

### Chapter 2

#### HOW TO SET UP A RECORDING STUDIO THAT WORKS FOR YOU

Chances are you either have a home studio already set up or dreams of it in your head. Everyone today is able to create their own little recording space for their productions. But don't just buy the equipment like we discussed in chapter 1 and be done with it. Your most valuable equipment breaks down into two things.

##### Your Room and Your Ears

You don't want your room interfering with what you are hearing. By treating your room acoustically, both with absorption and diffusion you will create better recordings and mixes. By reducing reflections and flattening the frequency response of your room to the best of your abilities, you will hear the instruments better; you won't have echoes and reflections bothering your sound, and you will have a more controlled work space.



Everything Within Easy Reach - Image by: Ranch Records

### SETTING UP AN ERGONOMIC WORKSPACE

Let's assume you have a room at your disposal that you can use as your studio. Some people have to make do with a corner in their bedroom, but in order to demonstrate how to have a good working home studio, we'll assume you have the whole room at your disposal.

If you are like most home recording hobbyists, you will be doing all of the work from recording instruments to mixing and mastering in this room. This has some disadvantages but nothing you can't work with.

Try to separate your room into two different areas: the "control room" and the recording space. I have self-made baffles out of carpet foam and blankets that create a fairly comfortable and quiet recording area in the corner of my room. The control room area consists of my desk three quarters from one of the end walls. This is where I do all of my mixing, and I also have a keyboard controller at one end of the desk. Since I don't need to worry about noise from my computer or extraneous noise from outside when I'm working with MIDI, it's very comfortable to set up your controller by your computer keeping everything with-

in easy reach. Recording gets a little more tedious, especially when I'm recording myself, since I have to get situated at the recording space and hit RECORD at the same time. But the benefits of having a quiet and comfortable recording space make up for it.

### Recording in a Roomy Room

You can avoid the room sound by setting up baffles and blankets around yourself and your instrument when you record. Also, if you use directional cardioid microphones at a close proximity, you further neutralize the room sound around you. A microphone that's close to an instrument picks up less room noise than ones that are situated at a farther distance. These recordings might sound pretty dull and dry once you've recorded them, but you will have more room to make them sound better in the mixing phase. You can add a nice reverb to a dry recording in order to create a great final sound, but adding a good reverb to an already roomy sounding recording will just make it sound worse.

By modeling your recording space and control room so that everything is within easy reach, you've created a very efficient work space. Having MIDI Keyboards by your desk, or a guitar within easy reach are two strategies that help ideas flow without unnecessary distractions and pauses.



### BE ECHO FREE

The first order of business is getting rid of flutter echo. Flutter echo persists in small rooms such as bedrooms. It's that ringy noise you hear when you clap your hands together and the walls seem to vibrate.

The only way to get rid of flutter echo is to kill it before it gets the chance to bounce all around your studio. Absorption at strategic areas helps reduce unwanted reflections and will kill flutter echo if put up correctly.

Notice in the workspace to the right how I've situated all the absorption? Those spots on the walls beside the monitors are where the sound waves will first hit. These are called primary reflections and you will want to eliminate them as soon as you can.



### BACKGROUND NOISE

Home studios have a lot of noise to deal with. Street noise, air conditioning, computer fans and the like are all typical problems for a home studio. This is one of the reasons I find it comfortable to create a second recording space away from my computer.

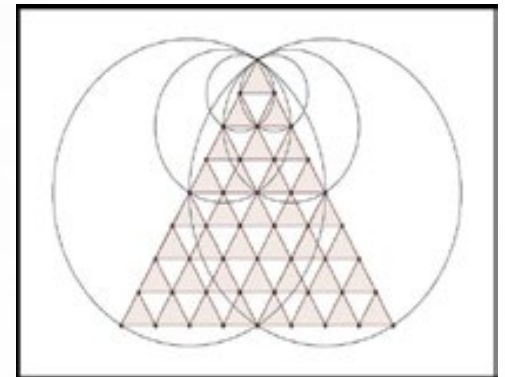
Desktop computers sometimes have loud fans, so by distancing yourself from the fan, setting up baffles between the microphone and the computer, and angling the microphone away from the noise you can minimize the amount of extraneous noise that bleeds into your recordings.

Rumbles and low-end background noise from the street can be minimized by using a microphone's high pass filter. Alternatively you can cut the low frequencies inside your workstation after recording.

### CORRECT MONITORING

Make sure you are hearing your monitors correctly. A few simple rules can save you a lot of badly translated mixes and unheard imbalances.

1. Your head must be the third point in an equilateral triangle. Make sure the two monitors are placed at the same distance from each other as they are from you.
2. Your monitors need to be at the correct height compared to your ears in order to hear the full range of the speakers. The tweeters need to be at the same height as your ears. Alternatively, if the monitors are higher, you can angle them down so that the tweeters point at your ears.



