

... All For The Perfect Sound

By Brett Allen of SnowGhost Music

Studios have been a place where great minds converse in the music language for all to hear. We have been privy to the early hotel room recordings of early blues greats such as Robert Johnson; The music of folk greats such as The Carter Family, Woody Guthrie, and Tommy Jarrell was all captured on a porch deep in the Appalachian Mountains. But the recording studio is where we really stretch our imaginations in crafting the sounds that make up the songs we know and love.

Prior to the recording industry, the publishing industry was the primary business, aside from contracted musicians. People would either hire their favorite artists, contract artists to play their favorites, or even play themselves, as publishing companies began to provide the sheet music. With the advent of the phonograph in 1877, Thomas Edison paved the way for the recording industry as we know it.

If Alan Lomax and Harry Smith led the way with early field recordings, Sam Philips, Tom Dowd, Geoff Emerick, and Eddie Kramer pushed modern music forward with their respective studio recordings. The mics, consoles, rooms, reverb chambers, and engineers' techniques and tricks all sculpted the sound. The studio and engineer essentially became the 'sixth man' in the band. It was not uncommon for bands to use the same studio and engineer for every record. It was not uncommon for bands to change it up for every record. But one thing was clear, the studio had secured its' place as a major player in the music industry.

... All for the Perfect Sound. Achieving the perfect sound is not about fidelity. Sometimes you want small sounds, large sounds, junky sounds, clean sounds, minimal sounds, or lush sounds. All of these paint different images for the prospective listener. Thus, the perfect sound is creating the right image. If the recording is your canvas, then the studio is your brush and paint. The studio's role is to provide as much versatility as possible to allow the artist to realize what they are hearing in their head.

I designed and built the recording studios currently in use by SnowGhost Music with every detail in mind. Having the opportunity to build from the ground up provided a huge palette of options to consider; From lighting and grounding, to acoustic treatment and signal path. Over 5 years, I realized that building a recording studio is a series of triumphs and failures, but in the end something I am very proud of doing. I enjoy the constant problem solving that goes into running a studio on a daily basis and would recommend it to anyone with the desire to find the perfect sound.

There are many things to take into account when building or retrofitting a space for recording. Let's start with the properties of acoustics: Absorption, reflection, and diffusion.

Absorption is soft and thick enough to eat up sound. The pro setup would include the pink fiberglass that we insulate our homes with; The DIY approach would be like using grandma's afghan or a thick curtain. Warning: Carpet generally sucks, because it is too rigid (shag could work). The main purpose of absorption is to control the high-end reflection in a room. Cymbals are often a nightmare if you don't have an option for some absorption. Absorption in the corners of the room can be good for controlling bass as well.

Reflection is necessary to give your recordings some space. Its' descriptors are words like hard, rigid, and inflexible; Some examples of reflective surfaces are drywall, wood, glass, stone, concrete, and metal. The famous plate reverbs of the 50s used a big sheet of metal to bounce sound off of. Reverb chambers are big rooms with hard surface walls. You don't want to go too far though, as you can limit the flexibility of your recordings if you only have one very live sound; Reverb effects units were invented with the intention of giving you flexibility, so most recordings were made fairly dry with the appropriate space being decided on in the mixing process.

Diffusion is probably one of the more overlooked principals in acoustic design. It is also what separates the amateur from the pro. The design of a diffuser can be time-consuming and very expensive if done by a professional. A diffuser relies on randomness to break up frequencies in a room; you will no longer worry about EQing out the low-mid range of your guitar because your room is bathed in mud. A properly diffused room can also make it seem larger than it actually is. If you were to go into a completely diffused room with your eyes closed, you would think it was much larger. The recipe for a diffuser is simple: As close to perfectly random as you can get. This could be an imperfect brick wall or even a bunch of two by fours stuck together in a staggered manner; A log cabin is generally a well-diffused space. In a more DIY setting I would even recommend buying a bunch of used books, building bookshelves, and recording in your own 'library'. Again, you can always pay someone a truckload of money to crunch some numbers and design a diffuser specifically for your space.

The cleanliness is godliness as far as your electric instruments are concerned, addressing the power issue. Proper grounding can make your life so much easier if done from the beginning, as opposed to chasing down the demons later. There are two ways to look at grounding: 'Safety' ground and 'Technical' ground. Safety ground is also referred to as 'Earth' and is required by OSHA (Occupational Health and Safety Administration) to protect you from getting electrocuted. There are various forms of 'Safety' ground scenarios, but the most common involves driving a large copper rod into the soil and connecting it to your 'House' service box. A 'Technical' ground is not required by the feds, but is used in almost all professional studios. The idea is to tie all of your audio equipment and power outlets together so that everything is seeing the same voltage. If your guitar pedals and amp are seeing different voltages at different outlets you will get the all-familiar 'buzz'; that's why the cheap fix is often powering your amp and pedals from the same outlet, using a power-bar. Recently, studios have also turned to using balanced power; balanced power works a lot like balanced audio (XLR mic cables), where you take two duplicate

signals and flip them out of phase to eliminate noise. Note that you definitely want to consult someone on your electrical system as it is not only illegal, but also dangerous to do on your own.

Lights may not seem like something to worry about but they are major contributors to the noise of your space. They can make audible noise themselves or generate fields that create noise in your electric instruments. Traditional canned lights have transformers built in locally and cause RF field noise. Lights with dimmers can often cause audible noise when not fully open. Fiber-optic lights are cool because you can house the illuminating source and transformer far away from your recording space, but they are somewhat cost-prohibitive.

Cable quality is another important aspect of a studio. Buy good connectors, good cable, and good solder; trust me. Every studio owner should know how to make their own cables because it is so much cheaper and you can guarantee that the proper love went into soldering the connectors together. It is a very tedious job, but you won't regret it in the end when your audio sounds crystal clear, and doesn't crackle do to weak connections.

Lastly we have gear. I recommend a console of good quality, but don't break the bank there. Mics and mic preamplifiers are the most important as they are your front end. You want at least one stereo pair of good mic amps. On the mics I recommend a pair of large diaphragm condensers, a pair of small diaphragm condensers, a bunch of Sennheiser 421s, and a bunch of Shure SM 57s (a bunch being as many as you can get). The most useful condenser mics are the AKG 414s (large diaphragm), and AKG 451s (small diaphragm). A stereo pair of compressors and EQs are helpful, but don't stress it you run out of money buying mics and mic pres, it's worth it; learn to use what you have and save some money.

If there is any sort of tip that I can give to the new studio builder, it's the "whatever works" philosophy. Your solution may not be pretty, but when the band is waiting you have to move quickly. Read as many books as you can find on recording and studio design, but don't take them too literally; the jury is not out on how to design a room, which mic to use, or on analog vs. digital. Recording is fun because the possibilities are endless, and there is no right answer. The same goes for studio design.