

# TAPE OP

The Creative Music Recording Magazine

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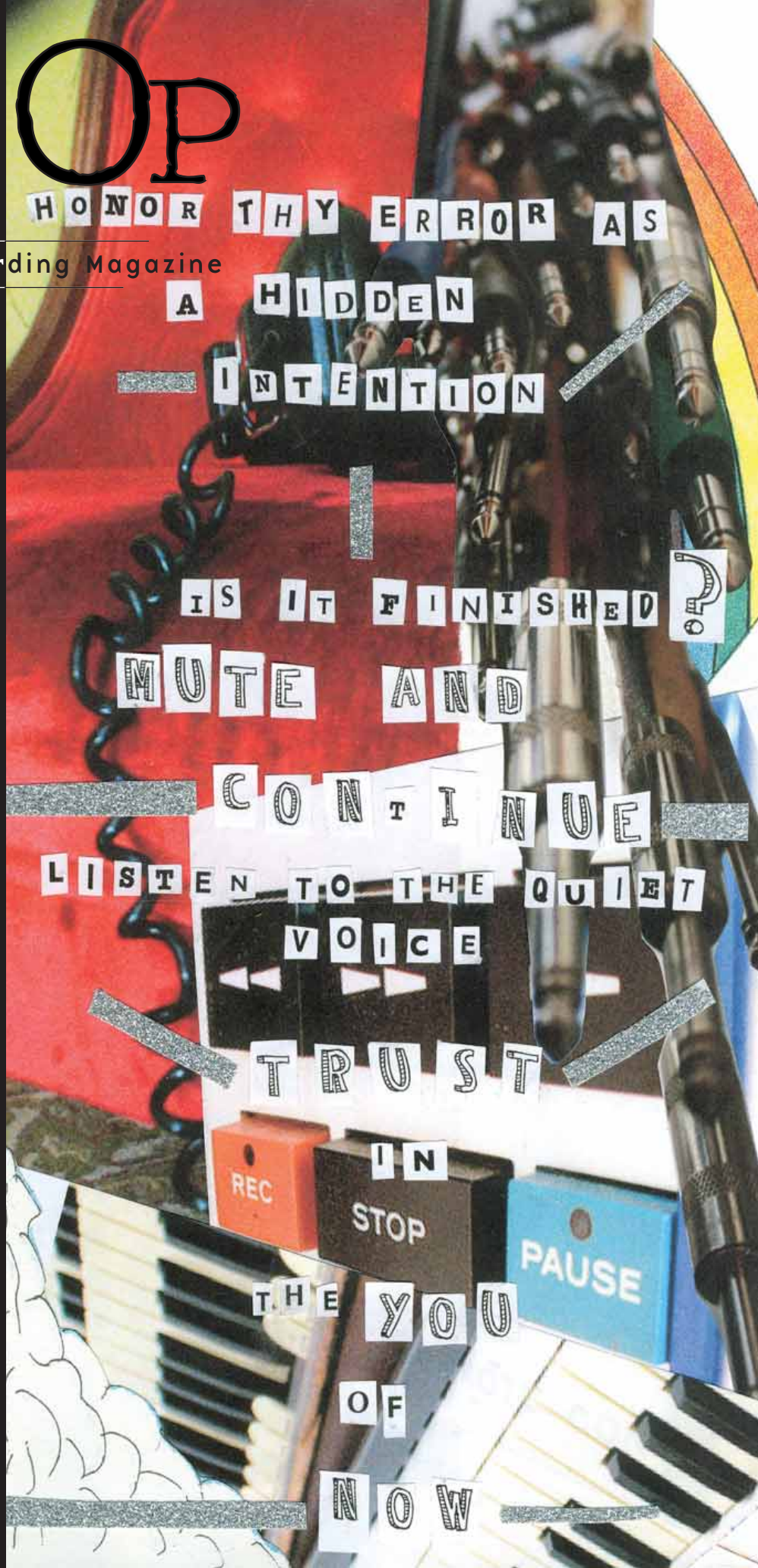
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Issue No. 85

Sept/Nov 2011



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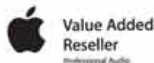
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# Hello and welcome to #85!



As I was nearing the end of one of the bigger album projects I've done this year, I had this thought: "What is my job?" Now first off, don't get on my case about professional engineer/producer versus "part-time" recording folks. That doesn't matter. In the end it's all about the music that gets captured and presented. Anyone can be part of the album making process regardless of experience, skill or fame. What I mean by "job" is the role a person takes on when they offer to help record someone else's music. What is our responsibility to the artist and the music?

**Maybe our job is to protect the art.** To shield the artist from outside worries that could derail better performances. To be the cheerleader when someone isn't sure of his or her work. To stop someone when they are nitpicking music that has already reached its peak. To hide technology from the artist in order to keep the flow of a session moving forward.

Many times I've had a client ask me questions like, "So, do we have to lay down drums first to a click and then overdub everything?" or, "Do you always double track the vocals?" Sometimes they are the scarred survivors of some studio nitwit that imposed inappropriate or odd recording choices on their music. ("We gotta record your bluegrass music with MIDI.") Other times they've read (and maybe misunderstood) something in a book or magazine about making records. ("Butch Vig says you have to record with this mic.") Or maybe they've only ever recorded at home, one track at a time. Whatever it is, our job is to inform, educate, support and benefit the people we work with. Anything else is shameful, in my mind.

Larry Crane, *Editor*

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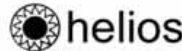
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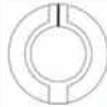
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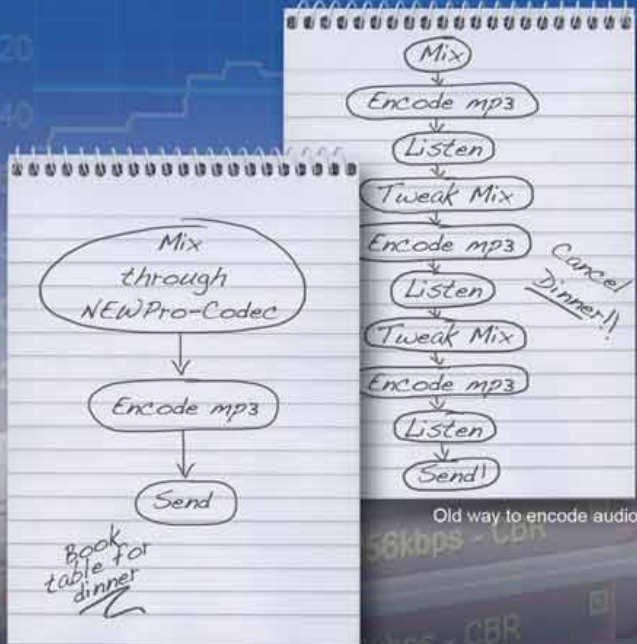
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## Disclaimer

Tape Op magazine wants to make clear that the opinions expressed within reviews, letters and articles are not necessarily the opinions of the publishers. Tape Op is intended as a forum to advance the art of recording, and there are many choices made along that path.

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# LETTERS to Tape Op

I'm a little behind in the reading of *Tape Op* – I just found out you're celebrating 15 years. Congrats. I'm very happy that this mag is out there, encouraging folks to press record; regardless of whether they're working in a multi-million dollar facility or at home dusting off their cassette 4-tracks and Realistic microphones. It's important that there is someone in our field reminding us that making music is the thing, not the equipment being used. Here's to at least another 15 years, and hopefully no major corporate takeovers!

**Dave Westner** <davidwestner@gmail.com>

How many people have already written in to tell you where to buy cassettes? Your local Goodwill store? Thirty-eight cents a piece! Amazon.com sellers. Tapes.com provides lots of cool options. Guitar Center still sells tapes. Yes, really. Cassettes have provided me with a whole way of working that I never got to experience before, having learned my recording chops in the digital age. My first 4-track cassette recorder was only purchased about four years ago, and since then I've been unable to stop buying more and more... I now also have two 8-tracks, one 6-track and a [Tascam] 388. I wish everyone who's only familiar with DAW-based recording would be able to spend some time in the non-visual realm of recording. Even though it's "just cassettes," it changes the way you think about everything, even if you stay primarily in DAW country.

**Ian Williams** <ian@dorm.org>

In *Tape Op* #83 Nickolas Monson was looking for a source for cassette tapes. I will suggest National Audio Company out of Springfield, Missouri (nationalaudiocompany.com). Last year I placed a small order and the service was quick and the price fair. What more could we ask?

**Arthur R. Jenkins** <arthurjenkins@gmail.com>

tapestockonline.com seems to have a pretty good deal – fifty 90-minute tapes (no cases) for about a buck each, plus postage. Thinking of my Tascam 424 MKIII, I've noticed if you balance the tape speed switch between "low" and "high" it seems to yield a 15 ips setting. I haven't tried recording in this middle position yet, and am not really sure if it would even be at all advantageous to do so. Maybe less hiss? I'd certainly burn through more tape.

**Charlie** <ctmc1981@gmail.com>

Hey Charlie, your 424 has two speeds: 1.875 and 3.75 inches per second. If it's speeding up in between the settings, it's probably in fast forward motion. You should take into account that, at this speed, the tension of the tape and the speed of transport are likely not consistent; therefore you probably won't have much luck with running at "super high speed." But why not try and see? -LC

*Tapeline in the UK (www.tapeline.co.uk) still manufactures audio cassettes to order. I am a very satisfied customer.*

**Kristian Bauck-Nordeide**  
<baucknordeide@gmail.com>

*We have a great company here in Cleveland (www.atozaudio.com)*

*that still manufactures cassettes, to any length, in different bias formulations. I have been shopping here for at least 15 years.*

**Stephe DK** <stephe\_dk@yahoo.com>

As usual, *Tape Op* has inspired me to continue recording for the right reason: for great/interesting sounds instead of the almighty dollar. Your interview with Kearney Barton [*Tape Op* #83] gave me the inspiration to get my studio finished. I've dreamt of having my own studio, but was unsure of the proper tools. I've always liked vintage gear because, unlike software, it did what it was supposed to. I feel confident about getting a few rackmount pieces, instead of the latest and greatest stuff. *Tape Op* is my welcome friend that comes to my mailbox

**Dave Orosco** <djorosco@gmail.com>

After reading the "End Rant" in *Tape Op* #83, I don't understand why, in the picture, the girl is about to smack the schoolboy upside the back of his head?

**Raven Tenderfoot** <stuntdrummer@gmail.com>

*It's a mean schoolteacher and a bad student. Back in the good ole days I guess! -LC*

I just wanted to let you know how dependable two of your advertisers (Black Lion Audio and RØDE Microphones) are for customers such as myself. I think it's important to recognize companies that have amazing customer service. Black Lion Audio are the kindest people and have great products they stand behind. Also, RØDE just replaced a 9-year old mic for me without an ounce of hassle. We need more companies like these!

**D. Barlow** <monkey@dbiddle.com>

*We appreciate the support of our advertisers. Please tell them you read *Tape Op* – it's important for them to know this! -LC*

I am a typical sound engineer graduate (from the UK) going through the motions of lots of "experience" work. I work really hard. I thought I'd drop you a quick email because I found your article on "What They Didn't Tell You in School" [*Tape Op* #83] fantastic. You hit every nail on the head. Although I would like to add a couple: "Don't be afraid to work for free – it's good to meet people."

"Don't assume the studio is going to have all the gear. Always keep a box of cables in your car!"

It is nice to know that there are other people learning these lessons in the same way I am! It made my day.

**Joe Dickinson** <jd.proaudio@gmail.com>

The Chris Shaw interview [*Tape Op* #83] is going to be a life-changer for mixers everywhere, especially for the Bob Dylan mixing lesson. That piece alone will make records sound better all around the world.

<ap23@rochester.rr.com>

I'm an ex-student of a Bay Area recording school, and surprisingly enough they covered most of the pearls of wisdom listed in your "End Rant." What they failed to mention was how to survive an unpaid internship when you have \$125,000 in student loan debt and nobody to pay your rent. That would have been nice to know.

**Trevor** <wrkingclassoi@yahoo.com>

I have been learning the dark art of producing and engineering now for a couple of years and am close to polishing off my first album at college. *Tape Op* has been, and will continue to be, the main reason I think that living like a bum 'til I'm 30 is still worth it. I especially enjoyed Larry Crane's "End Rant" this issue – a lot of firm facts there.

<beet44@hotmail.com>

Does anyone know if fluorescent lights actually make noise in the electrical lines that would be recorded, or if the buzzing is just audible?

**Larry Antiozzi** <laughinggravy1@verizon.net>

*Get rid of them. If they're making noise in the room, you don't want them around. -LC*

Just finished reading the Chris Shaw article (fantastic, to say the least), and just wanted to comment on something he said that I find particularly puzzling. "Everyone's buying HDTV and Blu-ray. Everyone wants to see everything in 3-D. But they're happy to listen to a 128-bit MP3? It's mind-blowing." I couldn't agree more. It is quite puzzling that people are oblivious to lossless formats; much less high-quality MP3. I feel that this is something that needs to be further addressed in today's listening society. There are no downsides (excluding larger files) to hearing the music we all love with higher quality. I think Mr. Shaw is right – the artists are the ones who have the responsibility to change this.

**Paul Cianciaruso** <www.myspace.com/butchersblindmusic>

I'm sure most of your readership can sympathise with me when I say that nearly every day, and in almost every music publication, I am bombarded with the latest "must haves." I regularly read that if you don't have X brand desk and X brand mic mastered on X brand vintage compressors, then nothing you make is worth a damn. It is nothing short of a relief to read *Tape Op*. Your interviews prove that you can record just about anywhere, as proven by Valerie George [*Tape Op* #83]. The interview with the Reaper team [*Tape Op* #80] shows that you don't need the most expensive industry standard DAW to produce quality recordings. Finally, your contributors and readership show that **nobody knows everything**, that the real people in this industry face similar problems and that it's not all about the big in-vogue names at the time.

**Chris Law** <coalshedstudio@googlemail.com>

Brad Williams' article ["Build Your Own (Inexpensive) QRD/BBC Diffusers" *Tape Op* #83] was amazing! I just wanted to say "thank you" for saving me money, which I will use to buy more gear. I recently moved and I have a whole floor of my house for a studio, and I have been building almost all of the sound treatment myself in order to meet a tight budget.

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I work with a lot of electronic musicians and I keep running into a fundamental issue time and again: producers drop audio samples into their DAWs that have been normalized at 0 dB and neglect to reduce the volume before the sound is processed by plug-ins. People just turn down the volume in the DAW; the result being that the VST plug-ins get slammed and the mix ends up 2-dimensional and "in the boxy." A simple solution to this is to place -20 dB pads at the beginning of each channel before any effects processing.

<jdempcy@gmail.com>

Or reduce the volume of the track/sample by processing with a gain plug-in. Good point though. Most gear, even plug-ins, usually works best when not pushed to its limits. -LC

I was wondering if you had any issues regarding lo-fi recording. **I am not into lo-fi, but my band is** and I am trying to figure out how to compromise in a way that still sounds good to me.

Damien <silvertendrils@gmail.com>

I feel like a goddamned advice columnist. Here it goes: Wikipedia states that "lo-fi" is "music in which the sound is of a lower quality than the usual standard. Recent uses of the phrase have led to it becoming a genre, although it still remains as an aesthetic in music recording practice." Of course this leaves the definitions for "lower quality" and "usual standard" in limbo. To me, the idea of any "recording practice" being a genre is pretty lame. Is "hi-fi" a genre? Is recording on a DAW a genre? Of course they're not - because that is stupid. I always encourage people to work with what equipment is available, but I also believe that one should strive for the proper clarity and creativity needed in order to support the intent of the material. There is certainly no right or wrong. Adopting a so-called "genre" like this for a band seems creatively restrictive, shortsighted and ludicrous. Record any way you wish, but make the most appropriate recordings you can to represent your music. Jumping onto some lame bandwagon that was probably defined by some jackass journalist is the last thing any self-respecting artist should ever do. Be yourself. -LC

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**cakewalk**  
by Roland

### **Who's involved in the Blakroc project?**

It's primarily The Black Keys and I'm a co-producer and engineer. Dan and Pat from The Black Keys are producers, with Damon Dash as the other producer.

### **Whose concept was it?**

You know, the *concept* didn't really exist. Damon contacted The Black Keys, from what I understand. Damon told The Black Keys that he liked how they operated one of the first days we were all in Studio G. It was based on the fact that a lot of modern hip-hop has gotten to a point where it's more about Twitter and, "Hey, look at me" than it is about content. It's heavy on the PR and light on the substance. That seems to be a pretty common opinion. Damon was talking about how The Black Keys are all content and no Facebook or Twitter – just a real band playing real stuff. The fact that we started recording things without a concept actually became an asset.

### **Each song features a different rapper?**

Yeah. Basically myself, Dan and Pat were the producers. Damon had suggestions for people that might want to be part of the project. We also had other suggestions, like Q-Tip. I think that's why a lot of the guys on this record are the people that rock guys think are cool in the rap scene. That's why it's Jim Jones, RZA, Q-Tip, Raekwon, NOE and M.O.P.'s Billy Danze. Nicole Wray sings a bunch of the hooks, and she has one whole song with Dan. She had a really big hit called "Make It Hot" on Missy Elliott's label, but that was '98 or '99.

### **So what's the process? Are you guys getting tracks done and then bringing in MCs?**

Yeah, for the most part. RZA had a lot more to do with the instrumental process, playing guitar and keyboards. He then wound up rapping on the tracks anyway. We did

his thing over at LoHo [Recording Studio], which is owned by the Blue Man Group. We wound up doing it there because Tony had a session at Studio G. RZA came in and set the tone for the whole track. None of the stuff was to a click – it had to be interpreted as a hip-hop song in the end. A lot of the loops are of me just grabbing the closest instrument. I wound up with a lot of sessions that are 84.663 BPM or whatever, because I'm just tapping tempo along with it until one lines up again with Pat's next kick drum. And sometimes it would just be cool to impose a straight 84 on that .663. Those were subjective decisions that were made on the fly, because I needed to get those drums and basics happening – just Dan playing guitar and Pat playing drums. I needed to get those things looped out so we could get RZA's keyboard, or the next thing, going. It would take shape in front of us. We went through all the same stages that anybody would when they're



by Allen Farmelo  
photo by John Peets



recording, but it's like we started with setting up drum mics and by the end of the day we'd have a song. The next part of the process was dependent on who was coming in next at any given time. We'd have to line up what Q-Tip needed to hear because he was coming in at 2 pm, which we knew would be 4 pm. So, we'd be working on it at 2:15 and then he'd show up! Nothing was set in stone. We'd redo arrangements, based on if they wanted 16 bars or whether the chorus became the hook. Things were left incredibly abstract. What would happen was very freestyle, at all times.

### **Was there a lot of assembly?**

Lots of assembly but, to be clear, a lot of assembly meaning listening to what did and did not work, given what we threw at the speakers. It was more of a subtractive process. A lot of times we'd have the arrangement done because they'd want to lean up into the verse. They'd want to tailor their flow to the space

between the choruses. We'd have to start with live instruments and people not on a click and wind up with something that sounded like a track by 3 o'clock.

### **So, you'd set the flow and then go for it?**

We'd totally go for it. It felt like the modern version of letting people jam. There's an incredibly accurate video. There are webisodes on The Blakroc website, and the RZA day is chronological. It could be the producer/engineer's worst nightmare because it's such a free-for-all. There are parts that don't work with each other, but it's that irreverent vibe I love about classic-era hip-hop. It's not about what key it's in – it's not about anything except for the beat. If you come to a consensus in the room that it works, then it works. That's more punk rock than what punk rock is, at this point.

### **Did you try to get those tracks to adhere sonically, in any particular way?**

Yeah, by fucking it up at every step of the way! [laughter] Literally by choosing the stupidest choice for what's under the snare. [Shure] Beta 52A? Fucking great. And it's the worst – it sounds so lame! We'd also use a mono [Beyer] M88 overhead. There were also two [Beyer] M69s as the rack and the floor mics, as well as a [Placid Audio] Copperphone mic between the snare and the hat. What I wound up with was a bunch of choices that I'd swear at myself about, but I'd find out that it's things that work. You're charged with making it great, so you pull out all these tricks. All of a sudden you realize that's exactly how every cool album that you love has been made. Most of the music I love definitely sound like things were fucked up in the studio and then a mix engineer had to deal with it. It's not like it sounded crazy and wrong when we were listening to it. It would influence the overdubs, obviously.

### **With all the voices rapping, were you taking similarly weird or different approaches there? Or were you just trying to get good vocal sounds?**

I was amazed at how much variation there was with one [Neumann U] 47 up. I had a 47 up on a stand from the get-go. I would blow it to bits with a tube preamp, if it required an aggressive sound. I would just use one of the Neves on my console with a little EQ, if the hook was being sung and I needed a Mary J. Blige vibe. I'd change pres, but leave the mic for the most part. I did some of it with a [Neumann] U87. Mos [Def] wanted a handheld [Shure SM] 57 to do his vibe tracks. It was awesome. We'd start with a 47 and do his main vocals on that, and then have these 57s being eaten and popping – so blown out. The combination of those things is like the professional version of rocking the house party.

### **Was there anything about working with a duo that you had to address, in terms of low-end representation for hip-hop?**

Yeah, definitely. I have this Korg, I forget what it's called but it's their answer to the [Moog] Taurus pedal, but it's not as instantly recognizable as the Moog filters and oscillators. As a mix person I can throw it in secret. It's like a cool, round organ that makes the bass strings sound like they got fatter during the chorus. Rather than, "Wow, this synthesizer just kicked in with a rock

thing." Then we had a couple of Moog analog synths. Everything was analog. We stuck with The Black Keys aesthetic, which is definitely a big knobs and vintage gear type of vibe, even if we were making sounds that had to compete with a 50 Cent-type of record. We wanted to make the sounds that are happening right now, but with vintage equipment – the fuzzy, blown out version. We wanted it to still sound like The Black Keys. We wound up with continuity, no matter what. I think the crucial aspect of this whole Blakroc project is that the strengths of any given performer were embraced. It wasn't like we were trying to get Mos Def to do rock. It wasn't about making somebody look awkward. If you look back prior to R & B and rock... I'm not sure when the divorce happened or who imposed it on the world.

### **Were you self-conscious about the implications?**

Yeah, totally, in the positive sense. I was amazed, not just by the willingness, but the enthusiasm in the room at all times. The thing I think is most interesting is the fact that everyone who came through the door was incredibly enthusiastic. I mixed an entire version of the record and Brian Gardner mastered it. I think it'll be one of those cool outtake things that will hopefully see the light of day in 15 years. We decided to have some other people take some stabs at the mixes. I sent the stuff over to Tchad Blake at Real World and he did some mixes – I think five or six songs. Clay Holly did a few of the mixes as well. He did a record that Dan and Pat had heard and really liked. It was good to have some fresh ears come to the project. We also changed mastering people to see if we could get the specific aesthetic that was being talked about. I think what we came up with in the end, was capturing the sound of musicians being enthusiastic about making music together in the studio. There's a point of creation and spark that reads through all these tracks.

### **It sounds like an awesome project.**

It's an amazing one to be involved with. And Damon Dash! I didn't know anything because I don't read *People Magazine*, but some people might have preconceived notions about what he's like. But man, that guy is really good at what he does! He did the perfect executive producer's job; he facilitated an atmosphere for the people to make great content. He would dance right behind me during takes and show up at the studio with exactly what people needed in order to feel good about making music; whether it was a couple of girls to dance behind the couch when the guys were rapping or helping get a quick punch-in for RZA when he wanted to mic his BlackBerry. [laughter] That kind of energy – that's real. He [RZA] rocked the control room like it was a show. It was really impressive. ☺

[www.JoelHamiltonRecording.com](http://www.JoelHamiltonRecording.com)

Allen Farnelo is at [www.farnelo.com](http://www.farnelo.com)



**bonus article:**

<http://tapeop.com/articles/85/joel-hamilton/>



When we heard Joel Hamilton, long time *Tape Op* contributor and partner in Brooklyn's Studio G with Tony Maimone [issue #41], was co-producing and engineering on a hip-hop project called Blakroc – with vocalist/guitarist Dan Auerbach and drummer Patrick Carney of The Black Keys and featuring rappers like Raekwon, RZA, Jim Jones, Mos Def, Ludacris and Q-Tip – we had to find out more. The resulting album, simply titled *Blakroc*, is a blast.

**A while back I met this guy in New York,** and he tells me, "Hey, I just produced an album with RZA where we used a live band for basic tracks and then tried to make it sound like samples." I was intrigued. The record, *Wu-Tang Chamber Music*, isn't a Wu-Tang album proper, but it does feature members RZA, Raekwon, Ghostface Killah, Inspectah Deck and U-God, as well as many important guests. It's a cool listen, and Noah's story on how he ended up co-producing, mixing and engineering this album is interesting. Besides this project, Noah fronts his group War Game and has recorded the *Historics* album *Strategies for Apprehension*, featuring members of Icarus Line and Maroon 5, as well as doing remixes under the name Ruby Beats. Noah has recently worked with RZA on a new Wu-Tang record called *Legendary Weapons* which was produced in the same manner as *Chamber Music*. We sent Joel Hamilton (who had just been working on the similarly "hybrid" Blakroc project) over to meet Noah and see what was up. -LC

### **What's your history?**

I was into hip-hop before anything else. When I was 11 I remember buying Ice Cube's *AmeriKKKa's Most Wanted* and my cousin bought Sonic Youth's *Goo* and we spent the whole weekend listening to both those records. I read *The Source* a lot in elementary school in suburban Boston. I went on to be a hardcore punk rock kid, but the way I got into music was definitely hip-hop.

### **How did you get into recording and production in general?**

I've always been a music person and I've always been in bands. In 2001 I got a job at this place in Tribeca called Two Lines Music. It was full of crazy vintage synthesizers. Because this was after September 11th and we were downtown, there were no customers. I basically sat around, drank coffee and played with every synthesizer ever all day long.

### **If you fuck with a modular once, you'll understand gain staging and signal flow...**

...envelopes and ADSR. Me and Chris Coady worked there at the same time together and we became close friends. He was already well into his career in terms of recording. The store had a pretty high-profile clientele – a lot of big producers – and I was the guy who understood hip-hop. So I was always talking to the hip-hop producers who came in. From there I ended up spending a lot of time in studios, and then I got asked to start doing interviews with producers for hip-hop magazines. That was the time when hip-hop producers were starting to become celebrities – Pharrell, Timbaland, Lil Jon and Kanye West – these were the people that they wanted on the cover. [Harris Publications] launched *Scratch* – a hip-hop production magazine – and I got hired as the technology editor. I ended up meeting tons more producers, hanging with them, getting feedback from them and being a liaison with technology companies. I became an editor at this magazine called *Mass Appeal*, and I also wrote for *Vibe Magazine*, doing technology writing. I had all this software that I was using and hip-hop people to that I was interviewing. The first proper record I worked on was with Chris

Coady – this hardcore band called Das Oath that we recorded in a week at Headgear [issue #65]. It was a super fast record. From there I ended up doing some remixes [as Ruby Beats] for bigger indie rock bands like Architecture in Helsinki, Celebration and Rings. At the same time I was building my hip-hop connections with people I had met through doing *Scratch*.

### **How did you get involved with the Wu-Tang Chamber Music project?**

I've had a relationship with the label [E1 Music/Koch] that's putting this out. I've been brought in for a few unconventional projects that they've had going on. I didn't know what I was gonna do when we started the project – I don't think anyone really did. It was like, "Here's a live band. You guys all know what Wu-Tang is supposed to sound like, so make something."

