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**Aidan Chopra**

*SketchUp Product Evangelist at Google*





***Google***  
***SketchUp***<sup>®</sup> ***7***  
FOR  
**DUMMIES**<sup>®</sup>



***Google  
SketchUp<sup>®</sup> 7***  
FOR  
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**by Aidan Chopra**



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## *About the Author*

**Aidan Chopra** has always had a thing for computers — his parents thoughtfully sent him to Apple camp instead of hockey lessons like every other eight-year-old in Montreal — but he learned to draft and build physical models the old-fashioned way, working for his architect father. These days, Aidan is a Product Evangelist at Google, where he's been since that company bought SketchUp in the first part of 2006. In the five years since he graduated with a Master of Architecture degree from Rice University, he's done a lot of writing and lecturing about the way software is used in design. Aidan writes the *SketchUpdate*, a monthly e-mail newsletter that reaches over a million SketchUp users worldwide. He has taught architecture at the university level and at Google and works on ways to mediate between power and usability. He believes the best software in the world isn't worth a darn if nobody can figure out how it works. Aidan is based in Boulder, Colorado, even though he is what many would consider to be the diametric opposite of a world-class endurance athlete.

# *Dedication*

For my parents, Jenny and Shab, and my brother, Quincy, because I love them very much.

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# Introduction

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A couple years ago, I was teaching a workshop on advanced SketchUp techniques to a group of extremely bright middle and high school (or so I thought) students in Hot Springs, Arkansas. As subject matter went, I wasn't pulling any punches — we were breezing through material I wouldn't think of introducing to most groups of adults. At one point, a boy raised his hand to ask a question, and I noticed he looked younger than most of the others. Squinting, I read a logo on his T-shirt that told me he was in elementary school. "You're in sixth grade?" I asked, a little stunned. These kids were *motoring*, after all. The boy didn't even look up. He shook his head, double-clicked something, and mumbled, "Third." He was 8 years old.

SketchUp was invented back in 1999 by a couple of 3D industry veterans (or refugees, depending on your perspective) to make it easier for people to see their ideas in three dimensions. That was it, really — they just wanted to make a piece of software that anyone could use to build 3D models. What I saw in Arkansas makes me think they were successful.

Before it was acquired in 2006 by Google, SketchUp cost \$495 a copy, and it was already a mainstay of architects' and other designers' software toolkits. No other 3D modeler was as easy to understand as SketchUp, meaning that even senior folks (many of whom thought their CD/DVD trays were cup holders) started picking it up. These days, SketchUp is being used at home, in school, and at work by anyone with a need to represent 3D information the way it's meant to be represented: in 3D. Google SketchUp (as it's now called) is available as a free download in six languages and is just as popular internationally as it is in North America.

## About This Book

The thing I like least about software is figuring out how it works. I once saw a movie where the main character acquired knowledge by plugging a cable (a rather fat cable, actually) into a hole in the back of his head. A computer then uploaded new capabilities — languages, martial arts, fashion sense (apparently) — directly into his brain. Afterward, the character ate a snack and took a nap. *That's* how I wish I could get to know new software.

This book, on the other hand, is a fairly analog affair. In it, I do my best to guide you through the process of building 3D models with SketchUp. I wrote this book for people who are new to 3D modeling, so I don't assume you know anything about polygons, vertices, or linear arrays. The nice thing is that the people who make SketchUp don't assume you know any of those things, either. That means I don't have to spend many words explaining theoretical concepts, which I think we can both appreciate.

I don't think many people want to use software just for the sake of using software. You probably didn't learn to drive just because you thought seatbelts and turn signals were cool; I'm betting you wanted to be able to get around in a car. People use SketchUp so that they can build 3D models. As such, most of this book focuses on what *you can do* with SketchUp, and not *what SketchUp does*. Naturally, this has a few implications:

- ✔ **I use the word *you* a lot.** You're reading this book because you have something you want to build in 3D on your computer, and you think SketchUp can help you do that. I try to keep this in mind by letting you know how you can use the features I talk about to do what you want to do.
- ✔ **I err on the side of architecture.** The fact is, a lot of people want to use SketchUp to model buildings, so I'm assuming that a good many of you (the collective *you*, in this case) want to do the same. You can use SketchUp to build just about anything you want, but to ignore the fact that it's extra-great for architecture would be silly.
- ✔ **I don't cover everything SketchUp can do.** If this book were about SketchUp, and not modeling *with* SketchUp, I would list every feature, every tool, and every command in exhaustive detail. I would tell you exactly what every radio button and slider bar is for. I would, in effect, just copy the documentation that comes with SketchUp (available in the Help menu) and call it a day. In writing this book, I had to make a tough choice: I had to figure out what to show you and, more importantly, what to leave out. The Table of Contents I settled on is a list of what most people want to know, most of the time.

Just in case you're interested, here's what didn't make the cut (and why):

- **The Dimension and Label tools:** I left these out because they're so simple to use that I didn't think they needed any explanation. That's not to say they're not great — they are. It's just that this book could only be so long.
- **The 3D Text tool:** Why'd I leave this one out? Like the Dimension and Label tools, it's too easy to use. Just try it out and you'll see what I mean.

- **Style Builder:** Because it's a separate program that comes with SketchUp Pro 7, I decided not to dive into Style Builder. You use it to create your own Styles for SketchUp; learn more about Styles in Chapter 9.
- **Ruby:** Actually, I do talk a little bit about Ruby, but only in Chapter 17, which is practically at the end of the book. Ruby is a scripting (programming) language that you (maybe) can use to code your own tools for SketchUp. I think that says it all, don't you?

One more thing: Because SketchUp is a *cross-platform* program (meaning that it's available for both Windows and Macintosh computers), I make reference to both operating systems throughout this book. In most cases, SketchUp works the same in Windows and on a Mac, but where it doesn't, I point out the differences. Just so you know, any figures in this book that show the SketchUp user interface show the Windows version.

## *Foolish Assumptions*

I mentioned earlier that I don't presume you know anything about 3D modeling, much less 3D modeling with SketchUp, in this book. That's true — you're safe even if you call SketchUp "Sketch'em-Up" (which I've heard more than once, believe it or not). If you happen to know a thing or two about SketchUp, I think you'll still find plenty of useful stuff in this book. Even though it's written with beginners in mind, I've included a lot that definitely isn't beginner-level information. I mean for this book to be useful for people with just about any level of SketchUp skill.

That said, I assume you're familiar with a few important concepts. To begin with, I assume you know how to work your computer well enough to understand how to do basic things like saving and opening files. I don't cover those things in this book because SketchUp handles them just like every other program does. If you're trying to model with SketchUp *and* figure out how to use a computer at the same time, Wiley has some excellent books that can help you out, such as *Windows Vista For Dummies*, by Andy Rathbone, or *Mac OS X Leopard For Dummies*, by Bob LeVitus, just to name two; visit [www.dummies.com](http://www.dummies.com) for other options.

Next, I take for granted that you have, and know how to work, a mouse with a scroll wheel. SketchUp all but requires you to have a scroll wheel mouse — especially when you're just starting out. The good news for folks who don't have one is that they're fairly cheap. Just look for something with a left button, a right button, and a little scroll wheel in the middle.

Finally, I assume you have at least occasional access to the Internet. Don't panic! Unlike most Google applications, you don't have to be online to use SketchUp — I do most of my best work on airplanes, in fact. You can find some great resources on the Web, though, and I point them out when I think they're important.

## How This Book Is Organized

Tell me if you think this is strange: I read most computer books in completely random order. I *never* start at the beginning and work my way through. In fact, I only pick them up for two reasons:

- ✓ **To figure something out:** I like to have a book on hand when I'm beginning something new because I like the way books *work*. If I need help, I look it up, but something else invariably happens — I end up reading more than I needed to, and I usually end up finding out something I didn't even know I didn't know. That almost never happens when I use digital media; it's too good at providing me with just the answer to my question. Computers are lousy for browsers like me.
- ✓ **To kill time:** I hate to admit this, but I don't usually keep my computer books anywhere near my computer. I keep them in the bathroom, because my bathroom has excellent light for reading and because I'm afraid that a television would fall in the bathtub and electrocute me. When I'm just killing time, I open my book to a random page and start reading.

