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Style-Juggling Diva Overcomes "Demo Love"

Dillinger Escape Plan's Atypical Metal Methods

Pat Metheny's Synchronized Robot Orchestra

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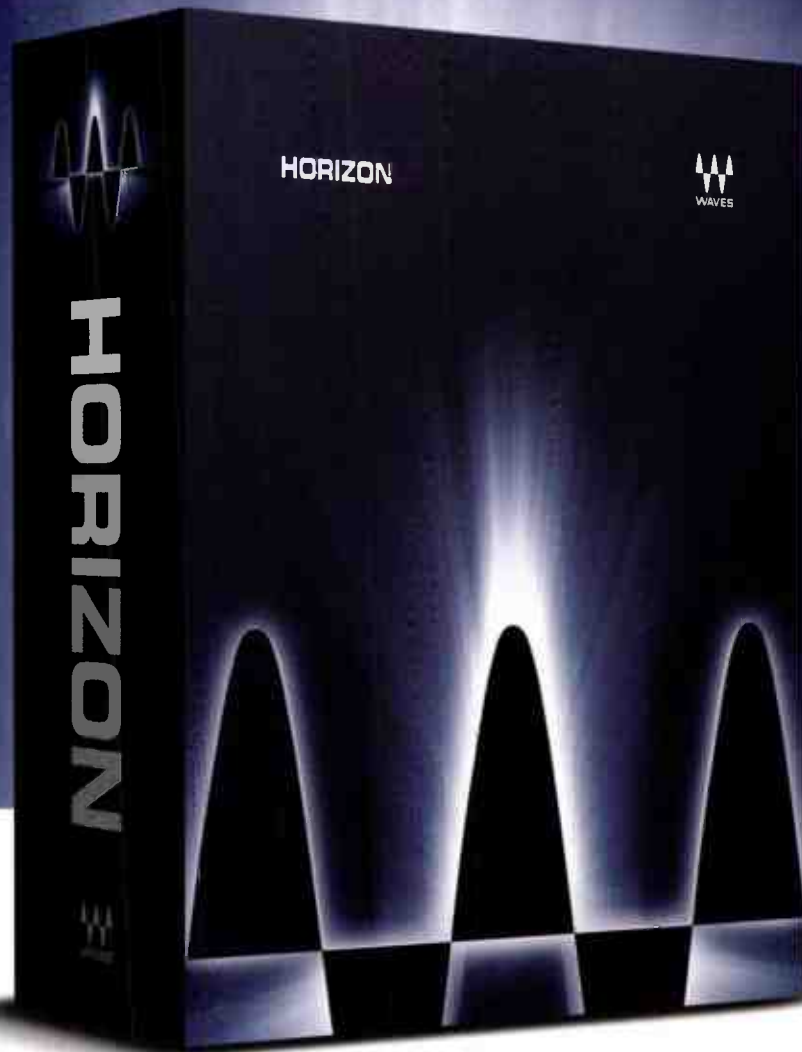
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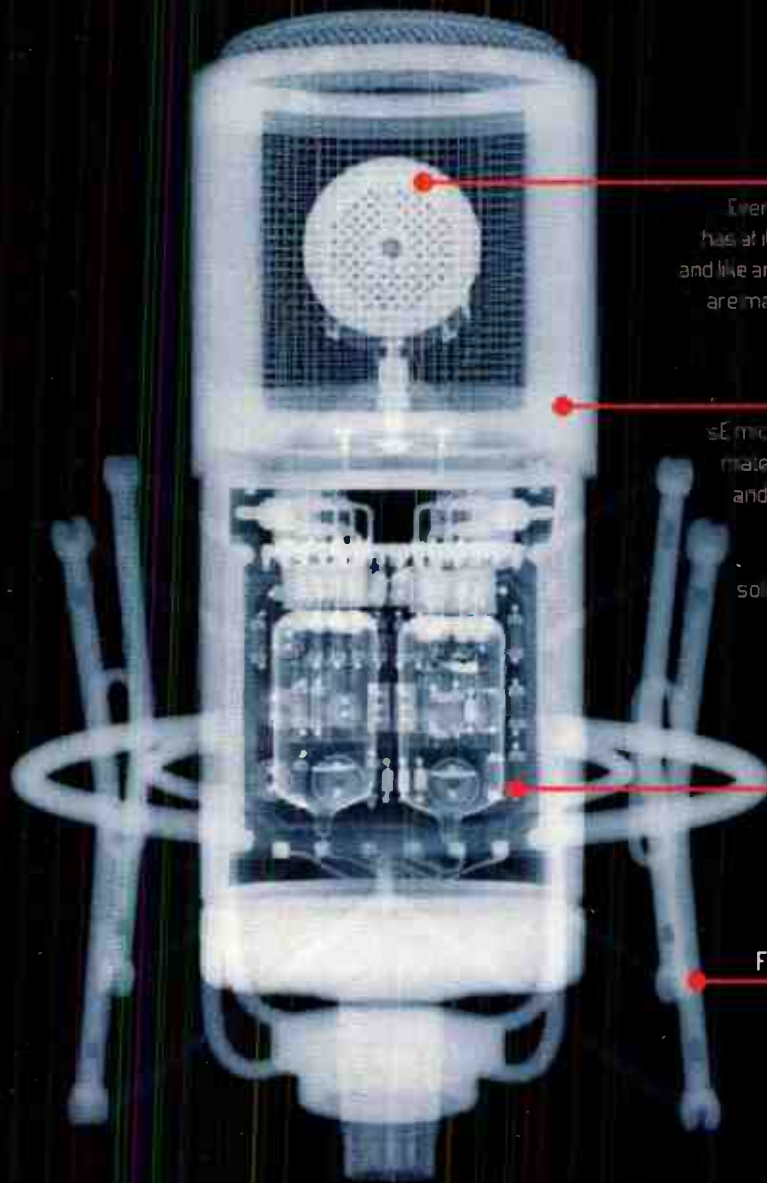
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# APRIL 10

# CONTENTS



## FEATURES

- 18 ERYKAH BADU**  
For her fifth album, Erykah Badu discovered new ways to twist old samples and learned how to overcome her “demo love.” Badu and some of her studio crew—Mike Chavarria, Tom Soares, James Poyser, and Chris Bell—discuss the making of *New Amerykah Part Two: Return of the Ankh*.
- 28 DILLINGER ESCAPE PLAN**  
While many metal bands tune down their guitars to conjure up a death-throttling, heavy sound, Dillinger Escape Plan finds alternative methods to create their mathcore tracks. The guys talk about the process behind their latest, *Option Paralysis*.

## PUNCH IN

- 8 PAT METHENY**  
**10 JÓNSI**  
**12 BOMB THE BASS**  
**14 MIDLAKE**

## TECHNIQUES

- 34 GUITAR**  
The Frampton Method
- 36 BASS**  
Bring on the Funk!
- 38 KEYBOARDS**  
Managing Gain Stages
- 40 DRUMS**  
Exploring Space
- 42 VOCALS**  
Crafting the Magic of the Beach Boys
- 44 MIXING**  
5 Reasons Why Your Mix is Crap
- 46 TRACKING**  
Four Ways to Survive a Double Bass Session

## GEARHEAD

- 52 PROJECT MASTERING MASTER CLASS** Take your mixes to the next level with expert mastering techniques—and practical examples for programs from Steinberg, Sony, BIAS, Cakewalk, Waves, Har-Bal, Adobe, iZotope, Magix, and more!
- 62 SOUNDS** Sony *Continental Drift*, Loop Workshop Various Drum Loop Packages, Ueberschall *Pure Fire*

## POWER APP ALLEY

- 48 WINDOWS XP DRIVER INSTALLATION**  
**50 ABLETON LIVE 8**

## DEPARTMENTS

- 6 TALK BOX** The True Power of Music  
**16 TOOLBOX**  
**66 ROOM WITH A VU** Mayfield Mastering

Cover photo by **Marc Baptiste**



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## THE TRUE POWER OF MUSIC

Having lived almost directly on the epicenter of a 5.8 earthquake, I have at least a very tiny idea of what happened in Haiti last January. Fortunately, by being so close to the epicenter, everything basically went up and down instead of shearing sideways; I'll never forget my TEAC 3340 recorder flying up about six inches in the air, then landing back down on the table where it sat. And the house, being wood, stretched, flexed, and survived.

But a quake of that magnitude is equivalent to a bit less than 1 megaton of TNT, while the quake that rocked Haiti translated to 32 megatons of TNT. The pictures of devastation, the tales of tragedy and heroism, and the loss of life was mind-boggling to try and assimilate. And it's not like Haiti had the infrastructure, even in the best of times, to cope with a disaster of that magnitude—few countries could.

Help arrived slowly at first, but picked up momentum. To tap the American public for assistance, George Clooney spearheaded a prime time TV special called "Hope for Haiti." And what was the main focus of this attempt to get people involved?

### Music.

Yes, music. Sure, actors participated too; but they were answering phones rather than re-enacting popular bits from plays or movies. The show was not about famous writers reading their heartfelt thoughts about the tragedy, religious leaders talking about the need for charity, and it certainly wasn't about politicians making speeches: It was up to *musicians* to attract the public, hold their attention, and ultimately, inspire them to lend their support to a most unlucky nation.

When Sting sang "Driven to Tears," it made perfect sense. That cut from *Zenyatta Mondatta*, released 30 years ago (!), re-surfaced in a context that was chillingly relevant. When the chips were down, it was music that provided the backdrop for people to donate over \$65,000,000 to the cause of Haitian relief.

Once again, music proved itself as a compelling force that could unite us all in a universal language. Music has incredible power, and as musicians, we have quite a history of inspiring, entertaining, and comforting our fellow travelers on this small and fragile planet.

If you're a musician, wear that title proudly—and whenever you can, use the power of music to make the world we share just a little bit better.

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# ZOOM

# PUNCH INH

## NUMBER 5 S ALIVE

### Pat Metheny Plays Well With Robots in the Studio for *Orchestrion*

BY KEN MICALLEF

At a recent demo for Pat Metheny's *Orchestrion* project, the multiple Grammy Awards-winning guitarist and jazz icon stood before a small orchestra of acoustic instruments, but without the musicians who would normally accompany them. As Metheny played his Ibanez PM120 guitar, the orchestra—drums, cymbals, other guitars, percussion, vibraphone, marimba, piano, tuned bottles, and "guitar bots" (guitar-like instruments that resemble rubber bands stretched over skateboards)—played complementary parts to his flowing melodies. Like magic, these solenoid and pneumatic driven robots performed complex accompaniment created from Metheny's love of jazz, cross rhythms, global music, and textural sound pieces. If you closed your eyes you could see an entire orchestra performing; open your eyes and *poof!*—no one's there.

The advanced man/machine technology used in Metheny's *Orchestrion* [Nonesuch] relies on the work of Eric Singer and LEMUR (the League of Electronic Musical Urban Robots), as well as Metheny's mastery of MOTU's Digital Performer, Digidesign Pro Tools, Ableton Live, and Sibelius.

"Digital Performer is the champ of all MIDI platforms," Metheny states from New York. "DP is the most musical and the most locked rhythmically, which is a huge thing for me. This project has very specific tech requirements, which are about the internal timing of how a platform works. DP was the first to do sample accurate MIDI. That figures heavily into this."

Metheny references earlier attempts at self-playing instruments, such as Yamaha's Disklavier, then cites pioneers like Conlon Nancarrow and George Antheil, who advanced the art of mechanically coupled instrumentation and composition. Metheny brings



Pat Metheny.

their work into the 21st Century.

"Triggering MIDI events from a guitar has been a challenging engineering problem for 30 years," Metheny explains. "The key to that for me is a box made by TerraTec Electronics, the Axon AX 50 USB. It's the fastest and most accurate guitar-to-MIDI box ever. Yet, there is a certain latency that happens from the time the string is plucked to when [you hear the sound]. The Axon could trigger samples, but this goes a step further. It's triggering an actual instrument. How the instrument responds is another thing."

"Different inventors do this in different ways," he continues. "Some use solenoids or pneumatics





or air-based valves that are given an instruction to close or open at a very fast rate. LEMUR's Eric Singer cracked this whole issue of MIDI to control voltage, which allowed the control voltage to respond dynamically. That's a huge thing for me in this project. Once Eric had dynamics in the discussion, I knew I could pull the trigger for *Orchestration*."

Metheny recorded *Orchestration* at New York's MSR Studios North, Studio B, on a Euphonix System 5-MC console. But as most of the record was written and mapped out at Metheny's apartment (where he squeezed all the instruments into one room), the sessions were more about documentation than creation.

"It didn't matter which instrument was recorded first," he says. "I went into MSR with the record basically done [in Digital Performer]. Essentially, we were acoustically treating it in the studio and recording to Pro Tools. We had to uncover the best audio result of what that is. We could have recorded guitar first, or bass drum first, or the whole thing first 'cause it didn't matter."

If you're a musician, you have to wonder how it feels to play with a band of robots. And if Metheny can do it, can you do it, too?

"It's almost identical to what it feels like when you do an overdub," Metheny explains. "It's me playing with something that I've already

played. So it's like live overdubbing. And any kind of overdubbing environment is challenging.

"People ask, 'Can I do this?'" he adds. "Sure they can. It's just that this tapped into a bunch of real specific skill sets that I've spent most of my life working on. I've been dealing with knobs and wires from day one, I've lived through the computer music connection deeply. And at the same time I've done many records and many overdubs. To do this you'd have to be able to do all those things. And you can. And it will sound different." **EQ**

**To see Metheny's robot orchestra in action, watch video at [www.patmetheny.com](http://www.patmetheny.com).**



Jónsi.

## SURPRISE BY DESIGN

**Sigur Rós' Jónsi** Creates a Pure-Sounding Acoustic Album—With a Twist

BY KYLEE SWENSON

Although he started writing songs simply—a vocal accompanied by guitar, piano, or harmonium—Sigur Rós frontman Jón “Jónsi” Thor Birgisson and his collaborators stirred up a storm of

creativity for his gorgeously complex solo album, *Go*.

At home in Iceland, Jónsi and his producer boyfriend Alex Somers initially thought *Go* [XL] would be an acoustic record. And technically, it is. There's only one electric guitar on the whole album,

and there are no synths at all. But things got interesting once New York composer Nico Muhly (a Philip Glass protégé who's worked with Björk and Antony & the Johnsons), Finnish percussionist Samuli Kosminen, and Connecticut-based producer Peter Katis

(The National, Interpol) got involved.

It started with a demo of the dirge-like "Koinidur." Muhly put the track in Logic, routed instrument sounds to various channels, and tried out ideas on a MIDI controller. "It was super-fun," Jónsi says. "He's so hyperactive and spontaneous and such a hard worker, and I'm like that in some ways, so we fit really well together. He wrote five arrangements in one night."

From there, Jónsi and friends moved on to Katis' Tarquin Studios in Connecticut, and the album was built up with celeste, glockenspiel, harp, kalimba, strings, woodwinds, brass, and various drum and percussion instruments.

Katis used a pair of Telefunken ELA M 260s regularly throughout the process. For acoustic guitar, he'd use one close up and in cardioid, and one six to eight feet away in omni. For the string sextet, Katis used Coles 4038s or RCA 44DXs as close mics, two M 260s at medium distance, a Brauner Valvet in one far corner, and an AKG C 414 in another corner. But he ended up not using the close mics. "To me, the sound of strings are strings in a room," Katis says.

The strings were recorded in one day through Gordon preamps, without compression. "It's not the kind of thing that we could redo if we had to, so most of the manipulating of the strings came after the fact," Katis says.

On opener "Go Do," Katis ran strings through a Thermionic Culture Culture Vulture distortion unit for an extreme effect. "There are times definitely where we thought, 'This song needs to be a little more interesting,' and we would start hacking the arrangements, distorting them, flipping them around, and everything that you can think of just to make the song a little more dynamic," he says.

Katis then spent a day recording woodwinds, a day for brass, and a day for flute, miking each of the instruments from three to six feet away.

Meanwhile, Kosminen played an ever-evolving, unusual drum setup. "It wasn't a proper drum kit," Katis says. "He'd just put different drums on the floor and percussion pieces, even things like his suitcase, which he stomped on to get a really interesting sound."

"Samuli's the coolest drummer ever in the whole world, easily," Somers says. "He just plays on random things, like four bass drums and one floor tom.

And he tapes little objects to drums. He showed up with a huge suitcase with random noisemakers—little rusty toys like cranks and shakers. The middle of the drum will be one sound, and then he has the toys going around the perimeter. So he has, like, 50 sounds, whereas most drummers have five."

For the explosive, trashy-sounding drumbeat on "Animal Arithmetic," Katis miked Kosminen's setup with M 260s set far apart and routed through different preamps and compressors (including a Chandler TG Channel and Urei 1176). Then a Thermionic Culture Rooster—which is "nice for manipulating stuff in a more discreet way, where you can overdrive it but not destroy it," Katis says—was used on both signals.

Jónsi's main vocal chain was a Neumann U 47 (although an AEA R84 ribbon mic was used on "Koinidur") through a Universal LA-610 preamp and a Chandler TG1 set to Limit mode. "When we bought [the TG1], Peter Katis recommended that we put it on Limit and set the Recovery to 1," Somers says. "It just sounds way better there than anywhere else, like, a 100 percent of the time."

In the two-month break between recording and mixing *Go*, there was more sonic experimentation Jónsi and Somers wanted to do. "I think this album became way poppier than anyone planned because so many people were putting their twist on it," Somers admits. "So I think it was really important

to keep it sounding dirty and never too polished."

Somers re-sampled piano parts, backing vocals, and even whole mixes using a Neumann CMV 563 or U 47 into Logic's ESX24 sampler, but he also used more lo-fi means, with an 8-bit Yamaha VSS-30 sampler. "It's such a creative tool because it narrows down your focus," he says. "The sample time is only a few seconds, so you get these little blips. And what you can do with that is so surprising. You can U-Turn it, put some fuzz on it, or turn the attack way up for a nice, slow attack. So you'd never know what the sound was [originally]."

Aside from re-sampling and manipulating sounds (Somers slowed and pitched down "Hengilis" by two whole steps, for example), Jónsi and Somers found other ways to rough up the music. "It was just playing around with different effects, like Sugar Bytes Effectrix," Jónsi says. "It's a playful plug-in, so you can f\*\*k things up badly with different filters and different grain sizes, but still keep the right timing."

In the end, Katis liked the balance of pristine and dirty sounds. "If we had just left this record completely unmanipulated and kept it an acoustic record as it was recorded, it would still be pretty awesome," Katis says. "But Jónsi really wanted to never be bored with it, and that's why there was an anything-goes approach. The more crazy the setup, the crazier it sounded, the more exciting it was." 🎧



Peter Katis (left) with Jónsi. See behind-the-scenes video from the sessions at [www.jonsi.com](http://www.jonsi.com).

# CIRCUIT BUILDING

## Bomb the Bass Evades Clinical Sounds With Hand-Built Synths and Analog Mods

BY KYLEE SWENSON

Dance-music producer Tim Simenon has been producing music as Bomb the Bass since the late '80s, but when the new millennium arrived, he was ready for a break. After releasing *Clear* in 1995, Bomb the Bass was mostly dormant until 2008's *Future Chaos*.

In between, he remixed and produced other groups, including David Bowie, Depeche Mode, and U2. But after shelving the unfinished *Future Chaos* for years, he finally decided to get it done. "The fact that *Future Chaos* was never finished was always a dark cloud over my head," Simenon admits. "I just needed to clear my head and get a life outside of making music because I'd spent 10 to 12 years just before that living in the studio."

