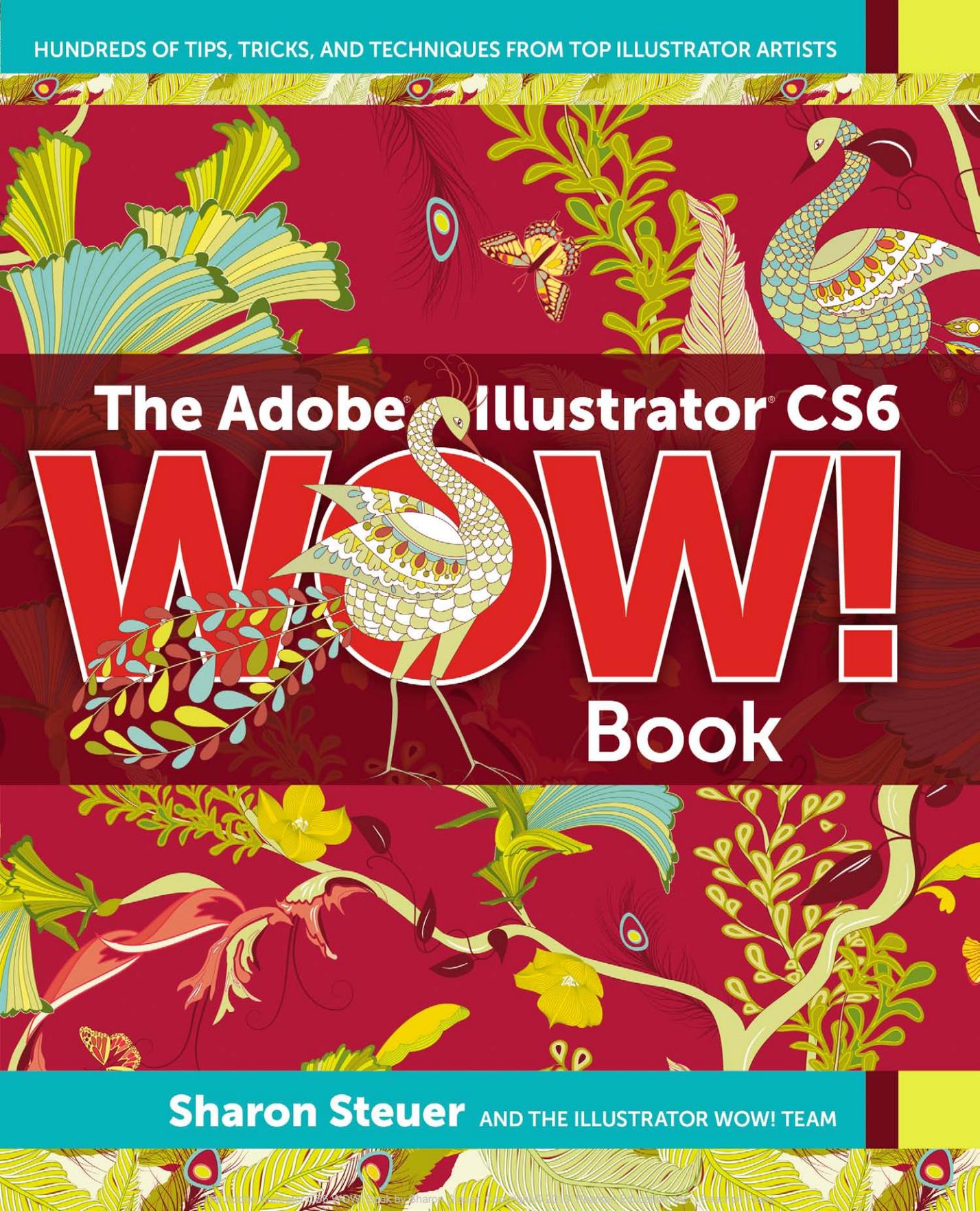


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The Adobe® **Illustrator**® CS6  
**WOW!**  
Book

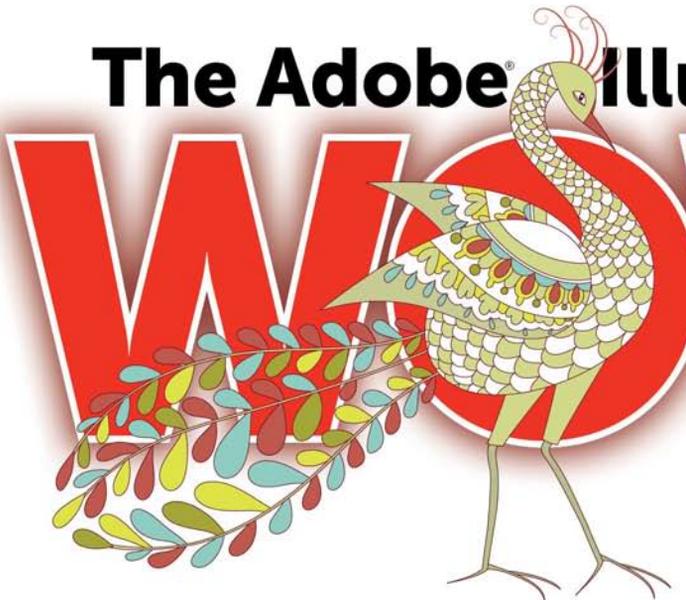
**Sharon Steuer** AND THE ILLUSTRATOR WOW! TEAM



# The Adobe® Illustrator® CS6

# WOW!

## Book



HUNDREDS OF TIPS, TRICKS, AND TECHNIQUES  
FROM TOP ILLUSTRATOR ARTISTS

**Sharon Steuer**  
AND THE ILLUSTRATOR WOW! TEAM

 PEACHPIT PRESS

# The Adobe Illustrator CS6 **WOW!** Book

Sharon Steuer

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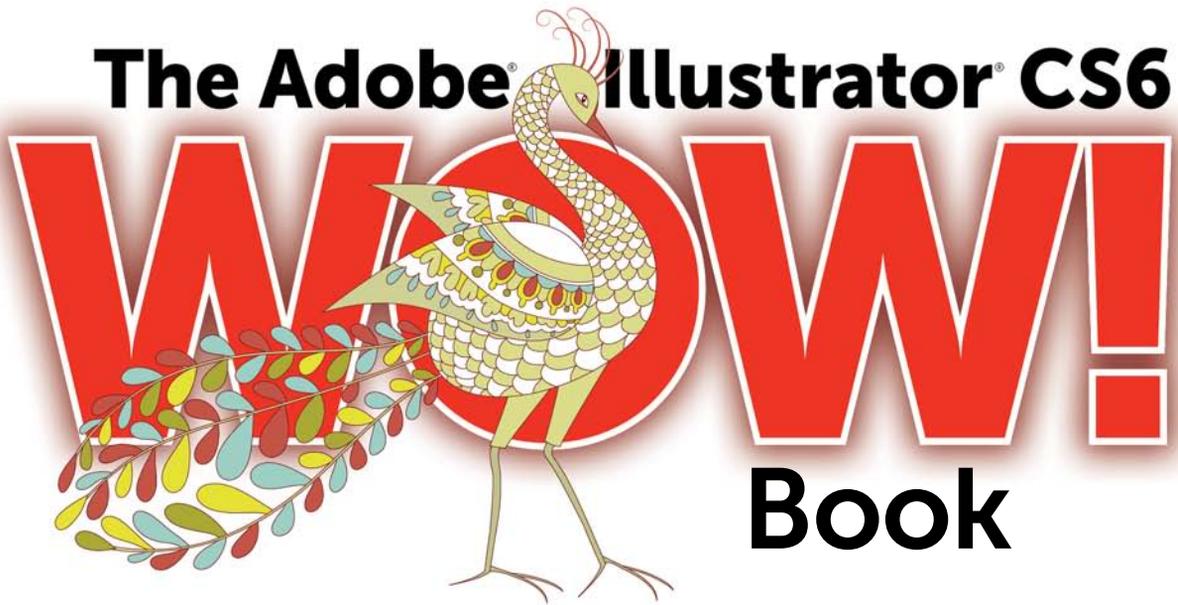
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# **WOW!**

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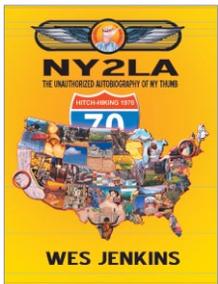
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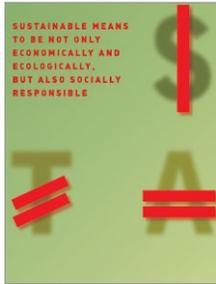
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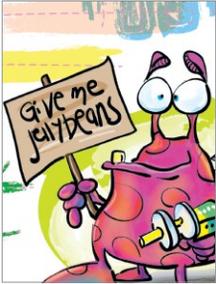
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# The Adobe Illustrator CS6 **WOW!** Book

## Team of Contributing Writers and Editors

**Sharon Steuer** has been teaching, exhibiting, and writing in the digital art world since 1983. Sharon is the originator and lead author of **The Illustrator WOW! Book** series, and author of **Creative Thinking in Photoshop: A New Approach to Digital Art**, and the soon to be released **Zen of Illustrator** ([info@zenofillustrator.com](mailto:info@zenofillustrator.com)). In between books, Sharon is a full-time artist working in traditional and digital media ([www.ssteuer.com](http://www.ssteuer.com)). She lives with her 17-year-old cat and the love of her life, her audio professor husband Jeff Jacoby ([jeffjacoby.net](http://jeffjacoby.net)).



As always, she is extremely grateful to **WOW!** team members (past and present), Peachpit, Adobe, and of course the amazing **WOW!** artists for constant inspiration, and for making this book possible. Keep in touch with her on [facebook.com/SharonSteuer](https://www.facebook.com/SharonSteuer) and [@SharonSteuer](https://twitter.com/SharonSteuer) (Twitter).

**Jean-Claude Tremblay** is the owner of Proficiografik, a consulting and training service for the graphic and print community, designed to help clients work efficiently. He is an Adobe Certified Expert Design Master and an Adobe Community Professionals member. He has been deeply involved as chapter representative for the InDesign User Group of Montréal he cofounded in 2010, and also with the launch of the Quebec City group in fall 2012. After serving as a magnificent **WOW!** tester, Jean-Claude returns for his fourth mandate as the **WOW!** technical editor, chief advisor, and resident magician. You can find him hanging on Twitter [@jctremblay](https://twitter.com/jctremblay) where he is always directing people to great resources related to design. He lives in the greater Montréal area with his wife Suzanne and his wonderful daughter Judith.



**Cristen Gillespie** has contributed to other **WOW!** books, including coauthoring **The Photoshop WOW! Book**. She has also coauthored articles for *Photoshop User* magazine. With a decades-long enthusiasm for the digital world of art and multimedia, and an equal interest in digitally preserving and presenting family histories, Cristen tackles step-by-step Techniques, Galleries, and Introductions with avid interest and commitment. She looks forward with every edition of the book to learning from wonderful artists and writers, and hopes she'll be asked to stay with **Illustrator WOW!** for many years to come.

**Steven H. Gordon** is a returning coauthor for step-by-step Techniques and Galleries. Steven has been an ace member of the team since **The Illustrator 9 WOW! Book**. He has too many boys to stay sane and pays way too much college tuition. Steven runs Cartagram ([www.cartagram.com](http://www.cartagram.com)), a custom cartography company located in Madison, Alabama. He thanks Sharon and the rest of the **WOW!** team for their inspiration and professionalism.

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**Aaron McGarry** is a San Diego-based writer and illustrator who spends time in Ireland, where he is from. While writing provides his bread, commercial illustration supplements the bread with butter. He paints and draws to escape and relax, but finds his greatest source of joy with his wife Shannon, a glass artist, and their gorgeous 7-year-old daughter Fiona. Please visit: [www.amcgarry.com](http://www.amcgarry.com). or [www.aaronmcgarry.com](http://www.aaronmcgarry.com).

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Please see **Acknowledgments** and **The Adobe Illustrator Book WOW! Production Notes** pages for thorough listings of the **WOW!** team contributors, past and present.

## Important: Read me first!

### If you're a beginner...

Beginners are of course most welcome to find inspiration in this book. However, be aware that the assumed user level for this book is intermediate through professional. If you're a beginning Illustrator user, please supplement this book with basic, beginning Illustrator instruction and training materials. In addition, don't miss the free Illustrator training videos from the Adobe TV website <http://tv.adobe.com/product/illustrator/>.

### Where & what is WOW! ONLINE?

The best way to really learn how to make things in Illustrator is to examine complex artwork created by professional artists using Illustrator. You're in luck! Many of the artists in this book have allowed us to post their works for you to examine and pick apart. Please contact the artists (find their info in the Artists appendix) to request permissions beyond personal exploration. Find these artworks, as well as a free scripts from Premedia Systems, a year's worth of *Design Tools Monthly* newsletters, and other goodies, at **WOW ONLINE**. See the Tip "Look for the **WOW! ONLINE** icon" at the top of the "How to use this book" section, page xvi.



First of all, I am really excited to bring you this twelfth edition of the **Illustrator WOW!** series. This book has been lovingly created for you by an amazing team of people. In order to provide you with the most thoroughly updated information in a timely manner (and as close as possible to the shipping of the new version of Adobe Illustrator), this book has become a truly collaborative project, and is created by a large team of international experts.

The process begins with all of us on the team, testing the newest features of a pre-release version of Illustrator, trying to discover which of the features is worthy of focus for this book by and for, artists and designers. Our astounding technical editor, Jean-Claude Tremblay, marks up the previous edition, identifying areas where we should be expanding and deleting. Steven Gordon and I co-curate the book, finding new artists and artwork that we think deserves inclusion. I work with each co-writer to determine which features they want to concentrate on, based on their expertise in Illustrator, and for the writers who are also artists, we work together to try and figure out which new features they might be able to incorporate into their professional projects. As problems arise, Jean-Claude, Cristen, and I will often pass files and questions amongst ourselves, always attempting to find the most efficient and fool-proof workflow possible.

With my name on the cover of the book, rest assured that as the book evolves, Jean-Claude and I oversee every single page of the book. But it's not just the two of us—the entire team of writers, as well our stellar team of **WOW!** testers, actually test and critique every page as it develops. This amazing group of experts, scattered around the globe, come together by email, iChat, and [acrobat.com](http://acrobat.com), all working as a team in order to deliver the best book possible to you, our reader.