### **Who were the band for this project?**

The live band is a group called The Revelations, who are a neo-soul band based out of Williamsburg. Their repertoire is very much oriented towards stuff that RZA might have sampled. That was why it made sense to do a project like this with them. It really started with pulling original tracks that were '60s and '70s soul that we felt evoked the vibe we were going for, playing that to them, mic'ing everything up and then having them do three or four jams based on these original tracks. Not even really interpolations, just like, "Here's the vibe. Can you rock something that goes with that?" Then it was going back and listening through that stuff, seeing where the feeling was really coming through and taking those parts and breaking that out into something that works as a song. The production team on *Chamber Music* was basically myself, Lil' Fame [Jamal Grinnage, aka Fizzy Womack] from M.O.P. and Andrew Kelley. So after we had all these tracks it went back to a more hip-hop methodology, where we were making beats out of these tracks.

### **Creating your own source material and treating it like a sample?**

Exactly. At the end of the day we wanted something that was like *Enter the Wu-Tang (36 Chambers)*, and I think a lot of live hip-hop records fall short for the listener.

### **They feel compelled to be too song-y and too musician-y.**

Which just doesn't translate. You want it to resonate with the feel that people are expecting, but you wanna create it in a new way and bring a new energy to it.

### **There were some collaborations in the '90s that fell short for that exact reason.**

Or feel like two completely separate songs. I'm really proud of this project on a lot of levels, but one of the things that makes me most happy is when you read the feedback from the hip-hop world and how excited people are about it. That's the funny thing when you talk about Blakroc or *Chamber Music*.

### **What was your working method? Did you do preproduction?**

Preproduction was all about vibe, listening to the tracks that we felt were inspiration or source material for other Wu-Tang songs that we really loved. So mic up the drum kit

– we had a small live room – and we had bass and guitar in the control room going DI. We had a click track going to the drummer's headphones 'cause we wanted everything tight in terms of tempo, and we let everything flow from there. We also had a keyboard player who was in on some tracks. The way it ended up being edited was that drums and bass were always the thing that ended up staying, and sometimes the guitar part would stay and other times it would come in from some other part of the track. The keyboard player was doing a wide variety of stuff, from more conventional synth and organ to sound effects that worked well in some of the interludes. From there it was take the jam and listen to it: "What are the loops that are working?" Then the band would take off, and the production team would take the parts we liked and map everything as a beat. Then I would take that basic beat and mix it. For me it was like, "This has to sound like it came out of a

fucking Ensoniq EPS." If it doesn't sound like a 12-bit sampler, it's not gonna sound like an old Wu-Tang record.

So then it's all about how you use distortion in the mix.

**So let's stay on the input side for a second.**

**Were you engineering for vibe?**

One hundred percent. The studio we were tracking in was somewhat limited in terms of gear. I definitely have stuff with more character, but I'm not gonna hate on any of it, 'cause at the end of the day I think that we got sounds that really worked. It forced me to think more about placement. The drummer, Gintas Janusonis, had a bunch of snares, so we messed around with those. We didn't have every mic to work with – it was all about getting the right angle on it. I didn't try to get too much out of the pres 'cause I felt like the more I tried to futz with it the farther I might get from something I'm gonna be happy with. I knew I was gonna be processing stuff a lot. We were

trying to get a sound that feels good and that you want to listen to it a bunch of times.

**You're one of the producers, right?**

I was producing, but [was] also the tracking and mixing engineer, so at the end of the day it came back to me.

**Where were you working?**

Have you seen the small room that's attached to Headgear? It's called Chop Shop Studios, and it was over there briefly – now it's in a really big space on North 12th and Kent. The live room was super tiny, but it really worked. My own studio is in the West Village.

**You don't need a gymnasium; you just need the right drummer.**

I think that's a good point. I really have to tip my hat to the players themselves, 'cause they really did work hard to get the feel just right. I think Gintas really understood what had to be done, and I think that kind of positive energy helped make the whole thing really work.

**So what's your point of reference? You compared it to early Wu-Tang? Old funk records?**

Those were all what was really in my mind, but at the same time I didn't know how the fuck I was gonna make it sound like Wu-Tang. I just had to trust my gut and believe that this was gonna work. I remember sitting with all these beats that we had made, getting ready to mix them to send them to the MCs, and it was like, "Okay, what does it even mean to mix these tracks?" Sitting there and sort of having a "Eureka" moment, where I was like, "This is the sound," and then getting to apply that to everything else and really starting to have the energy that we needed to have it translate.

**Did you bring anything in specifically for sound?**



**Noah Rubin**  
**and Wu-Tang Chamber Music**

interview by Joel Hamilton  
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In terms of tracking, nothing special. In the mixing process I had to take these loops that were just sort of dry little funk loops, and I had to make them into Wu-Tang – dark psychedelic, satanic rap. That process just involved lots of distortion – different guitar amps, SansAmp and Digidesign's Reel Tape.

### What did you mix it on?

It's all in the box. This record is 100 percent Pro Tools. I really used the SoundToys plug-ins a lot, especially Crystallizer. I used the Eventide Anthology bundle for pitch shifting, 'cause the bass line has to morph into some far out, horror movie sound. I'm really creating new parts out of things that didn't exist. I was using signal processing as a composition tool. The fundamental tracks are a drum kit, a bass, a guitar, sometimes a guitar with an effect and sometimes a keyboard, but that's not quite enough to evoke hip-hop – especially Wu. I had to go in and bring another level of sonics to create weird atmospheres, to make this other dimension that people are going to relate to in terms of this thing that they think of when they think of Wu-Tang. I used a SansAmp [plug-in] on the master bus, which I did on a couple of beats. I don't know if I could recommend that to everyone, but there were a couple of tracks where SansAmp is hard on the master bus for the instrumental side – not necessarily on the vocal bus. You're hearing this shit and you're like, "Wu-Tang is the coolest, most far out, most fucked up group ever, and this music has to be that fucking awesome."

### Make a bold move.

Exactly. I'm listening to these beats that sound dope, but you need to take it somewhere. SansAmp, pitch-shifter, Crystallizer – run them back through each other and then it starts happening. You see Wu-Tang as a blueprint and you have to push it. You all of a sudden have the freedom to try the most crazy idea you can think of, because Wu-Tang already is established as a group that pushes it and does fucked up crazy shit. RZA beats are not even quantized a lot of the time. The sounds are dirty. On *36 Chambers* half the tracks sound like shit, and that's why you love it.

### So how does Chamber Music break down track by track?

There are two things happening on the record. There are 17 tracks and nine of the tracks, are interludes and eight of the tracks are proper songs with rappers and beats. When we made all the tracks, we had 13 beats. We had the idea of the project, but at that point if the rappers weren't cool with the beats, the project was not happening. It was a little bit of an anxious moment, 'cause I felt I really pushed the envelope in terms of what I had done in terms of mixing and production, and really brought this vibe. Now I had to send it to Ghost[face Killah] and Raekwon, and if they weren't down with what I did, I would fail. Those beats got sent out. Then word comes back, "Hell yeah. We're in. We wanna do it." We started getting a verse at a time. We don't have Method Man and we don't have GZA on this record, but you've got Ghostface, Raekwon, RZA, Inspectah Deck, U-God, and on top of that we added a lot of people who are sort of classic '90s rappers.

### Who else?

Kool G Rap, Sadat X from Brand Nubian, Cormega, M.O.P., Masta Ace and Sean Price. It's a combination of people who recorded their verses remotely and people that recorded in the studio, but it came together a piece at a time. We went down to the Wu Mansion in Jersey where RZA has a midtown-caliber studio in the basement. SSL 9000, Boxer mains. We chilled down there and worked on a couple tracks. While we were down there we had to figure out how to make the tracks we had into a record. The label had this idea for some interludes, so we set up some mics, and me and RZA talked philosophy, drugs, Eastern thought and Five-Percent Nation stuff. The Revelations came in again and they played experimental, sort of Shaw Brothers [Hong Kong film studio] instrumental kind of stuff. We did 10 or 12 tracks of that, and then I mixed those in the most psychedelic manner possible. Then this dialogue me and RZA had got chopped up over these crazy beds of cinematic movie instrumentals between all the beats – half karate flick stuff and half me and RZA talking about philosophy.

### Sort of mood pieces that frame the proper tracks?

That's another thing that's cool about this record, is that it's a beginning-to-end kind of listen. This is a retro record. We tried to make a record that sounds like a classic hip-hop record, but it's new and it's done in a completely different way and it's exciting – it exists in its own world and we created it. ☺

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# Valgeir Sigurðsson

## Microscopic Approach and Organic Feel

### Interview and photos by Allen Farmelo

It's not an exaggeration to say that most non-Icelandic people come to know of this tiny island country through the records Valgeir Sigurðsson made with Björk, and there's no denying that these records were some of the most innovative, genre-bending albums of their time. From an engineering and production perspective, Sigurðsson work with Björk helped make her desire to blend pop, punk, electronica and neo-classical sounds and sensibilities into a sonic reality, and doing so required a fearless exploration of cutting-edge recording and production techniques. While hanging out with this softly-spoken yet candid Icelandic, I came to quickly realize that Björk was really only one snapshot in a long-arc career that, in many ways, is only now starting to hit its full stride with the development of his own label and creative collective, Bedroom Community.

Artists such as Ben Frost, Nico Muhly, Sam Amidon and Puzzle Muteson are collaborating with Sigurðsson with the Bedroom Community label to create albums that defy genre: Frost's music can remind one of wolves mauling prey; Muhly's is similar to the a global information network on speed; Amidon's reminds one of an Appalachian lucid-dream; and Sigurðsson evokes a wistful, longing landscape. Yet, all of these albums benefit from Sigurðsson highly articulate production style that elegantly combines acoustic recording and electronic manipulation. I met up with Sigurðsson at his Greenhouse Studio, off an impossibly entwined residential cul-de-sac about 10 minutes from downtown Reykjavik. His space is uniquely modern and open, designed to let the rain be heard and the outside air in.

#### Where did you grow up?

A small town directly North of here – about a three-hour drive – called Blönduós. It's on the main road so it's quite a busy place.

#### By 16 you had an internship in a studio?

Yes. I finished my basic schooling and then moved here to Reykjavik and began [college]. I had some songs that I had been writing, I saw an ad in a paper offering a day in the studio for a really good price, so I called them up and booked time. I went there with my drum machine and keyboards. The engineer noticed that I found my way around the studio quite quickly and was interested in what was going on. It was a little basement studio with an Akai. I don't know if you've ever seen these Akai desks, with a videocassette for tape?

#### Rings a bell. Eighties digital?

Right. He had a few compressors and some nice mics, too. He was losing interest in the place and asked if I'd come help him out. I soon took over his more mundane editing jobs. He did a lot of radio commercials and voiceovers. Lots of going to tape, cutting and splicing – so that was my first task. He'd leave me alone for hours with a pile of tapes and a script and say, "Hey, if you could get this done before I get back that'd be great." Then I helped him out recording some bands. He said to me one day, "I'm going to sell this place. Do you want it?" I said, "Sure." I was 17 and was spending a lot more time there than at school. I actually convinced my parents





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to help me sign the loans because I wasn't old enough to do it myself. It wasn't a lot of money, but for a 17-year-old it was enough. He offered to sell me the equipment as well and to take over the rent for the studio space and the apartment, which I did. That's what I did from 17 to 19 years old. I was trying to find projects and make it work. I was making the payments, learning more about studio life and making my own music. I was making a living, mostly by doing the commercial and the voiceover jobs. Sometimes bands would come in. Then I decided to sell the equipment to go and study. I needed to learn more in order to be able to go to bigger studios.

### **That's when you went to London?**

Yeah, I went to SAE [Institute]. At that time there were no Neve or SSL [consoles] in Iceland. There were quite a few studios with okay desks, but nothing great – and none of them had jobs [for me]. Those were in private studios, and you had to create your own thing. They had a Neve desk at SAE, and still [were] all about tape machines in '89.

### **How long was that program?**

It was a year – a postgraduate thing. I convinced them that since I had the two years of experience, I shouldn't have to do the first year. It was good to be there and to try to get a little taste of the real world. While I was in London I was trying to get jobs in studios, but it was hard while I was studying. I decided to stay around after school finished. That lasted for about two months while I looked for jobs; but it wasn't going anywhere so I came back [to Iceland] and started freelancing and doing other things.

### **Did you learn anything at SAE?**

I can't say that I did. I mean, they had some theory courses and I guess it all sinks in somehow. My biggest disappointment for that year was the practical time; it was really limited because there was one studio and you had to book time far ahead. It was actually useful, because when you booked time you had to have a project – I had to go out and find someone. I actually found this great singer that I did some work with. You learn the hard way. You don't really sit down in a classroom and learn how things are. You have to pay attention, and if you're lucky enough to be able to watch someone work then you learn from being there. I've been really fortunate – for example, the projects that I did with Björk: just going to a session with a full orchestra for *Dancer in the Dark*. It was the first orchestral recording I had experienced, and I was the engineer responsible for all the backing tracks and sequencing. You pick up a lot seeing someone who knows what they're doing while working with 100 people. That's something really hard to explain to people.

### **It's ironic. It sounds like you learned how to be a freelancer in school.**

Maybe I learned survival in the school. I don't know! [laughs]

### **I know with Björk on *Vespertine* you had a guiding principle, of "domestic music." I wonder if you could tell me more about how you derived that idea and how it guided the decision-making.**

That was actually a phase leading up to and into *Vespertine*. They overlapped. *Dancer in the Dark* to the beginning of *Vespertine* was when the domestic idea was forming. The laptop is what triggered it. It was the end of the '90s and suddenly it was possible to do stuff on the laptop. I think, for her, it was appealing to be able to do everything small, take it with you, put it in a bag and do whatever you want with it. It was never *exactly* how we worked, as we carried a lot of gear around. But this idea of domestic music grew around the self-sufficient person able to compose, record, mix and do everything at home. During this time I had taken all the necessary equipment out of my studio to go to Denmark, where she was filming with Lars Von Trier [*Dancer in the Dark's* director]. We were in this big house and I had a garden pavilion with windows looking out at the sea with all the equipment there. While she was filming, I was working on the music for the score and we also started working on new pieces – all in the same house we were living in. That's where this domestic concept started happening. She'd come back after filming and work on new stuff. I don't know how much you've heard about that movie, but it was quite an intense and stressful process for her, especially not being a [trained] actress. Coming into the studio was a big relief. That was a shift of headspace for her and it was really important. The other part of the domestic idea was that you could create music out of anything around you. You could pick up a piece of paper, you could play around with it in the microphone and make beats and then cut it up in the computer. Go into the kitchen and find some things to make sounds with. It's a microscopic approach – really zooming into the waveform, cutting a small piece out, creating something new and combining it with another sound. I used to layer them on a keyboard and play all these beats that you would never come up with as a percussionist. That was a part of it. She would come in from the kitchen and say, "What do you think *this* would sound like?" [laughs]

### **Björk went on to record with other people, and I'm wondering why you guys didn't continue to work together? I hope that's not too personal.**

No, not at all. We worked together for a long time, starting around 1998. In '05 or '06 I began the Bedroom Community label. I also wanted to focus more on my own music and projects. There was a point where I had to put myself on hold. It was around the time she was starting the *Volta* record. The intention was to keep working together, but it didn't pan out. We both wanted it to work, but it didn't seem like it was going to.

### **For scheduling or creative reasons?**

Both, probably. We were in completely different headspaces – me wanting to go more on my own, her wanting to give me that freedom but not really accepting it. It was a bit of struggle, almost a breakup process. It was probably good for everyone because, after working together for so long, there's only so much you can keep learning and adding. It came to a

point where I had to make a decision, "Is this what I want to do?" I didn't want to do that record. The difficult part about it was feeling like I had to close the door on a lot of people for a while. It was like starting from scratch after ending my time with Björk **But it's led to some great things. It must feel good to have that freedom and to pursue your music with Bedroom Community.**

Absolutely. It was a good start.

### **Have you worked with philosophies like the "domestic music" with artists other than Björk?**

I worked with this French singer named Camille recently, and she has these concepts for her records. The artist has to be into that, because it's really time consuming when deciding to go there. The luxury I had when I worked on the Björk project was being there from the writing process, to mixing and through the mastering. Björk and I worked together over a period of eight years on four major projects. It's a luxury to be part of the process, from when the first idea is born to two or three years later when it's finished. In the meantime, all these other ideas have come up and they go into the next phase. This is more than you get on a project that you plan ahead with the artist and go in to record for a smaller period – if you're lucky it's a few weeks, if the budget or schedule allows it. Something I try to do is break a project into smaller periods instead of saying, "We're going to spend two months making this record." I prefer to spend six months where the band and I work a month here, two weeks there and then two weeks there. That way the project is always in your system. Even if you're not thinking about it, it's developing. It gives me the opportunity to remove myself; to distance myself from something I've recorded. Then I come back to it and find something interesting and it becomes fresh again. I've been unhappy almost every time I've done something back-to-back; recording and mixing, for example. I try to encourage at least a week or more between, so I can come back and I'm not attached to anything on the tape anymore.

### **That implies that you're still making a lot of production decisions during mixing. I'm imagining, from the sounds you're using and the construction that's going on, that mixing is a lot more than tone and level.**

It's as much about production as the recording.

### **Do you find that you're typically trying to get things pulled out during mixing, or are you adding during mixing?**

It's anything from enhancing something that's already there, to stripping it down and arranging – going back and saying, "We have all these great parts, but actually they're in the wrong place." Or, "This would be stronger if we make this happen again." It's not uncommon for me to do that in the mix. I'm trying to push things even further. It's tedious and sometimes annoying, but when you have people recording, you want make the best use of their time, while not



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## On The Letting Go

Valgeir is almost Kentuckian in his patience, insight and opinion. He lacks presumption. He asserts his expertise and fine tastes with a very welcome gentleness. Our time in Reykjavik with him was nurturing; we were a shambolic crew, to be sure, and our efforts were crystallized in a fantastic manner. Later, Valgeir and I met up at the Nile Hilton in Cairo to record singing for his *Ekvilíbrím* record. I did not let the wildness of such a scenario go under-appreciated, nor did I let it overtake the task at hand, and Valgeir was uniquely similarly situated (or so he let it seem).

-Will Oldham <[www.bonnieprincebilly.com](http://www.bonnieprincebilly.com)>

wasting hours trying out a million things. I'm happy to play around with it when they're gone. I can have some space to look at it from the other side. Sound sculpting and song arrangement is more or less open until the final mix.

### How collaborative is the mix for you?

Usually not very collaborative. I do most mixing on my own, and then send people files. Or I'll bring them back into the studio so we can listen together and then have a discussion. My approach, for the last five or six years, has been to put down detailed stems. Sometimes that's the mix, but sometimes they get remixed, rearranged or edited. In Pro Tools you have so many tracks, just focusing it down into the sections is often something that I find really useful, in order to get an overview. Especially if it's a mix of electronic and acoustic instruments – everything is in a different acoustic space so you have to try to pull it together somehow. I find that I get a picture of it if I start by mixing things down as groups. Then I print the stems. I might go back, not to the original tracks, but only to the stems, if I need to record or work on anything. I prefer being left to it, at least up to the stems. I feel that's the stage where I can say to people, "This is what I was thinking."

**People have been merging electronic and acoustic instruments for decades, but with your productions they seem to blur together seamlessly; especially on the more recent work you've done with your own album, *Ekvilíbrím*. Ben Frost's *Theory of Machines* and Nico Muhly's *Mothertongue* also present a real defiance of the acoustic-electronic dichotomy. I'm wondering if you can speak about that from an engineering perspective, as well as a production perspective.**

It's definitely something I've tried to do. Within all of those examples, the source material is always acoustic, or at least 90 percent of it is acoustic. Even the programmed parts might come from acoustic sources. As a programmer, and as a beat programmer, I always struggled to get the most organic feel. To make it breathe, make it feel played or, even if it's impossible to play, make it have this humanity about it. I got really interested in going into detail

with the acoustic instruments and recording things so you could really feel close to it. You could *feel* the wood in the violin – not just the room around it, but the actual feel of the string or the player's breath. One of the only ways to do that is to layer things individually. I've actually experimented with doing it with bigger groups, but there's always bleed, which is fine. However, what you end up with when you've tracked everything in bits – which is not the typical chamber recording approach – is something that has a weird acoustic space, because there's no resonance between things. Instead, what I try to do is create reverbs or spaces around the instruments that make them blend together, and that creates an unusual blend. Sometimes I play it in the room, record it back and blend that ambience in. It doesn't sound exactly natural but that's partly where some of the sound comes from. Maybe there's a control freak element. [laughs]

### Close mic'ing allows you maximum manipulation after the fact.

Which obviously Pro Tools has allowed us to do, and it's a risky thing because you don't want to lose the performance aspect. I listen to *Mothertongue* and I want it to feel like it's an album that's been played by a real musician. It's really important, so you have to use your instincts. When you're layering, you have to think ahead, "What's going to be in the picture when it's finished?" You leave space here or there. You're making a painting and you have ten glass panels. You paint something on one, then another, then a third, and son on. Then you put them all together and you still want to be able to see everything. Or, at least if you can't see everything, it blends through in the right way. You want to be looking at one picture. This is especially true with chamber instruments, or instruments used to being in concert halls; the intonation is [based on] playing with other people at the time and hearing the resonance between the other instruments. That's half the sound; if you remove that ambience, you have to be able to compensate.

### Are there times when you think, "I don't want to work that way. I want to grab a bunch of ambience and have things merge acoustically."

Yeah, it happens, but at the same time I feel if I do that and I don't cover my ass, then I will become frustrated and not be able to zoom in.

### It seems you have a pretty good idea of what you want to hear in the final product as you're working.

That's true. I like surprising myself, but I usually have a pretty clear idea. That's why the mixing is important; because the mixing is where it actually all comes together. Sometimes the rough mixes sound horrible. [laughs]

### Because there's too much going on and you haven't put the space on it?

Right.

### Do you ever find that musicians are troubled or concerned about what they're hearing before the mix?

Yeah, that happens. But they have to trust. I guess all I have to say for myself is, "You like this thing I did and this is how I did it. Give me a little bit of space and I'll try to show you how it will come out on the other end." It takes time to establish and you have to try things before you actually know what works with each project. But, there's always a conversation. I always like to have the artist very closely involved when I'm producing someone. I like to work next to the artist and try to carry their vision through, even more so than mine. It's about *them* making their record, not me making mine. Then there the people I work with all the time and we create collaborative projects; but it's still their album or composition. Even *Mothertongue*, and some pieces on Nico's first album *Speaks Volumes*, were written with my approach to recording in mind – so that's flattering. Having said all that, I really appreciate and have deep respect for people playing in the room. I do a lot of that with sections of strings, brass or even bands, if I'm recording in a more standard way. I try to get them to play together.

### You have a lot of the artists who you're producing come to Iceland and stay here. This is a far away, removed and different environment for someone who isn't from Iceland. Do you think this is lending itself to people making a new type of record?

It seems to be often the case. I can't easily explain why, but it's obviously a big decision to go somewhere; especially if you have to bring the whole band. You're committing to a new place and to not knowing what's going to happen. You could be stuck there, so you can't drive back and say, "No, it really didn't work out." Maybe that puts people in a headspace that's actually helpful. I haven't thought about it in this way before, but it makes sense that there's a certain dedication that you have to have. My idea when I was creating the studio was to build a space that wasn't like other places. I've been lucky enough to record in a lot of really nice studios. I've had the opportunity to try out ideas, test things and slowly bring them in here. It also comes from the design you start with; the shell of the house, basically. I decided not to isolate. You can hear the rain on the ceiling. I didn't want to build a floated room inside a room and make a dead airspace. I wanted to keep it organic. You can do it if you're in a place like this where there's not much noise. Also, because I wasn't building it as a 100% commercial studio, I only had to please myself.

### As an example, let's talk about the Bonnie "Prince" Billy record, *The Letting Go*. It's regarded as a fairly new direction for his work.

I know he [Will Oldham] wanted a change of environment that would influence the recording, and also I think he's used to making records much more quickly than what we decided to do – played live in the studio and less produced. He wanted that, but he was also scared of going there. It wasn't easy for him to do.

### How did his fears show up in the studio? Was there resistance to new things?



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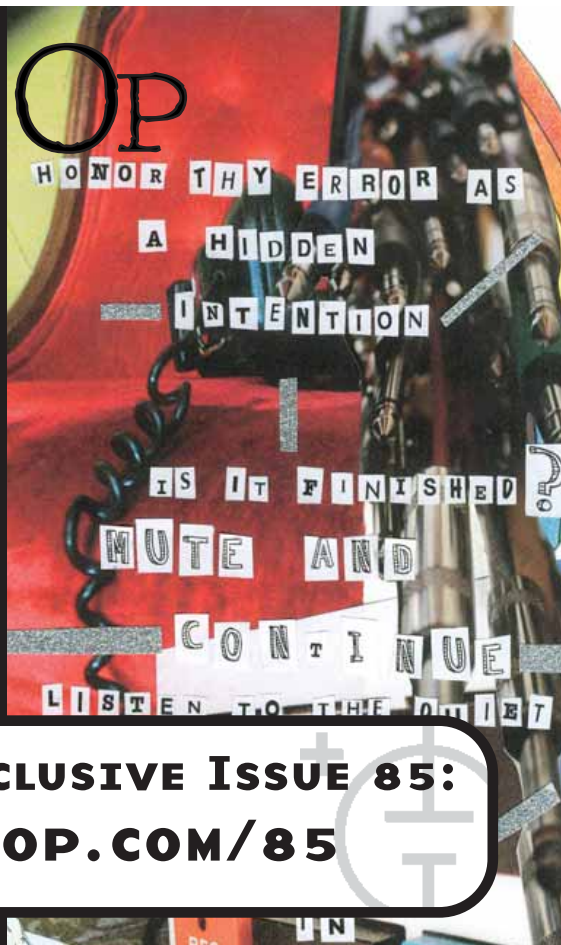
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No, not really, but he was nervous as to whether or not it was actually going to work. He was totally open, but unsure if he would have a record at the end of it. It was the extreme opposite for me. Having had all those Björk projects that took years in the studio and then going to making a record in a really short time was fine for me; but it felt quite long for him.

### How long was that?

Recording took about two or three weeks; then we came back for the mix and overdubs. I guess the process was maybe four or five weeks total.

### I know you have people stay at your place while they work with you. How did that work out with Will?

That was actually prior to opening that part of the house. They were not staying at the house. There was a guesthouse down the road, quite close. They really liked that, being close to the studio. It seems to work really well when people stay at the house; especially if they come for a short time. It's intense, but it works out really well. It's exciting for us as well, to have a full house. ☺

Visit [tapeop.com](http://tapeop.com) for more of Valgeir Sigurðsson's thoughts on his label, and working with Björk and Nico Muhly. [valgeir.net](http://valgeir.net)

transcribed by Nicole Pettigrew, Allen Farnelo <[farmelo.com](http://farmelo.com)>



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I've always been a big fan of Gillian Welch's albums. She and her musical partner, Dave Rawlings, made two records (*Revival* and *Hell Among the Yearlings*) for Almo Sounds with producer T Bone Burnett [*Tape Op* #67] that I enjoyed. But it was the next album, the Dave Rawlings-produced *Time (The Revelator)* on their own Acony Records, which put them onto my desert island list. It's quietly stunning, both musically and sonically, and Gillian's new album *The Harrow & The Harvest* is equally as strong. I got a chance to speak with them while they were on tour supporting Buffalo Springfield. At first they seemed a bit bored by yet another interview, but when I mentioned I wanted Dave to stay in the room so we could talk about recording, they both visibly perked up. Although Dave is credited with production, Gillian also has some deep knowledge and opinions on recording. As befits two people who have worked together for over a decade, they often finish each other's sentences and thoughts. Their strong connection as musical partners is evident.

**Time (The Revelator) is one of my favorite records. I think it's a classic album.**

G: We made it in the old RCA [Studio] B in Nashville that was built in the late '50s. It had no gear in there.

