Chapter 2

Equipping and Setting Up Your Recording Space

In This Chapter

- Knowing the dos and don'ts for equipping your GarageBand studio
- Determining your needs
- Working with must-have gear
- Knowing some good-to-have gear

I have some good news and some bad news. The good news first: Most of you don't have to spend a dime — assuming that you have GarageBand installed on your Macintosh — to have lots of fun with GarageBand.

Many Mac models, including most Powerbooks, iBooks, and iMacs, come equipped with everything you need. So if your Mac has speakers, a built-in microphone, and a CD recorder (burner), you have everything it takes to use GarageBand.

Now for the bad news: If you don't spend another penny, you can still make GarageBand songs, but their quality will be somewhat lacking. To make music that sounds great, you need to invest a few additional bucks — or perhaps even a few thousand additional bucks. Although I tell you what gear has the most impact on your sound (and ways to stay within your budget), be prepared to dip into your wallet more than once to get the best results from GarageBand.

Cobbling Together a Studio (Without Breaking the Bank)

You don't have to spend a ton of money on equipment for your studio, especially when you're first starting out with GarageBand. The least expensive way to do something is often good enough. And should you outgrow an inexpensive

product, you can always find bigger, faster, and flashier ones that are priced accordingly. Here are some tips for assembling a studio to meet your needs but stay within your budget:

- **When you start out, use the least expensive solution that you can find.** The microphones and speakers that are built into Macs aren't very good for making audio, but they're good enough to use until you're sure that it's worth spending money to do better.
- **If you're ready to take your gear up a notch but need to watch your budget, see if you can borrow the gear to test it first or try to find something used.** If you have a friend who records music, see if he or she has old microphones, keyboards, audio or MIDI interfaces, or speakers that you can use. Most recording enthusiasts have a closet full of gear that used to be good enough for them but isn't anymore. This equipment may be good enough for you.
- **Remember that the term *better* is subjective.** For example, a recording microphone is one of the first investments that you're likely to make. (The free microphones and speakers on most Macs are a thoughtful touch, and they are great for computing. However, for making music, the built-in mics just aren't good enough.) Is a $1,000 microphone *better* than a $100 mic? Probably. Is it ten times better? That depends on who is paying. To me, the answer is no. I have no microphones that cost over $150, and they all work fine for the kind of work I do (demo quality recording).

- **Purchase your audio gear from vendors with reasonable return policies.** You never know if a product is right until you use it in your studio. I prefer shopping with vendors that offer a 30-day (or even a two-week) money-back guarantee. That way, I can return a product if I'm not happy with it and receive a refund or a store credit.

  Some vendors offer a money-back guarantee but also charge you a restocking fee if you return the product. These fees can be substantial — I've seen them as high as 25 percent of the purchase price. On the other hand, while a restocking fee usually isn't such a good deal, it's often better than being stuck with an expensive piece of gear that isn't exactly what you need.
- **If you know you're using GarageBand as a primer for more serious recording, don't skimp too much.** This cheapest-first advice is just a guideline. If you're going to record a five-piece band live at some time, consider buying gear that can handle that kind of workload, even if you don't need its capabilities today or if the gear has features that aren't useful in GarageBand but may be in other audio programs.

My advice to most of you: If you're dabbling in audio production for the first time, cheaper is better. Remember that advice, or you might spend way more on audio gear than you need to.

Making the Most of Your Recording Space

Regardless of what you want to accomplish with GarageBand — singing a cappella in the shower, making dance mixes culled from Apple Loops, or creating a band demo — a few truths should be held self-evident.

The first truth is to choose the most appropriate space in which to record. I do most of my recording in my home office. It's not a very good recording space: It has too many hard surfaces that reflect sound and cause echoes and ugly resonation, and it doesn't have enough soft things, such as curtains or pillows, to absorb some of the sound that's bouncing around. But it's the appropriate space for me to record because it's where I have my computer, guitars, keyboards, and other recording equipment. This leads me to my second truth, which is to get rid of extra noise by deadening the room and preventing outside noises as much as possible.

Deadening the room

Unless you're recording an ensemble in a cathedral, (in which case the ambient reflected sound might be desirable), it's in your best interest to deaden the room you're recording in as much as you can. Reflected sound is the enemy when you're recording, so if there are curtains, draw them to cover those very sound-reflective windows. And set up your mic as far from hard surfaces in the room (walls, windows, artwork, and so on) as possible.

The middle of a room is a good place to start.

Pillows, blankets, and even sheets can deaden your recording space at little or no cost, but if you're serious, you can spend hundreds (or even thousands) of dollars on special sound-absorbing panels and freestanding "gobos," to deaden your studio.

According to my tech editor, Bryan Chaffin, you can also try the "wall of egg cartons" technique. For this you need a bunch of cardboard egg cartons; the commercial egg cartons used by food service establishments work best. You can often find them at diner-style restaurants, or any restaurant that serves breakfast. Just ask the manager; if one restaurant turns you down, keep trying.

After you've got a stash of egg cartons, string them together in a chain and hang them from the ceiling or attach them to the walls with tape or glue as needed.

This is an inexpensive way to baffle your walls yet it (allegedly) offers excellent results. I've never tried it but Bryan swears it works beautifully. He does give a word of warning, though: Make sure you throw away any cartons with egg left on them because they will begin to smell quite bad very quickly.

Preventing background noise

Always record in the quietest space that you can. If you're recording an acoustic instrument or vocal using a microphone, take extra steps to ensure that the room is as quiet as possible. I have a routine, which is as follows:

1. Before I start a recording, I turn off all electronic equipment in my office that isn't involved in the session — television, radio, neon lamp, unused Macs, and so on.
2. I switch off the central heating and air conditioning. When it's running, I can hear it as clear as a bell in my recordings.
3. I silence both of my phones and my fax machine.
4. If I'm feeling ambitious, I may even put my dog out in the (fenced) backyard, which is as far from the office as possible. Then I tape a sign above the doorbell: PLEASE DO NOT RING.

My method isn't perfect, but if I do all these things before the first take, I usually avoid having my perfect take spoiled by background noise.

Equipping Your Studio: "Must-Have" Gear versus "Good-to-Have" Gear

Gear falls into two categories: "must-have" gear and "good-to-have" gear — especially if you're just beginning to record music. The must-have equipment includes things that you need to record audio and to basically use all of GarageBand's features. These must-have items don't need to be expensive or even high quality, and some of them may already by built into your Mac. Here's the bottom line: GarageBand won't be as much fun without the following things:

- Microphone(s)
- Stereo speakers or reference monitors
- Headphones
- A MIDI keyboard

- The right cables and connectors
- Gobs of free space on your hard drive(s)

Good-to-have gear includes time- and effort-saving equipment and devices that, while not strictly necessary, may be convenient or useful in your setup. Place the following items on your good-to-have list:

- An analog audio interface
- Mic stands, pop filters, and wind screens
- A tuning device

I explain what all this equipment does and how you set it up in the following sections. But my list here is incomplete by design. See Chapter 17 for the best ways to take your recording to the next level. However, to cover every piece of equipment that you may want to use in your GarageBand studio and to describe what you would use that equipment for, I would have to write another book roughly the size of this one. Fortunately, I don't have to. Jeff Strong has written just such a book, *Home Recording For Musicians For Dummies* (published by Wiley). If you're serious about making music, this is the next book you should read (after you finish this book, of course).

Two virtual professional audio resources that you should know about are Sweetwater (`www.sweetwater.com`) and Musician's Friend (`www.musiciansfriend.com`). Both sites have extensive Web catalogs, so you can compare and contrast prices and features of multiple items. Or, if you're not a Web shopper and don't already have a favorite pro audio dealer, visit Guitar Center, probably the best known and largest brick-and-mortar audio store. You can find a store in most major cities.

