

FROM THE DEPARTMENT OF ILLUSTRATIVE DESIGN



Vector

BASIC TRAINING

A SYSTEMATIC CREATIVE PROCESS FOR
BUILDING PRECISION VECTOR ARTWORK

DEVELOPED & WRITTEN BY
VON GLITSCHKA

Praise for *Vector Basic Training*

“The problem with vector images today is that I hate most of them! Mainly because something dies between the drawing and the precision vector graphic version. Perhaps it’s the illustration’s soul lost in the transition? Most vector images today contain too many cyber-slick gradations, they are too mathematically perfect, like many of the billions of images populating millions of microstock sites that lack anything real and human. If Von’s book can help improve a designer’s ability to create better vector images, I’m all for it. And remember: Just because you can make everything a gradation doesn’t mean you should make everything a gradation.”

— **CHARLES ANDERSON**, CSA Design

“With *Vector Basic Training*, Von Glitschka shames me. And I thank him for it. He reminds me that I am walking a tightrope of forsaking my first love: drawing. Von approaches the process with an honor and reverence that emerges from a tradition rooted in art as much as design. His depth of thought, trained hand, and ability to art direct himself has produced a stunning body of work and he brings it all home in *VBT* to share with the reader. That’s the thing with Von—not only is he a powerful talent, he’s gracious enough to share it all. I’ll be keeping my copy of *VBT* next to my Mac and, yes, my sketchpad.”

— **TERRY MARKS**, TMARKS Design

“Von’s experience as an award-winning ‘illustrative designer’ enables him to provide a valuable methodology for creating vector artwork guaranteed to produce results for every designer.”

— **EARL GEE**, Creative Director, Gee + Chung Design

“As president of the School of Advertising Art (saa), I would like to thank Von for writing this book. Young designers need to understand the power of the drawing process, and they need to know that time spent sketching before jumping to the computer is time well spent on any project. Von clearly demonstrates this philosophy throughout the book by incorporating interesting visual examples of his work. I am excited to share *Vector Basic Training* with SAA students.”

— **JESSICA GRAVES**, President, School of Advertising Art,
Kettering, Ohio

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VECTOR BASIC TRAINING:
A Systematic Creative Process for Building Precision Vector Artwork
Von Glitschka

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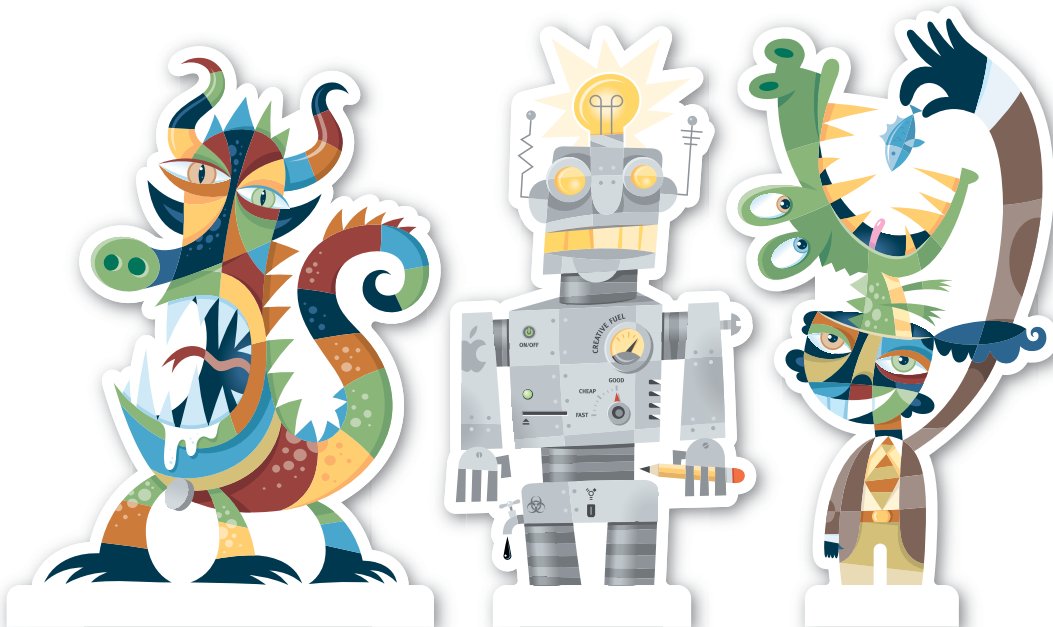
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Introduction

Vector Basic Training

The one question I get asked most by other creatives is, “How do you get your vector artwork to look so nice?” When people ask me this, they’re not talking about any specific art project or illustration, but rather how I go about building my artwork in vector format so precisely.

Truth is that many designers, whether they are students or seasoned professionals, struggle with building precise vector shapes. I have wrestled with it myself. There are times I have to access old art files from my personal archive, and when I open them, I cringe, thinking, “Why did I build it that way?” or “That could have been done a lot better.”

The point is: We all have room for improvement.

Vector Basic Training exhaustively documents my own creative process and approach to building vector artwork. The methods I’ll cover in this book (with exception to the plug-ins covered in chapter 2) are what I’d call application-agnostic. No specific software is required because you’ll be able to take these methods and use them within the vector drawing application of your choice. For sake of demonstration, I’ll be using Adobe Illustrator, which is the drawing application of *my* choice.

This book isn’t your typical software-oriented technical manual or a how-to for using the latest tools and pull-down menu effects. It assumes you have a general understanding of vector drawing applications already and want to improve your skills so you can build precise vector artwork.

My creative process is systematic in its approach. You may not agree with everything I have to say, but you can't argue with the end results you'll be able to produce over time if you apply the methods to your own creative endeavors.

