AutoCAD® 2007 FOR DUMMIES®

by David Byrnes and Mark Middlebrook

Wiley Publishing, Inc.

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About the Authors

David Byrnes is one of those grizzled old-timers you'll find mentioned every so often in *AutoCAD 2007 For Dummies*. He began his drafting career on the boards in 1979 and discovered computer-assisted doodling shortly thereafter. He first learned AutoCAD with version 1.4, around the time when personal computers switched from steam to diesel power. Dave is based in Vancouver, British Columbia, and has been an AutoCAD consultant and trainer for 15 years. Dave is a contributing editor for *Cadalyst* magazine and has been a contributing author to ten books on AutoCAD. He teaches AutoCAD and other computer graphics applications at Emily Carr Institute of Art + Design and British Columbia Institute of Technology in Vancouver. Dave has tech edited six *AutoCAD For Dummies* titles. *AutoCAD 2007 For Dummies* is his second go-round as coauthor of this title.

Mark Middlebrook used to be an engineer but gave it up when he discovered that he couldn't handle a real job. Since 1988, he has been principal of Daedalus Consulting, an independent CAD and computer consulting company in Oakland, California. (In case you wondered, Daedalus was the guy in ancient Greek legend who built the labyrinth on Crete. Mark named his company after Daedalus before he realized that few of his clients would be able to pronounce it and even fewer could spell it.) After having made mischief in the CAD world for 17 years, Mark now has embarked on a career in the wine world. He sells and writes about wine for Paul Marcus Wines in Oakland and develops wine-related Web sites for CruForge.

Dedication

From Dave: To Anna and Delia, the two women in my life, who remind me there are other things besides keyboards and mice (and sometimes they have to try REALLY hard).

From Mark: To Puck and Pretzel, two absolute AutoCAD dummies who never cease to inspire and amuse. It was during walks in the woods with them that I originally worked out some of the details of these chapters. I'm pretty sure that Puck could learn AutoCAD, if only he could figure out how to manipulate a mouse. Pretzel, on the other hand, is too interested in squirrels to bother with mice.

Authors' Acknowledgments

Mark thanks Bud Smith, who initiated this book eight editions ago, brought him in on it along the way, and eventually handed it over to him in toto. Dave in turn thanks Mark for bringing *him* on board as coauthor, and for asking him to tech edit the book for the last five editions.

Thanks too to two colleagues and friends at Autodesk, Shaan Hurley and Bud Schroeder, who never seem to mind being asked even the dumbest questions.

We both thank Terri Varveris and Tiffany Ma, who shepherded the project through the development process; their enthusiasm and infectious energy have helped make each new edition more than just an obligatory update. It was also a great pleasure to work with project editor Mark Enochs and copy editor Heidi Unger. And by no means least, but someone has to bring up the rear, thanks to Lee Ambrosius for taking on the tech-editing job. Lee's expertise is well known and respected in the AutoCAD community, and we're delighted to have him with us.

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We're proud of this book; please send us your comments through our online registration form located at www.dummies.com/register/.

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Introduction

It's amazing to think that AutoCAD came into being over two decades ago, at a time when most people thought that personal computers weren't capable of industrial-strength tasks like CAD. (The acronym stands for Computer-Aided Drafting, Computer-Aided Design, or both, depending on whom you talk to.) It's almost as amazing that, more than 20 years after its birth, AutoCAD remains the king of the microcomputer CAD hill by a tall margin. Many competing CAD programs have come to challenge AutoCAD; many have fallen, and a few are still around. One hears rumblings that the long-term future of CAD may belong to special-purpose, 3D-based software such as the Autodesk Inventor and Revit programs. Whether those rumblings amplify into a roar remains to be seen, but for the present and the near future anyway, AutoCAD is where the CAD action is.

In its evolution, AutoCAD has grown more complex, in part to keep up with the increasing complexity of the design and drafting processes that AutoCAD is intended to serve. It's not enough just to draw nice-looking lines anymore. If you want to play CAD with the big boys and girls, you need to organize the objects you draw, their properties, and the files where they reside in appropriate ways. You need to coordinate your CAD work with other people in your office who will be working on or making use of the same drawings. You need to be savvy about shipping drawings around via the Internet.