With the skyrocketing price of printing in full-color, and the fragile state of the economy, we continue to look for ways to keep the cover price of the book down. We

are continuing to emphasize creating art and design with Adobe Illustrator, and will leave the more basic and most technical aspects of the program to other authors and instructors to expand upon. To economize even more, instead of a DVD shipping with the book, we've posted files for you to download from **WOW! ONLINE**.

It's always exciting to assemble gorgeous new examples of art, essential production techniques, and time-saving tips from **Illustrator WOW!** artists worldwide. Nowhere else can you find this combination of gorgeous, professional art, combined with the range of expertise from the contributing writers, and the knowledge that the **WOW!** team has thoroughly tested every lesson and gallery to make sure everything actually works. All lessons are deliberately short to allow you to squeeze in a lesson or two between clients, and to encourage the use of this book within the confines of supervised classrooms.

The user level for this book is "intermediate through professional," so we assume that you have a reasonable level of competence with computer concepts (such as opening and saving files, launching applications, copying objects to the Clipboard, and clicking-and-dragging), and that you have a familiarity with most of Illustrator's tools and functions. Please see the **WOW! GLOSSARY** appendix for a thorough summary of the shortcuts and conventions that we'll refer to regularly in the book, as well as the section "How to use this book..." following, for more details on the user level for this book.

The more experienced you become with Adobe Illustrator, the easier it is to assimilate all the new information and inspiration you'll find in this book. I'm immensely proud of and grateful to everyone who works with me on this project. And I welcome you to the team.

Most Sincerely,



*Sharon Steuer*

## What's new in CS6 (and CS5)?

New features for CS6 include a Pattern Options panel for creating and editing patterns, an enhanced Image Trace panel (replacing Live Trace), gradients applied to Strokes, a quick-access Locate Object icon in the Layers panel, a faster Gaussian Blur, an interface overhaul, and native 64-bit support bringing performance improvements across the board. If you missed CS5, new features included the Shape Builder tool, perspective tools, bristle brushes, variable width strokes with the Width tool, transparency in gradients and gradient mesh, and the Artboards panel.

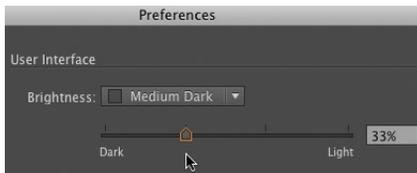
## How to keep in touch with us

We'll post notes on **WOW! ONLINE** when Adobe ships mini-upgrades via the Adobe Creative Cloud, discussing how this might impact your workflow. We'll also post announcements to **WOW! ONLINE** about future ePub versions of the **WOW!** books, **Zen of the Pen™** courses (when they're available), and CreativePro **WOW!** expansions. Communicate directly with Sharon via Twitter (@SharonSteuer), facebook.com/SharonSteuer, or sign up for her occasional eNewsletters (STEUERArtNews), or send her links to artwork, via <http://ssteuer.com/contact>.

# How to use this book...

## Look for the WOW! ONLINE icon

When you see this icon, it means that you can access related artwork or files for that project or artwork. To access a separate zip file for each chapter, plus a few extras, access **WOW! ONLINE** [the URL and password can be found here in the purchased book].



The default new dark interface (shown here with Preferences open to the new User Interface section to adjust this) makes screenshots more difficult to read in print, so throughout this book we're using the Light interface setting

## Where's the Welcome screen?

Illustrator no longer starts with a Welcome screen, but you can access default (and your custom-saved New) Document Profiles in the Profile list when you choose File > New. From this dialog you can also still access the Template menu. Use the Help menu for online resources, and find a list of recent files from the File menu.

### Windows WOW! Glossary

and essential Adobe Illustrator shortcuts

<b>Cmd</b>	Cmd always refers to the Cmd (Control) key
<b>Alt</b>	Alt always refers to the Alt key
<b>Marquee</b>	With any Selection tool, click-drag over object(s) to select
<b>Toggle</b>	Shows selection sets as a switch; shows one term if on, changing again turns it off
<b>Contextual menu</b>	Right-click to access contextual menus

The Mac and Windows WOW! Glossaries cover basic keyboard shortcuts for commands you'll frequently use

While everyone is welcome to be inspired by the fabulous work showcased in this book, please keep in mind that this **Adobe Illustrator CS6 WOW! Book** has been designed and tested for intermediate through professional-level users of Adobe Illustrator. That means that you'll need to be familiar enough with the basics of Illustrator to be able to create your own art to follow along with the lessons. Unlike some books that do all the work for you, this book encourages experiential learning; as you follow along with the lessons, you'll not only be mastering the techniques, but you'll be creating your own art along the way. And to help you figure things out and inspire you further, this icon  tells you to look for the featured artwork within that chapter's folder at **WOW! ONLINE** (see Tip "Look for the **WOW! ONLINE** icon" at left for details).

## Shortcuts and keystrokes

Please start by looking at the **WOW! Glossary** in an appendix at the back of the book for a thorough list of power-user shortcuts that you'll want to become familiar with. The **WOW! Glossary** provides definitions for the terms used throughout this book, always starting with Macintosh shortcuts first, then the Windows equivalent (**⌘-Z**/Ctrl-Z). Conventions covered range from simple general things such as the **⌘** symbol for the Mac's Command or Apple key, and the Cut, Copy, Paste, and Undo shortcuts, to important Illustrator-specific conventions, such as **⌘-G**/Ctrl-G for grouping objects, and Paste In Front (**⌘-F**/Ctrl-F)/Paste In Back (**⌘-B**/Ctrl-B) to paste items copied to the clipboard directly in front/back of the selected object, and in perfect registration. Because you can now customize keyboard shortcuts, we're restricting the keystroke references in the book to those instances when it's so standard that we assume you'll keep the default, or when there is no other way to achieve that function (such as Lock All Unselected Objects).

## Setting up your panels

Illustrator initially launches with an application default that could inhibit the way Illustrator experts work. One of the most powerful features of Illustrator is that, when properly set, you can easily style your next object and choose where it will be in the stacking order by merely selecting a similar object. But in order for your currently selected object to set all the styling attributes for the next object you draw (including brush strokes, live effects, transparency, etc.), you must first disable the New Art Has Basic Appearance setting from the pop-up menu in the Appearance panel (✓ shows if it's enabled). Your new setting sticks even after you've quit, but needs to be reset if you reinstall Illustrator or trash the preferences. Throughout the book we'll remind you to disable it when necessary, and also, at times, when it's helpful to have it enabled.

## HOW THIS BOOK IS ORGANIZED...

You'll find a number of different kinds of information woven throughout this book—all of it up-to-date for Illustrator CS6: **Introductions, Tips, Techniques, Galleries, and References**. The book progresses in difficulty both within each chapter, and from chapter to chapter. If you've not done this yet, please see the previous section "Important: Read me first!" about the user level of this book.

- 1 Introductions.** Every chapter starts with a brief, general introduction. In these introductions you'll find a quick overview of the features referred to in the chapter Lessons and Galleries that follow, as well as a robust collection of tips and tricks that should help you get started. In fact, there is so much info crammed in there it's likely that you'll discover new, useful information every time you take a look.
- 2 Tips.** Don't miss the useful information organized into the gray and red Tip boxes throughout the book. Usually you'll find them alongside related text, but if you're in an impatient mood, you might just want to flip through,

## ✓ New Art Has Basic Appearance

### New Art Has Basic Appearance

*If you want your currently selected object to set all styling attributes for the next object, disable New Art Has Basic Appearance by choosing it from the pop-up menu in the Appearance panel*

**1**

#### Your Creative Workspace

**Tabbed docs & the App Frame**

- Change whether documents are tabbed (the default) or not through Preferences > User Interface.
- If more documents are open than are visible on tabs, a double-arrow at the tab bar's right will list them.
- Drag documents away from the tab to make them free-floating.
- Drag an object from one document into another by dragging over that document's tab. The tab will spring open to let you drop the object in place.
- On a Mac, you can also turn on the Application Frame (disabled by default) from the Window menu. The frame contains all the panels and documents, and everything you can do in AI takes place within the frame.

**Note:** You should turn off the Application Frame when using an extended monitor setup (or during video projection).

**Magically appearing panels**

If you have used Tab or Shift+Tab to hide your panels, mouse carefully over the narrow strip just before the very edge of the monitor where the panels were and they'll reappear, then hide themselves again when you move away.

**OK, this might not seem like sexy WOW! stuff, but to save time and stay focused on being creative, you need to work efficiently. In this chapter you'll find tons of things you might have missed or overlooked. You'll find tips for customizing your workspace and in-depth coverage of newer organizational features such as working with multiple artboards and the multi-functional Appearance panel, which can take the place of several panels.**

**ORGANIZING YOUR WORKSPACE**

You can save time and frustration in the long run if you spend a few minutes setting up custom workspaces and creating your own document profiles. The panels you want handy in order to create a Bristle Brush painting are probably different from what you need when creating a technical illustration or the layout for a series of brochures. Not all panels are needed for every job, but by organizing all that you definitely need—eliminating all you'll rarely need or won't need at all—you'll be able to locate quickly just what you need when you need it. In addition, the Control and Appearance panels often contain the same information found in the special-purpose panels, permitting you to close some of those panels and streamline your interface even more than you might think possible (see the "Using the Appearance Panel" section later in this chapter).

In deciding which panels you want on your desktop for any given project, you'll probably first want to cluster panels that you will frequently use in sequence, such as Paragraph and Character Styles or Transform and Align. You'll also decide where each panel or group of panels should live, and whether, when you collapse them to get them out of your way, you want them to collapse to their icon and label, or all the way down to their icon. When you have everything arranged to your liking, choose New Workspace from either Window > Workspace, or from the

**2 Chapter 1 User Creative Workspace**

*Every chapter begins with an Introduction section that focuses on overviews of features*

## Everything's under Window...

Almost every panel in Illustrator is accessible through the Window menu. If we don't tell you where to find a panel, look for it in the Window menu!

## 2 Tip boxes

Look for these gray boxes to find Tips about Adobe Illustrator.

## Red Tip boxes

Red Tip boxes contain warnings or other essential information.



Step-by-step lessons show you how an artist or designer uses a feature to tackle a creative task



Galleries show original art projects by artists and designers from around the world



Access Illustrator Help from the Help menu, or if you have function keys, use F1

looking for interesting or relevant Tips. The red arrows, **red outlines**, and **red text** found in Tips (and sometimes with artwork) have been added to emphasize or further explain a concept or technique.

**3 Step-by-step lessons.** In these detailed sections, you'll find step-by-step techniques gathered from artists and designers around the world. Most **WOW!** lessons focus on one aspect of how an image was created, though we'll sometimes refer you to different chapters (or to a specific step-by-step Lesson, Tip, or Gallery where a related technique is further discussed) to give you the opportunity to explore a briefly covered feature more thoroughly. Feel free to start with almost any chapter, but be aware that each technique builds on those previously explained, so you should try to follow the techniques within each chapter sequentially. The later chapters include **Advanced Technique** lessons, which assume that you've assimilated the techniques found throughout the chapter. The *Mastering Complexity* chapter is packed with lessons dedicated to advanced tips, tricks, and techniques, and most will integrate techniques introduced in the earlier chapters.

**4 Galleries.** The Gallery pages consist of images related to techniques demonstrated nearby. Each Gallery piece is accompanied by a description of how the artist created that image, and may include steps showing the progression of a technique detailed elsewhere.

**5 References.** Within the text you'll occasionally be directed to *Illustrator Help* for more details; to access this choose Help > Illustrator Help. At the back of the book, you'll find a special tips supplement, plus a special list of Illustrator-related plug-ins, scripts, and other production resources, both assembled for you by Design Tools Monthly. Next you'll find **WOW! Glossary** references for Windows and Mac; followed by a listing the artists featured in this book, a General Index, and finally, on the last page, the production notes on how this book was created.

# Acknowledgments

As always, my most heartfelt gratitude goes to the many artists and Illustrator experts who generously allowed us to include their work and divulge their techniques.

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This revision is the result of a major team effort by an amazing group of friends and collaborators. Thankfully Cristen Gillespie is sticking with Illustrator **WOW!** Cristen works on almost everything, including contributing the vast majority of new lessons, Galleries, and this time, all of the introductions. Also blessedly returning were veteran **WOW!** artist/writer Lisa Jackmore (who did a great job with Galleries, lessons, and the **Adobe Illustrator CS6 WOW! Course Outline**), and cartographer/writer Steven Gordon (who returned to create and update important lessons and Galleries, join me on curatorial duties, and continue to contribute dry wit when needed). Also returning was artist/writer Aaron McGarry, who continues to be our resident 3D and perspective expert. Joining us as **WOW!** writers were the wonderful artists George Coghill, Raymond Larrett, and Laurie Wigham. Thank you Eric Schumacher-Rasmussen for returning (with kindness and humor) as the master juggler of so many edits from so many of us. A special thanks goes to our stellar team of testers: Nini Tjäder, Federico Platón, David Lindblad, Brian Stoppee, Janet Stoppee, Katharine Gilbert, Darren Winder, Franck Payen, Stéphane Nahmani, Chris Leavens, and Adam Z Lein (who also helped set up and troubleshoot the database that tracks who's doing what). Thanks to Sandee Cohen (@vectorbabe) who continues to act as our official kibitzer. Sandee also introduced me to Bob Levine (@idguy), and together they helped me try to figure out GREP answers to cryptic InDesign flow issues. Thank you Jim Birkenseer and Peter Truskier (of Premedia Systems), for taking on the difficult task of updating your **WOW!** scripts for our Illustrator lessons. Thank you Jay Nelson for continuing to nurture Design Tools Monthly and **WOW!** collaborations. And I look forward to previewing and expanding **WOW!** book materials for Mike Rankin at CreativePro.com, and Nick van der Walle at Astute Graphics. Thanks to Laurie Grace for screenshot updates, and making me laugh, Jack Lewis for being such a patient and fast indexer, and Darren Meiss being the best proofer we've ever had. Peg Maskell Korn helped me ten of the past eleven editions, and she was missed this time.