Why Designers Should Draw

Yes, this is a book about vector build methods, but its creative foundation is firmly established on core drawing skills—something I stress repeatedly throughout this book because I feel so strongly about its importance to the creative process.

We all drew pictures when we were children, freely and joyfully with arms and legs protruding madly from the heads of our very first crudely rendered self-portraits. Many of you continued to draw as you grew older and that creative passion is probably one of the main reasons you're a designer today.

Some of you, however, didn't stick with drawing and have evolved into the type of designer who can't, or simply doesn't, draw. This is unacceptable.

If you drew every day, in five years you certainly would not say to yourself, "I wish I never would have started drawing again. I am a worse designer now." Your creative skills will only improve by integrating drawing into your creative process. The practical benefits from drawing will be self-evident and a lot of fun.

I should point out that when I say "drawing" I don't mean that everyone needs to become a full-fledged illustrator. Being able to draw allows you to take the ethereal concept in your mind and formulate it visually. The more you draw, the better you're able to capture and leverage ideas and expand your creative potential. Combine improved drawing skills with the vector build methods in this book, and you will definitely execute better artwork with more precision.

When it's all said and done, you'll be what I like to call a "drawsigner."

Digital vs. Analog

Even though our industry may be digitally driven, ideas are still best developed in analog form. You should always work out your ideas by drawing out your visual explorations on paper before you ever jump onto a computer. Failure to do so is the primary cause of many designers' problems when building vector artwork. If you can't draw accurately on paper, you won't be able to draw accurately on a computer either.

Building vector artwork before you know exactly what to build is an exercise in design futility. In this book, I'll show you how to utilize both analog and digital methods throughout the entire creative process. You'll learn how to go back and forth between the two realms to create effective and precise vector artwork.

As part of the creative process that I'll teach you in this book, I'll ask you to start by drawing out your ideas as thumbnail sketches using good old-fashioned pencil, pen, and paper. After refining your sketchwork, we'll scan it into a drawing application and begin our vector build process. I have several tried-and-true methods and build processes, which I'll explain throughout this book, that will give you a firm understanding of how to place just the right amount of points in just the right places for any design. The end result? Precision vector graphics nearly every time.

Process Makes Perfect

You've heard the saying, "Practice makes perfect." But I'd argue that when building vector art, your process must be precise from the start. A flawed or sloppy creative process will handicap your design potential. Worse, repeated over time, it will make you a consistent builder of marginal vector artwork.

I think a more accurate saying for our purposes would be, "Process makes perfect." This book will help you establish a successful creative process that you can use on any project type and that, over time, will improve your creative abilities so that you can design well-crafted artwork consistently.

Direct to DVD

The build methods and plug-ins showcased in this book are also thoroughly documented in action through more than four hours of screen-casts, which are included on the DVD. You'll also find helpful resource files so you can test drive these methods yourself and deconstruct art shown in the book so that you can better understand how it was built.



When you see the DVD camera icon anywhere in the book, it means the content provided on that page has a video on the DVD that is associated with it.



When you see the Resource Ai icon appear in the book, it means the content being discussed on that page has a vector source file associated with it that is provided on the DVD. Again, these are yours to play with and study.

Don't be a Design-O-Saur

Nothing hangs me up more in my workflow than an unforeseen software bug or computer problem. I've often thought what it would be like if other industries had to deal with the types of problems we face all the time.

Imagine, for example, if a construction worker backed his truck over his tool belt and broke his hammer in half, forcing him to head to the local hardware store and buy a new hammer. The man returns to the work site to finish the job, but when tries to use the new hammer to drive in some nails, the hammer shifts to the right, causing the construction worker to hit the board instead of the nail. Uh-oh—looks like his new hammer isn't compatible with his older version nails.

I know this is silly, but it's the type of reality we designers have to deal with every day.

Our industry, more than most, is in constant flux due to the ever-growing and changing technologies we have to work with on a daily basis. It can get overwhelming at times keeping up to speed with everything, but it's essential in order to stay creatively relevant with the larger design community.

A creative process should be flexible enough to accommodate new technology, methods, and tools that will improve its efficiency without compromising its effectiveness.

Vector Basic Training won't cover every possible tool for building vector art, but it will introduce you to a systematic creative process that you can use to create high-quality design work, regardless of which vector drawing program you use.

Along the way, I'll touch on additional tools and techniques that make certain vector build methods easier to accomplish. The methodology I cover may stretch your creative comfort zone, but unless you adapt to new methods and constantly strive to improve your design skills, you risk becoming a dreaded *design-o-saur*, and your once forward-looking design work will start to resemble a thing of the past.



FIELD NOTES

A Systematic Creative Process

Having a plan of creative attack as you approach any given design project is essential in order to produce work that is both appropriate and effective for your clients. Here is how my creative process breaks down into specific stages:

1. Research
2. Style Selection
3. Thumbnail Sketching
4. Refinement Sketches
5. Building Your Artwork
6. Final Artwork

Vector Basic Training will serve as your field guide to creative excellence, covering all these topics and more, so you'll be better equipped to approach your own work and grow your skills moving forward.

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VECTOR BASIC TRAINING

CHAPTER 4

Getting to the Points

A Bézier curve or path is only as elegant, graceful, or accurate as the anchor points that control and shape it. And in order to better control and edit anchor points, you first need to understand and recognize what qualifies as a good anchor point and path, a bad anchor point and path, and an ugly anchor point and path.

A vector design can easily have hundreds of paths and thousands of anchor points within it. Each point that is incorrectly used or sloppily handled will just add to the overall degradation of your visual aesthetic.

Anyone can learn to use a digital tool; that is merely a skill set. I want you to become a vector craftsperson, someone who can handle the basic tools and create professional results. You may conceive of a brilliant idea, but if your vector craftsmanship is weak, it doesn't matter how well thought out the idea is. It will suffer from poor execution.