D: We were looking for a recording space and I had been driving around Nashville trying to find an old studio to rent, or possibly buy. One day I drove by Studio B and the door was open. I thought, "Oh my God, that's Studio B. I've never been in there." I walked in, heard my footsteps on the floor and knew that I liked the sound of the room. Bob Moore was there that day – Elvis's bass player. He just happened to stop by. I was really interested in [renting] it. I then found out that the Country Music Hall of Fame – who had been running a lot of tours through it and whatnot – were building the new Hall of Fame. In the interim they were going to be too busy to do anything with RCA B. We approached them through a friend who was on their board and they said would it be all right if we brought our gear in and rented it on a monthly basis. They treated it as a donation

to the new Hall of Fame, which was real nice. We rented it out for about 14 months. When we first got in there, I spent a month or two cleaning out the troughs and I fixed the plate reverbs. The place hadn't been used much as a professional space in quite a while.

G: It had not been a functioning studio.

**But they had a little bit of gear, like the plates?**

D: They had the plates in the other room and they had somebody doing some karaoke sessions out of the live room. The control room was basically empty.

G: The speakers were still there.

D: Oh yeah, the old Altec 604s were still there, but they needed to be fixed.

**Is that what you monitored on?**

D: It was mainly [Yamaha] NS-10s and the Altecs. What we ended up bringing in was all the gear from the home studio – stuff that we've assembled over the years. Our tape machine is a [Studer] A800.

**Is it 24- or 16-track?**

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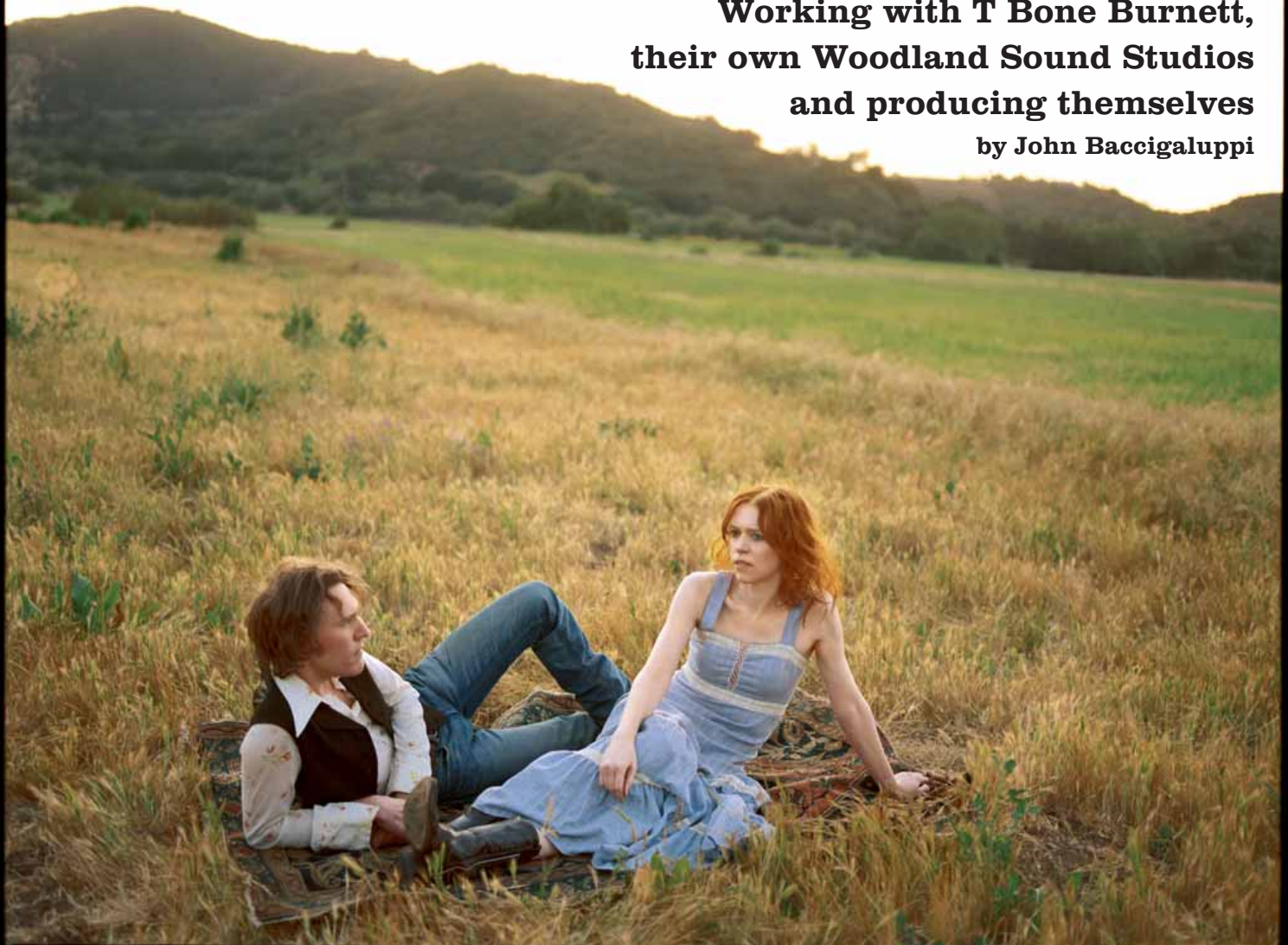
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KODAK PO

# Gillian Welch and Dave Rawlings

Working with T Bone Burnett,  
their own Woodland Sound Studios  
and producing themselves

by John Baccigaluppi



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D: 16-track. I actually bought the headstack *before* the machine. I found some unused 16-track heads when I was buying some other gear, and I threw those in. Then I found a 24-track machine. What else?

G: The Neve desk.

D: Yeah, we started buying [Neve] 1084s really early on. I bought a BCM-10 frame and every time we went on tour I would come back and buy a couple more modules. I found some other 1084s from the next console made, so the serial numbers were still pretty continuous. We hadn't filled the frame for ...*Revelator*, but we had enough – we only needed four or five.

G: That board came out of WGBH Boston. It was the old *Sesame Street* board.

### **So it had a Muppet vibe.**

D: Yeah, rubber ducky. I got this other old BCM-10-style console made by Neve that has 1055 modules in it; they're the wide, black ones with three fixed bands. They basically have a high, low and a mid – you can't select the frequency – and 10 dB steps. They are very unforgiving with transients; they really don't like anything barking. There is distortion all over our records because of those modules.

### **Does it squash the transients or distort?**

D: They break up in a weird tear-y way. If you hit them with the top of a vocal it will have a little "kkrrrrr" on it. I would go through those, as well as the 1084 at line level to get five dB gradation; as a buffer stage. I had some 1084s that bypassed the fader, and those were the ones

that I used before the tape machine. So the signal chain was two [Neumann] M 49s, a [Sony] C-37a on my guitar and an M 582 Neumann on Gil's guitar. There are other setups: "Dear Someone" would have been an Altec 639a, one of those birdcage mics, with a [Neumann] U 67 right on top of it. They end up perfectly out of phase and you just flip them. We were in there and we would have to break down every couple days 'cause they would run a tour, so we weren't able to leave the mics set up or anything. It was a difficult process.

G: With us, millimeters of difference in the mic setups are huge because the picture is so affected by overall phase between our four mics.

D: Everything is pretty close together.

### **How far apart are the two of you when recording?**

G: Two and a half feet. As close as can be.

D: Some days we would set up, the phase would be great and everything would click in. Then a tour would come through and we would have to tear down. We got a little rug with everything spiked, but we would have to get within millimeters. That's the difference with this new record. Since we were finally working in our own studio, we set up and we never touched the mics.

### **So a lot of the same gear has made it from record to record?**

D: Yeah. There are two tracks on *Hell Among the Yearlings* that we did at home on those same preamps. By then we also had the [Neumann] M 49s. That was the

beginning of what I look at as that incarnation of duets, like "Miner's Refrain" and "Rock of Ages." "Rock" is a banjo song, so it's a little different because I used a [Neumann] U 47 on the banjo.

### **You had 14 months to make *Time (The Revelator)*. However, it wasn't really 14 months because you were constantly interrupted?**

D: We made that record in five weeks. Most of the album was probably created within three weeks, and then there was a little bit of time on either side. I also produced part of the first Old Crow Medicine Show record in that time period. We just happened to be renting the studio for that long.

### **How long did *Harrow & The Harvest* take to record?**

G: Four weeks. That's about how long our records take.

### **Is everything recorded live?**

G: Totally.

D: Yeah, everything is live. It is pretty much all from takes one, two or three. Very few mixes. This is the first record we've done that Stephen Marcussen [our mastering engineer] listened to and said, "Okay, Let's transfer it." We didn't compress or EQ anything. Just transferred it from a machine of his that we really like, through the nice converters and a clean signal chain.

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G: We have never done that.

D: About half the songs on the album are complete takes. Five of them are composites of adjacent takes.

G: Edits between takes.

### **Edits on the 2-inch master tape?**

D: Yeah, I do a lot of 2-inch editing. I've always done that.

G: Dave's really good at editing. I'd put him up against anybody at this point, because he's not even getting to cut on drums. [*Drums make it easier to find the edit points.* -ed.]

D: I know where the edits are on this record, but they are pretty hard to find. I bet you can find a few on ...*Revelator*.

G: But I don't even mind. I like the sound of a tape edit.

### **Sometimes they're cool. It can totally change the ambience in an unexpected way.**

D: Yeah, as long as it's musical.

### **What speed, 15 ips?**

D: 30 ips. I think *Soul Journey* was at 15, but everything else we have done was at 30.

### **Why 15 for *Soul Journey*?**

D: Drums. There was more of that vibe. There might be a couple [of songs] at 30, but I just wanted to try it. But that was a very different rig. That was mostly [Shure] SM57s and API preamps.

### **Was that still mostly tracked live with the band?**

D: Yeah. The only thing I should say is that I overdubbed some organ on a few things. I'm a terrible [Hammond] B3 organ player, but if I get one pass at something I usually do a really good job. So I go in, do one pass and that's it.

G: One band song went down without any singing and I had to go back in and sing.

D: We were jamming with the chords of it and it sounded good, but then I think we used your scratch vocal to see if it worked.

### **Do you have an engineer helping you?**

D: We have worked pretty closely with Matt Andrews in Nashville for a while now, and our methodology has developed around the three of us. I'm not in the control room while we are tracking, so we rely on Matt, to some degree. We have some sense of whether or not we are getting there, but it's always good to have another set of ears. If we are going to be editing between takes, it's generally good to get parts from adjacent takes. I suppose I handle most of the responsibilities that you'd associate with a producer.

G: We all listen and weigh in on what the good takes are. Happily, we pretty much agree. It's pretty evident.

### **Do you do the mixing?**

D: I do a lot of mixing. On *The Harrow & The Harvest*, we weren't really moving faders very much – we never really ride stuff. For most mixes we set the faders and let them run. It's very rare for there to be fader moves within a song. Matt did a lot of live mixing, where he would get the picture a particular way. If we liked it when we came in, we might only tweak things slightly. He did a lot of riding the preamps and then we would adjust from there as far as color and compression.

G: We did a lot of printing tracking mixes – this is very common for us. If we like what we have – even if we can narrow it down to one, two or three takes – we will print them that night.

D: We did that when we were at Studio B and we needed to bring songs back to the other room. We don't have automation, but I have a system of recalling mixes that is crazy accurate by using voltage to get faders in exactly the right spot.

### **Do you measure it with a voltmeter?**

D: I measure the fader levels with a voltmeter. It's actually more accurate than any of those moving fader systems. I mean, you can be off a quarter or a half [dB], which, in our world, a quarter and a half is like...

G: A totally different mix.

D: I don't think we moved the reverb sends on this entire record. We moved as little as we could so we could get a consistent picture.

### **It seemed really consistent with ...*Revelator*. They seem to be a pair.**

D: That's good, 'cause it's a different room.

G: You're not the first one to say that.

D: *Soul Journey* was intentionally a departure from the duet thing. Gillian had songs that we thought would be good with drums.

### **I'm assuming you work out the arrangements well in advance and bring them in?**

G: No.

D: Some of the writing goes down in the studio.

G: It's a very "in the moment" dynamic process.

D: The improvisation is usually better early on, and of course you always have time later if you fail.

G: I tend to be... the positive way to say it is that I'm really consistent. But once I've been playing a song for a while it tends to solidify for me. That can be a problem if we are having trouble recording something, as it's unlikely that I'm going to change what I'm doing enough to make a difference. Dave's really good at suggesting arrangements. But, even broader than that, he creates musical changes that really crack things open. For instance, having me move from guitar to banjo or totally recasting a song from major to minor. A lot of these songs are very spontaneous takes on a new arrangement or even new music.

D: "Hard Times" is the second time Gil ever played it on banjo. The first take is un-listenable 'cause there are so many chord mistakes.

G: It's clam city.

D: As the second take was going down, I knew it was magic. I actually cut the solo short because I didn't want there to be any more time – I wanted less time for things to go wrong.

G: He shot me this look of, "Start singing again."

D: Let's get through the fucking thing! It was moving me so much.

G: "Six White Horses" was maybe one of the first times we ever performed it, with me hamboning and with you at the rack [harmonica]. This runs through the whole record – it's very spontaneous.

D: ...but only after quite a bit of writing and working. The studio time is the culmination of the writing. "The Way the Whole Thing Ends," has approximately 25

verses. The studio is where we figure out how long the songs need to be and where to cut them down. It was the same situation with "I Dream a Highway;" it's a very long song and I thought it was appropriate for it to remain long. Most of the time they get better if you shrink them, but that one seemed nice long.

G: We had only ever sung that twice.

D: I said, "We shouldn't ever play that until we..."

G: Til we have tape rolling."

D: We didn't know if it would fit on a reel. I cut out a couple of verses in the final – that's a composite of takes one and two.

### **You've done enough records in this format, and it seems like it's quick to get set up with Matt.**

G: The interesting thing about this record is that we had never had a room that was great sounding to do duet records in at Woodland Sound Studios [Gillian and Dave's studio].

D: We made *Soul Journey* in the A room at Woodland. We have tried several times to do acoustic stuff – even during the first record with T Bone. We worked in Woodland in '95 and tried to do some acoustic stuff, but never really got anything satisfactory. AES held an event where they brought in Glenn Snoddy, who'd built the studio. We looked at the room and realized that what we didn't like was basically a '90s renovation. So we took the B room and tore it down to studs. We took the wood floor up and basically restored it to how it was in the '60s, when it was built, with linoleum floor and acoustic tiles – basically the same construction as RCA B, which is what Woodland B was built to mirror. We didn't know what we were going to get. We came back, finished the trim, worked for a few weeks, buffing the floor with the same wax compound. Then we set up mics and did one take of a song that ended up being an outtake. The next thing we played was "The Way it Will Be." We did one take of that and it was a master. We felt like, "Okay, this room is working well." ...*Revelator* sits back in speakers in a very nice, mysterious way – *The Harrow & The Harvest* throws out the speakers and combines in the space you are in.

G: ...*Revelator* you have to listen into more. I feel like this new record comes out.

### **Tell me a little bit about working with T Bone Burnett. How did the transition go from working with him to essentially producing yourselves?**

G: I kind of learned how to make records from him. Rik Pekkonen (engineer on *Revival*) and T Bone came up with our mic'ing rig.

D: From the first days of *Revival*, we had Gil sing into a [Neumann] [U] 47, [U] 67 and an [M] 49. It was pretty apparent to everyone that the 49 was a great mic for her. When we got done, Rik Pekkonen sent me a very nice list of, "This is what you would need to buy in order to make professional recordings." We started out with an [Ampex] ATR-102 and a couple of U 67s.

G: T Bone is really the one that pushed us to have a recording rig in our house.

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D: ...and the methodology when it comes to tape editing. That's how T Bone was working at the time. In my mind we record in a mid '70's methodology, and I think that's the pinnacle of fidelity in the recording world.

G: We have to capture a performance and T Bone got that. That's why he said, "Have a way to record in your house."

**It sounds like he really encouraged you guys to move into producing yourselves.**

D: In a way, he forced us into it. He was not around at the end of either of the first two records. We mastered *Revival* without him. T Bone is an incredibly talented, fantastic producer. Listen to his track record and listen to his music. But oftentimes he is working on a lot of things, and he had a lot more energy at the beginning of these projects than he did at the end. There are tracks on *Hell Among the Yearlings* that he never heard before the record was out. That's just the truth of it – we needed to finish the record.

G: You would be hard-pressed to find someone who commences a project with more inspiration and enthusiasm than T Bone.

D: The man is a genius.

G: I think it is part of his process of how he goes to the next project. He has to mentally get out of the one he is in. Sometimes that happens before the record is done, if that makes sense.

**Around the same time you started your own record label?**

G: Yeah, *Time (The Revelator)* came out on our label.

**How hands on are you with the label?**

G: Pretty hands on.

D: We were walking around one day and I said, "I don't know how we're going to sign with another label that we can be sure we'll be with in another five years." The industry was so volatile and that became reason enough to start our own label.

**Is there anyone else on the label, besides you two?**

G: Both of our records.

D: We did a project with a friend of ours' named Morgan Nagler; her band is called The Whispertown 2000.

**Was there a flip-flop of roles with the Dave Rawlings Machine, A Friend of a Friend album?**

D: There was in terms of the musical thing. It was a difficult record to produce because it was one more layer of, "Oh god. I'm listening to myself."

**So you [Gillian] didn't kind of chip in a bit?**

G: No, I'm really not a producer. There is a reason why the albums say, "Produced by David Rawlings."

D: It was harder to do, but it was a lot of fun. We did that pretty quickly in RCA B. I didn't know how we were going to do it, but we ended up with all four vocals around an [Neumann] M 49 in omni mode, a couple of low instrument mics and a mic for the bass. There wasn't much to mix or fuck with.

**Do you rent Woodland Sound Studios out to other artists?**

D: Robert Plant made his last record [*Band of Joy*] there, but we don't really rent it out.

G: I wouldn't really call it "eccentric" gear-wise, but it's not a commercial studio.

D: It works for us. There isn't a [Pro Tools] HD rig. We have a decent complement of mics.

G: Buddy Miller [*Tape Op #34*], who recorded that Robert Plant album, totally understood that. He's local, so he brought in the gear he needed, knowing that our equipment would be available for him to use as well.

**What was the history of Woodland Sound before you bought it?**

D: They made [Kansas] "Dust in the Wind" there and [Neil Young's] *Comes a Time*. It was a very hot studio in Nashville – maybe the hottest studio in the world, as far as pop music from '73 to '83 – all the "urban cowboy" country.

G: And [The Nitty Gritty Dirt Band's] *Will the Circle be Unbroken*.

D: You can read up on Woodland – it's interesting. It was also Denny Purcell's – he had a mastering suite there, as well as two studios. If you look at the logs, they were running 24 hours [per day]. You may have noticed the studio business in the last decade hasn't been so good. The only reason we could buy this building in 2001 is because it had been on the market for two years. No one wanted it – it was going to be a Walgreens.

G: Who wants an enormous old studio? ☺

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# Brian Eno

*"Hampered by Intellectual Considerations"*



by Larry Crane

and John Baccigaluppi

Portrait by Miles Hermann

photos by John Baccigaluppi

With his early years in Roxy Music, arty solo albums in the '70s, the creation and conceptualization of "ambient" music, groundbreaking collaborations with David Bowie and as the producer of albums for Devo, Talking Heads, U2, James and Coldplay, Brian Eno should need no introduction to the readers of this magazine. Most likely no one else has discussed and analyzed the art of capturing music as much as Eno. He's obviously gifted with a constantly active mind.

It has long been a dream of mine to meet this man, as well as ask him questions about music and the art of recording. One recent sunny day in London found John and I walking down a dead end street leading to Eno's workshop near the famed Portobello Road. We waited patiently while paintbrushes were cleaned, cats discussed and tea made; then we sat down for an hour and talked.

**I just finished reading David Sheppard's *On Some Faraway Beach*, the book about you. Do you ever read books about yourself?**

I've never read it. I picked it up in a bookshop and read four pages, standing up. And there were four mistakes in it! They weren't very important mistakes; they didn't make any difference to anything. But I thought, "I'm just going to get annoyed if I read this."

**Sessions I've worked on have shown up in books about artists. I read these and think, "Nope. That's not what happened."**

Well, it's a sort of rule of life that anything you've ever been involved in will not be reported accurately! [laughter] So, a very good way of understanding newspapers and media information in general is to look at a report of something you know about and you'll find there are quite a lot of mistakes. Sometimes they're minor. But sometimes they're quite major and they're a completely different perspective on the event. They may be factually accurate, but they give quite a different feeling from what was going on.

**Exactly.**

If you imagine that this is probably true of every other article in the newspaper as well... Somebody who knew about it and read it would say the same thing. It's just *not* what happened.

**Right. So, we're here to propagate more mistakes and lies with *Tape Op!* [laughter]**

Well, interviews are different. Though there was a way of even perverting those in the '70s. What interviewers would do was ask you a question. Then they'd print your answer but rewrite the question! That's a very subtle way of changing things. They can make you look like a complete idiot. Your words are exactly the same, so you can't accuse them of misquoting you. But they fall in a different context because the question is different. It makes an entirely different impression. That was a different period of music journalism.

**You were collecting tape decks while in college. What was the urge to get devices that could capture and manipulate audio?**

First of all, the tape recorder was the first musical tool I could handle. I couldn't play any instruments. And I think I still can't, really, in the strict sense of that word. But I remember, when I was quite young, hearing about tape recorders and thinking how incredible it was that you could capture a sound! That seemed, to me, to be such an amazing idea at the time. I went to bothering my parents *for years* that that's what I wanted for Christmas, but they were expensive and clunky then. In England, we had these tape recorders called Ferrograph. Ferrous means iron, of course, and they were solid blocks of iron. I subsequently had one, but they were so heavy! I always wanted to get my hands on one of those. The first art college I was at had a tape recorder and I just took it over. It became my plaything! I started really exploring the plasticity of sound. The fact that, as soon as sound is not just something in the air but on tape, it's a plastic material. It's malleable, like paint is. It all seemed completely consistent somehow that the material I was working with instead of color was sound. I remember the very first piece I made, which is not very different from a lot of the music I still make now. It hasn't really progressed a whole lot. [laughter] We had a one of those institutional circular lampshades. When struck, it had a very beautiful note. The recorder had three speeds, so I multitracked it at different speeds. It was something like a Revox where you can jump from one track to the next. So, you put track one over to track two with the new additional sound on sound. It was very similar to ambient music I've done since. It was this long, slow gong sounds in three octaves.

**Right. I was going to say the speeds would be in octaves.**

Right. The deeper sound was so awesome at quarter speed. It was just, "Wow! This is fantastic." I'd never heard anything like it. I still didn't own a tape recorder. Then I saw someone selling one in the newspaper for not very much money, so I bought it. It was in quite bad repair. But that meant it could do something that no other instrument could do. The spindle that drove the tape was a bit wobbly, which meant everything went like *that* [makes wobbling gesture]. I thought, "Wow, that's good!" [laughter]

**It was accidental manipulation. Did you find subsequent ones that had other anomalies?**

Yes, lots of interesting anomalies. For instance, I used one as a tape echo device. There must have been something wrong about the way the bias was set because it would immediately take it all to high frequencies. Again, you see, this was before... There weren't other ways of doing those things. There weren't processing tools. This was in 1967 or '68. Not many things like that existed.

**Plate reverbs and such?**

I wasn't part of the pop world where there might have been things like that. I hadn't joined a band yet...

**At the time, were you aware of [Karlheinz] Stockhausen and tape manipulation and things like that?**

Yes. That was the area I was coming from, so I knew about that. Of course I was enjoying pop music, but I didn't really know anything about the technology of it at that time. But I did know about experimental music. In fact, my professor was Tom Phillips, who was a painter but had very close connections with the experimental music world. Through him I got to meet Morton Feldman and Christian Wolff. I subsequently met and worked with Cornelius Cardew, who's a very important composer here in England. He started this thing called Scratch Orchestra, which was an experimental commune of mostly art students who began doing really interesting things musically. They were very, very far ahead of their time, in some respects. The English school of experimental composers - which included Cardew, Michael Nyman, Gavin Bryars and Christopher Hobbs - were anti-electronic. So the electronic people were the Europeans; Stockhausen and his IRCAM [Institut de Recherche et Coordination Acoustique/Musique] were just starting to form then. There were actually three camps. There were the Europeans, who were consciously carrying on the tradition of classical music. They saw their route as serialism - [Arnold] Schoenberg, [Alban] Berg and [Benjamin] Britten. They saw logical steps into what they were doing. Then there were the Americans. There was [John] Cage, of course, at the top it. [Morton] Feldman, Steve Reich [*Tape Op 15*], Philip Glass and Terry Riley; they stepped out of that tradition completely. They didn't see themselves as the logical next step in the European classical tradition. They were really something different and looked much more interesting to me. But then there was the English school as well, which was different from either of those in the sense that it was very conceptual, very homemade and nothing to do with electronics. Electronics were slightly a "cheap trick." [laughter] I felt really at home between what was going on in America with the "California Minimalists," as they were then called, and what was going on in England. My idea became to consolidate those two things. Gradually, I started realizing that a lot of the things I was interested in about pop music, as it was called, such as The Velvet Underground, weren't actually irreconcilable with that. I'd thought they were irreconcilable. It seemed to me they were really different ways of thinking about music, and I couldn't, for a long time, see any way in which they could be brought together; but then I did.

**I know you had a few bands, or combinations of people playing, during your college years. But there's always a gray area in my mind as to the transition from the art world to ending up in Roxy Music. I know there was a bit of happenstance as to how you ended up in that band...**

Yes. I think there are two things going on here. First of all, by the late-'60s, multitrack recording was commonplace. It was still 8- to 16-track then. I think it was still 8-track, actually! But a new idea had appeared, which was that music could be a lot like painting instead of being something where you stood in front of a mic and performed. Essentially it was all made in one moment – one time, one place; which is what was happening with traditional recording at the time. Even if engineers and producers tarted it up a little bit, was essentially a record of performance. But, by the late '60s, there'd been the history of Phil Spector and, of course, George Martin as well as various other people. They were starting to realize that what you did in the studio was a painting. It was painting with sound. You could make a piece over an extended period of time – it didn't have to preexist the process; you could make it up as you went. And you could make it like you would a painting – you could put something on, scrape something else off. It

stopped being something that was located at one moment in time. It started being a process that you could engage in over months, or even years. You could come back, change it 'round and cut and paste. Funny enough, the people who first realized this were art students. That's why I'm convinced there was such an influx of art students into music in the late '60s and '70s. It was because we were better equipped to know how to use the medium than musicians were. Musicians, of course – because that's where their talents were – were still thinking of performance. Music students in particular were way behind the curve. They didn't get it at all! If you look at bands from the late-'60s and '70s, you'll find lots of art students and no music students in them.

**Exactly.**

Almost without exception the music students didn't *get* that idea.

**Well, Pete Townshend, whom I know you admire, is a perfect example of that.**

Exactly. We studied under the same people, Pete and I. There was this fact that the medium had changed. It had inherited the same name – music – but it wasn't the same medium. Just like cinema isn't the same medium as theater. It invited in a whole lot of new talents, which happened to come from the visual arts. Really, that these people came from outside music is the important thing. The second thing is by

the late '60s and early '70s, you have to remember that this was the era of pop art in the fine arts. The probable godfather of pop art was an English painter called Richard Hamilton; he was on it before [Andy] Warhol or anybody else. He was really one of the major figures in the idea that one could use popular iconography and take it seriously. Bryan [Ferry], the founder of Roxy Music, had studied under Richard Hamilton at University of Newcastle and I had studied under Roy Ascott, who was Hamilton's protégé at Ipswich. We'd both come out of this background of a fine art world that had turned its attention to pop and said, "Ah, there's something interesting going on there!" It's not the little brother that trickled down. It's not the debased form of what fine artists were doing. We both had this idea that there was a new medium and that it was the medium we wanted to be artists in. I don't think we ever felt that we were ever stepping down from the lofty ideals of fine art just so we could pull some attractive chicks, or something like that! [laughter] Both of us felt that this was where we were going to be artists. It was quite self-conscious, in that way.

