

# TAPE OP.COM

Dave Amels

by John Baccigaluppi

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I first met Dave Amels of Bomb Factory and Vocé in Nashville at the NAMM show last year. People kept telling me “You need to meet Dave and interview him for Tape Op.” We ended up chatting for a couple of hours, and I always look forward to talking with him at the annual music biz shindigs. I finally got a chance to sit and talk to him with a tape recorder rolling at this year’s Nashville NAMM.

Dave started playing music when he was kid growing up in Wood Ridge, NJ and was always interested in electronics. When it came time to choose between going to college to study music or electrical engineering he chose engineering, “because I figured I’d never make any money playing music.” After getting his degree at Stevens College in Hoboken, NJ (“They don’t actually teach you anything practical in engineering school.”) he worked various jobs including a stint with the military doing electronics and then ended up at NADY designing VHF transmitters and receivers. “After that I figured if John Nady could have a company, anybody could so I started Vocé with my brother in law, Al Alonzo. We made organ modules which grew out of my senior project in 1981 which was an eight voice polyphonic synth. It was more like a sampler which was similar to a Fairlight I suppose. It was built around an Apple II scanning a keyboard and assigning digital voice cards I’d built. The first Vocé was a 64 voice instrument in 1988 which was pretty unheard of at the time.” Voce went on to create several other pioneering keyboard products at the time including their additive electric piano module which can be heard on Becks’ “Where It’s At.”

Around 1995, Dave started working with Henry Hirsch who’s best known for engineering most of Lenny Kravitz’s albums. Dave started renting his esoteric collection of vintage keyboards to Lenny and Henry. This eventually turned into a friendship with Henry and Dave working together to build studios for Lenny. Dave had designed a console for his college radio station as well as some tube compressors, mic pres and DIs and built on this knowledge to work on Chelsea Studios and their Olympic Sound Console and two studios for Kravitz, along with upgrading his API Legacy console. If all this wasn’t enough, Dave has also been playing music and working as an engineer and producer since 1983 when he recorded his band The Stepford Husbands on a TEAC 4-track with some old RCA ribbon mics that a church had given me, “Little did I know that these would be the best mics I’d ever own.” Dave is currently working on a regular basis with Dennis Dyken of the Smithereens as a production team and has produced and recorded records for artists like Star City and David Kleiner and just recorded an album, Christmas In Memphis for Confidential Recordings.

Recording Ben E. King for a Springsteen tribute album was a highlight, “We got to write an arrangement for 17 musicians that we wrote out. We had 17 people play live in Jolly Roger at Hoboken. Ben E. came in sang on one of the takes. Sitting in the control rooms was one of the times when I felt the hair go up on my arms to hear Ben E. singing with all these musicians, it was just great.”

Contrary to Amels’ profession as a Pro Tools developer, he uses an all analog signal path. “We did a test in Lenny’s Miami studio where we tested a lot of vintage mics pres. The differences were apparent when we recorded them onto tape. But, we recorded them in parallel to Pro Tools and you couldn’t tell the difference between one mic pre and another, so it has this effect of homogenizing everything. The Apogee converters were much better than the 888s which are really horrible, but I got tired of the way they sounded too. The 001 sounds much better than the 888s. I think that’s part of the problem when you really stack up tracks in Pro Tools. If you have a minimal arrangement or bring things in and out it can work, but otherwise everything seems to pile up in the middle.” Dave combines all of his experience along with a love for ‘60s garage rock and keyboards and rolls it into his Bomb Factory plug-ins. In 1997 Dave met Erik Gavriluk and founded Bomb Factory which took Dave’s work in digital modeling and applied it to plug-ins of vintage analog processing gear. “I liked the idea of being able to dream up some kind of processing thing, create the code and have a product instantly. I was used to hardware where you had to prototype and then build. This was instantaneous.”

I was curious about what it takes to really “make” a plug-in which brings me to the main question I wanted to ask Dave.