On Prime Point Placement

There is one assumption to make before we can determine if an anchor point is good, bad, or ugly. We will assume you have the Prime Point Placement (PPP) of your anchor point correct. That is, you have each anchor point in the correct position within your design. We'll go over placing and removing anchor points, as well as PPP in more detail in the next chapter. But suffice it to say for now that if an anchor point is not positioned correctly as you build your vector shape, it will make controlling the path so that it matches your drawing far more difficult and possibly inaccurate.

For sake of demonstration, all of the vector art in the following images (**FIGURES 4.1–4.3**) contain identical PPP. That is, the anchor points are in the right places. The only difference among the figures will be found in the specific problematic characteristics associated with the individual anchor points.

With that graphic caveat in mind, let's take a closer look.

The Good Anchor Point and Path

In order to demonstrate the good, the bad, and the ugly as those qualities apply to anchor points and paths, I've selected an ornament design that contains only one straight line and depends mainly on the use of Bézier curves to form its shape.

First, however, you must understand the difference between corner anchor points and smooth anchor points. Corner anchor points are

placed anywhere your art has an apex that comes to a point. These types of anchor points can be used with or without Bézier curve handles pulled out from one or both sides when the transition between two paths doesn't need to be smooth.

A *smooth* anchor point is placed anywhere your art needs a curve that transitions from one path into the next. This sort of anchor point *always* uses Bézier curve handles pulled out from both sides to control the shape of the Bézier curve.

The following images (**FIGURES 4.1-4.3**) show the anchor points and path build shape on the left and the resulting final shape on the right.

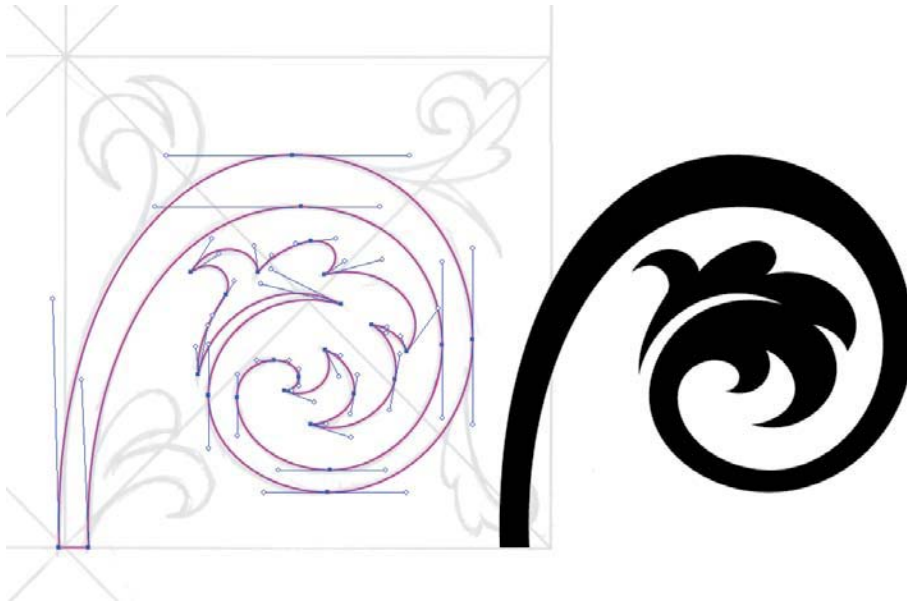


FIGURE 4.1 All of the anchor points in this vector ornament design are of the correct type, either corner or smooth depending on their PPP. The anchor points controlling the Bézier curves that form the main vine in this motif bend smoothly from one side to the other.

The handles are parallel with one another and are not pulled out too far, ensuring a smooth continuity throughout the art. The other anchor point handles that form the remaining Bézier curves are also not overextended, pulled out only as far as needed to form each of the various shapes in the path.

The end result of good anchor points and paths is a graceful and elegant shape.

The Bad Anchor Point and Path

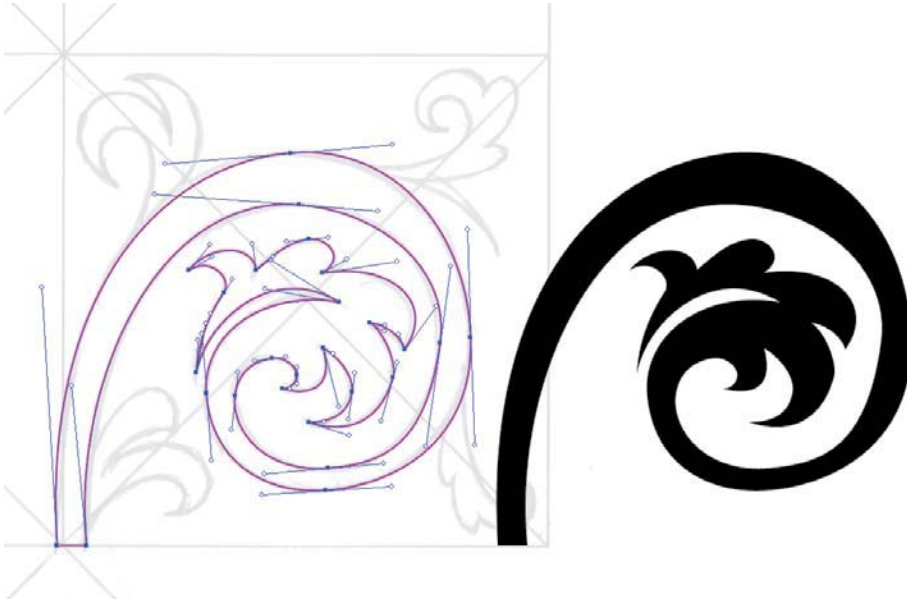


FIGURE 4.2 The anchor points in this vector ornament design are the correct type, but their handles are incorrect. They aren't parallel with one another, so the Bézier curves look less elegant and you begin to lose the visual continuity of the overall path. A consistent creative process that utilizes PPP and The Clockwork Method (which will be covered in chapter 5) will help you steer clear of this problem. At this point, the goal is simply for you to recognize that something is definitely not right. The end result of bad anchor points and paths is a less graceful and more clunky shape.