The break did him good. After *Future Chaos*, his re-inspired musical state spilled into creating his latest album, *Back to Light* [!K7], and he flew from Amsterdam to São Paulo to work with techno producer Gui Boratto.

In São Paulo, Boratto played bass guitar (later replacing parts with Moog synth bass) over Simenon's sampling collages. Then they played synths—a Roland MC-202 and SH-09, Moog Little Phatty, and Arturia Moog Modular V and Logic ES1 synth plug-ins—and then they'd remove most of the original samples.

A drummer named Cuca recorded live drums for "some of the more ambient stuff sitting behind the programmed drums," Simenon says, and to give a dynamic lift to the choruses. Simenon then took the live drum parts from Pro Tools, created loops, and

tuned them to the electronic drums in Ableton Live.

Phase two of the album was completed in Amsterdam with co-producer Paul Conboy, who also sang on four tracks. The other singers—Kelley Polar, Richard Davis, and The Battle of Land and Sea—recorded vocals in their own studios. But when Simenon and Conboy received their tracks, they realized there were more changes to be made to the music.

"The backing tracks would always need reworking so that they matched the quality of what the singers delivered," Simenon says. "Normally, what they'd send back would sound so good that the backing tracks would sound tame compared to what they just added to it."

"Blindspot," for example, went through multiple changes. "The vocal line Paul had in the verses was just killer, but the backing tracks always sounded dodgy," Simenon says. "Paul and I spent a couple weeks looping the verse parts and playing around with different bass lines until we came up with something that felt comfortable against what he was singing."

Then they pushed the sounds to the next level. "When we got to a point where we knew what the essence of a track was, we'd re-record plug-in MIDI parts using my handmade modular synth, a Roland MC-202, Moog Little Phatty, and the Minimoog," Conboy says. "I hate plug-in synths. They all sound rubbish really—no character and usually a horrible response control-wise. I don't mind using a few plug-in effects on stuff, but all the virtual synths are just toys."




Tim Simenon

Conboy built his modular synth using the Moog Modular format of a 5U panel. "The process is fairly complicated, but I built it all from scratch," he says. "I first built a Synthacon VCF and a Polivoks VCF, then two oscillators based loosely on the Moog, then a bunch of VCAs and envelope generators. It's constantly evolving really and will one day fill my entire house!"

His vocal-recording process is simpler: He sings through an Oktava Mk-219, into a Neve-designed Amek Pure Path Channel in a Box, and into a Digidesign Mbox. "The Amek is the best investment I ever made—really good quality EQ, compressor, and preamp." Later, some vocals would get extreme EQ treatment in Logic, with low-end cuts to thin out the vocals. And backing vocals were often hard-panned.

Phase three of the album was at mixing engineer Fopper's studio, where they broke down the stems to eight channels and ran them through an old 1974 Polygram mixing desk. They also got rid of all the reverb plug-ins in Logic and replaced them with an AKG spring reverb.

Finally, Simenon and Fopper bussed the entire mix through a modified EQ that Fopper had built from a Siemens cinema amp, driving it for a harsh sound, and then running it at low volume underneath the regular mix. "So we had this really noisy stereo mix of the eight tracks just underneath the eight tracks," Simenon says. "It gave it a nice bit of air around the whole mix. If you muted it, the tracks sounded skeletal, and when you pushed it back in, the whole track just sounded like it jelled really nicely." 

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Midlake (left to right)—Tim Smith, Paul Alexander, Eric Pulido, McKenzie Smith, and Eric Nicholson.

# AMERICAN PASTORAL

Digital Recording Tools Helped **Midlake** Record Airy Folk Jams

BY PATRICK SISSON

The music of Denton, Texas, band Midlake sounds labored over in the best possible way, an artful, sepia-toned style of folk rock exuding the craftsmanship of a handwritten manuscript. But the band's airy, languid delivery masks the precise arrangements and extensive effort expended during composition and recording. Making *The Courage of Others* [Bella Union], the follow-up to the band's 2006 breakthrough *The Trials of Van Occupanther*, took more than a year

and a half, including a side trip to the Sand Hill Farm in Buffalo, Texas, to shake up recording sessions after frustration had metastasized.

"The studio was getting quite dark, and there were bad vibes in there from so many failures every day," admits frontman Tim Smith. "It felt like we needed to get away."

The work done on that farm set the stage for final recording at the group's small hometown studio in Denton. British folk music like Pentangle and Fairport Convention and the guitar tones on American singer-songwriter

Jimmie Spheeris' debut album *Isle of View*, seeped into the new songs, according to Smith. The bulk of the album was tracked as the band played together—as opposed to overdub-heavy *Van Occupanther*—with the drummer in the main room and other members performing in the control and storage rooms. On "Rulers, Ruling All Things," a subtle bass thump, winsome drums, and guitar and flute melodies are as intertwined as a Celtic knot. But it wasn't recorded with the kind of acoustic and vintage equipment one might expect.

"You probably would think we use a lot of analog gear, but we don't," Smith says. "We used a RADAR V [digital recording system] and an old Soundcraft board from the '90s." RADAR's simple interface and distraction-free technology impressed Smith, who went so far as to tape the cover of a *Peter and the Wolf* record over the monitor screen when they were tracking *Van Occupanther*. "I really hate looking at a screen of colored waves of sound," he says. "You're expecting to hear something because you see the wave coming up and it's very distracting."

The band's digital gear (they use Logic and Cubase for mixing) and the slightly gothic tinge on many of the album's tracks doesn't mean the music sounds cold. Midlake utilizes an Empirical Labs EL7 Fatso, a compressor that adds high-end harmonics to recreate tape-like warmth. They'd often run the overhead drum mics and Smith's vocals through the Fatso to slightly amp up the bass during mixing.

The band normally used a Martin D-16 GT acoustic guitar and found the Neumann U 87 sounded better for recording picking instead of strumming, so they pinned the mic to the 12th fret. "We didn't really use a lot of compression," Smith says. "With the acoustic guitars, we just went direct to the board, and those preamps sounded fine."


Meanwhile, the Fender Jazz bass was altered with a little foam or denim placed by the back bridge to muffle the sound (as heard in the rich thump of "Acts of Man"). "It gets more of a plucky sound," Smith says. "We were really inspired by that early '70s bass sound. I always like that Höfner hollow bass sound, really woody-sounding bass."

Smith also fretted a lot over his vocals, settling on an AKG C 414 and usually standing back about seven inches while singing. Smith feels the 414 flattens out his voice and accentuates the mid-range. He swapped in a U 87 occasionally to get a more canny sound.

"I've never been a big fan of my

voice," he says. "It always takes me a long time. I always record alone and there are punch-ins all over the place. It may take me a day for a song. Finding the right mic is tough. People blame it on the mic, but man, it's my voice."

The band was its own harshest critic, constantly re-recording and evaluating because they believed they needed to get the right sound during tracking. And their recording techniques evolved as they went. They only used three mics for the drums on "Acts of Man," the first song recorded on *Courage of Others*, but by the end of the sessions, they were using up to seven, including an AKG for the snare, a Beyerdynamic Opus for the bass, and a Soundelux U99 room mic.

"If it's lacking energy, you can't wait for mixing," Smith says. "It's going to sound stale. In the future, I want to do more of the live type of recording with less overdubs, more like the old-school bands. Go back and listen to records like Grateful Dead's *Anthem of the Sun*. Music like that sounds so good, so different from today." 

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# TOOLBOX

by Mike Rozkin

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**Price** \$499

**Web** [www.abluesky.com](http://www.abluesky.com)

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**What** 40kHz high definition microphone

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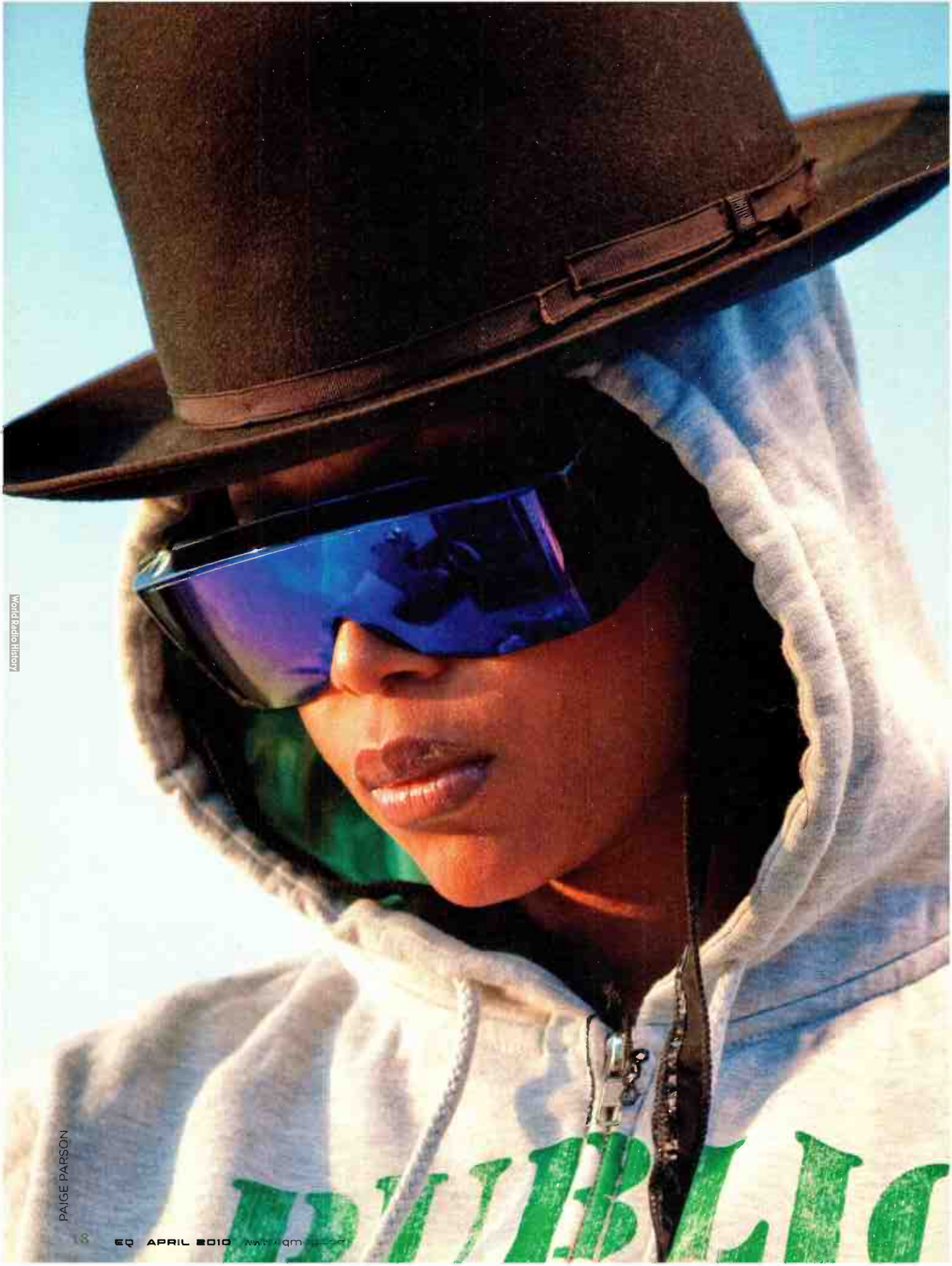
**What** Multi-channel mic pre with dynamics

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**Price** TBD

**Web** [www.focusrite.com](http://www.focusrite.com)



World Radio History

PAIGE PARSON

# MAMA'S (STILL) GOT A WARM GUN

An “analog girl in a digital world,” Erykah Badu cranks the heat on *New Amerykah Part Two: Return of the Ankh*—a life-affirming flight of raw, funky emotion

by Bill Murphy

On a chilly December night in New York City, a gaggle of journalists is being crowded into one of the live rooms at Chung King Studios in Soho. Not your typical album preview, everyone from Britpop soulstress Corinne Bailey Rae to legendary label exec Sylvia Rhone is rumored to be on hand, while in the small reception area on the penthouse floor, cell phones are being collected, bagged, and numbered to avoid “Internet leakage” of the night’s proceedings.

Continued

## MAMA'S (STILL) GOT A WARM GUN

Some are grumbling about the over-the-top security measures, but when Erykah Badu makes her entrance, all is quickly forgiven. Relaxed and regal to the core, she explains to her hushed audience that some unsavory type has already uploaded a bootlegged track from the previous night's session. That song, "Jump in the Air (Stay There)," with spotlights from Lil Wayne and Bilal, has since been leaked officially, and given Ms. Badu's unwavering commitment to creative control of her music, she can't be too happy about it.

Even on this night, she seems almost uneasy about drawing back the curtain on her fifth studio effort—maybe because some of the songs are not yet in the final stages of mixing. But she needn't have worried. *New Amerykah Part Two: Return of the Ankh* (Universal/Motown, 2010) delivers on multiple levels, one of the most prominent being a return to form that recalls the honey-soaked revelations of Badu's groundbreaking "neo-soul" debut *Baduizm* (Universal/Motown, 1997). Deeper still, *Part Two* is a meticulously crafted concept album, both in the vintage sense of *Music of My Mind*-era Stevie Wonder and in the alt-underground hip-hop vein repped by such artists as Madlib, J Dilla, Karriem Riggins, Georgia Anne Muldrow, Shafiq Husayn, and 9th Wonder—all of whom, it so happens, lend their production cuts (posthumously for Dilla) to the finished gem.

"I wanted the themes on this album to have a very warm and sometimes familiar feeling to them," Badu says. "Sonically, most of the first album jelled together because of the digital sound, but this time I wanted to feel it in more of an analog way. Some of the samples we used might sound very familiar too, but it's fun for me to revisit things like that and put a melody over it that has never been heard before. That's really what the art of hip-hop is about, and what makes it exciting. It doesn't have to be something totally new. It can be something redone or recycled that has a new twist, or a new feel to it."

Devout fans will also recognize shades of the slightly off-kilter, almost psychedelic jazz overtones and tape-saturated lushness that were the main

ingredient in Badu's sophomore release *Mama's Gun* (Universal/Motown, 2000). Some of the key personnel from that outing, who have worked consistently with Badu over the years, reprise their collaborative roles here—including, in particular, Roots drummer Ahmir "Questlove" Thompson and keyboardist/producer James Poyser.

"We definitely share a similar-mindedness," Poyser offers. "Erykah can go from the beatnik thing to the hip-hop hardcore thing to the jazz

thing, but in the end what she really loves is *music*. She has taken in a lot of different styles and influences, and she's grabbed them and made her own niche. When you're working with somebody like that, it just makes everything easier."

### THROAT CLEARING

Regardless of the hat she's wearing—producer, composer, musician, performer—Badu is constantly exploring the range of her voice and delights in



Erykah Badu stays perfectly in tune, performing at Merriweather Post Pavilion, Columbia, MD, on August 8, 2009.

CANDICE/FOOTPRINT FOTOS

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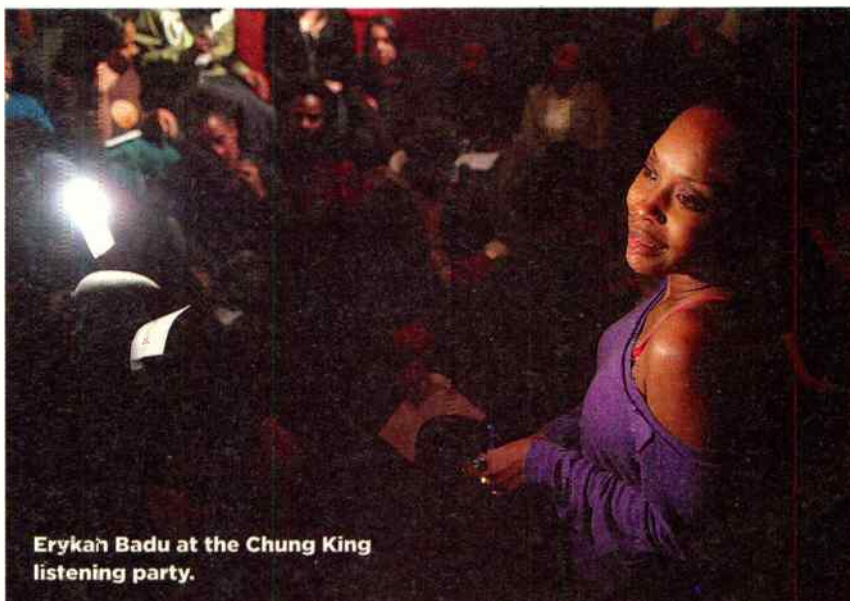
## MAMA'S (STILL) GOT A WARM GUN

the experimentation that modern technology affords her. When a song first begins to take shape, she'll record a demo vocal straight into GarageBand, and then manipulate it until it begins to line up with the sound she has in her head.

"I just keep turning knobs until I hear the right match for the song and how my voice should sound," she explains. "Each song has its own woman—its own character. I playfully call it 'she' when we're mixing or doing a sub-mix or a rough mix, so I might say, 'She needs some more of this.' Chav [Mike Chavarria, engineer/producer] will listen to what I've concocted and try his best to make it match."

Chavarria takes the lead vocal from "Don't Be Long," co-produced by Detroit-bred beatsmith Ta'Raach, as an example; the song immediately conjures up Stevie Wonder's classic "Girl Blue," where his voice is squeezed through an undulating, kaleidoscopic tape flange. "For her demo of that song, Erykah used one of GarageBand's phasers," Chav explains. "It tends to have a harsh quality to it, so I used several instances of a Waves MetaFlanger to get the sound she wanted. The vocal is feeding itself—really the flanger is feeding another flanger, and then it's sent to another flanger as if it were a reverb. The way it's set up on the console ends up being pretty complex, but it was the only thing that was able to make it move like that and have the right blend of effects."

Understandably, Badu is a perfectionist when it comes to her vocal performance and how it fits the final version of a song, so there's no telling when she'll scrap a take, even during mixing. "That's what's very unique about working with Erykah," says Tom Soares, whose tenure with Badu as recording and mixing engineer goes back to *Mama's Gun*. "I'm in mix mode all the time—if I'm not in Pro Tools, I'm in the computer on the SSL console. She likes to hear the progression of how the song is coming together, so at any given point in the process I have to recall the record that she's gotten used to hearing. Sometimes I'll be ready to print, and all of a sudden she'll ask for a couple of new vocal tracks, and



Erykah Badu at the Chung King listening party.

it'll be a brilliant performance. She has really good ears and she knows what she wants."

Finding the right microphone to get the job done has been a Grail-like quest over the years, but Badu feels she has finally found the right one, thanks to Soares, in the Shure KSM9. "Tom was telling us that James Taylor uses that mic to record with, so I tried it out," she says. "Now I religiously use it all the time, no matter how much they try to force these other mics on me. I even carry it with me in my purse. [Laughs]. Tom knows how much midrange I have in my voice, and how I hate to hear it coming back at me because it sounds too nasally, so this is the one I use now, for my live shows and in the studio."

