

# Chapter 1

## Why Be LT?

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### *In This Chapter*

- ▶ Detecting the LT difference
  - ▶ Finding where CAD fits
  - ▶ Reaping the benefits of DWG
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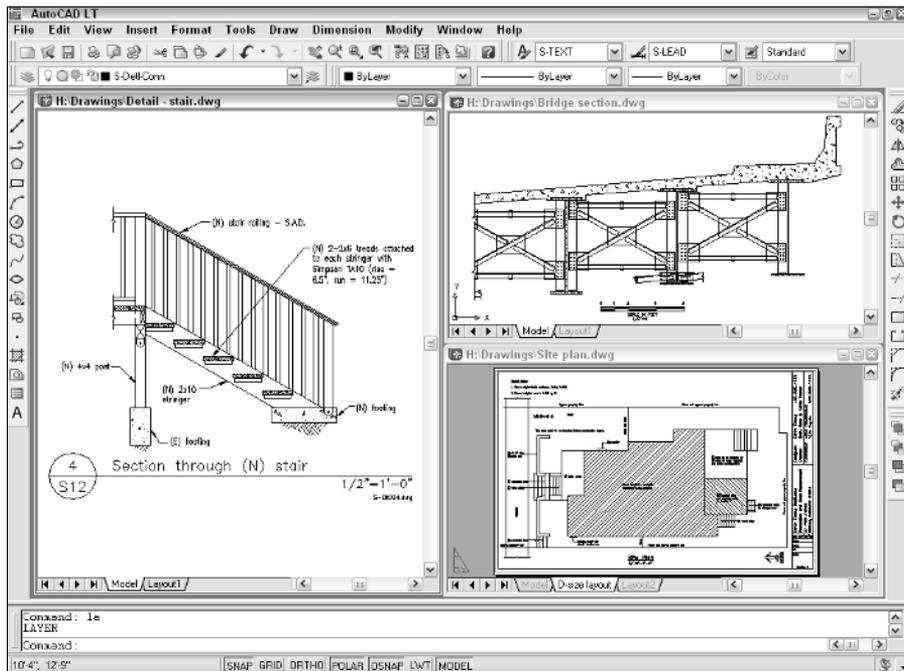
**A**utoCAD LT is one of the best deals around — a shining example of the old 80/20 rule: roughly 80 percent of the capabilities of AutoCAD for roughly 20 percent of the money. Like AutoCAD, AutoCAD LT runs on mainstream Windows computers and doesn't require any additional hardware devices. With AutoCAD 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 close cousin to AutoCAD. Autodesk, the company that makes the two programs, created AutoCAD LT by starting with the AutoCAD program, taking out a few features to make the program a little simpler to use (and to justify a lower price), adding a couple of features to enhance ease of use compared to full AutoCAD, and then testing the result.

### *The LT Difference*

AutoCAD LT 2005, shown in Figure 1-1, is almost identical to AutoCAD 2005 in the way it looks and works. The opening screen and menus of the two programs are nearly indistinguishable, with LT missing a small number of the commands found in the AutoCAD 2005 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 programming languages that software developers and even some advanced users employ to create utilities and industry-specific applications for AutoCAD. AutoCAD supports add-ons written in Microsoft's Visual Basic for Applications (VBA), in a specialized AutoCAD programming language called AutoLISP, and in a specialized version of the C programming language called the AutoCAD Runtime Extension (ARX).



**Figure 1-1:**  
See the LT.

Software developers, including Autodesk's own programmers, use AutoCAD's support for these programming languages to develop add-on programs that work with AutoCAD. For example, AutoCAD includes a set of handy utility commands called the Express Tools, and Autodesk used AutoLISP and other AutoCAD programming languages to create them. Other software developers create specialized applications for architectural drafting or other industry-specific needs.

AutoCAD LT doesn't support any of these programming languages, so most of the utilities and applications developed for AutoCAD don't work with LT. AutoCAD LT does include the same menu and script customization features that AutoCAD has. As a result, a few very simple AutoCAD add-ons do work with LT. For example, you can purchase or download *block libraries* — collections of drafting symbols — that work with LT.

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. You also can extrude a 2D object, which gives you a limited ability to create 3D models. (CAD people call this ability “2½ D” because it's limited to giving 2D objects depth in one direction.) However, you cannot create 3D surfaces or solids.

The lack of 3D object creation in LT is not as big of a limitation for many people as you may think. Most companies use CAD to create 2D drawings most of the

time. Although 3D modeling can be effective for some kinds of work, it requires a lot more skill and sophistication on the part of the user. It also begs for more computing power. A reasonably current, no-frills computer that runs AutoCAD LT quite respectably is brought to its knees if you try to do real 3D modeling and rendering with AutoCAD on it.

