Preface

Welcome to the AutoCAD 2004 Bible. AutoCAD 2004 is the most powerful CAD software product available for PCs today. It can perform nearly any drawing task you can give it. This book is designed to be your comprehensive guide to the entire AutoCAD program.

AutoCAD 2004 is the fastest, smoothest AutoCAD yet. Certain features have been added that are not even mentioned in this book because you never see them — you just notice that fewer regenerations occur, drawings load faster, and you spend less time waiting while drawing and editing. Files are automatically and invisibly compressed, so they take up less room on your computer system. In addition to these refinements, of course, are the many new features covered in this book that will make your drawing easier and faster. This book covers every major AutoCAD feature. If you're a beginning AutoCAD user, you'll find everything you need to start out; if you're already using AutoCAD regularly, the book covers advanced material as well. It provides a solid reference base to come back to again and again, as well as short tutorials to get you drawing. Finally, the CD-ROM is chockfull of drawings, a trial version of AutoCAD 2004, and AutoLISP programs. This book should be all you need to make full use of that expensive program called AutoCAD.

Is This Book for You?

The *AutoCAD 2004 Bible* covers all the essential features of AutoCAD and includes clear, real-life examples and tutorials that you can adapt to your needs.

Although I fully cover AutoCAD basics, I have also included material on the many advanced features, such as external database connectivity, AutoLISP, Visual Basic for Applications (VBA), 3D modeling, rendering, and customization. The following categories should help you decide if this book is for you.

If you are a new AutoCAD user

If you are new to AutoCAD, the *AutoCAD 2004 Bible* guides you through all you need to know to start drawing effectively, whatever your field.

If you are upgrading to AutoCAD 2004

This book highlights all the new features of AutoCAD 2004 and helps you make the upgrade transition as seamless as possible.

If you are switching from another CAD program

You already know what CAD is all about. This book clearly explains the AutoCAD way of drawing the models you have already been drawing. In addition, you'll find a great deal of essential information about transferring information from other formats.

How This Book Is Organized

This book is divided into eight parts.

Part I: AutoCAD Basics

Part I provides the background information you need to start drawing. It starts with a "quick tour" that gets you drawing right away, and then covers how to start a drawing, use commands, specify coordinates, and set up a drawing.

Part II: Drawing in Two Dimensions

Part II covers all the commands and procedures for drawing and editing in two dimensions. In addition, I discuss how to control the drawing process with layers, zooming, and panning. Also included in this part is information about dimensioning, plotting, and printing.

Part III: Working with Data

Part III covers many ways to organize and share data, including blocks, attributes, external references, and external databases.

Part IV: Drawing in Three Dimensions

Part IV explains everything you need to know to draw in three dimensions. It also discusses how to present 3D drawings using hiding, shading, and rendering techniques.

Part V: Organizing and Managing Drawings

Part V helps you incorporate AutoCAD into your work world by explaining how to set standards, manage drawings, and work with other applications. It concludes with a chapter on AutoCAD and the Internet. Many of the new features of AutoCAD 2004 are explained in this part.

Part VI: Customizing AutoCAD

Part VI introduces the tools you need to customize commands, toolbars, linetypes, hatch patterns, shapes, fonts, and menus. You'll also find a chapter on script files, which you can use to create macros.

Part VII: Programming AutoCAD

Part VII introduces you to programming AutoCAD. It includes three chapters on AutoLISP and Visual LISP and one chapter on Visual Basic for Applications.

Part VIII: Appendix

Part VIII explains what you'll find on the CD-ROM.

Cross-Reference   The CD-ROM contains a complete copy of this book in PDF format and four appendixes of useful information for AutoCAD users.

How to Use This Book

You can use this book in two ways: as a reference or as a learning tool or tutorial.

As a reference

The *AutoCAD 2004 Bible* is organized as a reference that you can refer to whenever you get stuck or when you try to do something for the first time. Each chapter covers a topic completely, making it easy to find what you're looking for. Each Step-by-Step exercise (with a few exceptions) can be done on its own without doing the other exercises in the chapter. You can easily look up a topic and complete a related exercise without having to go through the entire chapter. A complete index at the back of the book can also help you look up features and topics.

As a tutorial

The overall organization of the book goes from simple to complex, and each chapter has several Step-by-Step sections. This enables you to use the book as a tutorial — from beginning to end. You can then go back and redo any exercise when you need to refresh your memory on a particular feature.

For newcomers to AutoCAD, Parts I and II are essential. After that, you can refer to chapters that interest you. Parts III and V are also useful for beginners. Intermediate users will probably be familiar with most of the material in Part I and will be more likely to skip around looking for the specific topics they need. However, don't forget that many of the new features for AutoCAD 2004 are introduced in Part I. Enough material appears in this book to bring intermediate users up to a fairly advanced level.

