Chapter 1

Introducing AutoCAD and AutoCAD LT 2005

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

Welcome to the fraternity 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 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 Release 14.

Whatever your current situation and motivation, I 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 started as an MS-DOS-only program, when real men and women typed commands and didn't need toolbars or dialog boxes. Autodesk flirted briefly with the Macintosh and UNIX operating systems while moving AutoCAD into the GUI (graphical user interface) age, but the company eventually settled on Microsoft Windows as the sole operating system for AutoCAD. (AutoCAD 2005 works with Windows XP — both the Professional and Home versions —

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's 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). 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 2005.

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.

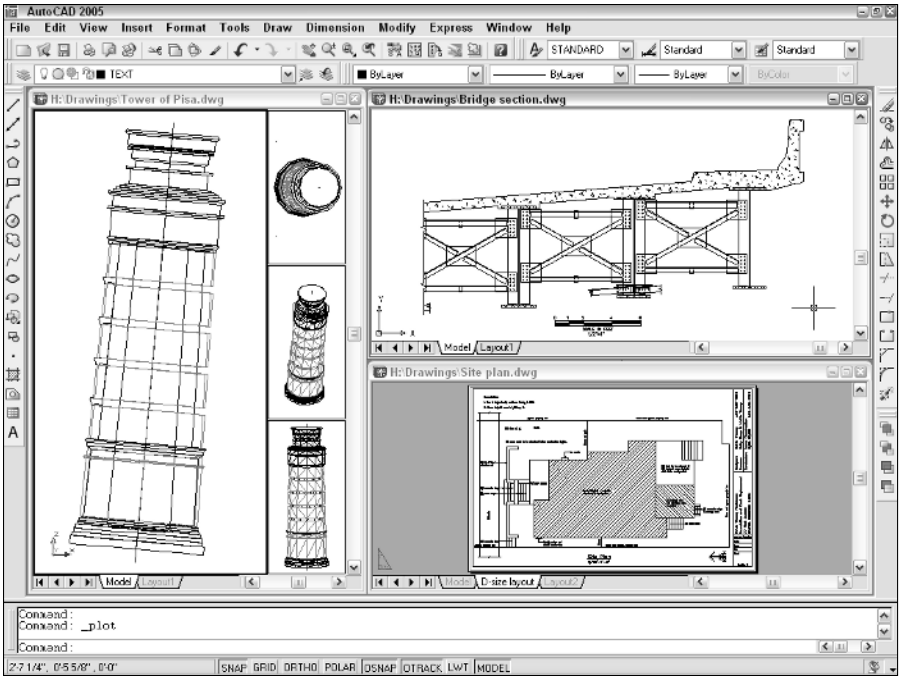

Figure 1-1: Tower, bridge, and plan — what do you want to draw today?

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 *always* can 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 2005. That's because Autodesk didn't change the DWG file format between AutoCAD 2004 and AutoCAD 2005.
- You can use the "save as" option in newer versions to save the file to some older DWG formats.

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

AutoCAD Version	*AutoCAD LT Version*	*Release Year*	*DWG File Format*
AutoCAD 2005 ("A2k5")	AutoCAD LT 2005	2004	Acad 2004
AutoCAD 2004 ("A2k4")	AutoCAD LT 2004	2003	Acad 2004
AutoCAD 2002 ("A2k2")	AutoCAD LT 2002	2001	Acad 2000
AutoCAD 2000i ("A2ki")	AutoCAD LT 2000i	2000	Acad 2000
AutoCAD 2000 ("A2k")	AutoCAD LT 2000	1999	Acad 2000
AutoCAD Release 14 ("R14")	AutoCAD LT 98 & 97	1997	Acad R14
AutoCAD Release 13 ("R13")	AutoCAD LT 95	1994	Acad R13
AutoCAD Release 12 ("R12")	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'll probably work with people — at least in other companies — who use AutoCAD versions as old as Release 14.

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.

AutoCAD 2005 — like AutoCAD 2004 — does not include an option for saving files to the R14 DWG file format. This omission creates problems if you want to send DWG files to clients or consultants who are still using AutoCAD Release 14. (And there are a surprising number of these folks — R14 was popular, and AutoCAD 2000 through 2004 didn't tempt everyone to upgrade.) To get around this limitation, you can save to the R12 DXF format, which AutoCAD Release 14 will open — see Chapter 18 for instructions.

