Get up to speed on AutoCAD 2012 and start building amazing 2D and 3D models in no time!

AutoCAD, the most popular technical drawing software, is known for its complexity. For Dummies is known for its simplicity. What a perfect match! This book shows you how to use AutoCAD 2012 tools, create a layout, work with the DesignCenter, draw and edit, add text, use blocks, and much more — and now with full-color images that match what’s on your screen!

- Learn all the parts — tour the AutoCAD interface, see how color aids in navigation, and get familiar with the Ribbon
- Start drawing — set up your first drawing, create a base plate, and learn to use nuts, bolts, and anchors
- Line it up — learn to manage properties; use lines, polylines, and polygons; and work with curves
- The last word — add annotative text to your drawings, style text, and use leaders and multileaders
- Go 3D — draw on the Internet, explore eTransmit and FTP, visualize 3D objects, and protect your drawings with passwords and digital signatures

Learn to:
- Set up the AutoCAD environment and use the Ribbon
- Create complex, realistic technical drawings and 3D models
- Use the AutoCAD DesignCenter, work with dimensions and blocks, and add text

Go to Dummies.com® for videos, step-by-step examples, how-to articles, or to shop!

David Byrnes works as a civil and structural drafter with a multinational engineering company and has been an AutoCAD user for over 25 years. He is a former contributing editor to Cadalyst Magazine and taught 3D and CAD courses at Emily Carr University of Art & Design for 15 years.
Get Smart at Dummies.com

Dummies.com makes your life easier with 1,000s of answers on everything from removing wallpaper to using the latest version of Windows.

- Videos
- Illustrated Articles
- Step-by-Step Instructions

Plus, each month you can win valuable prizes by entering our Dummies.com sweepstakes. *

Want a weekly dose of Dummies? Sign up for Newsletters on
- Digital Photography
- Microsoft Windows & Office
- Personal Finance & Investing
- Health & Wellness
- Computing, iPods & Cell Phones
- eBay
- Internet
- Food, Home & Garden

Find out “HOW” at Dummies.com

*Sweepstakes not currently available in all countries; visit Dummies.com for official rules.
About the Author

David Byrnes is one of those grizzled old-timers you’ll find mentioned every so often in AutoCAD 2011 For Dummies. He began his drafting career on the boards in 1979, and first learned AutoCAD with version 1.4. Dave is based in Vancouver, British Columbia, where he works as a civil/structural drafter. He taught AutoCAD for fifteen years at Emily Carr University of Art + Design and British Columbia Institute of Technology in Vancouver. Dave has authored or co-authored over a dozen AutoCAD books and has been the sole author of this title since AutoCAD 2008 For Dummies.
Dedication

I left the bohemian lifestyle of the AutoCAD consultant at the beginning of 2008 and rejoined the engineering company I last worked for in 1988 (luckily they’d forgotten all about that chandelier). Working full-time (oh! the horror!) and keeping up with AutoCAD so I can revise this book has made me somewhat inaccessible for 3 months a year, and I’m forever grateful to Annie and Delia, still and always 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).

Author’s Acknowledgments

Thanks, first of all, to former author Mark Middlebrook for bringing me into the AutoCAD For Dummies world. Mark asked me to tech edit AutoCAD 2000 For Dummies, then to join him as co-author of AutoCAD 2006 For Dummies, and finally to take over the title altogether. I hope my torch bearing comes close to the high standards that Mark set, and I wish him well in his new career in the world of fine wine (what, me jealous?).

Thanks, too, to colleagues and friends at Autodesk: above all Guillermo Melantoni, Heidi Hewett, and Bud Schroeder, who never seem to mind being asked even the dumbest questions. And speaking of colleagues, thanks to my cubicle-mates at Sandwell for showing me how things are done in the real world of engineering.

