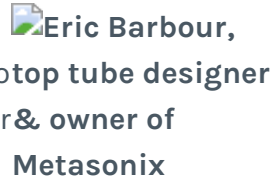
SYNTHTOPIA

Eric Barbour: Bringing Vacuum Tube Madness to Electronic Music

Eric Barbour is a world authority on using vacuum-tubes in audio devices, and is the first person to apply the ideas pioneered with early synthesizers to tube-based devices. His company, **Metasonix**, makes tube-based synthesizer modules that are completely unique.



Eric Barbour, top tube designer & owner of Metasonix

Barbour describes his modules as brain destroying, meaty, bizarre, crude, nasty, powerful and evil. He warns that his latest creation, the **TX-1 Agonizer,** is a sonic reducer that "*defines poor fidelity and does various horrible things*". The naked ladies torturing small animals on the Agonizer's case warn the music world that this is no ordinary device. Barbour notes that, as a special bonus, the Agonizer puts out such a "hot" signal that there is **a real danger of the Agonizer damaging some types of solid-state equipment**.

In this interview with Synthtopia, Barbour cuts loose, revealing a personality as unique as his creations. He tells us about Metasonix, tube-based audio mangling, burning Fleetwood Mac at the stake, and more!

Synthtopia: What got you into electronic music, Eric?

Eric Barbour: I was fooling around with synthesizer circuits back in high school. It just seemed like the best application for the technology. In college, I got more serious about it, but didn't find a job with a music equipment company till I started my own.

Synthtopia: Are there any favorite recordings or electronic musicians that have inspired your work?

Eric Barbour: In earlier times I had heard Synergy, the Switched-On records, etc.

But the greatest impact came with hearing Morton Subotnick for the first time. Plus, in the late 70s, I found punk rock far more interesting than the arena-rock crap of the era. It is my sincerest wish to see the members of Fleetwood Mac burned at the stake–and to have someone like Johnny Rotten or Mark Mothersbaugh light the flame.

In fact, nowadays I'm beginning to realize that too many of the 1970's electronic music "pioneers" were deeply embedded in the hippie-space prog-rock business. Which I hated even more than Fleetwood Mac. Only Peter Gabriel seems to have escaped from that grim little ghetto.

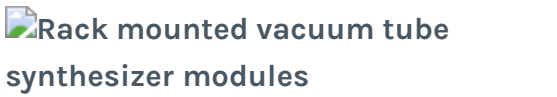
Synthtopia: What made you want to start Metasonix?

Eric Barbour: Chronic dissatisfaction with conventional employment. Being an electrical engineer in the US means you are regarded as being a costly and unnecessary parasite on the corporate body. Plus, I had been watching the music-gear business for 20+ years and realized that the only firms that survive are the ones who do something *really* different, and that also keep going for years. Musicians are incredibly conservative. Once you're a "standard" or a "pioneer" in a given area, you can't be eliminated. Bob Moog is a perfect example.

Look at the TB-303. It was a (costly) toy when it was new. Hardly anyone bought the thing. Now, a decent one can cost $2000. Or early Fender guitars–there was nothing special about them, they were well-made but not magnificent. Tell that to a collector who pays $175,000 for a 1954 Stratocaster. People were throwing away Pultec EQs and Fairchild 670 limiters in the 1970's and

1980's–"nobody will want this old junk, in the future, we're going *digital*"–but now a Fairchild 670 will set you back $35,000.

Synthtopia: Your products are very original in their exploration of tube-based audio mangling. For those that aren't familiar with Metasonix products, can you explain what makes your designs so unique?