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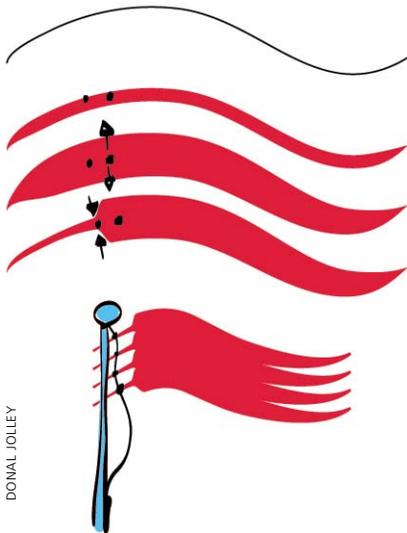
# 4

## **Expressive Strokes**

# Expressive Strokes

## Different Strokes

Marks made with the Blob Brush tool begin as a stroke, but automatically turn into a filled shape. Find details on using it in the *Rethinking Construction* chapter. For the basics of applying gradients to strokes, see the introduction to the *Color Transitions* chapter. You'll also find lessons and galleries that incorporate gradients on strokes throughout the book.



Creating discontinuous curves from continuous curves with the Width tool when creating a flag

## Save those width profiles

The Reset icon in the Strokes panel deletes all custom width profiles and restores the default profiles. To first save your width profiles, apply them to an object, then save that object's Graphic Style in the Graphic Styles panel.

New features in Illustrator give the user more control over Strokes than ever before. You can manually adjust the contours of a path with the Width tool to emulate calligraphy, and save its form (profile) in the Stroke panel to apply to another path. You can specify precisely where the middle section of an art brush will stretch along a path, and where the ends (such as arrowheads) will be protected from distortion. You have control over how pattern brushes and dashed lines fit around corners. You can use “natural media” bristle brushes to make complex and painterly marks, emulating airbrush, pastel, and wet paint, and using traditional brush shapes like flat or fan. And symbols can be sprayed and manipulated using a special set of Symbolism tools.

## WIDTH TOOL AND STROKE PROFILES

The Width tool (Shift-W) varies the width of strokes created with the drawing and geometric shape tools, or art and pattern brushes. The path doesn't have to be selected; hover over it with the Width tool and the path will highlight, along with hollow diamonds indicating existing width points that were either set automatically, such as the end points of a path, or that you have set. As you move your cursor over the path, still hovering, a hollow diamond moves with your cursor, ready to become a width point at whatever location along the path you click on. You can modify paths between two existing width points, and can create either a flowing, *continuous* curve, or a *discontinuous* one with a sharp break between sections.

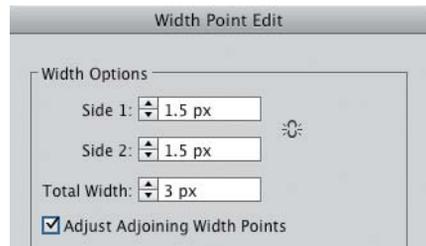
If width points are spaced apart, the path gradually gets wider or narrower from one point to the next in a continuous curve. If width points are placed on top of each other, you create a sharp break between the two widths, causing the curve to abruptly widen or narrow, much like adding an arrowhead to the path. Modify strokes on either side of the path either by adjusting the

stroke weight evenly along the path, or placing more weight on one side of the path than the other. Your custom stroke profile is temporarily stored in the Stroke panel, making it possible to apply the same stroke to as many paths in the document as you wish. An asterisk in the Appearance panel beside Stroke denotes a width profile. You can also save a custom profile as part of a Graphic Style and/or to the Profiles list using the Save icon at the bottom of the Stroke panel list. The Reset icon restores the default width profiles, replacing any custom profiles you've saved, so be careful about choosing to restore the default width profiles. You can modify width points in a variety of ways with the Width tool:

- **To open the Width Point Edit dialog**, double-click on a path or existing width point. Numerically input the stroke weight for each side of the path, and/or choose to have adjoining width points adjusted at the same time.
- **To interactively adjust the width point**, click-drag on a handle to symmetrically adjust the stroke width.
- **To adjust one side of a stroke**, press Option/Alt while dragging on a handle.
- **To adjust or move multiple width points**, Shift-click to select the points (not anchors) you want to alter, then drag on one point or handle to adjust the others with it.
- **To adjust or move all adjoining width points** (up to the next corner anchor point), hold Shift while dragging.
- **To copy selected points**, hold Option/Alt as you drag.
- **To delete a selected width point**, press the Delete key.
- **To deselect a width point**, click on an empty space away from the path, or press the Esc key.

## THE EXPANDED STROKE PANEL

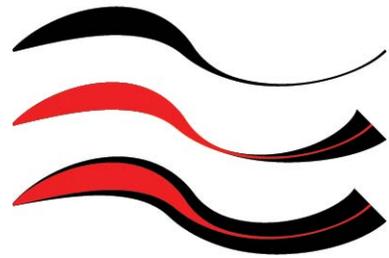
The Stroke panel controls settings for the many different types of strokes, from how they align to the path of an object to how they join at corners. Dashed lines, end caps, and arrowheads all are part of the Stroke panel, as well as stored width profiles, from a normal even width to a fully calligraphic profile. Here you can also customize and save your carefully crafted stroke profiles after creating a



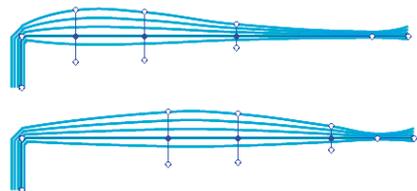
*To numerically adjust one or more selected width points, double-click on one to open the dialog and make adjustments; select just one point before entering the dialog if you want to enable Adjust Adjoining Width Points*

## Width points vs. anchor points

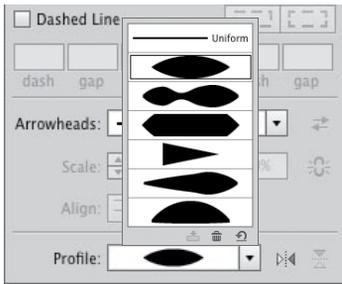
It's difficult to distinguish between the shape of Width points and normal points. The tip says "path" when you hover over a Width point, while the tip for other points says "anchor."



*(Top) The starting stroke with width points already added and adjusted; (middle) the width point at the right end adjusted again to make the end wider and Adjust Adjoining Width Points disabled; (bottom) with Adjust Adjoining Width Points enabled when adjusting the same original right-end width point—starting stroke shown for clarity in red on top of both adjusted strokes*



*Shift-selecting just some contiguous (shown) or non-contiguous (not shown) width points on a pattern brushstroke, releasing Shift, then moving them all at once*



With the Stroke panel width profiles list, save or delete one custom width profile at a time (resetting defaults removes all custom width profiles)



A path shown first in Outline, then in Preview with a Miter join, Round join, and Bevel join



(Top) When Dashes with round caps are added to art by Sally Cox, the default option in the Stroke panel preserves dash size but are unevenly distributed around the frame; (bottom) changing the option to Align to corners dash size varies the size of dashes but evens spacing

variable-width stroke, and preview how your path joins to an arrowhead. Adjust the way dashes follow a path, and scale arrowheads to suit.

### Making ends meet

Sometimes stroked lines seem to match up perfectly when viewed in Outline mode, but they visibly overlap in Preview mode. You can solve this problem by selecting one of the three end cap styles in the Strokes panel. The default Butt cap causes your path to stop at the end anchor point and is essential for creating exact placement of one path against another. The Round cap is especially good for softening the effect of single line segments. The Projecting cap extends lines and dashes at half the stroke weight beyond the end anchor point. Cap styles also affect the shape of dashed lines.

Corners have joins that serve a similar purpose to end caps. The Join style in the Stroke panel determines the shape of a stroke at its corner points; the inside of the corner is always angled. The default Miter join creates a pointy corner, with the length of the point determined by the width of the stroke, the angle of the corner (narrow angles create longer points), and the Miter limit setting on the Stroke panel. The default Miter join (with a miter limit of 10x) usually looks fine, but can range from 1x (which is always blunt) to 500x. The Round join creates a rounded outside corner with a radius of half the stroke width. The Bevel join creates a squared-off outside corner, equivalent to a Miter join with the miter limit set to 1x.

Dashes behave like short lines, and therefore have both end caps and, potentially, corner joins. End caps work with dashes exactly as they do with the ends of paths—each dash is treated as a very short path. However, if a dashed path goes around the corner, it can make that turn in one of two ways: The spacing between the dashes can be precise and constant, so the dash won't necessarily bend around a corner, or even reach to it, or you can click the “Aligns dashes to corners and path ends, adjusting lengths to fit” icon. Dashes won't be precisely spaced, but

will look tidy at the corners. The command affects dash spacing for other shapes, from circles to stars, as well.

One more “end” to a path is an arrowhead, and the Stroke panel now offers a choice of both the types of arrowheads and how they are affixed to the ends of the paths. Click on the Arrowheads pop-up list to choose to attach an arrow or feather to the start or end of the path. You can then scale it proportionally or disproportionately, reverse the start and end, or align the arrowhead so that either the tip or the end of the arrow meets the end of the path. To remove an arrowhead (or feather), choose None from the list. You can add custom arrowheads to the list without removing any of the default arrowheads (you’d have to reinstall Illustrator to make them available again if you removed them). Both dash alignment options and arrowheads can be modified again at any time.

## BRUSHES

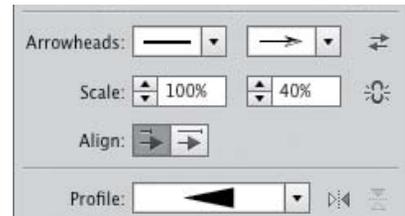
Illustrator’s calligraphic, art, scatter, bristle, and pattern brushes can mimic traditional art tools, create photorealistic imagery, or provide pattern and texture to your art. You can either create brushstrokes with the Paintbrush tool, or you can apply a brush to a previously drawn path.

Calligraphic brushes create strokes that mimic real-world calligraphy pens, brushes, or felt pens. You can define a degree of variation for the size, roundness, and angle of each “nib.” You can also set each of these attributes to respond to a graphics tablet and stylus (like the Wacom) with a variety of different pen characteristics (with a mouse, you can only use Fixed or Random).

Art brushes consist of one or more pieces of artwork that get fitted to the path you create with them. You can use art brushes to imitate traditional painting media, such as drippy ink pens, textured charcoal, spatter brushes, dry brushes, watercolors, and more. Or an art brush can represent real-world objects, such as a petal, a leaf, or a ribbon, a flower, decorative flourish, or train. You can modify art brushes and their strokes using a number of different parameters, including variables affected by pressure using

## Creating custom arrowheads

*Illustrator Help* provides directions for locating the Arrowheads file on your computer. The file contains instructions for customizing and saving arrowheads without overwriting the original file.



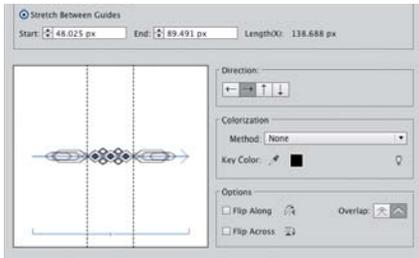
*Using the Arrowheads section of the Stroke panel to align the arrowhead so the tail of the arrowhead joins the end of the path with the head extending beyond (left and as shown in the dialog), or to align the arrowhead so the tip of the arrowhead joins the end of the path (right)*

## Deleting arrowhead presets

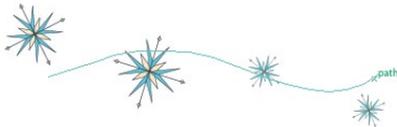
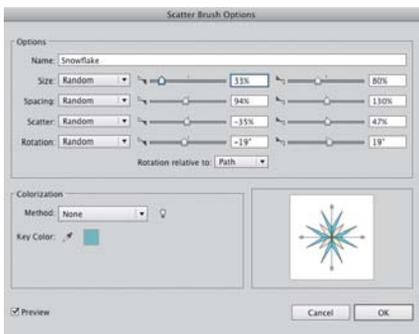
To make custom arrowheads, be sure to modify only the file holding the default presets. If you delete any arrowheads in that file, you’ll have to reinstall Illustrator to get them back again.

## Graphics tablets & brushes

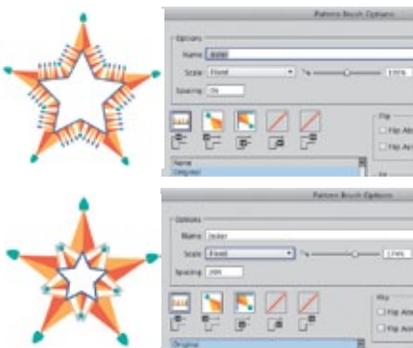
Bristle brushes, which mimic painter’s brushes, respond to hand gestures when using a tablet and pen, such as the Wacom. The “Wacom 6D Art” or “Art” pens also easily retain the appearance of the individual bristles, while allowing full rotation to create unique strokes that imitate real brushes. A mouse is much more limited.



Using the Width tool to alter an Art brushstroke modified by Stretch Between Guides option



The Scatter Brush dialog varies how the artwork is scattered along a path



Altering Pattern Scale and Spacing to create a very different look to the brush

a Wacom tablet and stylus). Art brush marks can be made to scale proportionately to fit the length of your path, or stretched to fit. You can also scale your brush non-proportionally by restricting the area of the art brush that can stretch, using two guides to create a segmented brush (choose Stretch Between Guides for the Scale option). Either or both ends of the brush are then protected from being stretched, and the middle portion is stretched to fill in the remaining length. This allows you to stretch the stem of a rose, for instance, without stretching the blossom itself. You can further modify an art brush with colorization methods, such as choosing to vary a key color by tint or hue. Modify the way the art brush follows a path by flipping its direction, and use the Overlap option to determine whether or not to allow it to overlap itself when turning a corner. You can also use the Width tool to modify an art brush.

Use scatter brushes to scatter copies of artwork along the path you create with them: flowers in a field, bees in the air, stars in the sky. The size of the objects, their spacing, how far they scatter from the path, and their rotation can be set to a Fixed or Random amount or, with a graphics tablet, can vary according to characteristics such as pressure or tilt. You can also align the rotation of the scattered objects to the direction of the path, or to the edges of the page. Change the method of colorization as you would with a calligraphic or pattern brush.