The Ugly Anchor Point and Path

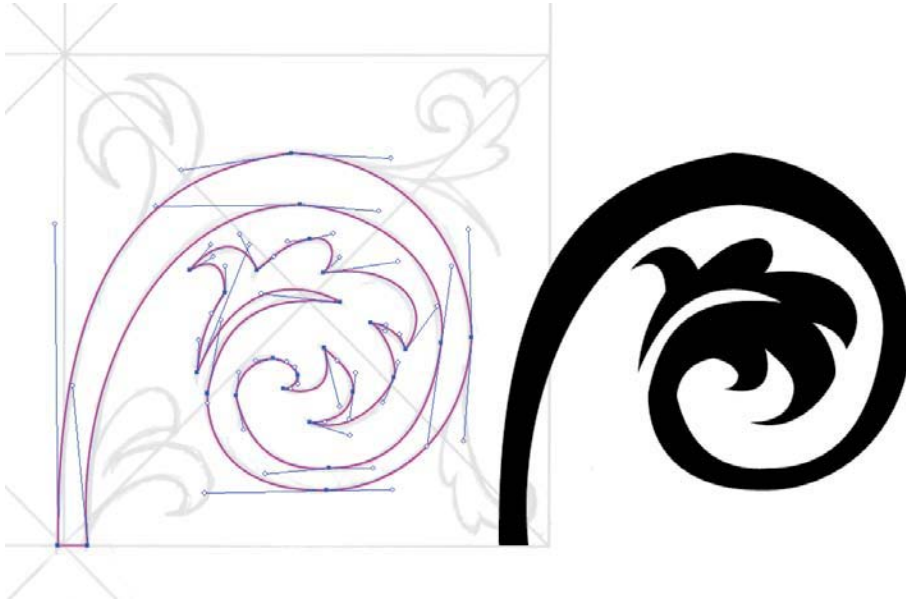
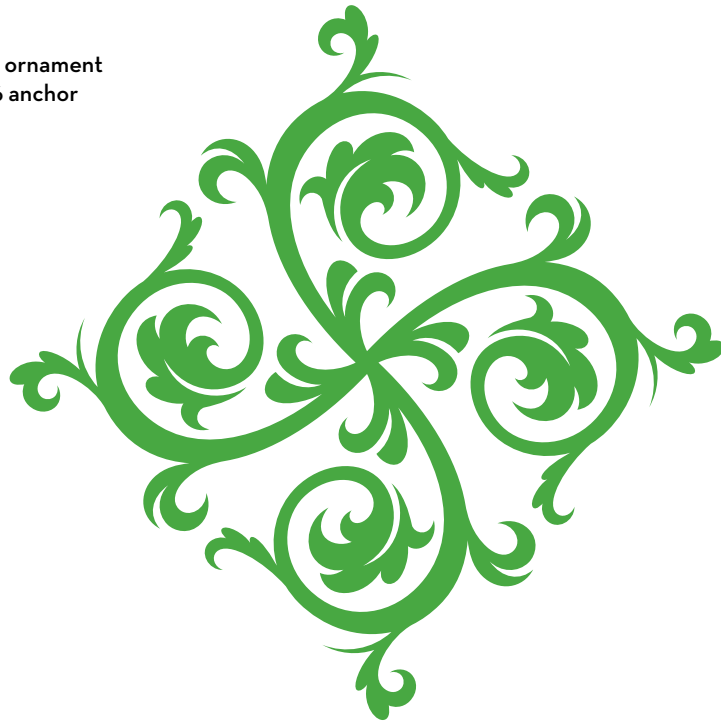


FIGURE 4.3 Almost all of the anchor points in this vector ornament design are the incorrect type. Any Bézier curve that you want to transition smoothly from one side of an anchor point to the opposite side should always utilize smooth anchor points, not corner anchor points. Using the wrong type of anchor point will cause a curved shape to look pointed.

More problems: Many of the anchor point handles aren't parallel with one another and some are pulled out too far, which prevents a continuous flow through the art and makes parts of it look flat. Some of the other anchor point handles that form the remaining Bézier curves in the design are overextended as well.

Some of these problems emerge from sloppy building and lack of attention to detail, as well as not building vector art point-by-point or shape-building (that is, autotracing). It all comes down to proper craftsmanship.

FIGURE 4.4 This shows the final ornament design. This graphic contains 276 anchor points that make up one path.



A Scrutinizing Eye

Throughout the vector build process, you'll need to pay close attention to your anchor points and paths to ensure you're creating quality. That said, no one is perfect; you'll make mistakes as you create your vector art, so it's important to train yourself to spot potential problems with your anchor points.

It may initially seem like I'm asking you to micro-manage your vector art, and in part that is true. But over time it will become second nature, to the point that you won't even consciously think about which anchor points to place or handles to pull. You will, however, notice the steady improvement of the vector shapes that you'll create because of your due diligence.

The Vector No-Fly List

Be on the look-out for the following common vector building mistakes:

1. **Incorrect Anchor Point:** If you're creating a Bézier curve that bends smoothly from one side of an anchor point to the opposite side as shown in **FIGURE 4.5**, you need to always use a smooth anchor point rather than a corner anchor point. If a curve looks pointed, then an incorrect anchor point is being used in the Bézier curve.

