

Chapter 1

Introducing AutoCAD and AutoCAD LT

In This Chapter

- ▶ Getting the AutoCAD advantage
 - ▶ Using AutoCAD and DWG files
 - ▶ Meeting the AutoCAD product family
 - ▶ Using AutoCAD LT instead of AutoCAD
 - ▶ Upgrading from a previous version
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Welcome to the community whose members are the users of one of the weirdest, wackiest, and most wonderful computer programs in the world: AutoCAD. Maybe you're one of the few remaining holdouts who continues to practice the ancient art of manual drafting with pencil and vellum. Or maybe you're completely new to drafting and yearn for the wealth and fame (would we lead you on?) of the drafter's life. Maybe you're an engineer or architect who needs to catch up with the young CAD hotshots in your office. Or maybe you're a full-time drafter whose fingers haven't yet been pried away from your beloved drafting board. Maybe you tried to use AutoCAD a long time ago but gave up in frustration or just got rusty. Or maybe you currently use an older version, such as AutoCAD 2000 or even (if you like antiques) Release 14.

Whatever your current situation or motivation, we hope that you enjoy the process of becoming proficient with AutoCAD. Drawing with AutoCAD is challenging at first, but it's a challenge worth meeting. CAD rewards those who think creatively about their work and look for ways to do it better. You can always find out more, discover a new trick, or improve the efficiency and quality of your drawing production.

AutoCAD first hit the bricks in the early 1980s, around the same time as the first IBM PCs. It was offered for a bewildering variety of operating systems, including CP/M (ask your granddad about that one!), various flavors of UNIX,

and even Apple's Macintosh. By far, the most popular of those early versions was for MS-DOS (your dad can tell you about that one). Eventually, Autodesk settled on Microsoft Windows as the sole operating system for AutoCAD. AutoCAD 2007 works with Windows XP — Professional, Home, and Tablet PC editions — and Windows 2000.

Because of AutoCAD's MS-DOS heritage and its emphasis on efficiency for production drafters, it's not the easiest program to master, but it has gotten easier and more consistent. AutoCAD is pretty well integrated into the Windows environment now, but you still bump into some vestiges of its MS-DOS legacy — especially the command line (that text area lurking at the bottom of the AutoCAD screen — see Chapter 2 for details). But even the command line — oops! command *window* — has gotten kinder and gentler in AutoCAD 2007. This book guides you around the bumps and minimizes the bruises.

Why AutoCAD?

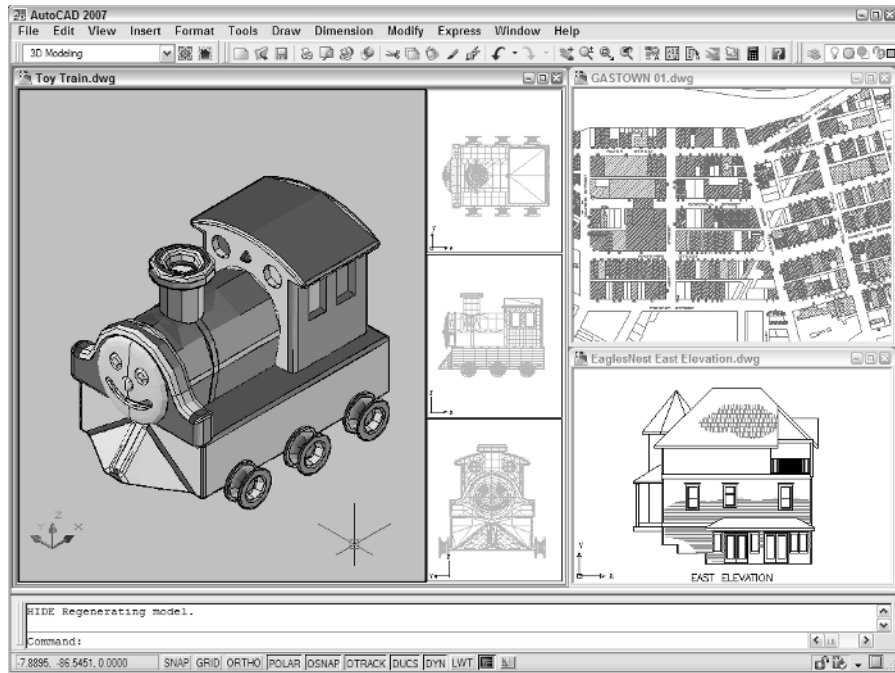
AutoCAD has been around a long time — since 1982. AutoCAD ushered in the transition from *really expensive* mainframe and minicomputer CAD systems costing tens of thousands of dollars to *merely expensive* microcomputer CAD programs costing a few thousand dollars.

