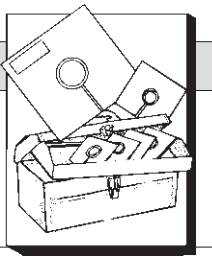

Fast 3-D With MiniCad

by Phil Hagopian

In 1985, *MiniCad* was one of the first computer modeling programs developed for the Mac, and the popular upgrade, *MiniCad+*, was the first Mac program to offer an interactive 2-D/3-D CAD environment. MiniCad+ introduced the ability to link "intelligent" symbols, like doors, windows, and plumbing fixtures, to a "Worksheet" database, which can be used to build an itemized material list and cost breakdown.

Suppose, for example, you have a $2,500 door budget for a house you're designing. Using MiniCad+, every time you draw a door you can check a user-defined "Door Schedule" Worksheet to find out instantly where you stand with costs (see Figure 1). Better yet, if you revise the door specification to replace hollow core birch doors with six-panel oak doors, you simply select and place the new doors in the drawing and MiniCad+ will automatically update on the Door Schedule Worksheet prices, rough openings, and any other specs you attached to the door symbol. You can include Worksheet data on the drawings, print them as separate reports, or export them in various formats to popular database or spreadsheet programs.

Two-Way Symbols

In addition to 2-D symbols, the latest upgrade, *MiniCad+4*, features "hybrid" symbols, which work in both 2-D and 3-D. Using "3-D Rendering," hybrid symbols allow you and your client to view a house model with windows, doors, plumbing fixtures, and other 3-D objects in place. You can check sightlines from the curb or an adjacent property, check to see if a dropped ceiling will interfere with kitchen window heights, and find out if a glass slider in the bedroom compromises privacy.

MiniCad+4 includes some generic architectural hybrid symbols, which you can also use as templates for developing your own symbol library. Of course, generic symbols may be all you need for preliminary 3-D study models, but as you become increasingly proficient with the program, customized libraries are the key to MiniCad+4's power. Working from a 2-D floor plan within the same drawing file, the libraries allow you to do a database record search as well as view the plan as a 3-D model.

Three New Tools

A preliminary 3-D study drawing of an addition or a new custom home can clinch the sale of a design concept because clients can better envision room relationships through perspective and isometric drawings — especially when they're keyed to a 2-D floor plan. Even a rudimentary drawing that shows only roof shapes is a powerful sales tool. Realistically, however, many builders don't have time to prepare these kinds of drawings. This is where MiniCad+4 really shines, with many new tools geared specifically toward architectural drafting and speedy 3-D modeling.

Three of the most exciting new drafting tools are the Wall Tool, the Floor Tool, and the Roof Tool. All three can draw in two dimensions like ordinary CAD drawing tools, but their real power lies in their ability to create lines and objects in 2-D *and* 3-D at the same time. For example, if you use the wall tool to place a "hybrid" window symbol — one that appears in both 2-D and 3-D — in a 2-D plan view of a wall, MiniCad+4 will automatically "cut" an opening in the wall in the 3-D plan and draw the window at the header height you have specified on the symbol worksheet. This works in reverse, too: Delete the window symbol, and the wall automatically "heals" itself in both 2-D and 3-D.

Case in Point

How easy is it? I timed the following exercise, which uses all three tools to create a 3-D drawing from an existing 2-D floor plan (see Figure 2, next page). You'll be amazed at how quickly I finished.

Walls. Using the wall tool, I click on the walls and select "Reshape" from the menu. A "Wall Preferences" dialog box appears,

Door Schedule

Mark	Type	Rough Opening	Jamb	Remarks	Unit Price
1	Stanley K1	3'-2 1/4"x6'-10"	6 9/16"	Plym. keylock, 8730	$168
2	HCB #600	2'-8 1/2"x6'-10 1/2"	4 9/16"	Plym. pass., 8730	98
3	HCB #600	2'-2 1/2"x6'-10 1/2"	4 9/16"	Plym. pass., 8730	98
4	HCB #600 Bifold	2'-8 1/2"x6'-10 1/2"	4 9/16"	Brass pulls, 8730	128
5	Andersen Fr. Wd.	6'-0"x6'-8"	6 9/16"	Grill, scr., 8730	864
6	Fire Rated SCB	2'-10 1/4"x6'-10"	6 9/16"	Plym., closer, 8730	328
					Total: $1,684

Figure 1. *Changes made on the drawings are updated to "Worksheets," which hold material lists and specifications. Worksheets can be customized and printed right on the drawings. In the case of this door schedule, the "Unit Price" column is confidential and will not appear on the printouts.*

which allows me to assign a height to the walls. Using "3-D Rendering," MiniCad+4 draws the walls in three dimensions to my specs (see Figure 3).

Floors. In 2-D plan view, I draw a single polygon, snapping to the outside corner points of the walls. When I select the floor tool from the 3-D menu, a dialog box appears, asking for the thickness of the floor and the distance from the top of the foundation or other benchmark elevation to the bottom of the floor. MiniCad+4 adds a shaded floor (see Figure 4).

