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Foreword

One of the reasons that this book came about is because, like my co-writer Rich Tozzoli, I've become a connoisseur of guitar tone over the years. To me, there's nothing better than a great-sounding acoustic guitar or electric guitar and amp rig. Over the years I've spent gigging, and especially in the studio, I think I've learned just what a "good" guitar tone is, especially in terms of how it fits in the mix.

It wasn't always that way though. Way back when I first started playing and gigging I was just like so many young players, searching for the elusive tone I heard on records and in my head, trying every amp and pedal I could find, and eventually resorting to some crazy combinations that led me further away from tonal nirvana instead of closer to it. But I had two revelations that led me to listen to electric guitar tones with new ears.

The first came when I was jamming in a garage one day with slide guitarist extraordinaire Gerry Groom, bass player and LA studio stalwart Paul III, and the amazing drummer Michael Wright. Gerry was a protégé of Duane Allman (of the famous Allman Brothers Band), and was so close to Duane that Duane willed Gerry his beloved Les Paul when he died. Gerry had amazing chops and a lot of experience, and was once dubbed by Jimi Hendrix' former manager "the next great American guitar player." I was no pup either. I had been playing about 15 years at the time, and had a couple of major-label record deals under my belt (back when they actually meant something).

Gerry plugged his 1960 Les Paul Black Beauty into his 1964 Fender black-faced Super Reverb and the sound was glorious with lots of sustain and some really great-sounding overdrive. I plugged my 1981 Strat into a small rack (which was popular at the time) full of distortion devices, chorus units, EQs and noise gates, which then went into a fabulous 1977 Marshall JMP 100-watt half-stack. While Gerry's guitar sang with richness and as much sustain as he wanted, mine sounded thin and buzzy, although just as loud. After about a half-hour of jamming, Gerry looked at my rack and sneered, "Why do you even use that crap? You'd sound a lot better without it."

I loved my pedals and rack gear and the way they made me sound while I played by myself, but I had to admit that his rig sounded better than mine by a mile. He had the sound that I kept trying to get by using all the pedals and rack gear, but he got it by using none of them!

I unplugged everything and went straight into the amp, turned it up, and...wow! It really did sound better once I tweaked the amp's controls a bit. I was a little bit shocked by how high I had to turn the amp up to get the sound, but there it was, the sound that I heard on countless records and that I'd been trying to achieve. It was that simple.

The next revelation came shortly afterward when I was producing and playing on a record. I was playing the same Strat with a '66 Fender silver-face transition-model Twin. I still wasn't totally confident about foregoing my rack so it was still plugged up, but after many, many takes of just not getting a sound that fit, I unplugged the rack, ran straight into the amp and turned it up. Once again, there was the perfect sound. At that point, the lesson had finally sunk in about where my tone was coming from.

PART ONE:

ELECTRIC GUITARS AND AMPLIFIERS

Chapter 1:

What is Tone



Photo by Rich Tozzoli

The 1960s: Amps and Distortion

With the sudden popularity of the electric guitar thanks to The Beatles and the “British Invasion,” market-leading Fender and Gibson guitars became a bit too expensive for the average beginner guitar player, which led to an influx of poor-quality imported instruments that were difficult to play. That didn’t discourage many new guitarists, though, as bands and players flourished like never before.

Sales of pricier instruments continued to thrive, which led to the major companies fighting for market share. In 1960, Gibson experienced a decline in sales, due to strong competition from Fender. In 1961, impressed with the cutaway design of the Stratocaster, Gibson modified its Les Paul line with a model that was thinner and lighter than earlier models and featured double cutaways and a vibrato system (see Figure 2.21). These modifications were made without Les Paul’s knowledge, and as a result, he asked that his name be removed from the instrument and parted ways with the company shortly thereafter. In 1963, the guitar’s name was changed to “SG,” which stood for Solid Guitar. Variations on this design evolved into products such as the less-expensive Les Paul Juniors, Specials and Melody Makers.

At the time, tubes were thought to be the weak link in the amplification chain, and many companies began to integrate the new technology of transistor amplification into their product lines, because of their lower heat and weight and longer life. Kay was the first company to implement the design in 1962, followed by Gibson in 1963, Vox in 1964 and Fender in 1966. Players were not impressed, to say the least, and these models have never been sought after in any vintage.

Musicians have always loved distorted guitar, but in the early days, most of the time distortion was achieved by accident. From Ike Turner’s defective amp on 1951’s “Rocket 88,” to Link Wray’s blown speakers on his 1958 instrumental hit “Rumble,” to the legendary 1961 Marty Robbins “Don’t Worry” recording session with a malfunctioning console preamp that generated a now-famous “fuzztone,” guitar players had trusted that magic sound to be a product of fate. Glen Snotty, the recording engineer at that fateful Marty Robbins session, managed to duplicate that sound in 1962 in the first known instance of a distortion stompbox, which soon became a popular device on the Nashville scene. That same year, this became the basis of the first commercially released distortion pedal, the Maestro FZ-1 Fuzz-Tone (see Figure 2.22), although sales were slow until Keith Richards used one on the Stones’ seminal “Satisfaction” in 1964. The sound of the guitar would never be the same again, as distortion and the stompbox became front and center of the rock guitarist’s sound.