Rack mounted vacuum tube synthesizer modules

Eric Barbour: No one, ***no one***, has ever applied general control voltage concepts to tubes before. In fact, some "synthesizer designers" seem to feel that you need hundreds of tubes to make the simplest synth modules. This is not true, and is a major mental weakness in the music industry. They are all fixated on "absolutes"–absolute pitch accuracy, perfect filter responses, perfect waveforms, perfect VCA cutoffs, etc. None of this applies to music electronics. In fact, some of the cheapest junk of the past now sells for premium prices as "priceless vintage gear". Mu-Tron Biphases, early Crybabies, old Tube Screamers (with the "proper" JRC chip in them, of course). And look at what early Moog and Buchla modular synths bring. 15 years ago, people were junking them.

So, the purpose of Metasonix is to create a paradigm that never existed before. Synthesizers were always solid-state. Why no tubes? In fact, experimenters like Raymond Scott *were* doing this, and even applying voltage control to tube circuits. He was extremely protective of his ideas, so they were never patented or documented.

But as soon as transistors and ICs became cheap enough, everyone was throwing out the tubes. It's time to reexamine this area more carefully.

Metasonix modules don't have the best specs on the market. In fact, our specs are quite mediocre. But our modules *sound* like no one else's circuits. It's so different, and so alien, that people still have misconceptions about our stuff. Except the actual buyers–they tend to hang onto our devices like grim death. Once every few months, one will pop up on eBay, but those are usually being offered by one of our authorized dealers.

Synthtopia: What got you into tubes?

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Eric Barbour: I've always been a contrarian. But in the late 1980's, the sound of hi-fi equipment had gotten so bad I couldn't stand it anymore.

There was a Hitachi integrated amp I owned that could peel paint off walls. And I couldn't figure out why. It tested well and had good waveforms on an oscilloscope. But it was **unlistenable**.

After reading up on the hidden problems with solid-state electronics, and discovering that vacuum tubes had advantages for audio reproduction, I got into that as a hobby. Then **Glass Audio** magazine started, and I ended up writing for them.

That became the self-education. Plus looking around in used bookshops for textbooks about this "dead" technology. The mainstream industry was so biased against tubes, that I realized there had to be something about them that polarized people. So, there had to be some truth about their better sound.

Naked woman tortures cute tiny animal, a sign of the madness behind Metasonix tube based audio devices.

Funny, the problem isn't technical. Good-sounding solid-state equipment exists. I feel the problem is social in basis. Once an electronic designer comes up with a clever gadget and gets some peer recognition, it causes his little head to swell up, and he ends up believing himself to be a god. Give this little god a design job, he frequently forgets about little things...like the user's needs.

So we end up with transistor amps that give perfect-looking sine waves but drive people out of the room with ugly harshness.

Not to mention software synthesizers that slavishly imitate all the sounds of an old Moog synth, and even the front panel graphics of the original. Yet the software synths are easily pirated off an IRC channel for nothing, while the original synth sells for thousands of dollars.

No working design engineer has *any* right to complain about audiophile weirdness–$10,000 speaker cables, tube amps, Shakti Stones, Tice clocks, whatever. *His* crappy designs, and *his* crappy attitude, gave birth to the audiophile scene. It didn't pop up like a magic weed one day. People listened to early CD players and 1980's transistor amps, and decided they didn't like it.

WHAT PEOPLE ARE TALKING ABOUT

- Behringer MS-101 Synthesizer Now In Production (Roland SH-101 Clone)
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- Korg Volca Modular, Volca Drum Coming At 2019 NAMM Show? (Unofficial)
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- iPods & Portable Media Players
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The same thing applies to pro audio equipment, only more so–because professional recording engineers *have* to be able to recognize good sound when they hear it.

Their livelihoods depend on it.

But of course, you are not permitted to criticize a few elderly cranks in the electronic design fraternity, like Bob Pease or Barrie Gilbert or Don Lancaster. Because they are **gods**. This whole situation is amazingly reminiscent of Scientology. Pointing out that L. Ron Hubbard was a liar, a schizophrenic, and an unpleasant bastard (plus one of the worst science-fiction writers of all time) only earns you the endless enmity of his rabid followers. Who are apparently capable of killing and torturing each other for not being "clear". Whatever that means.

