Chapter 7

Keeping Your Model Organized

IN THIS CHAPTER

- **Taking stock of your model with the Outliner**
- **Avoiding problems by using layers the right way**
- **Looking at how everything works together**

Living life can be a messy ordeal, and modeling in SketchUp is no exception. As you crank away at whatever it is you're modeling, you'll reach a time when you stop, orbit around, and wonder how your model got to be such a pigsty. It's inevitable.

Big, unwieldy, disorganized models are a pain. They can slow your computer, or even cause SketchUp to crash. Luckily, SketchUp includes a bunch of different ways to keep your geometry — edges and faces — from getting out of control. This chapter presents SketchUp's two main tools for organizing your model: the Outliner and layers. After we introduce each tool, we explain how to use it and how *not* to use it (are you listening, layers?). This chapter ends with a detailed example of how you can use both tools together to make modeling easier.

Taking Stock of Your Tools

When sorting out the thousands of edges and faces in your model, it's all about lumping things together into useful sets. After you organize geometry into sets, you can name them, hide them, and even lock them so that you (or somebody else) can't mess them up.

TIP If you haven't read about groups and components yet, now would be a good time to take a look at Chapter 5 — the stuff in this chapter is best understood if you have a firm grasp on the stuff in that one.

You have two organizational methods at your disposal in SketchUp:

- **Outliner:** The Outliner is basically a fancy list of all the groups and components in your SketchUp model. In the Outliner, you can see which groups and components are nested inside other ones, assign names for them, and easily hide parts of your model that you don't want to see. If you use a lot of components (and you should), the Outliner may well become your new best friend.
- **Layers:** For people who are used to organizing content in other software programs, layers are usually where it's at — you put different kinds of things on different layers, name the layers, and then turn them on and off when you need to. It's a pretty simple concept. In SketchUp, layers are similar — but the ways in which SketchUp layers work differently are important for modelers to know.

WARNING In SketchUp, using layers the wrong way can seriously mess up your model. We're not kidding. If you plan to use layers, read the section "Discovering the Ins and Outs of Layers," later in this chapter. Not doing so can result in serious injury or even death — depending on how upset you get when your 50-hour model gets ruined.

IS YOUR MODEL CLASSY?

The folks at SketchUp added an enormously powerful, enormously complicated feature to SketchUp 2014 Pro: Classifications. Basically, it lets you tag groups and components in your model with special identifiers that make them more useful — in very specific circumstances.

If you're using SketchUp Pro as part of a BIM (Building Information Modeling) workflow, *and* you want to imbue your model with juicy metadata while it's still in SketchUp, you can. All you have to do is load an existing classification *schema* and apply Type metadata to the component definitions you want to classify. Not lost yet? If you like, you can even make your own *schemata* (the plural form of "schema") using properly formatted XML to create your own `.xsd` files. Oof.

Needless to say, Classifications is a feature way beyond the scope of this book. You don't need to use it for basic, everyday modeling; you might not even need to use it if you're designing a new habitation module for the moon. But for folks who *do* need it (and there are more and more of them every year), this feature is a giant step forward for keeping SketchUp Pro integrated with modern, connected BIM software.

Seeing the Big Picture: The Outliner

We both love to make lists. Not only that, but we love to *look at* lists — information arranged neatly into collapsible rows is the kind of thing that comforts our hearts and brings a tear to our eyes.

Now, before you decide that we're so boring that we add zest to our lives by color-coding spreadsheets, consider this: Most halfway-complicated SketchUp models consist of dozens, if not hundreds, of groups and components. These groups and components are nested inside each other like Russian dolls, and many are heavy, computer-killing behemoths like three-dimensional trees and shrubs.

Moreover, the Outliner's list helps you keep track of all your groups and components, hide what you don't want to see, and (more importantly) *unhide* what you *do*. Ready to dive in? We thought so!

Taking a good look at the Outliner

You can open the Outliner panel by choosing Window ⇒ Default Tray ⇒ Outliner (Windows) or Window ⇒ Outliner (Mac). Figure 7-1 shows what the Outliner looks like when a model consists of a simple room with some furniture in it. Each piece of furniture is a separate component from the SketchUp 3D Warehouse.