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 2005 user, you'll be looking for the 2005-compatible versions of these tools, which should appear a few months after AutoCAD 2005 ships. These discipline-specific flavors of AutoCAD include Autodesk Architectural Desktop and Autodesk Building Systems (mechanical, electrical, and plumbing), Autodesk Mechanical Desktop, Autodesk Map, AutoCAD Land Desktop, Autodesk Survey, and Autodesk Civil Design.

To make matters even more confusing, Autodesk now offers Autodesk Revit and Autodesk Inventor, software applications that compete with Architectural Desktop and Mechanical Desktop, respectively. Revit and Inventor are not based on AutoCAD; they sacrifice AutoCAD compatibility in favor of a more fundamentally design- and 3D-oriented approach to CAD. Whether they ultimately will replace the traditional AutoCAD-based applications remains to be seen. Thus far, most companies seem to be sticking with AutoCAD and the AutoCAD-based Desktop applications.

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 `partnerproducts.autodesk.com/` for more information about what's available.

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. 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 opening 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.

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.

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 nerd IQ). 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 2005, but almost all the information in it applies to AutoCAD LT 2005 as well. The icon that you see at the left of this paragraph highlights significant differences. If you're an LT user, you may want to look for *AutoCAD LT 2005 For Dummies*, which is aimed squarely at AutoCAD LT and the types of people who use it instead of AutoCAD.

Staying Alive with 2005

You should know this before you upgrade from a previous AutoCAD release:

- **Wash those old Windows:** AutoCAD 2005 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.
- **DWG file compatibility:** AutoCAD 2005 uses the same DWG file format as AutoCAD 2004, so you'll be able to exchange files easily with users of

AutoCAD 2004. You can use File➪Save As to create DWG files for users of AutoCAD 2000, 2000i, and 2002, but not for AutoCAD Release 14 and earlier versions. (To get around this limitation, you can save to the Release 12 DXF format — see Chapter 18 for instructions.)

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

  Many *LSP (AutoLISP)* programs written for the last several versions of AutoCAD work with AutoCAD 2005.

- **Increased computer system requirements:** For AutoCAD 2005, Autodesk recommends an 800 MHz Pentium III or better processor, at least 256MB of RAM, 1024 x 768 or higher display resolution, 300MB of available hard disk space, an Internet connection, and Microsoft Internet Explorer 6.0 with Service Pack 1 or later.

AutoCAD 2005 comes out a mere year after AutoCAD 2004 and thus doesn't sport quite as many new features as did some earlier upgrades, many of which came out at two-year intervals. The new features and feature improvements in AutoCAD 2005, however, are well conceived and worthwhile. My three favorites are:

- Sheet sets — a radically new and much more sophisticated way of organizing sets of drawings. (See Chapter 14.)
- Text tables, an enormously improved way to place tabular data on drawings quickly and uniformly — including the ability to import the data from Excel spreadsheets. (See Chapter 9.)
- An improved plotting interface, including background plotting. (See Chapter 12.)

No Express service?

The AutoCAD 2005 CD-browser screen includes separate links for installing the main AutoCAD 2005 software and the Express Tools — a set of handy utilities for AutoCAD (but not available for AutoCAD LT). If your menu bar doesn't include the Express menu shown in Figure 1-1, you should consider installing the Express Tools from your AutoCAD 2005 CD. Just pop in the CD and, when the CD-browser page appears, click the AutoCAD Express Tools link and follow the installation instructions.

AutoCAD 2005 includes other goodies — look for the icon that you see at the left of this paragraph.

If you're using any version prior to AutoCAD 2004, the new version definitely is worth upgrading to. You'll enjoy a slew of improvements, including a cleaner, more functional interface (Chapter 2), numbered and bulleted text lists (Chapter 9), and many xref enhancements (Chapters 13 and 16).

AutoCAD 2005 is a worthy new version. If you've been putting off upgrading, and especially if you've been hanging out with an old version such as AutoCAD 2000 or Release 14, this probably is a good time to take the plunge.