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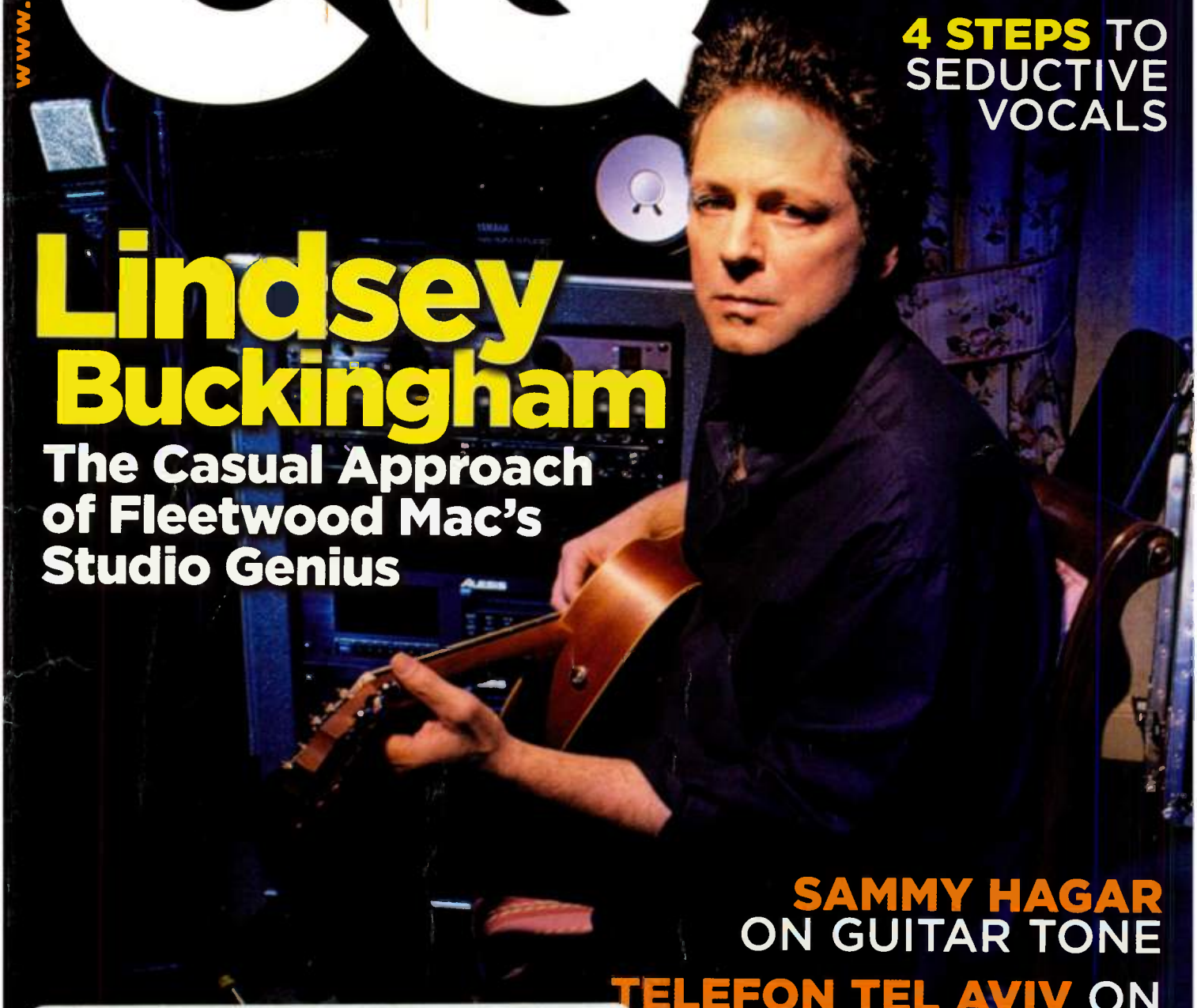