Me, I'd rather be in hiding, only to pop up at the NAMM show every year with a new alien strangeness. What's the point of being into music if you don't have an open mind? If I do this properly, nobody will call me a god. But they will use my devices.

Synthtopia: Is it true that you made the first tube-based modular synthesizer? How'd that come about?

Eric Barbour: I was prototyping various circuits starting in 1989-90. But managed to build the first ALL-tube modules in 1995/96. At a certain point I gave up emulating opamp circuits, and just said "let's make the designs as simple as possible, and use the oddities of the tubes whenever possible". I have since heard that the TONTO synthesizer had a few modules with tubes in them. But as usual, the guys who built that had misconceptions about what tubes do, so they didn't explore the full potential.

Everything else that involved electronic music and tubes were either conventional organs and simple monophonic devices like the Solovox and Clavioline, or they were obscure and experimental (TONTO, Raymond Scott, Hugh Le Caine, and the RCA Mark I Synthesizer). Radical concepts of complex voltage or other control were not applied to tubes, because synthesizers basically grew up around solid-state opamp ICs. At least it never showed up in commercial instruments.

SOMETHING TO THINK ABOUT

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— BT

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My first prototype modules were pictured in the June 1997 issue of **Keyboard** magazine. I worked at Svetlana, I took sample guitar-amp tubes to **Guitar Player**. They told their neighbors at **Keyboard** about the wacky tube synth I was building, so Mark Vail asked me about it. Roger Cordell of Big City Music currently owns the modular synth (the original Phattytron, also pictured in that article, eventually fell apart). People keep offering him big money for it, but he won't sell it.

Synthtopia: You also helped found **Vacuum Tube Valley** magazine. What's it about?

Vacuum Tube Valley magazine

Eric Barbour: Right now it's the only magazine in the world that deals strictly with vacuum-tube audio. When we started it in 1995, there was competition, such as **Glass Audio**, **Sound Practices**, **Valve** and a few others. As far as I can tell, all the others have shut down or been absorbed into other publications. This leaves VTV standing alone.

VTV (Vacuum Tube Valley) is pure tubes. In fact, it has the only historical articles about audio tube types I've ever seen. Antique radio publications rarely if ever write about tube audio–they tend to take the elderly-crank attitude, that nobody can hear the difference between solid-state and tubes. It seems that VTV is like a bridge between two worlds that despise each other.

Synthtopia: Tubes are 100-year old technology, yet you're doing innovative things with them. Do you think there's a lot of territory still to be explored with them?

Eric Barbour: In fact, I haven't even gotten into the really deep aspects of waveform generation and processing with all the unusual tubes that were made in the 1930-1960 period. I'm just starting to use the 6BN6 type FM detector tubes. Nobody ever ran audio waveforms through those things. I haven't done anything with cold-cathode triodes, I haven't run audio thru a thyratron yet, and I haven't done anything with secondary-emission tubes. There's always the weird things that happen when you apply a modulated magnetic field to the side of a vacuum tube in operation. You can even do amazing things with little neon lamps. I have this GE glow lamp manual from 1966 that shows hundreds of pages of applications for them.

TOP SYNTH NEWS

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Don't ever tell me there's nothing new under the sun because there are loads of brilliant Ph.Ds thinking about new ideas. I see little evidence that brilliant Ph.Ds even improve our lives greatly.

Things that change the world tend to come from backyard tinkerers and heretics. Name some major recent inventions (other than drugs or weapons) that originated from direct research at a major industrial or government laboratory. And accidents don't count!

AC electricity? A Croatian crackpot named Tesla and a German dwarf named Steinmetz. Microwave ovens? Discovered when a candy bar in Percy Spencer's coat pocket melted while he experimented with a magnetron.

Television? John Logie Baird and Philo Farnsworth. Nuclear fusion? Farnsworth again.

