

Chapter 1

The Concept of Tone for Creative Guitarists

In This Chapter

- ▶ Exploring the art and science of great tone
 - ▶ Crafting your sound as a creative force
 - ▶ Diving into the workings of guitars, amps, and effects
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When guitarists talk about *tone*, they don't just mean the balance of bass, midrange, and treble frequencies that an amp's tone knobs give you access to, or, that is, the general *timbre* of your sound. They're referring to the quality of a guitar sound comprised by its depth, richness, texture, and harmonic-overtone content. In short, a player's *tone* is the quality and character of his or her instrument's voice, as projected via any effects and amplifier(s) in use — which themselves are very much a part of electric guitar tone.

Tone is the most-discussed concept in the guitar world today, yet every guitarist out there has a slightly different notion of what *great tone* really is. And perhaps that's as it should be: Like anything experienced through your senses, the subject is, to some extent, subjective — we all hear things differently and *want* to hear different things in our playing. Yet there are also, I firmly believe, some objective standards of quality tone. Although any number of different great tones exist, each should exhibit superb depth, dimension, and harmonic content — its sweetness or richness — even if the end results have very different sonic personalities.

The concept of tone is so fervently discussed because it's very hard to get a grasp on, and for most guitarists, it is constantly evolving, constantly improving, or is at least part of a never-ending quest for improvement.

This is where *Guitar Amps & Effects For Dummies* comes in. This book lives to talk tone and to help you narrow down the many great yet extremely different tones that can be achieved with different types of guitars, amplifiers,

and effects pedals. You can peruse the rest of this chapter for an overview of what I discuss in detail throughout the rest of this book, or jump in where you see fit for the information deep-dive that gets you into the nitty gritty.

The Sound Chain: Your Sonic Team

When you play an electric guitar, your sound is never just about that guitar; it's an amalgam of everything else that contributes to the sound. In that sense, although your hands manipulate the guitar itself to make music, that first piece of the chain isn't really an instrument all on its own. The full instrument includes your amp and any effects pedals or units you use to further manipulate your sound. Each piece of gear you use together to make music, therefore, is part of a *sound chain*.

The elements in the sound chain aren't just individual components; they all work together and affect each other's performance. To understand how any one change in your setup will affect your overall tone, you need to be familiar with each piece of the sound chain, which is one of the major goals of this book. For now, just know that every type of guitar affects the sound of effects pedals differently, and both guitars' and effects pedals' tones vary depending on the type of amplifier used.



In other words, this whole sound-chain thing is a game of infinite variables. You're only going to get a handle on what the end results will be — as opposed to shooting for random sounds every time — by understanding both the individual stages and how they interact with each other.

If you're fairly new to the concept of working with amps and effects to get the sounds you're looking for, this all may sound fairly confusing at first, but each section of this book breaks down this reality of the electric guitar into essential and easily digested pieces, so you'll get the hang of this kind of thinking pretty quickly. Open your mind to the big picture right from the start, and you'll find it a lot easier to take in the theory of interplay and interactivity between not only guitars, effects, and amps but also between the smaller interdependent components of each of these individual pieces of equipment.

From Classic Tones to Total Originality

Some guitarists — like artists in any field, really — jump right in and find both original sounds and original ways of playing when they are still virtually beginners on the instrument. Many others work their way toward originality

by chasing the sounds of notable guitar stars. Some of them never achieve anything you'd call particularly original in their own sound, but that's absolutely fine too. Whatever works for your own music, and whatever makes you happy with your own playing is absolutely okay, and you can't let anyone else tell you otherwise.

Whatever types of sounds you ultimately make your own, exploring the sounds of many classic and contemporary artists as well as the gear that helped them achieve them is a great way to expand your own tone palette. When you hear a song you like, give some specific thought to the guitar tone and then see if you can identify what was used to create it. Plenty of the acknowledged classics (along with some fun alternatives) are dissected throughout the course of this book. I also provide a lot of info online to help you get to the bottom of what's behind different hit-making guitar tones. After you peruse several of these setups, a light bulb often pops on upstairs: "Ah, combing the Fender Telecaster with the Vox AC30 sounds like *this*, but adding the fuzz pedal and playing it through the Marshall stack sounds like *that*!" It's a process of discovery, and the more variety you throw into the mix, the more flexible and creative you're likely to be in your own tone crafting.