**Do you think it was more like conceptualizing what Roxy Music could be, as opposed to four guys getting in a room and just banging out songs?**

**I've come to think that attention is the most important thing in a studio situation. The attention to notice when something new is starting, the attention to pick up on the mood in the room and not be emotionally clumsy, the attention to see what's needed before it is actually needed, the attention that arises from staying awake while you're working instead of lapsing into autopilot.**





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No, it wasn't at all like that. We were very conscious of where we could stand in the history of pop music, which was approximately 16 years old at the time. Also, we felt we could use anything that had happened in that history as our palette. We weren't at all embarrassed about taking the stage style of Little Richard and adding it to a completely different kind of music. That's what we thought we were doing. It was a collage of pop music to that point. There are always a lot of those "sincerests" in art, who distrust intellect and think that it necessarily dilutes and ruins serious, passionate art. Well, they didn't like Roxy Music. They saw it as much too intellectual, really. In fact, funnily enough, yesterday I received a doctorate from my old art school.

### **Oh, really?**

I'm now a Doctor of Letters, whatever that means. The person who read my oration had gone through some internal documents of the art school I'd been at and he found one document from a member of staff to another that said, "Eno is hampered by intellectual considerations." [laughter]

### **And you still must be!**

It's interesting that there's always that problem in art. People think you've got to keep it away from the brain.

### **We could go forever about that one! When was the first time you stepped into a commercial recording studio?**

I was performing in the Scratch Orchestra. We recorded a portion of Cornelius Cardew's composition called *The Great Learning*, which is this enormous, very ambitious work written for non-musicians. There was a part in *The Great Learning* called "Paragraph 7." That was a piece I became very, very interested in and I wrote a lot about it.

### **So, that was the first time in the studio?**

Yes, but I wasn't involved at all. I didn't even go in the control room, actually. We just went into this great big studio and did it.

### **Where was that?**

I think it was a studio called Chappell. It was a classical studio, really. Just the other day I found a CD of it in a secondhand shop! I was very, very pleased to find it because I had the record for years.

### **What were your impressions of that experience?**

I didn't really pay much attention to the studio, because I wasn't aware of it. We were just in a big room. I think it was very simply recorded, maybe just two mics or something. The first time I went into a studio with intention of making something was the first Roxy Music album. We went into a studio called Command Studios in Piccadilly, which is a great part of London. It's right in the center. I used to love the lunchtimes; I'd go out for a walk. Bryan and I used to smoke Sullivan Powell Turkish cigarettes that you could get in the Burlington Arcade. Records were made so much more quickly then. I already had some idea, not only of *how* studios worked, but what I thought was possible *in* them that hadn't been done before. We did a little bit of experimenting on that record.

### **Does some of that have to do with processing things through the synthesizer?**

We're talking such a long time ago, to sustain my interest in talking about it is already proving challenging! [laughter] I'm really not all that interested in that era. It was primitive – and it was 44 years ago!

### **That's true! One of the things that comes up is people throwing your name around as "Eno-esque."**

It's quite nice being an adjective! [laughter]

### **Do you find it interesting when you see reference to it pop up?**

Yes. Well, it's a little bit like we were saying earlier. Sometimes I think, "This isn't Eno-esque at all!" [laughter] Not the Eno I know, anyway! But it's the same when ambient became a word. I'd been using it since the late '70s, but it wasn't until the early '90s that it became a word that people started using [regularly in regards to music]. Then there would be these sections in record shops called "Ambient!" I'd look through and think, "No, no, no." It very quickly morphed into something different than I thought it was, which is fine. One doesn't own concepts like this!

### **Right. Stuff showed up later in the '90s that had a defined beat, which always baffled me; especially coming from your view of ambient that things are more in a floating state. I'd hear this, "Boom! Boom! Boom!" and think, "Really?"**

Yes, it meant "slightly quieter kick drum!" [laughter]

### **That always confused the shit out of me.**

Me too.

### **John and I work as producers and at times, for me, it's a financial necessity to work in the studio – to keep my studio and my career alive. I imagine you don't have to worry too much about your finances on that end, but what are considerations that make you take on a U2 or Coldplay album these days?**

There are quite a few of them that mesh together. But the dominant one is, "Am I likely to go somewhere with this that I haven't been before?" Or, "Am I likely to take the little bundle of ideas that I nurture and plop them like seeds into some other soil and see them flourish in new ways?" Now, flourish means two things – it means either have babies with other ideas or worldwide successful ideas. One of them is a flourishing in quality and the other in quantity. As you know, I've done a number of things that are quite obscure, as well as a lot of things that are very well known. The obscure things are generally just as important to me, because I like planting some of those things and watching how they diffuse through the culture as well as what they become over time, and then picking them up again. It's like having a little incubator. Put the idea there, see what happens to it – then I'll take it back later and work on it some more. It's like a nursery – you let someone else grow

them for a little while! Then you can readopt them after they've been somewhere that you probably wouldn't have taken them yourself. That's the interesting thing about ambient, for example. That's actually a very good example. Suddenly that idea mated with a lot of quite unlikely partners. I wouldn't have imagined it. For instance, the ambient that you were just talking about is the marriage of my type of ambient and techno. I would never have thought of that – but I'm glad somebody did because the progeny of the combination has produced a lot of really interesting music, I think. It's become part of the vocabulary of things that you *can* do.

### **Right, true.**

So, that's one way of watching your ideas take root where they get married with lots of other ideas.

Another way is putting them with a very big band and seeing them suddenly everywhere. That's quite thrilling too!

### **Do you feel like you've seen that with something like Talking Heads or U2?**

Yes. I don't want to give the impression that I'm a sort of Svengali character where these poor, unsuspecting bands become the hosts for my parasitic ideas! [laughter] It's not like that at all. But those bands choose to work with me because they like to work with someone who encourages the *new* things they want to do, rather than the things they *have* done. You have to remember that most producers, and most record companies, are thrilled by repetition. You've done one thing that they thought was good, or became a hit, and they really would *love* for you to carry on doing exactly that for the rest of your fucking life!

### **John: Until it stops selling!**

Yes, exactly. I find with most bands, they are so thrilled when somebody comes along and says, "Wow, I've never heard that idea before. Let's work on that!" And they think, "Really? You mean you don't want another of *those* types of songs?" I know they can do that in their sleep. I want to know what the *other* thing is. Most people don't realize that new ideas are clumsy. They're clumsy, awkward and covered in blood. They need a little while to grow; and they need to be protected while they're growing. I think if you're prepared to go through that process with someone, they're very grateful. People really need that help. They need somebody to be engaged. What I give people, as a producer, is that I'm very highly opinionated. When I was in art college, I found that the most important tutors to me were not necessarily the ones I agreed with, but the ones who had strong opinions. The most useless tutors, even if I really liked them as people, were the ones that give no feedback. "Oh, that's quite nice." That doesn't help you at all! The ones who say, "Jesus! That's amazing! You've got to get that finished. Don't fuck it up, get it done!" That intensity makes you think, "Fucking hell, I'd better do something!" Or the person who comes in and says, "That's no good, get rid of it. That's really hopeless." That helps too because it forces you to believe in it. "Nope. I believe in this and I'm going to prove it to you!" Any strong position helps you.

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To maintain a strong position requires stamina and some sort of engagement. I've seen a lot of producers at work and I think, "You're not paying attention." They've got their phones and their bloody iPads out. If you're not going to be present, leave the studio!

**What restrictions do you place, at least on yourself, when you're working on an album, as far as communication and mobile media?**

Well, it's something you have to continually remind yourself of, because it's very easy to forget! It's easy to forget that your best work is done when your attention is fully engaged; when you're in a semi-obsessive state with something you're either so into it because you love it, or you're annoyed and you've got to fix it. Things like [the use of mobile media] are little safety valves that take the pressure off – and you don't want the pressure to be taken off, really. You don't want to calm down and chill out; you want to stay full temperature until you've got it done. Restrictions, from my point of view... Well, I don't have a television. I never have. Well, at least not for 30 years because I know I'm an addict! [laughter] English TV is much better than American TV, which means that you can get addicted to it much more easily. I don't have Internet at home, at my flat, because when I go back there I would rather read or have a conversation. I have Internet here [at the studio] so I can attend to things during the day, but I'm finding that I'm grazing much less than I used to.

**Like wandering around the Internet looking at things?**

Yes. It's lazy, really. It's like being in the waiting room at a doctor's office and there are a bunch of magazines lying around.

**In the studio, do you find yourself turning your phone off and setting it aside?**

Yes. I've come to think that attention is the most important thing in a studio situation. The attention to notice when something new is starting, the attention to pick up on the mood in the room and not be emotionally clumsy, the attention to see what's needed before it is actually needed, the attention that arises from staying awake while you're working instead of lapsing into autopilot. I get a bit annoyed when I see people on their phones and iPads during studio sessions, because I notice that they are failing to pick up on what is going on in the room, and of course therefore failing to contribute much. They aren't actually in the room, in fact, except as meat. Now, one interesting thing that's happened is I've noticed in conversations in studios now, because it's easy to do, people are much more inclined to refer to other pieces of music and listen to them. That is actually very interesting. That's something I never dreamed of doing. Until 15 years ago, you'd never play someone else's album in the studio. Now, quite often, we'll be talking about something or other, like, "Do you remember that song by The Essex, 'Easier Said Than Done?'" And then we check it out. With iTunes,

it's easier to do in a literal way. Roxy Music were regarding pop music as its palette – but we did that in our heads. We didn't actually listen to things and say, "Oh, see that idea on the bass? Let's try that out." But we do that a lot now, saying, "Why don't we just collage that idea? We don't need to disguise it. Let's just take the idea and see what it's like."

**Here you have an actual, instant reference.**

Yes. Like Picasso did at various times where he would make direct quotes from classical paintings and didn't ever disguise the fact that he was doing so. But he often did disguise it as well – he was too kind of a thief!

**John: I had a question. Regarding ideas as seeds – what about something like your [generative music app] Bloom? How did you see that going out into the world?**

That came out of a long, long process. Actually, the idea is as old as any musical idea I've had. I described that early work I did with tape recorders. That was really generative music because all I did was record myself bonging this thing every few seconds on one speed. And then I'd do it again every few seconds, but at a different speed. When these tracks overlaid, the bongs fell out of sequence with each other so it was constantly changing. As you can see, it's absolutely no different from the things I'm doing now! [laughter] What I was interested in was the act of composition – not the precise specification of a musical piece, but really the invention of a system for making music make itself. I couldn't predict what that was going to sound like. I didn't have an image of it in my mind, as people always imagine classical composers do. As if they walk around with whole symphonies in their minds! It wasn't like that. It was more of, "Here's a conceptual machine for producing a stream of music." That idea stuck with me. Steve Reich's early tape works were absolutely galvanizing! They were the most important things that happened to me in many ways, because I thought everything I'd been vaguely thinking about regarding composing music and how it would happen or come together was completely realized in those. I started to think of what I subsequently called generative music, from when I first heard those Reich pieces onward. Which now, by the way, has about four million web pages! [laughter] I think it's a more important idea than ambient music. But it'll keep. Just you wait – in a few years time there will be a generative music rack [in the record store]! But my idea was that I wanted to compose by constructing systems that made music *for* me. All the early ambient records were examples of [generative music], but they were not infinite systems because they were records. A product of a process that could have generated endlessly. It just so happened that the only way of presenting anything was taking a little section of that endless stream and saying, "Here it is." Throughout the '80s and the '90s, I was trying to think of systems, of ways of doing that for real, so I didn't have to present just a little section of it. I could present the system. My first solution... Well, you see these things hanging here [points to several metal bars hanging from the ceiling on cables]?

## Drums Between the Bells

**On your recent album, *Drums Between the Bells*, what about Rick Holland's work invited collaboration?**

His poems are short, multi-faceted and ambiguous. I wanted words that offered lots of readings, and which were abstract enough to be heard as music. As regards Rick as a person, I felt very comfortable working with him, partly because he works at about the same tempo as I do – that's to say, pretty quickly. Neither of us seem to get lost in details at the wrong moment, and both of us pay attention when we're working. I liked the way he could quickly respond to the moment, so that if I turned round to him and said, "I think that line doesn't quite sound right," or, "We need an additional line here" he would immediately come up with something – and something good. Conversely, when he said to me, "It needs to sound more crisp," or, "More distant," I would try to make it that way. We worked together pretty smoothly and I enjoyed the fact that we spoke at a conceptual more than a practical level.

**What working process did you take to connect words with rhythms and melodies. Did you use any rhythm beds you had already been working on?**

We made these songs in every way you can imagine: Sometimes I had a track already in the making and I'd ask Rick for an existing poem to sit on it, and then finish the track around the poem. Sometimes Rick wrote a poem for a piece of music I was working on, and then modified the text to work better. Sometimes we'd take one of Rick's poems and then adapt music to it or make a new piece to support it. The whole process was a little like alchemy for both of us since we were working in a form that doesn't really have much of a history. We'd try things and see how they felt... and sometimes we'd come back months later to something that had been done in the spirit of "experiment" and discover that it really had something. Some of these were revisited over a period of several years, so we returned to them in quite different frames of mind. I think that's why the tracks have pretty different natures – they issued from different frames of mind.

**Yes.**

So, they exist to hang these [portable] CD players. I've got about 50 of them. I used to hang those up in installations I did and I'd have a CD in each one. The CDs were on random shuffle. It wasn't random what was *on* them. There were sounds and music that could fit together in different ways. I had a permanently self-making music that never really repeated. However, it wasn't a very domestically suitable idea! The next step was to do it with early software programs – that proved much more successful. But again, it was still clumsy and awkward to expect people to install this thing in their computer and somehow get the sound out to a decent hi-fi system. It wasn't until the iPhone came along that I thought, "Okay, this is it. Now everyone has a computer in his or her pocket, potentially. Now, at last, this thing can exist in the way I've always thought it would." By the way, the important character in this is Peter Chilvers,

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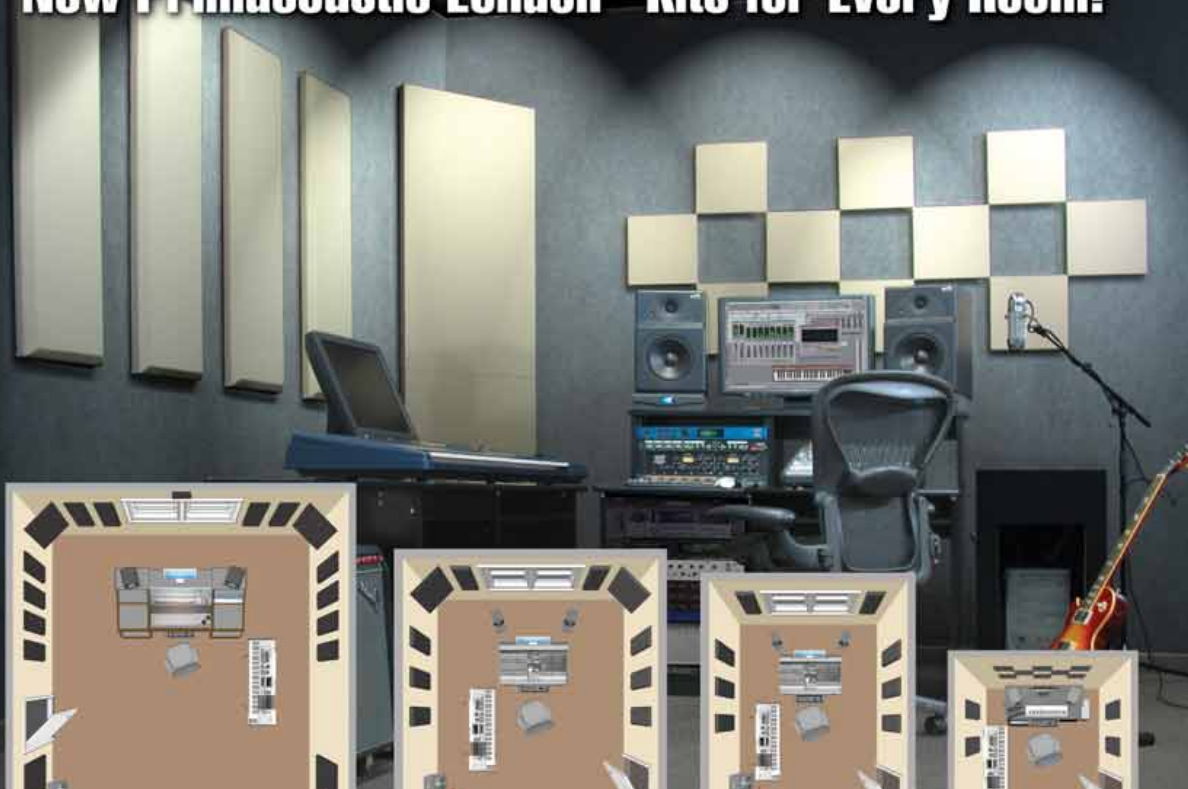
*I did. I like doing this sort of thing. I actually got my first job in the industry as part of the crew that built Westlake Recording Studios in Los Angeles.*

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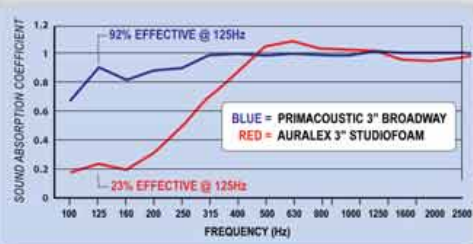


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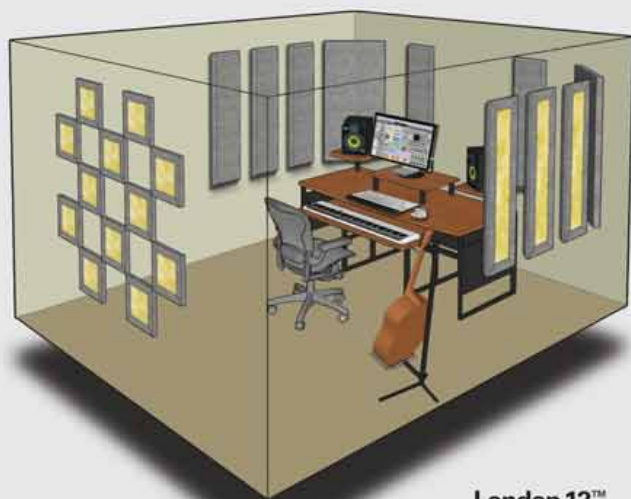


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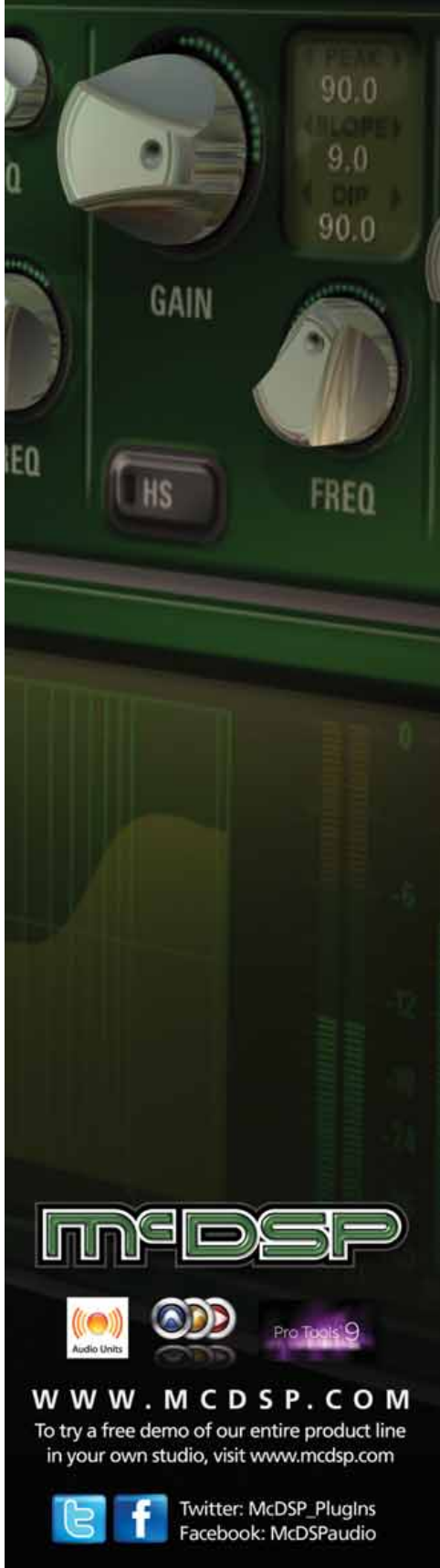


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who I made [the Bloom app] with. We'd been in touch over the years, but he'd very much been working on the idea of generative music for games. He used to be a game music composer. He had, like me, gotten sick of the idea that [the music] would just be repetitive loops. We realized as soon as the iPhone came along that this was the answer to our prayers! Suddenly you could imagine that people would carry this thing around. I think of Bloom, not as a tool – I think of it as a piece of music that comes out in different forms all the time. Your version is going to be different from mine and so on. I think it's a new idea – it exists in thousands of different states that isn't recordable. You can never really get exactly the same thing to happen twice. It exists and is occasionally realized, for a little while, in some audible, tangible form; but is always around in all it's possible, unrealized states.

### **It's somewhere between an instrument and an album.**

Yes.

### **John: How do you feel about it showing up on other people's albums now?**

Well, I hope it does! Has it?

### **John: Well, I used it on [Sea of Bees' Songs for the Ravens]. It's on Radiohead's [King of Limbs], as far as I can tell. There's a song called "Bloom" and it opens with what sounds like Bloom.**

Well, I love it! I really like the thought. I was talking early about one's ideas getting married with other ideas. I think it's wonderful. It's like you have children and one of them goes off and marries an African and suddenly you've got these amazing looking grandchildren!

### **John: I remember Jules [Sea of Bees] asking, "Is it okay if we use this?" And I said, "I have a feeling he'd be okay with it!"**

I think it is legal anyway. I think we anticipated it. We explicitly made the decision to *not* prevent it from happening. I personally am thrilled when that happens!

### **What if someone recorded 60 minutes of it and put out a CD with a sticker that says Larry Crane Presents Brian Eno and Peter Chilvers' Bloom? [laughter]**

I would think that was so funny! Why didn't I think of that?

*Brian Eno Presents Brian Eno and Peter Chilvers' Bloom!*

### **When you're in the studio working on your own music, or working as a producer, what roles do chance and random occurrences play?**

This is related to that "attention" issue. [Louis] Pasteur said, "Chance favors only the prepared mind." People would always say to me, "Oh, you're so lucky!" And things have worked out well for me! But I thought, "Well, luck is being ready, in some ways." The fact that I joined Roxy Music in the first place, which was the way I got into being a professional musician, you could say it was luck. I happened to bump into this guy and join this band. But it wasn't luck, because I deliberately hadn't gotten a job – because I didn't want a fucking boring job! [laughter] I wanted to be ready and open

for when something came up. This opportunity arose and it didn't look like it was going to be much at the time; it was a little thing. But I thought, "It's certainly more interesting than anything I've got going on right now." So, I was ready for it. I'd kept myself ready for it. Similarly, I think working in the studio you have to really be ready to step out of where you thought you were going. The problem of over-determination of thinking, "I know exactly where I'm going and I don't want any of these interferences..." That's a serious issue, actually. You have to really think about that. I'll give you an example of a bit of randomness that happened quite recently on this record [*Drums Between the Bells*, with poet Rick Holland]. There's a song called "Glitch." That was something I started a long, long time ago and I'd lost the multitrack version. It was in a distant computer and I probably couldn't play it again if I wanted to. But I had a good mix of where it had gotten to at that point. I thought, "Well, I can just work on top of that." There was one bit that had a really, really bad digital distortion part. It wasn't at all flattering. I thought, "What can I do with it?" It happened at a very important part of the lyrics of the poem. I couldn't just chop it out. I thought, "I'm going to regard this as an opportunity, not as a crisis. I've got to make something happen here that accommodates this incredibly difficult moment." Instead, I built a whole new section for that part of the song, which enabled me to take everything out and put this new section in. It was such a departure from the music. I thought, "Oh, dear. It works, but it's so off the scale of where the song has been to." So I now have to accept that the song has gone somewhere else and start working on top of [the new construct]. In fact, it opened up a whole new way of thinking about the piece and it benefitted hugely from that problem. Now, if I'd been richer or more anal, I probably could've gotten somebody to solve the problem technically. Some poor sod that sits here for three days and digitally rewrites all the waveforms and so on. That wouldn't have been an interesting solution to me. The interesting solution for me was to turn the crisis into an opportunity. Let's let it make me go somewhere else. That's generally what I try to do. Similarly, working with bands, if something goes "awry" I try to think of where it can take us. Let's not think, "Oh, all has gone wrong! We've wasted a whole day." No, we haven't wasted a whole day. We've only wasted a day if we *don't* make use of what's happened as a result. If we use it as ways of making us do something new, it wasn't a waste at all. It was just a funny way of getting to a different place.

### **Do you feel that perhaps people hold on to certain things a little too preciously at times and need to move on?**

Yes. The converse problem of that, actually, is that people lose faith in what they're good at because it's easy for them. My youngest daughter is a good example. She's not a musician and doesn't think of herself as one; she's interested in theater. But she's a really good singer. She doesn't take it seriously in the least. She doesn't have to try hard at it, so for her, it's meaningless. Sometimes you notice people not paying attention to what they're good at.

The other side, the one you mentioned, is people not daring to look at things. I've seen this very often in the studio. The more work that's been put into something, the less people are willing to say, "You know what? It's just not working." Another eight hours of guitar overdubs is going to make it *less likely* that the song is going to get better.

**Didn't you have the famous "Where the Streets Have No Name" scenario? [Where a frustrated Eno unsuccessfully attempted to wipe the multitrack for the U2 song.]**

Yes. That was the perfect example of Abe Lincoln's ax. Have you heard that story? Apparently there's a little shack wherever Abe Lincoln came from. There's a sign outside that says, "Come and see Abe Lincoln's ax. One dollar." You go in and there it is on the table. If you question the old farmer closely, who looks after the thing, he says, "Well, the handle's been changed. And the head's been changed." Well, an ax *is* only the handle and the head, so how is that Abe Lincoln's ax? "Where the Streets Have No Name" had become a bit like that. Everything had been replaced! Nothing was left that had been there in the beginning, but we weren't saying, "Shouldn't we just play that from the beginning?" [laughter] ☺

*Among interviews we have done in the past, several have worked with Brian Eno, including Daniel Lanois (#37), Tony Visconti (#29), Martin Bisi (#51), Kevin Killen (#67), David Byrne and Pat Dillelt (#79) and Devo (#80).*

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Thanks to Martin Kelley and Sea of Bees for helping to arrange this interview.



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Producers & Engineers Wing



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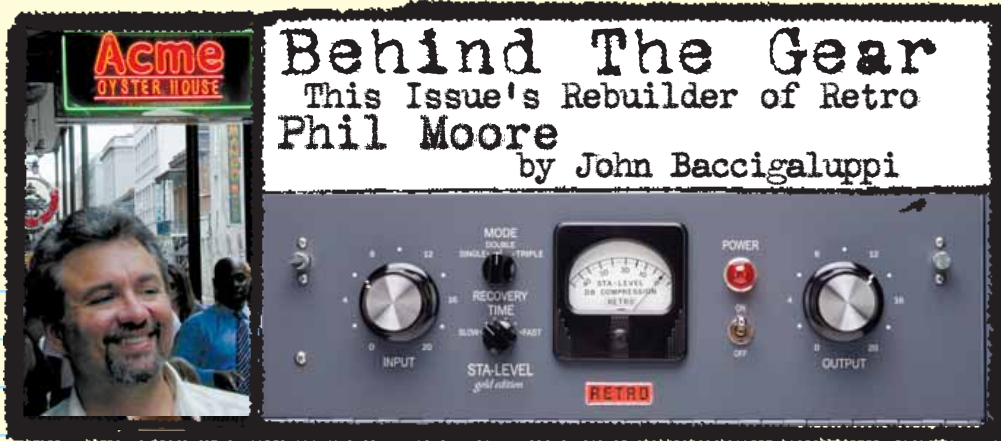
Photo by Peter Ellenby

Josephson.com

"Last year Tiny Telephone partnered with Minna Choi and her Magik\*Magik Orchestra, a modular group of symphonic players that can be ordered up as needed, from a single bass clarinet, to a 60-piece ensemble.