It's already pretty well known among producers, engineers, and gear geeks that Badu rarely, if ever, records in a vocal booth, preferring instead to sing in the control room with a live monitor mix. "As long as she's facing the speakers straight on, I can turn them up significantly and not have a problem with leakage [into the mic]," Soares explains. "But Erykah is not easy to record because her voice is so dynamic. She has a heavy range from 2.2 to 2.6K, so when she goes up there and really belts it out, you need a signal path that can take it. Lately I've been using the Little Labs Lmnopre—it's clear and big sounding, with tons of headroom. I run that into an Amek 9098 mic pre, but I just use the EQ end of it. I filter a little bit on the

bottom and a little up around the high end area, around 12 or 13K. Then from that, we go into a Summit TLA-100 compressor, with 2dB of leveling at the most. I'm not a big fan of compression on vocals, but the tubes help, especially when you're using Pro Tools."

For that matter, so does recording to tape. Soares acknowledges the speed and efficiency in editing that Pro Tools offers, but he remains skeptical of the digital platform's ability as a tape machine, especially when it comes to recording vocals. "All the music is coming out of Pro Tools," he admits, "but most of Erykah's vocals are coming off of 2-inch tape." It's a nod to how records used to be made, and really to how Badu continues to work; her vocals for *New Amerykah Part One* were tracked to tape, and she'll likely stick with it in the future. "I've even tried to fly a vocal take back into Pro Tools, but it just sounds different," Soares continues. "Even with a great converter, the difference is huge, so for us the best way to get around it is to lock up the 2-inch with Pro Tools."

## ANATOMY OF A SONG

From the start, *Return of the Ankh* swells with the velvety atmospherics that define the best tape-based analog recordings from the '70s: thick low end, warm limpid mids, and punchy highs, with close attention paid to the stereo spread and panning techniques. It's really the only

Left to right—Badu, Tom Soares, and Mike “Chav” Chavarria.



way to transmit the hypnotic mood of the album, which shifts gears effortlessly from dreamlike (in the opening echo-drenched sequence of “20 Feet Tall,” co-produced with 9th Wonder) to get-down funky (“Don’t Be Long”) to groove-introspective (in the closing epic “Out My Mind Just in Time,” with James Poyser and Georgia Anne Muldrow).

“Window Seat,” the album’s first single, is a prime vehicle for Badu to channel all her creative strengths, as well as her penchant for analog warmth. The song has its origins in an informal

session at her Dallas home with Poyser. “Erykah has this old lime-green, ridiculously out-of-tune piano,” he quips. “She refuses to get it tuned because it has character—it’s a sight to see and hear. We were just sitting there playing some things, and she started singing and that’s how the idea came about.”

Badu had a vocal melody, but no words. Like most of the songs she writes, she follows the path perfected by Marvin Gaye, allowing the lyrics to emerge from the rhythm of the melody. “I write on beat, very much like an MC,” she says. “I’ll keep listening back to it,

and once the rhythm starts to sound like syllables of words, I just say whatever word fits. Sometimes that becomes what the song will be, then I fine-tune it so it makes sense, or sometimes I just leave it as is.”

Using her own home 4-track, she laid down a drum pattern from her Korg Triton, and the demo began to take shape. From there, recording engineer Chris Bell, who first joined the Badu camp with *Mama’s Gun*, went in to prep Luminous Sound in Dallas—Badu’s de facto home away from home when she’s working on an album—to track a session with Poyser on Fender Rhodes and ?uestlove on drums.

“When they came in to work, I was instantly ready to pull up a 2-inch machine,” Bell says, recalling how *Mama’s Gun* was recorded entirely to tape. “I had a vintage drum kit delivered because I thought Ahmir would want that old-school sound. He’s very particular about what mics he wants on the kit—no [Shure] SM57s allowed—so I used Royer R-121 and R-122 ribbons on him, along with some Coles 4038s. It’s a real smooth sound. We basically came in and knocked it out in an afternoon, but Ahmir wanted to add some percussion parts, and pretty soon working with the 2-inch was getting cumbersome, so we dumped it into the computer.”

Tom Soares (left) and Chris Bell.



## MAMA'S (STILL) GOT A WARM GUN

What emerged was a fat, loping groove with a minimalist arrangement of claps and conga hits, all punctuated with Questlove's signature *snap* on the snare drum. "Initially, I played the bass parts on the Rhodes," Poyser says, "and I overdubbed a bass sound out of Logic. I had it controlled by a Motif [Yamaha MIDI controller keyboard], and I'm sure it was a sound from [Spectrasonics] Trilogy. The bass sound from that just married well with the track. Usually I scroll through and try playing a few things, and whatever marries well with the track is what I use."

Badu lived with that version of the "Window Seat" demo for months afterward, working diligently until she had two verses and a bridge recorded. "One of the things I'm accused of is demo love," she jokes. "I want it to sound *just like that*, forever. We hadn't put a real bass on it—James was playing that on keyboards, and it was just perfect. There was nothing more to be done to it . . . until Thundercat came in."

As bassist with Sa-Ra Creative Partners and Bilal, Stephen "Thundercat" Bruner is a known entity on the hip-hop underground. "He put a funky-ass bass line on it—very simple, just three or four notes—and that was all it needed," Badu recalls. "I guess you could say that songs are crafted the way Subway sandwiches are made. You start with the bread, then a little bit of lettuce, then we point to the pickles and so on, and the bass line was the oil and vinegar. That's how it happens."

In the mix, Soares called on some key pieces of outboard gear to thicken the bass sound even further. "I've got a Moog 3-Band Parametric Equalizer that works really well on bass," he says, "and I'll also use the Drawmer 1969 [Mercenary Edition] tube compressor, usually across the mix bus. There's a little switch in the stereo link section, and when you move it to the 'BIG' position, all the bass comes through so it only compresses the midrange and treble." The effect makes Poyser's Rhodes sound almost bass-like, and Bruner's bass sound almost synth-like.

When mixing vocals, Soares looks to a pair of Urei LA-22 compressors so he can fine-tune specific frequencies.



CANDICE/FOOTPRINT FOTOS

"When Erykah tells me that she's really enjoying 'Window Seat,' that means I've done my job," Soares says. "Whatever she's hearing in her head, I'm getting it to come out of the speakers. Sometimes she gives me a piece of music with crazy low end, and I have to find a way to make it fit in the speaker but still sound and feel the way she wants it. She wants

someone to feel an *emotion* about the song. It could be a love song to one person, and something totally different to another person, but it makes them feel *something*, so that it's special *only* to them."

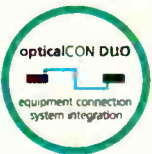
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Like the first installment of *New Amerykah, Return of the Ankh* swells





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**NEUTRIK**

## MAMA'S (STILL) GOT A WARM GUN

with the contributions of some key figures in experimental hip-hop. Drummer and producer Karriem Riggins is one of them, having worked closely with J Dilla on what would turn out to be his last solo project (2006's *The Shining*); his musical connection with Badu goes back to 1998, when she joined Dilla at his studio in Detroit for sessions that led to the Grammy-nominated "Didn't Cha Know?" from *Mama's Gun*.

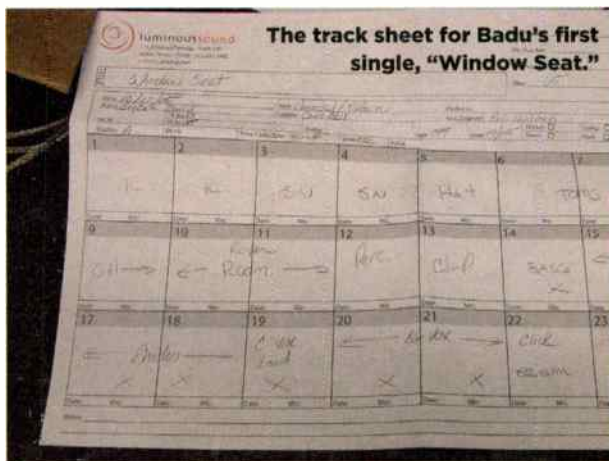
"Erykah had a batch of songs that were inspiring to her, and she burned a CD for me and James [Poyser] to listen to," Riggins begins, referring to the events that led to the making of "Get Money"—a smoldering soul groove based on the Sylvia Striplin classic "Can't Turn Me Away," and one of several standouts on *Return of the Ankh*. "She didn't actually say she wanted to remake these songs—it was more to spark some creativity. So when we finally booked the studio time [at Chick Corea's Mad Hatter Studios in L.A.], we started to recreate that break."

Riggins soon came across another inspirational break during a session at Sa-Ra's studio. "I brought my [Akai] MPC3000 in, and I think I had about 50 records with me, and I stumbled on this Eddie Kendricks loop ['Intimate Friends']. I knew that a lot of people had used it, so I thought about how I could do

something different. I just stretched it out into a long form on the 3000, and then added some clavinet and Rhodes when we dropped everything to Pro Tools. Erykah was incredible. She let the beat roll for at least half an hour and basically recorded a freestyle reference; then she pulled ideas from that."

The song became "Fa# in Love," which pays tribute to the stutter-step rhythmic explorations of Dilla but also serves as a test case to the challenges Soares had to meet in the mixing phase. He points to the song "Umm Hmm," a sample-stacked workout co-produced by Madlib, as another example. "We got Madlib's music in the form of a stereo MP3," he explains, "and I've developed a method of working with that format so it fits with the overall sound Erykah wants."

"Basically I duplicate the track about six or seven times, and then I go in with some heavy-duty EQ plug-ins and literally destroy the two-track and then rebuild it. I use



the Massenburg EQ plug-in a lot for this. It allows you to separate the bandwidths, so it plays only the bandwidth that you're highlighting. I'll usually start with the kick drum; if it's slightly out of phase, I'll fix that and then pan it up in the middle. Then I'll just keep isolating different parts of the two-track, each time panning it out a little bit more, until I've recreated a stereo image from a whole bunch of small snippets. How it works depends on the density of the two-track. You're gonna get phasing, so you have to keep adjusting until it makes sense, but at this point it's almost like I can go in there and [pull out individual] instruments."

With yet another album already nearly in the can—*Lowdown* Loretta Brown, named after one of her many aliases and described as a character "from the '50s who acts like she's from the '40s . . . the 2040s." — Erykah Badu continues to push soul and hip-hop music into entirely uncharted waters.

"Georgia [Anne Muldrow] and I have very similar world views, and we're very serious about the vitality of our families," she says. "Making that song with her—and in fact making this album—has been a liberating time for me because we're defining ourselves through our relationships as women. It woke me up to really acknowledging my part in my own heartache, and what I'm doing wrong. I wasn't in any particular situation at the time, but the music has so many elements of liberation in it, and that's all I could think of to talk about. It's a diary entry of what's inside of my mind, and a way for the whole deal to come out." 🎧



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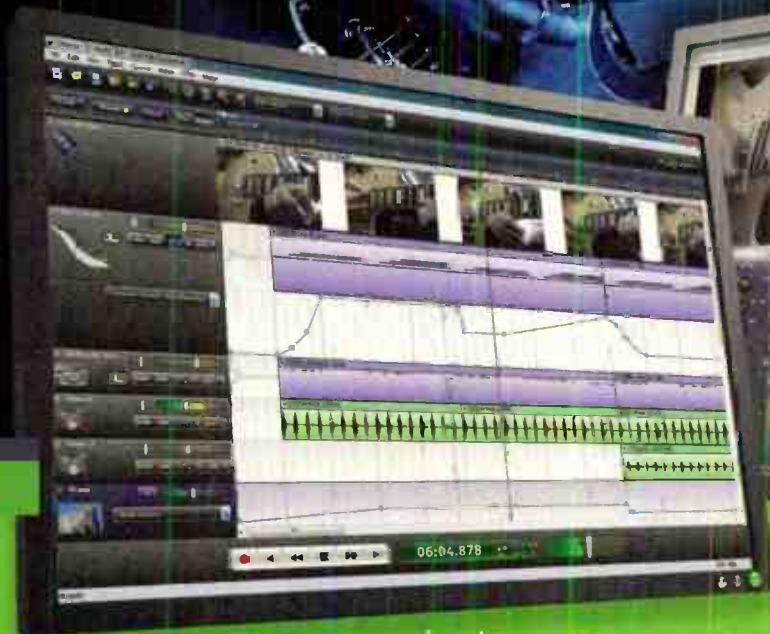
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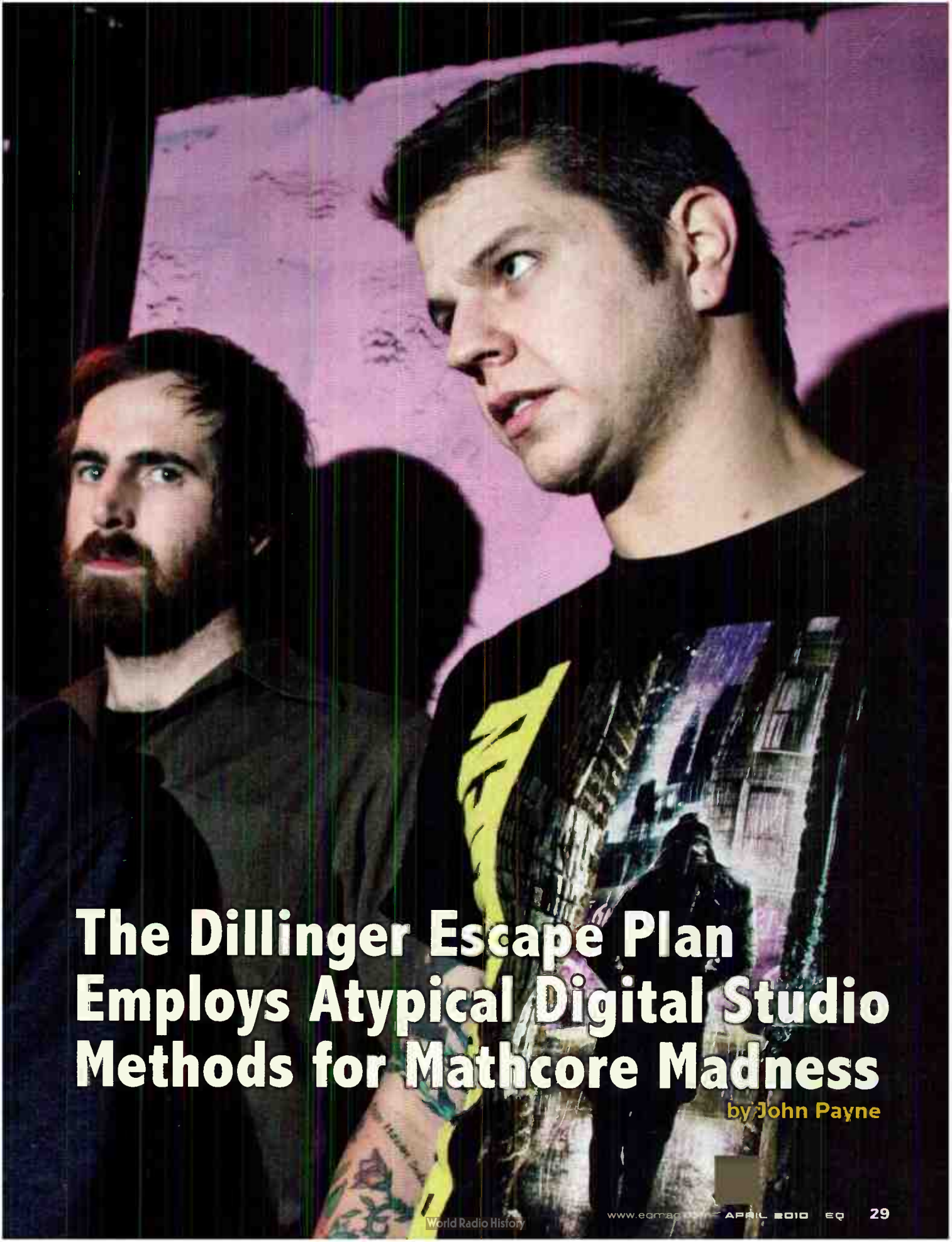
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# RARE METAL



NATHANIEL SHANNON

World Radio History



# The Dillinger Escape Plan Employs Atypical Digital Studio Methods for Mathcore Madness

by John Payne

## RARE METAL

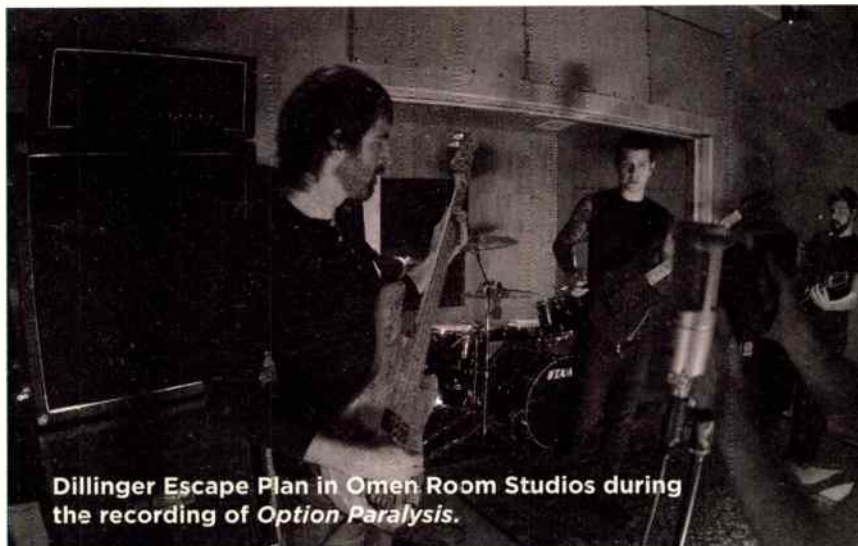
Looking for some mellow, smooth sounds to kick back to on a Friday night, with soft lights and a glass of wine? Well, you'd best leave the new Dillinger Escape Plan album outta your plans. Dillinger's purposefully agitating punk-metal typhoons are custom-crafted to hurl you off of that couch and make you punch holes in the walls.

Recorded and engineered by the band's longtime producer Steve Evetts at his Omen Room Studios in Garden Grove, California, Dillinger's new album *Option Paralysis* [Season of Mist] is another trademarked Dillinger blitzkrieg of *blamblamblam*. What has become increasingly provocative about the band's sound, however, is the ingenious ways Dillinger manages to blend the harsh with the harmonious.

"Our music definitely presents a challenge in that way," says guitarist/chief theoretician Ben Weinman, "because in one sense it's *supposed* to be aggressive and it's *supposed* to be obnoxious. It's written that way—we use a lot of dissonant chords, a lot of high frequencies, and we're also tuning to normal standard *E*, which is not as low as many heavy bands. But it's important to balance the annoyance with things that are the antithesis of that. It's the dynamics that are important to us at the end of the day."

## SOUNDS OF THRASHING

A veteran soundman who's produced and engineered albums by Hatebreed, Saves the Day, Sepultura, Glassjaw, and Every Time I Die, Evetts has been with Dillinger since the beginning of the band's career. The current lineup—



which includes Weinman, singer Greg Puciato, guitarist Jeff Tuttle, drummer Billy Rymer, and bassist Liam Wilson—convened at Evetts' studio after Weinman had worked out pre-production demos in Steinberg Cubase.

The Omen studio includes two rooms, and when Evetts tracks drums, he leases the A room from the building's other occupant; the rooms are connected, so he uses his gear in the live room and in the hallway, which he exploits as a recording area as well. "The hallway is a tiled room that's wired up and meant to use as a chamber," he says, "so we keep the door to the A room cracked open and have a stereo pair of mics at the end of the hallway. We get the best of both worlds."