To convert a corner anchor point to a smooth anchor point (and vice-versa), just select the problem point and click the “Convert selected anchor points to smooth” button in the Control panel shown in Figure 4.5. The opposite option will appear if the point is already smooth. (Unfortunately, there is no keyboard command for this, nor is it recordable via actions.)

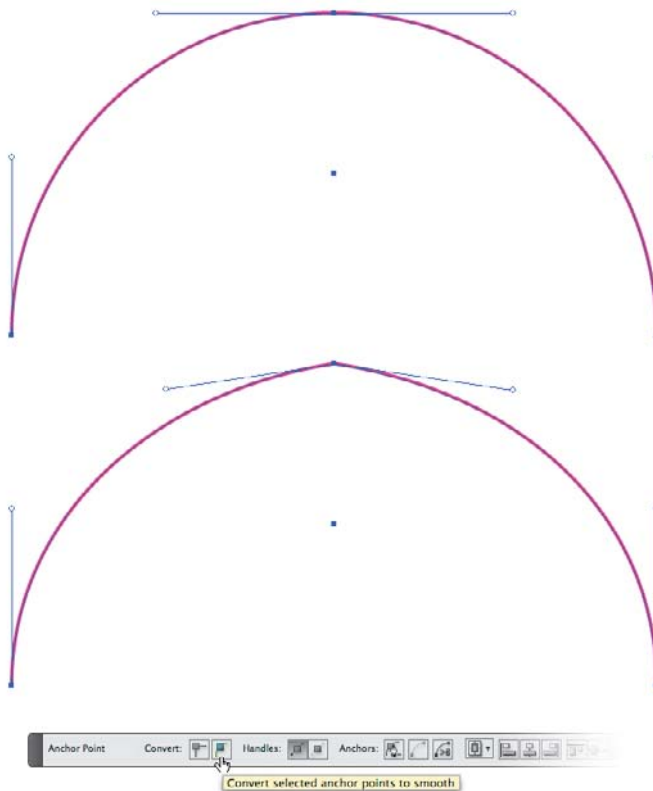
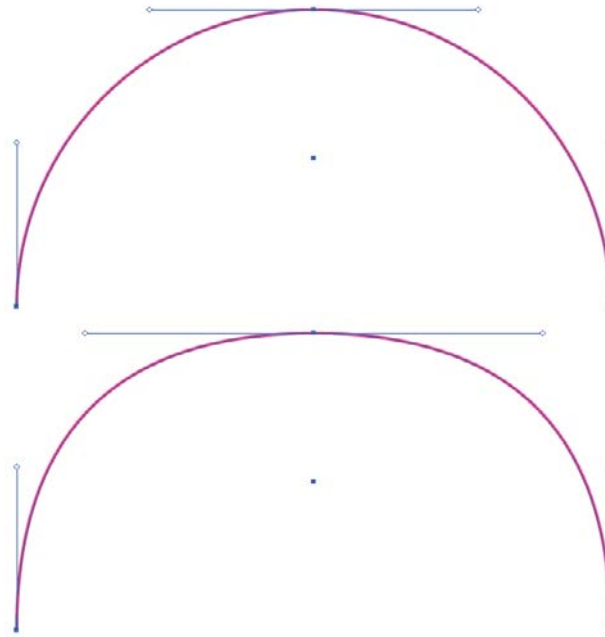


FIGURE 4.5 The correct use of a smooth anchor point shown on top; an incorrect corner anchor point, which causes a pointed look, is shown below.

FIGURE 4.6 Properly extended anchor point handles shown on top; a curve with overextended anchor point handles, which cause a flat appearance, is shown below.



2. **Flat Curves:** If you pull out your anchor point handles too far on a Bézier curve that bends smoothly from one side of an anchor point to the opposite side, as shown in **FIGURE 4.6**, the curve will lose its roundness and begin to look flat. It's a telltale sign of overextended handles.
3. **Parallels:** When you create shapes that contain corresponding Bézier curves that bend smoothly from one side of an anchor point to the opposite side, as shown in **FIGURE 4.7**, you want to make sure the extended handles at the apex of the path are parallel with one another. If the end vector shape doesn't have a graceful flow, it's a good bet some of the handles aren't parallel.
4. **Overextended Handles:** This is the result of trying to span the distance between two anchor points using one anchor point handle instead of using both. Much like the flat curve problem, it will result in a shape that is flat, awkward, and clunky. But it also can cause mitering problems on severe angles if you decide to add a heavier stroke to your art later (**FIGURE 4.8**).

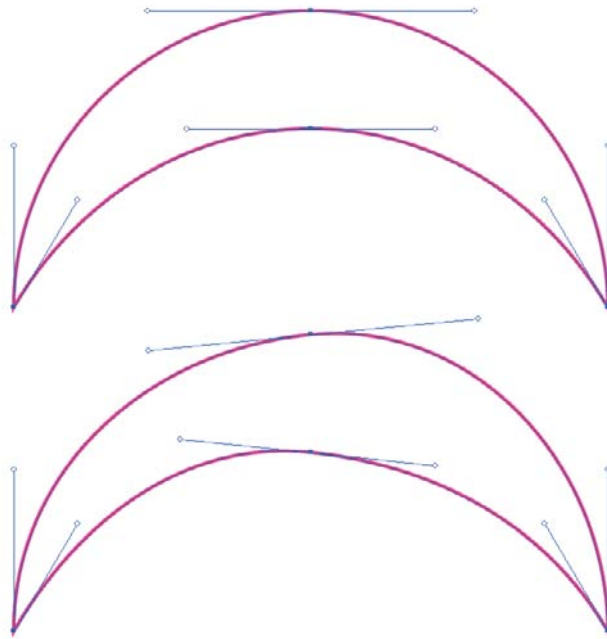


FIGURE 4.7 Parallel handles shown on top; non-parallel handles, which cause an uneven result, are shown below.