The enormous amount of string and orchestral work we started doing revealed startling flaws in our vintage mic collection: between problems of self-noise, variations within pairs, and issues of fidelity, we just couldn't rely on 60 year-old microphones to get us through a live chamber ensemble.

Then I discovered Josephson Engineering. I was blown away. It was like summer love. After a decade of collecting tube mics, I quickly auctioned them off and bought everything Josephson Engineering made." - John Vanderslice



I first met Retro Instruments' Phil Moore when he emailed me out of the blue about buying an old tri-band Gregg Labs broadcast compressor I had listed on my studio website. I was reluctant to sell it, even though it no longer worked properly. After talking gear with Phil a bit, he offered to trade it for another tri-band broadcast limiter he owned. Phil drove it up to The Hangar from his home in Modesto, a California central valley town about 90 minutes from Sacramento (also known to music fans as the place Granddaddy was from). A few days later, Phil emailed to let me know he had the Gregg working perfectly. I wasn't really digging the compressor he traded it for though, so he offered to do some repair work in exchange. On his next visit, he left with the compressor and about 10 pieces of broken rack gear - none of which had schematics. Two weeks later he returned them all in perfect working order. He then told me about his idea to start a company that would reissue the classic Gates Sta-Level - his favorite compressor. Three months after that he drove to the first Tucson TapeOpCon with Sta-Level serial number 001 (reviewed *Tape Op* #55). And now, a handful of years on, he has a collection of "retro" audio products out, including the Powerstrip Recording Channel (*Tape Op* #82), the 176 Limiting Amplifier (*Tape Op* #66) and the 2A3 Dual Program EQ (*Tape Op* #79). But we were really curious where Phil came from..

### How did you get started with electronics?

I guess it started when I was a toddler. I used to grab the knobs on the record player, and my dad understood that I had this attraction to amplifiers and things. I was about five when he really knew I was into electronics and sound, so he bought me one of those kits to make a bunch of electronic projects. He would

read the instructions while I would connect the wires up. Most parents would probably say, "Don't touch that! You might get hurt!" but he was actually encouraging me to mess around with wires. By the time I was eight I built my first mixing console and I took it to my third grade class.

### What year was this?

This was 1972 and '73.

### Were you doing tube electronics or solid state?

The first amplifier I had was an EICO HF-20 with a really huge output transformer and a couple of 6L6 [tubes]. The only reason I got into tubes was because that was the stuff people were throwing out. Solid state was taking off and it was like, "Why do we need these big heavy tube things?" I went to a garage sale and a guy sold me this classic amplifier, so I proceeded to shock myself and blow up speakers. The things that amazed me most were the radio stations and the transmitters. We had a station in town and my dad would take me up there. It was 500-watts with five towers right across from the Concord Pavilion [Concord, California]. I met the engineer there. There was a guy playing 45s on turntables and right behind him was this transmitter with these really big glowing tubes. You'd actually see the orange glow on the plates of the tubes modulating with the sound coming out of the console. So when I was 12, I built my first radio transmitter.

### You had your own?

Yeah, in my bedroom.

### How many watts?

Not too much. It would go around the block.

### Which is totally illegal, right?

Yeah. I started off modifying wireless microphones and tearing apart a Mr. Microphone. I was kind of obsessed with putting signals out on the radio, but it never sounded like the big stations. I asked the guy at the Concord station how come it sounded really cruddy and faint, while stuff on commercial radio was huge and full of energy. He told me, "You need a limiter. I've got a pair of Gate Solid Statesman limiters just sitting in my garage. I'll let you have them." They were actually the worst limiters I have ever heard - that's probably why they were sitting in the guy's garage. I wish I'd known how to modify them back then. Now I modify limiters and they sound amazing, but I ended up throwing that pair away several years later. When I was 13, I was trying to start a cable FM station on Concord TV cable. I met this guy, Steve Bryan, and he

introduced me to the [Gates] Sta-Level. He brought these Sta-Levels over and it just changed everything. The audio sounded amazing for the first time ever. I've been sold on the Sta-Level since I was 13.

### By the time you were 18 you were fully employed in radio?

I had a job when I was 15. I was offered a job that I couldn't take until I turned 16. The day I turned 16 I became a maintenance engineer for this 1000-watt AM station.

### And you had no formal training?

Yeah, I did actually. I guess I'm leaving some stuff out. From the time I was eight I had a study guide to get an FCC license, which you can't get until you're 12. On my 12th birthday, I went to the FCC office in San Francisco and took the test for the third class radio/telephone operator's permit, which allows you to operate a radio station.

### Did you pass?

Yeah. I got my license when I turned 12. My high school, Clayton Valley High School, had KVHS - a 5000-watt transmitter, behind glass outside the studio door. There were some classrooms next to the tower there. The teachers couldn't watch movies because the radio station would bleed into the amplifier of the projector. They would have to turn off the station so the teachers could play their films. From the time I was eight, I would go hang out at the high school. When you're that young, the kids in high school are kinda mean - they would throw my bike in the dumpster and things like that. I was hanging out at KVHS as much as I could. I'd watch what they were doing and how they operated the station; and I'd help out when they would let me. The instructor was very engineering intensive - they built their own mixing console from digital parts before those were really being used for consoles. They built a digital transmitter remote control and they moved the transmitter up to a hilltop. There were these guys there; one guy went to work for National Semiconductor Corporation and the other guy for another big technology outfit. They were really smart, for high school kids, and I got to hang out and watch them put stuff together. I was watching all this and learning. By the time I actually got into high school I was kinda bored with the school's radio station and was looking for other things. I was hanging out at the commercial local stations. I'd help take out the trash and, if they let me, I'd watch what they were doing. When I was 16, I was so ready to get into the field and get a job, so I worked in San Francisco.

### Did you finish high school?

When I was a junior, I went to a different school where you attend once a week and they pile a bunch of homework on you - I completed that. When I was 17, I moved to Stockton to be the chief engineer of an AM/FM combo station. From there I was the chief engineer for various radio stations around the Bay Area until I owned my own, which was my dream as a child.

### How old were you when you bought your first radio station?

I didn't buy it - I created it. I filed an application in Santa Rosa for a new frequency and through a miraculous chain of events it all came together in



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2001. This was at a time when people were spending millions of dollars on stations. It was a miracle that I was able to put mine on the air.

### **What kind of station was it? What was their programming?**

It was an FM station, 3000-watts; the antenna was mounted in a tree up on a 1600-foot hill in Cloverdale and it would shoot down the valley. You could hear it from Novato all the way up to Willits – really good coverage. All of this from a Douglas Fir tree in somebody's backyard up on a hilltop! I put the station together with stuff that I had collected over the years. We started out as a classic rock station but that was kinda tough to sell. After a year we switched it to hip-hop and it was huge, but it wasn't necessarily what I wanted to be playing. I wound up selling it and taking some time off to think about what I really wanted to be doing. I had five Sta-Levels when I started that station and when the classic rock choice didn't make it I had to sell them all. It was awful. I decided to build a Sta-Level for myself and I thought, "Everybody seems to like these." I actually set out to build an exact replica of the Sta-Level. It came together and I put it out on the market. It sounds fantastic and I still love it – 30 years later.

### **There is no market for selling Sta-Levels to radio stations anymore. You're now selling all your gear to recording studios and recording engineers.**

Yeah.

### **Was that a pretty natural transition?**

I was kinda surprised that it caught on in recording circles. It's just so old and antiquated. I've listened to every compressor that I can get my ears on. I've listened to a lot of compressors and limiters and nothing that I have heard does what the Sta-Level does.

### **Then you built the 176 Limiting Amplifier, based on Universal Audio's design. Can you tell us a little bit about that product and the process of designing it?**

I had just introduced the Sta-Level at TapeOpCon 2006 and my friend David Piechura made the suggestion that I build a 176 and I went right to work on it. The 176 is the best selling Retro product. It was critically important to get the sound of the original transformers, and then I added some features to get more flexibility out of it. I love the energy of Bill Putnam's tube compressors.

### **The next unit was the 2A3 Dual Program EQ. I heard *Tape Op* contributor F. Reid Shippen had a bit of a role with that.**

I read a *Tape Op* review that Reid did on another Pultec clone and knew that he was a tough customer to please. I thought he would be a good choice to get feedback from on a prototype I was working on. I sent him a rough prototype of a single channel unit. He liked it, but it really didn't sound like a Pultec. After several rounds of him sending his Pultec EQP-1A3 to me and me sending my 2A3 to him, it was getting better but it was still not right. We were getting close but still no dice. Then Tom and David at Cinemag made a special interstage transformer that makes the Retro sparkle like an original. The magic is in the transformers! Anyone can just copy a

classic circuit. At Retro Instruments we try to make products that sound as good, or better, than the classics, and make them usable in modern recording situations.

### **You now have the Powerstrip Recording Channel. What's the scoop on that box?**

Everyone wanted a mic preamp from Retro. I have prototyped just about every classic tube console pre, listened to several that I own and tried some new configurations with numerous new and classic transformers. I recorded tracks of each and compared them endlessly. My favorites turned out to be the Pultec Mavec, Redd 47, RCA OP-6, Gates Dynamote and the Collins 12Z. I ended up with my own, a custom blend of circuits to get the flexibility and fullness I was looking for. Still, I felt that a good mic pre just wasn't enough, so I added an EQ and a compressor that would bring out all of the detail of the performance. There are also instrument and line inputs, a re-amp output and an instrument pass thru. It is everything I could squeeze into a modestly-sized package for my attempt at a desert-island box.

### **What's next for Retro?**

I am big on customer support and I plan to focus on that. Retro is growing at a good pace and just brought on David Piechura to handle sales and marketing. We have no shortage of ideas, we just need to decide in what order we should develop and how to release them. We have a "plug-in" this year that will surprise people. I am always considering new products that will round out our product line. My dream project is a tube mixing desk with a built in tube tester. Not that we would sell many, but it would have *that* sound. That is why I love this gear. ☺

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## Radial Engineering *Workhorse 500-series rack & mixer Shuttle Insert Loop*

Radial Engineering sent both LC and AH a *Workhorse* and a selection of 500-series modules. Neither of them has had the time to try out all of the modules, but they both got in some quality time with the *Workhorse*, and Larry also had a chance to try out the *Shuttle* module.

**LC:** Radial Engineering seems to like solving pro audio problems. At Jackpot!, we have their reliable J48 active DI box (*Tape Op* #49) and J+4 balanced signal driver (a great way to monitor iPhones, laptops, and many other items). Both solve impedance and level-matching issues with great sonics and rugged construction. So when I heard that Radial was building a 500-series rack, I was curious, because I assumed that this rack would be overbuilt, well thought out, and versatile. I was right. The damn thing looks like you could drop it off a truck and it would survive, but there's a lot more to it than that.

**AH:** I've purchased many "problem solvers" from Radial Engineering and its sister company Primacoustic. They can't seem to leave well-enough alone! Oftentimes, they take what might otherwise be a mundane, standard product; add unique features or functionalities; and turn it into something that makes the product into a must-have.

**LC:** I currently have no 500-series gear outside of two custom-racked, vintage API 550A EQ modules. As more companies have introduced 500-series modules in recent years, I've thought about acquiring a rackmountable chassis or a "lunchbox" to power and interface these units in order to try out modules. API is the company that originated this format, initially for use in their fine consoles, and they currently make a 10-space rackmount and 6-space lunchbox unit. (BAE, A-Designs, Purple Audio, and Atlas Pro Audio also make excellent racks for this series.) Over the years, most racks have basically featured power and rear panel I/O, and this is where the *Workhorse* is quite different. With eight slots (compared with six to eleven for other units), they've left room on the right-hand side for a mixer. Really. And this is pretty cool, 'cause you can bus some or all module outputs down to a stereo mix or even use it for summing of other sources from a rear D-sub connector. This mixer's front-panel controls are basic and simple, featuring level and panning knobs with on/off switches for eight channels. Each module channel and its corresponding D-sub channel are first summed together before going through the level, pan, and on/off controls on the way to the mix bus. On the other end of the mix bus, there are main and monitor output attenuation controls and a headphone section too. Note that the main and monitor outputs are the same stereo mix — there's certainly no room for an auxiliary mix on this little mixer! On the rear panel, the mixer's main (Jensen

transformer isolated) and monitor outputs both appear as separate XLR and 1/4" TRS jacks, and two front-panel headphone jacks allow for easy monitoring. Note that the Main output even has an unbalanced insert jack. There's an expansion bus that will allow more *Workhorses* to gang together and share one unit's mix bus output. The module channels have plenty of I/O, with separate in and out XLR or 1/4" TRS jacks, Pro Tools-compatible D-sub connectors for audio interfaces or patchbays, and Radial's "Omniport" jacks for custom I/O. The rack has an outboard power supply with a decent 1200 mA of current, and it's compatible with any 500-series units that follow the VPR Alliance specs. But wait, that's not all. You can also flick "Feed" switches on the rear panel to daisy-chain one or more modules left-to-right to create a custom channel strip. And link switches allow for stereo linking of modules (like two channels of compression) that support that feature via their card connectors.

**AH:** Feature-wise, the *Workhorse* is pretty impressive, but I love how the folks at Radial Engineering get the little things right. For example, unlike other 500-series racks, the *Workhorse* has a platform with "slides" to align the modules for easy insertion; without it, positioning a module so that its edge-connector mates correctly with the back of the rack can be a hit-or-miss proposition. Thoughtfully, the platform accommodates single and double-wide modules, and it's removable if you have modules that are incompatible with it. On the back of the *Workhorse* are two grounding lugs to interface your rack to your studio's grounding scheme — one for the chassis and one for the circuit ground. And the dual-headphone outputs have a mono check switch. All very cool.

**LC:** So what can you do with this new take on a 500-series rack? A lot:

1. Mix eight mic preamps together with panning and a stereo output for live tracking.
2. Record off eight preamps into multitrack, yet monitor through the mixer.
3. Create custom mic preamp-based channel strips (mono or stereo).
4. Create custom DI-based channel strips (mono or stereo).
5. Sum 8-channel mixes (or more with extra *Workhorses*) direct into the mixer.
6. Sum, but run some channels through the modules and sum.
7. Set up complex re-amping situations, plus have a mic preamp or two available to track.
8. Use the summing mixer and a mic preamp or DI to do overdubs and monitor.
9. Set up a vocal chain through stompboxes in parallel or series blends (live or studio).
10. Create a wild instrument rack with versatile DI outs, amp feeds, and effects loops.
11. Parallel processing by bringing signals into the mixer and through one or more EQs, compressors, or other modules.
12. Oh yeah, go old-school and run eight 500-series modules with independent I/O.

Keep in mind that once the *Workhorse* is loaded with modules, one could pull and swap them as needed in recording scenarios. You could have eight preamps for tracking, swap them out, and then mix back through a combination of compressors and EQs.

**AH:** I think a lot of engineers and producers will use the *Workhorse* for "remote" overdubbing, as Larry mentions in point 8 above. Imagine you have all of your rhythm tracks recorded in the studio, and now you want to go home or head to the practice space to lay down some guitar solos and vocals. With a laptop, audio interface, and a *Workhorse* filled with your choice of modules, you've got everything you need to play back

what's already been recorded, record new tracks to the DAW, and monitor the takes with zero-latency on headphones (or powered speakers if you've got them). And you can do all that with minimal patching. You get to assemble your favorite channel strips, marry them to the built-in mixer, and grab the one box and go!

**LC:** I tried the mixer out, summing channels from Pro Tools for a mix I had previously done on my Rupert Neve Designs 5088 console (*Tape Op* #73). I'm not gonna lie and say that the mixes were equal, but I will say that this little 8x2 mixer sounded pretty damn good, with exceptional clarity and strong low end. I could imagine calibrating all the channels equally and panning odds and evens for a recallable summing mixer. But with mixing, one concern that I would have with this device is that the signal from each module is summed with its corresponding D-sub input before its mute switch. In other words, if you leave a bass plugged into a DI on channel 1, the DI output is blended in with the signal from the rear D-sub for channel 1. This can be avoided by removing any modules with an output present, or turning ones with attenuation controls all the way down; but it also seems to be something that wasn't quite thought out. I would have rather seen the eight mute switches apply to the modules only.

**AH:** I understand Larry's point, but personally, not having mutes for the modules independently of the D-sub inputs hasn't been a problem for me yet. I find the D-sub inputs most useful for two use cases: the overdubbing scenario I called out earlier, in which the mixer is being used for monitoring; and parallel processing through the modules. In this latter case, I can send a signal from the DAW to both a module input and the corresponding D-sub input, process the signal through the module (or chain of modules), and sum the unprocessed signal coming in through the D-sub — as Larry mentions in his point 11. For example, one of my favorite vocal mixdown chains goes like this: feed the vocal track to a filter or EQ and take out the highs and lows so all that remains is midrange, then squash heavily with a compressor; in parallel, feed the same vocal to a second compressor set for light, full-band compression; and finally, sum the outputs of the two compressors along with a bit of the unaffected vocal. This kind of processing is second-nature with the *Workhorse*.

And speaking of Larry's Rupert Neve Designs console, it's worth mentioning that the *Workhorse's* expansion bus can be used with other devices that have similar functionality — not just other *Workhorses*. The manual specifically states that the "virtual earth mix bus" scheme was chosen to be compatible with the RND Portico line.

**LC:** The rack I reviewed came with a bunch of excellent new Radial 500-series modules to try out, and I'm hoping we can get reviews of these in the future to give them a fair shake. But I do want to mention the simplest of the lot, the *Shuttle*. This unit allows you to create three insert points — one balanced and one unbalanced via front-panel TRS jacks as well as one more on the rear-panel Omniport. All are switchable in and out. These inserts go across the main I/O on the rear panel but also (and this is important) via the Feed function. In other words, you could take the output of a mic preamp or DI, feed it into the *Shuttle*, loop in a run of balanced or unbalanced line-level effects boxes, then perhaps feed a compressor module — or whatever you desire — yet still have a clean, balanced output. If you have an older 500-series module that doesn't feed signal to the mix bus pin on its card connector, you could mount a *Shuttle* next to it and use the Feed switch to send the module's output to the *Shuttle*, which in turn could assign the signal to the mix bus. Or if you just need a patch point to get your MP3 player into

the *Workhorse's* mix bus, the *Shuttle* comes in handy. It's a basic device, but it opens up some interesting interfacing possibilities. Another nice thing is that it's really affordable — almost presented as a courtesy to *Workhorse* users.

**AH:** I'm excited to demo all of the 500-series modules from Radial Engineering, including the PowerPre mic preamp with three selectable voicings; the JDX Reactor guitar interface, which you can use to record a guitar directly or place between a guitar amp and speaker; the EXTC for looping guitar pedals into your processing chain; and the TankDriver for driving and amplifying spring reverb tanks, like the ones in the back of guitar amps.

**LC:** I keep having visions of racking up three *Workhorses* with patchbays and a snake. You could have a pretty cool mobile rig that could handle a lot of routing possibilities. The *Workhorse* is so much more than just a rack that provides power, rackability, and I/O for 500-series modules. It's a veritable problem-solver that could be used in many recording and mixing scenarios, and it could potentially be the heart of a powerful yet portable studio rig.

(*Workhorse* \$1399 street, *Shuttle* \$129; [www.radialeng.com](http://www.radialeng.com))

—LC & AH

## Sonnox

### Fraunhofer Pro-Codec plug-in

We had two writers test-drive the new plug-in from Sonnox that allows you to encode, decode — and audition in real-time — data-compressed audio using Fraunhofer codecs. Let's start with multi-Grammy winner Joe Chiccarelli (*Tape Op* #14), whose first *Tape Op* review appeared in 2003 (#35). Following Joe's take is a call to action from senior contributor and active audio professional Garrett Haines. —AH

First impressions are everything to me. When I saw this plug-in at this past Winter NAMM, I was instantly interested in hearing it. To me, the first time you play a final mix to someone is crucial. Their first gut reaction to that playback means everything in their last impression of the mix. Therefore, I go to great lengths to make sure they are listening to a high-quality, high-resolution audio file. Unfortunately, with A&R staff and artists sometimes scattered all over the globe these days, this is not always possible. So at the very least, if I am sending out an MP3 for evaluation, I make sure it is at a high bit-rate and is rendered with the utmost care.

Sonnox *Fraunhofer Pro-Codec* is an RTAS, Audio Units, and VST-compatible plug-in that allows you to audition, encode to, and decode from various MP3 and AAC formats in real-time. Yes, this wasn't as much fun as checking out a new compressor, but having the ability to listen to your un-encoded mix going to the plug-in and hearing the resultant changes that the various codecs impart on the sound of the mix was striking and educational.

This is a plug-in that every recording school should own. Not only can you audibly audition the differences between various codecs, but you can graphically monitor the sum and difference of those effects on the large FFT display. It was quite shocking to hear the changes to my overall mix and to the vocals while A/B'ing between the console output, the feed to the plug-in, and the output of the codec. To be honest, it kind of made me crazy with Digital Disappointment over the state of the standard MP3 file. Nowadays when I send a mix out for evaluation, I always send it at 256 kbps. So having the ability to not only choose the higher bit-rates but to also audition MP3-HD, AAC-LC, HE-AAC, HD-AAC, and other codecs really made it easy to tailor the delivery format to the music for the least deleterious effects. All of the codecs are meant to compress the audio files down to more manageable sizes, but each uses a different algorithm so it will affect your music differently.

On the surface, the plug-in itself is easy to use, but once you start getting deeper, it almost requires some serious knowledge of digital audio to reap all the benefits. Experienced mastering engineers and archivists will especially appreciate the advanced feature set. That said, once you've inserted the plug-in on a track, there is a list of codecs to audition. You can choose up to five to check out and bounce back-and-forth between the various formats — without hearing glitches. You can also change parameters within each codec, including bit-depth; variable or constant bit-rate; high to low quality levels; etc. Bear in mind that some of the codecs don't allow changing of all the parameters. After you find the one that suits the track best to your ears, you are ready to record the plug-in. Recording the plug-in to the track is simple. It can be done "online" (kind of like operating an Audio Suite plug-in) or in an "offline" mode where you choose the file from a menu. Either way, it's pretty simple.

*Fraunhofer Pro-Codec* is meant to be the last plug-in in your mastering chain. For instance, you would place it after a high-quality mastering limiter. Coincidentally, I only use Sonnox Inflator. It's the only plug-in I've found to not destroy my mix while bumping levels up to the place where victims of the loudness wars can accurately evaluate my mix on their laptop speakers and earbuds! Anyway, it's pretty easy to insert your limiter and then follow it with *Pro-Codec* — and ship out your mix.

Now the one quick test I did was to encode a standard MP3 file at 256 kbps in the Pro Tools TweakHead setting and then encode one with the comparable settings in *Fraunhofer Pro-Codec*. I then imported both files into iTunes. Yes, I know the iTunes playback platform imparts its own sound to all digital playback, but this was just a quick comparison between the two methods of encoding the MP3 to the same bit-rate. There was indeed a difference in sound quality. This is when I start to get depressed — kind of like listening to test CD pressings from various factories. There shouldn't be a difference — it's digital, right? Well there is!!!! Needless to say, the Sonnox-encoded file felt clearer, more open, less compressed, and closer to my original mix.

If you are the type of person that believes in details and believes that there's a Digital Devil, then this is the one plug-in that may give you an advantage when sending a mix to the client. The ability to audition the encoding in real-time allows you to make critical decisions immediately — not only in terms of which encoding process to choose, but also for what mastering processes to employ — so that you end up with the best possible deliverable for that most important first impression. You can download a 15-day, fully-functional demo of *Pro-Codec* from the Sonnox website.

—Joe Chiccarelli <[artfitpro@mac.com](mailto:artfitpro@mac.com)>

Never has the word revelatory crossed my mind when working with a plug-in, until I tried *Fraunhofer Pro-Codec*. Joe Chiccarelli covered the basic usage, so I won't duplicate his efforts. Rather, I'll emphasize some features and cover some very important things that every *Tape Op* reader should now.

With respect to *Pro-Codec*, this is perhaps the only way to do a head-to-head comparison of pre-encoded source versus compressed target — or between compression algorithms — in such a simple manner. The graphic display, which warns of potential artifact "birds" and "warbles", as well as the difference button, which plays the audio that is being thrown out (for all intents and purposes), certainly emphasizes how limited some of the compression schemes are. Add to the fact that many simple encoders create digital overs and spikes (unthinkable, but this is the real world, and that's the kind of stuff that happens). And it's why you have to educate yourself about digital audio and the products we so often blindly — or deafly — use. And other than the inability to do batch encoding, I have few complaints about the product.

To continue to bandy the term revelatory around, please consider the following. At present, the corporations who distribute compressed digital media, such as iTunes, Amazon, Zune, and the many aggregators like TuneCore and The Orchard, do not accept encoded digital assets from artists and mastering engineers. *They will not let you choose the codec for your music!* That's right. Unless you're a major label, you have no say in the matter. You simply provide 16-bit, 44.1 kHz CD audio, and they shove everyone through the same batch encoder. As *Pro-Codec* so aptly demonstrates, encoding schemes are not one-size-fits-all. The differences in output are significant. Furthermore, some algorithms are better suited for some styles of music. For example, a codec that focuses on frequency masking might be perfect for a dense rock mix, while a codec that borrows space from silence would be more appropriate for classical. But in the status quo, you have no say in the matter. If you luck out and they're using the codec that works for your style, great. But the rest of the music suffers.

For the sake of journalistic integrity, let's consider why this is the case. First, aggregators must deal with thousands of submissions. In order to move music from intake to market, having a streamlined system makes the best sense. Second, and perhaps the chief reason, when it comes to digital audio, most people are technically inept. Anyone who has had a client give them a CD made from MP3 files can tell you what that sounds like. And those are just independent artists. Ask mastering engineers how many mix engineers turn in work that is out of phase, distorted, or has other technical trouble, and you realize that even some recording engineers struggle with digital audio. Consequently, it might be business suicide for aggregators to open a door for artists to submit their own encoded assets.

But this needs to change. First of all, what we do is a profession. Like any professional, we have standards, groups, organizations (AES, NARAS, SPARS, etc.). These groups need to pressure aggregators to allow professional mastering engineers to submit encoded assets. Furthermore, there is a successful precedent in the example of Gracenote. If you've ever put a CD into a computer and had the titles and artist information appear, you can thank a database called the Gracenote Media Database. (No, the information is not written on the CD in the form of CD-Text. That is a completely different thing.) Gracenote allows partner studios, labels, and mastering engineers access to the database. This has worked for years and, to my knowledge, has not had any major negative incidents. Sure, I could change all the names on Led Zeppelin II to say things about macaroni and cheese, but the audit trail would point out my guilt and the matter would be corrected rapidly. For ISRC, the RIAA has also established similar assignment initiatives for qualified professionals.

It's time we demanded a change from the aggregators. Please download Sonnox *Fraunhofer Pro-Codec* and hear for yourself — this is not a trivial matter. As professionals, the ability to provide final assets would be a fundamental courtesy. For the recording artists, it should be a fundamental right.

(\$470 street; [www.sonnoxplug-ins.com](http://www.sonnoxplug-ins.com))

—Garrett Haines, [www.treelady.com](http://www.treelady.com)

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## GEAR GEEKING W/ ANDY...