At Wiley, Acquisitions Editor Kyle Looper was a reliable source of calm but firm direction. It was a pleasure to work with project editor Pat O’Brien again, and copy editor Barry Child-Helton pointed out where I mixed up my Ps and my Qs. And thanks, finally, to Lee Ambrosius who did his usual sterling job of tech editing.
Publisher’s Acknowledgments

We’re proud of this book; please send us your comments at http://dummies.custhelp.com. For other comments, please contact our Customer Care Department within the U.S. at 877-762-2974, outside the U.S. at 317-572-3993, or fax 317-572-4002.

Some of the people who helped bring this book to market include the following:

**Acquisitions, Editorial, and Media Development**
- **Project Editor:** Pat O’Brien  
  *(Previous Edition: Blair Pottenger)*
- **Acquisitions Editor:** Kyle Looper
- **Copy Editor:** Barry Childs-Helton
- **Technical Editor:** Lee Ambrosius
- **Editorial Manager:** Kevin Kirschner
- **Media Development Project Manager:** Laura Moss-Hollister
- **Media Development Assistant Project Manager:** Jenny Swisher
- **Media Development Associate Producers:** Josh Frank, Marilyn Hummel, Douglas Kuhn, and Shawn Patrick
- **Editorial Assistant:** Amanda Graham
- **Sr. Editorial Assistant:** Cherie Case
- **Cartoons:** Rich Tennant  
  *(www.the5thwave.com)*

**Composition Services**
- **Project Coordinator:** Katherine Crocker
- **Layout and Graphics:** Samantha K. Cherolis, Joyce Haughey, Lavonne Roberts, Corrie Socolovitch
- **Proofreader:** ConText Editorial Services, Inc.
- **Indexer:** BIM Indexing & Proofreading Services

---

**Publishing and Editorial for Technology Dummies**
- **Richard Swadley**, Vice President and Executive Group Publisher
- **Andy Cummings**, Vice President and Publisher
- **Mary Bednarek**, Executive Acquisitions Director
- **Mary C. Corder**, Editorial Director

**Publishing for Consumer Dummies**
- **Diane Graves Steele**, Vice President and Publisher

**Composition Services**
- **Debbie Stailey**, Director of Composition Services
Contents at a Glance

Foreword
Introduction

Part I: AutoCAD 101
Chapter 1: Introducing AutoCAD and AutoCAD LT
Chapter 2: Le Tour de AutoCAD 2012
Chapter 3: A Lap around the CAD Track
Chapter 4: Setup for Success
Chapter 5: Planning for Paper

Part II: Let There Be Lines
Chapter 6: Manage Your Properties
Chapter 7: Preciseliness Is Next to CADliness
Chapter 8: Down the Straightaway
Chapter 9: Dangerous Curves Ahead
Chapter 10: Get a Grip on Object Selection
Chapter 11: Edit for Credit
Chapter 12: A Zoom with a View

Part III: If Drawings Could Talk
Chapter 13: Text with Character
Chapter 14: Entering New Dimensions
Chapter 15: Down the Hatch
Chapter 16: The Plot Thickens

Part IV: Advancing with AutoCAD
Chapter 17: The ABCs of Blocks
Chapter 18: Going Dynamic and External
Chapter 19: Call the Parametrics!
Chapter 20: Drawing on the Internet
Part V: On a 3D Spree .............................................. 445
Chapter 21: It’s a 3D World After All ................................................................. 447
Chapter 22: From Drawings . . . to Models .......................................................... 467
Chapter 23: On a Render Bender ......................................................................... 489

Part VI: The Part of Tens .......................................... 503
Chapter 24: Ten Great AutoCAD Resources ...................................................... 505
Chapter 25: Ten Differences between AutoCAD and AutoCAD LT .................. 509
Chapter 26: Ten System Variables to Make Your Life Easier ........................... 513

Index .................................................................................. 517
# Table of Contents

**Foreword** .....................................................................xxi

**Introduction** ................................................................. 1

What’s Not (And What Is) in This Book ........................................................1

Mac attack! .................................................................................................................. 2

Who Do I Think You Are? ................................................................................ 3

How This Book Is Organized ..............................................................................3

**Part I: AutoCAD 101** ...............................................................................4

Part I: AutoCAD 101 .................................................................................4

Part II: Let There Be Lines ..............................................................................4