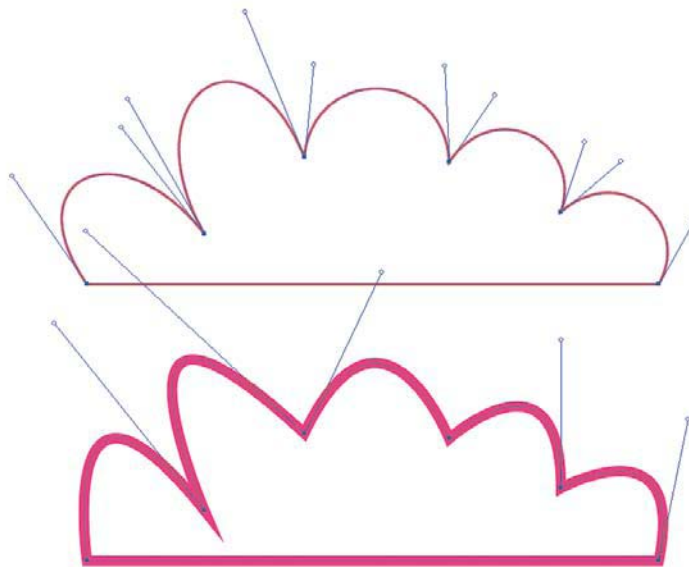


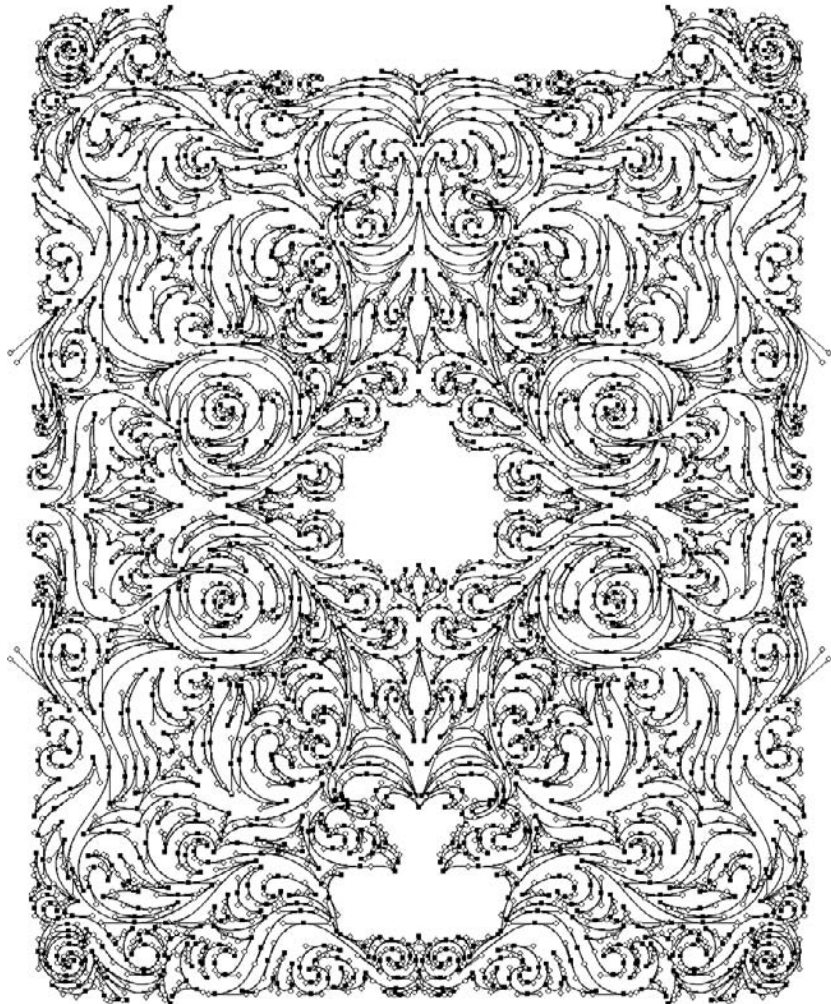
FIGURE 4.8 Both handles properly pulled out to form each Bézier curve is shown on top; the use of one overextended handle, which causes flatness, a clunky shape, and mitering problems, is shown below.

A Good Example

It's good to have a critical eye when scrutinizing your vector work as you build to ensure you're avoiding the telltale signs of problematic anchor points and the Bézier curves they control.

But one could argue that it's more important to recognize good anchor point characteristics. As your eye develops, you'll be able to look at any vector graphic and pinpoint either the good or bad characteristics of its anchor points and curves.

FIGURE 4.9 This complex vector ornament design doesn't contain any straight lines. It completely depends on precisely built Bézier curves created from smooth and corner anchor points. You won't find any of this design's content on the "no-fly list."



I should point out that the design shown in **FIGURES 4.9** and **4.10** took me about eight hours to build. I had to rebuild several shapes a few times before I dialed in the vector art precisely. I mention this because it would be easy for me to say that if you follow my process, everything will be easy and work the first time. That isn't true.