The vacuum triode? Some guy named DeForest. Not Bell Laboratories, not the U.S. Army Signal Corps, not Marconi or GE or Westinghouse. At first, DeForest didn't even understand how his invention worked.

Transistors? Not Bell Labs either. Does the name Julius Edgar Lilienfeld ring any bells? He even filed a patent on a field-effect transistor–in 1930. Seventeen years before the transistor was "invented" at Bell Labs.

Computers? Please. People laughed at Babbage and Hollerith.

An Iowa physics professor named Atanasoff was building an electronic digital computer in 1939. He never finished the prototype–couldn't get funding. John Mauchly saw Atanasoff's machine, went back to Philadelphia, and built ENIAC.

It's not the genius that usually wins the game, it's the bastard who works for a big institution with a public-relations department.

As for Metasonix, I haven't patented anything yet because so much of it is based on old devices, and patents that ran out 50 years ago. But anyone who makes copies of my circuits will be blatantly obvious. I've been doing this as a business for 5 years, and have yet to see anyone

make anything similar. All I see out there are more and more 12AX7 distortion boxes. Again, most engineers have the GOD thing going on in their pointed little heads.

And look at the nerds in the modular-synthesizer world. They are so damn conservative. It's sad, those guys are stuck in the 1970's. *I'm more interested in a parallel-universe 1952 myself.*

Think about this–one of my dealers is convinced that Korg sends its engineers all over the NAMM show, taking photos of new electronic-music devices, to get ideas they can steal. Supposedly, they snapped photos of my TM modules at the 2003 show. Then later in 2003, the Electribe grooveboxes (with tubes in them) pop up. And the Korg Triton Extreme appears at the 2004 show. With a tube under a little round window.

I'm either flattered or insulted. At least their things don't *sound* like mine. You want Metasonix sound, there's no simulation available.

I'd laugh my *ass* off if some team of programmers wrote DSP code to simulate the **Agonizer**. Proof positive that someone takes me seriously, and is *crazier* than I am.

Synthtopia: Your product marketing is as original and colorful as your products.


Metasonix TX-1 Agonizer

Your description for a mounting bracket shouts "*Jam some red-hot vacuum tubes up your Doepfer's ass!*" Meanwhile, your new **Agonizer** looks like it's a best seller, despite the fact it's got a graphic of naked women torturing small animals on the case, and you promise that "*your dog will chew your genitals off*" if you buy it!

What does all this sonic and verbal mayhem say about you?

Eric Barbour: Hey, *I like a little sonic mayhem.* The universe is a mixture of chaos and order. The music that endures was usually a little chaotic or "weird" when it was written. Stravinsky anyone?

Besides, you have to bash some people over the head to get their attention. This worked so well with the Agonizer that I shall just have to do it with the next product. Metasonix doesn't have a

million dollars to spend on saturation advertising, like Roland or Korg. So we have to be more creative. *Threatening anal rape seems to be a good motivator.* We'll try it next year.

Synthtopia: Can you tell us a little about the tubes that go into your products, and why you chose them?

Eric Barbour: I choose things based on what *unusual* applications they might have.

Why didn't people think of using a pentode as a VCA by applying a variable voltage to the screen grid? Works great. Why didn't anyone make an audio balanced modulator with the 6ME8 beam deflection tube? That's what the thing was *made* for. Why not use a thyratron as a VCO? It gives a really weird sawtooth waveform. More like a bent shark's fin, with a slow decay time.

Building this stuff is one thing, marketing it at a reasonable price is another. I try to use TV and radio tubes that have little or no other applications today, and that are commonplace and easy to get. Even so, building something with tubes is always more costly than doing it with transistors. Tubes are bigger, hotter, mechanically fragile, usually need sockets, consume lots of power, etc. etc.

The thing that disturbs me most, is the way people dismiss Metasonix out-of-hand when they see the prices. This stuff is TOTALLY unique, it's handmade in California, and it's innovative. And I don't see other modular synthesizer modules getting any cheaper. It's getting costly to make any hardware in America. But I seriously doubt there's enough of a market for this stuff to justify low-cost overseas manufacturing.