For miking drums, Evetts used Shure SM57s, as well as Sennheiser MD 421s on the toms and AKG C 414s or Violet Design The Amethyst on the

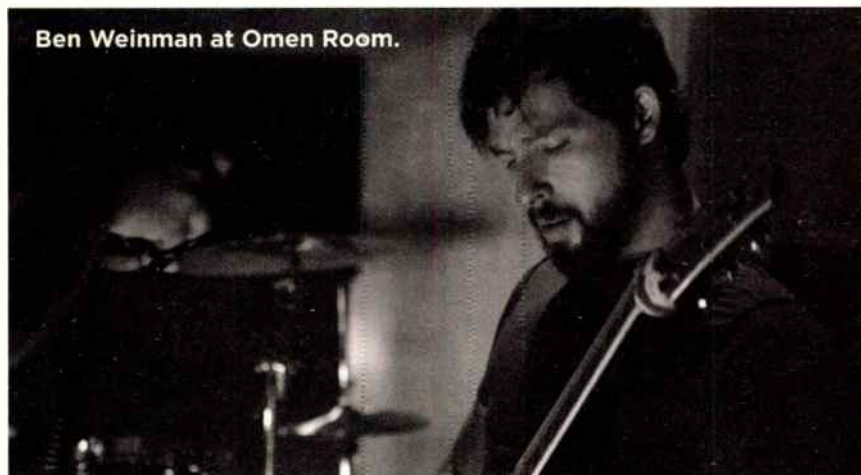
overheads. Room miking is mostly done with 414s, and in the drum hallway, Evetts depends on the Royer R-121s, plus a couple of inexpensive Langevin CR-2001 mics. Then there's the kick drum: "I love the Electro-Voice RE20 on the kick," he says. "A lot of people use the AKG D 112, but I usually use the D 112 on the outside to give a great low-end bump."

For Puciato's vocals, Evetts keeps going back to the AKG C 414 "because it always just works with him," he says. "Greg feels more comfortable with the way it sounds in his headphones, and if he feels more comfortable, I don't care what we use."

Recorded, mixed, and edited in Pro Tools|HD, *Option Paralysis* was essentially a digital project, though the process involved a blend of analog and digital methodologies. "I used some analog processing in the mix," Evetts says. "I'm mixing in the box but in a hybrid system, with some outside summing and then a lot of analog out-board gear in the mix. [And during tracking,] we used a Roland Space Echo, running through tape just to get that analog sound."

## DILLINGER GUITAR PLAN

While Evetts and Weinman did utilize direct-inject recording of the guitars from time to time, they did so in a sparing way; their tidal waves of chopping-knife guitars derive primarily from rudimentary means: using the right pick on the right guitar through the right amplifier.

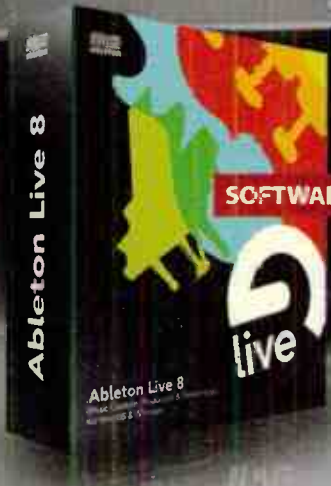




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## RARE METAL

jagged little accents on guitar, so I'll run a line from an amp," Evetts says. "I'm running a cleanish sound, low-wattage at 5 or 10 watts, to get that small-amp kind of thing, and then on the other side I'll record with a direct box and really jack the high end up super-high and compress it hard. It gives a very metallic kind of tiny sound."

In the studio, Weinman uses a wide array of guitars old and new, pricey and not so, depending on the desired effect. "I'm using a couple of cheaper ESP guitars, and then I also threw on a Les Paul in a few spots for more body," he says.

Because of the density and speed of the Dillinger attack, Weinman feels that he needs as much control over the sound as possible. "There's so much going on so quickly," he says, "so a lot of what's important for us is things like deadening the strings in spots where they're making noises, stuffing body cavities with tissue and cotton, etc."

Weinman and second guitarist Jeff Tuttle employ a zillion different analog pedals in the studio and onstage, but

Weinman insists that for his main tones he relies mostly on his guitars, his amps, and his fingers, though he's developed a fondness for the Japanese Guyatone pedals.

"They're really little, for one—you can put about 40 of them on a pedalboard, but they're really huge-sounding. And I also use their reverb pedals, a Guyatone that has a tube in it, a tremelo pedal, and the digital delay. There's a

shaper pedal, which you can carve out a lot of different frequencies and tones with, and then there's a booster pedal that's similar to a [BBE] Maximizer. Sounds really good."

The band's selection of amplifiers is crucial as well. "In the past I'd throw in a [Peavey] 5150 for certain things that were really bright and aggressive, and then for clean things I'd change amps," Weinman says. "But on this record



Dillinger Escape Plan (left to right)—Billy Rymer (top left), Greg Puciato, Ben Weinman, Jeff Tuttle, and Liam Wilson.

NATHANIEL SHANNON

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probably 80 percent was the Mark V, definitely the best amp Mesa/Boogie has ever made. It's diverse; the distortion is extremely tight. The pedalboard that comes with it has some interesting features, too, like looping and a great reverb; the clean sounds great, but then the variations in distortion rival any \$4,000 amp."

## PLUG-IN LOVE

While this very electronicized band's sonic attack can give the impression of being heavily effected, the real meat of the music is reliant on just a handful of plug-ins and hardware effects. Evett's two main tools for EQ are the URS plug-ins made for the Neve, along with the Massenburg DesignWorks Parametric EQ for more "carving out" of the sound. "The Massenburg EQ," he says, "is less obtrusive than the other Pro Tools EQs; the URS EQ has more of a color of a sound, but it's very pleasing to the ear."

For reverb and delay effects, it's back to basics for Evetts. "The funny thing is, for the main snare reverb I just use a Yamaha SPX90. I have other plug-ins, like the [Peavey] UltraVerb, but the DX just sounds great—it does one thing pretty much, but it does it well."

Evetts is not a big fan of plug-in compressors, but he's found a few that do the job well. "For some reason, a lot of software compressors flatten out the sound, and not in a pleasing way—it kills the bottom end," he says. "But the three main compressors I use are software, and they all seem to *not* do that—the URS doesn't do it, the Massey and the Chandler EMI don't either."

Evetts is referring to the Chandler EMI TG12413 Limiter plug-in, which he uses for drum compression, the URS Neve plug-in for bass, and the Massey CT4, which he hits up when the mood strikes. For the main vocals, he turns to hardware, such as the Universal Audio 1176.

## DILLINGENTLY DRAINED

Blurring lines between metal and hard rock, the members of Dillinger Escape Plan push a distinctly aggressive agenda with their sound—they just do it their own way.

"We usually don't try to have a metal-sounding record, even though a lot of stuff we're playing is really fast

and heavy and distorted," Weinman says. "Typically metal bands use a lot of frequencies that wouldn't necessarily work with a rock album, and vice-versa. We're trying to make a record that's blast-you-in-the-face, but we're not using a lot of the tricks that a lot of other bands are doing, so we do incorporate a lot of electronics."

The question is, with all the ferocious speed and complexity built into a typical Dillinger Escape Plan song, how in the hell do these guys process

it all without losing their heads?

"Dillinger records usually take a lot more effort than most," Evetts says. "It's a lot to take in, and it's an intense listen. When you're hearing all this stuff going on at a million miles an hour, and sometimes in multiple time signatures, all that is mentally exhausting. Dillinger's the toughest job I ever loved. It takes so much out of you, but I always love the end result, and it's very satisfying as a creative entity." **EQ**

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# THE FRAMPTON METHOD

by Michael Molenda

Peter Frampton has recorded a couple of bitchin' guitar albums in his career, including a little ditty called *Frampton Comes Alive*, and 2006's Grammy-winning *Fingerprints*. He's also an avid home recordist—albeit with a much hipper and more gear-lush personal studio than the average musician. As the follow up to *Fingerprints*, *Thank You Mr. Churchill* [A&M/New Door/Ume] gets ready to drop this April, we thought a few words of studio wisdom from one of the world's greatest rock guitarists might help you with one of your projects.

## Start Here

"There are no rules—just go for whatever sounds good," says Frampton. "But knowing the sound you want at the start—before you even touch a microphone—is a good idea. It's all down to what you can get out of each amp and guitar—what's the best match for what you're trying to achieve? Someone once said to me, 'You're like molasses [in the studio];' because I'm so methodical. I take my time, and I don't rush. When you're in the studio, the microscope is on, and in order for me to play my heart out, I have to be turned on by the sound. It's like the sound is so wonderful that I can't stop playing because I love it: so much. To get there, I might take a day to choose an amp, choose a guitar, select the mics, and then position the mics. Sometimes, I'm so exhausted by the setup that I won't actually cut the track until the next day. And, to me, that's okay. Some sounds come in a minute, and some sounds take three days. You never know how it will go, but you have to take the time to get there, because if you're not inspired

by the sound, you may not rise to the occasion and play something great. I mean, you can have all the best equipment in the world, but if the performance isn't stunning, your track ain't going nowhere."

## Miking Electrics

"It's all down to trial and error. Basically, I work two different ways as far as electric sounds go. One is positioning a Shure SM57 close to the speaker. But I don't like pointing the mic at the speaker cone—that's a little too honky for me. I like to angle the mic at sort of a 90-degree angle, pointing a bit off to the paper [of the speaker]. The second part is setting up room mics. I position a pair of Neumann mics—I have a couple of vintage U67s and a U47—about ten to 12 feet away in a wide-stereo configuration. Then, a little closer—I call them the 'mid-room mics'—I'll use either a stereo Royer or two mono Royer mics in an X-Y pattern. So I'm actually recording five tracks of one guitar sound. Then, I can choose the sound—or combination of sounds—I like later on.

"You know, when I first started recording with Glyn Johns in the old days with Humble Pie, he would put Neumann U67s on just about everything. I don't remember seeing an SM57 on anything in those days. And then Neumann brought out the U87—which was the transistor version of the 67—and everybody seemed to switch to 57s. And I know why now, because after getting my hands on a couple of beautiful old U67s, I realize that you can put them close on the amp, and they sound virtually the same as what you're hearing in the room—as long as you don't put them too close. So, one of my alternate

options to the SM57 close-mic is to swap it for one of the U67s positioned about 18 inches or two feet from the speaker."

## Miking Acoustics

"Neumann KM184s are definitely a standard for me—I know I'm going to get a great sound with them. They don't capture a lot of bass, so they sound pretty good flat—you don't have to do too much of a roll off. The U47 is nice, too, but it's not a good choice if you're strumming away because it will pick up too much low end and muddy things up. I typically do the conventional thing of positioning one mic by the soundhole, and another mic higher up on the fretboard, pointed down towards the 12th fret or so."

## The Recording Environment

"My studio has a wood floor with fabric-covered walls—except where I set up the amps, which is a complete wood of stone. The reflection off the wood floor is nice and even, whereas the stones on the wall are all angular, and the echo is a bit harsher in a good way. And then the fabric dampens the reflections a bit. Obviously, not everyone is going to have the same construction in their recording space, but I've found that the best spaces give you a nice bit of ambience that's not too bombastic. You don't want the reverb swamping the room and all your guitar sounds. You also have to be careful not to crank up the guitars too loud if you want some natural room sound on your tracks. There's definitely a threshold where the volume overpowers the room, and the ambience just kind of goes away." 🎸

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# BRING ON THE FUNK!

by **Buddy Saleman**

To create the perfect funk bass tone, you must have all of the necessary elements at hand—a funk playing style, good bass-miking technique, and a fat and funky approach to the mix. These elements all cascade together into one warm, mammoth funkosaurus bass sound that will bump speakers off their stands. Here's how to get down with the low down. . . .

## Style

This is crucial. Funk bass playing is its own beast, and it has very playful, syncopated relationship to the kick drum. This is not to say that the bass and kick don't hit together, but it's a bit of a dance—sometimes on, sometimes off—but always interacting in a way that pushes the groove forward while remaining in the pocket. A sensitive producer will critically assess the player's style to determine if the groove is working, rather than immediately ask that he or she play "tighter."

## Pocket

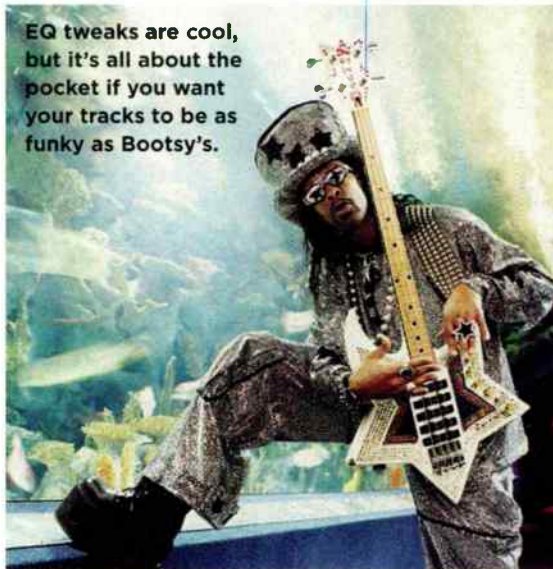
Ask five funk musicians to define "pocket," and you may get five different answers. But ask the same five musicians to play in the pocket, and you'll get a groove so fat that you'll put on ten pounds listening to it. I define the pocket as the space and distance between the kick hit and the

snare hit within the same bar. These spaces are obviously governed by meter and tempo, but there is flexibility in there that a savvy player can push, delay, and otherwise funk-ify. Again, getting obsessed with metronome-like precision may destroy the funk. Let the groove breathe and flourish, and soon you'll be in the house that Bootsy built.

## Tracking

For me, the optimum funk bass has a huge quantity of bottom (around 50Hz-200Hz) and top (between 6kHz and 9kHz) in order to allow the bass to bump up against your chest while still cutting through the mix. To get such a tone, I like to record a direct signal and a miked-amp signal simultaneously in a relatively dead space (no hardwood floors, big windows, or other bright, reflective surfaces). Remembering that bass frequencies take more physical space to roll out, I typically mic the amp with a large-diaphragm dynamic (such as an Electro-Voice RE20) positioned two or three feet from the speaker, and turned slightly off-axis. I also place a large-diaphragm condenser (such as an AKG C414) about seven feet away from the speaker cabinet at a height of two to four feet. This technique allows much of the bass waveform to interact with the room and develop maximum resonance as it's captured by the mics.

EQ tweaks are cool, but it's all about the pocket if you want your tracks to be as funky as Bootsy's.




The direct signal provides clean, sharp, and present tones. Both the direct and mic signals are lightly compressed (a 2:1 ratio with a -10dB threshold) to deliver more punch.

## Mixing

To bring it all home during the mix, I blend the three separate bass tracks together. The dynamic-mic track is often the main sound, as it delivers warmth, bottom, and booty. A subtle boost at 100Hz can make the party even bigger. The direct track is mixed in for clarity, and I often help the snap a bit by boosting 4kHz to taste. Finally, the condenser, room-mic track is employed just to round out the bass tone and impart a sense of depth and hugeness. I assign all three tracks to a subgroup and compress them as a unit—usually at a 4:1 ratio with a -15dB threshold. The bass is now ready for the mother ship!

## Extra Credit

Here are two other mix tricks I've seen great funk players use:

- Add a light chorus effect to help the bass pop out of a busy mix. It also sounds kind of techno.
- Add a slapback delay set to eighth-notes, and mix it just below the dry bass sound. If you take care not to collapse the pocket, the subtle slap can add dimension and sonic interest to the bass line. Freaky! 

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# MANAGING GAIN STAGES

by **Stephen Fortner**

Anyone with a cable TV box has juggled two volume controls. Set the cable too low, crank the TV, and you'll hear too much background noise. With the cable too high, you can get distortion or a honky sound even with the TV volume low. Even a basic recording setup makes you manage multiple volumes, too. Here's a Golden Mean approach for setting them.

## Your Keyboard's Volume Control

An old rule says to leave it at maximum, then set levels for recording on your mixer or audio interface. That's a good place to start, but on some keyboards, full throttle might make hiss audible while almost-full volume sounds clean. Call up the sound you'll record with, but don't play. Move the volume knob or slider slowly from low to high, and listen carefully for background noise. If an increase happens, most likely towards the top of the range, back off until it goes away. Chances are, any making up you'll do using the gain control of the gear that's listening won't add as much noise; if it does, the process is easy enough to undo.

Don't forget MIDI volume. Make sure a pedal, other controller, or even the sound program itself isn't keeping it below maximum (127) without you knowing. Also, the edit menus

of some synths have an output parameter that works in the digital domain—another option if you need hotter levels without added noise.

## Faders and Gain Knobs

Next come the inputs of your audio interface, compact mixer, or stand-alone recorder. Either you're in a channel (or two) with an input gain knob—also called trim or sensitivity, which are not the same as faders on the device or in your DAW's mixer window — or you're not.

In the first case, leave the channel fader at "unity," usually indicated by a zero located most of the way up the fader's travel range, and start with the trim all the way down. Play as loud as you mean to and adjust the gain until your loudest peaks hit the "yellow" zone on your physical or onscreen mixer's meter, but not the red. With most keyboards, you'll turn up the trim very little, or not at all, unless something else in the chain is quieting the signal first.

This is why many audio interfaces and compact mixers have trim knobs only on their mic inputs: Line-level ins are pre-optimized for things such as keyboards. If your keys are too quiet no matter what, you may wish to go for the extra gain of a mic channel. Otherwise, it's one less volume control to worry about. Depending on how your mixer works, the channel fader may or may not have any effect on the level that'll get recorded, and

it may not have any visible effect on the meter, depending on your setup. If not, don't be afraid to lower your keyboard's volume a bit more if it's still too hot.

What sounds too loud or too soft through your listening system may be the perfect level for the A-D converters of the audio interface or recorder itself, so use only your headphone, "monitor out," or "control room" volume to get a comfortable listening level.

## Soft Synth Secrets

Many soft synths have their own volume control in the plug-in window, and the rules are different for soft synths. Push the soft synth's volume too high, and often, you'll overload its mixer channel in the host program, distorting the sound. Try this advice from recording engineer Orlando Rashid (Jamie Foxx, Ludacris, Snoop Dogg): "Insert a compressor plug-in on the audio or instrument channel where the soft synth lives. Set it so it's not really compressing, or just barely hitting. Keep the soft synth's volume on the low side, and use the compressor's output or make-up gain to make it louder." Some DAWs also have simple "trim" plug-ins, useful for adjusting software instruments that don't have their own volume.

*This article was originally published in Keyboard magazine's mammoth June 2006 "Record Your Boards" issue.*

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## EXPLORING SPACE

by Michael Molenda

Recording aggro, bombastic drums isn't just about fabulous source sounds captured by mics positioned very close to cymbals, toms, a kick drum, and a snare. That's a start—a very good start, in fact—but the awesomeness also comes from how the drums interact with a specific recording environment.

Sadly, the “room sound” challenge is where many home-studio musicians start reaching for drum-sample collections, because the typical personal studio is not the hippest place to set up mics, and track a glorious combination of percussive impact and environmental ambience. Or is it? If you can record drums at a time when all the banging won't drive your house mates or neighbors insane, then any apartment or home might surprise you with the number of cool reflections, echoes, and reverbs hiding within. And while there are tons of absolutely marvelous drum samples available today, it's also a thrill to be able to craft big-ass drum sounds to your own preferences, or to the specific needs of the song at hand. So if you're one of those hardy explorer types who adore drums that sound as expansive as the Alaskan wilderness, here are a few suggestions for mammoth DIY drum sounds.