Lindsey Buckingham

The Casual Approach of Fleetwood Mac's Studio Genius

SAMMY HAGAR ON GUITAR TONE

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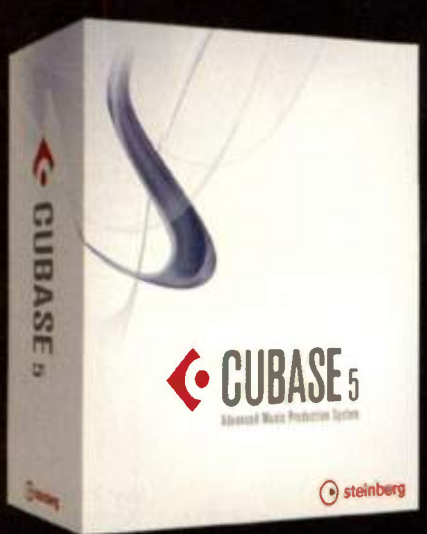

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THE SONGSMITH FLAP

Step right up, and sing into this mic! Click here, and we'll create an arrangement for you! And now—you're a musician!

And that's the way some people look at Microsoft Research's SongSmith. Only problem is, that's not the way Microsoft looks at it: They bill it as an inspiration starter, or a fun program to get kids interested in music. In the infamous SongSmith promotional video (which is spawning a plethora of hilarious parody videos on YouTube), the main character playing with SongSmith is a young girl, and her father uses SongSmith to create a jingle for glow-in-the-dark towels. Can anyone really take a commercial that seriously if it's based around *glow-in-the-dark towels*?

Poor Microsoft: In the eyes of many, they can't do anything right. People snicker about seeing a Mac in the video—but Microsoft doesn't make computers, and Macs run Windows programs just fine. There's an online debate about whether the video is a self-parody, for real, or a joke; regardless, it shows the potential of viral marketing. Whether people look at the video and think "epic fail" or "hmmm, kinda interesting," Microsoft has likely gotten more attention with that video than with a big-bucks agency Super Bowl ad. The video has been a magnet for the people who like to pile on Microsoft, but in the YouTube comments threads, I'm starting to the see the first posts along the lines of "Well I tried it, and you know, it's actually a pretty interesting program. . . ."

Is SongSmith going to put us all out of business? Not a chance. The backing tracks are cheesy, and the results are unpredictable. SongSmith uses some form of artificial intelligence (or some would say, artificial stupidity) to build an entire song around a vocal—a process with inherent limitations.

Yet I'm fascinated by the program. Not because I'm planning to use it, or because it makes great music. But it's time for a reality check: Even the people doing the parody videos on YouTube are *having fun with the program.* And isn't *that* what it's about? Those getting started on SongSmith today might be the Lennon-McCartneys of tomorrow—not because of what they learned from SongSmith, but because they learned that *playing with music can be fun.*

The same impulse that makes people create funny plastic keyboards for babies to play with is the same impulse that created SongSmith. And it's the same impulse which, when augmented by experience, curiosity, inspiration, and technique, can create great music.

But we all have to start somewhere. Some of today's kids messing with SongSmith will, at some point, say "I can do *much* better than that."

And indeed, some will.