Choosing a Microphone

A microphone may be the most critical component that you buy. If you're a singer or want to record almost any acoustic instrument (guitar, piano, flute, and so on), you need a microphone, and the quality of your recording will be greatly influenced by your choice of mic.

My Webster's Concise Electronic Dictionary defines a microphone as "an instrument for transmitting or recording sound by changing sound waves into variations of an electric current." Technically, that's not a bad definition, but I prefer a simpler one: "A device that captures incoming sound and saves it (as a tape recorder or GarageBand does) or transmits it (as a telephone or walkie-talkie does)."

Musicians and audio enthusiasts often refer to a microphone as a *mic* or *mike,* both pronounced like the nickname for Michael. I use the full term *microphone* most of the time, but I also like using *mic.* (It's easier to type!) I never use *mike.* After all, I don't want you to think I'm talking about a boxer (Tyson), Monkee (Nesmith), or detective (Hammer).

I recommend that you begin by using any microphone that's available. I've made many GarageBand recordings using an old Andrea USB NC-7100, a cheap USB mic that came bundled with speech-recognition software that I reviewed many years ago.

Many Macs have a built-in microphone and/or an audio input jack. Use the built-in mic or connect a cheap mic to the audio-in jack, and make some recordings. If they sound good to you, you just saved yourself a lot of money; if they *don't* sound good, buy or borrow a better microphone and re-record the material. Now compare the two recordings and decide whether the better mic is worth the money.

Microphones vary greatly in price and quality. You can pay as little as $10–$20 for an inexpensive, consumer-quality mic at Radio Shack or Best Buy, or you can spend thousands of dollars for a pro-quality mic at your local or virtual pro audio dealer.

When it comes to microphones, price and sound quality don't necessarily correlate directly. You can find inexpensive microphones that sound as good as (or better than) other microphones that cost three, five, or even ten times as much. However, you generally get what you pay for, and more expensive microphones usually sound better.

The main things to consider when choosing microphones are

- The type of mic (dynamic, condenser, or ribbon)
- The polarity pattern (cardioid, omni-directional, figure-8, and so on)
- Preamps
- Price (of course)

In the following sections, I explain these basic considerations and discuss what you need to know about connecting a mic to your computer so that you can start recording.

Dynamic and condenser microphones

Many types of microphones are available; they use many different mechanisms and electronic components. The two types that you're most likely to encounter, though, are *dynamic* and *condenser* microphones. The technical

differences in the way that each type works aren't important (at least not in this chapter), but you should know the following nontechnical differences between the two before you consider choosing one kind (or both):

- Dynamic mics are generally less expensive than condenser types.
- Condenser mics generally reproduce vocals and acoustic instruments more accurately and with more "warmth." (*Warmth* is a desirable tonal characteristic that might best be described as *mellow* or *not bright*. It refers to a pleasant decrease in mid and mid/high frequencies that make a voice or instrument sound smoother when recorded.)
- Dynamic mics can be placed closer to loud bursts of sound — such as drums or a guitar amp — than condenser mics, so dynamic mics may achieve a sound that you just can't get with a condenser mic. Furthermore, a condenser mic is more likely to be damaged by extremely loud sounds than a dynamic mic.
- Many dynamic mics are built for rough use — they better withstand being dropped on the floor or being knocked over with a mic stand. If you're rough on your gear or plan to use it in a live stage setting, a dynamic mic will probably last longer.
- Condenser mics require a power source (known as *phantom power*), so they must contain an internal battery or have the phantom power supplied through the cable by your audio interface or mixer.

Not all audio interfaces and mixers supply phantom power to condenser mics. If you plan to use one of these mics, make sure that the device you're going to connect it to — for example, an audio interface, mixer, or sound card — provides phantom power for it.

There is a third type of microphone — the ribbon mic — but they're fragile, expensive ($1,000 and up), and while ribbon mics are prized for a silky response, they don't sound that different from condenser mics. You probably want to avoid ribbon mics unless you're a purist and have some very deep pockets. I've recorded with a ribbon mic in a studio many years ago and it did indeed sound silky. But so did the Neumann U87 (around $2,500), which was (and still is) the gold standard for condenser mics.

If you buy only one microphone, you can't go wrong with a dynamic mic such as the Shure SM57 or SM58. These are two of the most popular dynamic mics around and have been for at least 20 years.

The SM57 and SM58 are very similar, but the SM57 has "contoured frequency response for clean sound reproduction of amplified and acoustic instruments," whereas the SM58 is "tuned to accentuate the warmth and clarity of lead and back-up vocals." The SM58 is the ball-shaped mic you see all the time on stage and in videos.

The differences between the SM57 and SM58 are small and you may not even be able to hear them. Either is fine for both vocals and instruments. So, if you're only buying one, first decide which is more important to you, recording vocals or recording instruments, and choose accordingly. You can buy either one from online music vendors such as Sweetwater Sound (`www.sweetwater.com`) and Musician's Friend (`www.musiciansfriend.com`) for around $100.

Microphone polarity patterns

Each microphone is designed with a specific polarity pattern, which, in plain English, means that they pick up sound from certain locations better than others. The three polarity patterns you're most likely to encounter are

- **Cardioid (directional):** Cardioid mics, as you can see in Figure 2-1, reject sound from the rear and sides, making them excellent for recording an instrument or vocal with little or no extraneous sound leakage.
- **Omni-directional:** Omni-directional mics pick up sound from all directions equally, as you can see in Figure 2-2. That makes them a fine choice for recording a large ensemble or orchestra, but not the best choice for recording individual voices and instruments, which is what you do in GarageBand most of the time.
- **Figure-8 (bi-directional):** The figure-8 pattern picks up sound from the front and back equally, while rejecting sound coming from either side, as shown in Figure 2-3.

This will be easier to show than tell, so take a look at Figures 2-1, 2-2, and 2-3. These are "polar graphs" that show how well the mic picks up sound from the front, rear, and sides. The specification sheets for most microphones will include a polar graph of its polarity pattern.

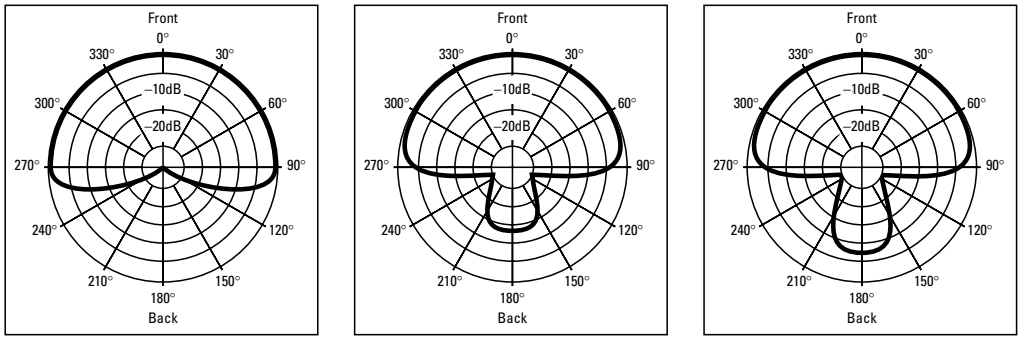

Figure 2-1: Cardioid patterns come in three flavors: cardioid (left), super cardioid (middle), and hyper cardioid (right).