Despite these two facts, this book *does* have structure. Basic concepts are grouped in the first few chapters, and more advanced material appears toward the end. Chapter 3 is entirely devoted to a step-by-step approach to getting started, just for those who like to get to know software that way.

In general, though, this book is intended to be a reference. If you keep reading from this page on, right to the end of the index, you'll have a pretty good idea of how to use SketchUp to make 3D models — but that isn't what I'm expecting you to do. I recommend that you start with Chapters 1 and 2, just to get your bearings. After that, you should use the Table of Contents or the index to find what you're looking for; then proceed from there.

To make it easier to understand how certain chapters are related, this book lumps them together into parts. Check out the following summaries to get an idea of what's in each one.

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## ***Part I: Getting Started with SketchUp***

If you're completely new to SketchUp and 3D modeling, this is the most important part in this book. Start here, lest you get frustrated and decide to use these pages to line your rabbit coop. Chapter 1 talks about how SketchUp fits into the bigger 3D modeling picture. Chapter 2 lays out all — that's 100 percent — of the basic concepts you need to understand to do anything useful with SketchUp. Chapter 3 offers a basic end-to-end workflow for creating and sharing a model. You can skip it, but I think it's a nice way to ease into the program.

## ***Part II: Modeling in SketchUp***

SketchUp is a 3D modeling tool, so this part is, in Shakespeare's eternal words, "where it's at." Chapter 4 dives right into using SketchUp to make buildings, with an emphasis on drawing and extruding simple plans, modeling stairs, and constructing roofs. This isn't easy, mind you, but it's what a lot of people want to use SketchUp to do, so I put it right at the beginning.

Chapter 5 deals with using groups and components, two of the most important elements in any SketchUp model you make. Chapter 6 deals with tools you can use to manage big models, and Chapter 7 lays out advanced techniques for modeling things like terrain, characters, and other non-boxy objects. In Chapter 8 I talk about using photographs in SketchUp. The second part of the chapter is all about SketchUp's photo-matching feature, which I guarantee will make you smile.

## ***Part III: Viewing Your Model in Different Ways***

Making models in SketchUp is only half the fun. The chapters in this part present some of this software's truly unique presentation features. Chapter 9 dives into Styles and Shadows. Also, don't skip the last part of Chapter 10 on using sections to create animations — it's easy and more rewarding than almost anything else you can do in SketchUp.

## *Part IV: Sharing What You've Made*

These chapters are dedicated to getting your models out into the world. In Chapter 11 I talk about using SketchUp with Google Earth, which, if you haven't tried it, is reason in itself to have a fast Internet connection. Chapters 12 and 13 deal with printing and exporting images and movies from your model files. Chapter 14 is an introduction to LayOut. This whole-new program, which is included as part of SketchUp Pro, is for creating 2D presentation documents that automatically link to your 3D models.

## *Part V: The Part of Tens*

My favorite thing about books in the *For Dummies* series is the way they embrace people's love of lists. I *could* have spread the information contained in these ultra-short chapters throughout the entire book, but it's so much easier to read when it's all in one place, don't you think?

Chapter 15 is a list of ten things that you'll definitely struggle with when you're first using SketchUp; remember to check here before you do anything drastic. Chapter 16 lists great add-ons that'll make your SketchUping more enjoyable, and Chapter 17 is all about where to turn when the information you need isn't in this book.

## *On the Web site*

I created a little online presence for this book in order to be able to share more information with you. This book's Web site ([www.dummies.com/go/SketchUp7FD](http://www.dummies.com/go/SketchUp7FD)) includes lots of useful stuff:

- ✔ **A Bonus Chapter:** The previous edition of *Google SketchUp For Dummies* included a whole chapter on exporting 2D and 3D vector information with SketchUp Pro. That information is still relevant, but I cut it out of this book to make room for new features in SketchUp 7. The good news is that you can get the whole chapter in digital form on the Web site.
- ✔ **Videos:** I recorded about six dozen videos and put them up on YouTube. They're pretty basic (just me talking and modeling) but seeing SketchUp in action is often very helpful — black and white pictures can only convey so much. All my videos are also embedded in this book's Web site, and they're organized by chapter and section to make them easier to find.