Part III: If Drawings Could Talk .......................................................................4

Part IV: Advancing with AutoCAD .....................................................................5

Part V: On a 3D Spree ...........................................................................................5

Part VI: The Part of Tens ....................................................................................5

But wait . . . there’s more! ................................................................................. 5

Icons Used in This Book .......................................................................................6

A Few Conventions — Just in Case .....................................................................7

Commanding from the keyboard .......................................................................7

Tying things up with the Ribbon .........................................................................8

Where to Go from Here ......................................................................................8

**Part I: AutoCAD 101** ...............................................................................9

**Chapter 1: Introducing AutoCAD and AutoCAD LT** .............................11

Why AutoCAD? .................................................................................................13

The Importance of Being DWG ..........................................................................14

Seeing the LT .......................................................................................................16

Checking System Requirements .......................................................................17

Suddenly, It’s 2012! .............................................................................................18

**Chapter 2: Le Tour de AutoCAD 2012** .................................................21

AutoCAD Does Windows (And Office) ..........................................................22

And They’re Off: AutoCAD’s Opening Screens .............................................23

Running with Ribbons .......................................................................................25
AutoCAD 2012 For Dummies  

Getting with the Program ................................................................. 33  
Looking for Mr. Status Bar................................................................. 34  
Let your fingers do the talking: The command window ..................... 41  
The key(board) to AutoCAD success.................................................... 42  
Keeping tabs on palettes................................................................. 47  
Down the main stretch: The drawing area ...................................... 48  
Fun with F1 ..................................................................................... 51

Chapter 3: A Lap around the CAD Track .............................................. 53

A Simple Setup ................................................................................ 55  
Drawing a (Base) Plate................................................................... 59  
Drawing rectangles on the right layers ......................................... 60  
Circling your plate ........................................................................ 65  
Placing your polygon .................................................................... 66  
Getting a Closer Look with Zoom and Pan ..................................... 69  
Modifying to Make It Merrier .......................................................... 71  
Hip-hip-array! ................................................................................ 71  
Stretching out ................................................................................ 74  
Crossing your hatches ................................................................... 76  
Following the Plot ......................................................................... 78

Chapter 4: Setup for Success ................................................................. 83

A Setup Roadmap ........................................................................... 84  
Choosing your units ...................................................................... 85  
Weighing up your scales ............................................................... 88  
Thinking annotatively................................................................. 89  
Thinking about paper ................................................................. 90  
Defending your border .................................................................. 93  
A Template for Success ................................................................. 94  
Making the Most of Model Space .................................................... 96  
Setting your units ....................................................................... 97  
Making the drawing area snap-py (and grid-dy) ............................ 98  
Setting linetype and dimension scales ....................................... 101  
Entering drawing properties ......................................................... 102  
Making Templates Your Own ......................................................... 103

Chapter 5: Planning for Paper ............................................................... 107

Setting Up a Layout in Paper Space ............................................... 108  
Will that be tabs or buttons? ....................................................... 108  
Creating a layout ......................................................................... 111  
Copying and changing layouts ................................................... 114  
Lost in paper space ..................................................................... 115  
A view(port) for drawing in .......................................................... 117  
About Paper Space Layouts and Plotting .................................... 120
Part II: Let There Be Lines ........................................ 121

Chapter 6: Manage Your Properties ......................................... 123
  Managing Your Properties ................................................... 124
  Putting it on a layer ............................................................ 125
  Accumulating properties .................................................... 127
  Creating new layers ........................................................... 130
  Manipulating layers ............................................................ 136
  Using Named Objects ........................................................ 138
  Using AutoCAD DesignCenter .......................................... 139
  Copying layers between drawings ....................................... 141

Chapter 7: Preciseliness Is Next to CADliness ....................... 145
  Controlling Your Precision ................................................ 145
  Keyboard capers: Coordinate input .................................... 148
  Understanding AutoCAD's coordinate systems .................... 148
  Grab an object and make it snappy ...................................... 152
  Other Practical Precision Procedures .................................. 158