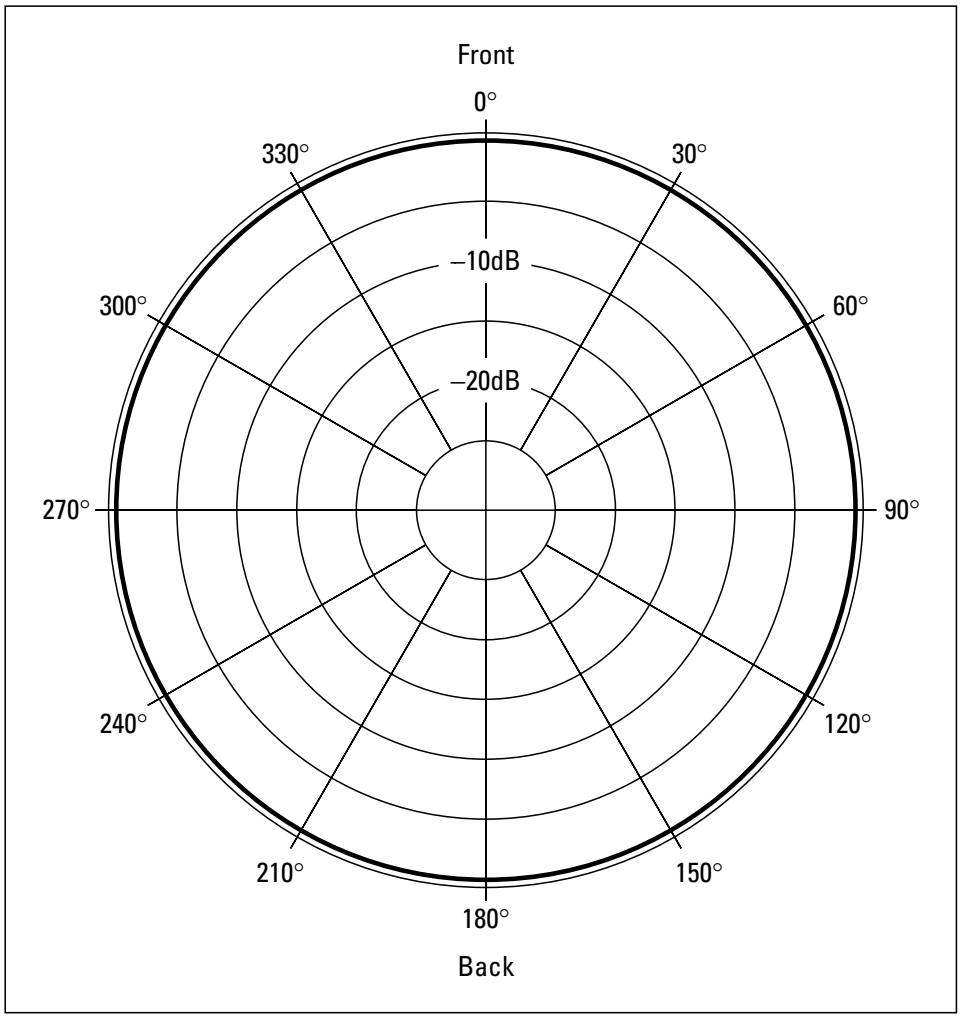

Figure 2-2: The omni-directional pattern picks up sounds from every direction.

The three flavors of cardioid are so similar and you won't notice much (if any) difference between them for the kind of recording you're likely to do when working with GarageBand. I merely include this information so you won't be confused when you start seeing these terms in brochures and reviews.

Microphone preamps

You have one last thing to consider if you're buying a microphone — your mic preamps have a tremendous effect on how your mic will sound.

A mic preamp amplifies the sound coming out of the microphone to the higher voltage known as line level, because mixers, tape recorders, GarageBand, and almost anything else you might use a decent microphone with, requires line level input for recording.

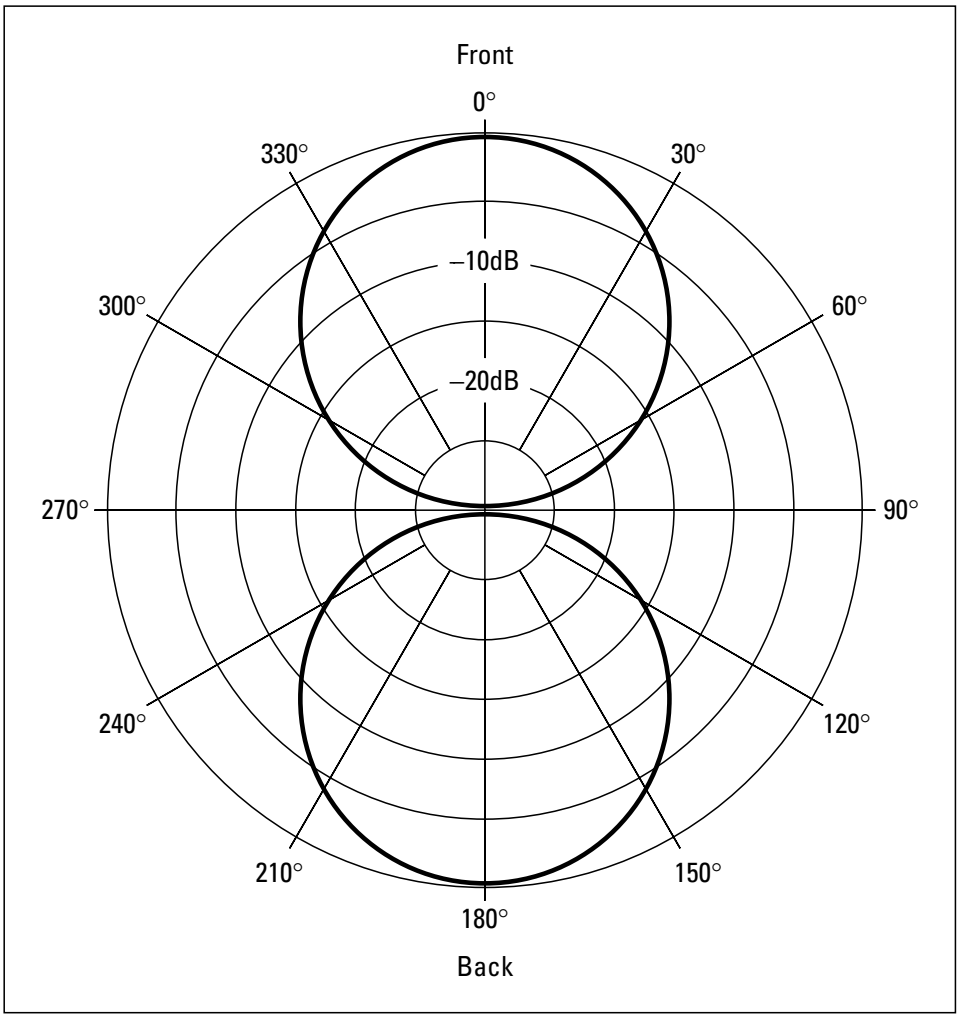

Figure 2-3: The figure-8 pattern is perfect for recording two instruments or vocalists.

If your microphone plugs directly into the Mac's audio in port, you're using the built-in audio preamps, which are lower quality than most outboard gear but certainly good enough for GarageBand work in a pinch.

If you purchase an external audio interface, chances are it will tout its own preamp circuits; all of these will provide a cleaner signal than your Mac's built-in audio-in subsystem.

Setting up your microphone

Many Macs have a built-in microphone and/or an audio input jack. A built-in mic requires no extra work on your part. You may be able to simply connect a cheap mic to the audio-in jack and make some recordings.