Why do people pay $400 for old Tube Screamers and $2000 for TB-303s, but object to paying $399 for a Metasonix TM-1? Vintage vibe? A TM-1 is vintage–inside. It's just a vintage you can't find in our universe.

Synthtopia: You use only NOS (new, old-stock) tubes and tube hardware. Why is that? Isn't there a lot of variation in old stock? Isn't anybody making good tubes anymore?

Eric Barbour: Yes, there is variation in NOS. That's why you can't depend on something that is scarce or costly. I do end up throwing away about 15% of the tubes I buy for Metasonix products. But it's better than trying to use what's manufactured now.

Basically, all that you can get in new form is what guitar amps and hi-fi amps use. And they never use small pentodes, or weirdness like thyratrons. So for most functions, I need NOS.

Luckily, the supply of small pentodes is not just excellent, it's amazing. Radio and tube collectors offer me mountains of these things regularly.

Don't ask me about 12AX7s. I've participated in listening tests involving thousands of assorted tubes. And tested thousands of them in bench amplifiers and text jigs. I think obscure triodes like 5687s *beat the hell* out of any 12AX7, if you want to talk about the best sound. We get new 12AX7s because they are the standard guitar-amp tube type. It usually comes back to money, not sound.

Synthtopia: Is audio tube engineering and manufacturing destined to become a lost art?

Eric Barbour: It already is lost. The only reason we have tube guitar amps in the stores today, is because guitar-amp manufacturers found sources for cheap 6L6s and 12AX7s. Almost all of them come from old Communist factories in Eastern Europe, Russia or China.

Ask Aspen Pittman at **Groove Tubes**. He's been trying to make his own 6L6GCs for years. He can't even get the button-base stems anymore. The remaining factories usually have to make *all* the parts themselves, from scratch.

This "industry" is hanging by a thread. Only the demands of the marketplace keep it alive. As I said before, engineers regard vacuum tubes as antique abominations, better off eliminated.

One major result is that discerning users are running around driving up the prices of good NOS audio types, and *using them up*— thus driving the prices up further. But the current production is nowhere near as well-made. The only pressure the tube factories feel is from guitar-amp makers–who only want the price lower.

The musicians are usually clueless, *and* also looking for the lowest price. Laissez-faire capitalism might yet choke the business off. Ignorance is strength, war is peace.

Synthtopia: How are people using your products? Are there musicians that you think are doing particularly interesting stuff with them?

Eric Barbour: Currently there's **The Wretch** and **Not Breathing**. I like those guys, they have the right attitude.

Thanks to dealers like **Big City Music** and **Two Lines Music**, my devices are starting to end up in the hands of major recording artists. It'll take them some time to figure out what to do with the stuff, but it's slowly becoming recognized as a unique and special kind of technology. Our web site **FAQ** has a list of major artists using Metasonix.

Synthtopia: Eric, thanks for your time!

About Eric Barbour

Eric Barbour has a BSEE from Northern Arizona University, and has 25 years' experience in the electronics industry. He's worked as an applications engineer for Svetlana Electron Devices (USA), a leading power tube manufacturer. As the owner of Metasonix, he designs and manufactures tube-based audio modules that can be used with instrument effects, or as part of a modular system.

He's also written extensively about vacuum tubes. He's currently the Senior Editor of **Vacuum Tube Valley** magazine, and his articles about using tubes and the history of their use is widely respected. Barbour has been awarded with the Gerald F. J. Tyne Award by the Antique Wireless Association (AWA) in recognition of his work in documenting the history of vacuum-tube electronics.

Resources:

- **How a vacuum tube works** – by Eric Barbour
- **Audio Synthesis via Vacuum Tubes** – by Eric Barbour
- **Metasonix Vacuum Tube Audio Forum**
- **Metasonix**
- **Vacuum Tube Valley**

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