Chapter 8: Down the Straightaway ........................................ 161
  Introducing the AutoCAD Drawing Commands ..................... 162
  The Straight and Narrow: Lines, Polylines, and Polygons ...... 164
    Toeing the line ............................................................... 165
    Connecting the lines with polyline .................................... 167
    Squaring off with rectangles ............................................. 172
    Choosing your sides with polygon .................................... 173

Chapter 9: Dangerous Curves Ahead ....................................... 175
  (Throwing) Curves ............................................................ 176
    Going full circle ............................................................ 177
    Arc-y-ology ................................................................. 179
    Solar ellipses ............................................................... 181
    Splines: The sketchy, sinuous curves ................................. 182
    Donuts: The circles with a difference ................................ 184
    Revision clouds on the horizon ........................................ 185
    Scoring Points .............................................................. 186

Chapter 10: Get a Grip on Object Selection .............................. 189
  Commanding and Selecting ............................................... 189
  Command-first editing ...................................................... 190
  Selection-first editing ...................................................... 190
  Direct object manipulation ............................................... 190
  Choosing an editing style ................................................... 190
### Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>One line or two?</td>
<td>267</td>
</tr>
<tr>
<td>Your text will be justified</td>
<td>268</td>
</tr>
<tr>
<td>Using the Same Old Line</td>
<td>269</td>
</tr>
<tr>
<td>Turning On Your Annotative Objects</td>
<td>271</td>
</tr>
<tr>
<td>Saying More in Multiline Text</td>
<td>274</td>
</tr>
<tr>
<td>It slices, it dices . . .</td>
<td>277</td>
</tr>
<tr>
<td>Doing a number on your Mtext lists</td>
<td>279</td>
</tr>
<tr>
<td>Line up in columns — Now!</td>
<td>281</td>
</tr>
<tr>
<td>Modifying Mtext</td>
<td>282</td>
</tr>
<tr>
<td>Gather Round the Tables</td>
<td>283</td>
</tr>
<tr>
<td>Tables have style, too</td>
<td>283</td>
</tr>
<tr>
<td>Creating and editing tables</td>
<td>285</td>
</tr>
<tr>
<td>Bring Out Your Inner Leader</td>
<td>287</td>
</tr>
<tr>
<td>Electing a leader</td>
<td>288</td>
</tr>
<tr>
<td>Multi options for multileaders</td>
<td>289</td>
</tr>
<tr>
<td>Chapter 14: Entering New Dimensions</td>
<td>291</td>
</tr>
<tr>
<td>Discovering New Dimensions</td>
<td>293</td>
</tr>
<tr>
<td>Anatomy of a dimension</td>
<td>293</td>
</tr>
<tr>
<td>A field guide to dimensions</td>
<td>296</td>
</tr>
<tr>
<td>Dimension associativity</td>
<td>296</td>
</tr>
<tr>
<td>Finding your dimension tools</td>
<td>297</td>
</tr>
<tr>
<td>Doing Dimensions with Style(s)</td>
<td>298</td>
</tr>
<tr>
<td>Borrowing existing dimension styles</td>
<td>298</td>
</tr>
<tr>
<td>Creating and managing dimension styles</td>
<td>298</td>
</tr>
<tr>
<td>Adjusting style settings</td>
<td>300</td>
</tr>
<tr>
<td>Drawing Dimensions</td>
<td>305</td>
</tr>
<tr>
<td>Lining up some linear dimensions</td>
<td>306</td>
</tr>
<tr>
<td>Making dimensions annotative</td>
<td>309</td>
</tr>
<tr>
<td>Drawing other kinds of dimensions</td>
<td>309</td>
</tr>
<tr>
<td>Editing Dimensions</td>
<td>309</td>
</tr>
<tr>
<td>Editing dimension geometry</td>
<td>310</td>
</tr>
<tr>
<td>Editing dimension text</td>
<td>311</td>
</tr>
<tr>
<td>Controlling and editing dimension associativity</td>
<td>312</td>
</tr>
<tr>
<td>Chapter 15: Down the Hatch</td>
<td>315</td>
</tr>
<tr>
<td>Batten Down the Hatch!</td>
<td>317</td>
</tr>
<tr>
<td>Pushing the Boundary (of) Hatch</td>
<td>319</td>
</tr>
<tr>
<td>Hatch from scratch</td>
<td>320</td>
</tr>
<tr>
<td>Getting it right: Hatch angle and scale</td>
<td>322</td>
</tr>
<tr>
<td>Hatching for the 21st century</td>
<td>323</td>
</tr>
<tr>
<td>Do fence me in: Defining hatch boundaries</td>
<td>326</td>
</tr>
<tr>
<td>Have palette, will hatch</td>
<td>327</td>
</tr>
<tr>
<td>Editing Hatch Objects</td>
<td>327</td>
</tr>
</tbody>
</table>
Chapter 16: The Plot Thickens .................................................329
  You Say Printing, I Say Plotting ..................................................329
  Get with the system ...................................................................330
  Configure it out .........................................................................331
A Simple Plot ..............................................................................332
  Plotting success in 16 steps ......................................................333
  Preview one, two ........................................................................337
  Instead of fit, scale it ..................................................................337
Plotting the Layout of the Land ....................................................338
  The path to paper space layout plotting success ......................339
Plotting Lineweights and Colors ................................................341
  Plotting with style ......................................................................341
  Plotting through thick and thin ................................................346
  Plotting in color .........................................................................349
It’s a (Page) Setup! ........................................................................349
Continuing the Plot Dialog .........................................................351
Troubles with Plotting .................................................................354