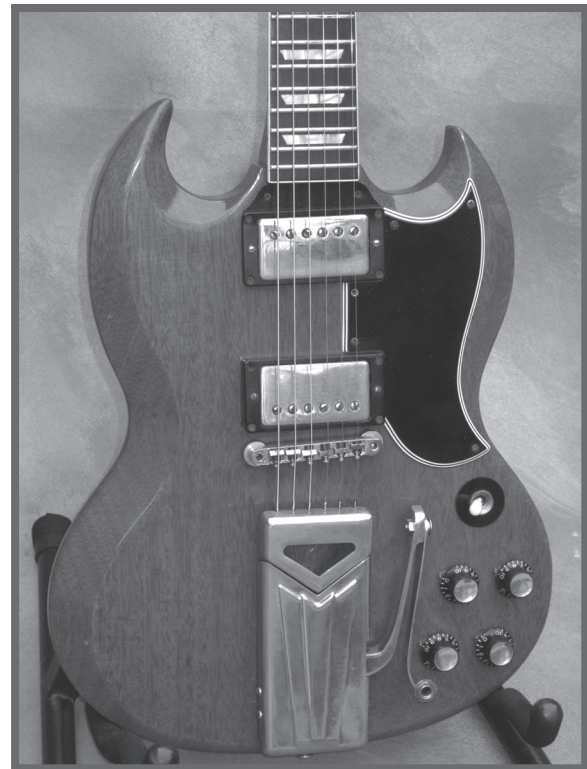


Figure 2.21: 1961 Les Paul SG



Figure 2.22: Maestro FZ-1 Fuzz-Tone stompbox

Power Tubes

While preamp tubes boost the guitar’s level and shape the tone, and driver tubes prep the signal, power tubes do the heavy lifting of amplification. Amplifiers have long been built around a number of popular power tubes that have unique characteristics (see Figure 4.3). For instance, 6V6s are compact tubes that don’t require a very high voltage, so they’re perfect for use in smaller, low-power amps. 6L6s were some of the first power tubes made (all the way back in 1936); they were easily available, and were perfect for the amps that Leo Fender wanted to build. Jim Marshall started building amplifiers that were basically Fender Bassman knock-offs that used 6L6s, but had to convert to using EL-34s because they were cheaper and more available in the UK at the time. For serious high-power applications that required lots of clean power (like for bass amps), the 6550 was hard to beat, yet it ended up in some of Marshall’s US amps in the mid-’70s because of problems with EL-34s failing in American imports.

Every power tube has its own sonic characteristics, which is why both major and boutique amp manufacturers offer models built around each type (see Figure 4.4). In fact, some manufacturers build amps that either switch directly between different tube sets or allow quick changes between them (which isn’t normally possible because of tube socket differences, voltages and other incompatibilities). Manufacturers have changed tube types over the years simply because of available stock, which means that some versions of the same amp model have become more desirable than others.

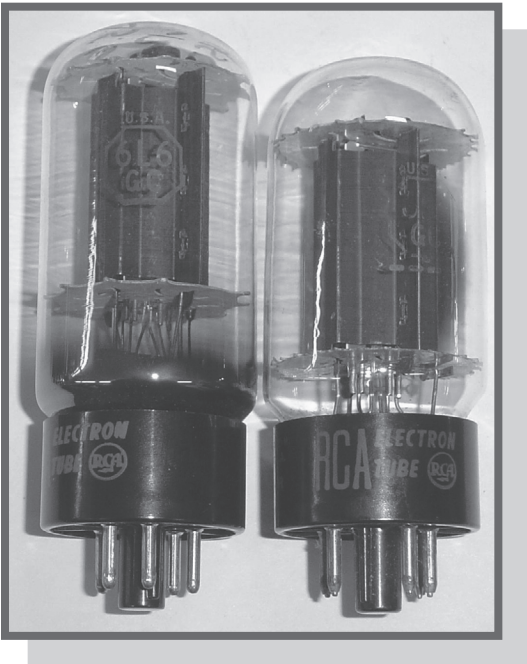


Figure 4.3: Pair of 6L6GC power tubes

Figure 4.4: Power Tube Characteristics		
Power Tube Type	Description	Used In
6V6	Smaller, lower-powered cousin of the 6L6, 10 to 14 watts per pair, good clean tone with noticeable compression when driven hard	Smaller Fender amps such as the early Champ and Deluxe Reverb
EL-84	Miniature power tube, up to 18 watts per pair, darker sounding than other power tubes with good midrange	Vox amps such as the AC-30 (which uses four) and the Fender Pro Jr.
6L6GC/5881/KT-66	Up to 50 watts per pair, very round and smooth sounding	Fender’s main power tube
6CA-7/EL-34	Up to 50 watts per pair, fairly easy to overdrive	Marshall’s main power tube
6550/KT-88	Up to 100 watts per pair, harsher midrange when cranked	Some Marshalls, Ampeg SVTs, tube Leslies

Electric Guitar Miking Set-Ups

While many believe there's only one accepted way to mic an amplifier, you'll be surprised to learn that there are as many techniques as there are guitar and amp sounds. Let's look at some.