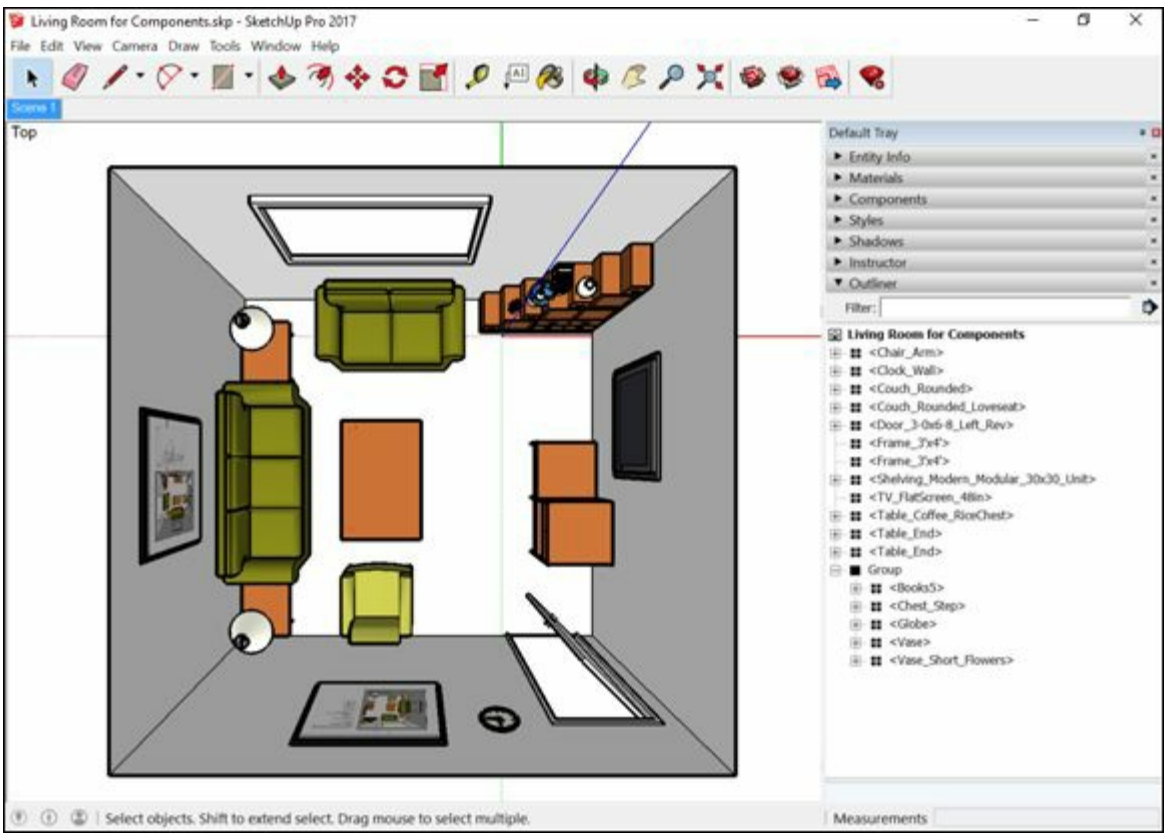

FIGURE 7-1: The Outliner lists the components in a model.

The Outliner panel has the following features:

- **Search filter box:** If you type a word or phrase into this box, the Outliner shows only the items in your model that include that word or phrase in their names. For example, type **coffee**, and only the coffee table component is visible.
- **Outliner Options flyout menu:** This handy little menu contains three options:
  - *Expand All:* Choose this option to have the Outliner show *all* the nested groups and components in your model — every last one of them (provided they're on visible layers).