AutoCAD 2007 provides the tools for doing all these things, but it's not always easy to figure out which hammer to pick up or which nail to bang on first. With this book, you have an excellent chance of creating a presentable, usable, printable, and sharable drawing on your first or second try without putting a T square through your computer screen in frustration.

What's Not in This Book

Unlike many other *For Dummies* books, this one *does* tell you to consult the official software documentation sometimes. AutoCAD is just too big and complicated for a single book to attempt to describe it completely.

AutoCAD is also too big and complicated for us to cover every feature. We don't address advanced topics like database connectivity, customization, 3D object creation, and programming in the interest of bringing you a book of a reasonable size — one that you'll read rather than stick on your shelf with those other thousand-page tomes!

Autodesk likes to keep its users (and us authors!) guessing about new features in future versions of the software. For the previous edition of this book, we removed the chapter on 3D in order to make room for a new "A Lap around the CAD Track" chapter. We figured that, really, most people were using AutoCAD for 2D drafting, and anyway, there possibly were (gasp!) better, more modern programs for doing 3D than our beloved 20-plus-year old classic.

Wouldn't you know it? Autodesk has revamped its 3D features so thoroughly that they're not only logical and intuitive — they're downright fun! So with this edition, we restore a mostly all-new 3D chapter. Something had to go to accommodate, so this time we've removed the previous edition's chapter on sheet sets, replacing it with a sidebar in Chapter 13. Of course, now we're expecting the next version of AutoCAD to revamp the sheet set feature so thoroughly that it's not only logical and intuitive, it'll be downright fun. And then we'll have to find something *else* to cut!

This book focuses on AutoCAD 2007 and addresses its slightly less-capable, much lower-cost sibling, AutoCAD LT 2007. We do occasionally mention differences with previous versions, going back to the highly popular AutoCAD Release 14, so that everyone has some context and upgraders can more readily understand the differences. We also mention the important differences between full AutoCAD and AutoCAD LT, so that you'll know what you — or your LT-using colleagues — are missing. This book does *not* cover the discipline-specific features in AutoCAD-based products such as Autodesk Architectural Desktop, except for some general discussion in Chapter 1, but most of the information in this book applies to the general-purpose AutoCAD features in the AutoCAD 2007–based versions of those programs as well.

Who Are — and Aren't — You?

AutoCAD has a large, loyal, and dedicated group of long-time users. This book is not for the sort of people who have been using AutoCAD for a decade, who plan their vacation time around Autodesk University, or who consider 1,000-page-plus technical tomes about AutoCAD as pleasure reading. This book *is* for people who want to get going quickly with AutoCAD, but who also know the importance of developing proper CAD techniques from the beginning.

However, you do need to have some idea of how to use your computer system before tackling AutoCAD — and this book. You need to have a computer system with AutoCAD or AutoCAD LT (preferably the 2007 version). A printer or plotter and a connection to the Internet will be big helps, too.

You also need to know how to use Windows to copy and delete files, create a folder, and find a file. You need to know how to use a mouse to select (highlight) or to choose (activate) commands, how to close a window, and how to minimize and maximize windows. Make sure that you're familiar with the basics of your operating system before you start with AutoCAD.

How This Book Is Organized

Appearances can be deceptive. For example, if you saw the apparently random piles of stuff that covered the authors' desks while they were writing this book, you might wonder how they could possibly organize a paragraph, let alone an entire book. But each of us (given some concerted thought) knows exactly where to put our hands on that list of new dimension variables, or that bag of ½" binder clips, or the rest of that bagel and cream cheese we started at coffee break.

We hope you'll find that the book also reflects some concerted thought about how to present AutoCAD in a way that's both easy-to-dip-into and smoothly-flowing-from-beginning-to-end.

The organization of this book into parts — collections of related chapters — is one of the most important, uh, *parts* of this book. You really can get to know AutoCAD one piece at a time, and each part represents a group of closely related topics. The order of parts also says something about priority; yes, you have our permission to ignore the stuff in later parts until you've mastered most of the stuff in the early ones. This kind of building-block approach can be especially valuable in a program as powerful as AutoCAD.