### Steve Lillywhite's Big Bang

In 1980, U2's “I Will Follow” exploded from radios everywhere. But the propulsive energy wasn't just due to the youthful angst of talented and visionary teens—a fair share was due to producer Steve Lillywhite's massively ambient drum sound on the song's intro. Let's use that classic and tremendous sound as the benchmark for pulling big booms out of your personal studio space.

### Get Hard

If you're not recording drum tracks in a warehouse—or in a big studio with 30-foot ceilings from which to hang microphones—ambient success rests in your ability to get some sexy reflections out of your home. And that means it's all about hard surfaces.

Remove as many soft surfaces from the room as you can. That cushy couch and all those easy chairs are oh-so-comfy for watching TV, but they'll suck the life out of the reflections you're trying to capture, so get 'em outta there!

Now, set up the drum kit a few feet in front of a large picture window, and atop a hardwood floor. If the room is carpeted, borrow or buy a sheet of plywood large enough for the entire kit to be placed upon it, and then toss some more sheets around to break up the reverb-killing effect of the rest of the carpet. If there's no huge front window, then find a suitable house, or McGuyver a few plywood sheets to stand upright around the back of the drum kit. If you go crazy at Home Depot, putting an extra couple of plywood sheets at the left and right of the kit will help intensify the reflection action. If you've done a good job, when you clap your hands, you'll hear some very cool echoes.

### Miking for Massive

The first step is to close-mic the kit as you usually would, because these tracks will still provide the impact and punch of the overall drum sound. Then, as the drummer plays, walk around the room and listen for areas where the reflections are most intense. Don't miss the reverberant majesty of putting mics down hallways, or inside nearby closets (with the door open, of course), facing windows, or raised up and pointing at the corners of the ceiling. Seek out any and every place where reflections are having a party, and get mics in the area. Yes, you will probably need to

borrow mics from buddies in order to document all the potential ambient points in your home, so don't be shy. Large-diaphragm condensers are preferred, as they're typically sensitive enough to “hear” the detail of most excellent reverb tails, stutter echoes, and other such reflections. However, I've also captured some pretty cool ambient sounds with small-diaphragm condensers, affordable ribbon mics, dynamic mics, and even cheap Radio Shack mics. As always, experimentation is often as critical as the gear, so use those ears and your imagination.

### Squash It

Because you're not in a warehouse or huge, beautiful pro-studio space, some of the miked ambience may be rather low in level. The in-the-closet mic, for example, can sound cool as hell, but it might be a bit limp on the impact factor. This is where compression can save your butt. You can compress every track to bring up the low-level ambient sounds if you have a rockin' DAW, or, if you're limited on compressors, you can assign all the mics to a stereo submix, and compress the crap out of the sub. I tend to go pretty aggressive with a 10:1 ratio at a -10dB threshold.

### Mix It

Now that you have a hopefully enormous and totally compressed stereo submix (or individually compressed mic tracks) of ambient drum sounds—so ambient, in fact, that they seem absolutely drenched in reverberation—the trick is to blend the ambient drum tracks with the close-miked drum tracks to craft a killer combo of articulate percussive attacks and vibey room sound. You can go more “dry” if you're a sissy, or do the Lillywhite move and crank up the “wet” tracks. Real adventurous souls can bring in the wet tracks more intensely at certain parts to pump up specific energy points in the song. Go Big! **EQ**



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# CRAFTING THE MAGIC OF THE BEACH BOYS

by Scott Mathews

I've been lucky to be included in the Beach Boys' inner circle since the late '70s—and I've worked on many of their records—but nothing quite prepared me for being given carte blanche to arrange, record, and produce background vocals for a founding member of one of the greatest vocal bands of all time. The legendary Al Jardine asked me to help complete a song he had been working on sporadically for 15 years, and when the audio files to "Don't Fight the Sea" were opened at my Mill Valley, California, studio Tiki Town, the glorious voices of Brian Wilson, Carl Wilson, and, of course, the forever underrated Al Jardine gave me chicken skin. I've come to understand that there is only one way to get that Beach Boys sound—the blend always has to include Al's voice. He had the glue that brought all the individual voices into one instantly recognizable and magnificent vocal sound.

## A Few Small Repairs

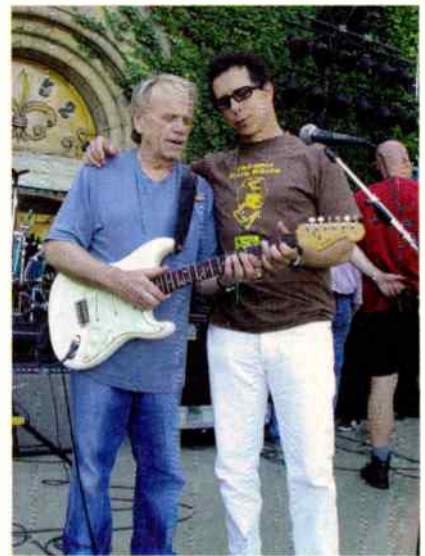
My first priority was to listen and figure out if any parts needed to be fixed, added, or deleted. I instantly recognized the greatness of the tracks, but there were some spots that needed work—the most obvious being a rough outro section. I replaced an out-of-tune and out-of-time vocal with my own voice, using a lovely, early '50s Neumann U48 tube mic. The main reason I chose the U48 is that it was often used on classic Beach Boys tracks, and I wanted to go after the same sound. Once I had the first part down, I doubled it in unison for a full and rich sound that was so good I decided to

triple it. Each time I sang the part, I moved slightly off the mic to emulate a more natural "group vocal" sound, as well as to introduce just the right amount of ambience to the tracks. That hit the spot, and it was the end of the "fixes."

## Singing With Angels

What came next was about as fun as recording gets—arranging *new* vocal parts to go with some of my favorite singers ever. I had purposely not prepared any parts in advance of the session to ensure that the spirit of the moment would inspire me to the fullest. I asked my chief engineer Tom Luekens to roll to a section of the song that sounded a little empty, and I began signing a series of "ahhs." It took about three takes until I hit on one that was perfect for building on. I tripled this part, and then sang a higher harmony part, and tripled it, as well. I thought about trying an even higher harmony, but I quickly realized that Brian and Carl Wilson's voices sounded so fine up there that it was best leaving that frequency range to them. I went with a lower harmony, tripled it, and was quite pleased with the results.

Happy as I was, I decided to try a fourth part that was very low. Cautious not to end up with any fat tones that could clutter the bottom end, we severely EQ'd the part after it was recorded by applying a -12dB shelf at 188Hz with a gentle slope beginning at around 400Hz. I sang a throaty bass part three times in unison, thinking that it likely wouldn't work, and we'd get rid of it. To my surprise, it was true to the school, so to speak. Lesson: You don't really know if something works or not until you lay it down, so don't be timid to try things. At worst, you'll



Scott Mathews (right) and Al Jardine during a Brian Wilson soundcheck at the Mountain Winery, Saratoga, California.

just erase the part, and no one will know it ever existed.

## Singing

Some solo-vocal lines appeared three times during the song. The first one worked perfectly, but I added a vocal to the second occurrence (single-tracked) that brought something new to the part, and then added a second and third vocal when the part appeared for the third and last time. All told, I stacked 17 vocal parts. Nothing was too busy, or got in the way of other mix elements, and all the vocal tones were crafted to fit with the original Beach Boys voices. After laying down a couple of acoustic 12-string parts to introduce the choruses—parts that Al dubbed "the Tarantino Touch"—I was done.

Afterwards, I realized that I had done lots of singing with the Beach Boys in my car, in the studio, and on stage, so I had a good intuition as to which types of vocal parts, harmonies, and timbres would enhance Al's track. That experience not only kept me from being nervous about tackling the job, it also guided me to craft *appropriate* parts that would help complete "Don't Fight the Sea" without moving it too far from the Beach Boys sound. **EQ**

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# 5 REASONS WHY YOUR MIX IS CRAP

by Michael Molenda

Oops. Sorry. Tough love, there. But here's the deal: Your musical fate is totally decided by what a listener hears "in the grooves"—whether that person is a label rep, a potential fan, or your mom. Unfortunately, *you* don't come along with your mix. You're not there to explain all your angst, or make excuses for the crap gear you cobbled together to record your sonic opus, or inform everyone they should really dig the songs because they're based on the life of burlesque comic Pinky Lee, and you used a DADGAD tuning to perform all the guitar tracks. Trust me—no one cares.

When you're already famous, Barbara Walters might marvel at your obsession with Pinky, but when you're a nobody all that so-called "interesting background material" is just meaningless pap that doesn't make up for a less-than-inspired audio production.

Of course, if people love you no matter what you do—even if what you do sucks—then you will be a famous and beloved musician whether you produce appallingly awful mixes or not. The rest of us should probably try to avoid the five deadly sins that follow. . . .

## You've Drowned the Sucker in Reverb

Reverb is like super crack for unsophisticated audio nerds who can't help themselves from drenching everything in cathedral-type ambience with epic decays. Pretty soon, every element of the mix sounds like it's underwater, and clarity, impact, and dimension are lost. And remember, every element in a stereo mix can affect its neighbor, so don't try the excuse that "I only put a big reverb on the vocal," because that vocal reverb can still mess with the perception of the backing tracks, or worse yet, seem totally out of place against a much drier rhythm section.

**Sonic Life Preserver:** Try mixing everything completely dry, and when

you like how everything sounds, try adding in just a bit of reverb until a three-dimensional quality becomes evident.

## Man, This is a Messy Room . . .

The Beatles recorded *Sgt. Pepper* on two synced 4-tracks, but now DAWs offer up something like 10,000 individual tracks. But that doesn't mean you have to actually use all of those tracks. I'm sure that your multiple percussion tracks, and quadrupled guitar-harmony lines are fabulous, but do they move the song forward, or add to the vibe, or are they just one of too many things for the listener to focus on? Cluttered mixes with tons of textures and layers can be frustrating to hear, because the heart of the song is often lost in the crowded sonic spectrum.

**Sonic Life Preserver:** Choose just a few mix elements to highlight. One element will likely be the lead vocal—which is the thing most people listen to, anyway. Or are you certain that everyone would go nuts over your soft, bell-like harmonics that happen just once in verse three for six seconds? Discipline yourself to spotlight one main element per song section in order to keep interest pumping along as the work chugs along. If you mix a ton of things the same volume because you love them all, you're not really allowing the listener to hear a compelling story unfold in your music.

## Vocal Ping Pong

Some people like vocals loud, and some like them soft, but nobody likes them too loud or too soft. Sounds confusing, huh? Well, if someone has to strain to comfortably hear the vocal, you've lost them. If the vocal is mixed so low that the snare, guitars, cymbals, or anything else interfere with the voice, its words, or its tone, you're done. Bad things also happen if the vocal is mixed so loud

that it seems as if the singer is screaming over a boom box.

**Sonic Life Preserver:** There are a number of good "tests" for vocal levels. One of my favorites is to turn down the mix until it's barely audible. If I can still hear every word of the vocal, but I can also hear the drums and main harmonic instrument (guitar, keyboard, etc.), then all is well.

## Gnarly Sonic Spectrum

Muddy mixes are the aural equivalent of wolfing down too much turkey, stuffing, and potatoes on Thanksgiving. The indistinct bass and dull mids make for a sluggish listening experience that will likely thrill no one. On the other hand, trying to be all modern and punchy with a mix that shoots out searing mids and sizzling highs like ninja shuriken blades might just behead your audience.

**Sonic Life Preserver:** To ensure that your sonic spectrum isn't out of whack, reference your mix to a selected "professional" mix from one of your favorite CDs. This is the best way I've found to assess whether I'm pumping too much bass (as compared to the reference mix), or being too heavy handed on the mids or highs. When you switch back and forth between your mix and the pro mix, it will be very clear where yours stands sonically. Correct accordingly.

## Crushed to Death

Compression can make your mixes appear to sound louder, and explode right out of a playback system. Too much compression can destroy every shred of dynamic interest, and incorporate bizarre pumping and breathing artifacts into the mix. Learn from the sad tale of Metallica's *Death Magnetic* CD that was so compressed fans started listening to the less-compressed tracks on the Guitar Hero game.

**Sonic Life Preserver:** Leave the compression to a good mastering engineer. **EQ**

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World Radio History

# 4 WAYS TO SURVIVE A JAZZ DOUBLE BASS SESSION

by Kent Carmical

Many home engineers might cringe in fear at the thought of a double-bass player walking in to record a jazz session. The instrument itself is large, has strings made from sheep's intestines, and isn't likely to show up in your usual rock and roll scene. Not to mention that jazz players ain't impressed with hammer-ons, sweep picking, or bitchin' tats, and they play in keys most rock musicians have never even considered. Jazz is its own world with its own priorities, Daddy-o, and while this bit won't have you digging Kerouac or Coltrane, it may keep you from looking like a square when the cats come to your studio to really blow.

## Find the Sweet Spot

Acoustic instruments rely on the environment they are recorded in for a good deal of their sound, so take the time to find the sweet spot in the room—that is, the location where the bass sounds best. It's also no sin to trust the bassist's choice of the spot where the instrument produces its finest tones. Jazz bassists have sacrificed most of life's wonders to learn their instrument from the headstock scroll to the pointy thing that sticks out of the bottom, so don't second guess them just to massage your ego.

## Use Two Mics

For all its size and intimidation factor, the double bass would have to work pretty hard to overcome a ukulele when it comes to volume. So unless

you have access to some very sensitive dynamic mics, condensers are usually the way to go. A good start is to use a large-diaphragm condenser to capture the low-end thump, and a small-diaphragm condenser to pick up the woody midrange of the body.

While you might think the best position to start miking a double bass would be around the f-holes, the rush of air shooting from each hole space can produce boomy, indistinct sounds. Instead, place the large-diaphragm condenser roughly six inches from the body of the bass, and pointed at a spot between the bridge and the f-hole. Now, position the small-diaphragm condenser about a foot from the bottom of the fingerboard, tilted up at a 90-degree angle. If the large-diaphragm mic is picking up too much low end (or wind from the f-hole), point it closer to the bridge, keeping the same distance from the bass itself. If a more articulate sound is the action you crave, try raising the small-diaphragm mic until it's closer to where the bassist is plucking the strings.

## Jetison Compression

Frank Zappa once referred to jazz as "the music of unemployment." While I'm in no position to argue with one of the greats, I can tell you that when it comes to recording, jazz is the music of no compression. Dynamics are important to jazz music, so why would you want to stomp all over them? If you are having problems with too much dynamic range—say, if the

bassist uses a combination of soft plucks and violent slaps to play a passage—then man up and ride the fader like a real engineer. (Which means you actually learn the song, dipping the fader during the slap phrases, and boosting it when the bassist's touch gets light.) However, if you are *compelled* to use compression, use it lightly—no more than a 2:1 ratio, with a fast attack and a medium release.

## Dial Out Bad Things With EQ

Equalization however, is a different matter. Most double basses produce copious amounts of sonic blubber between 80Hz and 120Hz. You can help alleviate any muddy or woofy low end with a notch filter. Start by notching out 5dB to 10dB at 100Hz, realizing that every bass has its own sonic character, and you will most likely have to play with different frequencies and cut/boost levels to bring out the instrument's hippest tone. For punch and clarity, experiment with boosting somewhere around 800Hz to 2.5KHz by 2dB–3dB. It is important to do EQ adjustments with the bass in the mix, rather than soloed, to ensure your tweaks don't adversely affect the other elements of the track. A big low end on the double bass, for example, might overwhelm the sound of the kick drum. Critical listening should point you to any tonal problems or challenges, and appropriate EQ adjustments can save you from having to re-mic and re-record. Dig? **EQ**



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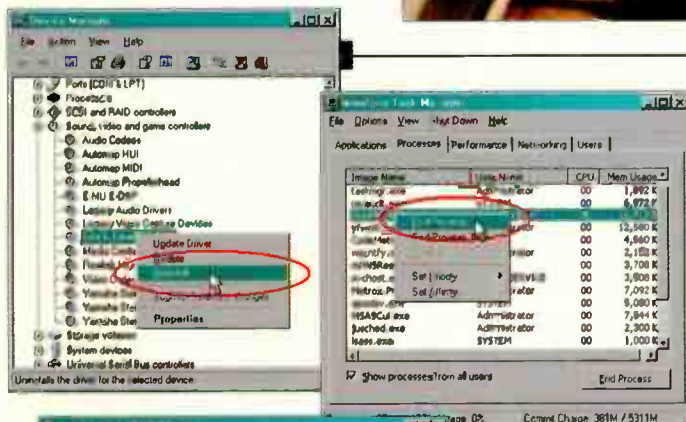
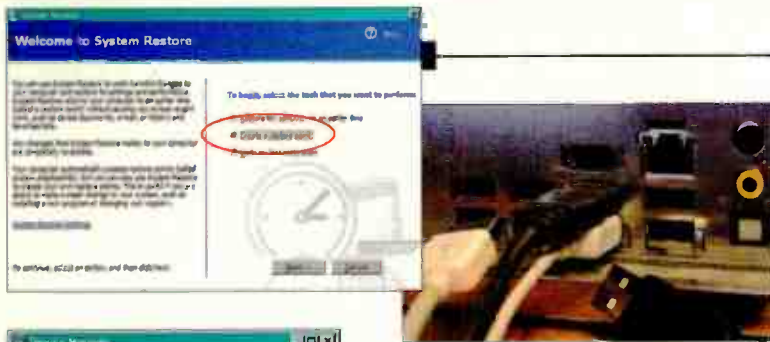
BY CRAIG ANDERTON

## WINDOWS XP DRIVER INSTALL

### Practice “safe install” for Windows XP

**OBJECTIVE:** Install USB and Firewire hardware devices, like audio interfaces and control surfaces, without any problems.

**BACKGROUND:** Hardware driver installation for Windows has become simpler, but sometimes there are still issues. This Power App Alley covers the steps you need to take for a (hopefully!) flawless installation, using USB as an example.



## STEPS

1. Create a System Restore point (go *Start > Programs > Accessories > System Tools > System Restore*) in case there's a problem and you need to try again.

2. Physically unplug all unneeded USB devices (e.g., everything, including dongles, except keyboard and mouse).

3. If an older driver is installed, go *Start > Control Panel* and double-click on System. Click on Device Manager, locate the driver, right-click on it, and select Uninstall. Optional: Restarting the computer (see Step 6) after this step may solve installation problems.

4. Right-click on the Taskbar, and select Task Manager. Turn off all unneeded programs, especially anti-virus programs and Windows Defender, by right-clicking on the entry and selecting End Process.

5. Start driver installation, usually by double-clicking on an EXE or MSI file. Follow any instructions, particularly if you're advised not to have hardware connected.

6. After driver installation, unless instructed otherwise, go *Start > Turn off Computer* and select Restart to re-boot the computer.

7. Plug in the hardware. Wait for the “Found New Hardware” balloon to appear, and when the “Found New Hardware Wizard” appears, select “Install the software automatically” and follow instructions. When driver installation is finished, enjoy your hardware!

## TIPS

- Step 3: You may be able to uninstall drivers by going *Start > Control Panel > Add or Remove Programs*, selecting the driver, and clicking on Remove; or, by going *Start > (name of program)* and selecting an uninstall routine. If you're downloading drivers, look for any instructions (e.g., PDF docs) and read them.
- Step 5: Most, but not all, XP hardware installations require leaving the hardware unconnected until after driver software installation.
- Step 6: With Line 6 hardware, a re-start is generally not required.
- Step 7: If a warning says the driver hasn't passed Windows testing, click on “Continue Anyway.”