Use pattern brushes to paint patterns along a path. To use a pattern brush, first define the tiles that will make up your pattern. For example, a train has an engine, rail cars, links, and a caboose. Each of these constitutes a tile where you have the start of the path, the middle (the side tile), the tiles that turn either an inside or outside corner, and the end of the path. The tiles must be made as individual art and stored in the Swatches panel before you can make your pattern brush. Afterwards, however, you can delete them from Swatches. In the Pattern Brush Options dialog, select a tile, then click on the swatch name below the tiles that you want assigned to that tile. You can customize

settings for how the tiles fit to, or flip along, the path, and to alter their color. You can also vary the appearance of the pattern brush, how it fills sharp angles (by altering the Scale in both Fixed parameters and those affected by tablet features), and the spacing between tiles.

Bristle brushes emulate traditional paint brushes, showing both the texture of the bristles and the tip shape, which can be round, flat, fan-shaped, etc. To create a bristle brush, select it as the New brush type and, in the Bristle Brush Options dialog, choose a tip shape. From there, modify the brush's bristle length, density, and thickness; whether or not the bristles are stiff or soft; and how opaquely it applies the paint. By default, these brushes use a Paint Opacity of less than 100%, so you'll see some opacity in your strokes even when you have set Opacity in the Control panel to 100% opaque. Because calculating transparency for printing often takes a long time, a dialog warns that if you have more than 30 bristle brushstrokes, you may want to select some or all of the bristle brushstrokes and choose Object > Rasterize to set raster settings for them before you attempt to print.

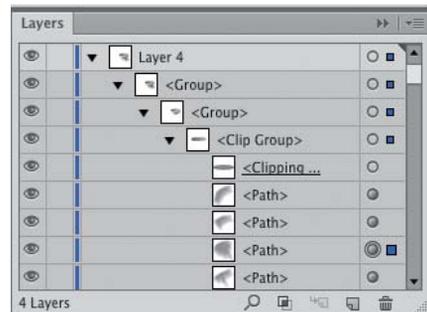
### Working with brushes

The following describes functional features that apply to most or all brushes:

- **To create art, scatter, and pattern brushes**, create the artwork for them from fairly basic artwork, including compound shapes, blends, groups, and some live effects such as Distort & Transform or Warp. You *can't* create brushes from art that uses gradients, mesh objects, raster art, and advanced live effects such as Drop Shadow or 3D.
- **To modify the art that makes up a brush**, drag it out of the Brushes panel, edit the object, then drag it back into the Brushes panel. Use the Option/Alt key as you drag to replace the original art with the new art.
- **To set application-level preferences for all brushes**, double-click the Paintbrush tool. (The new preferences will apply to work you do with the brushes going forward, but won't change existing work.)

### Draw inside and bristle brushes

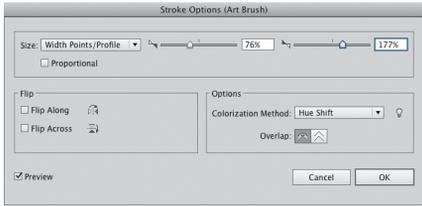
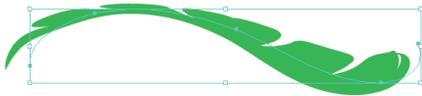
Bristle brushes are a good candidate for the Draw Inside mode (see the *Rethinking Construction* chapter). You can add the bristle texture to a vector shape while retaining some or all of the original color; Draw Inside also constrains the strokes inside the object, ensuring stray bristle marks are automatically masked.



Using a bristle brush (the Footprint brush showing) to draw inside a selected path, and the Layers panel showing the Clipping Paths created by Draw Inside

### Symbols vs. scatter brushes

Because it's easy to edit symbols, using symbols can be preferable to using scatter brushes, whose attributes will be applied to the whole set. The ability to delete individual symbols within a set is another potential advantage over scattering objects with a brushstroke, which must be expanded before individual objects can be deleted from it.

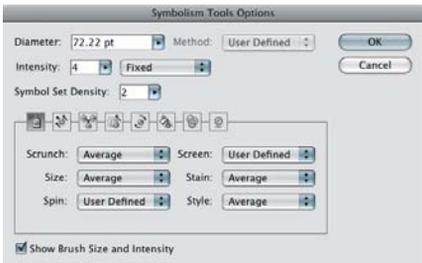


Modifying based on Width Points using Options of Selected Object for an Art Brush that has already been modified with the Width tool

### Bristle brush opacity

Set bristle brush opacity:

- In bristle brush Options under Paint Opacity.
- With the Paintbrush tool active, the 1-0 keys change the opacity for selected strokes, or, with no strokes selected, the setting affects the next brushstroke.
- With the Opacity slider in the Appearance or Control panels.



Symbolism Tools Options dialog



Quick access to Symbol features on the Control panel when a symbol object is selected in the artwork; the Reset button not grayed out indicates the symbol has been transformed and the Replace pop-up gives immediate access to the loaded Symbols library

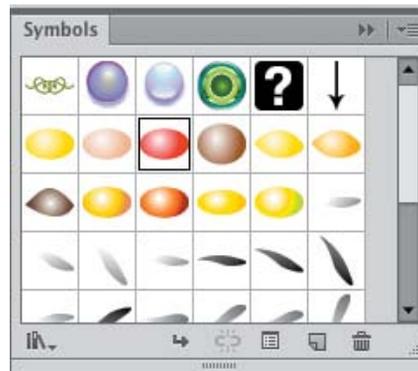
- **To modify the properties of a single brushstroke,** select it, then choose Options of Selected Object in the Brush panel's menu. If you've used the Width tool to modify the stroke, your options include using the width points to calculate the profile for your next strokes.
- **To choose how to apply modifications** to existing brushstrokes, in the brush's Options dialog choose Leave Strokes to create a duplicate brush, or Apply to Strokes to modify every use of the brush in the document.
- **When Keep Selected and Edit Selected Paths are both enabled,** the last drawn path stays selected; drawing a new path close to the selected path will redraw that path. Disabling either of these options will allow you to draw multiple brushstrokes near each other, instead of redrawing the last drawn path.

### SYMBOLS

Working with symbols in Illustrator saves file size (since objects converted to symbols aren't duplicated in the file), provides consistency whenever the same artwork needs to be used more than once, and makes it easy to update objects in your artwork simply by editing the symbol to change it wherever it has been used. Symbols can be made from almost any art you create in Illustrator. The only exceptions are a few kinds of complex groups, such as groups of graphs, and placed art (which must be *embedded*, not linked). Symbols are edited and stored using the Symbols and Control panels, and are manipulated like other objects, or with the Symbolism tools:

- **To store selected artwork as a symbol,** drag it into the Symbols panel (or click on the New Symbol icon in the panel). Use the Libraries Menu icon to save the current symbols to a new library, or to load other libraries.
- **To add a single instance of a symbol to your document,** drag it into your document or, with it selected, click on the Place Symbol Instance icon. Drag a symbol instance into your document as often as you like, but you can only use the Place Symbol Instance icon once. It's most useful for modifying the symbol (see following).

- **To modify a symbol without modifying the original symbol** in the Symbols panel, click either the Break Link button in the Control panel or the “Break Link to Symbol” icon in the Symbols panel.
- **To modify a symbol and all instances of it** already in the document, place or drag it into your document, then click on the Edit Symbol button in the Control panel. Your symbol will be placed in isolation mode. After you modify it and exit isolation mode, all instances of the symbol, including the symbol in the Symbols panel, are updated.
- **To modify a symbol in the Symbols panel when you have already broken the link**, Option/Alt-drag the modified symbol on top of the symbol in the Symbols panel. This will replace the original symbol with the modified artwork and update all instances of the original symbol.
- **To restore a symbol to its original size and orientation** after transforming it, click the Reset button in the Control panel.
- **To quickly find all instances of a symbol** in your artwork, select the symbol either in the Symbols panel or in your artwork and choose Select All Instances from the Symbol panel’s menu.
- **To replace one symbol with another without opening the Symbols panel**, select the symbol in the artwork and click on the Replace list arrow in the Control panel. A miniature Symbols panel opens, which allows you to swap out symbols.
- **To add a sublayer to a symbol’s artwork**, in isolation mode click on the topmost layer with the symbol’s name, and then click on the New Sublayer icon. (You can’t add sublayers to a <Group> or <path>.)
- **To add a new layer above a group or path sublayer at the same hierarchy level**, target the layer, then Option-click/Alt-click on the New Layer icon. If the layer remains a normal layer (not a group or a path), you can continue to add new layers at that level merely by clicking on the New Layer icon.

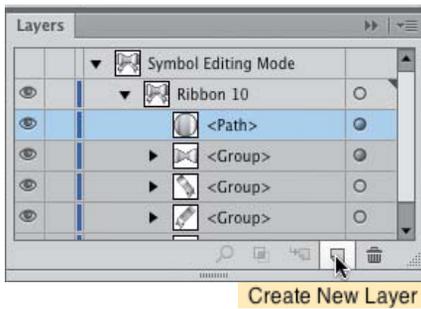


Storing symbols in the Symbols panel, with access to other symbol libraries, editing commands, and the Symbol Options dialog

### Transforming symbols

When creating symbols, Illustrator has two features that are important whenever a symbol might be scaled or transformed any other way: If you use Flash, these features also affect symbols taken into Flash for animating:

- Apply 9-slice scaling to symbols in Illustrator. Doing so reduces distortion when transforming objects, especially noticeable with elements such as buttons that have custom corners. All nine areas of the symbol can be scaled independently.
- Assign a Registration point to the symbol in Illustrator. The point appears as a crosshair both in Symbol Edit Mode and when the symbol is selected in normal mode. Use the Registration point to affect any transformations applied inside Illustrator.



Adding a new layer at the same level as a path sublayer by Option-clicking/Alt-clicking on the Create New Layer icon



LISA JACKMORE

Artwork by Lisa Jackmore created with symbols



Using the Symbolism tools to modify the original set (top) for greater variety (bottom)

## Working with the Symbolism tools

There are eight different Symbolism tools. Use the Symbol Sprayer tool to spray selected symbols onto your document, creating a symbol set. You can't select individual instances inside a set with any of the selection tools.

Instead, modify them with any of the other Symbol tools.

To display a ring of tools in your document in order to

select a new one, press Control-Option/Ctrl-Alt while

clicking and holding in an empty spot in your document,

then drag to a new icon before releasing your mouse. (In

the CS6 1.0 release, the HUD doesn't appear, but you can

still see the Symbolism icons for the tools change in the

Tools panel.) Add symbols to a selected set by selecting

a symbol in the Symbols panel—the symbol can be the

same as or different from the symbols already present in

the instance set—and spray. To add or modify symbols in

a set, make sure you've selected *both* the set and the cor-

responding symbol(s) in the Symbols panel that you want

to affect. The Symbolism tools will only affect those sym-

bols in a selected set that are also selected in the Symbols

panel, thus making it easy to modify just one of the sym-

bols in a mixed set.

To adjust the properties of the Symbolism tools,

double-click on one to open Symbolism Tools Options.

Vary the diameter (the range over which the tool oper-

ates), the rate at which it applies a change, and the density

with which it operates on a set. If you're using the default

Average mode, your new symbol instances can inherit

attributes (size, rotation, transparency, style) from nearby

symbols in the same instance set. For example, if nearby

symbols are 50% opaque, symbols added to the set will

also be 50% opaque. You can also change the default Aver-

age mode to User Defined or Random. (See *Illustrator*

*Help* for more information about choosing User Defined.)

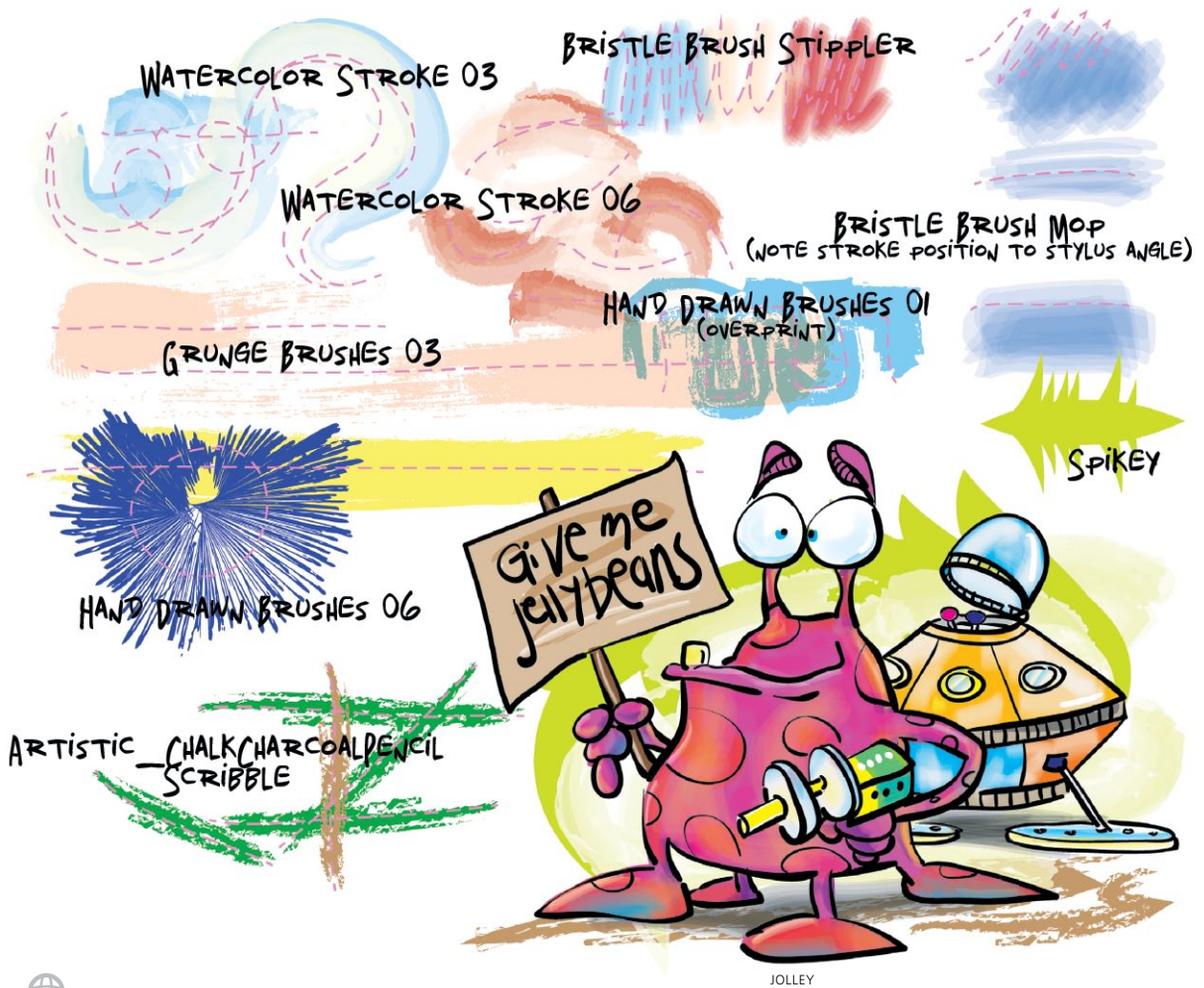
To remove symbols from an existing instance set, use

the Symbol Sprayer tool with the Option/Alt key, and

click on an instance to delete it (or click-drag your cur-

sor over multiple instances—they're deleted when you lift

your cursor).