The following sections describe the parts that the book breaks down into.

Part 1: AutoCAD 101

Need to know your way around the AutoCAD screen? Why does AutoCAD even exist, anyway? What are all the different AutoCAD-based products that Autodesk sells, and should you be using one of them — for example, AutoCAD LT — instead of AutoCAD? Is everything so slooow because it's

supposed to be slow, or do you have too wimpy a machine to use this wonder of modern-day computing? And why do you have to do this stuff in the first place?

Part I answers all these questions — and more. This part also includes what may seem like a great deal of excruciating detail about setting up a new drawing in AutoCAD. But what's even more excruciating is to do your setup work incorrectly and then feel as though AutoCAD is fighting you every step of the way. With a little drawing setup work done in advance, it won't.

Part II: Let There Be Lines

In this part, it's time for some essential concepts, including object properties and CAD precision techniques. We know that you're raring to make some drawings, but if you don't get a handle on this stuff early on, you'll be terminally confused when you try to draw and edit objects. If you want to make drawings that look good, plot good, and *are* good, read this stuff!

After the concepts preamble, the bulk of this part covers the trio of activities that you'll probably spend most of your time in AutoCAD doing: drawing objects, editing them, and zooming and panning to see them better on the screen. These are the things that you do in order to create the *geometry* — that is, the CAD representations of the objects in the real world that you're designing. This part of the book ends by explaining how to navigate around in an AutoCAD 3D model, and how to change its visual appearance on-screen. By the end of Part II, you should be pretty good at geometry, even if your ninth-grade math teacher told you otherwise.

Part III: If Drawings Could Talk

CAD drawings do not live on lines alone — most of them require quite a bit of text, dimensioning, and hatching in order to make the design intent clear to the poor chump who has to build your amazing creation. (Whoever said "a picture is worth a thousand words" must not have counted up the number of words on the average architectural drawing!) This part shows you how to add these essential features to your drawings.

After you've gussied up your drawing with text, dimensions, and hatching, you'll probably want to create a snapshot of it to show off to your client, contractor, or grandma. Normal people call this process *printing,* but CAD people call it *plotting.* Whatever you decide to call it, we show you how to do it.

Part IV: Share and Share Alike

A good CAD user, like a good kindergartner, plays well with others. AutoCAD encourages this behavior with a host of drawing- and data-sharing features. Blocks, external reference files, and raster images encourage reuse of parts of drawings, entire drawings, and bitmap image files. AutoCAD's Internet features enable sharing of drawings well beyond your hard disk and local network.

The drawing and data-sharing features in AutoCAD take you way beyond old-style, pencil-and-paper design and drafting. After you've discovered how to apply the techniques in this part, you'll be well on your way to full CAD-nerdhood (you may want to warn your family beforehand).

Part V: The Part of Tens

This part contains guidelines that minimize your chances of really messing up drawings (your own or others') and techniques for swapping drawings with other people and accessing them from other computer programs. There's a lot of meat packed into these two chapters — juicy tidbits from years of drafting, experimentation, and fist-shaking at things that don't work right — not to mention years of compulsive list-making. We hope that you find that these lists help you get on the right track quickly and stay there.

Icons Used in This Book

This icon tells you that herein lies a pointed insight that can save you time and trouble as you use AutoCAD. In many cases, tip paragraphs act as a funnel on AutoCAD's impressive but sometimes overwhelming flexibility: After telling you all the ways that you *can* do something, we tell you the way that you *should* do it in most cases.

The Technical Stuff icon points out places where we delve a little more deeply into AutoCAD's inner workings or point out something that most people don't need to know about most of the time. These paragraphs definitely are not required reading the first time through, so if you come to one of them at a time when you've reached your techie detail threshold, feel free to skip over it.

This icon tells you how to stay out of trouble when living a little close to the edge. Failure to heed its message may have unpleasant consequences for you and your drawing — or maybe for both of you.

There's a lot to remember when you're using AutoCAD, so we've remembered to remind you about some of those things that you should be remembering. These paragraphs usually refer to a crucial point earlier in the chapter or in a previous chapter. So if you're reading sequentially, a remember paragraph serves as a friendly reminder. If you're not reading sequentially, this kind of paragraph may help you realize that you need to review a central concept or technique before proceeding.