While recommending various hand tools for maintaining studio wiring in the previous issue, I thought of also covering flashlights, but being the tool geek that I am, I realized I wouldn't have enough room to share with you my suggestions for the various lighting products I keep on hand — unless I reserved a whole column for the topic. More often than not, the subtle lighting that preserves your studio vibe will be ineffective when it comes time to fix things. Therefore, a flashlight is a necessity whether you're taking note of your cue sheet during a dimly-lit session or you're peaking behind a rack to check on a piece of gear. A "torch" (for you UK readers) that is easy to access when you need it — in a front pocket, on your keychain, or around your neck — is often best, especially if you've managed to contort yourself into a tight spot looking for an elusive broken connection or such. I've mentioned before that I keep a thumb-switch LED light on my keychain; you can find these in hardware or sporting goods stores. Mine is the **Beamer** from **Super Bright LEDs** (\$2.99; [www.superbrightleds.com](http://www.superbrightleds.com)). It's the brightest light of its kind that I have seen; it puts out a nice, wide spot that's perfect for illuminating the backs of racks; and it has a locking slide-switch so you don't have to keep squeezing it. If you're a fan of the original Mini Maglite, Super Bright LEDs also sell replacement LED modules (which incorporate the lamp, reflector, and electronics) that use far less energy than conventional bulbs and will never burn out. A few years ago, before Maglite offered their own LED flashlights, I converted all of my Maglites with these LEDs. More recently, I purchased two purpose-built LED penlights that I find very impressive. My favorite is the **4Sevens Preon 2** (\$43-\$47; [www.4sevens.com](http://www.4sevens.com)). With two AAA batteries and a Cree XP-G R5 LED module, it has an output of 160 OTF lumens at max power — brighter than larger, multi-D-cell conventional lights. It also has low and medium power settings, as well as several strobing patterns. My **Maxxeon WorkStar 220** penlight (\$29.97; [www.maxxeon.com](http://www.maxxeon.com)) is a close second, but only because it uses difficult-to-source AAAA batteries (yes, quadruple-As). Its broad, evenly-dispersed, 70 lumens beam is oftentimes better suited for close-up work than the Preon's hot-spot beam, although it lacks the Preon's multiple lighting modes. When I need to use both hands to do delicate work, I strap a **Husky 3 Watt LED Head Lamp** (\$12.87; [www.homedepot.com](http://www.homedepot.com)) around my head. I like that it's not overly bright, and I can rotate the lamp module 90 degrees to choose between a wide left-right beam or a tall up-down one. It's easy enough to adjust the lamp's position on my brow so I can see into the tiniest of gaps and openings, without the work area being flooded with too much distracting light. When I recently opened up an Intel iMac to install a solid-state drive, the head lamp was crucial for finessing the four Torx screws that hold the LCD panel in place. I have several other head lamps for camping and SCUBA diving — with harness-like headbands and multiple lighting modes — but the Husky is better for precision, two-handed operations. Another hands-free light that I find indispensable is the **Striker LED Light Mine** (\$5.97; [www.striker1.com](http://www.striker1.com)). It looks like the magnetic mines that are used to sink submarines and ships, but this one has twelve supermagnets around its perimeter for attaching the unit to a nearby surface so you can aim the beam where you need it. This and its bigger brother **Light Mine Professional** (\$19.97) are my favorite, behind-the-rack tasklights. —AH

## Universal Audio

### Lexicon 224 Digital Reverb plug-in

I first became acquainted with the Lexicon 224X digital reverb in Studio One at the Strongroom around about 1989. It was the first time we had made that level of investment, and back then, Strongroom was a small, independent company, which meant that such a purchase was a big decision; I remember it being a really big deal. The 224X brain sat in a rack, and before we had a machine room, it was mounted above the Sony PCM-701ES (a high-quality, 2-channel converter which would write to Betamax).

Being an illustrious tea-boy back then, I got lots of time at round 4 am (when cleaning the studios) to mess about and really get to know how certain gear made such a difference. I did not have a user manual for the 224X (too young to read probably), so I started by just pushing each of the buttons and moving the sliders in multiple ways. In the following years, I was given many lessons by the wonderful Martin Rex, who was doing lots of mixing at that time.

The first thing you need to understand about the 224 or 224X is the fact that they employ 12-bit converters (albeit with gain-shifting for additional dynamic range) and 20 kHz or 32 kHz sampling-rates, respectively — not much when you consider today's level of performance. But these units met the requirements of the recording technology of the time, and the 224-series became the standard digital reverb that you hear on so many classic recordings. Certainly, the bandwidth and dynamic range limitations were partially responsible for shaping the sound.

What I really love about Universal Audio's *Lexicon 224 Digital Reverb* plug-in is the ability to turn the "system noise" on and off. Of course for the UAD-2 platform, when it's in the signal path, the effect of all that analog circuitry and conversion processes, beyond just the reverb algorithm, has a great deal to do with the faithful character of the 224 plug-in. But it is nice to hear how the reverb algorithms perform on their own, or at least how they did in Dr. David Griesinger's mind. It certainly demonstrates the difference for those who are interested.

Having easy access to the Mode Enhancement feature is also nice. I think the original method of modulating the delay lines to prevent modes from building up in the tail works quite well, but the option to adjust the settings can give some variation and thickness if required. The Decay Optimization really helps clean up the response, in particular the subsonic frequencies. Both of these features were hidden behind multi-button-press combinations in the real 224's interface in later versions of firmware.

Two Band Reverb Time controls (Bass/Mid — this should be Treble if I'm picky) with adjustable crossover meant that with very few parameters, you had an amazing level of control over the response. You got to the sounds you wanted quickly, which meant you stayed focused on creating the best mix. The crossover sweeps all the way from 100 Hz to 11 kHz, so you could get some very cool effects, especially when used with the Treble Decay, which also helped tonal experimentation. Depth of course simply sets the distance of the material from the listener, which really helped to position things in the mix, especially when trying to emulate certain environments. All this is true to the original 224 in the plug-in.

Diffusion to me in its purest form is how much disruption there is at the point of reflections; the more diffusion there is, the smoother and less metallic the response. Conversely, a reduction in diffusion creates a response with the ringing and resonating you would associate with a smooth-walled room — often useful for certain instruments and artists. Again, the plug-in gets this right.

Another really cool function of the 224 is the Immediate mode switch, which allows you to switch algorithm types without changing your basic parameters; this is an incredible time saver and can be turned off if you want to recall the default positions, just like in the original.

The addition of the rear outs so that the 224 plug-in can be integrated into a surround environment will ring some bells with anyone working on music for picture. The icing on the cake is access to a "hidden panel" so you can crank the input gain and really exploit the non-linear response for snares and anything which needs that extra crunch. It tickled me to see UA also fixed the bugs in the original code and gave us an option to run with or without the fixes! Just brilliant engineering!

In summary, UA have recreated an industry standard which would have been lost to the annals of time (which will help younger engineers perceive what all the fuss is about). From subtle use as a vocal reverb, all the way to an intense and aggressive drum reverb, this does everything the original 224 did with incredible transparency. I love this plug-in. (\$349 direct; [www.udio.com](http://www.udio.com))

—Neil McLellan, [www.thelodgemusic.com](http://www.thelodgemusic.com)

## Avenson Audio

### IsoDI Direct Box

DI boxes are just not that sexy. However, the more sessions I record, the more I grow to really appreciate the simple pieces of gear that I can consistently rely upon. After repeated use, the Avenson IsoDI boxes now hit the tracking room floor at the same time the mic stands and cables come out. Too often we view the DI box as a standard studio tool without consideration for its features or fidelity. If our concern is to honor the sound of the instrument we're recording, while maintaining true grounding, the IsoDI proves more valuable than a standard DI box.

The IsoDI provides a phantom powered transformerless FET circuit design with true ground isolated DC-to-DC power conversion. When working in studios (or venues) with less than perfect wiring, or with ground loops, guitar amps and long cable runs, these tough little boxes can save you from hum, buzz and losing your mind. The Avenson's isolated transformer output and ground lift switch have always left me with a clean, honest sound. In addition to the two isolation stages (parallel or iso out) and its ground lift mode, the IsoDI offers an LED indicating phantom power — when the little blue light comes on I feel calm and reassured. Any tool in the studio that gives me that kind of confidence is going to get used constantly.

So how does it sound? Paired with its extended frequency response (10 Hz-100 kHz) and FET technology, I'm consistently pleased with the IsoDI's Hi-Fi/Hands-off design. It's a little bit of vibe and a whole lot of truth. While the IsoDI has proved well on electric guitars and basses, it really shines on electronic instruments. Many of my clients focus on the craft of their electronic sounds (be it MPC samples, synth patches, etc.) and wish to maintain the essence of those sounds throughout the recording process; when tracking these instruments live, we have all been happy with both execution and result.

What seals the deal for me is the build; smaller than a guitar pedal, able to fit in the palm of your hand and durable as f%k! Brad Avenson [Tape Op #76] makes great stuff and is confident in his designs, so I asked him if I could take the ultimate challenge — he allowed me to run over the IsoDI with my minivan. Check out the video at <http://tapeop.com/video/85/avenson> and then pick one up!

(\$160 Street; [www.avensonaudio.com](http://www.avensonaudio.com))

—SM

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## Shure SRH940 headphones

When I initially donned these headphones, I was reminded of when I heard ADAM Audio S3-A active monitors (*Tape Op* #33) for the first time at the now defunct Bomb Factory Studios in Burbank. I was blown away by the immediate sense of space and detail that I was hearing. I've purchased several pairs of ADAM monitors since then, and I'm also now a proud owner of the *SRH940* headphones. If you're a fan of ADAM's proprietary ART ribbon tweeter, you'll appreciate what I'm about to say. The *SRH940* have an extended high-frequency response with incredible detail — so much so that upon first listen, you might think their response puts too much emphasis on the highs. For example, one of my colleagues commented that the *SRH940* were too sibilant when he first listened to them. On the contrary, I feel that the high-frequency response is actually exceedingly smooth. Yes, there is a small bit of high-frequency lift to my ears, but it's a very smooth rise, and to me, what I hear is the opposite of sibilance. There isn't any harshness in the 7–12 kHz range, which is where I find the most offensive energy in regards to sibilance. Moreover, the *SRH940*'s midrange is as neutral as any headphone I've ever heard. Vocals, for example, translate well between the *SRH940* and various listening-environment and speaker combinations throughout my studio and home — in terms of both relative level in the mix and harmonic content.

Compared to the Audio-Technica ATH-M50 (*Tape Op* #63), which up until now were my favorite studio headphones, the *SRH940* actually have less sizzle at the very top end, but the *SRH940*'s upper mids are a little more prevalent. The gentle lift in the ATH-M50's lower mids isn't there in the *SRH940*, so if you're using the Shure headphones for mixing, you might not try so hard to clean up what "muddiness" might be in your recording. And perhaps because of the more clinical-sounding lower mids and upper lows, the *SRH940* seem to exhibit less bass in general during casual listening, but the extreme lows are definitely there when you are listening critically, with a tightness that is astounding. With that said, I think that listeners who are accustomed to an overabundance of bass volume in their cans will definitely find the *SRH940* inappropriate for their needs, but I find the low-frequency clarity refreshing. Plus, transient response throughout is amazing.

The *SRH940* come with a semi-rigid, multi-compartment carrying case that's too large for carry-on air travel, but it does protect the headphones well. The *SRH940* have hinges in all the expected locations, and they can fold up asymmetrically such that one earcup backs into the other (as opposed to the earcups facing each other). Once collapsed, they take up as much room as any other full-size folding headphones, but one advantage to this asymmetric arrangement is that there's less likelihood for pressure on the cable where it exits from the earcup. Speaking of the cable, you'll find two in the case — one straight and one coiled. Thankfully, the straight cable is just the right length for working at a console; you'll need to extend it if you plan to hand these headphones to a guitarist during tracking. The cables lock into the left earcup with a twist. You'll also find a second pair of velour ear cushions in the case.

The headphones are surprisingly light, and they're comfortable for extending wearing. The only caveat worth mentioning is that I found that the orientation of the *SRH940* on my head had a greater effect on the sound than with other headphones. For example, I can hear the bass levels go up when I rotate the earcups a bit so that the headband is just above my forehead — in fact, I get the most neutral-sounding response with the headphones positioned this way. Also, if I take off my glasses, the ear cushions seal better, and again, I get better bass response.

With many other headphones, I don't hear such a discernible difference with position and eyeglass changes. Regardless, the *SRH940* are now my favorite headphones — not only for critical listening during recording and mixing, but also for just plain listening to music. In fact, I busted out a whole bunch of vinyl, and for the past few weeks, I've been having a great time hearing all that extra detail. (\$299 street; [www.shure.com](http://www.shure.com)) —AH

## Universal Audio Studer A800 tape recorder plug-in

The *Studer A800 Multichannel Tape Recorder* plug-in from Universal Audio is one of the latest in a series of classic hardware emulations made for the UAD-2 series DSP Accelerators (*Tape Op* #57, #73, #76, #83). Having long been a convert to the UAD DSP platform, I had to check this out but had only one problem. I'm still using (with great success) an older Mac G5, PCI-based Pro Tools rig with 4 UAD-1 cards (#41) in a separate chassis. The *Studer A800* plug-in requires a UAD-2. I decided to call Will Shanks at UA and convince him to give me a tour of the new plug-in at UA headquarters, with the advantage being that I could compare the plug-in side-by-side with the actual machine that was used for the modeling. Plus, I could get more detailed info from Will than I could if I had just tested the plug-in in my studio.

A ton of tape emulation plug-ins are currently available, including Crane Song Phoenix (*Tape Op* #46), which I use in every mix. So you have to ask, "Do we really need another one?" Having known the UA folks for some time, I understand the level of detail and amount of time that goes into their plug-in releases, not to mention the brain power at the company, so I think for me, the answer is most definitely.

Jumping right in, the plug-in gives you the ability to adjust all of the same settings one would associate with a real Studer A800 multitrack tape deck, as well as some other tweaks that don't exist on the original. You can choose tape speed (7.5, 15, 30 ips), tape formulation (3M 250, Ampex 456, BASF 900, and Quantegy GP9), and operating level (+3, +6, +7.5, +9 dB). The original Studer A800 had 24 sets of color-coded cards with adjustments used to calibrate each track on the machine for recording and playback. Each instance of the plug-in gives you a set to calibrate as well. The cards and the adjustments available are the HF Driver or Red card (high frequency and bias); Sync EQ or Yellow card (HF and LF); Repro EQ or White card (HF and LF); and Noise or Blue card. The latter was not on the original machine; it allows control over how much hiss and low-frequency hum you want added to your signal. Apparently, the real A800 was susceptible to hum depending on where it was sitting in the room, so UA has provided the ability to keep that sound in if that's your thing. Of course, hiss is something some enjoy, and others run from.

Another set of controls to the right of the calibration settings include Equaliser for switching between NAB or CCIR operation; Noise for simply turning the noise on or off; Auto Cal, which allows the plug-in to choose the calibration settings automatically depending on the type of tape formulation used; and Gang Controls on/off. Ganging allows you to have multiple instances of the plug-in running yet control them all with just one instance open. Very handy! One thing to mention is that even though you have the Auto Cal feature, you can turn it off and go crazy with bias and the other calibration controls to achieve some pretty radical sounds. Of course, you can over or under-bias this plug-in!

The transport controls are Thru, Input, Sync, and Repro. Thru acts as a true bypass of the plug-in while Input allows you to just have the signal hit the electronics of the tape machine and not the tape. Sync and Repro heads on the original were exactly the same in response, so why have them both on the plug-in, since overdubbing with a sync head is not going to happen or matter in this case? Well, options and familiarity I guess. On the plug-in,



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they each have their own EQ adjustments, so use your imagination and your automation, and go nuts. All of the calibration controls can be hidden so that you can look at spinning tape reels complete with logos from each tape manufacturer. The spinning reels can be stopped by clicking on the label below the IPS control.

OK, but how does it sound? I had Will Shanks hook up a situation where I could A/B the results between the original A800 and the plug-in in real-time. This setup had signal going to the real tape machine and was monitored off the repro head with the plug-in setup to be identical to that. At first, I sat and listened and was able to pick out the original machine each time and was disappointed by this until Will realized he had the settings left over from our initial experiments and tour of the plug-in. Once Will hit Auto Cal and switched over to the 250 setting, which was the tape we had up on the original machine, I lost all ability to discern between the original and the plug-in. I was able to use the A/B test to try things like over and under-biasing. The results were identical between the original machine and the plug-in. I also had the chance to try the plug-in on a project I tracked, and I was floored by the results and instantly sold. This level and quality of emulation makes me desire other tape machines like the Ampex MM1200 or even an MCI JH-24. Maybe if I bug Will and his team enough, I can own an army of multitrack recorder plug-ins!

The Universal Audio folks really have done a fantastic job on this plug-in. It sounds exactly like the real deal. You are getting the benefits of analog without the traditional hassles and cost that come with operating a tape machine. The only thing they can't give you is that tape smell. In my opinion, the *Studer A800* plug-in is well worth its price.

(\$279.49 direct; www.uaudio.com)

—Matt Boudreau, www.mattboudreau.com

## Sound Skulptor Stereo Tape Simulator

Sound Skulptor is a division of the Synchronia Company, which also runs a studio in southwest France. They offer a line of DIY audio kits. We jumped at the chance to review the *Stereo Tape Simulator (STS)*. Encased in a desktop box, the *STS* includes the electronics of a classical tape recorder along with many features such as variable gain input stage, pre-emphasis stage, recording amplifier, constant-current driven tape head, playback amplifier with 6 dB per octave attenuation, NAB de-emphasis stage, filter emulating the effect of head gap, and differential output stage. Readers who want to know more about these physical reconstructions of tape deck technology can check out my review of the Rupert Neve Designs Portico 5042 (*Tape Op* #51). Inside the case are actual coupled coils that simulate head and tape behavior. By modifying the bandwidth and saturation of the magnetic core of each coil, the *STS* can simulate an analog tape recorder operating at 7.5, 15, and 30 ips.

Regarding the build, the parts were clearly labeled, and the instructions were well documented and illustrated. Although they are a French company, the instructions are clearly translated. (I totally felt like the ugly American who doesn't speak other languages.) The parts include a lead bender that was much more useful than the commonly seen Digikey and Mouser ones, and we continue to use it to this day. There are many components to this kit, and it is a trial of patience and attention to detail. Obviously, that means Dylan Ray (one of our engineers) assembled it. Everything worked on the first try; the only tough part was calibrating the LED meters, but careful calibration is always needed for such meters.

I was not satisfied with the desktop enclosure because I wanted to try it in my mastering rig. Fortunately, Sound Skulptor

sent me the data files for an aluminum 19" rack panel made by Front Panel Express ([www.frontpanelexpress.com](http://www.frontpanelexpress.com)). I ordered it. With shipping, it was around \$90. (If you don't need to rack mount your *STS*, you won't need to buy this extra faceplate.) The stock unit comes with a black faceplate, but the design of the 19" panel was silver. I didn't change it, and in person, the silver looks pretty sharp. Power is provided by a "line lump" power supply/cable.


I tried the *STS* on a variety of mixes across many genres. Although I did not always choose it for the final masters, I was always able to find a usable setting. In general, at 30 ips, the effect is subtle. Spikey transients are rounded and tamed in gentle manner. There is some high-end reduction, but it is very slight. There were times when harsh cymbals were better controlled by the *STS* than by a multi-band compressor or de-esser. Moving to 15 ips gives a more pronounced boost in the low end. Thin mixes or all-ITB mixes can be thickened this way without undue low-mid mud. The 7.5 ips setting provides even more bass and more high-end roll-off. I didn't find any times when I felt comfortable using it across a two-track mix, but I could imagine it being used on individual tracks without a problem. I could see this getting a lot of use during tracking and mixdown. Since the unit is dual mono, you could simultaneously process bass guitar at 15 ips and snare at 30 ips. You have a lot of flexibility.

So, how does it sound? In a few words, really good. One of my clients, Prslav Lefterov, who owns a Pittsburgh studio called Machine Age, loved the *STS* at 15 ips on the last two projects he brought in for mastering. That's a strong endorsement coming from the owner of a studio that specializes in tape machines and vintage gear. I mean, this guy has an ATR-102, an Ampex MM1200, and more! Compared to other tape saturators, I like to bring in the preference argument. For example, the Neve 1710 tape saturation circuit in my *Legendary Audio Masterpiece (Tape Op* #67) has a more aggressive, almost "you are now mixing through an API console" sound. Conversely, the emulation process in the Crane Song HEDD 192 (#26) is much more subtle than either. So, like comparing an Otari to a Studer to an Ampex, they all sound different.

The only concerns I have about the unit deal with the input and output potentiometers. This is more a usage note than a complaint. The pots are fully variable, although there is a center detent. Like a real tape machine, the unit saturates differently depending on how much input gain you provide. So, trust your ears and the LED meters to see how far into the orange and red you choose to venture before committing your processing. The gain responses are different depending on which ips setting you choose; consequently, it can be difficult to make fast comparisons between settings. If you plan to use the unit in stereo, be advised that the left and right controls track independently, and you will need to check your levels in order to ensure equal left and right gain. (The simplest way to do this is feed a 1 kHz tone through the unit. Flip the polarity of one channel, and listen to the results in mono. Adjust until you hear the most cancellation.)

If you are handy with a soldering iron, or if you can convince/pay/coerce someone who is into building one of these for you, I sincerely recommend the *STS*. It does a very good job imparting a vintage vibe to individual tracks and two-track mixes. It sounds distinct from other market offerings, and if you take your time, you might learn a little bit more about electronics in the process. Of course, if you are lacking construction skills or a minion, Sound Skulptor will ship you a completed and tested kit for an additional fee. I'm keeping my *STS* in my mastering rig. If the tracking guys in my studio want it, they'll need to build another one. (€75 EUR for full kit, €52 EUR assembled; [www.soundskulptor.com](http://www.soundskulptor.com))

—Garrett Haines, [www.treelady.com](http://www.treelady.com)



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## Ryan Hewitt On the New MA-300

"I've had a pair of Mojave MA-200s for years now and use them on all sorts of sound sources, but I've been begging the company for a variable pattern version for almost as long. I am really amazed with the MA-300's performance. The ability to tailor the response of the mic, along with the new high pass filter and pad has greatly increased its versatility. I'm now able to use the MA-300 even more creatively."

### Ryan Hewitt

Engineer: Avett Bros., Red Hot Chili Peppers, Flogging Molly, blink-182

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## Placid Audio Copperphone Harmonica Mini mic

Placid Audio's first product was the original Copperphone (*Tape Op* #42), a unique mic in both appearance and sound. Recently introduced, the *Copperphone Harmonica Mini* was originally designed for (you guessed it) harmonica players. And while it does have the limited-bandwidth sound of the original Copperphone, the *Harmonica Mini* uses a more modern transducer and lacks the resonant chamber found in its larger sibling. The body of the mic is an eye-catching 1.75" x 2.25" pill-like capsule. Instead of the U-shaped yoke found on the Copperphone, the *Harmonica Mini* is surrounded by an aluminum halo and suspended by eight springs (think *The King's Speech* — you know, that movie your girlfriend made you see because Colin Firth is so "dreamy"). As a dynamic mic, it does not require phantom power, and it interfaces using a standard XLR connector.

Oddly enough, I had mixed results with the *Harmonica Mini* on... harmonica. First, my test player wanted to use the mic out of the mount. Fine. So I disconnected the springs. And there was a lot of metal on metal sliding and noise at first. (He was used to a bullet-style mic that has small metal guides that hold the harmonica from shifting up and down.) But some gaffer tape on the edges provided enough resistance to reduce the slippage. Sonic results varied. On a small Hohner Blues Harp (in C), the *Harmonica Mini* was almost too bright, and from a recording engineer's viewpoint, I would have preferred a ribbon mic at a distance. However, using a larger Koch Chromatic was a different experience. The lower registers were simply fantastic through the *Harmonica Mini*. In some ways, I liked the playback better than what I heard in the room. Like any mic choice, I think a lot would come down to the performer and how the instrument was going to be used in the song. But most people considering this mic are not going to treat it as a one-instrument device anyway.

I'm sure there are skeptics who scoff at the idea of a mic that purposefully sounds, well, limited — specifically when the manufacturer states a frequency response of 200 Hz to 1.4 kHz. These naysayers refuse to pay for a mic when they can slap an EQ plug-in on a track and mangle it to similar effect. Note, I say "similar", because a plug-in is simply not the same. I suppose the argument is no different than using an amplifier simulator plug-in instead of mic'ing up a real tube amp. If those results sound good enough for you, then go for it. But to my ears, virtual amps don't sound as good as the real thing (yet). Likewise, vocals recorded with the *Copperphone Harmonica Mini* sit in a mix unlike any EQ-filtered equivalent. Perhaps it's the harmonics or the way the diaphragm can or can't deal with transients, but there is an undeniable dimension and presence with this mic. For example, working with Isaac Sharp on a song called "Mr. Scientist", Isaac wanted a nasal or telephone sound. We have a Bing Carbon Telephone mic (*Tape Op* #66), but this section needed more sparkle, more top, more aggression. Using the *Harmonica Mini* was exactly what the track needed.

We also tried, or wanted to try, the mic in the following situations. On background vocals, put a group in a semi-circle and surround with diffusors, or for a more wild sound, stick everyone in the shower or in a tiled bathroom. We also keep a bunch of smaller amps for guitar solos and effects. The *Harmonica Mini* in front of a little Danelectro or Kalamazoo can help get you a track that almost mixes itself come solo time. It was also cool as a drum room mic, but even more fun as a snare bottom mic. (Remember, this is a dynamic; it can take the SPL.) Finally, one thing we tried was recording the chorus of a song as it played back through our nearfield monitors,

then used that played back as a weird intro for the song. No plug-in will give you that kind of effect. These are just some starting points. *Tape Op* has some of the most creative readers on the planet. I'm sure the Placid Audio website will have even more stories in times to come.

Ultimately, choosing the original Copperphone or the *Copperphone Harmonica Mini* will come to personal preference. But either mic will give you a unique sound, impress clients, and might even inspire your creativity. (\$299 direct; [www.placidaudio.com](http://www.placidaudio.com))

—Garrett Haines, [www.treelady.com](http://www.treelady.com)

## JLM Audio

### Dual99v500 mic preamp & FC500 FET compressor

Back when I reviewed the Eisen Audio DIY500 mic preamp kit (*Tape Op* #80), I bragged about the beefy monsters we brewed. But shortly after publication, the manufacturer discontinued the kits, leaving some readers without a way to obtain similar preamps. To be fair, the input transformer and op-amp were the same JLM components found in the *Dual99v500* preamp. Also, our DIY kit did not have as many features as the JLM, so get ready for good news.

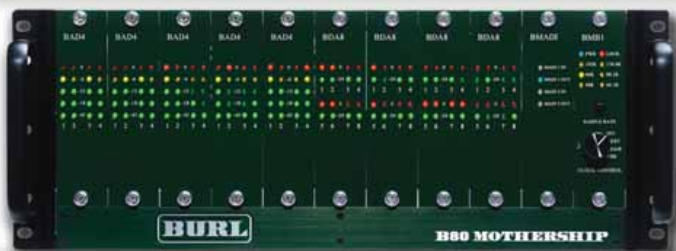
External controls on the *Dual99v500* include line input, pad, polarity reverse, high-pass filter, and phantom power, as well as input and output gain. But a nifty plus is a variable impedance control. Internally, the *Dual* uses two JLM discrete 99v op-amps. According to JLM, this double-team provides 75 dB of gain, but our tests found that to be conservative. This preamp is definitely in the "more gain" club!