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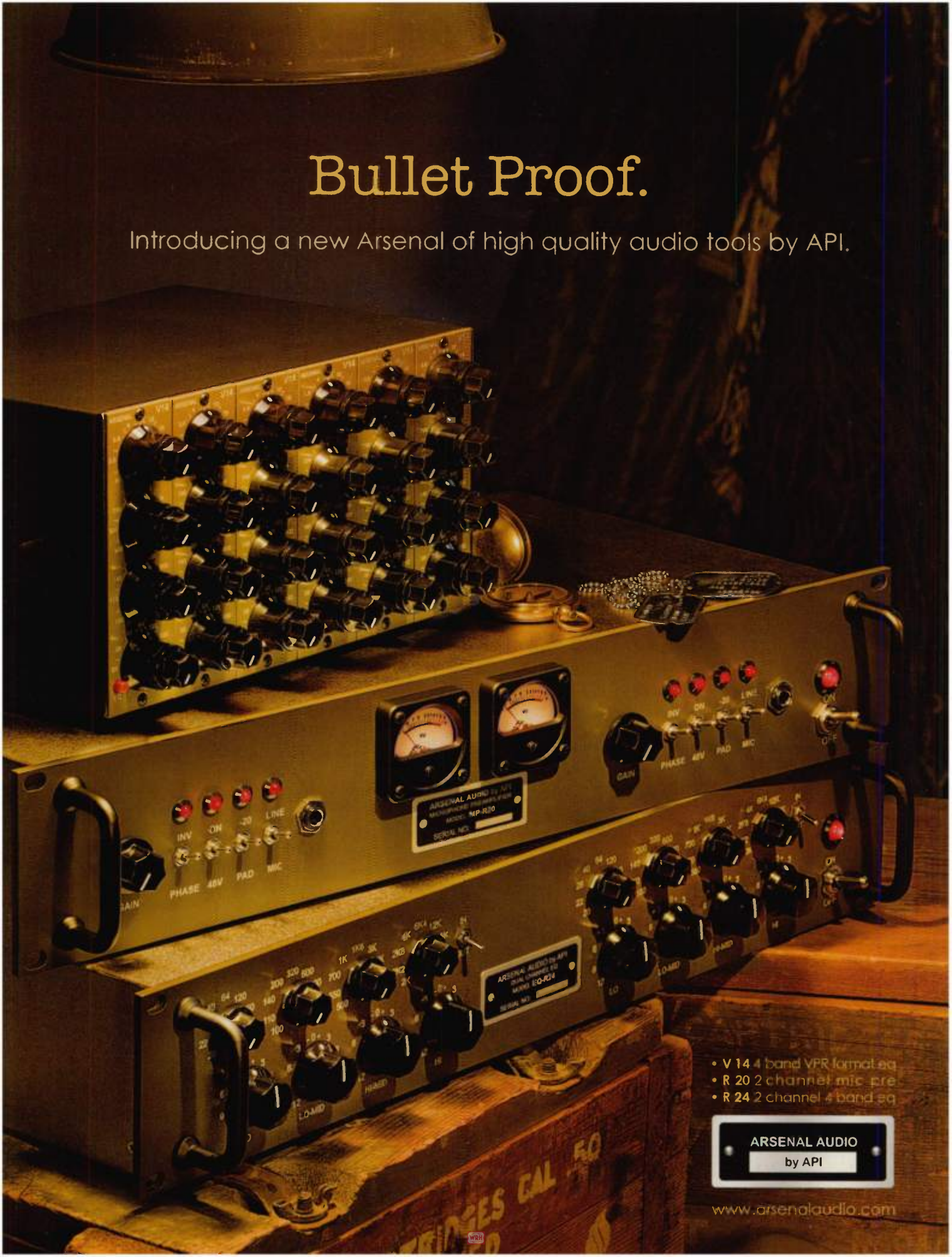
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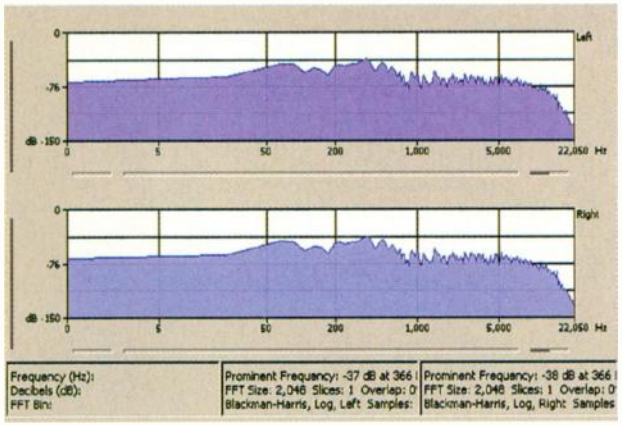

As mastering has become "democratized," it's become a part of the project studio process. We asked the project studio owners in the "Sound, Studio, and Stage" forum community on Harmony Central what they use for real-world mastering, and the range of responses was surprising: Hardware, software, in the box, out of the box, combinations of same, tape—you name it. And there were lots of responses! Check www.eqmag.com for what we couldn't fit in here.

MASSEY RULES

I sometimes use the Massey Tape-Head saturation plug-in at its lowest setting to add saturation. It provides a lovely "glue" to the whole mix and, oddly, does something to the midrange I really like. It affects the overall EQ, so be aware of that.

I also use the Massey L2007 Mastering Limiter for its ease of use and transparency; "Vibrant Mode" leaves much of the dynamics intact but pleases clients who want loud mixes. The L2007 has four different settings that affect dynamics and even EQ, so it's not a one-size-fits-all limiter.