### Donal Jolley

This sampler by Donal Jolley, using his 6D Art Pen, demonstrates the tremendous variety you get from brushes that ship with Illustrator. When you add a Wacom pressure-sensitive pen and tablet to these out-of-the-box brushes, you can introduce even more variety into your strokes; the standard Grip Pen registers pressure, tilt, and bearing, and the optional, more sensitive Art Pens (6D Art for Intuos3, or Art

Pen for Intuos4) add the ability to vary each stroke with rotation. The bristle brush responds particularly well to the Art Pens, adding a new dimension to painting. You can manually transform some of your strokes (but not those made with the calligraphic, scatter, or bristle brushes), by modifying its profile with the Width tool (such as Spikey above), and then saving that profile to apply to other strokes.

# Stroke Variance

Creating Dynamic Variable-Width Strokes



**Overview:** Place sketch and trace with Pen tool; modify strokes with Width tool; save width profile and apply to other strokes.

1



The original sketch



Traced sketch

2



Width tool (Shift-W) adjusting middle of stroke



PUTNAM

Ryan Putnam creates many character illustrations for websites, branding projects, and more. Putnam now uses the Width tool to add depth and variance in the strokes of the illustrations. Moreover, he can save the stroke adjustments to Profiles in the Stroke panel to easily apply to other strokes in current and future projects.

## 1 Placing a sketch template and tracing with Pen tool.

Putnam first created a character sketch in Photoshop, chose File > Place in Illustrator, enabled Template, and clicked OK. Putnam then traced basic paths of the sketch with the Pen tool in the layer above.

## 2 Adjusting strokes with the Width tool.

Putnam wanted his strokes to have some variance compared to the uniform strokes created by the Pen tool. He created two distinct stroke widths to use on the majority of the paths in the illustration. For the first stroke adjustment, Putnam created a stroke with a thicker middle and tapered ends. To do this, he used the Width tool to click in the middle of the desired path and drag a width point to the

desired width. For the second custom width, Putnam created a stroke with a thicker end and a tapered end. Again, he used the Width tool, but this time clicked on the far right side of the desired path and dragged a width point to the desired width.

If you like to be precise with your adjustments, you can double-click a width point to open the Width Point Edit dialog, allowing you to numerically adjust the width of the stroke in the Side 1, Side 2, and Total Width fields.

### 3 Saving stroke profiles and applying to other paths.

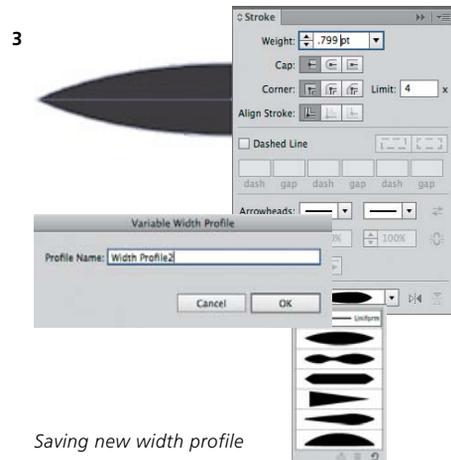
Instead of adjusting every path in the illustration to match the two custom widths he created with the Width tool, Putnam saved time and ensured consistency by saving his two custom stroke profiles. To save each profile, he selected the modified stroke and clicked the Add to Profiles icon in the Stroke panel. With both of his strokes saved as custom profiles, Putnam could select a uniform stroke, click the saved Variable Width Profile at the bottom of the Stroke panel, and select the saved profile from the drop-down list. These custom profiles will then be available in other new Illustrator files.

After Putnam applied the custom profile to all the desired paths, he utilized specific keyboard commands with the Width tool to further adjust individual paths. For example, holding down the Option/Alt key when dragging width points creates non-uniform widths, the Delete key deletes selected width points, and holding the Shift key while dragging adjusts multiple width points. Other keyboard modifiers with the Width tool include holding down Option/Alt while dragging a width point to copy the width point, holding down Option-Shift/Alt-Shift while dragging to copy and move all the points along a path, Shift-clicking to select multiple width points, and using the Esc key to deselect a width point.

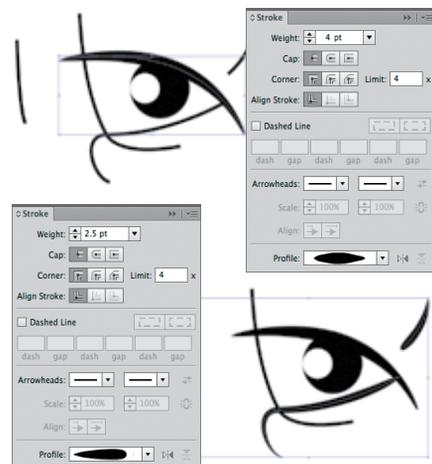
**4 Applying finishing touches.** Putnam added additional elements as needed. For instance, he create simple shapes with the Pen tool and filled them with grayscale colors.



Width tool (Shift-W) adjusting end of stroke



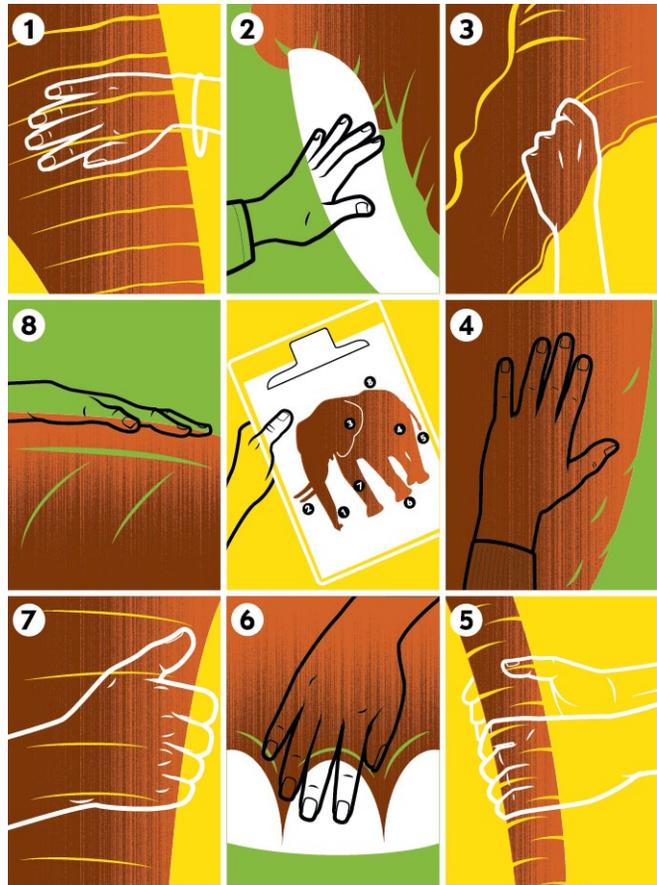
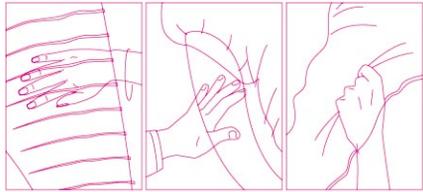
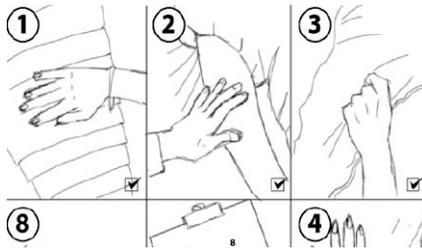
Saving new width profile



Applying a saved width profile



Adjusting a path with Width tool and keyboard commands

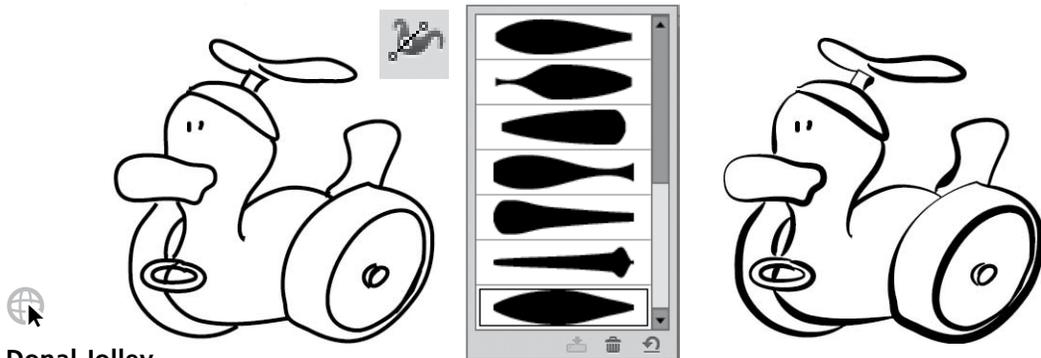


MCKIBILLO

### MCKIBILLO (AKA Josh McKible)

For a commissioned piece on different management styles, MCKIBILLO used the parable of the Blind Men and the Elephant as the basis for his illustration. He began with a sketch created in Alias SketchBook Pro that he traced in Illustrator using the Pen tool. While the image was in progress, he used a fine, uniform line, bright Magenta so it wouldn't visually disappear. When it came to finessing his linework, MCKIBILLO frequently applied a couple of the default width profiles from the Profile pop-up in the the Stroke Panel to create many of the lines. If he needed even more control over

the shape of his strokes, however, he used the Width tool to modify both width and anchor placement along a curve. In this illustration, he manually delineated the hands and fingernails with the Width tool. Most of his strokes used a rounded cap, but he occasionally varied the cap according to the way the lines joined. Using the Width tool, and then saving and reusing profiles (from Profile in the Stroke panel), MCKIBILLO was able to quickly develop a style that appears completely hand-drawn, yet has the advantage of remaining easily edited throughout the course of a project.



### Donal Jolley

To create his “Rubber Ducky,” Donal Jolley began by drawing the basic lines with the Pencil tool. Then with the Width tool, he adjusted each stroke so it curved gently and came to a sharp angle at the end (his custom profiles are shown above). To finalize the line work, he used the Scissors and Eraser tools to clean up the extra anchor points that sometimes occur at the end of brushstrokes. He then locked his line work layer and created a new layer at the bottom, into which he painted the colors. He works very intuitively with the brushes, saying, “Usually I will open a brush category, choose

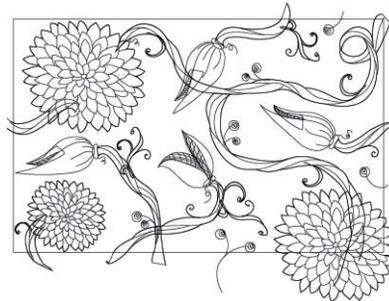
a brush, and then make a stroke with a sharp angle and a gentle curve to see how it behaves with the color I want to use. Because many of the strokes have a certain transparent quality that does not truly mix with the underlying color (or white), I make sure of the stroke before I employ it. I check for opacity, form, and how it ‘bends,’ because many brushes tend to give unpredictable results at sharper angles.” Then, using his chosen default bristle and calligraphic brushes, Jolley painted the ducky’s colors, varying pressure and angles with his Wacom Intuos tablet and 6D Art Pen.



JACKMORE

### Lisa Jackmore

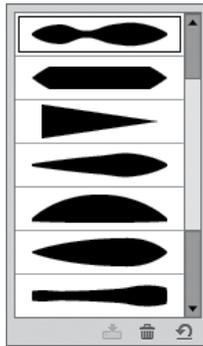
For drawings as fluid as this floral design, Lisa Jackmore finds that initially drawing with the Paintbrush tool and a calligraphic brush is the most natural and intuitive way to begin. However, when she wants to create specific variations to the strokes, she then converts the brushstrokes to Basic stroked paths, so she can use the Width tool (you can't use the Width tool on calligraphic brushstrokes). To do this, she clicked on the Basic Brush in the Brushes panel (the basic stroke version is shown directly above). Jackmore then selected the Width tool (Shift-W) and clicked on the stroke itself, dragging the handle outwards to evenly widen the path. To make adjustments to one side, she held the Option/Alt key while dragging the handle. To make even further variations to the strokes, Jackmore clicked on the stroke, added new



width points, and adjusted them. She saved several profiles by selecting each modified stroke, then from the Variable Width Profile menu in the Control panel, clicking on the Add to Profile button, naming it, and clicking OK. To finish the design, she selected each of the remaining paths, applied one of her saved width profiles from the Control panel, and then increased the stroke weight on all of the paths. Jackmore's background includes a gradient mesh object and a few bristle brushstrokes drawn with the Paintbrush tool.



PAIDRICK



### Ann Paidrick

For Ann Paidrick, the Width tool was key to creating the hand-drawn look for this pair of spiral patterns. Starting with the Spiral tool (hidden under the Line tool), she used the up and down arrow keys to vary the wind of each spiral as she drew. To begin with she chose an orange fill and black stroke. Clicking **Stroke** in the Control panel, she chose the Round Cap, and for each spiral she set a stroke weight between 5 and 8 pts. Next she used the Width tool on each spiral to thicken some areas while narrowing others. For final tweaks to the paths, she used the Direct

Selection tool to move anchor points and direction lines just enough to cre-

ate a hand-drawn feel. After assembling a cluster of spirals together, she entered Pattern Edit Mode (PEM), where she finished arranging the elements until the pattern worked as a whole. After saving the orange and black pattern, she remained in PEM, where she created and then saved the version at top by changing spiral fill and stroke colors, and putting a rectangle with a purple fill beneath the spirals (for more about using PEM see the *Mastering Complexity* chapter).