In just about any use, the *Dual* provides that thick "Neve on steroids" sound I described in the Eisen review. When combined with the variable impedance control, we were able to test it on a wider range of microphones than normal. First up was a Shure 315 ribbon mic recording a shaker. Keeping the impedance at the center point works for most mics, but for ribbons, going more towards 1000 ohms will open up the top while retaining the mids and lows ribbons are known for. However, on shaker, the Shure was fine at about 300 to 500 ohms. Actually, it was about 10 o'clock on the dial. I don't know what the exact value would be. It's often hard to tell specifically where you are. But let me put gripe in context. First, I'm used to mastering gear, which is often precision-stepped. Second, I'm used to 19" rack gear, as opposed to the compact real-estate of a 500-series unit. It's like moving from Montana to Tokyo. I digress. Just remember clock settings, and you'll be fine.

On bass drum, the *Dual* is all oomph. Using a Shure Beta 52 was almost too much low end. Moving the mic further into the shell and altering the impedance gave more attack. It led me to the hypothesis that you might not need a big locker of kick drum mics if you own a *Dual*. For example, we stock Audix, AKG, Shure, and Electro-Voice dynamics for kick drum duties. (The fact that several engineers here are drummers who can't agree on a mic has nothing to do with it.) I find that each brand voices bass drums differently, and combined with shell material, depth, and player, you never know in advance which you'll use on a session. But with the *Dual*, I was able to alter the Shure Beta 52 to sound more like the other brands and vice versa.

Just when you think you pigeonhole a unit, something destroys the stereotype. All of this praise on low end prompted me to try it on a voiceover session. After all, many people want that DJ sound. For a male narrator using an RE20, the *Dual* had less clarity and definition when compared to straightforward preamps such as the Seventh Circle Audio T15 (*Tape Op* #84) or the PreSonus MP20 (#35). And the difference was obvious.

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No love there. Not to rule out vocals entirely, we paired the *Dual* with a Sennheiser MD 421 for a male country artist. We really liked the initial feel, but to even out the performance, we decided to run into the *FC500* FET compressor, and holy cow! With medium attack, slow release, and 3:1 ratio, the vocal was like butter on a steak. Wow. Despite trying to beat the recording with a large-diaphragm condenser and any other preamp in house, we ended up using that scratch track for the final. It was so perfect for that application.

I spent most of the mic trials with dynamic mics for a few reasons. First, many of us have them. Second, I wanted to see how the impedance loading changed the response. Third, when we tried the *Dual* on acoustic guitar, we found it was similar sounding to the Purple Audio Biz (*Tape Op* #55) in dual-transformer mode, which is a good thing in my opinion, but not different enough for me to pull the Purples from their duties. And finally, we got distracted by the *FC500* compressor.

JLM says that the *FC500* is their “ground up redesign of the 1176LN.” That makes it easy to ignore anything else and start comparing it to our UA black-face. However, that could be a mistake. In addition to having a side-chain high-pass filter (which is amazingly useful on this type of hard-knee compressor), the *FC500* can provide 45 dB of gain, making it a “free” mic preamp for dynamic mics. Visually, the most striking feature is the large porthole VU meter. When the *FC500* is enabled, a blue LED provides backlighting for the meter. A set of eight of these in a rack would be cool as can be.

Once vocal tests were done, I used the *FC500* as a snare mic preamp. It was so nice to have the HPF tell the compressor to ignore the kick drum bleed! And for a heavy-handed 2/4 back beat, it was easy to dial in some serious *thwack!* In my experiences, I was able to get drum and vocal compression sounds in seconds with the *FC500*, but other things proved to be more hit or miss. On electric rhythm guitar, I found that the unit added a thickness that I wasn't looking for, or that I often had the threshold set too high to trigger the compression. But on a wood block, the *FC500* turned a music-class percussion piece into Thor's hammer hitting an oak tree. (The wood block came out of our “bill payer” drawer; if you own a studio, you need one. You never know which doodad a band will decide is suddenly “essential” to a track. It also gives me a lot of battle testers for gear reviews.) There is also a stereo-linking feature, but since we had one unit, we didn't have the opportunity to try it out in a 2-bus situation. I could see this being good for thickening up stereo synths in a mix or a crush compressor for room mics, but that's conjecture.

Ultimately, we kept using the *FC500* in conjunction with the *Dual*, and I found the pair to be a simply wonderful front-end. The combination of the impedance variability and that old chestnut of moving the microphone never left me missing an EQ. And as far as tracking with compression, well, that's how I grew up. Commit now, and finish the recording later. But that's a rant for another day.

It was really hard to pack up the review units. The preamp is so flexible and gives such controlled girth to so many sounds, and paired with the *FC500* FET compressor, the two make one hell of a vocal chain. If you own a 500-series compatible rack and are looking for mic preamps, JLM has just made your decision-making tougher. Hmmm — I said the review units were packed. I didn't say I dropped them off at the shipper! (*Dual99v500* \$995 direct, *FC500* \$995; [www.jlmaudio.com](http://www.jlmaudio.com))

—Garrett Haines, [www.treelady.com](http://www.treelady.com)

## Ingram Engineering MPA685 mic preamp

I had seen the ads for a while in *Tape Op*. There were these preamps I had never heard of by a company I had never heard of — Ingram Engineering. They looked cool and somewhat retro. I had always thought that I'd like to try these out, so I jumped at the chance when offered the Ingram *MPA685* for review.

The *MPA685* is a 2-channel 19" rackmount mic preamp. It uses a discreet JFET front end, with a class-A solid-state output circuit. The inputs and outputs are transformer-isolated, using custom Sowters on the inputs and Jensens on the outputs. There are some nice circuit-design features such as providing constant impedance to the mic regardless of gain settings. It also has a balanced buffer to the output circuit that ensures the preamp won't run out of horsepower when driving into a low-impedance device.

As for front-panel controls, it has a 24-step rotary switch for input gain and a continuously-variable attenuator for output. It has switchable phantom power; polarity reverse; a high-pass filter selectable between 70 or 140 Hz; and a 3-position input-impedance selector. The settings are marked Low, Medium, and High. The reason that the specific impedance values aren't specified on the front panel is that the preamp can be ordered with two different ranges, depending upon your needs. The standard range is 600, 1.5k, and 2.5k ohms. The optional range is an ultra-low 60, 200, and 600 ohms. This is accomplished by use of a different Sowter input transformer. Lastly, there is a DI input on the front that uses a JFET front end. This also includes the nice feature of a 1/4" instrument loop-through, as you might find on a direct box. The preamp can also act as a “reamp” device if you need to send a previously-recorded signal back through a guitar amp at the correct impedance.

When listening to the *MPA685*, the first thing I noticed was the tremendous headroom this thing has. I love using well-designed high-voltage circuits. You just get the feeling that they're never going to give up and slip into distortion, and that's the feeling I get with the Ingram. It seems to have endless headroom and current capacity. I feel like I could drive a blender with the output. Although not a perfect comparison, I listened to the Ingram *MPA685* alongside the UA 2108 (*Tape Op* #31), which uses FET-based class-A circuitry and transformer isolation on the inputs and outputs.

I first tried the Ingram on snare. There was plenty of body to the sound, without being at all muddy. It articulated well. The 2108 on the same snare didn't quite have the depth of the Ingram; however, there seemed to be a little more harmonic content going on in regards to the upper midrange attack of the snare. The interesting thing is that I didn't find this to be the case when comparing other instruments, as I will explain. It was an illustration that different pieces of gear can exhibit different apparent tonal characteristics depending upon the attack of the source. Perhaps a difference in slew rate? Although the Ingram doesn't have a separate input pad switch, the stepped gain control and the variable attenuator allow you to optimize gain for lowest noise. I was able to dial the gain back perfectly on the hot signal from the snare without driving the input stage too hard.

Next, I tried out piano tracking, using small-diaphragm tube condenser mics as the source. I found these results interesting and slightly different than the results during the snare tracking. In this application, I found the Ingram to have more articulation than the 2108. The Ingram had a bit more clarity, although slightly less body to the sound. There seemed to be

an additional level of harmonic content to the Ingram that the 2108 didn't have. If you were intentionally going for a darker sound, this might not be the preamp you would choose for the specific application. But for most of the things I do, I did really like the presence the Ingram gave to the sound. Let me be clear — I don't think the Ingram lacked body. I just think the tone leaned towards upper-end clarity, rather than adding much fatness.

I got very similar tonal results on electric guitar. The Ingram showed a nice balance and again seemed to favor clarity and harmonic content rather than girth. This did allow crunchy guitar tracks to stack very nicely in the mix. And as I found with other sources, the Ingram seemed to never even consider running out of headroom, no matter how much the amp was cranked.

I then did a session that was a little different. I had to record a classical piano and vocal in the studio. Instead of the normal close mic'ing, I needed to try and somewhat capture the sense of space of a live concert recording. I pulled the mics back from the piano and the vocalist. Now, classical vocalists can have big voices with a huge dynamic range. I needed a preamp that had no hint of clipping or overloading. The Ingram was perfect. I actually felt more at ease using it, because I knew that it wouldn't ruin a great take. I know — some of you are thinking, “Well *any* properly gain-staged preamp can do *that*.” Mostly true. Even when carefully gain-staged, some preamps just have more headroom before clipping than others. It's hell when an unexpected peak causes a preamp to break up.

So the Ingram *MPA685* is a great preamp which seems to have a sonic signature that's a little different than some. It seems to combine the neutrality of a JFET input with the headroom and gain of a class-A circuit. It isn't totally in the “squeaky clean” camp, but it isn't a girthy preamp either. It's fairly neutral, but certainly not boring.

One more bit of detail — when testing the Ingram, I did experiment with the different impedance settings. I tended to start with the “medium” setting of 1.5k ohms, and then switch to the “low” setting of 600 ohms. Transformer-based impedance switching can be a really useful tone-shaping tool, and it was here as well. If I have this option, I tend to run the impedance a little lower than some mic manufacturers recommend. It tends to thicken up the sound a little. Running at the lower impedance did add a little more body to the sound and didn't really sacrifice the clarity. It would be interesting to see what the lower impedance range option might do.

The only issue I had with the preamp came before I ever plugged it in. One of the Sowter input transformers had dislodged in the long trek cross-country in the delivery truck. It took only a moment to reseat it back on the board. After speaking with Eric at Ingram, he assured me that this had never occurred before, but that for all units going forward, he would add an additional way to secure the transformers to the board, so that it wouldn't happen again. As I've said before in other reviews, I love boutique manufacturers. They instantly respond to issues, implement real solutions, and continue improving their products.

Again, this is a preamp that can handle any source and sound great. If you're looking for something a little different than the truly neutral preamps, but something with less of a sonic footprint than a preamp that is truly thick and goey, the Ingram *MPA685* is one you should check out. (\$2425 street; [www.ingramengineering.net](http://www.ingramengineering.net))

—Kirt Shearer <[kirt@kirtshareproductions.com](mailto:kirt@kirtshareproductions.com)>

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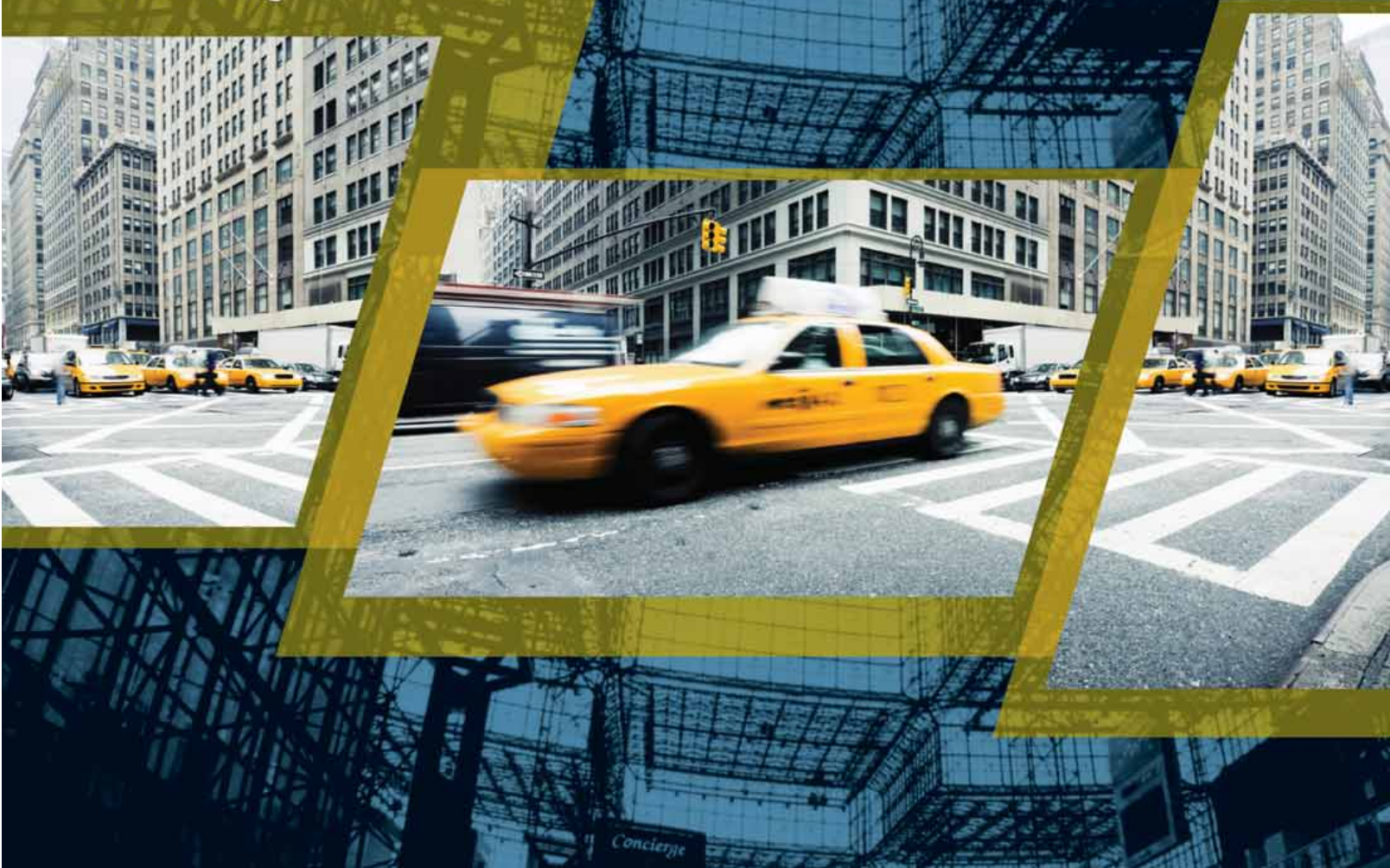
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*MondoTraps, MiniTraps,  
Diffusor, and RFZ*

Assuming that one of the goals in treating a mix room is to achieve flat frequency response at the mix position, one must simultaneously grapple with room dimensions; resonant and reflective surfaces; speaker placement and stands; subwoofer placement and settings; crossover frequencies; active and passive acoustic treatments; program EQ; and more. Managing all these variables with any kind of know-how requires precise measurement tools, the skills to use them, and a general strategy that can accurately account for how all of these variables interact. It's no surprise, then, that very few people really know how to flatten out a room's frequency response.

To complicate matters, today more and more people (myself included) are mixing in relatively small residential spaces built with no regard for acoustics. To be blunt, most smaller residential spaces are acoustic disaster zones with frequency responses that can look like the Alps. The ability to work from one's home-based studio has a lot of immediate advantages, but acoustic accuracy is usually not one of them. That's going to take some doing.

And it gets worse. The smaller your room, the worse your problems will be. Imagine throwing a super-ball as hard as you can at a wall in an 8 x 8 x 8 ft room. You'd probably find yourself ducking for cover as the ball zips from surface to surface. Now compare that to throwing the same ball with the same force in a room three times larger per dimension (24 ft). In this larger room, you'd probably just watch the ball lope around the room. As ironic and annoyingly true as it is, smaller spaces actually require a lot more acoustic treatment to get control of reflections.

Being a New Yorker, my room is predictably small: 15 ft deep by 7 ft wide by 9 ft tall, with the rear wall being a bit out of parallel to the front. I'm actually lucky that my room's dimensions are not exact multiples of each other and that I have that odd rear wall, but it's still a small and problematic space. About five years ago, I went to [www.realtraps.com](http://www.realtraps.com), read everything, and then built and installed eight bass traps made from Owens Corning 703 Fiberglas panels. The improvement was night and day, and I felt I could actually do professional mixing in my room.

This year, I installed a new console. This installation shifted the speakers and the mix position, and it introduced new reflections from the console's surface. These changes provided the incentive to begin a more concerted, multi-faceted approach to flattening my room's frequency response. I knew my DIY capabilities weren't going to get me too much further, so I reached out to Ethan Winer at RealTraps as a first step in my approach. (Note that RealTraps only makes and sells passive absorbers and diffusor panels.)

First I emailed Ethan some photos, measurements, and a description of my room and existing treatment. He emailed me back with a list of the products he thought would be the best in my space, asked me which colors I preferred and had them shipped to me within a week. The panels he recommended were two MiniTraps (*Tape Op* #38), one MiniTrap HF, two MondoTraps (#48), two RFZ (Reflection Free Zone) panels, and two Diffusors.

The first thing I did was replace a pair of my DIY 4 ft x 2 ft x 2" bass traps that hung behind my speakers in the front corners of the room with a pair of standard MiniTraps. MiniTraps measure 4 ft x 2 ft x 3.25" and have a proprietary membrane that my DIY traps lack. This membrane not only improves low-end absorption, but it also reflects some mids and highs. The MiniTraps won me about 2 dB of improved low-end flatness at my mix position (this is considerable), and the reflective surface kept the room active in the mids and highs so that we could shift the high frequency absorption to more strategic locations.

Next, I installed the MiniTrap HF (High Frequency) directly above my mix position as a cloud. This panel absorbs floor-ceiling low-end waves, and being absorptive into the mids and highs, also absorbs first reflections from my tweeters. (Note that low-end absorption of the HF model is slightly sacrificed to make them absorptive at higher frequencies. You should choose and place the two MiniTrap models with these features in mind.) To further control first reflections, I hung the RFZ panels on the left and right of my mix position halfway between me and my speakers. In conjunction with the cloud, these panels created a completely different sonic image than I had been used to, but once I listened for a day or two, I adjusted to the new sound and really appreciated what I was hearing. The phantom image (that illusion that there's something 3D in the middle of the stereo field) and the width of the stereo image were both significantly improved.

The RFZ panels warrant further consideration because they absorb down to 300 Hz, a far lower frequency than the more typical foam offerings can absorb. Doing some measurements with and without the RFZs showed serious improvements in frequency response from 300 Hz up past 7 kHz, with an impressive flattening of peaks and nulls between 500 Hz and 5 kHz. I'm talking about almost completely flattening out a lot of frequencies that were deviating by as much as 7 dB. Because first reflections will reach the mix position slightly later than the direct signal, many of these deviations are the result of phasing (when these phase-related deviations scatter across the mid and high frequencies at predictable intervals, we call this comb-filtering). My measurement software confirmed that phase was involved.



Pausing for a moment, let's summarize the logic and results of Ethan's recommendations so far. First, putting thicker and more efficient MiniTraps in the front corners behind the speakers and on the ceiling produced considerable low-end flatness. Second, strategically relocating mid and high-frequency absorption from the rather useless location behind the speakers to the ceiling and side walls created a reflection-free zone around the mix position that drastically flattened the frequency response in the mids and highs. It's all about getting the right panels into the right spots, and Ethan's advice was spot-on.

From this point, it was time to address the rear of the room, for which Ethan recommended a pair of MondoTraps (4 ft 9" x 2 ft x 4.25") and a pair of RealTraps diffusers (4 ft x 2 ft x 6"). I mounted these panels on optional, free-standing, powered-coated steel stands (a breeze to attach) and placed them behind the sofa in the rear of my room, with the MondoTraps in the corners and the diffusers overlapping them in the center of the back wall.

Listening to music, the two MondoTraps definitely tightened the low end, and while measuring with and without them, I could see that I was gaining roughly another 2 dB of flatness at the mix position at lower frequencies. (MondoTraps are twice as effective as MiniTraps below 100 Hz.) With the Diffusers, which also trap low frequencies starting around 400 Hz, there wasn't a significant improvement in low end, but the improvement in clarity all around the room was really impressive. The RealTraps Diffusor is a QRD (Quadratic-Residue Diffusor) designed to randomize mid and high-frequency reflections as a means to combating the peaks and nulls created by phasing and comb-filtering.

Ethan's recommendations for the rear of my room were, again, spot-on acoustically. Unfortunately, the ugly truth about small rooms reared its head, as all these panels were just physically too big. As obsessed with sound as I am as an engineer, I am perhaps equally as concerned with interior decoration as a producer. Here's the crux of it; I've never won over the creative trust of an artist because of an improved low-end response in the mix position, but I have watched many artists decide on the spot whether they can work in a room or not based on the initial vibe they feel. As a good acoustician, Ethan encouraged me to reconsider my seemingly irrational position, but I basically ended up saying that if had to take a super-ball in the face to put an artist at ease, I'd do it. We had a good chuckle over our difference of opinion here.

But I also recalled Ethan talking me through a process by which one can figure out where the best place for a bass trap is. With some coaching from Ethan, I removed the MondoTraps and Diffusers and played a sine wave at my problematic modal frequencies and moved an SPL meter around until I found the spot where those frequencies had the most power. Interestingly, it was way up in the top rear corner of the room. This is an odd little corner near a window that the MondoTraps were going to have a hard time sealing off, so instead I snugged a 2 ft x 2 ft x 4" panel I had already built into the corner. This strategically-placed smaller panel bought me close to 1.5 dB of low-end flatness at the mix position, and I was impressed with how well these ghost-hunting techniques worked.

While I was also unwilling to hang the large RealTraps diffusers in the rear of this room, it was coincidentally the same time that *Tape Op* [#83] published the article on how to build BBC/QRD diffusers, which I did according to plan and hung on the rear wall of my room. The RealTraps diffusers did a better job, but this was to be expected as they are 2" deeper than my DIY panels, so effective to far lower frequencies. However, my DIY diffusers and the little square bass trap in the corner struck a good compromise between my need for good acoustics and good vibes.

My situation spells out all too well the challenges of improving the acoustics of small residential rooms, and anyone treating a similar room for serious mixing work will need to learn how to do room measurements and become familiar with the best strategies for placing the right kinds of acoustic treatments available. The RealTraps website is a great place to start reading up, and RealTraps offers passive panels that are among the most efficient available with an incredibly solid build-quality at really reasonable prices. RealTraps brought me to the point where I now need to go beyond passive panels and into the realm of subwoofers, active bass traps, Helmholtz resonators, and more. As difficult and involved as flattening out any room can be, you can make essential steps in the right direction with the help of RealTraps. (*MiniTrap* \$200 direct, *RFZ* \$250, *MondoTrap* \$300, *Diffusor* \$600, with discounts for higher quantities; [www.realtraps.com](http://www.realtraps.com))

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# Spectra Sonics

## 611-B Complimiter

These days, fans of the much-loved (and much-misunderstood) Spectra Sonics 610 compressor/limiter (dubbed “Complimiter” by the company) have much to be happy about. In addition to the original model being readily available again (it was introduced in 1969, eventually becoming somewhat obscure, and then reintroduced with a few refinements in 2008), Spectra Sonics has just issued a lower-priced version — the 611-B — that differs a bit from its bigger brother.

For those unfamiliar with the original 610, it is unique among analog compressor/limiters in that the limiter circuit has such a fast attack time (100 nanoseconds — the fastest on earth that I am aware of), that transients can actually be tamed independently of peak-to-average ratios. When set correctly, the results are dramatic — much less distortion, better signal to noise ratio, and improved dynamic range. This is unusual, and very useful. It’s also a bit difficult to wrap one’s head around, frankly. Bill Cheney, co-owner of Spectra Sonics, explains it best, saying, “Most analog compressor/limiters operate as peak-sensing volume compressors. So, the gain of the device is determined by the peak-to-average ratio of the audio that is to be processed. For example, a peak-to-average ratio 10 dB above average audio program material results in approximately 10 dB of gain reduction for the device. Since the noise of a given audio system is generally fixed, the 10 dB reduction in device gain results in 10 dB increase in system noise. The higher the peak-to-average ratio, the larger the gain reduction, which results in a corresponding increase in system noise and significant loss of system headroom. The Spectra Sonics 610 and 611-B Complimiter designs employ independent limiting and compression functions, which may be used separately or combined. The limiter function eliminates the peak overload associated with short time-base transients. As an example, if a 10 dB peak-to-average ratio is present within the program material, the 610 and 611-B Complimiters eliminate the 10 dB peak overload component and allow the system gain to be increased 10 dB. The overload recovery occurs by virtue of the sub microsecond attack time exhibited by the 610 and 611.”

The cool thing about all of this is that, if set appropriately, the 610 exhibits very little sonic coloration, other than level control. It can be considered one of the highest fidelity compressor/limiters around. High frequencies are not smeared or muffled the way they can be with other compressors. The 610 “plays well” with other gear. That said, as a bonus, when the controls are set differently, say, with a quick release time and high input level, the 610 can overload and distort in a very pleasing, tube-like way. Think Tchad Blake.

The 610 is reasonably priced at \$1595, but with the 611-B, Spectra Sonics has made it easier for budget-minded studio folks to get in on this singular type of compression/limiting. At about \$950, the 611-B’s circuitry and behavior are identical to the original 610. The input transformers are different, though, allowing the 611-B to accept mic and instrument-level signals, as well as line-level. So, it can double as a direct box or mic preamp — a very handy bonus.

The front controls consist of an input pad, stepped from unity down to -24 dB in 6 dB increments; a release-time knob; and a slope knob. I’m not sure why Spectra Sonics opted to use the term “slope” instead of “ratio”. Definitely not a big deal; I quickly got used to it, but did initially find it confusing as “ratio” seems to be universally used for this type of compression control. Surprisingly, there is no gain-makeup stage in the 611-B. This had me scratching my head until Bill Cheney explained that he and partner Jim Romney decided to keep costs as low as they could

by skipping the output gain stage. They felt that the extra gain would not be needed in most cases and, where it was needed, the user could use a third-party line amp or channel strip to add gain. When checking out the 611-B, I found this to be true. Only every once in a while — generally when using the unit as a straight-up channel insert — did I find I missed the extra gain. The company plans to release a companion to the 611-B, the M-101 preamp, that will effectively turn a 611-B into a full blown 610.

The 611-B is housed in a sturdy, smallish tabletop enclosure reminiscent of a high-end direct box. Very portable and good looking — black with small, chrome, front-mounted “D” handles — yet curiously non-standard. Cheney reports that Spectra Sonics has imminent plans to release a version in standard rackmount format, and that they did attempt to make the 611-B work as a 500-series module, but found the DC voltage supplied by a 500-series rack was too low to support the 611-B’s required parameters without a serious compromise to performance.

I enjoyed using the 611-B in a variety of situations and found its clarity particularly handy for controlling levels while tracking (where I didn’t want to necessarily color the sounds, preferring to save that option for mixing). With vocals, I found I could compress fairly heavily without ending up with mushy, essy artifacts — the natural high end remained sparkly. On the other end of the spectrum, I loved smashing drum submixes with the 611-B by boosting the input level and setting a fast release time. The resulting distortion and “tunable” pumping were cool aspects that helped give a somewhat limp drum performance a lot more teeth.

With its hand-selected components, top-notch build-quality, yet moderate price tag, the 611-B is an affordable way for anyone, from a world-class facility to a minimalist home recordists, to achieve the singular, versatile, super hi-fi sound and performance of a Spectra Sonics 610. It’s really not an exaggeration to say there is no other compressor/limiter like it, nor has there ever been. (\$945 direct; [www.spectra-sonics.com](http://www.spectra-sonics.com))

—Pete Weiss, [www.weissy.com](http://www.weissy.com)

## Cloud Microphones

### Cloudlifter CL-1 Mic Activator

Cloud Microphones has intrigued me since I first heard about its JRS-34 and JRS-34-P ribbon mics (*Tape Op* #78), which utilize the same ribbons as those in the classic RCA 44-series mics. When asked about reviewing the *Cloudlifter CL-1 Mic Activator*, I was unaware of what it was but became very curious upon investigation. The CL-1 is an active, fixed-gain amplification device designed to “provide 20–25 dB of clean, quiet, extra gain for any passive microphone.” Hey, I have passive microphones that need extra gain! Sure! Send it on!