Part IV: Advancing with AutoCAD .......................................357

Chapter 17: The ABCs of Blocks ...........................................359
  Rocking with Blocks ..................................................................360
  Creating block definitions .........................................................362
  Inserting blocks ........................................................................365
  Attributes: Fill-in-the-blank blocks ..........................................368
  Exploding blocks .......................................................................373
  Purging unused block definitions .............................................374

Chapter 18: Going Dynamic and External ..........................377
  Arraying Associatively .............................................................379
  Comparing the old and new ARRAY commands ......................379
  Arraying along a path ...............................................................380
  Associatively editing .................................................................383
Theme and Variations: Dynamic Blocks .................................383
  Now you see it .........................................................................384
  Lights! Parameters!! Actions!!! ................................................388
  Manipulating dynamic blocks ................................................390
Going External .............................................................................391
  Becoming attached to your xrefs .............................................393
  Layer-palooza ..........................................................................395
  Creating and editing an external reference file .........................395
  Forging an xref path ...............................................................396
  Managing xrefs .......................................................................397
Blocks, Xrefs, and Drawing Organization .................................399
Mastering the Raster ................................................................. 399
Attaching an image ................................................................. 401
Maintaining your image ......................................................... 402
You say PDF, I say DWF ......................................................... 403

Chapter 19: Call the Parametrics! .............................................. 405
Maintaining Design Intent .......................................................... 405
Defining terms .............................................................................. 406
Constrain yourself ...................................................................... 407
Understanding Dimensional Constraints ................................. 407
Practice a little constraint ............................................................ 409
Making your drawing even smarter ............................................ 411
Using the Parameters Manager .................................................. 413
Dimensions or constraints — have it both ways! ....................... 416
Understanding Geometric Constraints ...................................... 418
Applying a little more constraint ................................................. 420
Autoconstrain yourself! ............................................................... 426

Chapter 20: Drawing on the Internet ........................................ 429
The Internet and AutoCAD: An Overview ............................... 429
Sending Strategies ...................................................................... 432
Send it with ETRANSMIT .......................................................... 432
Rapid eTransmit ........................................................................ 433
FTP for you and me .................................................................... 435
Bad reception? ............................................................................ 436
Help from the Reference Manager .............................................. 436
Design Web Format — Not Just for the Web ............................... 438
All about DWF and DWFx .......................................................... 438
ePlot, not replot .......................................................................... 439
Making DWFs with ePlot ............................................................. 440
Making DWFs (or plots) with PUBLISH .................................... 441
Hyper objects .............................................................................. 442
Autodesk Design Review 2012 .................................................... 443
The Drawing Protection Racket .................................................. 443