JACKMORE

### Lisa Jackmore

To make interesting brushstrokes, Lisa Jackmore used variations of a few calligraphic and bristle brushes, painted using a Wacom Intuos4 tablet and Art Pen. In creating the variations for the brushes, Jackmore changed the parameters for Pressure, Rotation, and Tilt. When she wanted to customize a brush, she double-clicked the brush, and made changes to the options. For the tree outline, she used a 3-pt Flat calligraphic brush, set the Diameter to Pressure (with a 2-pt variation), Roundness to Tilt (34°, with a variation of 15°), and set the Angle to Rotation (with a 125° variation). For the long sweeping lines of the tree, she found the combination of using Rotation and a chisel tip of the Art Pen worked the best to vary the brushstroke. As she drew, she slightly rotated and tilted the pen and created variations in her stroke. To create

an irregular ink-like appearance in the words, she used a 1-pt Round calligraphic brush, and set the Angle to 30° (fixed), Roundness to Tilt (60°, with a 29% variation). Jackmore used several other variations of calligraphic brushes to draw the suitcases and background pattern. To make the pattern, she drew several paths with a customized calligraphic brush, grouped the brushstrokes, and dragged the pattern tile to the Swatches panel. After she drew all of the black brushstrokes, she colored the illustration with a gradient mesh object for the background, and used variations of the Fan, Round Blunt, and Round Point bristle brushes for other areas, such as the bird, suitcases, and shadows. Finally, Jackmore used the rectangle tool to make a frame, then applied a Charcoal brush to the stroke.

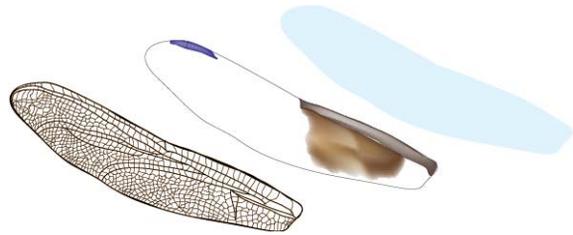


AHUJA



### Anil Ahuja/Adobe Systems

Adobe's Product Specialist Anil Ahuja used a range of tools and techniques to create his dragonfly, and relied upon transparency methods to obtain color accuracy to closely match his reference photo. In his three levels of objects used to create the wings (shown separately at right), this is readily apparent. After drawing the wing's black-stroked vein structure with artistic calligraphic brushes of various sizes and shapes, he selected the paths and chose Object > Expand (to outline the strokes), then Merge (to create a compound path object). In the Appearance panel he clicked Opacity, and changed the Blending Mode to Darken to reduce the opacity, giving the wing its realistic brown color. With the brown and blue gradient mesh objects (residing on a layer beneath the vein structure), Ahuja used the Direct Selection tool to select individual mesh points to decrease



the opacity (ranging from 0–90%). To make the wings appear translucent instead of just transparent, Ahuja used the Pen tool to draw an outline copy of the wings which he put on a layer below the veined structure and the mesh. He filled the outline with a color similar to the background and reduced the opacity to 30%. To complete the illustration, Ahuja created a shadow on a layer between the dragonfly and the gradient mesh background. To make the shadow, he pasted a copy of the wing outline and with the Pen tool added an outline of the body. He then reduced the opacity of the shadow object to 53% and changed the Blending Mode to Darken.

# Brushes & Washes

Drawing with Naturalistic Pen, Ink, Wash



**Overview:** Start with a placed image as a template; create a custom calligraphic brush; create variations on the brush to apply to strokes; add a wash layer below the ink layer.

## Transparent brushstrokes

By default, calligraphic brushstrokes are opaque. You can also draw with semi-transparent brushstrokes, which you can use to simulate some types of inks or watercolors; where marks overlap, they become richer or darker. Click **Opacity** in the Control panel to reduce opacity or choose a blending mode.



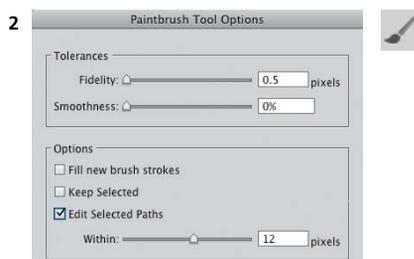
(Top) The original photo; (bottom) brushstrokes drawn over the dimmed template photo



It's easy to create spontaneous painterly and calligraphic marks in Illustrator—perhaps with more flexibility than in many pixel-based programs. Sharon Steuer drew this sketch of Honfleur, France, using a Wacom tablet, her Art Pen for the Intuos4, and two different Illustrator brushes. She customized a brush for the thin, dark strokes and used a built-in brush for the underlying gray washes.

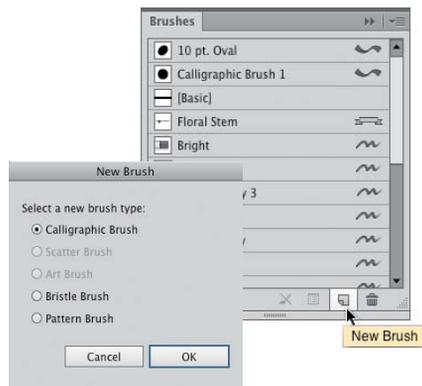
**1 Placing artwork as a template.** If you want to use a sketch or photo as a reference as you draw into layers above, set it up as a non-printing template layer. For her template image, Steuer scanned a small photo of Honfleur and saved it as a JPG, then opened it in Illustrator. To place an image as a template, choose **File > Place**, enable the **Template** option, and click the **Place** button. If the image imports at too large a size, unlock the layer, select the image (holding down **Option-Shift/Alt-Shift** keys to resize proportionally from the center), and drag on a corner of the bounding box until the image is the size you want, then lock the layer again. Illustrator automatically dims images on your template layer to 50%, but you can double-click the layer icon to adjust this and other settings in **Layer Options**. Toggle between hiding and showing the template layer using **⌘-Shift-W/Ctrl-Shift-W**, or toggle the visibility icon in the **Layers** panel.

**2 Customizing a calligraphic brush.** In order to sketch freely and with accurate detail, you'll need to adjust the default Paintbrush tool settings. Double-click the Paintbrush tool to open Paintbrush Tool Options. Drag the Fidelity and Smoothness sliders all the way to the left so that Illustrator records your strokes precisely. Disable “Fill new brush strokes,” and if you want to be able to quickly draw strokes that overlap, disable Keep Selected.



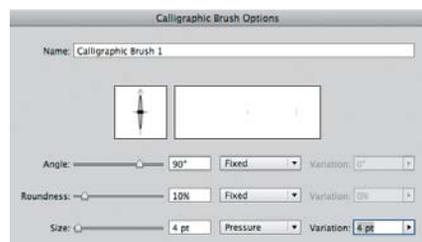
Customizing the Paintbrush Tool Options

To create a custom calligraphic brush, click the New Brush icon and select Calligraphic Brush. For this piece, Steuer chose the following settings: Angle=90°/Fixed; Roundness=10%/Fixed; Diameter=4 pt/Pressure/Variation=4 pt. If you have one of the newer Wacom Art Pens, try varying the Diameter with Rotation instead of Pressure, then let the pen barrel rotate between your fingers naturally as you draw. (If you don't have a pressure-sensitive tablet, only Random will have any effect on varying your stroke.) To create a variation of a brush, duplicate it by dragging it to the New Brush icon, then double-click the copy to edit it. If you create a variety of brushes—adding minor variances in Angle, Roundness, and Diameter—you can enhance the hand-drawn appearance of your ink drawing by selecting a brushed path and choosing a new brush for it.



Creating a new calligraphic brush

**3 Adding a wash.** For this piece, Steuer added depth by introducing gray washes underneath the dark brush-strokes. To easily edit the wash strokes without affecting the dark ink strokes, create a new layer, and draw your wash strokes into this layer between the ink and template layers. To avoid altering other layers while you brush in the washes, you may want to lock all the other layers. To toggle between locking all layers except the wash layer, and unlocking all layers at once, including the wash layer, Option-click/Alt-click the wash layer's Lock icon.

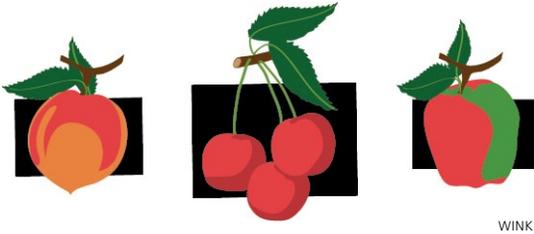


Angle, Roundness, and Size can be set to a variety of Pen characteristics (including Rotation, Tilt, Bearing), but you can only make use of these features if your tablet, and Art Pen, support them

For the wash, select a light color. Steuer used the Dry Ink 2 brush from the Artistic\_Ink brush library (Swatch Libraries menu). In the Layers panel, click the wash layer to make it the current drawing layer, and paint away.



The final ink drawing after adding a couple of people not in the original photo, and before adding the wash



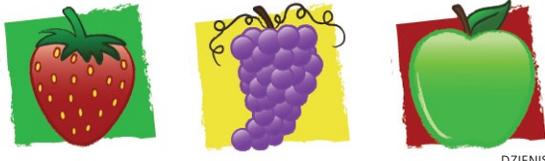
WINKEL



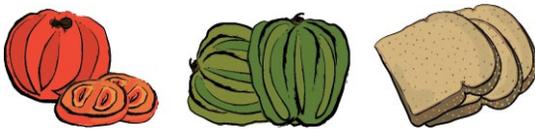
MORRISON



PERNAL



DZIENIS



LOUKOUMIS



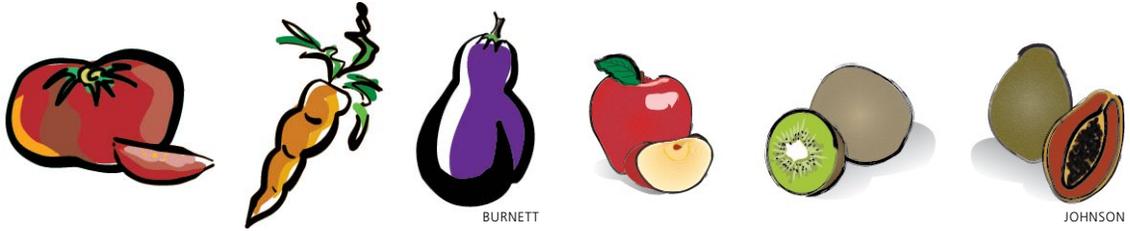
MARTIN



**Stephen Klema's Students:**  
**Jillian Winkel, Stephanie Pernal,**  
**Amber Loukoumis, Jeffrey Martin,**  
**Nicole Dzienis, Tamara Morrison**  
 (clockwise from upper left)

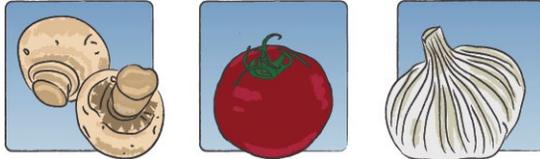
As a class assignment, Professor Stephen Klema challenged his students to create expressive graphic illustrations of organic forms. The students of Tunxis Community College used a variety of default brushes from the brushes panel. They included both calligraphic and art brushes. Before drawing, the students double-clicked the Paintbrush tool and adjusted the Paintbrush tool preferences. They dragged the Fidelity and Smoothness sliders to the desired

positions. The sliders moved farther to the left had more accurate brushstrokes, while those moved to the right were smoother. The "Fill New Brush Strokes" and "Keep Selected" options were disabled to allow multiple brushstrokes to be drawn near each other without redrawing the last path. Using a pressure-sensitive tablet, the students drew varying widths and angles of brushstrokes, many either on top of or close to one another, for a spontaneous, expressive look. Extra points within the brushstrokes were deleted using the Smooth tool or the Delete Anchor Point tool.



BURNETT

JOHNSON



CASSIDY



DRAPEAU



ALBERT



WYNN



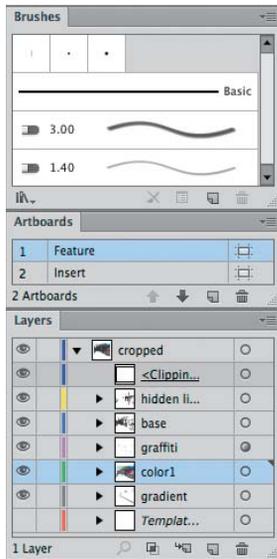
**Stephen Klema's Students:**  
**Cynthia A. Burnett, James Cassidy,**  
**Kenneth Albert, Jamal Wynn,**  
**Suzanne Drapeau, Mahalia Johnson**  
 (clockwise from upper left)

Using the same techniques described on the previous page, additional student creations are shown above. In some of these illustrations, artists applied art and calligraphic brushes to paths drawn with the Pencil or Pen tools, by selecting the path, and then choosing a brush from the Brushes panel. You can find many additional brushes in the Brushes library. To access



DRAPEAU

more art brushes, click on the Brush Libraries Menu icon found in the lower left corner of the Brushes panel. Select Open Brush Library> Artistic, then select the brushes you want to add to the Brushes panel. Find more artwork from Professor Klema's students on his website at: [www.StephenKlema.com/wow](http://www.StephenKlema.com/wow).