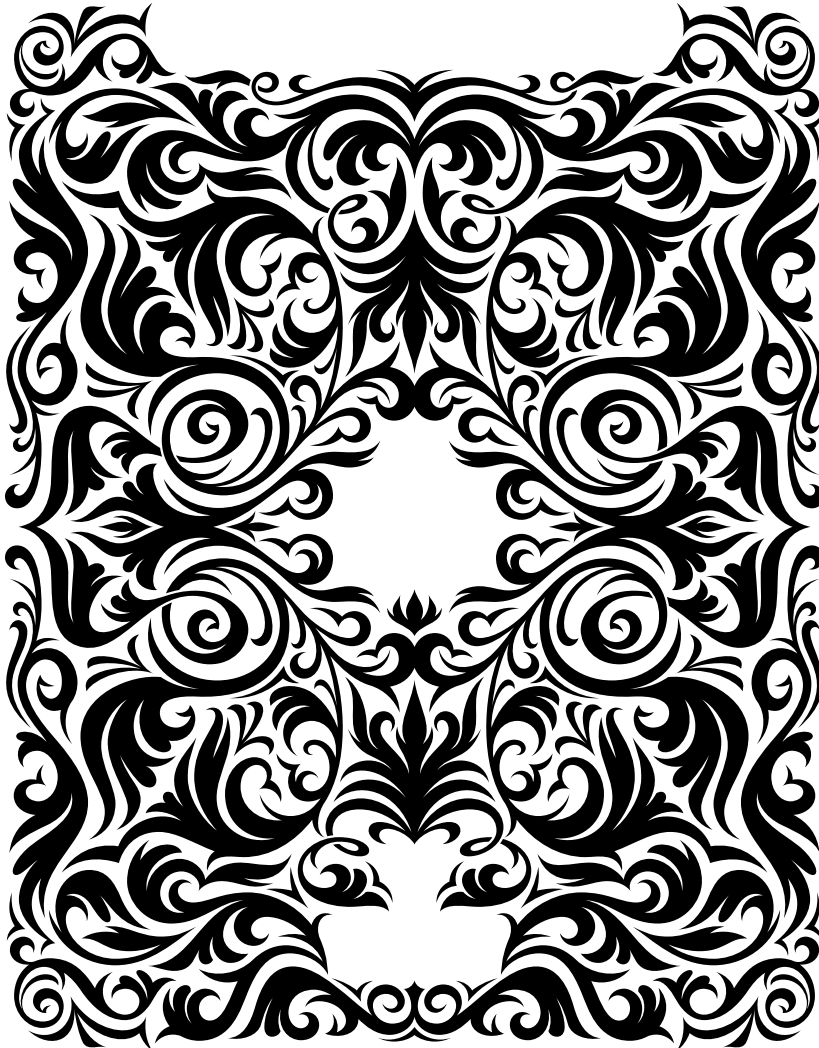


FIGURE 4.10 Final vector artwork I created for a die-hard Mac fanboy who loves his Apple iPad so much that he hired me to design this custom ornament, which he'll have etched onto the back of it.

FIELD NOTES**Change Your Perspective**

When scrutinizing your vector shapes, it's a good idea to select and rotate or flip them, print them out larger, or change your view to outline in Adobe Illustrator in order to pinpoint problem areas you can improve on. If you don't do this, it's too easy for your eyes to get used to what they are looking at.

Changing the visual perspective and orientation of the art forces the mind to reassess the shapes in your design and determine if something needs to be fixed. It's the same principle as holding a drawing up to a mirror in order to discover a distortion.

We'll talk more about self-art direction in Chapter 8.

What is true about my process is that it is a *process*. Part of that process is recognizing the good and bad characteristics in your own art and in the art of others. While creating this design I had to remind myself of The Clockwork Method (or TCM, a very handy method we'll introduce in Chapter 5). I wasn't following it, and my shapes were looking wonky.

Thank God for Command\Control-Z

Even using this systematic approach for building vector graphics, not every piece of vector artwork you create will be perfect. I still make mistakes every day. Placing anchor points and manipulating handles takes some trial and error.

The ultimate goal of this book is to dramatically reduce your potential for making vector mistakes, help you to recognize when something isn't right, and show you how to fix problems quickly so you can continue building your designs. So when in doubt, Command-Z (or Control-Z) can be your best form of creative accountability.

DESIGN DRILLS: Vector Skeletons

Proper anchor point placement is critical for creating precise vector artwork. But, unless you have your vector paths selected (V), it can be difficult to tell where all of the anchor points reside within a given design.

On the next four pages, we'll take a closer look at the vector skeletons within two very different sorts of design projects so you can see exactly where all of the anchor points are placed and how those placements affect the final results.