# The John Lennon

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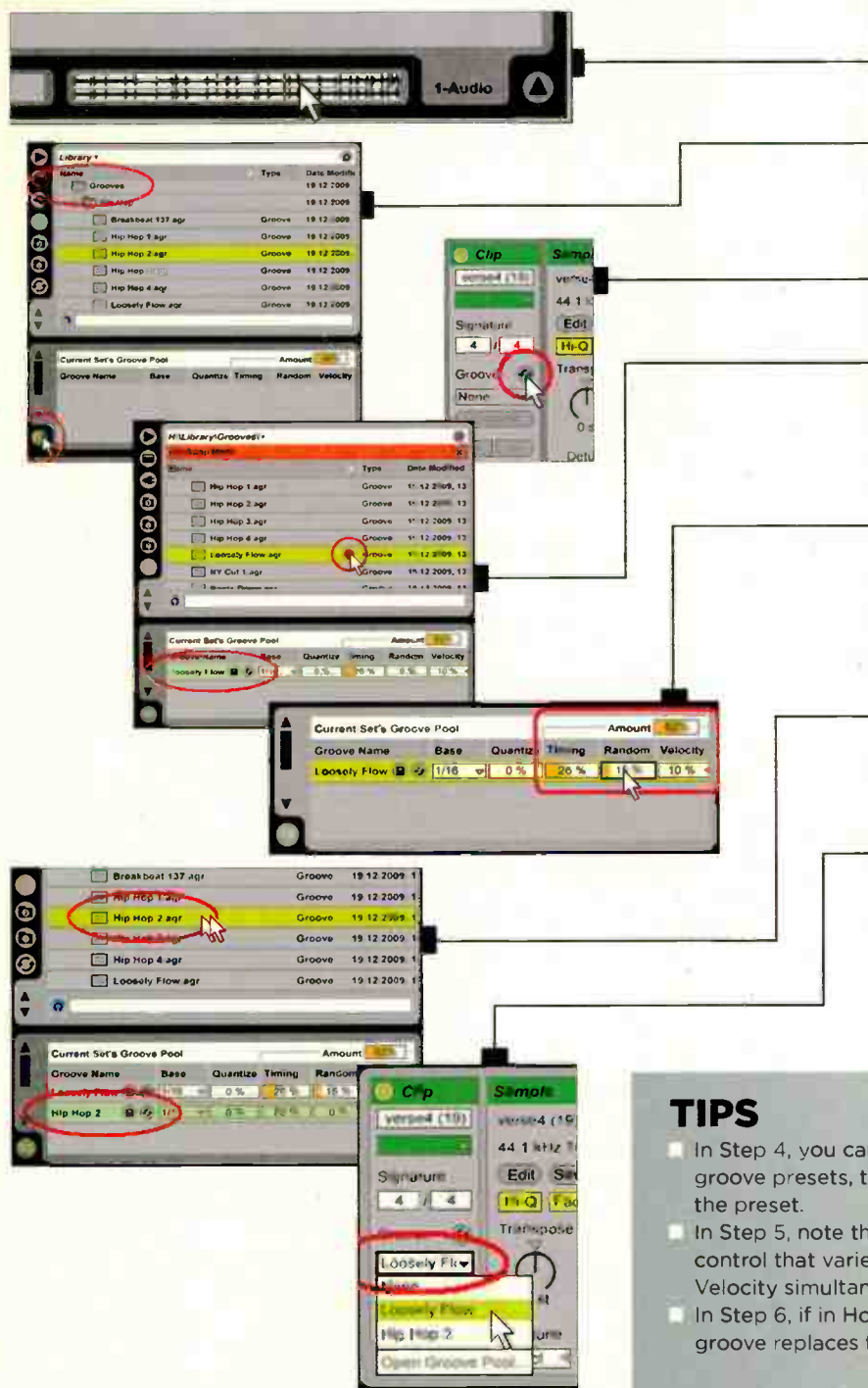
BY CRAIG ANDERTON

## ABLETON LIVE 8

### App y and edit “grooves” for audio clips

**OBJECTIVE:** Change the character of loops by taking advantage of Live’s groove-oriented functions.

**BACKGROUND:** You can overlay “grooves” on the timing of audio and MIDI clips to change the clip’s timing and velocity, thus creating different “feels.” Live’s Library includes a bunch of preset Grooves, but note that you can also extract groove timing data from MIDI and audio clips to create custom grooves.

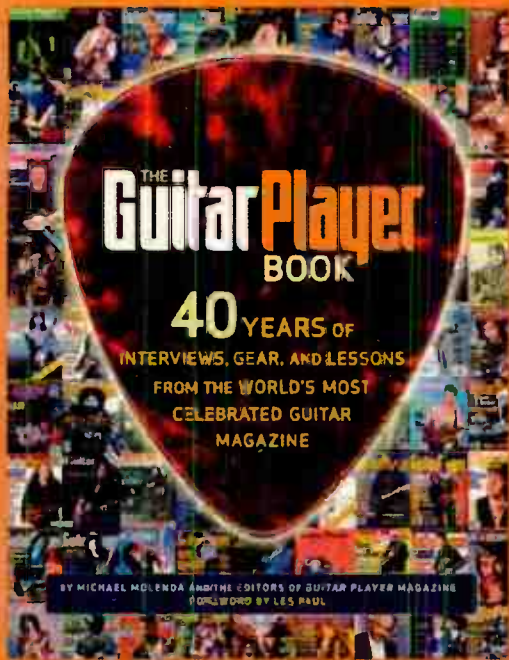


## STEPS

1. With an audio clip loaded, click on the Clip Overview to reveal clip parameters.
2. Locate the Grooves folder in the Library, then click on the Groove Pool button to open the Groove Pool. This will show all available grooves for the Live set.
3. For quick groove auditioning, click on the Clip’s Hot Swap button.
4. The Groove Browser goes into Hot Swap mode. Click on a groove to select it, then click on the groove’s Hot Swap button to audition it. This groove will appear as an entry in the Groove Pool.
5. When you find a groove you like, you can tweak the various parameters (Timing, Randomness, and Velocity, as well as Quantization) for that groove in the Groove Pool. Note that tweaking automatically exits Hot Swap mode.
6. When not in Hot Swap mode, you can add more grooves to the Groove Pool by double-clicking on groove presets in the browser.
7. All currently available grooves in the pool appear in a drop-down menu in clip view; selecting a groove applies it non-destructively to the clip. To write the groove to the selected audio clip, click on the Commit button just below the drop-down menu.

## TIPS

- In Step 4, you can use the up/down arrow keys to step through groove presets, then click on the Hot Swap button to audition the preset.
- In Step 5, note the Amount control at the top. This is a “master” control that varies the amount of Timing, Randomness, and Velocity simultaneously and proportionately.
- In Step 6, if in Hot Swap mode, double-clicking on a browser groove replaces the currently selected groove in the Groove Pool.



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# ROUNDUP: PROJECT MASTERING MASTER CLASS

***Why settle for tracks that sound “good” when they can sound “great”?***

by Craig Anderton

Without blowing our horn like, y'know, *too* much, we really have been on top of the “project mastering” trend for some time. So for this roundup, we'll assume you have the basics figured out (you *can* master at home, but you better know what you're doing), and concentrate on specific techniques that relate to mastering. Some of these relate to tracking and mixing, too. Also, rather than having our usual review format, we'll instead pick some cool features from various digital audio

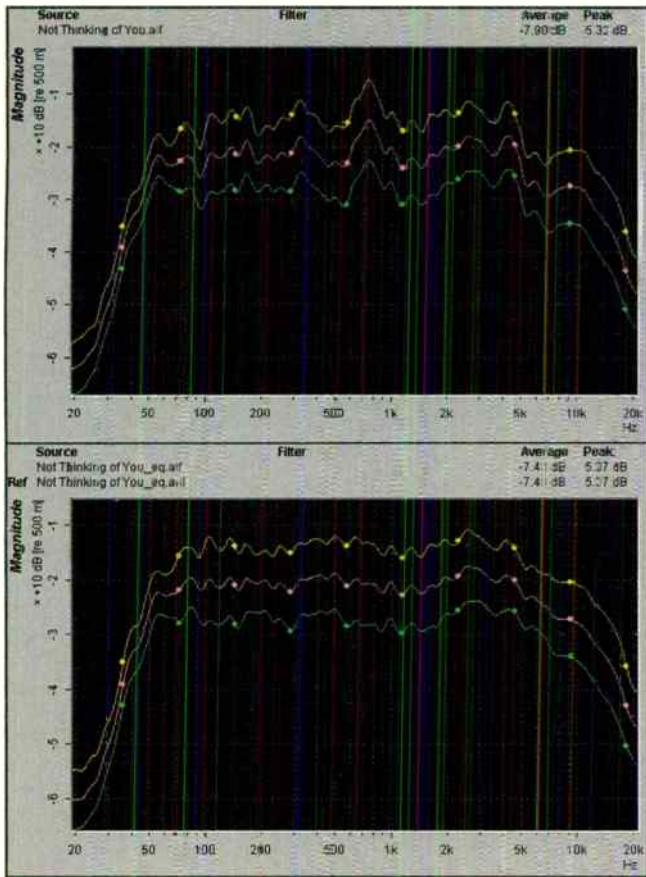
editing programs, and show how to apply them to real-world situations.

As to which digital audio editor is best, they all do the job—but they all do the job *differently*. Also, some have unique features that are essential to some people, but irrelevant to others. I'm very fortunate, because I get to evaluate all these programs while doing reviews, then use whatever I want with music projects. And frankly, I use *everything*. I'll often go through three or more programs to get the final result—even crossing back and forth between Windows and Mac.

Of course, having multiple products adds up price-wise, but the price of all these programs adds up to about the same as the reel-to-reel two-track machine I used back in the day. We've definitely come a long way.

## **SO WHAT'S THE DEAL WITH “GOLDEN EARS”?**

But first . . . for years, people have talked about the need to use professional mastering engineers, with the usual reasons being “well, they've done hit records and have golden ears.” But what are the characteristics



**Fig. 1.** The upper window shows the response prior to compensating for inconsistencies in the bass range and a wicked peak at about 700Hz; the lower window shows the response for the fixed version.



**Fig. 2.** SoundSoap Pro 2 is a general-purpose noise reduction plug-in that's suitable for use with digital audio editors and multitrack DAWs.

of “golden ears” for mastering?

Simple: The ability to detect *extremely* subtle changes. This is crucial for two reasons. First, applying a processor to a mixed stereo track affects *everything*—if you boost a particular frequency, you’re boosting that frequency for drums, voice, bass, etc. This is very different from processing an individual track, where it’s often desirable to paint in broad strokes.

Second, mastering typically involves lots of little edits, but these add up to a not-so-little result. Every action *does* have an equal and opposite reaction; alter the dynamics, and you alter the mix. Boost or cut at a certain frequency, and it will make other frequencies seem softer or louder in comparison.

This is where many wannabe mastering engineers fall short, because they apply “recording thinking” to

“mastering thinking.” Mastering is the art of subtlety, and you have to understand which small changes you need to make for a big result.

## THE EQUALIZATION TWO-STEP

If I could only have one processor for mastering, it would be EQ. I actually use two independent EQ processes. The first fixes problems, while the second adds subjective tonal improvements. For fixing, I call up the file in Har-Bal to see what’s going on in the overall audio spectrum (Figure 1). The heart of the program is an 8,192 stage FIR equalizer, but it also displays an average of the energy distribution across the audio spectrum in 1/6 octave bands (you can change this, but 1/6 octave is my preferred setting). Looking at the display can provide an “early warning system” for

any frequency response anomalies, although of course you can’t make any final determinations without using your ears (and brain). Common problems are:

- **Bass doesn’t roll off at subsonic frequencies.** Cutting everything below 20–30Hz can clean up the sound and open up a bit more headroom (also see the section “Remove the Subsonics”).
- **Bass range peaks and dips.** This is usually due to room issues where the recording was made, but be careful in your analysis—there may be a major kick drum that causes an *intended* peak. However, this tends to be a single blob of energy, whereas room issues cause a curve that looks more like “ripples” due to multiple resonances.
- **Too many highs.** What with distorted

guitars, aliasing that generates weird harmonics, digital clipping, and the like, today's recordings sometimes seem harsh. A little high-frequency rolloff can tame harshness without reducing the perceived high frequency response.

• **Midrange issues. Unexpected**

midrange peaks, attributable to a variety of factors, can sometimes give a "honking" effect. These may be subtle, but you'll still notice the sound is smoother when you correct them.

Of course, you don't need Har-Bal to do these kinds of fixes; you can use a parametric EQ to reduce nasty peaks. The trick here is to narrow the peak and boost to an absurd degree, then sweep the frequency to hear which frequencies slam the level into distortion. You can then cut the response of that frequency to reduce the peak, and smooth out the sound.

For the second EQ process, I'll tend to use a parametric or a "broad" EQ (I've always liked Pultec units for this, and the Universal Audio emulation is very good). For example, I might add a general upper midrange lift to give vocals and guitars more definition, or

boost the bass a bit to give the kick more authority.

## BANISH THE NOISE

If you're lucky, a cut to be mastered will have a few seconds of "air" at the beginning, rather than be cropped right up to the start. System hiss and noise will be present in this "silent" part. Granted, this might seem very low-level, but removing low-level noise is like blowing the dust off a painting—everything looks the same, it's just more defined.

I generally use Sony Sound Forge's noise reduction, and choose the most natural algorithms and minimal reduction (the less reduction you need to do, the better). If a file already has relatively low noise to begin with, noise reduction can make it sound *perfect* without creating audible artifacts.

This type of noise reduction (Adobe Audition incorporates a similar noise reduction module) requires defining a region of pure hiss, called a "noiseprint." This is analyzed, and extremely sharp/precise filtering removes these specific frequencies. You can edit the strength of the noise reduction, and even edit the noiseprint manually. Also, Sound Forge lets you include noise reduction in effects

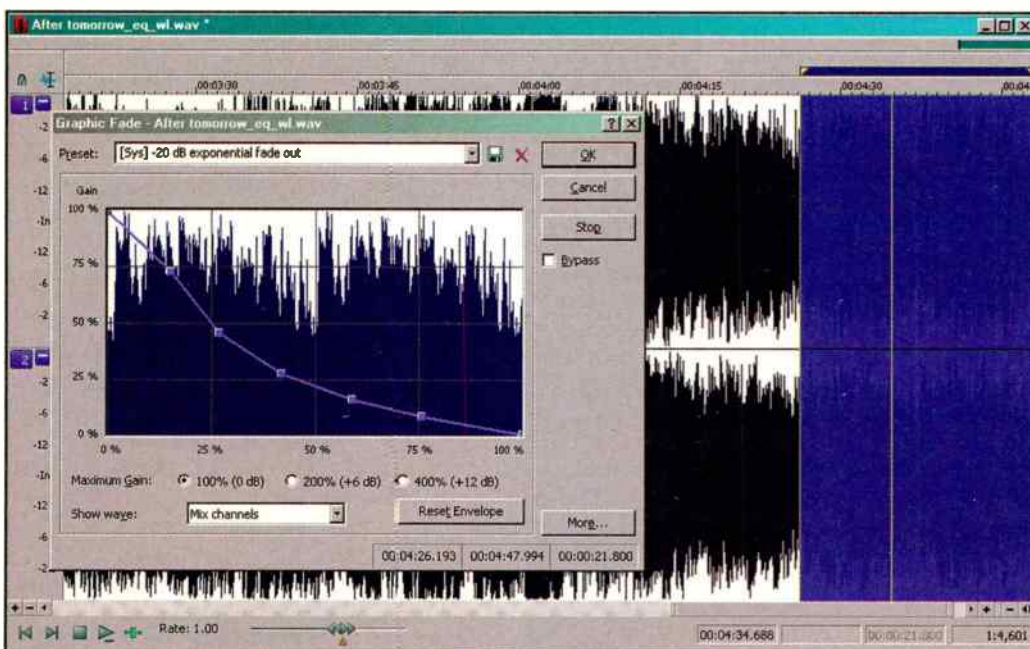
chains, which is helpful: You can apply two subtle processes instead of a single, more drastic one.

On the Mac, and also with Windows DAWs, my plug-in of choice is BIAS's SoundSoap Pro 2 (Figure 2). But I also use it with digital audio editors, because while it can do the "isolate a piece of noise and eliminate it" trick, the latest version does Adaptive Noise Reduction where the program decides what's noise and what isn't by itself, and can even change that definition over the course of a file. For an example of why this is useful, consider a noisy file that's been compressed, so the noise changes over time—SoundSoap Pro 2 can adapt to the changes in hiss levels. It also includes other restoration tools (click/pop removal and hum).

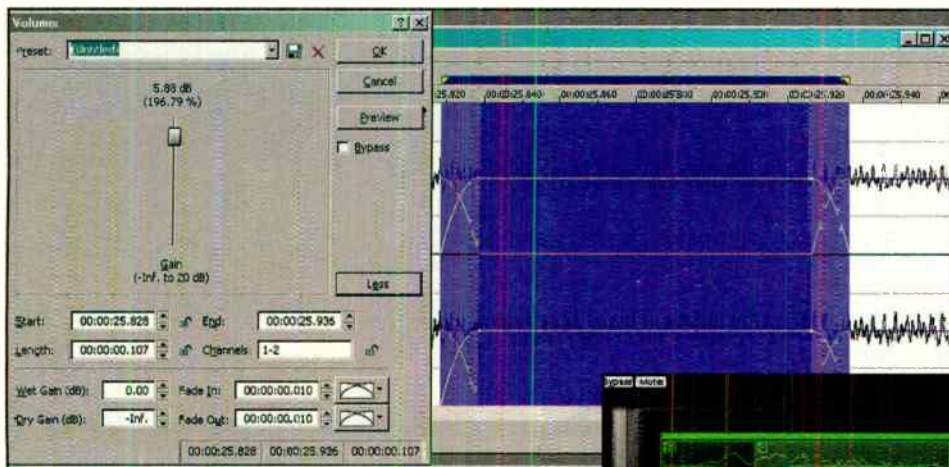
However, note that most digital audio editors include some kind of noise reduction; Audition offers several different types, and Steinberg Wave-lab's DeNoise even offers adaptive noise reduction.

## THE RIGHT FADE

I request that people submit files to me with no fades, and instead specify where they want the fade to begin and end. The main reason is so I can create



**Fig. 3. Sound Forge has a great fade feature that uses a breakpoint envelope, where you can add as many points as you want to create any arbitrary curve. It's also possible to preview the fade before committing to it.**



**Fig. 5. The multiband stereo image widener in iZotope's Ozone 4 can also narrow the image. In this case, lower bass frequencies are being pulled to the center.**

the perfect curve—a lot of the files I get have linear fades, which don't sound all that great. But the other reason is so there's material just in case the fade needs to be extended.

This situation happened recently while mastering a cut by Norwegian musician Ronni Larssen. He expected the fade to occur over an instrumental figure at the end, but it seemed like not quite enough time for a fade, and besides, I liked the figure. So, I copied the last figure, and pasted it in twice (using automatic crossfading) so the figure repeated three times at the end.

Next was taking advantage of Sound Forge's fade feature, which can define pretty much any fade curve you want (Figure 3), as well as preview it. I went for a fairly quick fade, then drew a logarithmic fade to the end.