For EQ, I often use the Waves Renaissance EQ or the Stillwell Vibe-EQ for larger, broadband EQ. *—Ken Lee*

KEEPING IT SIMPLE WITH WAVES

I depend heavily on the Waves C4—it's not sexy, but it works. Then I throw on the L1 Maximizer. *—Ernest Buckley*

MASTERING ON LOCATION WITH MASTERLINK

I do location orchestral recordings, and burn/duplicate CDs onsite. I record a live two-track mix with the Alesis Masterlink; a pair of Seventh Circle Audio A12 preamps are the only things between the mics and the finished product. This is "mastering" in the sense that it's the final processing before duplication.

The Masterlink's ability to set up a CD more-or-less on the fly, then process it all in the one box, is great. Mostly, I'll use its limiter with a pretty lengthy attack (more than 100ms), and I'm conservative about setting the threshold so that it doesn't crush anything. *—John Reeve*

BASS IS THE PLACE

I've mastered Reggaeton projects lately, and it's essential to have those subwoofers pumping right on the beat. Being software-only, I rely heavily on Waves MaxBass to get the right sound through small speakers. My chain nowadays usually has Waves API 550B + Waves MaxxBass + Waves S1 Stereo Imager + Waves C4 + Digidesign MAXIM + Waves PAZ Analyzer, right into Pro Tools. *—Gus Lozada*

ANALYZE AND CONQUER

Sometimes it's useful to see what you hear—Blue Cat's Analysis Pack can show exactly where the problem is. Another great tool is the Brainworx BX_Digital mid-side/stereo processor-mastering EQ, which can give your mix a real 3-D feeling, and is superb for classical ensembles. One more favorite: iZotope RX noise reduction/spectral repair/hum remover. I almost always have unexpected noises with location recording, so this is a must-have. *—Temnov*

TAPE FOREVER!

I still use analog tape for mastering; specifically 1/4-inch half-track reel-to-reel at 15 ips, with or without noise reduction depending on the material. Gentle tape compression is the perfect dynamics tamer before transfer to the digital realm. The master then has controlled dynamics that not only aren't flattened, but have more life.

The subtle fuzz on peaks matches how our ears respond to loud sounds. Thus the character of analog tape gives the ear cues that translate into the perception of greater loudness and energy, even though the listening level in dB is the same. Much of this character survives the transfer to digital. My masters enter the digital realm at the bit depth and sample rate of the end medium (*e.g.*, for a Red Book-compatible CD, I transfer the tape directly to a professional CD burner, currently a Fostex CR300). I try to avoid digital conversion between different bit depths and sample rates. *—Tim Beck*

INTO THE OZONE

I went with iZotope Ozone for my project studio because it offers all the tools I need. I demoed a couple other packages, but they were either overly complex or lacking elements I needed. And I must admit, the lower price certainly didn't hurt the deal.

To other experimenting project studio owners: Remember that mastering tools are like salt—sprinkle in a little bit, don't remove the lid and dump the whole bottle on. *—Greg Best*

WAVELAB ROCKS

Steinberg's Wavelab 6 Essentials has most of what I need—punchers, EQs, dynamics control, waveform/EQ analyzers, and editing suite options (like making clips or doing crossfades). Before getting Wavelab, I had no idea that DC offset existed and that different tolerances of electronics could even affect a master. I always take the standpoint that it's all about the ears working the equipment, but Wavelab has made things a lot easier, and improved what I can do. *—Introspection*

Got something to say? Questions, comments, concerns? Head on over to www.eqmag.com and drop us a line in our Letters to the Editor forum, send us an email at eqeditor@musicplayer.com or snail mail c/o EQ Magazine, 1111 Bayhill Dr., Suite 125, San Bruno, CA 94066 for possible inclusion in the Sounding Board.

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A MAP OF LESS EFFORT

Telefon Tel Aviv Gets Quick and Dirty

BY MICHAEL ROSS

On their 2004 recording, *Map of What Is Effortless* [Hefty Records], Telefon Tel Aviv (TTA) teammates Joshua Eustis and Charles Cooper perfected their unique combination of glitchy micro-edited beats, slow-jam grooves, soulful guest vocalists, and soaring strings—effectively demonstrating that computer-based music could comfortably meld machine and human elements. But one thing that set the record apart from its electronica peers was its ear-catching drum parts.