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.

The most notable example of this penchant for power over ease of use is the command line (that text area lurking at the bottom of the AutoCAD LT screen — see Chapter 2 for details). But fear not; this book guides you around the bumps and minimizes the bruises.

## Letting the CAD Out of the Bag

Depending on whom you ask, CAD stands for Computer-Aided Drafting or Computer-Aided Design. A few people cover both bases by calling it CADD: Computer-Aided Drafting and Design. (AutoCAD presumably is short for “Automatic CAD” — it's certainly not limited to drawing cars.) Most people use CAD programs for drafting — creating and modifying drawings that guide the construction of something. A design task, by contrast, involves making decisions such as “how many veeblefetzers can I cram into this crawl space?” or “how big does this beam need to be to ensure that the 500-member synchronized polka dancing team doesn't bring down the building?” Documenting these decisions is part of your CAD work, too, so computer-aided design is not a bad name. Just remember that you'll probably use AutoCAD LT primarily for drafting.

AutoCAD LT 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 LT must adhere to standards established long ago for hand-drafted drawings. The upfront investment to use AutoCAD LT certainly is 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 LT rather than pencil and paper are:

- ✓ **Precision:** Creating lines, circles, and other shapes of the exactly correct dimensions is easier with AutoCAD LT 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!

CAD programs have some similarities to other kinds of programs that are used for drawing. Here's a quick rundown on some major types of drawing programs that you may recognize, and how they relate to CAD programs:

- ✓ **Paint programs:** You use these programs to create *bitmapped images*. The computer stores a bitmapped image as a bunch of *pixels* (short for "picture elements," the little dots on your screen). The standard format for bitmapped images in Windows is a *BMP* (BitMaP) file. Most people prefer to use other formats, such as TIF, GIF, or PCX, that offer file compression. The Paint program that comes free with Windows is, as you may expect, a prototypical example of a simple paint program. Adobe Photoshop, for all its sophistication, is a grown-up paint program.

The biggest difference between a paint program and CAD is that you can't easily modify geometrical objects in a paint program; after you draw a line, for example, you can't select it again as a line — just as a bunch of pixels. If the line crosses other lines or images, selecting it again just as a line is nearly impossible. So, creation is easy in a paint program, but editing things such as lines and arcs is hard, and precision is next to impossible.

In the CAD world, paint-type images are referred to as *raster images*.

- ✓ **Illustration programs:** You use an illustration program to create *vector-based images*. The computer stores vector-based images as a set of geometrical objects (such as lines and arcs), using any of a variety of formats. Adobe Illustrator and CorelDraw are draw programs; Visio is an example of a specialized form of draw program called a *diagramming program*.

The biggest difference between a CAD program and a draw or diagramming program is the degree of support for precision. In a draw program, you can create an image easily, but creating a precise one is difficult. In a CAD program, creating an image can be somewhat difficult, but making it precise doesn't require much additional work. CAD programs also offer robust support for CAD-specific features, such as dimensioning and hatching.

If your previous computer drawing experience is limited to a paint program, AutoCAD LT presents a fairly steep learning curve for you — you have to "think different," to quote the ads of a large computer company known more for its design cachet than its adherence to grammatical norms. In CAD, you create geometrical *objects* rather than just images, and that difference introduces a whole new set of things that you need to think about as you draw and edit.



If you've used a draw program or a diagramming program, and especially if you've used one to do complicated, precise work, you don't face such a steep learning curve. After you understand how to select objects, enter commands, and print, you can get rolling.

In either case, you need to pay close attention to controlling object properties and precision — Chapter 3 shows how. Paint and draw programs and the types of images that you create with them usually permit a fairly loose approach to properties and precision. AutoCAD LT *permits* the loose approach, but drawings created that way won't work well for you or for the intended audience.

Wherever you start from, figuring out how to use AutoCAD LT offers many rewards. AutoCAD is the best-selling CAD program in the world, and billions of dollars worth of drawings have been created with it. By using AutoCAD LT, you inherit much of the AutoCAD infrastructure. You also gain the ability to create precise, well-documented drawings that can be used, edited, and reused by millions of other designers and drafters.

## *The Importance of Being DWG*

One of AutoCAD LT's key advantages is its use of the same DWG ("drawing") file format as full AutoCAD. AutoCAD LT reads and writes DWG files, using almost exactly the same computer code as in AutoCAD because the same company creates both programs and uses much of the same programming work for both. Thanks to this common parentage, an AutoCAD user and an AutoCAD LT user can almost always share files smoothly, although users of any other pair of CAD programs usually can't share files without bumping into compatibility problems.