AutoCAD is, first and foremost, a program to create *technical drawings*: drawings in which measurements and precision are important because these kinds of drawings often get used to build something. The drawings you create with AutoCAD must adhere to standards established long ago for hand-drafted drawings. The up-front investment to use AutoCAD is certainly more expensive than the investment needed to use pencil and paper, and the learning curve is much steeper, too. Why bother? The key reasons for using AutoCAD rather than pencil and paper are

- ✓ **Precision:** Creating lines, circles, and other shapes of the exactly correct dimensions is easier with AutoCAD than with pencils.
- ✓ **Modifiability:** Drawings are much easier to modify on the computer screen than on paper. CAD modifications are a lot cleaner, too.
- ✓ **Efficiency:** Creating many kinds of drawings is faster with a CAD program — especially drawings that involve repetition, such as floor plans in a multistory building. But that efficiency takes skill and practice. If you're an accomplished pencil-and-paper drafter, don't expect CAD to be faster at first!

Figure 1-1 shows several kinds of drawings in AutoCAD 2007.

Figure 1-1:
Cities,
houses, little
toy trains —
what do you
want to
draw today?



Why choose AutoCAD? AutoCAD is just the starting point of a whole industry of software products designed to work with AutoCAD. Autodesk has helped this process along immensely by designing a series of programming interfaces to AutoCAD that other companies — and Autodesk itself — have used to extend the application. Some of the add-on products have become such winners that Autodesk acquired them and incorporated them into its own products. When you compare all the resources — including the add-ons, extensions, training courses, books, and so on — AutoCAD doesn't have much PC CAD competition.

The Importance of Being DWG

To take full advantage of AutoCAD in your work environment, you need to be aware of the DWG file format, the format in which AutoCAD saves drawings.

- ✓ In some cases, an older version of AutoCAD can't open a DWG file that's been saved by a newer version of AutoCAD.
- ✓ A newer version of AutoCAD can *always* open files saved by an older version.



- ✓ Some previous versions of AutoCAD can open files saved by the subsequent one or two versions. For example, AutoCAD 2004 can open DWG files saved by AutoCAD 2006. That's because Autodesk didn't change the DWG file format between AutoCAD 2004 and AutoCAD 2006. However, the drawing file format *did* change with AutoCAD 2007, so drawings created in the current version must be saved in an older format to be openable in AutoCAD 2006 and earlier.
- ✓ You can use the Save As option in newer versions to save the file to some older DWG formats. In fact, AutoCAD 2007 will save as far back as AutoCAD Release 14, which was released in 1997!

Table 1-1 shows which versions (described later in this chapter) use which DWG file formats.

Table 1-1 AutoCAD Versions and DWG File Formats			
<i>AutoCAD Version</i>	<i>AutoCAD LT Version</i>	<i>Release Year</i>	<i>DWG File Format</i>
AutoCAD 2007	AutoCAD LT 2007	2006	Acad 2007
AutoCAD 2006	AutoCAD LT 2006	2005	Acad 2004
AutoCAD 2005	AutoCAD LT 2005	2004	Acad 2004
AutoCAD 2004	AutoCAD LT 2004	2003	Acad 2004
AutoCAD 2002	AutoCAD LT 2002	2001	Acad 2000
AutoCAD 2000i	AutoCAD LT 2000i	2000	Acad 2000
AutoCAD 2000	AutoCAD LT 2000	1999	Acad 2000
AutoCAD Release 14	AutoCAD LT 98 & 97	1997	Acad R14
AutoCAD Release 13	AutoCAD LT 95	1994	Acad R13
AutoCAD Release 12	AutoCAD LT Release 2	1992	Acad R12

Working with AutoCAD is easier when your co-workers and colleagues in other companies all use the same version of AutoCAD and AutoCAD-related tools. That way, your DWG files, add-on tools, and even the details of your CAD knowledge can be mixed and matched among your workgroup and partners. In the real world, you may work with people — at least in other companies — who use AutoCAD versions as old as Release 14.