STEUER

## Sharon Steuer

To create this illustration for her “Good Food in the Microhood” UntappedCities.com posting, Sharon Steuer began in Photoshop, where she collaged photos she’d taken from different vantage points into one imaginary cityscape. After placing it as a JPG template in Illustrator, from another image, she copied objects styled with her custom calligraphic brushes and pasted the objects into her new file, which added the custom brushes to her current Brushes panel. She then deleted the objects and used these brushes to paint her black line drawing. In a new layer she added color using default bristle brushes and a pressure-sensitive Wacom tablet and Art Pen. To easily switch between brushes, colors, and layers, she started by selecting a path styled similarly to the one she wanted to make, then deselected (⌘-Shift-A/Ctrl-Shift-A). To draw a new, blue, wide transparent bristle brush stroke on the Color layer, she selected a blue-wide stroke on the Color layer, then deselected, and drew. Next, to draw a new calligraphic path on



the lines layer, she selected then deselected one of those. With Edit Selected enabled in Brush Options, if she kept a brush stroke selected, she could redraw the path (instead of draw a new one). After adding a few more detail layers, she created an “unwanted lines layer” and hid it, so she could then select and move unwanted lines to that hidden layer. Lastly she created two overlapping artboards: one to frame the crop when featured on the website front page, and the other sized for insertion within the post. To see this posting, which also contains a link to an article on CreativePro.com detailing how this image was created, go to UntappedCities.com and enter “CreativePro” in the search field.



### Sharon Steuer

For her UntappedCities.com “Good Food in the Microhood” article on San Francisco’s Tenderloin restaurants, Sharon Steuer used Photoshop to stretch, crop, and color-correct her photo of the Vietnamese soup called “phở.” She placed the photo in Illustrator off the artboard (as a reference), and used the Pen tool to draw a few closed paths (filled with gradients). Locking that first layer with the objects and photo, she created additional layers, where she painted her image using two bristle brushes at default settings (one Angle and one Mop), and a custom calligraphic brush. As the image progressed

Steuer decided to modify the bowl’s shape in ways that would be difficult with traditional or raster tools; she selected the bowl objects, then compressed them vertically using the bounding box. After the article posted, she reworked the image as a fine art piece titled “Vegan phở.” Resizing some elements and adding others, she printed a square variation in archival materials. Coating the print with clear acrylic medium, Steuer cut and collaged it onto a 6”x6” cradled board, and then drew and painted on the surface with watercolor pencils. She applied fixative and a UV coating to the finished artwork.

# Painting Inside

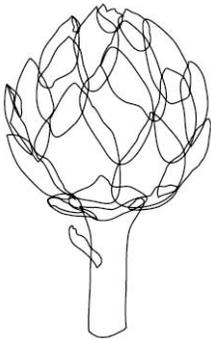
Painting with Bristle Brushes & Draw Inside



## Advanced Technique

**Overview:** Start with a placed image as a reference; create a line drawing made of closed paths; use a variety of bristle brushes and the Draw Inside mode to paint the sketch; add a rectangular background with a Charcoal art brush edge.

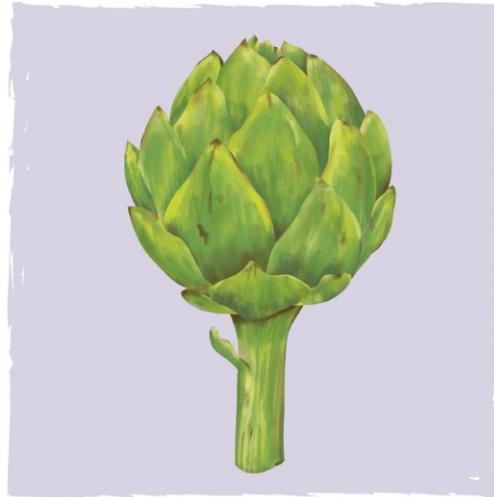
1



The closed path line drawing created with the Pencil tool using a 1-pt stroke

### Re-enter isolation mode

When you use the Draw Inside mode (bottom of the Tools panel or Shift-D), you're actually creating a special kind of clipping mask. Once you've "drawn inside" an object, double-click it to enter into isolation mode and automatically re-enter Draw Inside mode to add to the object. To remove a "drawn inside" clipping mask from an object and return the object to its original state, select Object > Clipping Mask > Release.



JACKMORE

Draw Inside mode makes it easy to create a painterly illustration with bristle brushes. Lisa Jackmore drew this sketch of an artichoke, using a Wacom tablet with her Art Pen, and several modified brushes. After drawing a simple outline of the artichoke leaves and the stem with the Pencil tool, she utilized the Draw Inside mode and painted with a range of bristle brushes.

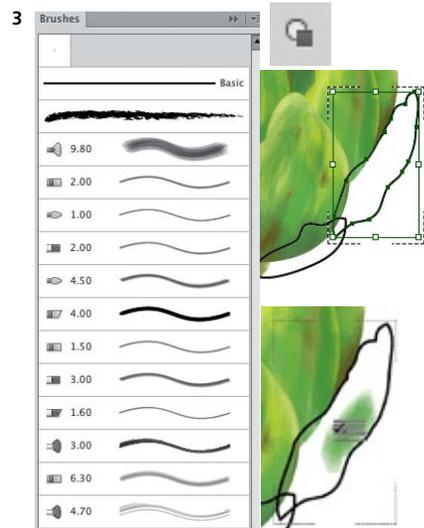
**1 Drawing the outlines.** Jackmore used a snapshot as a basic reference, but if you prefer to draw directly on top of a photo or drawing use File > Place and enable the Template option. In order to create a fluid but accurate line drawing she double-clicked the Pencil tool to set Options for Fidelity to 3 pixels, Smoothness to 3%, and disabling Edit Selected Paths and Keep Selected. Into one layer she created a 1-pt line drawing of the artichoke using the Pencil tool, making sure that she closed each leaf and stem path so that she would later be able to add detail and color the loosely-drawn paths using the Draw Inside mode.

**2 Setting up for painting using the bristle brush tool and a tablet.** So she'd be able to paint freely and easily, Jackmore planned ahead and first set up her tools. She opened the Brushes panel, the Bristle Brush Library (from the Libraries menu), and the Layers panel. She also set the Wacom tablet's Touch Ring to auto scroll/zoom.

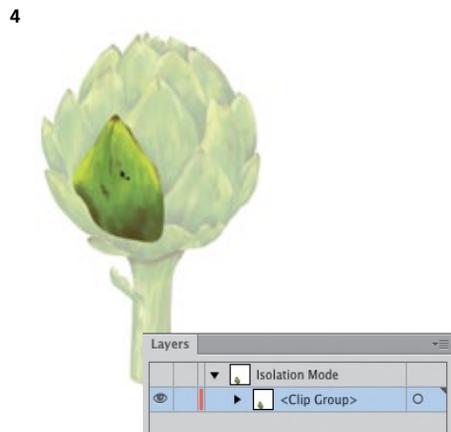
### 3 Painting with bristle brushes and the Draw Inside mode

**mode.** To draw into a path, she selected it, pressed Shift-D to choose the Draw Inside mode, then deselected the path (so the bristle brush wouldn't be applied to the outline, but would be constrained within the path). She selected the Paintbrush tool (B), then chose a bristle brush, and a stroke color. When she finished drawing inside a path, Jackmore pressed Shift-D to switch back to Normal drawing mode. She switched between the Paintbrush tool and the Selection tool by holding the  $\mathbb{C}$ /Ctrl key to temporarily switch to the Selection tool, and toggled between drawing modes with Shift-D. Jackmore created a number of variations of the Round Point, Fan, Round, and Flat Blunt bristle brushes. To customize parameters for opacity, Bristle Length, Stiffness, and Thickness, she'd open Options by pressing the upper switch on the Intuos4 Pen (or double-clicking the Paintbrush tool). With the Paintbrush tool selected, she decreased/increased brush size with the [ ] keys, adjusted opacity with the number keys, and zoomed in or out by turning Wacom tablet's Touch Ring clockwise, or counter-clockwise.

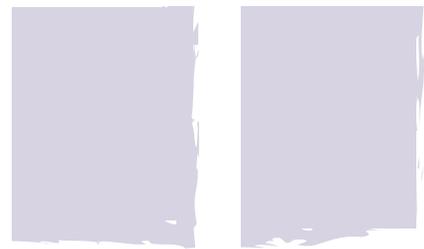
**4 Organizing layers and finishing details.** To reveal the correct part of the leaf as it overlapped another, as she worked, Jackmore moved each leaf into its appropriate layer. As each leaf and stem became painted enough to see the entire path, while in Normal drawing mode she set the stroke to None. To fine-tune the painted area for a particular leaf, she double-clicked on that leaf to automatically enter into isolation mode while already in Draw Inside mode, allowing her to continue to paint and modify brushstrokes. For the background, on a layer below Jackmore drew a rectangle, with the same fill and stroke color and applied a 3-pt Charcoal art brush stroke. To more fully distribute the brushstroke, she slightly rotated a duplicate of the stroke by first clicking the Add New Stroke icon in the Appearance panel (to add a stroke), and from the *fx* menu she chose Distort & Transform > Transform and entered 180° for rotation.



Some of the bristle brushes in the Brushes panel; selecting a leaf to Draw Inside; bristle brush icon while drawing inside the leaf



Double-clicking a leaf to enter isolation mode and automatically switch to Draw Inside mode



Detail of the lower right corner of the background before and after adding a second, rotated Charcoal art brush stroke

# Painterly Portraits

Painting in Layers with Bristle Brushes



## Advanced Technique

**Overview:** Place a sketch as a template; draw with customized bristle brushes; continue to paint with custom brushes into separate layers; create frame.

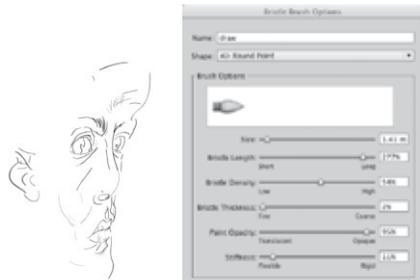
1



The template; a distorted Photoshop sketch



The myriad bristle brushes presented Greg Geisler with an infinite variety of brushes to create his expressive painterly portrait, “Blue Mirror.” Commissioned by Adobe Systems, you can find this file, and a PDF ReadMe file explaining more about how he made it, on **WOW! ONLINE**.



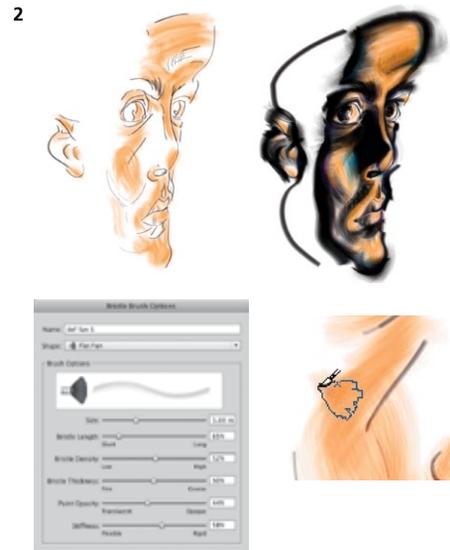
The initial bristle brush sketch made with three variations of a Round Point bristle brush; the Bristle Brush Options

**1 Placing the initial sketch, and customizing Bristle Brush Options.** Geisler placed his distorted Photoshop sketch (PSD) as a Template layer. He opened the Bristle Brush Library (from the Brush Libraries Menu in the lower left of the Brushes panel) and clicked on the 1-pt Round bristle brush, which automatically loaded the brush into the Brushes panel. Geisler next duplicated that brush (by dragging its icon to the New Brush icon in the Brushes panel) and then double-clicked on the New Brush icon so he could change several settings in Bristle Brush Options. He made changes to Bristle Thickness, adjusted Paint Opacity and increased the Stiffness, and then named it and clicked OK. On a layer above the template, he used this new brush to create the base sketch for the entire illustration. Geisler kept the Brushes panel and the Bristle Brush Library open throughout the drawing session, so he could continue to duplicate and customize brushes as his drawing progressed. For this layer, he created three different variations of the 1-pt Liner brush.



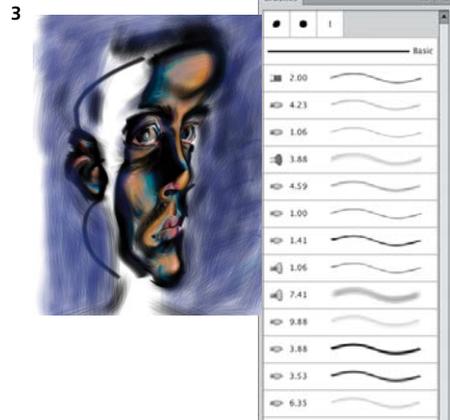
Adding shadows with a wide, fairly opaque bristle brush

**2 Adding highlights, midtones, and shadows.** To make one of the many layers of highlights, such as the strokes in orange, Geisler customized copies of the 3-mm Flat Fan Brush in the Bristle Brushes Library, adjusting Bristle Thickness, Bristle Length, and Paint Opacity. He also drew highlights with a Round bristle brush customized with Pointy variations. Geisler continued to draw in separate layers, focusing in particular on midtones, shadows, highlights, or color for each layer, using variations of the Flat Fan and Round bristle brushes.



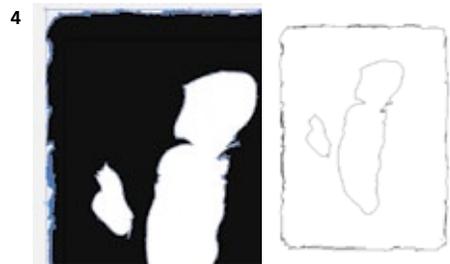
Adding highlights with a Wide Fan Brush, adding shadows; the bristle brush icon that appears when using a pressure sensitive pen

**3 Working efficiently and further modifying brush characteristics.** Geisler's process is very organic in that he continually defines new brushes, and creates new layers, as he draws. He rarely deletes a stroke, preferring to layer new bristle brushstrokes upon others, choosing a more opaque brush to cover the underlying strokes. As he's drawing, he presses the [ key to decrease the brush size, and the ] key, to increase the bristle size. To vary the opacity, he presses the keys from 1, which is completely transparent, through 0, which is completely opaque. To add texture, as in the blue background shown at right, Geisler modifies the settings to increase the brush stiffness toward Rigid, increase the brush density toward Thick, and then decrease the bristle length.