This icon points to new stuff in AutoCAD 2007. It's mostly designed for those of you who are somewhat familiar with a previous version of AutoCAD and want to be alerted to what's new in this version. New AutoCAD users starting out their CAD working lives with AutoCAD 2007 will find this stuff interesting, too — especially when they can show off their new book-learnin' to the grizzled AutoCAD veterans in the office who don't yet know about all the cool, new features.

This icon highlights differences between AutoCAD LT and AutoCAD. If you're using AutoCAD LT, you'll find out what you're missing compared to "full" AutoCAD. If your friend is using LT, you'll know where to look to find stuff in AutoCAD to brag about.

A Few Conventions — Just in Case

You can probably figure out for yourself all the information in this section, but here are the details just in case.

Text you type into the program at the command line, in a dialog box, in a text box, and so on appears in **boldface type**. Examples of AutoCAD prompts appear in a `special typeface`, as does any other text in the book that echoes a message, a word, or one or more lines of text that actually appear on-screen. Sequences of prompts that appear in the AutoCAD command line area have a shaded background, like so:

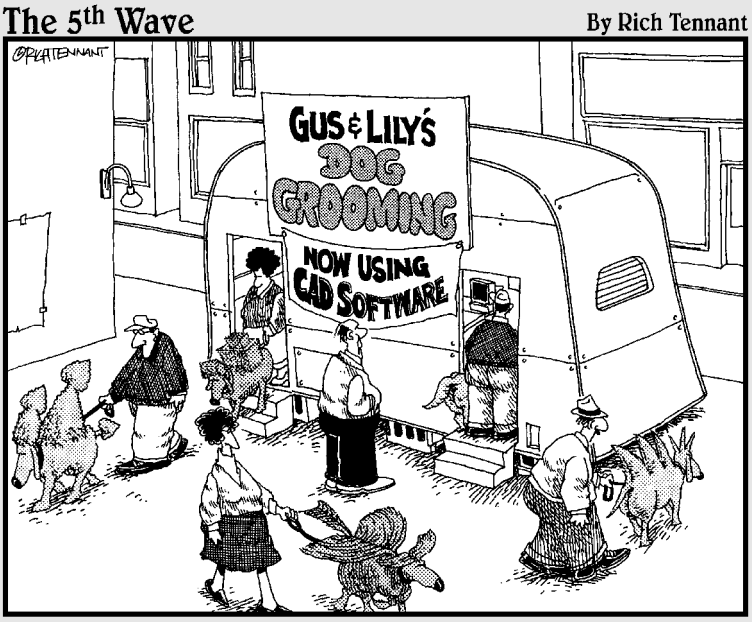
```
Specify lower left corner or [ON/OFF] <0.0000,0.0000>:
```

(Many of the figures — especially in Chapters 6 and 7 — also show AutoCAD command line sequences that demonstrate AutoCAD's prompts and example responses.)

Often in this book, you see phrases such as "choose File➪Save As from the menu bar." The funny little arrow (➪) separates the main menu name from the specific command on that menu. In this example, you open the File menu and choose the Save As command. If you know another way to start the same command (in this example, type **SAVEAS** and press Enter), you're welcome to do it that way instead.

Many AutoCAD commands have shortcut (fewer-letter) versions for the benefit of those who like to type commands at the AutoCAD command prompt. In this book, we format command names in uppercase letters. If a command has a shortcut, we include the shortcut in parentheses at the first reference to the command so that you become familiar with the shortcuts and can use them if you want to. So when you see an instruction like "run the DIMLINEAR (DLI) command to draw a linear dimension," it means "for a linear dimension, type **DIMLINEAR** (or **DLI** for short) at the command line, and then press the Enter key."

Part I
AutoCAD 101



In this part . . .

AutoCAD is more than just another application program; it's a complete environment for drafting and design. So if you're new to AutoCAD, you need to know several things to get off to a good start — especially how to use the command line area and set up your drawing properly. These key techniques are described in this part of the book.

If you've used earlier versions of AutoCAD, you'll be most interested in the high points of the new release, including some newer interface components. The lowdown on what's new is here, too.