    REMEMBER The Outliner shows only groups and components that exist on visible layers in your model. In other words, anything on a hidden layer doesn't appear in the Outliner, so be extra careful if you're using both the Outliner and layers to organize your model. You can read all about layers in the "Discovering the Ins and Outs of Layers" section, later in this chapter.
  - *Collapse All:* This option collapses your Outliner view so that you see only *top-level* groups and components — ones that aren't nested inside other groups and components.
  - *Sort by Name:* Select this option to make the Outliner list the groups and components in your model alphabetically.
- **Outliner List window:** All the groups and components in your model are listed here. An icon with four little boxes indicates a component, whereas an icon that's a bigger solid box indicates a group. An Expand/Collapse toggle arrow appears next to a group or component that holds nested groups or components. (You see an example of a group with nested components in Figure 7-1.) You can keep the nested list closed or expand it so that the constituent groups and components appear in the list.

Making good use of the Outliner

REMEMBER If you use lots of groups and components (and you should), having the Outliner open on-screen is one of the best things you can do to model efficiently.

Here's why:

- **Use the Outliner to control visibility.** Instead of context-clicking groups and components in your model to hide them, use the Outliner instead. Just context-click the name of any element in the Outliner and choose Hide. When you do, the element is hidden in your modeling window and its name is grayed out and italicized in the Outliner. To unhide it, just context-click its name in the

Outliner and choose Unhide.

- **Drag and drop elements in the Outliner to change their nesting order.** Don't like having the component you just created nested inside another component? Simply drag its name in the Outliner to the top of the list. This moves the component to the top level, meaning that it's not embedded in anything. You can also use the Outliner to drag groups and components into other ones, too.
- **Find and select things using the Outliner.** Selecting something in the Outliner highlights that something's name and selects it in your modeling window. With this technique, selecting nested groups and components is easy, especially if you're working with a complex model.

Discovering the Ins and Outs of Layers

Layers are a very useful part of SketchUp, and they can make your life a lot easier. Layers can also be a major source of heartache because they can *really* mess up your model if you're not careful. This section can set you on the right track.

What layers are — and what they're not

In a 2D program like Photoshop or Illustrator, the concept of layers makes a lot of sense: You can have content on any number of layers, sort of like a stack of transparencies. You find a distinct order to your layers, so anything on the top layer is visually in front of everything on all the other layers, as shown in Figure 7-2.

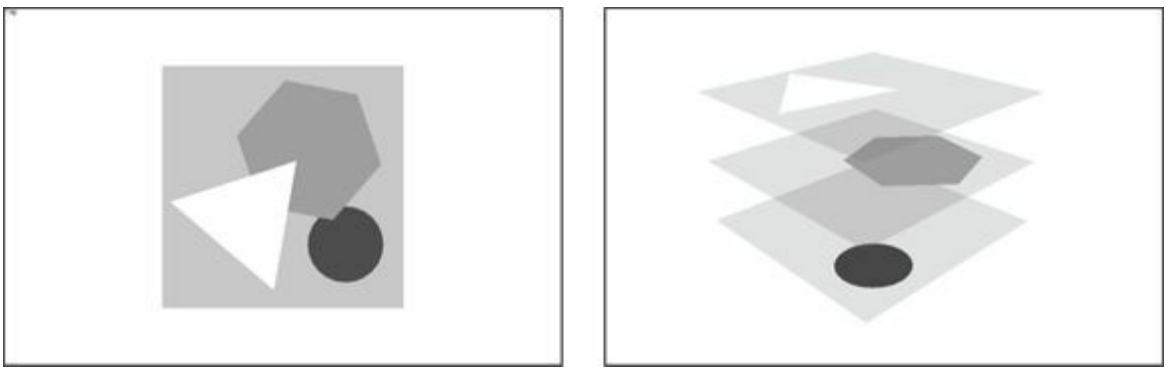

FIGURE 7-2: In 2D software, layers are pretty straightforward.

But SketchUp isn't a 2D program; it's a 3D program. So how can it have layers? How can objects in three-dimensional space be layered on top of each other so that things on higher layers appear in front of things on lower ones? In short, they can't — it's impossible. Layers in SketchUp are different from layers in most other graphics programs, and that's confusing for lots of people.