However, most quality microphones (dynamic and condenser), as well as many other pieces of audio gear that you're likely to encounter, use cables with XLR

connectors (shown later in Figure 2-11). Because your Mac has no built-in XLR ports, you can't plug an XLR cable directly into a Mac. If you choose a microphone with an XLR connector, you also need another piece of audio gear — an audio interface, internal sound card, mixer, or other device — that has XLR inputs. This device can send its output to your Mac through one of its built-in ports, such as FireWire, USB, PCI (Power Macs only), or PC card (Powerbooks only).

I cover cables, jacks, plugs, ports, and connectors in the section, "Unraveling the Cable and Connector Conundrum," later in this chapter. For more on audio interfaces, see the section, "Adding an Audio Interface to Your Setup," also later in this chapter.

Finding the Right Speakers

Choosing the speakers that you use to listen to your GarageBand work is almost as important as selecting the right microphone. The perfect recording never sounds good in your car, on your home stereo, or on your iPod if you don't use speakers that accurately reproduce the sound when you mix and master.

That said, you don't have to spend a bundle on speakers. The built-in speakers in your iMac or eMac may be as good as you need for the kind of work that you plan to do.

If the built-in speakers aren't good enough, almost any set of computer multimedia speakers is a major improvement. I'm currently using the Telex/ElectroVoice EV Sonic XJR Hardcore Multimedia Speaker System (`www.telex.com`), which is an inexpensive, three-piece set made up of two desktop speakers and one larger subwoofer. I've used many multimedia speaker systems with my Macs over the years, and the EV Sonic XJRs deliver a lot of bang for the buck. They are really inexpensive — around $100 — but they sound as good as some speaker systems that cost twice (or thrice) as much.

ElectroVoice is a legend in club and concert sound, so the XJR speakers and subwoofer look like the monitors that sit on the stage when your favorite band performs, but they are much smaller. The units have volume and subwoofer knobs and a blue LED power light on the left speaker, and they look quite cool on my desk.

Finally, if you're really serious about recording, you will probably want to buy a studio-style speaker system. These systems reproduce audio so accurately that they are called *reference monitors* or *near-field reference monitors.*

M-Audio (`www.m-audio.com`) sells several inexpensive reference monitor systems. I recently evaluated the company's Studiophile LX4 2.1 system (two

speakers and a subwoofer), and all I can say is, "Wow!" I thought my XJR system sounded darned good, but the LX4 system, which costs less than $300, sounds even better — a lot better.

The LX4 is also the only reference monitor system that can be upgraded to a surround-sound (5.1) system. If that's your desire, you just add the M-Audio LX4 5.1 Expander kit, which provides the three additional speakers for less than $200.

Figure 2-4 shows a single LX4 speaker.

I love my EV Sonic XJR system, and the price was right, but for under $300, the LX4s sound so much better that I'm going to buy them as soon as I can afford another audio purchase. I don't use surround sound, so I won't need to buy the Expander kit, but it's nice to know that for another $200 I could have five-channel sound.

One last thing: I just tested Tapco's S-5 Active Studio Monitors, which are Mackie-designed active desktop monitors with dual high-precision internal amplifiers.

Mackie is one of the most famous producers of mixing boards and other professional recording gear; Tapco is their consumer products division. So it's no surprise that the S-5 monitors sound better than many reference monitors costing more.

Figure 2-4: One of M-Audio's LX4 near-field reference monitors.

Speaking of price, while the S-5s cost more than the LX4s (around $400) and don't provide an option for expanding the system to 5.1 surround sound, they do sound spectacular and may be a better choice, depending upon your needs and budget. Check them out at www.tapcogear.com.

Now I'm not sure which to buy: LX4s or S-5s. Either way, I can't go wrong — both systems are far better than the EV Sonic XJRs I'm using now.

Listening with Headphones (Without Messing Up the Take)

If you intend to use any kind of microphone while you record a voice or instrument, you can't use your speakers or reference monitors while you sing or play. This would almost certainly cause ear-shattering feedback.

When you use microphones, you need to listen to other tracks in *cans.* This is studio talk for headphones, as in "Put on that pair of cans and sing a few bars."

You don't need to use expensive headphones, but whatever kind you choose, make sure that they don't leak sound that can be picked up by the microphone. The sound may not cause feedback, but it will spoil the track if you're picky about things like that — and I am.

Ask your friends what they recommend, but avoid any headphones with open foam for earpieces. I have a pair of Grado SR-60 headphones that are the greatest $60 headphones I've ever owned. But they are not acceptable for recording, because the ear cups are made of a loose type of foam that leaks too much sound for recording purposes.

I used to do a radio show from my home office, and the engineers at the station (CNET, before it went off the air) recommended Sony MDR-V600 headphones. They cost less than $100, have leather-like earpieces that seal in the sound nicely, sound darned good, and are comfortable for extended periods of wearing.

If you own an iPod, try using the earbuds that came with it. If you don't set the listening level of the tracks that you're playing too high, these earbuds work pretty well. But Apple's $39 In-Ear Headphones are better: They have better bass response and three different-sized ear caps. You get a snug fit that seals in more sound than the standard iPod units (or most other earbuds, for that matter).

Earbud-type headphones are shown in Figure 2-5.

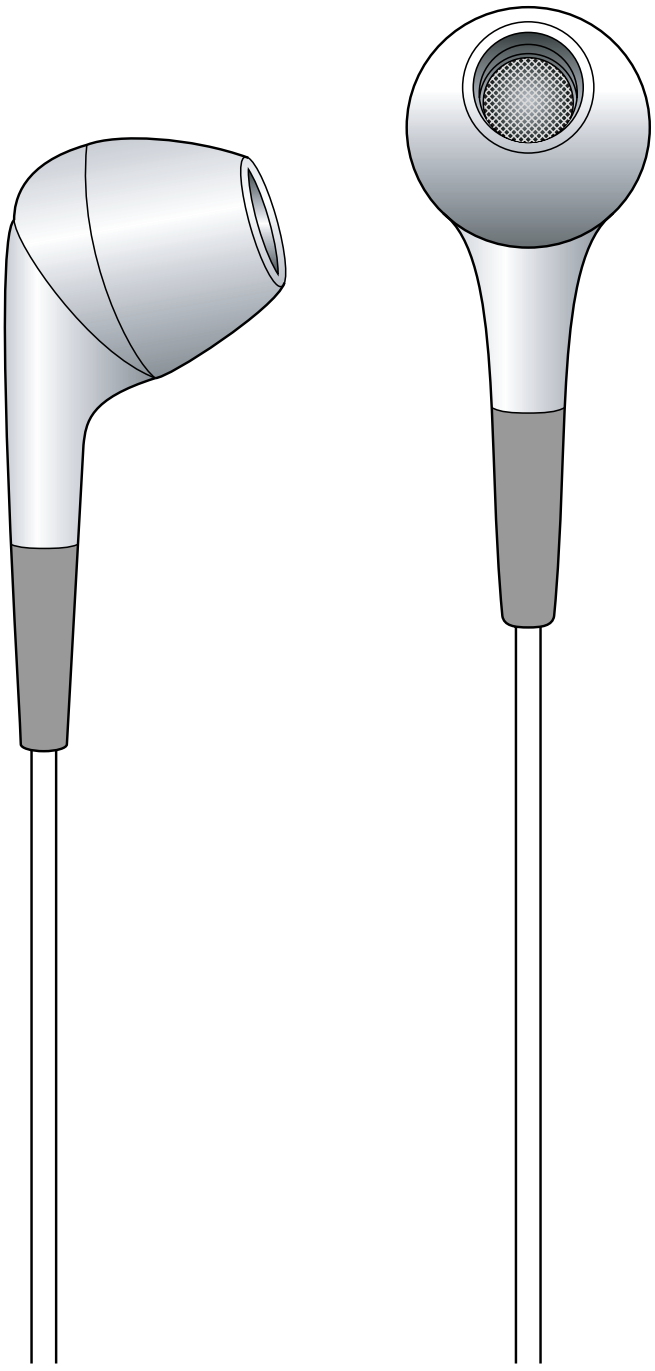

Figure 2-5: Earbuds are headphones like this, which go entirely inside your ear.