It All Begins with Your Guitar

Whatever kind of sound you're after, it all starts with your guitar. Make no mistake, an electric guitar can't make any sound without the rest of your equipment, other than a thin, soft jangle. But when you plug it into an amp (and any effects you use in between), it feeds a signal to the truly electric parts of your rig, and that signal determines the fundamental nature of the sound that comes out the other end, however much it's shaped along the way.

The signal that your guitar sends farther up the chain is determined by what goes into making that guitar in the first place — as well as, of course, how you play it. But the woods, hardware, electronics, and even the strings you use play an enormous role in shaping the little low-voltage electrical signal that comes out of your guitar and goes into everything else down the line, and the shape of that signal determines the core of your tone.

In addition to what goes into your guitar, its condition, setup, and *action* (its playing feel, determined by the height of the strings from the frets) have a huge impact on its feel and tone. These details are covered in detail in Chapter 7, where you can explore plenty of DIY care and maintenance issues.

Variations in guitar designs

The sound of any electric guitar is established largely by the fundamentals of its design and construction and the ingredients that go into making it. The following blueprint elements determine the tonal ballpark of the instrument, which is only tweaked or enhanced — but not drastically altered — by whatever else goes into it:

- ✓ **Body style:** Solid, semisolid (that is, semi-acoustic), and entirely hollow electric guitars all have different personalities.
- ✓ **Scale length:** Guitars of different *scale lengths* (the length of the part of the string that vibrates when you play) have somewhat different characters.
- ✓ **Neck attachment:** Guitars that have necks attached with wood screws sound somewhat different from those with glued-in necks, all else being equal (not better or worse, just different).

In addition to these basics, the woods used to construct a guitar's body, neck, and fingerboard all play an important part in shaping its sound. A lot of detail is required to cover this topic, and I address it in-depth in Chapter 4, but the density, weight, rigidity, grain, vibrational characteristics, and other factors all play a part.

Pickups and electronics

Your guitar generates the fundamental sonic characteristics of every note you play, but the *pickups* are the part that makes it electric. Pickups are simple, passive electromagnetic devices, motion sensors essentially (in the early days, many guitar makers even called them *mics*). They consist of magnets and coils of wire, which produce a low-voltage electrical signal when the movement of a steel string interrupts their magnetic field.

There are many, many different types and makes of pickups out there — the field is huge and really has been booming lately — and different types of pickups offer their own very different sonic personalities on top of the fundamentals generated by the guitar's body design and woods. A simple change in pickups can make a guitar sound brighter, darker, deeper, bigger, hotter, and all sorts of other things. I cover all the possibilities in detail in Chapter 5, but just keep in mind for now that your electric guitar tone options expand exponentially depending on the pickups you put into it.

Hardware

By *hardware* I mean the metal components that are attached to your guitar, most of which play some part or other in keeping the strings anchored and keeping them in tune.

Different types of hardware — most notably, guitars' bridges, tailpieces, and tuners — clearly have an impact on the functionality of the guitar in question: how you tune it up, how you adjust its playing feel, and so forth. Because they are the contact points for the strings, and that's where your sound originates, these components also greatly affect the sound of your guitar. Different designs of bridges, for example, and those made from different materials (such as steel or wood) contribute to very different-sounding guitars.

There's a whole big, wonderful world of guitar hardware and components out there that you may not have considered previously but which needs to be accounted for if you want to dial in your tone. Well, Chapter 6 accounts for it in all the detail you need, so dive in there if you want to get to grips with electric guitar hardware.

Amps: Your Tone Machines!

A guitar amp, by definition, is there to make your guitar louder — to *amplify* it — but the part that these units play in your sound is far greater than one of simply making your instrument audible.