I have designed this book to be comprehensive and to include every significant feature of AutoCAD. Therefore, do not be concerned if some of the material seems too advanced. It will be there when you are ready for it.

Doing the Exercises

AutoCAD is a very customizable program. This book assumes that you are working with the default setup. However, a number of changes may have been made to your system that could result in menus, toolbars, and drawings appearing or even functioning differently from those shown in this book. If you installed AutoCAD yourself and made some adjustments, you know what changes you made. However, if you are using a computer that was set up by someone else, it may help to talk to that person first, to see what changes were made.

In addition, as you work through some of the exercises in this book, you will make certain changes in AutoCAD's setup. Most of these are minor changes that any user would make while drawing. For safety, Cautions and Tips accompany all changes that could have serious consequences, such as customizing the menu. For example, when customizing the menu, you will be instructed to copy the menu template file under a new name, and you will then work with the new menu file, not the original one. Nevertheless, if you are working on a network or sharing AutoCAD with someone else, it is proper computer etiquette to consult with others who may be affected by the changes you make.

If you do the exercises, I recommend that you do them from the beginning. Important instructions are given during earlier exercises that may affect your system later. For example, one of the first exercises is to create a new folder to hold your drawings from the exercises. This folder keeps your exercise drawings separate from other drawings created in your office. However, each exercise stands on its own so you can go back and do only the exercise you need.

Cross-Reference You can create your own AutoCAD configuration that helps ensure that some changes you make will not affect others. Instructions for doing this appear in Appendix A, "Creating Multiple Configurations," on the CD-ROM.

The exercises in the *AutoCAD 2004 Bible* have been carefully checked by a technical editor to ensure accuracy. However, we cannot anticipate all situations, either due to varying hardware/software configurations or customization within AutoCAD. If you have a problem with an exercise, contact me at the e-mail address listed at the end of this Preface so I can correct the problem in the book's next edition.

Conventions Used in This Book

Given all the ways in which you can execute a command in AutoCAD, you'll find it useful to read through this section, which describes this book's typographical conventions. You will find this section helpful for doing the Step-by-Step exercises as well.

AutoCAD commands

AutoCAD uses standard Windows conventions for menus and toolbars. To indicate that you should choose a command from the menu, for example, I say, "Choose View ⇨ Viewports," which means that you should click the View menu with your mouse or puck/stylus and then click the Viewports menu item. A few of AutoCAD's toolbar buttons have flyouts, which are equivalent to submenus. They are called flyouts because they fly out when you click and hold the button on the main toolbar, displaying even more buttons. Therefore, to indicate which button to choose, I may need to tell you to choose (or click) Zoom Extents from the Zoom flyout of the Standard toolbar. Although I haven't found a good alternative, this is not completely satisfactory for two reasons. First, it's a mouthful! Second, the flyout names do not appear, making it hard to know which is the Zoom flyout. However, you can check Appendix B on the CD-ROM. It shows each toolbar and flyout along with its name. Also, in most cases it will be obvious which flyout I'm talking about.

AutoCAD is unique in that every command also has a command name that you can type on the command line, which appears at the bottom of your screen. Command names are shown in capital letters, as in CIRCLE. AutoLISP functions are shown in small capital letters, as in COMMAND.

AutoCAD prompts, your input, and instructions

In the Step-by-Step exercises, most instructions are presented in the same font and style you are reading now. However, when I reproduce the AutoCAD command line, AutoCAD's prompts appear in a `nonproportionalfont` and the input you should type in appears in bold. Other instructions (such as "Type in the first coordinate") are shown in italic.

Here's a sample Step-by-Step section. In this exercise, you click the proper toolbar button, type in the X,Y coordinates shown in bold, and press Enter where indicated by the bent arrow (↵) symbol.

1. With your left mouse button (also called the pick button), choose Line from the Draw toolbar. Notice that the command name is repeated on the command line.

```
Command: _line Specify first point: 0,0 ↵ (This arrow means
to press Enter)
Specify next point or [Undo]: 10,0 ↵
Specify next point or [Undo]: 10,7 ↵
Specify next point or [Close/Undo]: 0,7 ↵
Specify next point or [Close/Undo]: 0,0 ↵
Specify next point or [Close/Undo]: ↵
```

Often I make references to specific elements in a drawing. References to these elements appear in the text as numbers in circles, such as ❶, ❷, ❸, and so on. You'll find the corresponding number in the figure to which the text refers.

Mouse and keyboard terms

You can draw in AutoCAD using a mouse or a puck. The mouse is familiar to all users. A puck (or sometimes a stylus) is used with a digitizing tablet. Because most AutoCAD users do not have a digitizing tablet, I do not directly refer to it in this book. If you have one, follow the instructions for using the mouse in the same way, using your puck.