- ✔ **Color images:** It often helps to be able to see a figure in color, so I put color versions of some of the images in this book online.
- ✔ **SketchUp files:** These are actually stored on the Google 3D Warehouse (which you can find out about in Chapters 5 and 11), but I link to them to make them easier to find.
- ✔ **Links to other cool resources:** There's a world of great SketchUp material — plugins, components, models, blogs — out there, and you can find direct links to many of them on my Web site.

## Icons Used in This Book



This icon indicates a piece of information I think will probably save you time.



When you're working in SketchUp, you need to know a lot of things. I use the Remember icon to remind you of something I cover earlier in the book, just in case you might have forgotten (or skipped) it.



Everyone's a little bit of a nerd sometimes, and paragraphs that bear this icon indulge that nerdiness. You can skip them without fear of missing anything important, but reading them can give you something to annoy your SketchUp friends with later on.



When you see this icon, pay special attention. It occurs rarely, but when it does, something you do could harm your work.



This icon denotes a spot where you can find supporting material on this book's companion Web site, including videos, sample files, and links to helpful material, which you can find at [www.dummies.com/go/SketchUp7FD](http://www.dummies.com/go/SketchUp7FD).



I revised this book to cover SketchUp 7, but instead of adding a section at the beginning that lists everything that's new, I added the information throughout — I think it makes more sense that way. This icon denotes what's new or different in the new version.

If you'd like to see a complete list of new features and improvements in SketchUp 7, open your Web browser of choice and try doing a Google search for **new in SketchUp 7** — something gloriously list-like will no doubt appear.

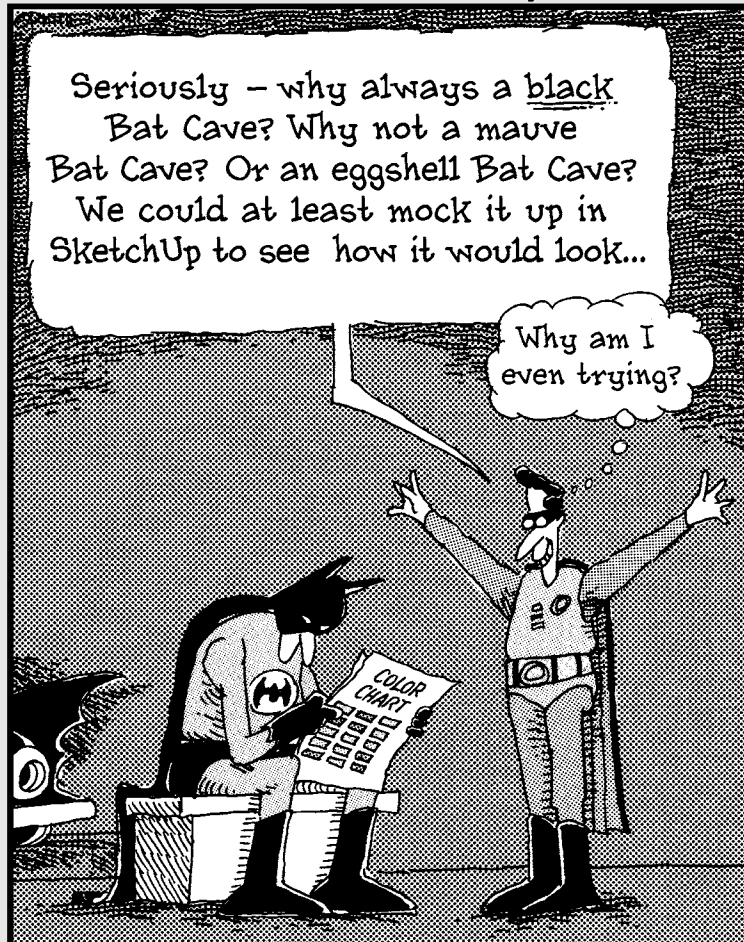


# Part I

# Getting Started with SketchUp

The 5<sup>th</sup> Wave

By Rich Tennant



## *In this part . . .*

**T**his part of the book is dedicated to helping you get your bearings. It's not a step-by-step guide to starting a new file in SketchUp; instead, it provides a little bit of information about what SketchUp is, what you can use it to do, and how to get the most out of it.