Part V: On a 3D Spree .................................................................. 445

Chapter 21: It’s a 3D World After All ....................................... 447
Understanding 3D Digital Models .............................................. 448
Tools of the Trade ....................................................................... 449
Warp speed ahead ...................................................................... 450
Entering the third dimension ....................................................... 450
Untying the Ribbon and opening some palettes ....................... 451
Modeling from Above ................................................................. 453
  Using 3D coordinate input .................................................... 453
  Using point filters ............................................................... 454
  Object snaps and object snap tracking .............................. 454
Changing Planes ................................................................. 455
  Displaying the UCS icon ..................................................... 455
  Adjusting the UCS ............................................................. 456
Navigating the 3D Waters ...................................................... 460
  Orbit à go-go ..................................................................... 462
  Taking a spin around the cube ............................................ 462
  Grabbing the SteeringWheels ............................................. 464
Visualizing 3D objects ......................................................... 464
  Getting some (visual) style ................................................ 464

Chapter 22: From Drawings . . . to Models ...................... 467
Is 3D for Me? ........................................................................ 468
Getting Your 3D Bearings .................................................. 469
  Creating a better 3D template .......................................... 469
  Seeing the world from new viewpoints .............................. 473
From Drawing to Modeling in 3D .......................................... 475
  Drawing basic 3D objects ............................................... 476
  Gaining a solid foundation ............................................. 477
  Drawing solid primitives ............................................... 478
Adding the Third Dimension to 2D Objects ....................... 479
  Creating 3D objects from 2D drawings ............................ 479
Modifying 3D Objects ........................................................ 483
  Selecting subobjects ....................................................... 483
  Working with gizmos .................................................... 483
  More 3D variants of 2D commands ............................... 484
  Editing solids ............................................................... 485

Chapter 23: On a Render Bender ................................. 489
Visualizing the Digital World ............................................. 490
Adding Lighting ............................................................... 491
  Default lighting ............................................................. 491
  User-defined lights ....................................................... 492
  Sunlight ........................................................................ 495
Creating and Applying Materials ....................................... 496
  Defining a Background ................................................ 498
Rendering a 3D Model ...................................................... 500

Part VI: The Part of Tens .............................................. 503

Chapter 24: Ten Great AutoCAD Resources .................. 505
  Autodesk’s Feedback Community .................................... 505
  Autodesk’s Discussion Groups ........................................ 505
Table of Contents

Autodesk’s Own Bloggers ................................................................. 506
Autodesk University ...................................................................... 506
The Autodesk Channel on YouTube .............................................. 506
The World Wide (CAD) Web .......................................................... 506
Your Local ATC ............................................................................. 507
Your Local User Group ................................................................. 507
AUGI ............................................................................................... 507
Books ............................................................................................. 507

Chapter 25: Ten Differences between AutoCAD and AutoCAD LT .... 509

Price ............................................................................................. 509
3D Abilities ..................................................................................... 509
Customization Options ................................................................. 510
Network Licensing ......................................................................... 510
Express Tools ................................................................................ 510
Parametrics .................................................................................... 511
Standards Checking ....................................................................... 511
Data Extraction ............................................................................... 511
MLINE versus DLINE ................................................................. 512
Profiles .......................................................................................... 512
Reference Manager ....................................................................... 512

Chapter 26: Ten System Variables to Make Your Life Easier ......... 513

APERTURE ..................................................................................... 514
DIMASSOC .................................................................................... 514
MENUBAR ..................................................................................... 514
MIRRTEXT .................................................................................... 514
OSNAPZ ......................................................................................... 515
PICKBOX ....................................................................................... 515
REMEMBERFOLDERS ................................................................. 515
ROLLOVERTIPS ............................................................................. 516
TOOLTIPS ....................................................................................... 516
VISRETAIN .................................................................................... 516