Adding a MIDI Keyboard to Your Setup

If you play the piano or organ and want to record GarageBand's software instruments well (or at least not one note at a time using GarageBand's on-screen keyboard, which is shown in Figure 1-1), you should buy a MIDI

keyboard. This keyboard can send information about what you're playing in a format that your computer can understand. (See the sidebar "MIDI this, MIDI that: What the heck *is* a MIDI anyway?" for details).

Finding a keyboard

You may already have a MIDI keyboard. Look around your house and the houses of close friends for anything that has piano-like keys. I discovered an old Miracle Piano that my kids used many years ago had MIDI in and out ports. That meant that I could have used it with GarageBand (with the proper cables and/or MIDI interface), but it was a little too grimy and missing a bunch of keys.

The Apple stores — both physical and online — sell the M-Audio Keystation 49e. This is a nice 49-key, velocity-sensitive MIDI keyboard, as shown in Figure 2-6, that costs just $99.

I'm not a trained keyboard player, but the Keystation 49e feels like a keyboard to me, even though the keys are made of plastic. My musician friends tell me that it doesn't compare to their expensive keyboards, which have special weighted keys that are made from the same material that real piano keys are made of. But even they agree that for nonkeyboardists, the M-Audio Keystation 49e is a good keyboard and a great value.

MIDI this, MIDI that: What the heck *is* a MIDI anyway?

MIDI is the acronym for Musical Instrument Digital Interface. It's an industry standard that has been used by almost all musical software and hardware. A device that conforms to the MIDI standard can send and receive musical information.

A MIDI keyboard doesn't send sound; it sends messages that GarageBand (or other audio programs) can then translate into sounds. If you were recording and pressed the middle C key very softly, waited 1 second, released the key, waited another second, then struck the D key above it with all your might and held the D key for 4 seconds, your MIDI keyboard would send a message something like this to GarageBand:

- At time 00.00, play middle C with a velocity of 17 percent and sustain it for 1 second.
- At time 02.00, play the D above middle C with a velocity of 98 percent and sustain it for 4 seconds.

That's a gross oversimplification. The MIDI standard lets a device send and receive much more information than just pitch, velocity, and sustain. But that's all you need to know for now — you play the MIDI keyboard, and GarageBand memorizes what you played.

Figure 2-6: M-Audio Keystation 49e, an inexpensive but perfectly adequate MIDI keyboard.

I paid a bit more and bought a different M-Audio MIDI keyboard, called the Oxygen 8 (see Figure 2-7).

Figure 2-7: The M-Audio Oxygen 8 is a 25-key MIDI keyboard.

The Oxygen 8 has fewer keys (it only has 25) than the Keystation 49e and a bunch of knobs that don't work (at least not at this time) with GarageBand. So why did I pay more for a keyboard with fewer keys and knobs that don't work? I'll give you four good reasons, as follows:

- The Oxygen 8 is portable.
- The knobs work in some other programs.
- The keyboard was on sale and included a padded carrying case.

Most importantly, with my iCurve Invisible Laptop Stand ($39.99; www.griffintechnology.com), I can stash the Oxygen 8 MIDI keyboard directly under my Powerbook, saving lots of desk space when I'm not playing it.

Connecting a MIDI keyboard to your computer

Most modern MIDI keyboards connect to your Mac via a USB port. Years ago, however, setting up a keyboard wasn't so simple. Only a few years ago, MIDI devices used special MIDI cables. Unfortunately, Macs have never been made with special MIDI cable ports.

The solution to this problem was to use a small box called a *MIDI interface,* as shown in Figure 2-8. You plugged a thick, expensive MIDI cable (or cables) into the MIDI port(s), plugged a USB cable (or an AppleTalk or LocalTalk cable in the very old days) into the USB port, and then connected the other end of the USB cable to your Mac.

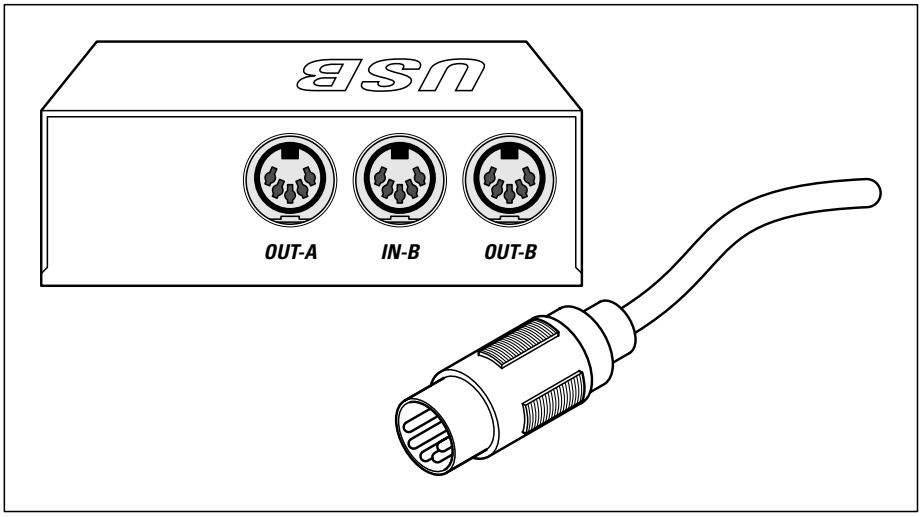

Figure 2-8: A MIDI interface connects MIDI cables to your Mac via a USB port.

Fortunately, most modern MIDI devices (typically keyboards, but many instruments including MIDI guitars and MIDI drums can send and receive MIDI) have their own USB port and often have two or more MIDI ports as well, so you don't need a separate MIDI interface to use these devices.

MIDI devices require *driver software* to operate properly. If you don't install their driver software — or install it improperly — the device probably won't work.

I purposely skipped this driver installation step in the previous MIDI interface discussion. I didn't want to add to your confusion, because the sequence in which you install the driver makes a difference to many devices.

The driver installers for most MIDI devices come on a CD-ROM, which should also include a "read me" document or manual, usually in PDF (Portable Document File) format. Some devices even include a printed manual or a Getting Started guide. You should review all of these documents, because they may contain important information about how to install the drivers. Read them *before* you launch the installer program.

Why is it so important to read before launching? Some MIDI devices must be plugged in before installing their drivers; other devices cannot be plugged in before installing their drivers. And many MIDI devices don't give a hoot either way.

Because you never know how long the device has been sitting on a shelf, Mac power users always check the device maker's Web site before installing drivers from the included CD. If newer drivers have become available, they almost always fix bugs, work better, and are more reliable than the drivers on the CD. The same goes for old devices you have lying around the house or studio: Always check the manufacturer's Web site for the latest driver software and instructions on installing it before you attempt to connect the device to your Mac.

If you install the drivers incorrectly, the device won't work. It's frustrating, but it's easily avoided: Just RTFM (that's Read the Fine Manual) before you launch the installer.

Unraveling the Cable and Connector Conundrum

Nothing is more frustrating than having a cool new toy and not having the proper cable to connect it to your Mac. Your Mac only has so many holes (that is, ports) that you can stick things into — and so do most pieces of audio gear. Unfortunately, the holes in your Mac don't always accept cables that fit the holes in your audio gear. But with a little cable-and-connector know-how, hooking up your gear should be pretty easy. Table 2-1 gives you an overview of the common connectors and cables and indicates how to plug them into your Mac. The rest of this section explains how to recognize each cable and connector and describes what you need to know about them.