TECHNICAL STUFF SketchUp has a layers system because some of the very first SketchUp users were architects, and many, *many* architects use AutoCAD drawing software. Because AutoCAD uses layers extensively, layers were incorporated into SketchUp to maximize compatibility between the two products. When you import a layered AutoCAD file into SketchUp, its layers show up as SketchUp layers, which is pretty convenient. For more information about importing CAD files into SketchUp Pro, take a gander at the last part of Chapter 8.

REMEMBER So what are SketchUp layers for? Layers control visibility. Use them to gather particular

kinds of geometry so that you can easily turn it on (make it visible) and turn it off (make it invisible) when you need to. That said, layers *don't* work the same way as groups and components; your edges and faces aren't isolated from other parts of your model, which can cause major confusion if you're not careful. To find out more, take a look at the section "Staying out of trouble," later in this chapter.

Navigating the Layers panel

The Layers panel, shown in Figure 7-3, is a pretty simple piece of machinery. You open it by choosing Window ⇒ Default Tray ⇒ Layers (Windows) or Window ⇒ Layers (Mac). Here's a quick introduction to the panel features:

- **Add Layer:** Clicking this button (the plus sign) adds a new layer to your SketchUp file.
- **Delete Layer:** Click this button (the minus sign) to delete the currently selected layer. If the layer you're trying to delete contains anything, SketchUp asks what you want to do with it; choose an option and click Delete.
- **Layer Options flyout menu:** This menu offers the following useful options:
  - *Purge:* When you choose Purge, SketchUp deletes all the layers that don't contain geometry. This is a handy way to keep your file neat and tidy.
  - *Color by Layer:* Notice how each layer in the list has a little material swatch next to it? Choosing Color by Layer temporarily changes all the colors in your SketchUp model to match the colors (or textures) assigned to each layer. To see what's on each layer, go straight to this option.
- **Layers list:** This lists all the layers in your SketchUp file. You need to know about these three columns:
  - *Name:* Double-click a layer's name to edit it. Giving your layers meaningful names is a good way to quickly find what you want.
  - *Visible:* This check box is the heart and soul of the Layers panel. When it's selected, the geometry on that layer is visible; when the check box isn't selected, the layer's geometry isn't visible.
  - *Color:* You can choose to view your model using Color by Layer, described earlier in the list. You can choose which material (color or texture) to assign to each layer by clicking the Color swatch.

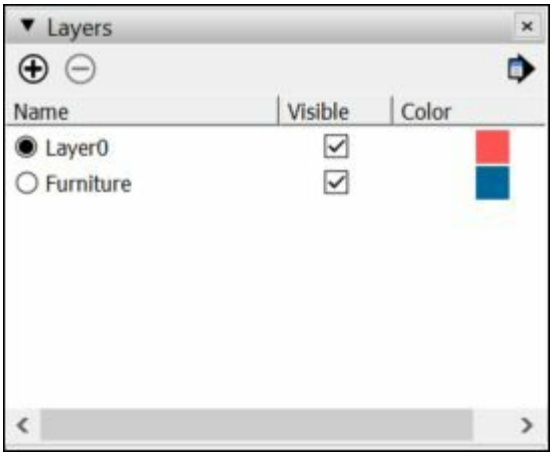

FIGURE 7-3: The Layers panel.

Moving entities to a different layer

Moving things from one layer to another involves using the Entity Info panel. Follow these steps to move an *entity* (an edge, face, group, or component) to a different layer:

1. **Select the entity or entities you want to move to another layer.**

   REMEMBER Move only groups and components to other layers; have a look at the next section in this chapter to find out why.

2. **Open the Entity Info panel in the Default Tray (Windows) or choose Window ⇒ Entity Info (Mac).**

   You can also open it by context-clicking your selected entities and choosing Entity Info.

3. **In the Entity Info panel, choose a layer from the Layer drop-down list.**

   Your selected entities are now on the layer you chose from the list.