Since the first jazz or blues guitarist in the 1930s turned a tube amp up a little past the point where it sounded entirely clean and undistorted, players have realized that amps are as much about generating tone and texture as they are about making guitars louder. Guitar amps, and tube amps in particular (but also solid-state and digital amps that emulate the way tube amps perform), add lots of depth, dimension, and harmonic overtones to each note you play on the guitar, making it a much bigger, richer sounding instrument in the process.

Or, guitar amps *should* do this, at least — when they are right for the job and set up correctly. That's where Part III of this book comes in: Probe the information and advice there to learn how to make the most of your amp, how to set it for the best sounds for your music, and how to make your guitar sound better and more expressive as a result.

Inside guitar amps

You don't need to be an electrical engineer to achieve great guitar tone, but understanding a little something about what makes different types of amps sound the way they do helps you to identify the best amp for your music as well as use that amp to its full potential.

A guitar amp is far more than just a black box that takes your guitar signal in one end and coughs some sound out the other. Any amp contains several internal circuit stages that work together to shape your tone as it moves from input to output. Chapter 8 gives you a detailed look under the hood of many classic amp designs to show you how these stages — preamp, tone, output, and power supply — craft different sounds that are ideal for a wide range of music styles.

Many new amps are still built following templates that were established in the 1950s and '60s, and plenty of old amps are still running strong and making great music, so an exploration of all the groundbreaking vintage tube designs is essential to any understanding of the guitar-amp world. Chapter 8 gives you this, too, as well as information on the ins and outs of contemporary amp designs.

The right amp for the job

With all the very different amps you'll find out there, finding the perfect one for your music can be a veritable minefield. Chapter 9 is designed to cut through precisely this confusion by investigating the several factors you need to consider to identify the right amp for the job.

Major considerations include:

- ✓ Finding an amp that hits the sweet spot — that is, the ideal ratio of clean to distorted tone — for your type of music and playing.
- ✓ Realistically assessing how much power (that is, potential volume) you need for your playing situation and understanding how much is *too* much.
- ✓ Assessing the optimum feature set for your playing, considering multichannel amps, different tone control options, overdrive and sound-shaping controls, and extra features. Do you need it all, or is simplicity better for your music making?

In short, you can make great music with *any* amp if you play it with attitude and conviction, so using a design that is theoretically wrong for your genre shouldn't stop you from getting on with it. But finding an amp that really works *with* you rather than *against* you can make playing feel a whole lot easier and more expressive.

Tu-be or not tu-be

A *tube* amp is one that uses vacuum tubes to make a guitar single stronger, in several stages that ultimately make it powerful enough to drive a speaker. In the good old days, tubes were used in everything from TVs to radios, but they largely fell out of favor in consumer electronics when solid-state (transistorized) technology took over in the late 1960s. Tube amps still rule the roost, tone-wise, for the vast majority of guitarists, although more and more players are also enjoying the vast improvements that have been made in solid-state and digital modeling amps in recent years.

Understanding something about how different types of tubes function and how they sound helps you be a more tone-conscious guitarist. Many tubes are somewhat specialized in their applications, and to some extent at least, several classic guitar tones are based around a very specific type of tube that was or is used in a specific amp design. These issues and more are covered in Chapter 10.

Tubes are replaceable parts, and some of them do weaken or burn out entirely with time, so knowing something about what to look for and how to replace them will make your playing life easier.

Speakers and cabinets

Because they carry your guitar sound from the amp to you and your listeners' ears, speakers and the cabinets that they come in (*cabs* for short) are another essential part of any electric guitar setup.

Much like amps, speakers do more than simply project the sound of your guitar. Many add distinctive characteristics to your tone, and they're often specialized for a great variety of performances and sounds. Different speaker considerations include

- ✓ **Vintage or modern designs:** These often vary from softer and warmer to brighter and punchier, respectively.
- ✓ **Low and high power-handling capabilities:** More powerful amps need speakers that can handle the punishment, but lower-wattage amps sometimes sound better through speakers that aren't expecting all the bluster.

- ✓ **Low and high efficiency speakers:** Different speaker designs convert your amp's output into decibels (volume) at different rates of efficiency. A high-efficiency speaker can make a seemingly underpowered amp a lot louder, or a low-efficiency speaker can tame an amp that's *too* loud.