"We had a different approach than the normal deconstructionist way of looking at it—which is people programming a beat and then dicing it," says Eustis. "We didn't chop beats, but rather built them up. We would start with a thousand sounds, and then program them manually—a kick drum here, some weird sounds there, and, sometimes, between four and eight tracks of just noises. We would work on a bar for an hour, moving things around until it sounded cool. It was a painstaking and ridiculous way of doing it, but, at the time, it was the only way to get the effect we wanted. We used things like Native Instrument's Reaktor to create a long piece of sound, and then we went in and cut a hundred tiny pieces out of it. This certainly slowed down the process of making a record. Whereas most bands can make a record in a month to three months, it was taking us a year."

Speaking from his current home in Chicago, the former New Orleans native explains how the band's exhaustion of this laborious process led to a different direction for its new record, *Immolate Yourself* [Bpitch Control]. The band's "new" direction involved what some would call a "traditional" method of making a record.

"We were not interested in those tiny little textures anymore, because we took that process as far as we were able," says Eustis. "So instead of opening a session in Pro Tools and starting there, we demoed the song first. We would write the lyrics, work out the melodies, and then produce it. We made the demos by recording synthesizers into Pro Tools. I did a lot of demoing with the Fender Rhodes piano, but once we got into the actual production, the Rhodes ended up being replaced by synths—which were recorded into Pro Tools using a Drawmer 1960 preamp. The 1960 gives you as much, or as little, dirt as you want. Analog synths sound amazing through the thing."

In addition to abandoning Telefon's trademark Rhodes and strings, the current record explores a newfound obsession with analog tape, as well as some antiquated recording techniques.

"Everything was mixed down to an Otari MX-5050 1/4" 2-track tape machine, but we also used tape as an 'instrument,' because it is such a physical, tactile thing," notes Eustis. "A lot of the sounds on the songs were derived from actual loops of 1/4" tape. We would record something to the tape machine, make a loop of what we liked, and run the tape around mic stands set up like the capstans on a tape recorder. Some of the tape loops were 20-feet long! We wrapped them all around the studio, and then recorded the loops back into Pro Tools."

Eustis and Cooper also found themselves creating a flanging effect by using the historic method of grabbing the edge of the tape spool—or "flange"—as the loop was recorded back into Pro Tools.

"We were more interested in physical destruction of the media, than editing in a computer," says Eustis.

After four projects—two CDs, an EP, and a remix compilation—that exemplify meticulous construction and digital clarity, *Immolate Yourself* reflects a looser approach. Though it retains TTA's romantic melodies and harmonies, the use of tape loops and vintage synthesizers made their previously precise, synchronized sound impossible, creating in its stead a more '80s-style synth-pop atmosphere influenced by early Factory records (Joy Division, New Order, etc.).

"If you listen very carefully to this record, you will notice that very little is lined up perfectly," reveals Eustis. "It is very messy, and things are somewhat intentionally out of tune. VCOs drift all over the place. The ARP soloist we used had a horrible drift problem, but we left it alone."

The celebration of imperfection on *Immolate Yourself* was also manifest in tape distortion and audible hiss—elements that were considered part of the sound rather than shortcomings of the analog medium.

"During the mix, the meters were buried in the red most of the time—except for quiet passages where we were trying to keep dynamics alive in the song," says Eustis. "We weren't going for loud tracks—I would print my master 2dB or 3dB below maximum levels—we just wanted the

MAUREEN PEABODY AND ROLAN VEGA

The late Charlie Cooper (left) and Joshua Eustis.

sound of analog tape being completely mauled. In addition, we mixed to 1/4" tape at 15ips—which is a weird, silly thing for electronic music. Our audiophile friends were saying, 'You should have done it on 1/2" tape at 30ips.' We didn't use more modern Quantegy GP9 tape either, because we liked the ancient-sounding characteristics of Ampex 456 tape. To go even more lo-fi, we mixed 'Worst Thing In The World' at the insanely slow tape speed of 7-1/2ips. But we like the way these things sound. We like tape hiss."

Expect tape to figure even more prominently on future TTA projects, as Eustis has recently acquired an Otari M-5050 1/2" 8-track machine.

"The previous record [*Map of What Is Effortless*] was done entirely on a laptop and a Digidesign Digi 001, and it was perfectly clean," he says. "We went as far as we could with the 'clean digital sound.' Now we want to see what we can do with dirt, and how can we turn it into a beautiful thing."

As this issue went to press, EQ learned that Charlie Cooper passed away. Eustis released a comment shortly thereafter, including these words: "Aside from Charlie's singular genius and musical gifts, I can tell you that he was a total sweetheart of a guy, and a loving friend and confidant to people everywhere. His musicianship was surpassed only by his greater gift to the world—his warmth, his generosity, his unquenchable humor, and his undying loyalty to those whom he loved." EQ

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Chimaira takes over the control room.

