



Michael Grace started Grace Design in 1994, a boutique pro audio company located in Boulder, CO. The story of his rise as a designer is one born from a love of music. His need for a preamp to record Grateful Dead concerts drove him to design his first piece of gear. We talked about how this need grew into a highly regarded gear company.

How would you describe your design aesthetic and design process?

The key word for us is "musicality". The ultimate goal in designing all of our audio gear is that in the end when you're listening to it, you shouldn't be hearing it - you should just be hearing the music. Along with "musicality" is "reliability", and those are the two things that we focus on with equal intensity. The best sounding piece of gear in the world doesn't do you a lot of good when you're at a session and there are musicians waiting around and something is broken. I've done enough live remotes to be absolutely intolerant of any kind of reliability issues. Those are the two prime objectives, but obviously ergonomics and industrial design play into that as well. Pride of ownership of a good piece of gear goes beyond just knowing it sounds good, but when you go and reach the knob it should feel solid and give you confidence. It shouldn't have whistles and bells that you don't really need and it should be laid out so that you can quickly and easily achieve your task and get on to other important parts of creating music.

There are a lot of preamps being developed and marketed these days, ranging from clones of vintage gear to new variations of tube-based preamps to "Made in China" \$200 bargain-basement preamps. What does Grace Design bring to the table that is not being done by other gear developers?

The final test of any piece of audio gear is how it sounds. I think that is something that's not achieved through a singular design criteria like "discrete" or "Class A". It's something that is achieved through a holistic approach, taking a careful look at every aspect of the signal path, from passive components to power supply layout and grounding as well as amplifier topology. All of the amplifiers in our products in the critical gain stages use an amplifier topology called a current

feedback amplifier, or a trans-impedance amp, and these types of amplifiers use a different kind of negative feedback in the current domain instead of the voltage domain. They are able to track really complex waveforms, resolve rich harmonic structures and track transients without the various aberrations of slew rate limiting and things that are associated with textbook op-amp designs. I think people's problems with IC [integrated circuit-based] designs are that most are using standard op-amp type amplifiers that have these problems, and that is the characteristic solid state, integrated circuit sound that people are used to. I think the use of trans-impedance amplifiers gives our products the ability to have a very musical, very transparent sound and still be really linear and accurate, without having a solid-state characteristic. In a lot of our listening tests, when we'd compare our products to other types of preamps (our competition and vintage pieces and such), we were always kind of amazed that we found our preamps sounding closer to the higher quality tube preamplifiers than the ones you would expect to be aligned with, like other high-end solid state preamplifiers. There are so many other circuit decisions that have an equal effect on the overall sonic characteristic of the product. That is why we use only ultra precision metal film resistors and there are no electrolytic capacitors anywhere in the signal path. We try to direct couple as much as possible to keep the number of components in the signal path as low as possible. If you're following a design process with your ear, you're going to come out with something a lot different than if you follow a design process with analyzers and scopes.

What was the first piece of gear you ever designed?

As a designer you are always influenced by other people's designs - my very earliest designs were adaptations of high-performance phono preamplifiers. I dropped out of college and started working for a high-end home stereo amplifier and preamplifier company in Colorado Springs. This particular company really focused on things like eliminating capacitors from the signal path and using zero negative feedback or using current feedback. Early on I was a big Deadhead and I adapted some of the phono preamps from the company I was working for and turned them into mic preamps and hooked up phantom power supplies. I would drag those out to Grateful Dead concerts with an old [Sony] PCM-F1. Those were the earliest incarnations of what would become a long lineage of mic preamps. Around 1990 I

was getting pretty busy at night building custom mic preamps for people, so I quit working for that company and started out on my own. That remained a garage operation for several years until my brother Eben and I joined forces and became partners. We decided we wanted to start a manufacturing company and build preamps on a larger scale so we could take advantage of the economies of scale, being able to buy better components and build things that were not absolutely stressed in terms of cost. That was almost twelve years ago when we came out with the first official Grace Design product, which was the 801 preamp.

What kind of problems does a small manufacturer like yourself encounter in terms of designing and building something that a larger manufacturer might not encounter?

Quality control is the top issue for any manufacturing company. Being a boutique manufacturer, most of our products are fairly expensive and not something that someone just plunks down on a credit card on a whim for their studio. So we can't build our equipment in very large production runs. What that means is that every time we go to build a product, we have to set everything up and get practiced and dialed in on what we're doing all over again. We've gotten good on that internally, but we have a lot of vendors that build parts for us in short runs, and we spend a lot of time rejecting components because they might vary from run to run. Whereas a large manufacturer would get all of their processes dialed in, and then spit out a thousand or ten thousand widgets, and they'll all be the same if they were all built at the same time. We definitely struggle all the time with making sure that every single piece of gear is absolutely a hundred percent perfect, because you can never expect it to be. Quality control is just something that we have to eat, drink, breathe and do all the time. Those are where the real challenges come as boutique makers - you're never in huge production runs, so there are so many variables that you have to keep in control.

How does a designer such as yourself, who is rooted in traditional analog gear design, deal with bringing aspects of digital recording technologies into your products?

Certainly, digital technology keeps changing at a very rapid pace and is evolving before our eyes. Keeping up with that keeps any electronics company really busy because customers start to expect and demand all sorts of features that they didn't have last year. There are all the bits and pieces of, "What type of digital format do you have to support this year?" In a bigger picture, I think people are so used to everything getting cheaper and more mass market and more "bang for the buck" and more inputs for the dollar that there is bound to be sort of a return to looking at, "Okay, now we've got all these features and all this power and all this capacity. Now how do we do things really well?" I think that is where we find all of our niches. When people were first realizing that the best mic preamps weren't inside their consoles and they started buying outboard mic preamps, to when it became clear that when consoles were going away, people still needed

Continued on page 102>>>