TECHNICAL STUFF The Entity Info panel offers another, slightly trickier, way to add a new layer and move entities to a new layer. In the Entity Info panel, type a new layer name into the Layer field and press Enter. SketchUp both creates a new layer with that name and moves whatever geometry is currently selected onto it. We suggest you save this particular time-saver until you have experience working with layers. Nothing about Layers is as straightforward as it seems.

Staying out of trouble

Layers can be really helpful, but you need to know how to use them; if you don’t, bad things can

happen. Check out the following do's and don'ts before you start working with layers:

- WARNING **Do all your modeling on Layer0.** Always make sure that Layer0 is your current layer when you're working. Keeping all your loose geometry (that's not part of a group or component) together in one place is the *only* way to make sure that you don't end up with edges and faces all over the place. SketchUp, unfortunately, lets you put geometry on whatever layer you want, which means that you can end up with a face on one layer, and one or more of the edges that define it on another. When that happens, working out where everything belongs is next to impossible; you'll spend hours trying to straighten out your model. This property of SketchUp's layers system is a major stumbling point for new SketchUp users; knowing to keep everything on Layer0 can save you a lot of anguish.
- **Don't move anything but groups and components to other layers.** If you're going to use layers, follow this rule: *Never* put anything on a layer other than Layer0 unless it's a group or a component. Doing so ensures that stray edges and faces don't end up on separate layers.
- **Use layers to organize big groups of similar things.** More complicated SketchUp models often include things like trees, furniture, cars, and people. These kinds of things are almost always already components, so they're perfect for organizing on separate layers. For example, you can make a Trees layer and put all your tree components on it. Because trees are usually big, complicated components with lots of faces, hiding all your trees at once with the layers feature is a handy way to improve your computer's performance.
- **Don't use layers to organize interconnected geometry; use the Outliner instead.** By *interconnected geometry*, we mean things like building floor levels and staircases. These model parts aren't meant to be physically separate from other parts in the way that vehicles and people are. When you put Level 1 on one layer and Level 2 on another, more often than not, you become confused about what belongs where: Is the staircase part of Level 1 or Level 2? Instead, make a group for Level 1, a group for Level 2, and a group for the staircase — you'll need less headache medicine at the end of the day.

- TIP **Feel free to use layers to iterate.** *Iteration* is the process of doing multiple versions of the same thing. Lots of designers work this way to figure out problems and present different options to their clients. Using layers is a great way to iterate: You can move each version of the thing you're working on to a different layer, and then turn the layers on and off to show each in turn. Just remember to follow the rule about using groups and components only on separate layers (mentioned previously), and you'll be fine.

TIP Check out the sidebar "Using Scenes to control layers" (later in this chapter) for a nifty way to quickly flip through layers that represent design iterations in your model.

Putting It All Together

In this chapter (and in Chapter 5), we talk about each of SketchUp's organizational methods in isolation: discussing how they work, why they're special, and when to use them. When you're actually working in SketchUp, you probably use a combination of them all, so we thought you'd find an example of all the organizational tools in action especially helpful.

Figure 7-4 shows a model of a house that Aidan created. Here's how all the organizational tools are working together to keep the model organized:

- **Each floor level is a group.** Organizing each floor into a group enables you to hide whichever one you're not working on, so you can see what you're doing and SketchUp runs a little faster. Aidan included the house's only staircase in the first floor group, because that turned out to be the easiest thing to do, but you might also make the staircase a separate group, too.

TIP Aidan included the interior walls on each level in that level's group. For most buildings, you can probably do the same, unless you plan to study different floor plans with different interior wall arrangements.

- **The roof and exterior walls are groups inside of another group.** To remove the roof and the exterior walls separately, each needs to be a group. However, to hide and unhide them both at the same time, Aidan made a Shell group that includes them both. With this setup, he can selectively show or hide just the geometry he wants to see. See Figure 7-5.

REMEMBER The floor levels, roof, and exterior walls are groups instead of components because they're *unique*. A house has only one first floor, so that floor doesn't need to be a component.

- **All the furniture and plumbing fixtures are components.** To furnish the house, Aidan created furniture components himself or used components from the Components panel and 3D Warehouse.