To understand the importance of smooth DWG exchange, think of a similar problem involving word processing. If you create a document in Microsoft Word and send it to someone who uses WordPerfect, the recipient can open it, but the formatting frequently changes — page breaks may move, tables may look a little different, special characters may mysteriously transmogrify, and so on. Fixing the problems can cost lots of time and money.

File exchange is much more common and frequent among CAD users than it is among users of other kinds of programs. Many CAD projects involve dozens of designers and drafters working at several different companies. CAD file exchange also is much more fraught with potential compatibility problems. Properties, precision, and plotting vary from one CAD program to the next. These differences frequently show up on the screen, printed output, or both. And remember that companies use CAD files to build airplanes, buildings, and medical instruments such as pacemakers; errors literally can be life threatening.

To quickly sum up years of technical work by Autodesk and its competitors, as well as discussions, articles, online debates, and even lawsuits, DWG compatibility is notoriously hard to achieve. The only program that offers nearly flawless file compatibility with AutoCAD is AutoCAD LT.

As you probably expect, the DWG format isn't static — Autodesk changes it every few years in order to accommodate new features. In some cases, an older version of AutoCAD or LT 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 LT 2004 can open DWG files saved by AutoCAD 2005 or LT 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. For example, AutoCAD LT 2005 can save to the previous format, namely the AutoCAD 2000 DWG format.

Table 1-1 shows which versions use which DWG file formats.

<b><i>AutoCAD Version</i></b>	<b><i>AutoCAD LT Version</i></b>	<b><i>Release Year</i></b>	<b><i>DWG File Format</i></b>
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

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



AutoCAD LT 2005 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 a surprising number of these folks are out there — 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 can open — see Chapter 17 for instructions.

## Why Workalike Works

In addition to DWG compatibility, another, subtler reason exists for viewing AutoCAD LT as your best choice for a lower-priced CAD program. And, like DWG compatibility, this reason relates to AutoCAD's position as the industry standard for CAD. Choosing AutoCAD LT makes sense because of all the industry experience and products that exist for AutoCAD and therefore, to a large extent, for AutoCAD LT.

This book is a great example of how LT and its users benefit from full AutoCAD. My book *AutoCAD 2005 For Dummies* provides the source material for much of this book. *AutoCAD LT 2005 For Dummies* is easier to justify economically — not to mention easier for me to write! — because of AutoCAD.

Similar reasoning applies to many books, articles, courses, and products related to AutoCAD and AutoCAD LT. The AutoCAD connection provides the base for AutoCAD LT-related products, and AutoCAD itself provides an upgrade path in case LT can't meet all your needs.



As I mention earlier in this chapter, not all AutoCAD-compatible products work with AutoCAD LT. You can't use the add-on programs and utilities developed with one of the AutoCAD customization programming languages, such as AutoLISP or the AutoCAD Runtime Extension (ARX). Before you buy any product that was developed to work with AutoCAD, ask whether it supports AutoCAD LT, too.

## Working with AutoCAD veterans

Watching an experienced AutoCAD user work can be a bewildering experience. In all likelihood, the old pro moves quickly and unpredictably between the program's menus, toolbars, and command line. You may see that person start a command or process in one part of the screen, continue it in another, and complete it in a third.

Also, you may see AutoCAD veterans using a program that looks a lot different from your version of AutoCAD LT. They may have an old version of AutoCAD, they may be running one or more add-on programs (mostly not compatible with LT), or they may have customized and rearranged the AutoCAD screen beyond recognition.

AutoCAD veterans use a confusing mixture of very fast, efficient approaches and old hang-overs from previous versions that are no longer

the best way to work. A novice AutoCAD or LT user can't easily distinguish which is which when getting help from an experienced user.

Unless you have an unusually thoughtful, patient, and otherwise unoccupied AutoCAD veteran nearby, you probably shouldn't get most of your beginning AutoCAD instruction from a veteran. Turn to this book as a resource for the basics of using AutoCAD LT and save your questions for when you need to know how your company does things, or for when no other source (neither this book, the AutoCAD LT Help files [which I describe in Chapter 2], nor your own trials and tribulations) provides a quick, satisfactory answer. You get brownie points for going it alone as much as you can — and then are more likely to get a quick, helpful answer just when you need it.

The final, but perhaps most important, AutoCAD-related advantage of AutoCAD LT is all the AutoCAD knowledge that's likely to be in the heads of your co-workers. If you have colleagues with AutoCAD experience, you have an experienced technical support staff on call nearby. Although you don't want to wear out your welcome (using this book can help you answer the easy questions yourself), this informal support network, plus any formal AutoCAD support in your organization, is an invaluable resource. And as your LT knowledge grows, you can help other LT and AutoCAD users with their problems in return.