If you've never given much thought to your speakers, Chapter 11 opens up a wide world of variables to help you further perfect your tone. And even if you already know a bit about speakers, it's packed with information and advice that are indispensable to most guitarists.

Amp use and maintenance

Even when they are simple designs with relatively few controls, many guitar amps can provide a broad range of different sounds with fine-tuning of the knobs. As for others with control panels that look like the flight deck of the *Star Trek Enterprise*, well, they definitely need some study to get the most from.

Tips and techniques for using your amp are covered in detail in Chapter 12, from simple starting point control settings, to more involved tone-crafting, to the use of effects and special features with your amp.

Guitar amps are sensitive electronic devices running on high voltages, so most do occasionally need to be serviced by a qualified technician. You can do a lot yourself, however, to keep your amp working as it should, and Chapter 12 gets you there. After you have uncovered the best control settings for your music and developed the ability to keep your amp in top running condition, you'll be better equipped to put the fiddling and tweaking behind you and to just make some music.

Effects Pedals: Shift It, Spin It, and Fuzz It Up

Effects pedals really are the icing on the cake, sonically speaking, for many guitar sounds. Although you can achieve great clean and juicy natural distortion tones with a guitar straight into an amplifier, effects pedals — connected between guitar and amp, in most cases — can add a phenomenal world of sounds to your, uh, sound.

Different effects types

Whether you use just a pedal or two or string together as many as a dozen different effects, these units can be extremely powerful and versatile sound-crafting tools. Some of the sound effects achieved with these nifty boxes are

- ✓ **Delay, also known as echo:** This effect is pretty self-explanatory. It has a great, atmospheric effect with guitar.
- ✓ **Chorus, phasing, and flanging:** These swirly sounds, from subtle to space aged, can make you sound like an entire chorus of guitars playing together, or the attack of some alien life force, depending how you use them.
- ✓ **Tremolo:** This effect is a cool retro *pulse-pulse-pulse* of the volume that creates several evocative moods.
- ✓ **Wah-wah:** From funk to psychedelic rock, this expressive, vocal-sounding effect has been a favorite since the '60s.
- ✓ **And yes, overdrive, fuzz, and distortion:** These give the sound of a cranked amp, in a small foot pedal, to fatten up lead and rhythm tones alike.

Explore what these and other pedals can do for you in Chapter 13.

Rack and stand-alone effects

Many effects come as larger units that are either mounted in a standard-sized rack or simply set on the floor or desk or table top. Many of the earliest effects were built this way, and some that require more involved circuitry and/or more powerful processing still require this format. Most common among these are

- ✓ **Spring reverb:** The large “spring pan” that creates the atmospheric reverb effect, and the tubes that are often used to drive it, require a larger enclosure than would work for a foot pedal (or, as is often the case, you find this effect mounted right in your amp).
- ✓ **Tape echo:** The original echo effect, produced by a tape loop continually running past record and play heads, is still a favorite with many players, but it demands a big box.
- ✓ **Complex digital multi-effects:** Some budget units are compacted down into floor-standing foot pedals, but many of the top multi-effects units require a rack-mounted enclosure.

In Chapter 14, you can not only investigate many variations on these rack-mounted and stand-alone devices but also uncover bounteous information on how to best use them in your setup.

Using effects

Effects pedals and stand-alone units offer endless configurations for use and connectability, and an exponential number of sonic variations along with that. Chapter 15 explores myriad ways to set up and use these devices to expand your music making.

Beyond just “plug and go,” these pedals can often be used in either mono or stereo, split off into separate amps from your main amp, or configured in several alternative ways. In addition, because they interact with each other just as the rest of your sound chain does, you can achieve different sounds by putting one effect before another than you do by connecting them vice versa. Chapter 15, therefore, also explores many permutations of both traditional and alternative pedal set-up orders.

Many guitarists like to mount their effects pedals together on a pedalboard for convenience of transport and setup, and I provide info on these handy devices, too.