Roof. In 2-D plan view, I draw two rectangles to represent the two roof planes of a typical 8:12 gable roof meeting at the ridge line. They include a 12-inch overhang at the eaves and a 2-inch overhang at the rakes. Next, I click on one of the rectangles, then I select the roof tool from the 3-D menu. A "Create Roof" dialog box appears asking me to set the rise and run of the roof, the width of the fascia, the thickness of the rafter or truss, and the elevation of the top plate on which the roof will sit. I click "OK" to accept my entries, and a second dialog box appears asking me to define the roof axis. I do this by clicking on the beginning and end points of the bearing wall, and then clicking on the side of the wall toward the ridge. I repeat the same procedure for the other half of the roof, then jump to an isometric view to fill in the peak of the gable walls. Done.

The completed 3-D model is a shaded solid with a single light source (see Figure 5). Checking the time, it took me just under 11½ minutes — not bad. Obviously, complex roof designs and multistory buildings will take longer to create. And rendering them on a Mac Quadra is faster than on a Classic. But with MiniCad+4's new 3-D "SmartCursor" and "3D Tool Palette," working in the 3-D universe on any Mac is faster and much easier than in previous versions.

Figure 2. *With MiniCad+4's Wall Tool, the walls in this 2-D preliminary floor plan are actually 3-D elements.*

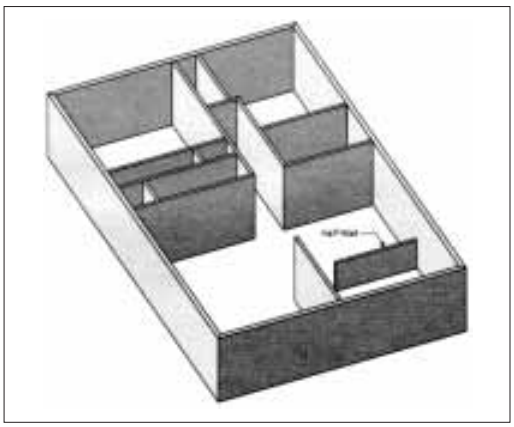

Figure 3. *With the wall height set to 8′-0″, the 2-D walls are drawn in three dimensions and shaded. The exception is the half-wall between the kitchen and dining areas, which is set to a height of 3′-6″.*

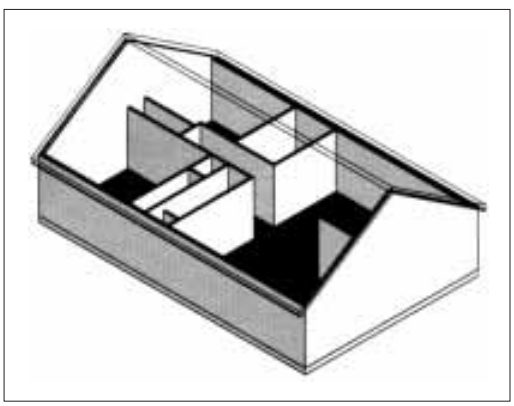

Figure 4. *The Roof Tool allows you to create a 3-D roof drawing, including overhangs and fascia, from the 2-D floor plan. Leaving the roof "wireframe" lets you peek inside the house from above.*

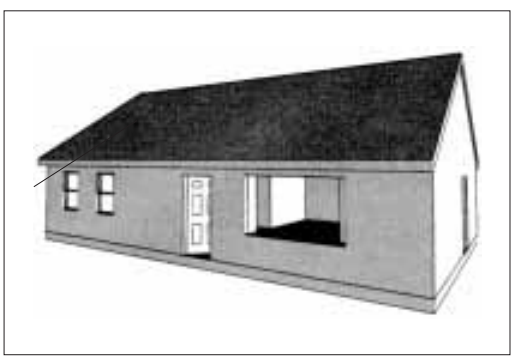

Figure 5. *A "hybrid" symbol, such as a window, placed in the 2-D floor plan will appear at the appropriate header height when viewed in 3-D. Notice how objects in the room beyond can be seen through the window opening.*

CAD on the Move

The publisher of MiniCad+4, Diehl Graphsoft (8370 Court Ave., Ellicott City, MD 21043; 410/461-9488), regularly makes incremental upgrades available to registered users. The company provides exemplary technical support and is attentive to user comments and suggestions. The biggest gripe about MiniCad over the years has been the hefty user manual. In response, Diehl Graphsoft hired professional writers to work with their programmers. Together, they waded through user comments and wrote an entirely new manual and training tutorial for the latest upgrade. Plus, they produced a training video geared toward jump-starting new users.

It's no wonder that MiniCad+4 is considered the best CAD value for the Mac. With a list price of $795, it compares feature-to-feature with 2-D/3-D CAD packages costing thousands of dollars more. And I haven't even mentioned some of the other new tools in MiniCad+4, like "3-D Walkthrough" and "Flyover," which let you tour the interior and exterior of a design in 3-D, or the ability of "3-D Sections" to draw sections in three dimensions. With all this going for it, MiniCad+4 allows a small contractor on a limited budget to develop a customized CAD system that is sure to be the envy of the competition. ■

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