## MASTERING WITHIN MASTERING

With a recent mastering job, one section bothered me: a drum fill lead-in to a chorus just didn't "pop" enough. Instead of kicking the energy up a notch, the

quiet fill brought down the song.

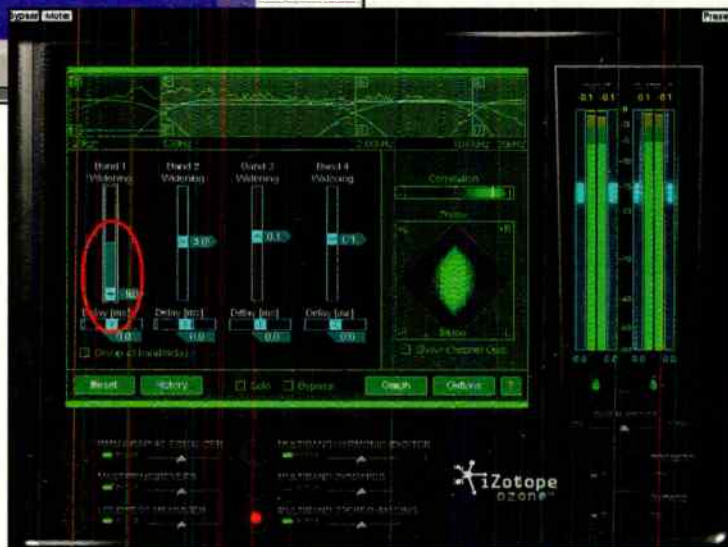
No problem: I defined that fill as a region, and increased the gain by 3dB. With Wavelab 6, it's important to have regions begin and end on precise zero-crossings, as increasing or decreasing level where there's level can cause a click due to the abrupt level change. Unfortunately, zero-crossings don't always occur in the same place on different channels.

BIAS Peak, Adobe Audition, Sound Forge, and others get around this by introducing a small crossfade between the altered and non-altered sections (Figure 4). The screen shot shows Sound Forge because its graphical representation clearly shows what's going on, but I first became aware of the value of this approach with BIAS Peak Pro, when I needed to change levels or tonalities of individual notes with classical harp:chord and guitar projects.

## PULL THE BASS TO CENTER

Bass belongs in the center. With vinyl, that's a requirement so that the stylus

**Fig. 4. When you need to raise or lower the gain or otherwise process individual sections, the ability of several programs to add an automatic crossfade eliminates clicks due to abrupt level changes.**

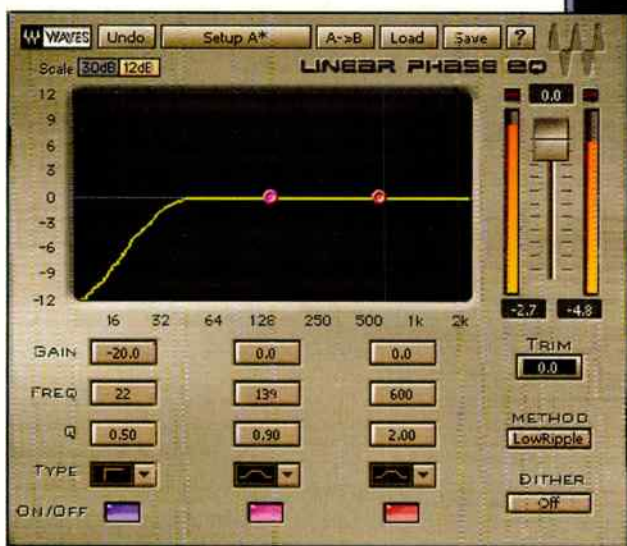


doesn't jump out of its groove; these days you can put bass wherever you want from a technical standpoint, but for my taste, it still works best in the center. Bass is non-directional compared to highs, so having it emanate equally from stereo loudspeakers on playback makes sense.

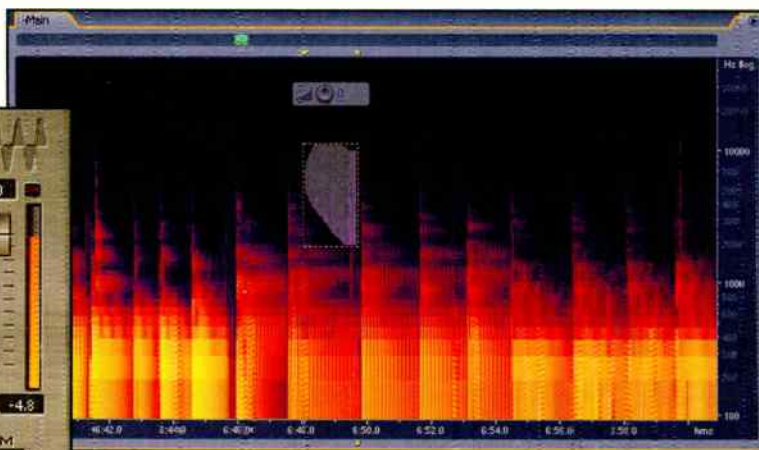
One of my "secret weapon" techniques for giving rock/pop tunes more power is the Multiband Stereo Imaging processor in iZotope's Ozone 4 (Figure 5). Although these types of processors generally widen the stereo image, with Ozone 4 you can narrow the stereo image by choosing a negative "widening" value. Because it's a multiband processor, you can apply this to the bass range only, and "anchor" the song's low end.

## REMOVE THE SUBSONICS

People aren't going to hear what's below 20Hz, so you might as well nuke any energy down there. If there are any subsonic signals—which is increasingly likely in a digital world, where sounds



**Fig. 6. Waves' plug-ins are very popular for mastering, but don't overlook the LinEQ Lowband Stereo for removing subsonics and rumble.**



**Fig. 7. Adobe Audition's Spectral View is ideal for making edits with surgical precision—you can even lower the level on a single drum hit, or remove the cough from a live recording.**

can be transposed into the subsonic range—they'll take away from available bandwidth, and in some cases, muddy the sound.

Although this roundup isn't really about plug-ins, for low-cut filtering I use Waves' LinEQ Lowband Stereo (Figure 6), because there have been times when I haven't heard any difference with it inserted, but the meters indicated I'd gained back headroom. It's your basic linear phase surgical EQ tool, and is ideal for this type of application.

## WHY SPECTRAL VIEW ROCKS

Wavelab and Adobe Audition include the option of spectral view editing (Sound Forge has a spectral display, but you can't do any actual editing). The 1/10 issue includes a techniques article on using spectral editing to remove noises, scrapes, and the like from nylon string guitar.

Spectral view presents audio not as a waveform, but how energy is distributed in the spectrum. For example, in Figure 7 the bass notes are yellow, with brighter yellow meaning that the note is louder. It's possible to identify, isolate, and edit specific events, like a kick drum, cough, finger scrape, and the like. With Audition, after selecting the region you want to edit, you can

change level (e.g., attenuate it so it's not as prominent, or boost it) with the level control that appears automatically, or do any other processing—compress just a single kick note, for example.

I don't use spectral view for general mastering, but only if problems need to be solved—it's more of a technical process than a musical one. But when you really need to get "inside" the waveform, there's no better option.

## MICRO-MASTERING

Clients want loud cuts, but I'd rather not put a limiter on the output and squash the file to death. "Micro-mastering" is an effective, albeit tedious, way to increase overall level, while minimizing the negative effects of any limiting or compression that does get used.

This works on the principle that any mixed file has occasional peaks that are significantly higher than other peaks. For example, suppose that 12 peaks have values between -2dB and 0dB, and all other peaks fall below -2dB. If we reduce the 12 peaks to -2dB, then it's possible to raise the level of the entire file up by 2dB, thus gaining 2dB of "loudness" without using compression.

Finding those peaks is easy with Wavelab's Global Analysis feature. First, decide how much headroom you

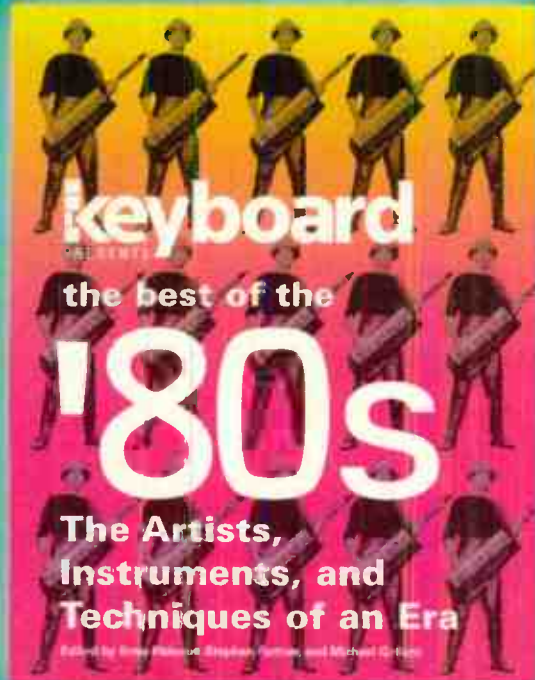
want to open up—I'd suggest 2dB until you get a feel for how this process works. Go *Analysis > Global Analysis*, and click on the Peaks tab. To find one peak at a time, enter 1 for the maximum number of peaks to report. Click on Analyze, then click on the Maximum field for either the right or left channel. Click on Focus, and Wavelab jumps to that peak.

With snap to zero crossings selected (it's under Options, or just type Z), define the half-cycle containing the peak as a region, then invoke normalization to change the peak level for this region to -2dB. If the corresponding region in the other channel exceeds the peak you just reduced, normalize that section as well while you're in the same general area.

Keep working through the file, a peak at a time, until the maximum peak Wavelab finds is -2dB or less. Your work is done for that channel. Similarly, reduce peaks on the other channel to -2dB.

When all peaks have been tamed to -2dB, use normalization or gain change to bring up the file level (Figure 8). The file will be noticeably louder, but you'll notice no artifacts from compression because you haven't compressed anything. Furthermore, anything lower than -2dB has been





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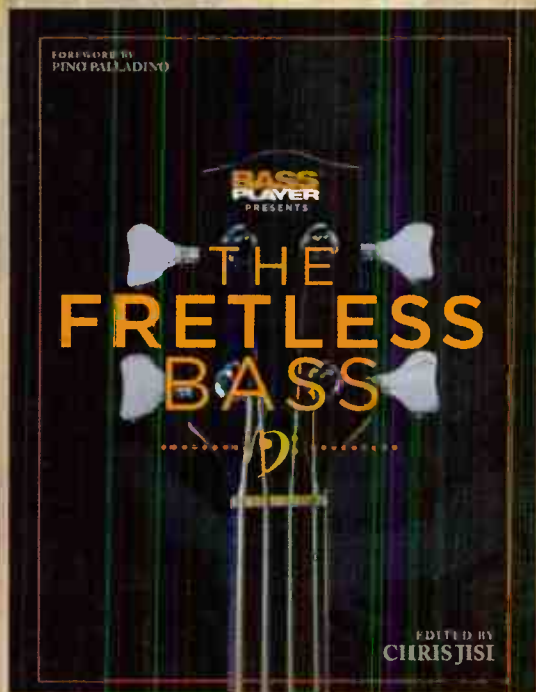
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## WHAT ABOUT THIRD-PARTY PLUG-INS?

Although digital audio editing programs come with a plethora of plug-ins, don’t overlook what third-party plug-ins can bring to the party. Universal Audio and TC Electronic (with their PowerCore) offer several mastering-oriented plug-ins hosted by hardware so they don’t load down your CPU, and previous issues of *EQ* have covered useful mastering plug-ins like tape emulators. Also, note that McDSP has announced upcoming availability of many of their plug-ins in VST and AU formats; several McDSP plug-ins are superb for mastering, so this is good news.

As to other favorites, this is a very subjective area but I like PSP Audioware’s compressors, EQ, and their Vintage Warmer; and of course, Waves makes outstanding mastering plug-ins. I also find some of SSL Duende’s plug-ins invaluable when you want to add “character” but if your budget is tight, check out what Voxengo has to offer—their plug-ins are often underrated. URS makes several cool plug-ins, but for me the ones that stand for mastering are those that model mixer stages, transformer inputs, and the like—they’re subtle, but subtle is often exactly what you need. And for a one-stop solution, it’s hard to beat Ozone 4.

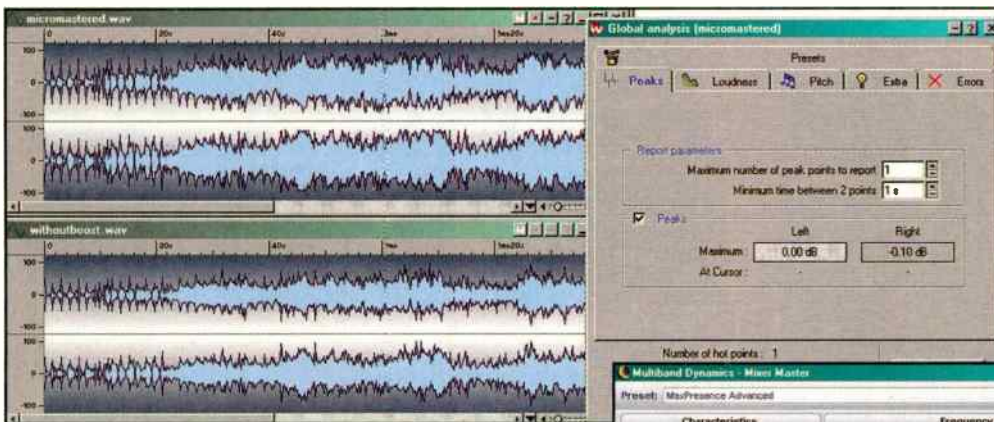
## TRANSFORMING A DAW INTO A MASTERING MACHINE

Although there are many similarities among digital audio-related programs, digital audio editors still exist as a separate product category because they

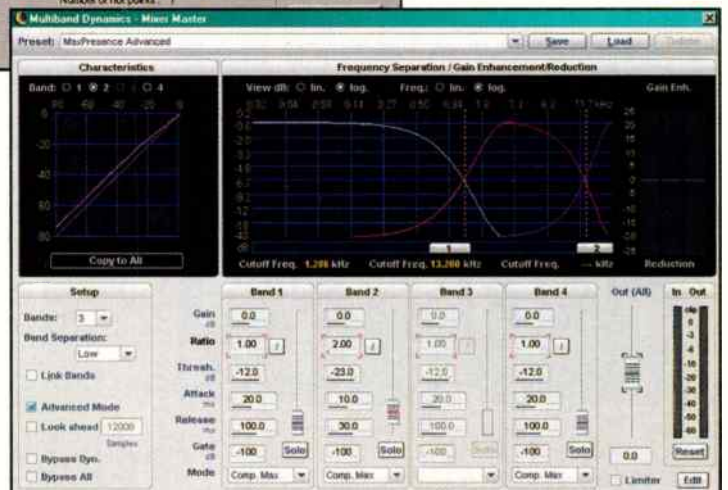
put individual bits of digital audio under the microscope, while DAWs are about dealing with large numbers of hard disk, MIDI, and virtual instrument tracks. Still, some DAWs are slowly but surely turning into mastering machines.

Magix Samplitude (Figure 9) and Adobe Audition have always emphasized a combination of multitracking *and* mastering. More recently, PreSonus’ Studio One (Figure 10) has integrated mastering with tracking/mixing in a highly evolved way—for example, edits to a mix are reflected in the playlist that burns a CD. But even programs that aren’t billed as mastering software *per se* can often be pressed into service.

Take Cakewalk Sonar: It has several phase linear processors, a spectrum analyzer, dithering, markers that identify peak levels, high-resolution metering (down to -90dB), and other mastering-oriented tools. While Sonar’s default workflow isn’t particularly suited to efficient digital audio



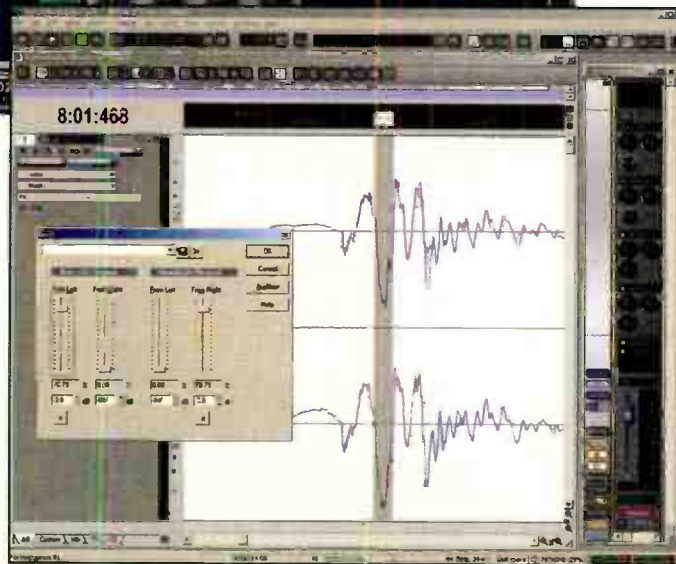
**Fig. 8.** The “micromastered” file is at the top, the original file at the bottom, and Wavelab’s peak-finding dialog is toward the right. The peaks on both files are at 0, but the micromastered file has a higher average level.



**Fig. 9.** Samplitude includes several mastering-level effects, including this multiband dynamics processor.



**Fig. 10.** Studio One has a separate window for not only mastering individual cuts, but assembling them into a playlist, adding master effects, burning CDs, and publishing to the Web.



**Fig. 11.** This window layout optimizes Sonar for digital audio editing. Note the "Master Strip" to the right; on the waveform itself, a peak is about to be reduced by a few dB so that normalization can give a higher average level.

editing, customization can make it "feel" more like a digital audio editing program (Figure 11).

For example, simplifying menus so that they show only essential functions helps improve workflow; there's usually no need for MIDI, measures, staff view, lyrics, virtual instruments, and video. I renamed the "Process" menu "DSP" and placed all audio DSP functions under it, and as I've been using Sound Forge since the mid-'90s, I re-arranged and re-named Sonar's File menu to be more like Sound Forge's.

I also created a layout for digital audio editing, with a large track view to make waveform viewing simpler, and a very restricted console view that shows only the master bus (with levels set to 0). This recalls Wavelab's master section, but there's a practical reason for splitting the mastering load into destructive "technical" fixes that involve DSP (like getting rid of clicks,

glitches, noise, etc.), and "artistic" fixes that usually involve plug-ins (like how much EQ, limiting, or other "spices" to add). I make technical fixes on the track view itself, but the plug-ins get loaded into the master console strip. It's therefore possible to bounce the file to another track through the master effects, and if needed, do multiple bounces with different variations that the artist can evaluate.

Another advantage is that when saving the project, all these variations are kept as separate tracks; when working on the "technical" elements, you can put temporary dynamics and EQ processing in the master strip for a better idea of what any changes will sound like after mastering.

