



*By Theo Hartman - GJD Contributor*

My first instinct was to make this a technical column about pedals since that is what I build. Given that pedals typically inhabit and influence the larger whole of the guitar-to-amp signal chain, I thought I'd begin by looking at the bigger picture.

When you plug your guitar into your amp, the instrument, cable and amplifier react to each other in ways that affect the content and quality of the signal going into the amp (and therefore what eventually comes out of it). The effects can be subtle, second-order, or quite audible. One example of this phenomenon most of us have heard and experienced is the "loading" of a (passive) guitar's output signal by excessively long length of cable causing high frequency loss.

Historically, guitar players have exploited the subtleties of this interplay. To flip the above example of cable loading on its head: one might use a coiled-style cable to bleed off highs and dull down an overly bright signal. Another traditional method: set an amp's input volume to the edge of breakup with guitar volume down some; then, crank the guitar to get amp compression and distortion. In other words, opportunities for tone shaping abound here, but you're adjusting all the apparatus as a single device.

Some early effects embodied this philosophy of the parts working together chaotically to form the whole. The Rangemaster, one of the earliest "trebleboost" circuits, doesn't just add its own eq, gain and clipping to the signal. It conditions the signal (via a change in something I won't go into right now, called impedance) in a manner favorable for preserving high frequencies and overdriving the amplifier's input. Granted, similar "impedance benefits" result from just about any pedal with a buffer (which we'll talk about in a minute), but I'm speaking here as much if not more about the intent and manner of use as I am about the thing itself.

Some early fuzz boxes such as the Fuzz Face and certain Tonebenders possess characteristics that would cause them to change behavior audibly when adjustments are made to the guitar volume and tone controls:

1. Try rolling guitar volume back into a Fuzz Face. Do you get the same fuzz less loud? No, you get less fuzz, i.e. a cleaner guitar sound. This is another version of the "edge of breakup" model, but it overdrives the pedal's transistor instead of an amp's input.

2. Roll a Strat's tone knob all the way off while you're playing into a dimmed Fuzz Face (silicon or germanium, doesn't matter, though the effect is more audible sometimes with silicon because of its sharper highs). One would expect the fuzz to become more muted in tone, right? Try it and you may be surprised at what happens instead.

All of this is to say that the notion of intentionally/musically manipulating the "gross subtleties" of the guitar-to-amp connection did survive the introduction of effects, though not without challenge: the buffer.

What is a buffer? In a guitar signal chain they act like firewalls; they separate segments of the signal chain from interacting. Why are they there? Some circuits demand them, or behave much more consistently when they have them. Do they suck tone? Not if well built, but while an ideal buffer might be tonally transparent, it still presents a barrier to some of the subtler interactions between upstream and downstream devices described above.

What the buffer makes possible, however, is an approach to tone shaping that is more serial in nature. This turns out not to be a terrible thing, though it is important to note that it is a decidedly different thing than the often bone-crushingly loud, primitive, organic, free-love method described above. And because distorted tones derive from the pedal board on the floor and not the amp, the same tones can be accessed at the coffeehouse as can at Wembley.

So which is right for you? I think many of us, myself included, use a little of both (and still other) approaches to get our sound. Understanding more than one approach to getting a sound broadens the palette of tones available, and facilitates accessing tones quickly and more accurately for the mood and the music. Enjoy!

*About: Theo Hartman is the founder of Hartman Electronics. His California-based company specializes in building custom and classic guitar pedals with a product line of 9 pedals. Theo is a lifelong musician and worked professionally in architecture for 15 years prior to founding [Hartman Electronics](#) in 2005.*