Put your head at the top, your monitors at the left and right points. Image by: Electric-Eye



3. The monitors need to be in an equilateral triangle to your mixing position. That's the correct way to set up your monitors. You want both of them at the same length from your ears, otherwise you will feel like one is louder than the other.

### Absorption around Monitors

You want to isolate the sound coming out of your monitors as much as you can. This means putting up absorption underneath them, behind them and by the side to reduce primary reflections. Auralex MOPADS are a really good way to decouple the vibrations coming from your monitors.

Leaving the monitors on your desk creates an amplifier out of it, making the desk vibrate with the monitors. By eliminating these vibrations you will hear more clearly and accurately what is coming out of your mix, resulting in better judgment and translation to other systems.

However, putting up a ton of absorption isn't the end-all solution to your reflection problems. The thing with foam absorbers is that they're usually pretty thin. Since they are thin, they usually only absorb the higher and middle frequencies. In order

to accurately treat your room for the lower frequencies, you need thicker absorption in the form of bass traps. Bass traps are simply thicker absorption panels that absorb lower frequencies. The lower the frequency, the thicker the trap.

### The Mirror Trick

My girlfriend hated this trick when I was putting up my acoustic treatment. She was the one who had to hold the mirror, and she didn't understand the point. I tried to explain, but she wasn't interested. Hopefully you will be.

The mirror trick is used to catch the direct primary reflections from the monitors that hit the walls. Since sound waves follow simple geometry, it's easy to see where they will hit the walls.

Here's how you do it:

1. Set up your monitors in an equilateral triangle, and have your chair as the third point in the triangle.
2. Have someone hold a mirror up to the walls to your left and right side.

3. Move the mirrors around until you see each monitor in the mirror from the listening position.
4. Put absorption where you see the monitor in the mirrors.

With simple mirror geometry you can easily see where the primary reflections are hitting the walls. The primary reflections are the most important ones to eradicate in a home studio. Make sure you do this trick, even if it means getting your girlfriend involved.



### BASS TRAPPING

Dealing with bass in your studio is also very important. Even though absorption is great to take care of your reflections, bass needs a heavier approach. Bass traps take care of the lower frequencies and leaves you with a cleaner sounding home studio.

You can usually see bass traps in the corners of studios. Bass traps are made of thick material and usually placed in corners to achieve two things:

1. A bass trap in the corner eliminates the ninety degree angle the two walls make, reducing reflections.
2. Bass tends to build up in the corners so if you have a thick bass trap there it will eat up the excess bass that's clogging up your control room.

Don't worry about overdoing the bass traps; you can't really over-bass-trap a room anyway. Low-end is big and bulky so create as many bass traps as you can. The thicker the better. If you can you should put bass traps in every corner of your room.



*Auralex LENRDS and homemade bass trap alongside Auralex Roominator pack in the primary reflection zone.*

If you have a DIY tendency, there are a multitude of videos on how to create your own bass traps on Youtube.

If you have the budget to spend on acoustic treatment, then many of the [Roominator kits by Auralex](#) are excellent choices for treating your home studio. I use many Auralex products in my studio and they work really well. Once you've put up a certain amount of absorption you will instantly hear a difference in how your room sounds. My recording room is significantly quieter than any other room in my house, just because of all of the absorption.

Sometimes you will notice that even though you've put up all these bass traps, the bass just isn't going away. Standing waves can sometimes be problematic in small studio rooms. If your room is a good dimension for an annoying standing wave you can definitely hear how the bass is louder in some parts of the room. One of the ways you can combat this is to roll up blankets and put them on the floor by the walls. Sometimes all you need are a few rolled up blankets to kill a standing wave from forming.

**Further Reading on Bass Traps:** [What are Bass Traps and Why Do You Need Them?](#)

### DIFFUSION

A completely sound-absorbed room is actually not a desirable thing in a studio. We want some reflections, but we want controlled and diffused reflections. We want to be able to hear how our mix sounds in a room, but we don't want that room to interfere with our mixing. As paradoxical as it sounds, we can achieve these controlled reflections by using diffusers.

Diffusers scatter the sound waves that reach them reducing the energy of the reflections but still retaining the live-ness of the room. The typical diffuser has many different panels that create one large seemingly random surface. It's not just a flat panel, but a number of flat panels at differing lengths that make the sound wave reflect at different intervals, scattering the sound wave and reducing its energy.

By placing a diffuser at the back wall of your studio, you can reduce the reflections coming at you from that wall. And if you have a small recording area set up over there, you have the advantage of a controlled live environment. Instead of a blank wall that might interfere with your recordings, you have a lively sound that enhances your recordings instead.