AutoCAD-based applications

Autodesk has expanded AutoCAD into a whole product line of programs with AutoCAD as a base and specialized, discipline-specific add-ons built on top and included as one complete product. As an AutoCAD 2007 user, you'll be looking for the 2007-compatible versions of these tools, which should appear a few months after AutoCAD 2007 ships. These discipline-specific flavors of AutoCAD include Autodesk Architectural Desktop, Autodesk Building Systems (Mechanical, Electrical, and Plumbing), AutoCAD Mechanical, Autodesk Map 3D, Autodesk Land Desktop, Autodesk Survey, and Autodesk Civil 3D.

To make matters even more confusing, Autodesk also offers two flavors of Autodesk Revit (Revit Building and Revit Structure) and Autodesk Inventor, software applications that compete with Architectural Desktop and

Mechanical, respectively. Revit and Inventor are not based on AutoCAD; they sacrifice AutoCAD compatibility in favor of a more fundamental design- and 3D-oriented approach to CAD. Whether they ultimately replace the traditional AutoCAD-based applications remains to be seen. While many architectural firms have not made the leap to Revit, their mechanically-oriented colleagues do seem to be favoring Inventor over Mechanical Desktop.

In addition to the products from Autodesk, thousands of AutoCAD add-on products — both discipline-specific and general-purpose — are available from other software developers. These companion products are sometimes called *third-party applications*. Visit <http://partnerproducts.autodesk.com> for more information about what's available.



Many programs claim to be *DWG compatible* — that is, capable of converting data to and from AutoCAD's DWG format. But achieving this compatibility is a difficult thing to do well. Even a small error in file conversion can have results ranging in severity from annoying to appalling. If you exchange DWG files with people who use other CAD programs, be prepared to spend time finding and fixing translation problems. This is even more of an issue when there's a new DWG format, as there is for AutoCAD 2007.

Seeing the LT

AutoCAD LT is one of the best deals around, a shining example of the old 80/20 rule: roughly 80 percent of the capabilities of AutoCAD for roughly 20 percent of the money. (Actually, with recent price creep, it's now more like a 75/25 rule!) Like AutoCAD, AutoCAD LT runs on mainstream Windows computers and doesn't require any additional hardware devices. With AutoCAD LT, you can be a player in the world of AutoCAD, the world's leading CAD program, for a comparatively low starting cost.

AutoCAD LT is a very close cousin to AutoCAD. Autodesk creates AutoCAD LT by starting with the AutoCAD program, taking out a few features to justify charging a lower price, adding a couple of features to enhance ease of use versus full AutoCAD, and testing the result. As a result, AutoCAD LT looks and works much like AutoCAD. The drawing screen and menus of the two programs are nearly identical. (LT is missing a few commands from the AutoCAD menus.)

In fact, the major difference between the programs has nothing to do with the programs themselves. The major difference is that AutoCAD LT lacks support for several customization and programming languages that are used to develop AutoCAD add-ons. So almost none of the add-on programs or utilities offered by Autodesk and others are available to LT users.

AutoCAD LT also has only limited 3D support. You can view and edit 3D objects in AutoCAD LT, so you can work with drawings created in AutoCAD that contain 3D objects. However, you cannot create true 3D objects in LT.

The lack of 3D object creation in LT is not as big a negative for many users as you may think. Despite a lot of hype from the computer press and CAD vendors (including Autodesk), 3D CAD remains a relatively specialized activity. The majority of people use CAD programs to create 2D drawings. It's going to be interesting to see if AutoCAD 2007's new 3D capabilities change anything.

Although you may hear claims that AutoCAD LT is easier to master and use than AutoCAD, the truth is that they're about equally difficult or easy, depending on your NQ (nerd quotient). The LT learning curve doesn't differ significantly from that of AutoCAD. AutoCAD was originally designed for maximum power and then modified somewhat to improve ease of use. AutoCAD LT shares this same heritage.

Fortunately, the minimal differences between LT and AutoCAD mean that after you have climbed that learning curve, you'll have the same great view. You'll have almost the full range of AutoCAD's 2D drafting tools, and you'll be able to exchange DWG files with AutoCAD users without data loss.



This book covers AutoCAD 2007, but almost all the information in it applies to AutoCAD LT 2007 as well. The icon that you see at the left of this paragraph highlights significant differences.

It's CAD Heaven with 2007

If you're upgrading from AutoCAD 2006 or another recent version and you work mostly or entirely in 2D, you're probably already current with system requirements. If you want to use AutoCAD 2007's new and enhanced 3D features *productively*, however, it may be time for some new wheels, as we describe next.