Table 2-1 Sorting Out Connectors, Cables, and Ports

Connector	*Typically Found On*	*To Connect It to Your Mac To*
Mono	Anything that sends audio to your computer, such as mics and electronic instruments such as guitars	Insert ⅛-inch plug into your Mac's audio-in port. If the device uses ¼-inch plugs, you'll need a ¼-to-⅛-inch converter (available at Radio Shack).
Stereo	Any gear that plays audio coming out of your computer, such as headphones and speakers	Insert ⅛-inch plug into your Mac's headphone (or "audio-out") port. If the device uses ¼-inch plugs, you'll need a ¼-to-⅛-inch stereo converter (available at Radio Shack).
XLR	High-quality audio gear, such as microphones and mixing boards	Plug the XLR connector into an audio interface with XLR inputs. The interface then plugs into your FireWire or USB port or a PCI slot inside your Mac. See the section "Setting up your microphone," earlier in this chapter, for details and don't forget that some microphones with XLR connectors require phantom power to operate (so make sure your interface supplies phantom power if you need it).
S/PDIF	High-end audio and video gear that uses a fiber optic connection	On a G5, plug the connector directly into the S/PDIF ports. On other Macs, plug into an audio interface with S/PDIF ports. The interface then plugs into your FireWire or USB port or a PCI slot inside your Mac. See the section "Setting up your microphone," earlier in this chapter, for details.
RCA	Consumer audio and video products, such as a receiver, DVD player, audio amplifier, or CD player	Plug the RCA connector into an audio interface with RCA inputs. The interface then plugs into your FireWire or USB port or a PCI slot inside your Mac. See the section "Setting up your microphone," earlier in this chapter, for details.

Mono and stereo plugs. These plugs can be confusing for two reasons: They look almost alike, and they come in two different sizes. Note the following examples:

- The audio-out port (for headphones and speakers) mates with a stereo minijack plug, known as an *⅛-inch stereo plug* at your local Radio Shack.
- The audio-in port (for microphones and instruments) is a mono minijack, or an ⅛-inch mono plug at Radio Shack.
- Electric guitars and other electronic instruments use ¼-inch mono plugs, as shown in Figure 2-9.
- Many good headphones and other electronic devices use a ¼-inch plug as well, but they use a stereo ¼-inch plug.

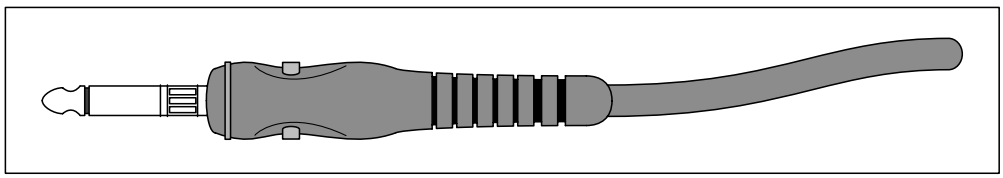

Figure 2-9: A ¼-inch mono plug used for guitars and other electronic instruments.

The size difference is fairly easy to figure out: ⅛-inch plugs are smaller and fit into your existing ports and ¼-inch plugs don't. But how do you tell the difference between mono and stereo plugs? Stereo plugs have two rings, and mono plugs only have one.

Look at Figure 2-9, a ¼-inch mono plug, and compare it to Figure 2-10, a stereo plug. Notice the two rings on the stereo plug and the single ring on the mono plug. The two-ring/one-ring deal applies to the minijacks (⅛-inch plugs) as well. Always make sure that the plug you shove into a given port is the right one for the job.

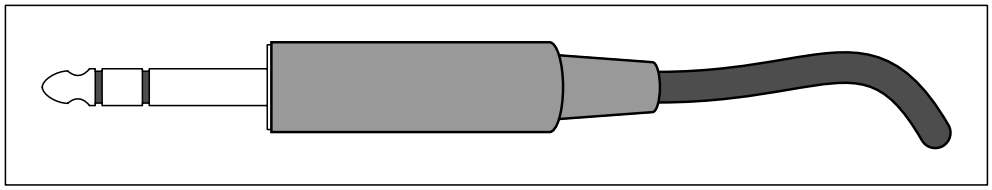

Figure 2-10: A ¼-inch stereo plug used for headphones and other stereo devices.

Stereo comes out of two speakers. Stereo plugs have two rings.

XLR connectors. XLR cables and connectors are yet another kind that you're likely to encounter, particularly if you use higher-quality audio gear such as microphones (mentioned earlier in this chapter) and mixing boards. Two XLR connectors are shown in Figure 2-11.

S/PDIF connectors. S/PDIF (Sony/Phillips Digital Interface Format) is becoming more popular and is now supported by many inexpensive devices. As of this writing, the Power Mac G5 is the only Mac with built-in S/PDIF ports.

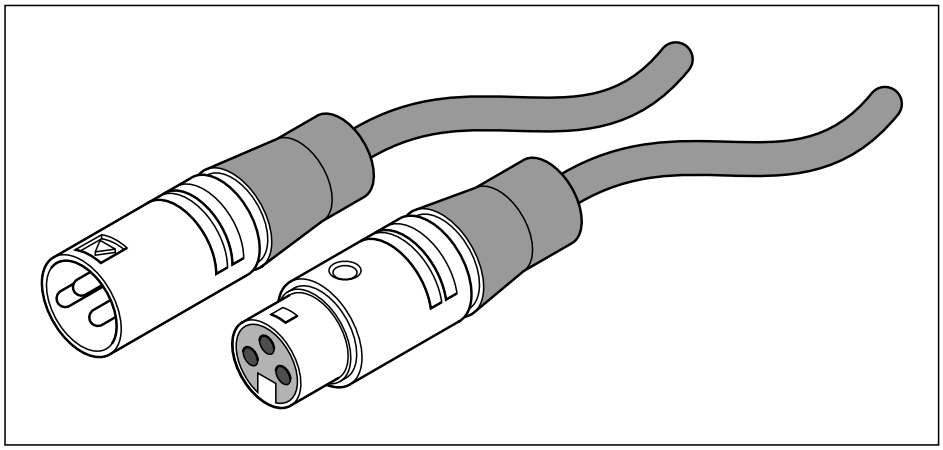

Figure 2-11: Male (left) and female (right) XLR connectors.

If you have a G5 with S/PDIF in and out audio ports, you should use them if you have gear with S/PDIF connectors. Because S/PDIF is fiber-optic cable, it adds the least noise to audio that passes through it.

XLR cables are quieter than other types of analog cable and are less likely to add hiss, static, or hum to your recording. But the quietest cable of all may be the S/PDIF.

RCA jacks. Finally, many consumer audio products, as well as some computer audio products, use RCA jacks. These jacks, shown in Figure 2-12, are also known (at least in the old days) as phono plugs.

Here's the best tip in this section: Radio Shack is a great place to solve cable dilemmas. The Shack has adapters or cables that do just about anything that you can think of. Do you need to connect two mono ⅛-inch cables to a single ⅛-inch stereo jack? Radio Shack sells cables and adapters for that. Do you need a male connector when all you have are female connectors? No problem; Radio Shack has gender switchers for most plugs. Do you need a cable with one type of plug on one end and a different connector on the other? Chances are that Radio Shack has it or has a plug converter that you can use.