Index .............................................................................................. 517
If you are completely new to AutoCAD or just feeling a little rusty, this book will help start the wheels turning and keep you rolling in the right direction. Tidbits of historical insight and explanations help you understand not only “how” to perform a task, but “why.” David’s friendly and humorous writing style makes the book easy (and even entertaining) to read. The topics are well organized, enabling you to read it cover to cover or use it as a handy reference tool. It includes a comprehensive Table of Contents and Index to help you quickly locate key topics. Icons scattered throughout the book further aid in your quest for knowledge by identifying important or useful information such as warnings or new functionality. And, the AutoCAD 2012 edition is printed in color making it even easier to visualize and understand key concepts.

Heidi Hewett

AutoCAD Technical Marketing Manager
It’s amazing to think that AutoCAD came into being more than a quarter of a century 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.) What’s equally amazing to the grizzled old-timer writing these words is the fact that many of today’s hotshot AutoCAD users weren’t even born when the program first hit the street! It’s almost as amazing that, 25 years and counting after its birth, AutoCAD remains the king of the microcomputer CAD hill by a tall margin, making it one of the longest-lived PC programs ever. It’s conceivable that the long-term future of CAD may belong to special-purpose, 3D-based software such as the Autodesk Inventor and Revit programs, but for the present and the near future anyway, AutoCAD is where the CAD action is.

AutoCAD has grown more complex over the years, 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 carefully organize the objects you draw, their properties, and the files in which they reside. 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. You may even need to be a little cognizant of working with AutoCAD in three dimensions.

AutoCAD 2012 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 (And What Is) in This Book**

Unlike many other *For Dummies* books, this one does sometimes tell you to consult the official software documentation — such as it is. 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 a book like this to cover every feature. I don’t address advanced topics like database connectivity, customization, or 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 1,000 page tomes!
Autodesk likes to keep its users (and us authors!) guessing about new features in future releases of the software. AutoCAD 2009 surprised users and authors alike with a totally revamped user interface, replacing the drop-down menus and toolbars of previous versions with a Microsoft Office 2007–style Ribbon (happily, Autodesk doesn’t force its users to adopt the new look the way Microsoft does — there’s still an “AutoCAD Classic” interface available). The new interface got some tweaking in AutoCAD 2010 — 2009’s Menu Browser, which essentially duplicated the pull-down menu structure, was replaced with a better-thought-out Application Menu.

AutoCAD 2010 also delivered two significant new features — parametric drawing and organic (or free-form) 3D modeling. The changes in AutoCAD 2012 are relatively minor compared with those: AutoCAD added inferred constraints to its parametric toolbox, and 3D benefitted from the addition of a major suite of surface-modeling tools. But while the program may not have changed that much from the last release, the book you hold in your hands has changed. For years now, I’ve been bemoaning the fact that lack of space prevented virtually any coverage of 3D modeling. I guess the editors at Wiley got tired of my whining, so AutoCAD 2012 For Dummies proudly presents three new chapters on 3D modeling and visualization, written by 3D expert (and AutoCAD 2012 For Dummies technical editor!) Lee Ambrosius.

This book focuses on AutoCAD 2012 and addresses its slightly-less-capable but much-lower-priced sibling, AutoCAD LT 2012. I do occasionally mention differences with previous releases so that everyone has some context and upgraders can more readily understand the differences. I also mention the important differences between AutoCAD and AutoCAD LT so you’ll know what you — or your LT-using colleagues — are missing so far as this book is concerned; the major difference is the almost-total absence of 3D capabilities in AutoCAD LT. This book does not cover the discipline-specific features in AutoCAD-based products such as AutoCAD Architecture 2012 or AutoCAD Mechanical 2012 (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 2012–based versions of those programs as well.

Mac attack!

Late in 2010, Autodesk released the first non-Microsoft Windows version of AutoCAD in 20 years. AutoCAD For Mac is out there today, but this book covers the Windows versions only. Although the two versions are file-compatible, there are many differences in how they look and what they can do. If you have AutoCAD For Mac, you should be able to gain some understanding of concepts, but you might be better off with a Mac-specific book such as Mastering AutoCAD For Mac by George Omura and Rick Graham (Sybex Publishing).
Who Do I Think You Are?