Chapter 1 is a very general overview of Google SketchUp. I try not to bore you with too much background information, but here's where you can read about what the software is supposed to let you do, how it compares to other 3D modeling applications, and where everything is.

In Chapter 2, I jump right in. There are a few things about SketchUp you absolutely need to know when you're just getting started, and here's where I lay them out. I think this is the most important chapter in this book; read it, and you'll know more about SketchUp than millions of other folks who already use it every day.

The contents of Chapter 3 are included for the benefit of those readers who like to learn software by getting their hands dirty right away. The whole chapter is a workflow that takes you through the process of making a simple model, changing the way it looks, and creating an image of it that you can keep forever.

## Chapter 1

# Meeting Google SketchUp

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### *In This Chapter*

- ▶ Finding out why it's free from Google
  - ▶ Comparing SketchUp with other 3D software
  - ▶ Finding out what you can and can't do with SketchUp
  - ▶ Looking around the application
- 

Once upon a time, software for building three-dimensional (3D) models of things like buildings, cars, and other stuff was hard to use. I mean *really* hard — people went to school for years to learn it. And if that wasn't bad enough, 3D modeling software was expensive. It was so expensive that the only people who used it were professionals and software pirates (people who stole it, basically). Then along came SketchUp.

Operating under the assumption that lots of people might want — and need — to make 3D models, the folks who invented SketchUp decided to design a program that worked more intuitively. Instead of making you think about 3D models as complex mathematical constructs (the way computers think), they created an interface that lets you build models using elements you're already familiar with: lines and shapes.

So do you need to know how to draw to use SketchUp? In the latest version of the software, not really. Traditional drawing is about *translating* what you see onto a flat piece of paper: going from 3D to 2D, which is hard to do for most people. In SketchUp, you're always in 3D, so no translation is involved — you just *build*, and SketchUp takes care of stuff like perspective and shading for you.

This first chapter is about putting SketchUp in context: why Google offers it for free, how it compares to other 3D software, and what you can (and can't) do with it. In the last part of the chapter, I give a quick tour of the program, just to let you know where things are.

## Things You Ought to Know Right Away

Before I continue, here's some information you might need:

- ✔ **You get SketchUp by downloading it from the Internet.** Just type <http://sketchup.google.com> into your Web browser and read through the first page of the Google SketchUp Web site. Click the links to download the application to your computer, and then follow the installation instructions on the Web.
- ✔ **SketchUp works in Windows and Mac OS X.** Google SketchUp is available for both operating systems, and it looks (and works) about the same way on both.
- ✔ **A Pro version is available.** Google offers a Pro version of SketchUp (called Google SketchUp Pro) that you can buy if you need it. It includes a few terrific features that folks like architects, production designers, and other design professionals need for exchanging files with other software. SketchUp Pro also includes a whole separate application for creating presentation documents with your SketchUp models. It's called LayOut, and it's the subject of Chapter 14. If you think you might need Pro, you can download a free trial version at <http://sketchup.google.com>.

## Where SketchUp Fits in Google's World

A long time ago, somebody invented photography (hey — this isn't a history book), and all of a sudden there was a way to make pictures of things that didn't involve drawing, engraving, or painting. Nowadays, you can't throw a rock without hitting a photograph of something. *Everything* (it seems) can take pictures, including people's phones. Photography is the main way that visual information is communicated.

But what comes after photography? Google (and just about every science-fiction writer who ever lived) thinks it's 3D, and here's why: You live in 3D. The furniture you buy (or build) is 3D, and so is the route you take to work. Because so many of the decisions you need to make (buying a couch, finding your way) involve 3D information, wouldn't it be nice to be able to experience that information in 3D?

Software like SketchUp lets you see 3D information on a 2D screen, which is good, but affordable 3D printers and holography (yep, holograms) are just over the horizon. All that's left is to build a model of every single thing in the world — and guess who's going to do it?