

***The following appeared in edited form in Muzik ETC in Graham Collins' Synthesizer Basics column. All right reserved.***

*"All digital gear sucks. That analog stuff is old and useless. Digital synths are harsh sounding and aren't cool. All analog synths are warm and 'fat' sounding. Digital gear will \*never\* be as good as an analog machine because it's nothing but ones and zeros ...man. Analog machines are so noisy. Analog machines are better because of all the knobs and sliders. Digital sounds so sterile. blah blah blah..."*

STOP it. Just STOP it. I'm begging *everyone* .... please? For the love of Buddha..please ..time-out, ok? Phew.

Ladies and gentleman, there seems to be some kind of battle within the industry based on 95% misinformation, and 5% disinformation... or the other way around depending on how you look at it. It is the battle between digital musical equipment and analog musical equipment. Rather, the battle is between the proponents thereof. In an issue of Muzik ETC earlier this year, my colleague Jason Jaknunis wrote an excellent article explaining the concepts behind digital and analog recording processes and the differences between them. As those processes apply similarly to the world of synthesizers I'd like to start to talk about the issues and myths that surround these different ways of creating sound.

Using a buzzword like 'analog' or 'digital', like any buzzword, tends to gloss over the truth and hide certain shades of grey. In its simplest definition, an 'analog synthesizer' is one that uses discrete circuits such as oscillators, filters etc to generate an electronic signal. A 'digital synthesizer' is one that at some level is using a digital computer of to control certain tasks. It is interesting also how trends change regarding buzzwords. In 1983, manufacturers were scrambling to look up-to-date and deliver their synth as a 'digital' machine. Ah Youth! It is hard to remember a time when it seemed as though having FEWER controls on a synth seemed cooler than more. What exactly were we thinking? Anyway, here's the interesting part- a machine that was called 'digital' in 1984 we \*might\* refer to as 'analog' today. Depending on the circumstances. A synth may have digital oscillators and an analog filter--what is often called a hybrid machine. A machine may have all analog audio circuitry, but have a user interface that is digital in nature. A synth may have ALL digital audio circuitry and have an interface laden with analog knobs and sliders. Many people will call a machine 'analog' if it simply has an analog filter of some type. Just to complicate matters, some early 80's synths had analog oscillators that were digitally tuned, and wound up being labelled as 'digital oscillators' due to either misunderstanding or marketing 'spin'. The truth is, these labels of 'analog' and 'digital' are all wrong. ..or all right. Depending on how you look at it. Here's another big monkey wrench to throw into the works. Many people when they say 'analog synth' actually mean 'subtractive synthesis' -- the process of synthesizing a sound by starting with a complex sound and filtering out unwanted frequencies. Like a Minimoog. When they say 'digital synth' they often mean 'additive synthesis' -- any process that involves creating sound by combining simpler sounds in different ways to produce a more complex result. Like a DX7's FM synthesis. In case I lost you there, the point is is that a subtractive synth can be all-digital and an additive machine can be all-analog. Sheesh. What a mess.

Nowadays the lines are blurred yet even further by the introduction of so-called 'virtual analog' or VA synths. Machines which are essentially all-digital in construction but are specially designed to emulate the processes of analog machines. As I mentioned in my last column on emulating analog synths, one of the keys to 'realism' in emulating an analog synth is to simulate the inherent flaws and shortcomings of real analog circuitry (less precise, tuning drift etc). For many, the jury is still out for many on whether VA machines will ever completely replace an analog synth sonically. To those analog purists (you know who you are!) who think that day will never come consider the following-- and I would apply this not just to synths but also recording equipment and any other area where the quality of simulation of an analog process is in question. Ray Kurzweil (the author/inventor who just happened to initiate a line of synthesizers bearing his name) wrote a wonderful book a couple of years back which I highly recommend called "The Age of Spiritual Machines". In it, he posits the idea that computer technology will continue at its current rate of growth for another 20-30 years. This rate of growth that leaves every new generation of computers more powerful and cheaper than the last, will in his opinion continue such that eventually a typical \$1000 computer will have the computing power equivalent to the collective brain-power of the

entire human race!. I want to play Quake on that machine. Skeptical? Ok stop for a second and look around you. Look at the computer you used 5 years ago compared to say, the Commodore-64 you had in 1980. Now compare that difference to the difference between that 5 year old computer and what you work on today. Project 2 years into the future. Now project 5 years. How about 10 years? 20 anyone? This would be a good time to remind you that naysayers tend to wind up left on the scrapheap of history as people who lacked insight into human endeavours and the things we can accomplish when we get around to it. We have crossed over the threshold into an age of diminishing impossibilities.

We're just digging into this topic folks. Next time? What exactly makes some analog synths \*sound\* so good like that anyway?

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