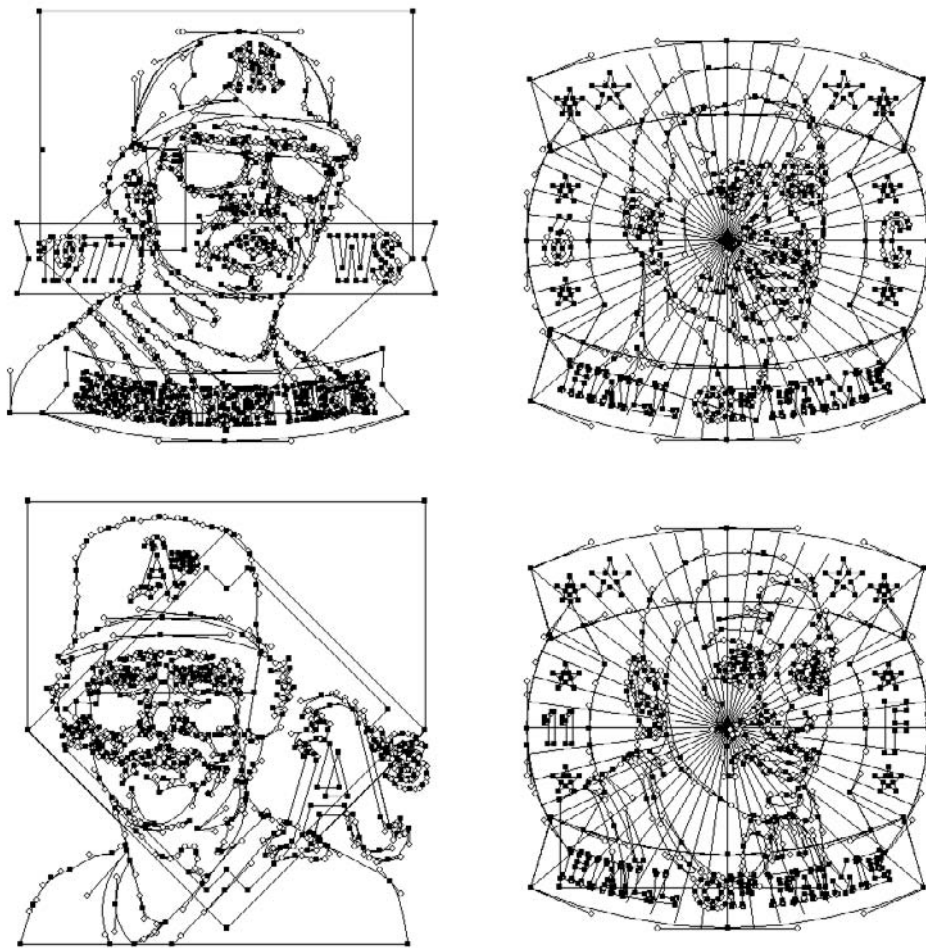


FIGURE 4.11 When you view the skeletal points and paths of these patch designs, created for Major League Baseball (MLB) and National Basketball Association (NBA) licensed products, they reveal that some of the vector content is masked. You can't see it in the final art shown in Figure 4.12.



FIGURE 4.12 The final official MLB- and NBA-licensed patch designs.

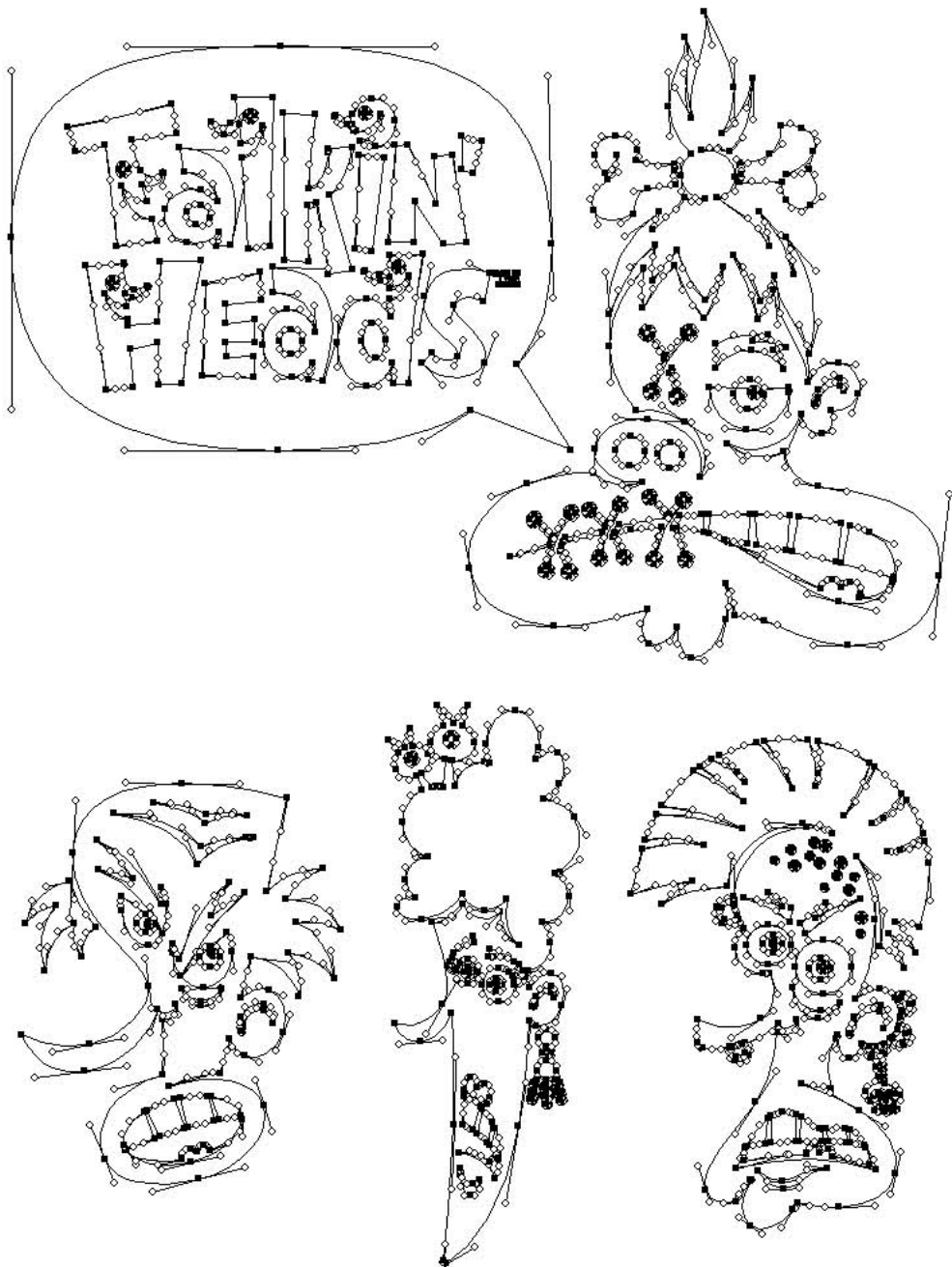


FIGURE 4.13 Not all art requires a massive number of anchor points. Note how I only needed seven anchor points to form the speech bubble in this logotype design for a custom art product.



FIGURE 4.14 This final art shows only four of the 50 “talkin’ heads” I created for the company Veer.

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