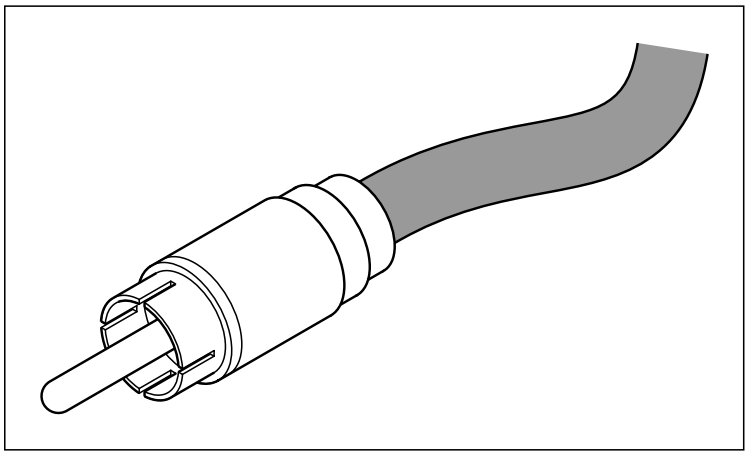

Figure 2-12: Consumer audio/video equipment often uses cables with RCA jacks to connect various components.

Every guitarist should have one cable — a ¼-inch mono female–to–⅛-inch stereo male minijack. Plug the male end into your Mac's audio-in port, and connect your guitar cable to the female end. Now you can play your guitar in GarageBand without additional hardware (some of which is covered in the next section).

Apple sells a Monster Instrument Adapter, an expensive ¼-inch mono female–to–⅛-inch stereo male adapter, for $19.95. I bought one and it works fine, but it adds more noise to guitar recordings than any of my analog audio interfaces. But it's not noticeably better or worse than a similar adapter I got at Radio Shack for under $5. (I discuss this further in the next section.)

Adding an Audio Interface to Your Setup

While you can usually rig a cable to connect various devices to your Mac, sometimes you need better quality than jury-rigged cables can provide. Or, maybe you have other audio software that's capable of recording more than one track at a time. (GarageBand limits you to recording a single track at a time; most other audio programs don't impose this limitation if your hardware supports more than one audio input.)

Using an interface with GarageBand

With GarageBand, an audio interface is most commonly used for microphones (or other devices) with those pesky professional XLR connectors. Like a MIDI interface does for MIDI instruments, an audio interface acts as a bridge between the XLR cable port that your Mac doesn't have and the USB port that it does

have. An analog audio interface can also help you use other connectors that your Mac doesn't have a port for — for example, ¼-inch mono and/or stereo plugs and several other types of plugs, depending on the interface you choose. (See the section, "Unraveling the Cable and Connector Conundrum," earlier in this chapter, if you're not sure what all these plugs are for.)

Audio interfaces come in all shapes and sizes and many combinations of inputs and outputs. The following two main types are available:

- FireWire interfaces, which plug into your FireWire port
- USB interfaces, which plug into your USB port

FireWire interfaces are usually capable of more than one or two channels of input or output at a time. (This matters not a whit to GarageBand, which records one and only one track at a time.) FireWire devices are faster than USB interfaces, although that doesn't matter to GarageBand either. The USB interfaces that I've tested have been plenty fast enough and have the inputs and outputs that I use — XLR plugs for microphones and ¼-inch mono plugs for guitars.

Shopping for an interface

If you would like to use an interface with GarageBand, think about whether you want to stick with GarageBand or whether you should move up to higher-end software. Buying the right interface for your needs will save you a lot of money. Keep the following points in mind:

- For GarageBand, choose the least expensive audio interface that does what you need. Otherwise, you end up paying for features that GarageBand doesn't support. And, if you're on a tight budget, make do with microphones and instruments that you can plug into the Mac's audio-in port and avoid anything with an XLR connector.
- On the other hand, if you plan to someday move up to more sophisticated recording software, a more capable (and more expensive) audio interface may be worth it; those other programs can record 4, 8, 16, or more tracks at a time!

An interface for GarageBand only

M-Audio (`www.m-audio.com`) and Edirol (`www.edirol.com`) offer the widest selections of USB and FireWire interfaces. If you want an interface just for GarageBand, the inexpensive ones should have everything you need. For example, you get the following with the M-Audio Mobile Pre USB, which sells for around $150 and is shown in Figure 2-13:

- **2 XLR inputs with 48V phantom power:** This is the port that you need for a higher-end microphone, complete with the phantom power.
- **1 stereo microphone input (⅛-inch)**
- **2 instrument/line inputs (¼-inch):** These inputs are ideal for connecting guitars and basses.
- **2 line outputs (¼-inch)**
- **1 stereo line output (⅛-inch)**
- **1 stereo headphone output (⅛-inch):** For adjusting the volume of what you hear in the headphones.
- **Bus-powered:** This means it gets all the power it needs from your USB port; that means you don't have to lug around a power brick, which is particularly nice if you use the interface with a Powerbook or iBook.

Figure 2-13: M-Audio's Mobile Pre USB audio interface.

These features are pretty good for the low end of M-Audio's product line; the features are probably all that most of you will need for a while.

An interface for other recording software

As much as I hate to admit it, if you're serious about recording, you're going to outgrow GarageBand, and its limitations will frustrate you — probably sooner than later. In this case, you should consider another audio interface. This interface is Digidesign's Mbox, another USB audio interface with an array of inputs and outputs that's similar to M-Audio's $150 Mobile Pre USB. I have a Digidesign Mbox, and it works great with GarageBand, but it's three times the price of the Mobile Pre USB, at around $450. The Mbox may be worth considering for one reason alone: It comes with Digidesign's popular Pro Tools LE software (and a bunch of other useful software, including AmpliTube LE, the coolest guitar/amp modeler I know).

Pro Tools is a standard in the audio recording industry; some Pro Tools systems cost $100,000. Mbox is the entry-level Pro Tools offering, but it sports the same interface as the $20,000 (and up) Pro Tools TDM systems. If you buy the Mbox now to use as your audio interface with GarageBand, when you are ready for a more powerful program, you'll have it already — Pro Tools LE. See Chapter 17 for more on Pro Tools and other more advanced recording software.

Perfecting Your Mic Setup

If you're using microphones to record, supplementing your mic setup can help you get a better recording. The obvious addition to your mic is a mic stand. If you're recording vocals, pop filters and wind screens can also help you get a better take.

Choosing a mic stand

I have two or three mic stands, and they are all cheapies — bought on sale at one of Guitar Center's Super Savings Spectacular Sale-a-Thon promotions. Figure 2-14 shows a boom-style mic stand on the left and a straight stand on the right.

I prefer booms; they are more flexible when placing the mic. When you're recording using a microphone (and you're going to hear me say this time and again), mic placement is critical. Placement two inches one way or the other could mean the difference between an award-winning take and a pile of garbage. The boom stands make it a lot easier to place the mic exactly where you want it. The downside is that they tip over easily, and I've tipped them over more times than I care to remember. I've also whacked myself in the head with both ends of the boom — more than once. So be careful; those mic stands are inherently unstable critters.

I think the straight stands are better on stage than in the studio.

If you're on a tight budget, duct tape is a cheap alternative to the mic stand. Tape your mic to an object that's big and heavy enough so that it doesn't vibrate while you're recording. Or, prop the mic on pillows that you pile on a chair and point the mic at the sound hole of your acoustic guitar. You can also dangle a mic from the ceiling. (It's not good for the cable, but it may sound cool.) The point is this: Use your imagination. When it comes to how and where to position a mic, no consensus exists and anything goes.