A mouse can have two or more buttons. Many AutoCAD users like using a mouse with at least three buttons because you can customize the buttons to suit your needs. However, because many mice have only two buttons, I assume only two. The left mouse button is used to choose commands and toolbar buttons and to pick points in your drawing. For this reason, it is sometimes called the pick button. The right button usually opens a shortcut menu.

AutoCAD 2004 introduces time-sensitive right-clicking. Because this feature is not on by default, I do not assume that you have turned it on. I use the term *right-click* when you need to access a shortcut menu. If you have time-sensitive right-clicking turned on, you need to hold down the right mouse button more than 250 milliseconds (by default) to display the shortcut menu. See Chapter 3 and Appendix A on the CD-ROM for more details.

If I say one of the following

✦ Choose Tools ⇨ Options
✦ Click Line on the Draw toolbar
✦ Select the circle in your drawing

it means to use the left button of your mouse.

When I say to press Enter, it means to press the key that is marked Enter, Return, or ↵ on your keyboard. Often I use the bent arrow symbol (↵) to indicate that you should press Enter.

I also use the mouse terms listed in the following table.

AutoCAD Mouse Terms	
Term	**Description**
Cursor	The shape on your screen that shows you where the mouse is pointed. It can take a number of shapes, such as crosshairs, pickbox, or arrow. Also known as the mouse pointer.
Pickbox	A type of cursor consisting of a small box, used to select drawing objects.
Crosshairs	A type of cursor consisting of intersecting lines.
Pick	Point to a drawing object and click the left mouse button.
Click	Press the left mouse button once and release it.
Double-click	Press the left mouse button twice in rapid succession.
Click and drag	Click the left mouse button and hold it down while you move the mouse, dragging an object on your screen with it.
Choose	Click a menu item, toolbar button, or dialog box item. You can sometimes choose an item using the keyboard as well.
Right-click	Press the right mouse button once and release it. If you have turned on time-sensitive right-clicking, hold the right mouse button at least 250 milliseconds (by default) before releasing it.
Shift and click	While holding down the Shift key, press the left mouse button once and release it.
Shift and right-click	While holding down the Shift key, press the right mouse button once and release it.
Select	Highlight an object in a drawing by picking it or using another object selection method, or highlight text in a dialog box or text document.

What the Icons Mean

The *AutoCAD 2004 Bible* is liberally sprinkled with icons—small symbols in the left margin that call your attention to noteworthy points.

The New Feature icon means that a feature is new to AutoCAD 2004 or has been significantly changed.

A Note icon alerts you to some important point that requires special attention or additional information that may be helpful.

A Tip shows you a way to accomplish a task more efficiently or quickly. You'll find plenty of practical advice here.

Cross-References refer you to a related topic elsewhere in the book. Because you may not read this book straight through from cover to cover, use cross-references to quickly find just the information you need.

The On the CD-ROM icon highlights references to related material on the CD-ROM.

The Caution icon means you should pay special attention to the information or instructions because a possibility exists that you could cause a problem otherwise.

About the CD-ROM

The CD-ROM contains all the drawings you need to do the exercises in this book. These drawings save you time as you learn AutoCAD's features. In addition, the CD-ROM includes the drawings that result after you finish an exercise or tutorial. In this way, you can check what you have done if you want.

The CD-ROM is also chockfull of resource material that I hope you will find useful for many years to come. The Appendix at the back of the book lists the contents of the CD-ROM. I am especially pleased to include a 30-day trial version of AutoCAD 2004 on the CD-ROM as well as this entire book in (nonprintable) PDF format.

Other Information

If you are an advanced AutoCAD user but need tips and secrets for getting the most out of AutoCAD, this book will probably not add too much to your already great store of knowledge.

If you want to learn about Windows, look for a book that focuses on Windows. This book assumes that you know the basics of Windows, although the instructions you'll read here are usually detailed enough to get you through any task. For more information about Windows, try *Windows XP For Dummies*, by Andy Rathbone, or try *Alan Simpson's Windows XP Bible* (both published by Wiley, Inc.). For Windows NT, try *Teach Yourself Windows 2000 Professional VISUALLY*, by Ruth Maran, or *Windows 2000 Professional For Dummies*, by Andy Rathbone and Sharon Crawford (both also published by Wiley).

If you want just the basics, AutoCAD LT might serve your needs better. However, if you do have AutoCAD and want a more basic book, look at *AutoCAD 2004 For Dummies*, by Bud Smith and Mark Middlebrook. The *AutoCAD 2004 Bible* covers AutoCAD 2004. However, most of the information also applies to Release 2002. I have used AutoCAD in Windows XP Professional, but almost everything also applies to Windows NT (4 and 2000), although some of the screens will look different.

Contacting the Author

I would be happy to hear any comments you have about this book. The best way to contact me is by e-mail at `ellenfinkl@bigfoot.com`. You can also use the United States postal service (aka snail mail) and write to me in care of Wiley. Please note that I can't provide AutoCAD technical support for my readers.