For me, the biggest shortcoming of typical DAWs is a lack of noise reduction, but as mentioned previously, BIAS SoundSoap Pro 2 can take care of that. Like many other DAWs, Sonar

includes dithering (I use the noise-shaped Pow-r 3 option, even though it's the most CPU-intensive) and the ability to burn CDs. ☞

## Links

Adobe [www.adobe.com](http://www.adobe.com)  
 BIAS [www.bias-inc.com](http://www.bias-inc.com)  
 Cakewalk [www.cakewalk.com](http://www.cakewalk.com)  
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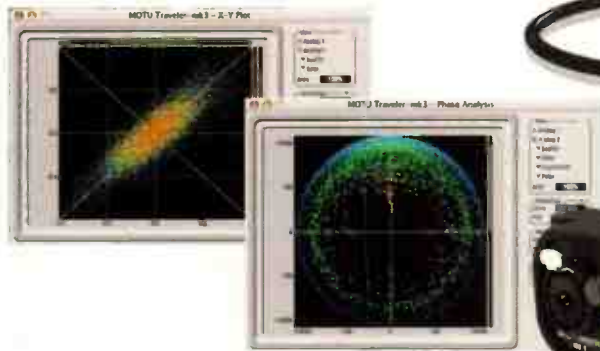
Run DP7 on Apple's latest MacBook laptops, connect the UltraLite-mk3 with HYBRID technology, add powerful new third-party products, and you've got a state-of-the-art desktop studio that's more slim and powerful than ever.



## Apple MacBook Air

### Thin as always — faster than ever

MacBook air continues to redefine what's possible. It's incredibly light, amazingly thin, extremely durable, and eminently portable. And now its new Core 2 Duo processor pushes the performance limits. With no moving parts, its solid-state drives enhance durability and use less power. Connect your MOTU UltraLite-mk3 Hybrid via USB2 and off you go.



## HYBRID Technology



## MOTU UltraLite-mk3 Hybrid

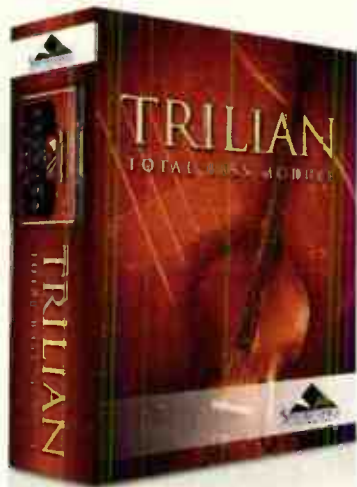
### FireWire•USB2 mobile audio interface

Connect to any current Mac or PC via either FireWire 400 or hi-speed USB2 and enjoy the same pristine audio quality and zero-latency on-board mixing performance either way. Includes classic reverb, modeled analog EQ, vintage compression, and advanced signal analysis tools like a full-screen real-time FFT display, spectrogram "waterfall," oscilloscope, X-Y plot, and linear or polar phase analysis.



## Euphonix MC Transport Compact media controller

MC Transport's ultra-high resolution jog wheel and shuttle ring, ergonomic controls, and programmable Soft Keys deliver one-handed access to almost every facet of your Digital Performer 7 project for an unprecedented "hands-on" editing experience. Use the new MC Transport standalone or together with its Artist Series companions, **MC Control** and **MC Mix**, to bring Euphonix' high-end console technology to your MOTU desktop studio in a compact design that fits perfectly in front of your MacBook.



## Spectrasonics Trilian

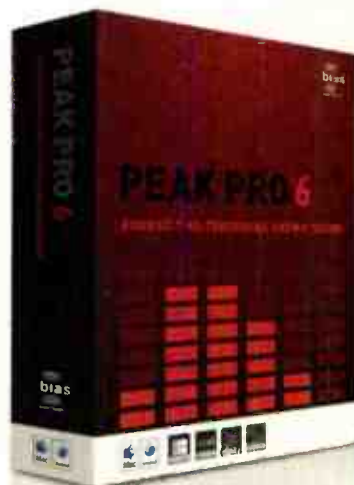
### Total Bass Module — acoustic, electric, synth

With a new level of expressive, real-time performance for acoustic and electric basses — plus cutting-edge synth basses, Trilian is the most versatile bass virtual instrument available today. Trilian's elegant interface and powerful STEAM technology provide deep sound shaping control over its 34GB core library. Plus, Trilian's sounds can be used in Omnisphere for further sound design and keyboard/bass splits. Trilian is the bottom line for bass!

## BIAS Peak Pro 6

### Evolution of an award-winning standard

Whether you're a musician, sound designer, audio editor, multimedia producer, or mastering engineer, Peak Pro 6 offers more creative potential than ever before. Used side-by-side or launched directly from within DP7, Peak Pro 6 streamlines your workflow with industry-renowned sonic quality and precision. For additional mastering, restoration, and DDP 2.0 delivery power, step up to Peak Pro XT 6.



## Neumann TLM 102

### Sweet little microphone — huge Neumann sound

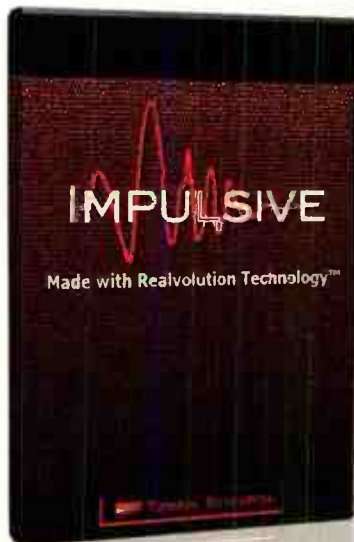
Don't let its small size fool you — only 4.5" tall — the new TLM 102 large-diaphragm microphone makes a perfect addition to any studio, from project to professional. Featuring transformerless circuitry, a foam-lined grille to reduce 'p' and 's' sounds and an SPL rating of up to 144 dB, the TLM 102 brings the legendary Neumann sound home at a price everyone can afford.



## Timbral Research Impulsive

### First-class impulse responses for DP's ProVerb

Get the most from ProVerb! Impulsive is an extraordinary new collection of hardware reverb impulse responses, captured via "Realvolution," a patent-pending process resulting in phenomenal accuracy. You get more than 4GB of impulse responses from 24 of the most sought-after hardware reverberators. IRs are available in 24-bit/96kHz, 24-bit/44.1kHz, and CPU-friendly ECO versions. When you're ready to maximize the power of Digital Performer's included ProVerb convolution reverb plug-in, it's time to get Impulsive.



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World Radio History

## SONY CONTINENTAL DRIFT



When they say world loops, they mean *world*: Some of these sound like Smithsonian field recordings, but higher quality—this isn't "new age" world.

Some regions are sparsely represented: Asia has four instruments, Native Americans and Arabians get five, Gypsies and Celts have seven; however Africa has ten folders

and East India, six. Fortunately each folder has a reasonable amount of loops, so it's easy to create variations.

Yes, you can make ethnic-sounding music, which might seem limited unless you're scoring an action flick where the hero jet-sets to exotic locales. But then I did the "let's throw loops together and see what sticks" test, using African vocals and bass, Arabic rhythms, Celtic dulcimer, and East Indian harmoniums and vocals. It sounded surprisingly cool, and as I assumed you

wouldn't believe me, check out the audio example at [www.eqmag.com](http://www.eqmag.com).

Of all the "world" sound libraries I've reviewed, this is a tough call. On one hand, there are enough spices to take any dance mix to the next level in a Peter Gabriel-esque way, and it's a gold mine for soundtracks; but a lot of the material is *very* exotic, likely limiting its usefulness in traditional genres. Still, this is a bold and novel library, and because some of the loops are *outstanding* in terms of being chills-up-spine evocative, it keeps pulling me back in for more. —*Craig Anderton*

**Contact:** Sony Creative Software, [www.sonycreativesoftware.com](http://www.sonycreativesoftware.com)

**Format:** Two CD-ROMs with 969MB of Acidized WAV files; 24-bit, 44.1kHz

**List price:** \$69.95

## LOOP WORKSHOP VARIOUS DRUM LOOP PACKAGES



Loop Workshop follows the "download for cheap" model—typical Pro Session Drumz series packages are around 100-200MB, averaging 50-150 song segments duplicated as stereo kit and room mics only (layer them in parallel to choose the amount of room sound), and cost

\$12-\$14. No, that's not a typo, and these were recorded in Nashville by Tony Morra, so the playing is great. There are many other packages too, like a dozen drum machine loops for \$1.99.

The online audio demos are very helpful, because the number of samples is pretty overwhelming—I checked out Big Drumz, Pop Drumz, Rock Drumz, Alt Drumz, and Reggae Drumz. The sound for these is raw (but not grungy), muscular, and well-recorded—not surprising, as founder Rick

DiFonzo was half of Discrete Drums, whose libraries are still my go-to loops for rock drums. In addition to stereo files, the site will also be offering multitrack Pro Tools sessions; this appeals to me a lot, as I tend to mix cymbals somewhat lower than most people, and the crash cymbals on the stereo files are a bit hot for my taste.

Overall, Loop Workshop seems aimed at the instant gratification crowd—"I need a big rock backbeat *now*, what am I gonna do?" Why, you're going to go to the Loop Workshop site, listen to the demos, see what works for you . . . then download, and pay for, only what you need. —*Craig Anderton*

**Contact:** Loop Workshop, [www.loopworkshop.com](http://www.loopworkshop.com)

**Format:** Downloadable AIF (Apple Loops 16-bit/44.1kHz or 24/48), Acidized WAV (24/48 only), and EXS24; for many files you'll need to edit transient markers when stretching

**List price:** Varies depending on product, but value is excellent

## UEBERSCHALL PURE FIRE



This loop library-meets-instrument is all about intense, hardcore urban music with a mostly minor vibe. I could probably score an entire inner city crime drama show with just these loops (and it would be a great soundtrack, too).

The drum beats are bone-crushing and huge, but not huge as in *ambience*—huge as in taking over most of the audible spectrum, holding it by the neck, and threatening its family. The synth riffs buzz away, some FX sound like samples of the apocalypse, and there are even a few massive, orchestral-type stings and strings.

The 20 construction kits include deconstructed and mixed riffs, each playable via MIDI (controller or sequencer notes). The Elastik player features stretch algorithms from

zPlane; Ueberschall's "loop eye" interface brings realtime control sensibility to a loop-based virtual instrument (see the 3/10 issue). This makes it easy to create extended improvisations within the context of a construction kit.

But it's not all doom and gloom: Take out the melodic instruments, and you're left with beefy drum parts that work with other genres. And don't get me wrong—the drama and danger in these loops isn't a bad thing, as they're extremely well done; the intensity and depth lifts them above the ordinary. If you seek big, bad, authoritative loops with an undertone of power and menace, these deliver. —*Craig Anderton*

**Contact:** Ueberschall, [www.ueberschall.com](http://www.ueberschall.com)

**Format:** DVD-ROM with 1.54GB of content (approx. 900 loops), arranged as 20 construction kits

**List price:** \$99.95



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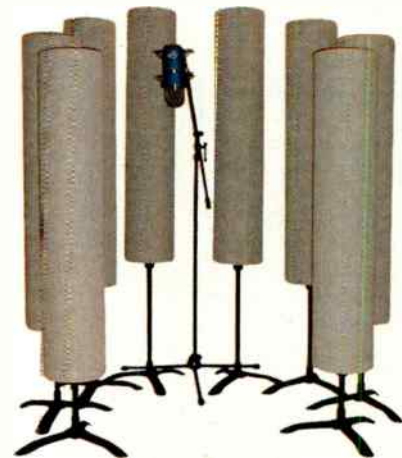


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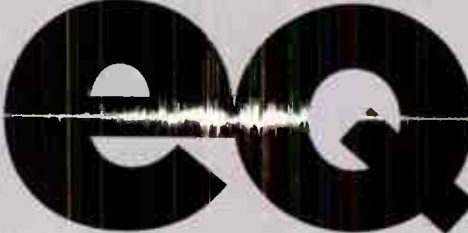
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**Studio name:** Mayfield Mastering  
**Location:** Nashville, Tennessee  
**Website:** [www.mayfieldmastering.com](http://www.mayfieldmastering.com)  
**Key players:** John Mayfield, Justin Bonnema  
**Latest projects:** Katie Armiger, Steve Green, Naturally 7, John Rutter (*Handel's Messiah*), CeCe Winans  
**DAW:** PC-based Merging Technologies Pyramix MassCore and Pyramix Virtual Studio 6.1.8  
**Plug-ins:** Cedar Retouch, Celemony Melodyne, Flux, iZotope Ozone, PSP Audioware, Serato, Sonnex Oxford, Universal Audio UAD  
**Console:** Custom-built Crookwood Mastering Console  
**EQ:** Avalon Design AD2077 analog EQ with custom mods, Weiss EQ1-MK2 LP digital EQ  
**Compressors:** Alan Smart C2, Manley Variable Mu with mastering and m/s mods, Prism Maselec MLA-2, Weiss DS1-MK3 digital compressor  
**Effects:** Sony DPS-V77

**Room treatment:** Custom-built diffusion, Whisper Wall absorption, Hidley-style bass trapping  
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**Monitors:** Mains: PMC IB1 speakers and XB2 subwoofer, bi-amp, Bryston powered; Smalls: Blue Sky EXO  
**Headphones:** Ultrasonne  
**Why did you open your mastering studio in 1996?**  
 Shortly after moving to Nashville in 1993, I bought a Sonic Solutions DAW to properly prepare my final mixes for mastering. After turning down repeated requests to master my own mixes (something you should never do!), I decided that it might be smart to at least consider the change. I had played music professionally for seven years, recorded and mixed for 23 years. The transition to mastering was a no-brainer because I liked the idea of having more control of my own hours. However, running a high-end mastering facility with a staff of five is not cheap or easy. But it's a great work environment where everyone gets along. And clients especially love our catering service and open kitchen.

**You expanded the studio in 2002. What was involved in the project, and what additional gear was needed?**

The expansion was primarily based on simple physics. To reproduce the frequency ranges required in mastering, you need lots of cubic footage. Client comfort is a nice by-product of that large space requirement.

Throughout my career, I had never considered a recording studio a good financial investment. The stock market provided a much better return without the headaches of property management. Besides, there were always plenty of good rooms available to rent for recording and mixing. A mastering control room, on the other hand, is a

completely different situation. These rooms are truly custom built and set up for the specific engineer that will be using it. So when the decision was made to dedicate all of my time to mastering, I started planning for the big build. It took six years of financial "focus" and planning, but we broke ground in mid 2002 and finished in early 2003.

Regarding gear, the only thing we needed to address was the speaker layout, so we looked to PMC and installed two IB1s, each paired with an XB2 sub via the Bryston 10B Sub Crossover. Amplification is provided by four Bryston 7B SST mono blocks.

**What gear couldn't you live without?**

My personal mandate is the implementation of a good quality master clock and great converters. I cannot emphasize this point enough. Though there are many good ones available, I use the Apogee Big Ben and Rosetta Converters.

And I would not be able to start a mastering session without the monitors I have become so accustomed to. As a recording/mix engineer, I traveled with my own speakers and amplification. Before I moved a fader though, I would always sit down and listen to some known sources to hear what my speakers sounded like in that particular control room. Now, if I sat down at my console one morning and saw a different set of speakers in my room, I'd stop the session immediately, tell everyone to go home, and start a lengthy educational listening process. (After which, I'd launch a full-scale investigation into who switched out my *blankin' speakers!*)

I also would not be able to start my day without Merging Technologies' Pyramix Virtual Studio, which might very well be the best audio production tool on the planet! Lastly, our in-house FTP server allows us to stay connected with our worldwide client base.

**What is one "Aha! moment" you've had in your career?**

I spent all of my recording/mix career in the analog domain. When I switched to mastering in 1996 and started receiving mixes from great engineers who had switched to all digital, it was more of an *uh-oh* moment. The convenience of digital recording was just too hard to ignore for most. Unfortunately, the quality level just wasn't there. Even today, gargantuan efforts persist to "emulate" the sounds of old. Thankfully though, in the last couple of years, designers have started figuring things out, and digital is finally starting to sound acceptable. But that's not quite an "Aha! moment"; it was more of a "Finally! What took you guys so long?!" moment. **EQ**

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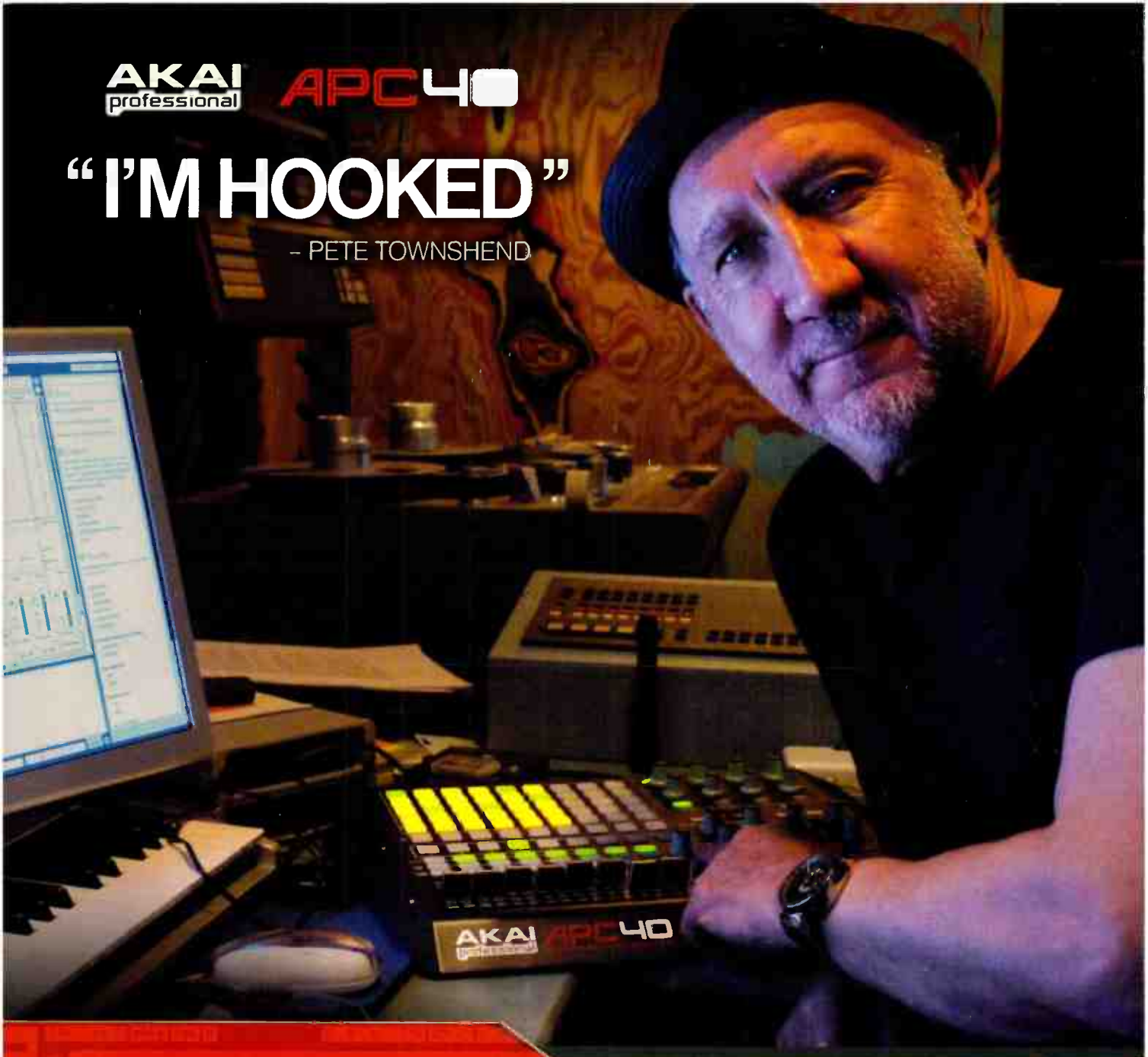
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