SINGLE-MIC TECHNIQUES

It's amazing what you can do with a single mic if you experiment a bit. Here are a number of techniques that have been used on popular recordings since the '50s. They all work, but remember that a method that works for one recording may not work for another. It's good to always have an alternative in your pocket when you need one.

Classic Set-Up #1: A Shure SM57 on the Cabinet

Place a Shure SM57 about one inch away from the best-sounding speaker in the cabinet, about three quarters of the way between the edge of the speaker and the voice coil (away from the voice coil). If you need more high end, move the mic toward the voice coil. If the sound needs more body, move it toward the outside edge of the speaker. Make sure that the mic does not touch the speaker cone when the loudest passages are played (see Figure 6.1).



Figure 6.1: The classic set-up—an SM57 on a guitar cabinet

Classic Set-Up #2: Miking Where Speakers Converge

In the '60s and '70s, the most common amp-miking technique was placing the mic between one and two feet away from the center of the speaker or speakers (see Figure 6.2). This configuration allows the sound from the speakers and the cabinet to develop, but also captures some of the room, which can be a nice bonus. The ideal miking distance on a cabinet with two speakers is the point where the output of both speakers combines. If more high end is required, move the mic to the side to capture more of one of the voice coils.

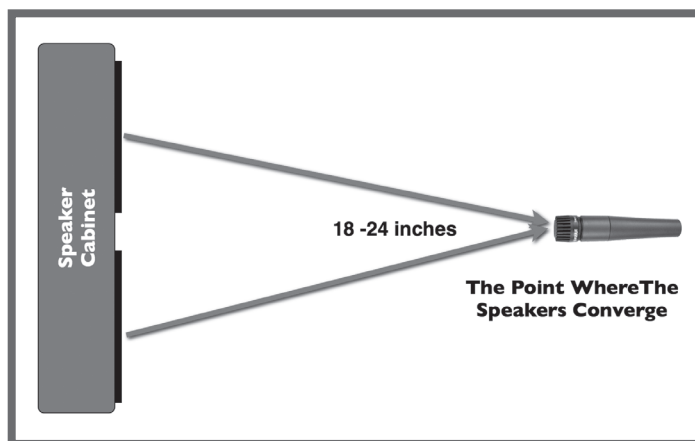


Figure 6.2: Classic Set-up #2—miking the point where speaker sounds converge

Any of these pedals and DIs can be used both onstage and in the studio, if your acoustic guitar has an internal pickup with a ¼-inch or XLR output. In the studio, you can run the XLR signal from the pedal's output directly into a recording channel and combine it with a mic for further tonal options.

Miking an Acoustic Guitar and an Amp Together

If your acoustic guitar has a pickup, consider running the signal into an amp instead of into a DI, and miking both the amp and the guitar. This technique will provide two distinct guitar sounds to work with: the instrument's natural, acoustic sound, and its amplified sound. Or, just mike up the amplifier and leave the guitar unmiked for a nontraditional sound.

If you do mike the guitar, try to isolate the amp so that it doesn't bleed into the acoustic mic. This set-up will let you keep the sounds separate in your mix. Each signal can then be treated independently, in terms of effects, EQ, compression and so on.

This technique is especially effective if you run the acoustic into an amplifier that has a nice, deep reverb (see Figure 11.27). It will create a “washy,” ambient sound that can't necessarily be duplicated with a plug-in or outboard reverb. Acoustic guitars can also sound good with the addition of an amplifier's vibrato or tremolo effect. Interesting results can also be achieved by letting the amp sound “bleed” into the acoustic mic, creating a natural blend.

RECORDING GUITAR WITH VOCALS

Capturing both an acoustic guitar and vocal track at the same time has its challenges. Since you would typically use a vocal mic on the singer and one or more mics on the guitar, and the mics are in close proximity to each other, phase issues can occur.

Some engineers angle the vocal mic (usually a large-diaphragm condenser) up toward the singer's mouth and away from the guitar. The guitar mic or mics (usually small-diaphragm condensers) are angled downward toward the instrument and away from the singer's mouth (see Figure 11.28).

Using a hypercardioid mic with a very tight polar pickup pattern on the guitar may help alleviate vocal bleed if it becomes a problem. However, hypercardioids tend not to record the wide tonal spectrum of an acoustic guitar as well as other mics, so they must be positioned carefully.



Figure 11.27: Acoustic guitar plugged into a Gibson Falcon amp



Figure 11.28: Recording a singer and an acoustic guitar at the same time