TIP When you have only one couch, why make it a component instead of a group? By making every piece of furniture in a model a component, you can see the furniture listed in the In Model collection of the Components panel. You can also save your furniture as a separate component collection on your computer. The next time you move, you have all your furniture in a single place, ready to drop into a model of your new house.

- **All the furniture is on a separate layer.** Furniture components can be a little *heavy* — that is, they tax your computer system. With the furniture on a layer, you can easily hide it all. This setup also enables you to see your space without furniture. Remember that you can control the visibility of a layer with a single mouse click.

TIP But why not just create a group from all the furniture components and use the Outliner to hide and unhide them all, instead of bothering with layers? Good question. Changing a component's layer is easier than adding a component to an existing group. To add something to a group, you need to use the Outliner to drag and drop that something in the proper place; with complex models, this can be a hassle. Changing a component's layer is just a matter of using the Entity Info panel to choose from a list.

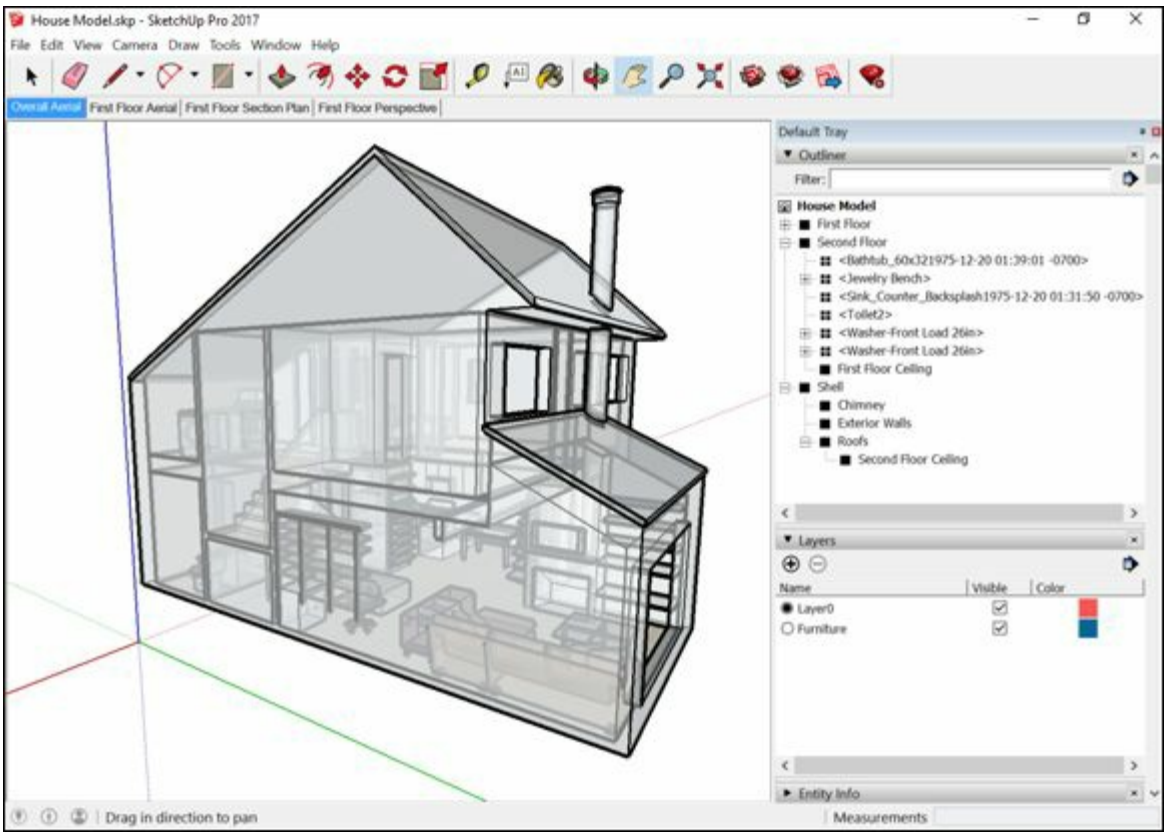

FIGURE 7-4: Aidan used all of SketchUp's organizational tools to build this model.