You should know the following before you upgrade from any older AutoCAD release:



✓ **Wash those old Windows:** AutoCAD 2007 does *not* support older versions of Windows, such as Windows NT, 98, and Me. You must use Windows XP (Professional, Home, or Tablet PC) or Windows 2000, all patched with the latest service packs.

✓ **DWG file compatibility:** The previous three releases shared a common DWG file format, but AutoCAD 2007 uses a new format. You have to use File→Save As to create DWG files for users of AutoCAD 2006 and earlier versions as far back as Release 14. (If you need to go even further back, you can save to the Release 12 DXF format — see Chapter 17 for instructions.)

✓ **Application compatibility:** If you use third-party applications with a previous version of AutoCAD, they may not work with AutoCAD 2007. AutoCAD 2004, 2005, and 2006 applications, including those developed with the ARX (AutoCAD Runtime eXtension) and VBA (Visual Basic for Applications) programming interfaces, work with AutoCAD 2007; but older ARX and VBA applications don't work.

Many LSP (AutoLISP) programs written for the last several versions of AutoCAD work with AutoCAD 2007.

✓ **Increased computer system requirements:** For AutoCAD 2007, Autodesk recommends an 800 MHz Pentium III or better processor, at least 512MB of RAM, 1024 x 768 or higher display resolution with True Color graphics, 750MB of available hard disk space, an Internet connection, and Microsoft Internet Explorer 6.0 with Service Pack 1 or later.

✓ **Additional requirements for working in 3D:** AutoCAD recommends a 3 GHz processor; 2GB of RAM; a workstation-class, OpenGL-capable graphics card with at least 128 MB of memory; and an additional 2GB of hard disk space beyond the 750 MB required for installation.

We find even the recommended system requirements on the minimal side. For example, Mark works at a screen resolution of 1280 x 1024, and Dave works at 1600 x 1200. The figures in this book were shot at a resolution of 1024 x 768, and as you can see, things can get pretty crowded at that resolution. We also think 512MB of RAM is on the low side for productive work — get at least a gigabyte.



Even though AutoCAD 2007 comes out a mere year after AutoCAD 2006, it sports some substantial and impressive new features, mainly in 3D modeling. Because AutoCAD 2007 For Dummies is designed as an introductory text, we don't cover every in and out of 3D, but we do present some basics. Of course, 3D isn't all that's new — how would they get you to upgrade if you work only in 2D? Among the worthy new or improved features are

- ✔ **Save As:** As we already mentioned, you can save a DWG all the way back to Release 14. This is a welcome change from the previous policy of letting users save back to only the two previous releases.
- ✔ **DWF Underlay:** Similar to external references (see Chapter 14) with the added benefit of eliminating many of the bottlenecks involved with xrefs. Team workers will be very happy!

If you're coming from AutoCAD 2005 or even earlier, you may have overlooked some new features introduced in AutoCAD 2006; these were the big changes in that version, and all have been tweaked in AutoCAD 2007:

- ✔ **Dynamic input:** You can *almost* forget about the command window — command line. In addition to the command line, AutoCAD 2007 features a heads-up interface that displays command names, options, prompts, and values right next to the crosshairs. (See Chapter 2.)
- ✔ **Improved object selection:** AutoCAD provides more positive feedback than ever before with its rollover highlighting feature. (See Chapter 7.)
- ✔ **Dynamic blocks:** You no longer need separate blocks for every door or window size in your drawings. Now you can insert a single block definition and choose its configuration as you insert it. (See Chapter 14.)

If you have any interest at all in updating your AutoCAD skills by venturing into the third dimension, now is the time and AutoCAD 2007 is your version. Even if you're not interested in 3D, there are enough refinements to make upgrading worth your while. That's especially the case if you're an LT user, since many of the full-version-only Express Tools have been incorporated into the core program and so are available in LT, too.



No Express service?

If your menu bar doesn't include the Express menu (it's the third item from the right in Figure 1-1), you should consider installing the Express Tools from your AutoCAD CD (AutoCAD LT does not include or support the Express Tools).

When you first install AutoCAD 2007, you choose between a Typical or a Custom installation. If you choose Typical, the next screen asks if you want to install the Express Tools. If you

choose a Custom installation, in the next screen make sure to check the Express Tools item in the list of components. If you do not install the Express Tools during initial setup, you will have to rerun AutoCAD 2007's installation routine. If you haven't installed AutoCAD yet, we strongly recommend that you choose the Typical installation option — or, at least, make sure the Express Tools box is checked during a Custom installation.