AutoCAD has a large, loyal, dedicated group of long-time users. This book is not for the sort of people who have been using AutoCAD for a decade or more, who plan their vacation time around Autodesk University, or who consider 1,000-page-plus technical tomes about AutoCAD to be 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 2012 version). A printer or plotter and a connection to the Internet will be big helps, too.

You also need to know how to use your version of 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, had you wandered into my office and seen the apparently random piles of stuff that covered my desk while I was writing this book, you might wonder how I could possibly organize a sentence, let alone an entire book. But — given a suitable degree of concerted thought — I know exactly where to put my hands on that list of new dimension variables, my bag of 1/2” binder clips, or the rest of that bagel and cream cheese I started at coffee break.

I 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 my 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 complex as AutoCAD.

The following sections describe the parts that the book breaks down into.
Part I: 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 sloooow 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 doing your setup work incorrectly and then feeling as if 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, you discover some essential concepts, including object properties and CAD precision techniques. I know you’re rarin’ 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. 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 don’t 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, I show you how to do it.
Part IV: Advancing with AutoCAD

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. You can create symbols with changeable text or appearance, and you can apply parametric “rules” to drawing objects so they help maintain design intent. This part of the book ends by explaining how to use AutoCAD’s Internet features to 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: On a 3D Spree

In this part, you learn the basics of 3D modeling in AutoCAD 2012. Beginning with the 3D environment — how to change its appearance, how to move around in it, how to examine the model itself in different ways — the chapters introduce different modeling techniques, from solid models, through to the latest surface modeling commands included with AutoCAD 2012.

Part VI: The Part of Tens

This part contains a concise catalog of differences between AutoCAD and AutoCAD LT, and lists of resources and settings that can make the time you spend in AutoCADland more enjoyable. There’s a lot of meat packed into these three 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. I hope that these lists help you get on the right track quickly and stay there.

But wait . . . there’s more!

AutoCAD 2012 For Dummies has a companion Web site. Point your browser at www.dummies.com/go/autocad2012 to find many of the drawing files I use to demonstrate commands and procedures in this book. The drawings are posted to the Web site in ZIP format; just download and unzip them and they’re ready to open in AutoCAD. The ZIP files are named for the chapters and contain one or more drawing files. For example, afd03.zip contains the versions of the drawing for the base plate exercise in Chapter 3 of the book (refer to the downloadable Read Me file for an explanation of the naming conventions used for the drawing files). Note that not all chapters have associated drawing files.
The drawing files are saved in AutoCAD 2010 format and can be opened in AutoCAD 2010, AutoCAD 2011, or AutoCAD 2012 (and, of course, AutoCAD LT 2010, 2011, or 2012). If you’re using this book with an earlier release, you can download Autodesk’s DWG TrueView, a free viewing-and-conversion utility from www.autodesk.com/trueview.

If you don’t have any AutoCAD release and just want to get a taste of the program before you buy, you can also download a free 30-day trial version of either AutoCAD 2012 or AutoCAD LT 2012. Just browse to

www.autodesk.com/autocad or www.autodesk.com/autocadlt

You can also find the cheat sheet that’s mentioned here and there in the book at

www.dummies.com/cheatsheet/autocad2012

Icons Used in This Book

Throughout this book, I point out certain morsels of particularly important or useful information by placing handy little icons in the margin. Naturally, different icons indicate different types of information:

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, I tell you the way that you should do it in most cases.

The Technical Stuff icon points out places where I delve a little more deeply into AutoCAD’s inner workings or point out something that most people don’t need to know 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 points out text that tells you how to stay out of trouble when living close to the edge. Failure to heed its message may have unpleasant consequences for you or your drawing — or both.

There’s a lot to remember when you’re using AutoCAD, so I’ve remembered to remind you not to forget about some of those things that you should remember. These paragraphs usually refer to a crucial point earlier in the chapter or in a previous chapter. So if you’re reading sequentially, a