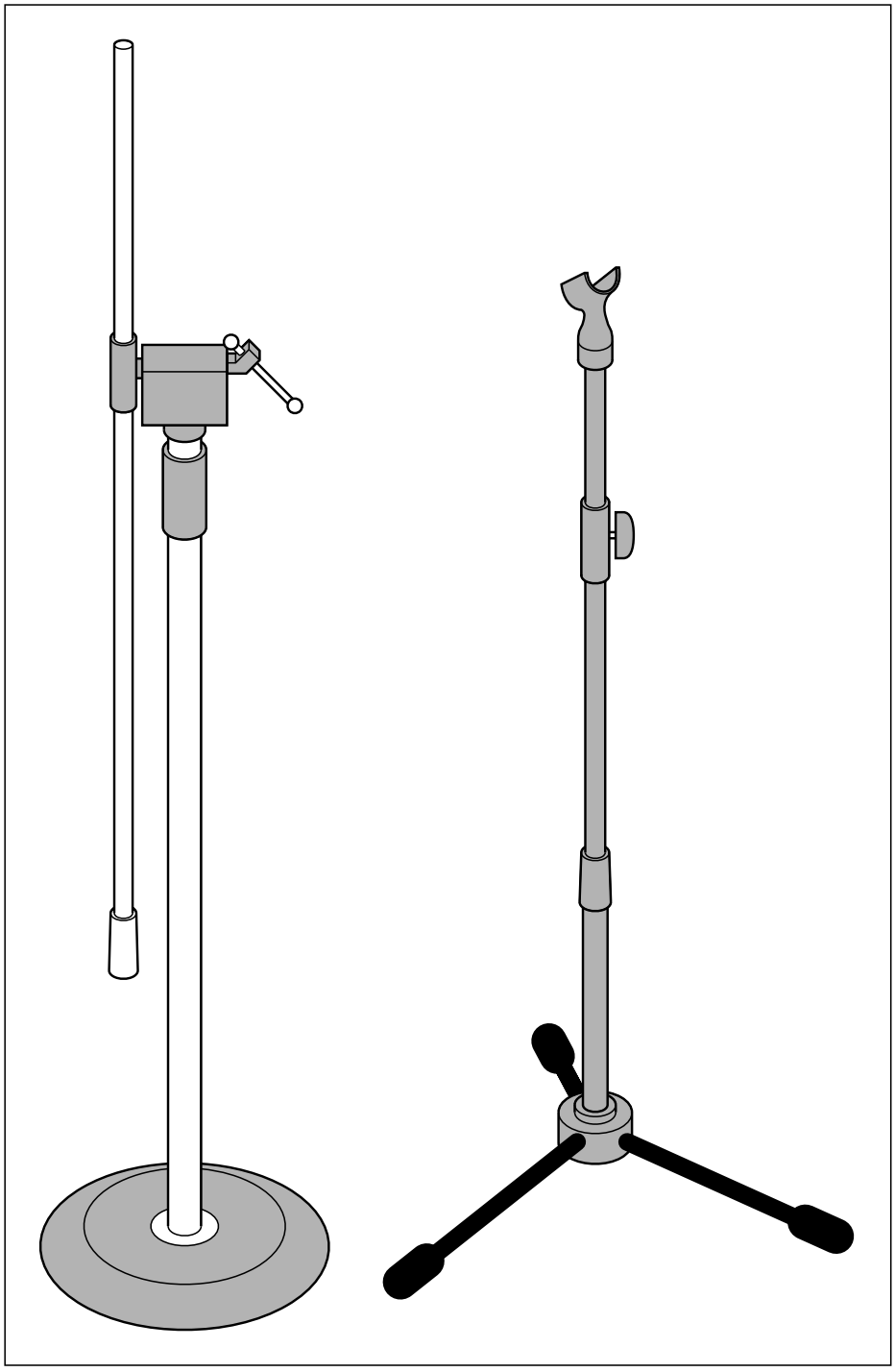

Figure 2-14: Boom (left) and straight mic stands.

Recording vocals with pop filters and wind screens

Two more tools that pros use for their recordings are pop filters and wind screens.

A *pop filter* is a thin piece of cloth (usually nylon) stretched over a frame that's slightly larger than the microphone itself. This idea is that the pop filter minimizes the popping sound created when you pronounce, for example, the letter "P." Place the filter 4–6 inches from the mic, and even the most plosive p-poppin' vocalist will sound less percussive.

You can make a pop filter from a wire coat hanger and panty hose, or you can buy a ready-made filter at most music stores for about $25. Make them or buy them, but use them for most vocals. These filters almost always improve your sound, even if your vocalist doesn't pop his or her *P*s.

Along the same lines, but less important in studio work, are *wind screens*. Like pop filters, wind screens keep unwanted noise from entering the mic. When a television newscaster shoves a microphone in someone's face, the foam ball that you see is the wind screen that covers the microphone.

A wind screen can help with plosive *P*s, but a pop filter usually works better for that issue. A wind screen may also muffle what you are recording more than a pop filter. I use the pop filter for all vocals and rarely use a wind screen, but if you have a wind screen, try it and see if you like it.

Boosting Your Hard Drive Space

Something you can't do without is plenty of free space on your hard drive — internal or external. GarageBand and its attendant files are huge, and a single song can use hundreds of megabytes of space. The more you use GarageBand, the faster your hard drive will become full enough to cause you problems.

Mac OS X doesn't like it when the startup (boot) drive is nearly full. This condition may slow your Mac's performance, affect your ability to record in GarageBand, or both. My guideline is to leave at least 10 percent of my startup drive free; bad things can happen if you let the hard drive get much fuller.

In Chapter 1, I mention that if your hard drive gets too full, one option is to purchase an external FireWire drive. My top two reasons why external FireWire drives are better than internal ones are as follows:

- If a FireWire drive has problems, you don't have to open your Mac to get at your drive or to replace the drive. With a FireWire device, you merely connect the replacement drive to your Mac and plug in its power supply, and you're back up and running.
- FireWire drives are bootable, so you can use one hard drive with more than one Mac and have all your stuff just the way you like it. If you use more than one Mac — like a Powerbook and a desktop — being able to easily use the drive with either computer is a plus.
- If you compose or record with friends, you can just take the FireWire drive containing the GarageBand session files to their house instead of lugging your whole Mac.

The internal hard drive in my old Power Mac G4 died, and I didn't replace it for months. I simply used FireWire drives exclusively.

I know I'm getting ahead of myself, but while I'm talking about drives, you should probably hear this now. With audio applications other than GarageBand, you are strongly recommended to save your project files on a drive other than your startup (boot) drive. You get better performance from many audio applications by storing your projects on a nonboot drive and GarageBand is no exception, so if you've got a second (or third, fourth, or fifth) hard drive, use it to save your GarageBand projects instead of saving them to your startup drive.

Recording in Tune with a Tuning Device (for Guitarists)

Last but not least, if you're a guitarist or you play any instrument that is tunable, you should get some type of digital tuner and use it before each and every recording you make. The computer isn't very forgiving. If you record a piece when your instrument is out of tune, it's never going to sound as good as if you had tuned up first, no matter how hard you try. That's because GarageBand's software instruments never play off-key.

Some other audio programs (for example, the eMedia guitar lesson series and AmpliTube Live) include on-screen tuners that work pretty well. If you have a tuner that came with other software, use the tuner before you launch GarageBand to record. If you don't already have a good tuner, be sure to get one before you record.

Chapter 3

GarageBand Preferences: How Do You Like Yours?

In This Chapter

- Using the General pane
- Working with the Audio/MIDI pane
- Understanding the Export pane
- Gaining experience with the Advanced pane

Before you work and play with GarageBand, you should familiarize yourself with its four preference panes and their settings, as shown in Figure 3-1.

Figure 3-1: The GarageBand preference panes (clockwise from upper left): General, Audio/MIDI, Export, and Advanced.