### **What is involved in making a modeled plug-in?**

Modeling is a term that has been abused in recent years. My definition is breaking an actual physical system into its components and creating a simulation of each of those components and building on that. I think that works as a very general definition of modeling. With Bomb Factory we start with the schematic of, say an LA-2A, compressor and every capacitor and every resistor is modeled. There are simulation packages used in engineering called PSpice and OrCad and they work in a similar way. You enter a schematic and you can put test signals in and you’ll actually get what the circuit is doing out, depending on how well you describe the actual components and their defects. Capacitors, for instance, are never ideal in the real world, they all have certain dissipation factors and stuff so you take that into account and you can create mathematical equations that represent that so that when you put audio in, you get audio coming out that corresponds to what the actual physical system is doing. Now on things like the LA-2A there are components that are not well understood and can’t be well modeled because there is a device made from photocells that varied from +100% to -50% in production. So the photocells are hand chosen in an LA-2A and there’s an electro luminescent panel which has a certain luminosity vs. applied voltage vs. frequency. So what I had to do on that is to run tests to determine the transfer curves for such a strange system. There’s all sorts of lags in attacks and release times both from the phosphor and the electro luminescent panels and the cadmium sulfide has a release time associated with it as well. All that stuff had to be modeled as far as frequency vs. voltage characteristics and such. So while most of the LA-2A is pretty simple, there’s some very weird components in there. There’s a transformer that has phase shift, all sorts of stuff going on in there. We have every one of those components represented in the digital code. It’s always shocking when you take all that and do the listening tests and it’s dead on. Of course, we verify everything with extensive testing and blind listening tests in case I made a mistake like missing a decimal point somewhere.

### **Was the LA-2A the hardest to model?**

It was. It took almost a month to do the opto and we were working 60-80 hour weeks at that point.

### **How long does it take to do a plug-in from start to finish?**

At least three months or so. Once I’m done, Erik has to do his part with the graphics to make sure the plug in looks right too. Getting all the shadows and texture right can take a huge amount of time.

### **So something like the Fairchild or Pultec is easier?**

Oh yeah, the better behaved the system is, the easier it is to model.

### **Are you using a high level language when you code or are you hacking away in assembly language?**

I start with the RTAS version and I use C++ but then we optimize that. I code the 56K version separately in pure assembly which is quite a task. The tools that Digi gives us to make this stuff aren’t very good, so we spend a lot of time rebooting Macs.

### **So how many lines of code are there in a finished plug-in? How many lines of code does it take to represent say a resistor?**

Well, a resistor by itself wouldn’t mean anything. It would have to be a pair of resistors which would be a multiplication by an integer of less than one for a resistive divider say. But for say a resistor and a capacitor, which forms a simple low pass filter, in 56k that would be a few opcodes in a row, whereas something like the opto in the LA-2A is something like a hundred lines or so of very dense code.

### **What are your plans for the future?**

We’re planning on supporting more formats besides Pro Tools and MAS, and all formats will be both PC and MAC as we’ve always done. Whatever the users ask for. We want to be more responsive to customers request from now on and not be held down by any exclusivity requirements by any one platform manufacturer.

### **What are your thoughts on software piracy and copy protection?**

Erik is more outspoken on this than I am, but the bottom line is that if software companies can’t make a living doing this, there won’t be any more cool software. Digidesign isn’t doing anything to help with this. They could have put hardware on their cards that would allow third party developers to have code that would protect the plug-in developers. I think that was a conscious decision, I don’t know if it’s still that way, but it was admitted to me that there was a sense that cracked plug-ins

made their platform cheaper, and it does because you just pay for Pro Tools and you get free plug-ins. But that's very short sighted because if that's the case there won't be any plug-ins. If it was a physical product and it was stolen, people would say that was wrong, but because it's software, people think it's Okay. People intrinsically think that software doesn't have much value. I've just outlined how much work it takes to design these things, it takes just as much time as designing hardware. My health has suffered from working 80 hour weeks for the last three years on this stuff- I'm actually under a doctor's care right now for fatigue. To have people rip this stuff off left and right is really demoralizing to me and makes me not want to do this anymore.