The *Cloudlifter* seems like an interesting solution to problems often encountered with certain microphones. Recording quiet instruments with low-output mics can often sound wonderful, tonally, but can be problematic in terms of noise floor from the microphones themselves or from preamps without ample quiet gain. The CL-1 provides a unique solution. Phantom-powered JFET circuitry allows for an extra jump in quiet output volume before the mic preamp. Basically, the CL-1 is connected between the preamp and the mic, and when phantom power is applied, the signal from the microphone is amplified without increasing the noise floor. Because the phantom power will not pass through the CL-1 (avoiding any potential damage to vintage ribbon mics, for instance), it can only be used with microphones that do not require phantom power, so using the CL-1 to get extra gain out of a phantom-powered condenser mic is not possible without an external phantom power supply between the *Cloudlifter* and the mic. Getting extra gain out of almost anything else is.

The CL-1 appears to be well-built, in a hefty little metal box a little smaller than an average passive DI box. I’m a sucker for blue equipment, and this box looks great! It has four small rubber feet for keeping scratches off the surface when set on the floor and a small metal “belt clip” designed to strap the CL-1 to a mic stand using one of the two Velcro straps included with the unit. Smart.

I first used the CL-1 on an electric guitar amp with a Royer R-121 (*Tape Op* #19) in front of it. The amp wasn’t all that loud, and the noise would not have been a problem under normal circumstances, but since I had the CL-1, I figured I’d see how well it worked. The CL-1 did indeed raise the output of the mic, allowing me to use a lower preamp setting for the recording. I could see this being quite useful in a variety of intended and unintended circumstances. While I had the unit, I also ran it through a number of similar tests, including an acoustic guitar recording with an old EV RE15, which is a dynamic mic with a notably low output. The RE15 is often good for a certain “vintage” acoustic guitar tone, but its low output can be an issue in terms of noise. One thing about the *Cloudlifter* became clear in this situation; if the mic itself is inherently noisy, the *Cloudlifter* is going to amplify that noise along with the desired signal. While the *Cloudlifter* wasn’t the ideal solution I’d hoped for in this situation, it did help get me a bit more signal so that I wasn’t maxing out the gain of the preamp (in its noisier realm) in order to get usable level.

In another interesting situation, the *Cloudlifter* saw some action running a mic some 75 ft or so outside to the front of the studio for one particular vocal take. Concerned about running that kind of cable length before a mic preamp, I decided to use a high-output vintage tube mic with the CL-1 in-line. The combination of the two gave me more than ample gain and a clear, clean signal with no unwanted artifacts.

In addition to increased output, the *Cloudlifter* also provides some slightly more appropriate impedance matching for older microphones. Putting the *Cloudlifter* in-line did usually result in a slightly more forward and robust sound from the microphones, but I found the difference to be fairly subtle with all the microphones I tested.

I wish the CL-1 had arrived about two weeks earlier. Prior to receiving the review unit, I had problems recording an acoustic guitar where the sound of an RCA BK-5A (*Tape Op* #65) was terrific, but too noisy to be useful, and on one other session, a Coles 4038 (#15) across the room from a drum kit sounded fantastic, but the extra gain from setting up an ADR Complex like I wanted gave the mic an ugly amount of extra hiss. I think the *Cloudlifter* would have been an ideal solution for both those situations. Overall, it’s an extremely useful tool, especially for someone with a decent collection of older, low-output microphones. I’m certainly keeping the demo unit. Cloud also makes a two-channel version, the CL-2. (CL-1 \$179 MSRP, CL-2 \$299; [www.cloudmicrophones.com](http://www.cloudmicrophones.com))

—Chris Garges, [www.chrisgarges.com](http://www.chrisgarges.com)

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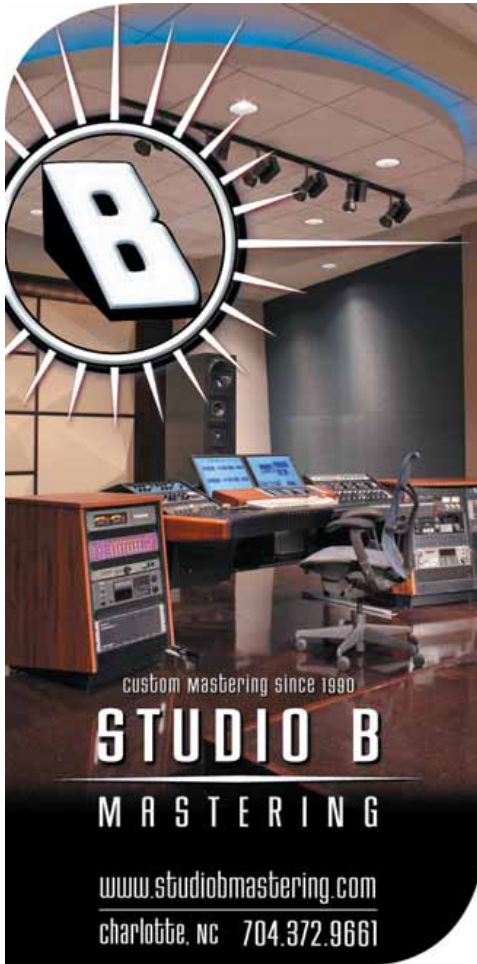
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CHRISTIAAN VIRANT AND ZHANG JIAN

*Buddha Machine FM3 "Chan Fang"*

*Buddha Machine* iPhone app

I was wandering around Rough Trade Records in London recently, when a small contraption caught my eye. Looking like a see through plastic AM radio, and the size of a pack of smokes, I recognized the "*Chan Fang*" (or *Buddha Machine FM3*) as a self-contained music player. It was a music gizmo similar to Tristan Perich's *1-Bit Symphony* (encased in a CD jewel box) that we discovered in *Tape Op* #84.

Being that I love gadgets and crazy ideas, I bought one. The unit contains a circuit board, a small speaker, an on/off volume control, a pitch control, a loop selector switch and a headphone jack. You have to supply your own pair of AA batteries. What it plays back are four meditative loops of music composed and recorded on the guqin, an ancient Chinese seven-string zither. The pitch wheel allows change in the speed of the playback for effect. I thought I would love this thing, but I feel the unit is fundamentally flawed. Much of the "marketing" around this device promotes its "12K audio quality," whatever that might mean. (It goes up to 12 kHz? It outputs at 12 kbps?) What I hear, audio-wise, is something far worse than I ever imagined.

When I was young, Radio Shack had an IC chip that you could purchase – and by simply adding a few variable resistors, audio connectors and power you could build an analog delay. I was searching for ways to add ambience to my electronic recordings and this looked like the answer. I built a wooden box, wired this chip up and installed it. But what the designers never told us was that the clock frequency for the bucket brigade analog circuit would be audible. Sure, I knew had a short, cool sounding delay – but I also could hear the clock's high frequency whine over the music. I used my homemade analog delay for years anyway, but it was a let down.

The *Buddha Machine* has this very same problem though, of course, in this case it's the clock source for the digital playback chip. The clock intrudes on this peaceful music with a very pronounced high frequency squeal; we aren't even talking in the 10 kHz range, we're talking around 4 kHz and up, depending on where you set the pitch. It's sheer pain on decent headphones, but you can even hear it on the tiny built-in speaker. What's worse is that the sound sometimes goes away (a gate?) so that it's even more apparent when it returns with the music. To top that off, I'm not so sure they even recorded the guqin very well. I swear I frequently hear distortion artifacts. With all this clocking racket, extraneous noise filtering in and out and a poorly recorded instrument track I cannot see any way this device could claim to be as meditative, contemplative or soothing as the marketing claims. Instead, the thing gives me a fucking headache.

Christiaan Virant and Zhang Jian are supposedly important musicians on the Chinese electronic scene, but if they released *albums* that sounded this poor I doubt anyone would care about their work. This could be a really cool thing with a little tweaking; an object you could set by your bed and zone out to at night, or something you could take on long flights to listen to and relax. As it stands now, all the praise being heaped on this *Buddha Machine* seems to be more for the concept than the execution and quality. Those steps are crucial in order to veer out of sheer novelty and into a blend of functionality and art.

But wait. There's also an iPhone app based on the *Buddha Machine's* physical versions 1.0 and 2.0. It plays a wider variety of loops from those earlier devices, but without the horrible clock noises of the *FM3* (though at least one of the recordings used in the loops still has a ridiculous amount of hiss). It has a sleep timer, a selector for 1.0 or 2.0 and it'll change colors when touched. But not only is it really difficult to figure out how to swipe and expose the settings screen, the *Buddha Machine* app also has no way to turn the audio off once you start it (unless you power down your phone or open up another music or video app). It's sad when you find yourself recommending a virtual recreation as being an improvement (but where's the app 3.0 upgrade?). But then again, they managed to implement at least one major flaw in the virtual world as well.

In this issue Brian Eno explained to us how it wasn't until the iPhone came about that he and Peter Chilvers found a good home for their generative music ideas. Those apps, Bloom, Trope and Air, all are easy to use, offer many options and sound great. Proof that beyond a concept and the initial work required, to actually move forward with new ways of experiencing and delivering music requires the same amount of energy invested in follow through.

(\$23, [www.fm3buddhamachine.com](http://www.fm3buddhamachine.com), [www.forcedexposure.com](http://www.forcedexposure.com), or \$.99 @ [itunes.com](http://itunes.com)) -LC

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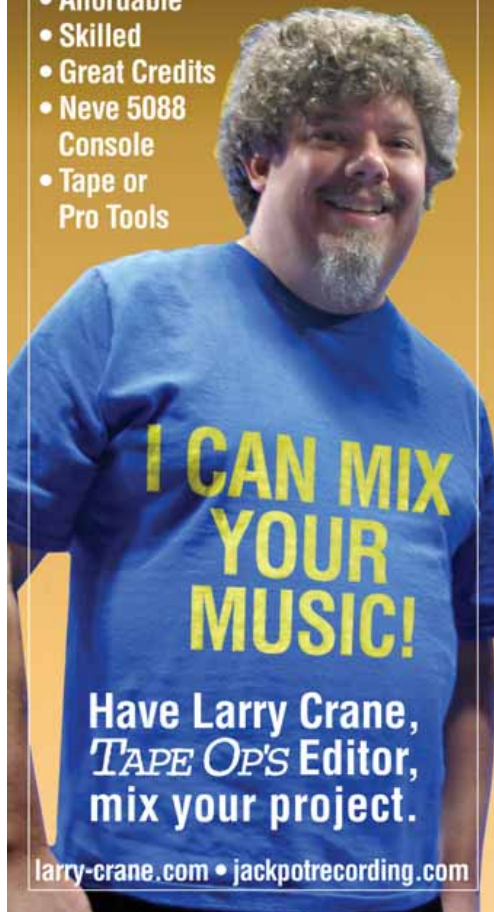


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## Massey Plugins

### *DRT Drum Replacement Tool*

Former Trillium Labs software engineer Steven Massey (*Tape Op* #68) — who worked on both TL Aggro and TL Space — now makes Pro Tools plug-ins for the rest of us. No dongles, affordably priced, no time-limit on the demos, and each plug-in is always of the highest quality, Massey has given us compression, limiting, EQ, echo, and even a de-esser plug-in. This time Massey came up with something a little bit different, an AudioSuite plug-in called *Drum Replacement Tool*. Simply put, *DRT* converts your drum tracks to MIDI for use in your favorite drum machine. People who have used the Pro Tools SoundReplacer plug-in will see a similarity in the interface, but unlike SoundReplacer, the output of *DRT* is either audio clicks (which could then be used in SoundReplacer) or MIDI code, which can be used in BFD, Battery, EZdrummer, or any other software drum machine you prefer.

To test the plug-in, I decided to generate an audio drum track using EZdrummer (*Tape Op* #61). First, I imported a MIDI track of kick drums into Pro Tools then ran the MIDI to the Pop/Rock section of EZdrummer. I ran the audio output of the kick drum to another audio track on Pro Tools, and on this track, I called up the *DRT* plug-in from the Instrument section of AudioSuite, highlighted a section of the kick track, and hit the analyze button. I took a look at the track, and using the loudness fader, moved it to the left until I found what Massey calls the “sweet spot”, a gap between true drum hits on the left and the bleeds, false double-hits, and other extraneous noises on the right. When I found that sweet spot, I boosted the velocity fader and then clicked on the button called MIDI drag-and-drop. I moved the cursor over the audio track until I saw the outline of a box around the track, and when I released the mouse button, a dialogue box came up. I made sure that New MIDI Track was selected as well as Session Start, so that the MIDI track would line up perfectly with the original audio track. I clicked okay, and a MIDI track with the code created by *DRT* appeared.

I ran the newly generated MIDI track into EZdrummer, and it worked perfectly, although there was a four-sample delay. Before that test, I never even considered there might be a delay using EZdrummer, but then four samples isn't all that much, and it's not like I'm doing a lot of technopop productions.

Having just re-read what I've written so far, the explanation of what I did seems much more complicated than the actual process. Fortunately, there's a quick-start guide and an instructional video at the Massey website to guide you. In actual practice, you wouldn't start with MIDI-generated audio anyway, you'd start with a snare track you wanted to clean up, or a kick drum track where you liked the feel but didn't particularly like the sound. For my purposes, I used to record myself banging on a kitchen pan to record snare tracks, and then replace the pan sound with a real snare using SoundReplacer. I can use *DRT* the same way, but it's much easier to use than SoundReplacer and much more flexible.

As it always goes with Massey plug-ins, the demo version gives you a lot of functionality for free, but there are some key functions I really like in the paid version. In the demo version, the MIDI is generated at C3, but you can change that to C1 or any other configuration in the paid version. EZdrummer likes C1, so I made the change in *DRT* just to simplify things, as you can always transpose manually afterward. Another feature I really like in the paid version is the ability to add and delete triggers for drum beats. You can also modify the velocity and position of the triggers as well. Finally, the entire Learn section of *DRT* only comes in the paid version. In this section, *DRT* learns the drumbeat you want to keep and the plug-in finds all similar beats on the track. This is especially handy if you have nothing to work with but a stereo drum track. You can separate the snare, the kick, and the cymbals so they all appear on separate tracks. Nice.

Like any pro-audio device I try, there were a couple of things I'd like to see improved. Although you can change the plug-in to output from, for example, C3 to C1, it will default back to C3 every time you use the plug-in. It would be nicer to be able to make that change permanent, since EZdrummer only works correctly on C1. In an email I received just as I was finishing this review, Massey's Todd Hodges said this bug was being addressed and a fix would be available shortly. Also, I thought the drag-and-drop function was a little bit tricky. Fortunately, there's an alternate method to create the MIDI track. Just click on the MIDI drag-and-drop button and a MIDI file of the *DRT*-modified track will appear. You can then drag that file into any open MIDI track on Pro Tools.

One more thing about *DRT* and all Massey plug-ins — you have to be a Pro Tools user to use them. There are no VST or AU versions, and there are no plans to make them in the near or distant future. But if you are a Pro Tools user, you definitely want *DRT* and all the other Massey plug-ins in your arsenal, as the quality's high and the price is right. (\$69 direct; [www.masseyplugins.com](http://www.masseyplugins.com))

—Mike Jasper <[mike@deceptivesound.com](mailto:mike@deceptivesound.com)>

## Splicit

### *Pro Audio Splicing Tape*

I've been using that same crap splicing tape that most everyone uses. You know, that thin white stuff that holds better to skin than tape. I found a much better solution sold by Splicit. It's made of strong acrylic polyester. The pressure-sensitive coating grabs just enough when you're getting set and then holds well once you need to commit the join. It's also reasonably forgiving should you need to lift it and start over. The roll I received was 82 ft long and was a fluorescent blue color, which is easy to see in low-light situations. Splicit also makes 1/2" tape, but I couldn't find any for 1" or 2" at this time. Check it out. (1/4" \$7.99 direct, 1/2" \$12.99; [www.splicit.com](http://www.splicit.com))

—Garrett Haines, [www.treelady.com](http://www.treelady.com)

## SE Electronics

### *RNR1 active ribbon mic*

SE Electronics has been busy building a loyal fan-base for their wide range of microphones, and they recently teamed up with Rupert Neve to design some new microphones for SE's lineup. The SE *RNR1* active ribbon mic emerged as the first effort, where Mr. Neve brought his knowledge of transformers and circuit board design to the table and helped create a new standard in ribbon mic performance. Engineers love ribbons because their inherent design produces a smooth, natural, and flattering tone. However, there are some shortcomings of traditional ribbon mics, including self-noise, limited high-frequency response, and sensitivity to mic preamp impedance loading, which affects the overall color of the sound. By incorporating an internal amplifier circuit and high-quality output transformer, the microphone designer can vastly improve self-noise, frequency response, and output level as well as control output impedance loading of the microphone. Additionally, while the typical ribbon mic has a useable frequency response that is 5–10 dB down at 15 kHz, the *RNR1* has an almost-flat frequency response that extends to 25 kHz with very low self-noise. These specs rival those of the best mics, regardless of the type of mic.

Cosmetically, the *RNR1* looks about as different from any mic as you've seen. It's about 9" long, made of black metal and rubber with a silver screen, and sits in a futuristic-looking shockmount. The powerful looking mic feels heavy and well-built, with the SE logo and Rupert Neve's signature decorating the front of the body. The only switch on the mic is for bass roll-off. The units I received were packaged in an aluminum briefcase which contained a very nice wooden box for the mic and the shockmount. The entire package feels very expensive and classy.

I'm personally a big fan of ribbon mics for percussion, overheads, piano, upright bass, and sometimes acoustic guitar; and over the past few weeks, I've used the *RNR1* on all of these — and more. During use, my first impression was that the output of this mic is hot! So hot, in fact, that I had to use an inline 15 dB pad for almost all of the sources that I recorded. The preamps I used included API 512, Neve 1073LB (*Tape Op* #82), Great River MP-500N, and Manley Slam — and every preamp needed the external pad. Maybe SE could include a built-in pad in a future version. For my first session, I mic'd an upright bass with my usual mic placement, about a foot away and just above the f-hole on the player's left side, and I also took a DI from the bass for punch and brightness. For this recording of a pop song with orchestra, the *RNR1* gave me the best double-bass sound I have ever recorded. I didn't even need the DI since the mic gave me a full, present tone with tons of natural low end and plenty of clarity. Next up was a three-piece horn section, and I placed a pair of *RNR1*s in front of trumpet and tenor sax. The sax player heard his tone and immediately asked where he could get the mic for his home studio. On trumpet, the ribbon sounded much more natural and pleasant than the large-diaphragm tube condenser that I would typically use. To me, if an instrument track takes EQ well, it says a lot for the quality of the mic — and I could add all the air that I wanted with EQ, and the horn's tone never got harsh or pinched. Later in the day, I recorded congas, udu, hand percussion, and cymbals with the *RNR1* pair in near-coincident arrangement (but not quite Blumlein arrangement) and everything sounded great. I could easily add bite to the congas with a little EQ, and the metal percussion sounded very three-dimensional and lifelike. Steel-string acoustic guitar also sounded great through the *RNR1*. Alongside a small-diaphragm condenser that I usually use, the *RNR1* had a similar presence, without the harsh bite. I could easily use the *RNR1* recording of the guitar in a dense pop mix without having to carve out more body than I normally would. In general, I feel that the neutral and extended frequency response of the *RNR1* allowed me to process the sounds with EQ and compression with fewer artifacts, and even the unprocessed tones fit most productions very well.

Many contemporary ribbon mics aim to compete with bright, modern condensers, while vintage ribbons are revered for their warm, natural tones. The SE *RNR1* bridges this gap well, providing a natural tone that retains an open top end and great clarity. If you are in the market for a ribbon mic or just a fantastic all-purpose mic with a unique flavor, check out the SE Electronics *RNR1*. (\$1995 street; [www.seelectronics.com](http://www.seelectronics.com))

—Adam Kagan <[adamkagan@mac.com](mailto:adamkagan@mac.com)>

# My Unwritten (Until Now) "Rules" in the Studio → by Larry Crane

During a recording session, there are many small details that can subtly derail the ideal flow of the work at hand. Outside of the technical end of capturing music, I think we all bring other habits or routines with us that define who we are while in the studio. These are things we might not consciously know that we do. Below are my quirky little behaviors. If these are self-imposed rules, then I'm sure I bend a few of them occasionally. But remember: these describe *my* actions only. I am not asking anyone else to abide by them; nor am I criticizing others that have differing practices. That would be foolish. Rules are for jerks.

***I don't play music by other artists that might possibly be inappropriate in some way.***

***I never wear band t-shirts.***

I'm here to record the client. I am wary of coming off as if I prefer some other artist, or style of music, and don't wish to be working on what's happening right now. If discussions lead towards outside music like, "Hey, how did the strings on that Carly Simon song go?" then, by all means, I'll pull up a track and listen. Otherwise I won't subject clients to what they may perceive as my preferred taste (or your intern's bad taste) and possibly alienate a client. But when I know my clients well, playing music we all enjoy can be a great way to unwind, get perspective and talk about new recording ideas. On one session we even played that first Chickenfoot album over and over for comedic relief. (*Apologies to Chickenfoot producer Andy Johns, Tape Op #39.*)

***I don't talk trash on other artists I have worked with.***

It's pretty obvious, but if you're telling your client how crummy yesterday's session was, they'll probably be thinking that you'll be telling tomorrow's client how crappy they were. Maintaining and building trust in the studio is important.

***Make coffee.***

I have to explain that for many years I was the odd-man-out engineer who didn't smoke or drink coffee. I still don't smoke (though I envy those smoke breaks that others always seem to get) but I did begin drinking coffee in my forties. I'll make a pot and have that ready before the client comes in. After I ascertain whether or not my clients drink coffee, I then remember their preference. That way I don't keep offering it if it's not needed. I make sure that we have coffee and brewing equipment on hand (thanks to Stumptown Coffee for hooking us up) and I never demand break times to "go get coffee." If the client wishes to do so, and wants to pick me up a cappuccino, that's fine. But it shouldn't be *me* asking!

***Bring my own food.***

Here's a similar situation. If you haven't worked out specific meal breaks, then bring something you can eat while punching in. Sandwiches, canned soups, nuts, fruit, salads or leftovers work well. On day one of a longer session I bring in extra snacks and set them out for the band/artist. This can create a great situation where we all start bringing in things to munch on. There ain't nothing better than two weeks of sampling gourmet potato chips.

***Never discuss money or rates during the session.***

I hammer this stuff out in advance, usually via emails (which I save in a folder, just in case). It should be made clear well in advance. By the end of the day/session/album the client should know how much to make the check out for without even seeing an invoice. Any other scenario invites disaster, especially if disputes arise *during* the session. Think about it: clients can easily be paying a dollar a minute or more. I don't want any grey areas about billing or money.

***During sessions I won't drink alcohol (or do anything else similar).***

On my first paying visit to a studio I watched in horror as the man recording us drank bottle after bottle of cheap wine coolers. I'd already noticed the mirror and razor blade under the console. (This *was* the mid-'80s.) When he repeatedly recorded my backing vocals and then couldn't find them during playback, I knew he was getting a good buzz on. I don't *ever* want to be that guy. I heard a great story once about a recording session that was paid for with sheets of acid. Turned out it was impossible to mix, as instruments randomly popped up on tracks, in no apparent order. I don't want to be that engineer either. I love beer, especially microbrews. In 18 years, I can count on one hand the number of times I've had a beer while "on the job." Beer can be my reward after a long day in the studio, and I keep it that way.

***I bike or walk to the studio if possible.***

Nothing like clearing my head by walking to work. A swift bike ride can also be nice. Both get my heart pumping and my lungs moving. I don't overdo it and show up sweaty and smelly. No one wants that. I fondly remember a session in Montreal at Hotel2Tango (*Tape Op #47*) where I would visit one of the two "competing" bagel shops on my walk to the studio every day. Not only did I get fed; but the lively discussion of which shop was better made for a good time.

***Limiting personal communications.***

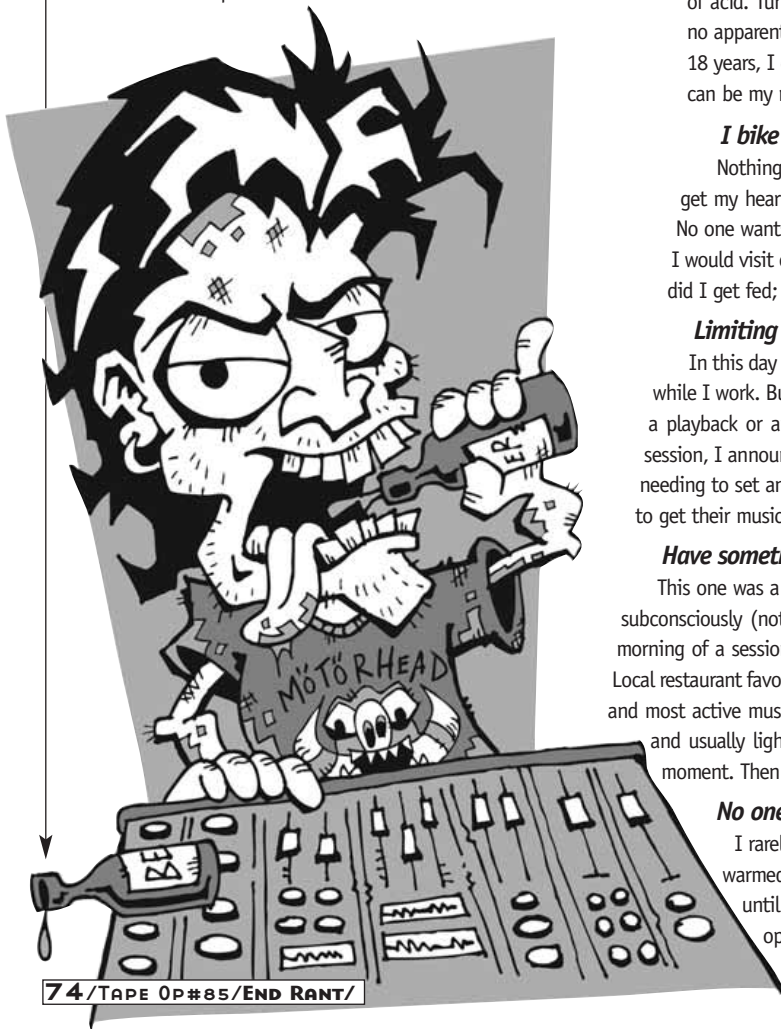
In this day of texting, cell phones and email it's pretty hard to shut everything down for 10 hours while I work. But it's also rude as hell to think I can pick up the phone any time it rings, text during a playback or answer emails during a take. If urgent communication might be needed during the session, I announce that at the start of the day. Everyone is sympathetic in dealing with real life (like needing to set an appointment time with a plumber for a situation at home), but they are also trying to get their music recorded and mixed.

***Have something to talk about other than music.***

This one was a difficult discovery, but through years of self-analysis I figured myself out. I seem to subconsciously (not any more, I guess) set aside topics for discussion, either the night before or the morning of a session. Movies are fun to talk about, and I regularly watch a few during a normal week. Local restaurant favorites are also a great topic, and might inspire a visit later. Everyone loves travel stories and most active musicians have a few. I never thought about it, but these conversations always pop up and usually lighten the mood while inspiring people to think about things outside of music for a moment. Then it's back to overdubs!

***No one should ever be waiting on me.***

I rarely show up late, and I prefer a good extra half hour or full hour, in order to get gear warmed up, get the coffee on, check emails and clean the dishes. I'll wait to use the restroom until someone begins tuning or there's a playback happening that I already have a firm opinion on. And I'm now hyper aware of Daylight Saving Time. That shit really messed me up once. ☹



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