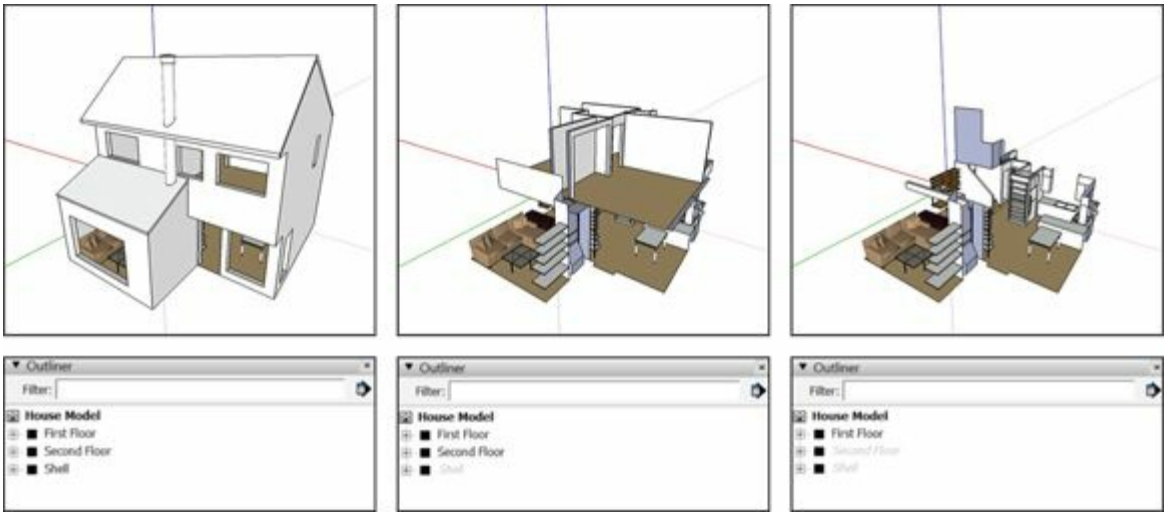

FIGURE 7-5: Each floor of the house, as well as the roof and the exterior walls, is a group.

USING SCENES TO CONTROL LAYERS

In SketchUp, *scenes* are basically saved views of your model. Instead of fiddling with navigation tools and panels every time you want to return to an important view, you can click a scene tab.

Although you learn the details about scenes in Chapter 11, scenes are relevant in this chapter because scenes don't just save different camera positions; you can also use them to control layer visibility. Being able to click a scene tab to instantly change which layers are showing is a crazy-powerful way to do *iterative design:* creating and presenting different options within the same design.

A very simple example: You've modeled a living room and want to try three different furniture configurations:

1. **Make three layers — Option 1, Option 2, and Option 3.**
2. **Do three separate furniture arrangements, one per layer.**

   Of course, this means that you have three copies of each object you move.
3. **Use the Layers panel to show Option 1, and hide Option 2 and Option 3.**
4. **Create a new scene and name it Option 1 using the Scenes panel.**
5. **Repeat Steps 3 and 4 for the other two configurations.**

Now all you have to do is click a scene tab to switch among the three options; this is much more elegant than having to fiddle with the Layers panel during a presentation.

To make this technique really sing, you need a working knowledge of the Properties to Save check boxes in the Scenes panel. Although this technique combining layers and scenes isn't beginner-level stuff, you can probably easily get the hang of it after you have some practice with both layers and scenes. After you get the hang of this technique, it's an elegant way to work. Pick your way through Chapter 11, when you're ready.

One more useful tidbit: The Layer Tools plugin lets you (among other things) create a new layer that isn't visible in any of the scenes you've made previously. This plugin comes in handy when you need to add a new iteration *after* you've already made a bunch of scenes. You find plug-ins in the Extension Warehouse, introduced in Chapter 16.