Part of the Brushes panel (right), and a later stage of the illustration with blue texture

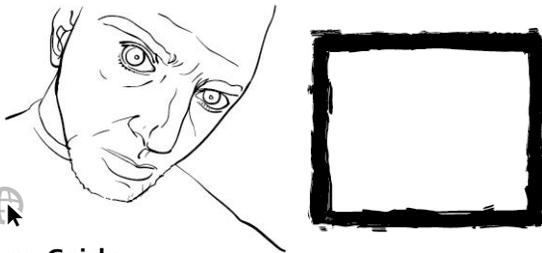
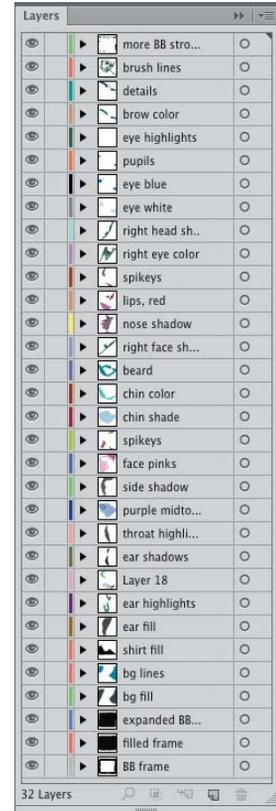
**4 Finishing touches.** Geisler created an irregular edged black frame that surrounded the portrait, on a layer between the blue texture and the face. He customized a wide Flat Fan brush to 100% Opacity (100% opaque bristle brushes lose their character within the stroke, but maintain a ragged edge), and then expanded the brushstrokes (Object> Expand) and clicked Unite in the Pathfinder panel, melding the brushstrokes into one frame object. He then used the Pencil tool to draw a few closed paths, delineating the area between the rectangular frame and the head. Marquee-selecting these paths and the frame, he filled them with black, and again clicked Unite in the Pathfinder panel.



Black frame made with expanded bristle brushstrokes and filled paths shown in Preview mode (detail at left), and Outline mode (right)



GEISLER



### Greg Geisler

Greg Geisler created this graphic self-portrait using a customized calligraphic brush. In the Brushes panel, Geisler double-clicked the default 3-pt round calligraphic brush, and for the Diameter settings, he changed Fixed to Pressure, and set the Variation to 3 pt. Using a Wacom tablet and pressure-sensitive pen, he drew the facial outline, varying the stroke width as he changed his touch (directly above left). To block out planes of color within the face (such as the chin, beard, and cheek),



he used the Pencil tool to draw color-filled irregular paths on separate layers. Each layer contained one of the many defining areas of color (Layers panel shown above right) for highlights, shadows, or texture. To create the frame, Geisler used the same bristle brush, and a technique similar to the one developed in the previous lesson (shown below the artwork). For finishing touches, Geisler drew the bright blue squiggly lines with the Pencil tool.

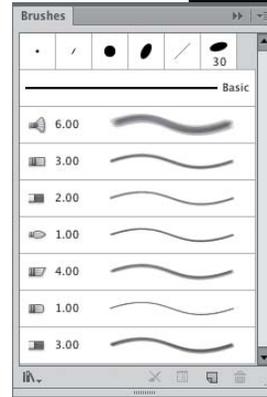
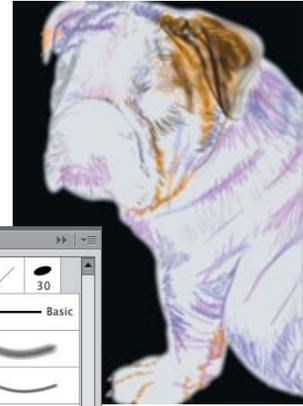


CESAR de OLIVEIRA BALDACCI



### Janaína Cesar de Oliveira Baldacci

Based on a photograph taken by Tatiana Bicalho, Baldacci captured the natural undulations of the fur and folds of her pet bulldog with bristle brushes. Baldacci first drew a white outline of the dog (against the black background) with the Pen tool and applied a Gaussian Blur effect. From the Brush Libraries Menu (in the bottom left of the Brushes panel), Baldacci opened the Bristle Brush Library. She then chose a few bristle brushes that had varying characteristics in Paint Opacity, Bristle Stiffness, and Bristle Density, such as Round Fan, Flat Blunt, Flat Point, and Round Curve



(a portion of her Brushes panel shown above). Baldacci then selected the Paintbrush tool (B), chose a bristle brush and a stroke color, and drew into the first of many layers (the image on the first layer is shown above in Preview and Outline modes). In layers above, she added greater definition and built the fur in stages based on color, such as white, gray, and highlights. On the uppermost layers she added the snout, eye details, and additional layers of fur until the portrait was complete.

# Pattern Brushes

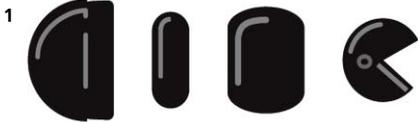
Building Characters with Pattern Brushes



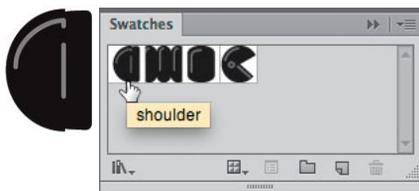
**Overview:** Create the parts that will make up a pattern brush separately; place the parts in the Swatches panel and give them distinctive names; use the Pattern Brush Options dialog to create the brushes; vary the width of the pattern brush line using the Stroke menu and the Width tool.

## Adjusting pattern brush fit

After you've applied a pattern brush to a path, you can still scale, flip, and modify its fit along the path. Modify all these settings in the Pattern Brush Options dialog, or manually reshape and scale the pattern by changing the stroke weight or using the Width tool.



1 Creating the various robot arm elements, oriented in the outward-facing position that pattern brushes use for their tiles



Dragging objects for pattern brushes into the Swatches panel and naming them



To create these stylized science-fiction robots, Raymond Larrett saved extensive tedious rendering by building the robot limbs using a custom pattern brush. Working this way allows him to quickly and easily make alterations to his art by adjusting the weight of the brush stroke, modifying or replacing the various brush elements, or even replacing the entire brush itself.

**1 Creating the robot arm parts.** Larrett's robot arm required four distinct elements: a "shoulder" piece where the arm joins the body, an "elbow" connecting the upper and lower arm, the "hand" (in this case a claw), and an "arm link" segment that replicates as it connects and forms the majority of the robot arm. He created these pieces individually, then turned each into a separate pattern swatch. These swatches become the "tiles," that together make up the robot arm pattern brush.

To create the shoulder piece, he first modified a shape made with the Ellipse tool. Using the Pen tool, he drew a lighter, unfilled path with a Round Cap for the highlight to complete the shoulder. He then dragged the shoulder art into the Swatches panel, naming it "shoulder" so he would recognize it as he built the pattern brush. In the same way he created the arm link, hand, and elbow swatches for the pattern brush tiles. He made sure that

the various pieces were facing in the correct direction relative to the pattern tiles, which run at right angles to the path, before individually dragging each one into the Swatches panel (alternatively, you can select art and click the New Swatch icon, or choose Object > Pattern > Make).

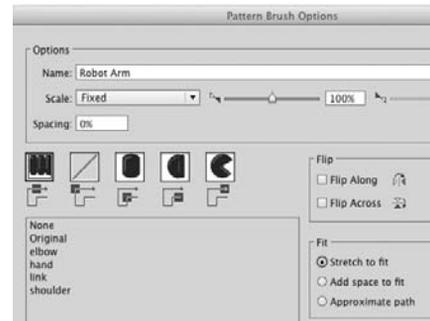
**2 Making and using the pattern brush.** To build the pattern brush for the robot arm, Larrett opened the Brushes panel, clicked New Brush in the Pattern Brush Options dialog, and then clicked OK. He enabled the first box in the panel (the Side Tile), and when prompted selected the pattern swatch for the arm link. Next he placed the other tiles in the appropriate position: the shoulder to the Start Tile box, the hand in the End Tile box, and the elbow in the Inner Corner Tile box. He named the new pattern brush Robot Arm, and clicked OK.

To use his new pattern brush, Larrett selected the brush in the Brushes panel, then drew a path for the robot arm using the Pen tool (P). He clicked where the Start Tile (the shoulder) should go, clicked again to place a corner anchor point (necessary for the elbow tile, the Inner Side Tile, to load), and finally clicked to place the hand element (the End Tile) at the end of the path. He also sometimes drew with the Paintbrush tool or applied the brush to a drawn path.

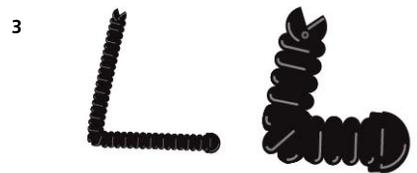
**3 Creating variations in the pattern brush.** Larrett then modified the art by varying the pattern brush line weight and stroke profiles. To adjust the width of a selected robot arm, he changed the line weight in the Control panel or Stroke panel by clicking in the numeric field and using the up arrow and down arrow keys to increase or decrease stroke weight as desired (adding the Shift key alters the weight by increments of 10). To manually adjust only selected portions of the robot limb, Larrett used the Width tool (Shift-W). Placing the tool over a point on a path, he moved the diamond-shaped handles to widen or narrow a portion of the path. Lastly, he combined some old and newly-made swatches to create additional brushes for other robots' limbs.



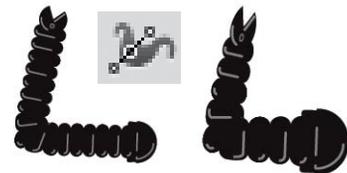
Selecting the Pattern Brush option from the New Brush dialog



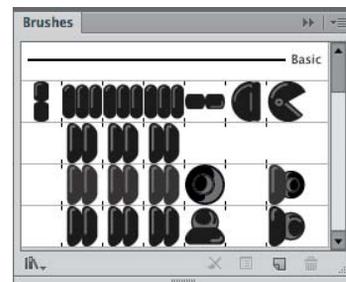
Creating a new pattern brush by placing the swatches in the appropriate tiles



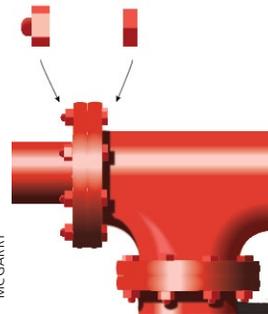
Using the Stroke panel to widen or narrow the pattern brush line weight



Using the Width tool to introduce variations in the width of your pattern brush line



Recombining and building new swatches to create new pattern brushes



### Aaron McGarry

For this urban portrait Aaron McGarry relied heavily upon Illustrator's Symbol Libraries and Symbols panel. He made his own panel containing only the symbols he needed using Window > Symbol Libraries > User Defined. He saved as a symbol any detail that he would need to repeat so he could easily access and apply that element. To build the roof tiles in the background building, McGarry made one tile and filled it with a solid color. He then made two duplicates and filled each with a different color. He separately dragged and dropped each into the Symbols panel, named it, and clicked OK. He was then able to quickly drag alternating tiles from the panel to lay the roof, giving it a natural look. To create the red plumbing in the foreground, he also used many duplicated parts, such as the nuts and bolts holding the assembly

together, that he had saved as symbols (see detail above right). McGarry took full advantage of Illustrator's Symbol libraries to create the greenery and curb area around the pipes. He used grass, leaves, and rocks found in the libraries accessed from the Symbol Libraries icon in the Symbols panel. To create a perspective point of view he modified some of the symbols; for instance, he used Effect > Distort & Transform to turn Rock symbols into paved concrete. He also created the oil stains on the road by modifying a Dot Pattern symbol from Illustrator's library. For the dirt on the vehicle, he drew a path around its lower side, then enabled the Draw Inside drawing mode. Using the Symbol Sprayer tool he sprayed the sand symbol within the path along the vehicle's side. Lastly, he selected the path and reduced the opacity.



### Nobuko Miyamoto/Yukio Miyamoto

Making these intricate beaded necklaces at first glance would seem impossibly difficult, but once they carefully construct each gem, with the use of pattern brushes, the necklace virtually draws itself. Nobuko Miyamoto designed the necklace and created the bead elements (details above right) with a mixture of blended and solid filled objects. She paid careful attention to the ends of the bead to ensure that when each bead lined up with the next one there would be a seamless connection between them. Yukio Miyamoto then transformed Nobuko's designs into brushes. To make the chained ends, he selected the chain object and dragged a copy (Shift-Option/Shift-Alt) to the other side of the bead. With the chain selected, he chose the Reflect tool and clicked above and below the chain to reflect the

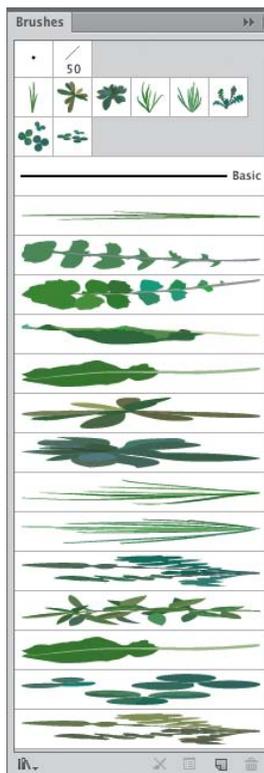


chain vertically. He selected and grouped each bead, and then in some cases he put the beads in pairs and then grouped a pair of beads. For each bead or pair of beads Yukio clicked the New Brush icon at the bottom of the Brushes panel, selected New Pattern Brush, and clicked OK. In the Pattern Brush Options dialog, he kept the Colorization method as None, and then under Fit he chose Stretch to Fit. To make the necklace, Nobuko drew a path with the Paintbrush tool and selected the desired bead pattern brush in the Brushes panel to apply the brush. Now with the bead as a pattern brush, the necklace can be easily adjusted to any length or path.



## Moses Tan

Moses Tan recreated astonishing detail and captured a precise likeness of his photographic reference using mostly meticulously-drawn filled paths, but he used custom art and scatter brushes for some of the intricate details (such as the weeded area shown across, right). He preferred to use scatter brushes for the small-sized growth and art brushes for the larger foliage. To make an art or scatter brush he first drew a weed object, then dragged it into the Brushes panel and in the New Brush Options, selected Art Brush or Scatter Brush (several are shown at right). For art brushes he specified the stroke direction (either top to bottom



or left to right) so when he drew a brushstroke, the foliage was oriented correctly. He kept the other parameters at the default settings. For the scatter brushes he varied options for each weed (size, spacing, scatter, and rotation). For scatter brushes he used Page for "Rotation relative to," and to preserve the original artwork colors in all his brushes, he used a Colorization of None. To paint with a brush he would select the Paintbrush tool, a scatter or art brush, and draw paths to easily form the weeded detail in his drawing.

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