TODD BELL

MIXED MEDIA

Chimaira Changes It Up Again for *The Infection*

BY CONTESSA ABONO

Chimaira, named after the legendary beast of Greek mythology, has been on the metal circuit for two decades now, but the Cleveland-based band continues to keep fans guessing what the next album or live show will bring.

"Maybe people think we're crazy, but we have a different vibe each time we come out with an album," says vocalist Mark Hunter. "We have signature things we do, so you ultimately know it's us, but for the most part, our songs aren't interchangeable from album to album—you'll only hear certain styles for a specific record."

For the band's fifth album, *The Infection* [Ferret Music/Nuclear Blast], the members returned to their friend and producer, Ben Schigel, who had worked on their previous albums, *This Present Darkness, The Impossibility Of Reason,* and *Chimaira.*

"Ben has been involved with the band since we were 15 years old," says Hunter. "He's like the seventh member of the band. He knows us inside and out."

Chimaira's sonic signature for *The Infection* focused on a more melodic, groove-oriented approach—a departure from the band's previous release, *Resurrection,* which was extremely heavy and very technical.

"The most noticeable change is that the new album is slower," says Hunter. "But slowing down the songs wasn't a conscious decision—it just kind of happened as we were writing."

Once the overall approach was nailed down, the band played records for Schigel to illustrate the sounds they wanted to achieve in the studio.

"You don't necessarily play your favorite records of all time," says Hunter. "For example, I'll bring in a band's best-sounding album—or the one that has sounds that best relate to what we want to do—rather than my personal favorite from that group. I'll bring in Mötley Crüe's *Dr. Feel Good* or Metallica's "Black Album" because they are amazing productions. Then, we'll listen and make comments such as 'I love that snare drum tone,' or 'I love how deep that kick drum sounds.' I also referenced extreme death metal records that had cool guitar tones. Now, you're not trying to match the sounds you're playing for everyone—you just say, 'Okay, let's go for some kind of gigantic kick-drum sound.' The songs are just references to let everyone know the direction you're going for. I'm influenced by so many productions—things I grew up listening to that I loved. Ultimately, you throw all the audio references into a melting pot, and that's what you use to develop a production approach for your own album."

To achieve the kick-drum sound Chimaira wanted for *The Infection*, drummer Andols Herrick was tracked with MIDI drum triggers via an Alesis DM5 system.

"We didn't even bother miking up the kick drum," says Hunter. "Andols still played all the parts in real time, but the kick-drum sound was our own creation constructed from various stock samples in the DM5. The sound was perfect, and we didn't have to waste six hours setting up mics and trying to get the kick just right."

Another technique Hunter found efficient was evaluating mixes via email while working on production and mastering with album engineer Zeuss (real name, Chris Harris).

"It took about two or three weeks to mix the record," says Hunter. "The mixing was done in a studio in Massachusetts while we sat in Cleveland. "The real advantage—besides not having to travel to Massachusetts—was being able to listen to the tracks in our own comfortable environments. For example, instead of being in a control room, trying to assess sounds on speakers we're not familiar with, we could listen in our cars, or on our favorite playback systems." EQ

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SESSION NOTES

A Discussion with Engineer **Paul Ericksen**

BY MR. BONZAI

I first met engineer/mixer Paul Ericksen when I was shooting a short video with producer Peter Wolf at his studio in Malibu. I interviewed and recorded Wolf at the piano, with his vintage Telefunken ELA-M 250 going directly into my Panasonic DVX-100 camera. Unfortunately, I overdrove the mic, but Ericksen was able to make everything sound perfect by routing the signal through his gear (which included the BIAS SoundSoap plug-in). I was impressed.

Ericksen has been at his gig now for more than 30 years. He has recorded Weather Report, Joe Zawinul, Carlos Santana, Chicago, and others, as well as Wolf, whom he has worked with for 25 years. Much of Ericksen's time is now spent in Wolf's impeccable home studio—which features a rare, vintage Neve console (one of only five manufactured)—tracking major artists and film and television projects.

When did you decide to become an engineer?

In 1978, when after graduating from high school, I decided to go to college and enroll in a two-year course in the recording arts. Evan Williams was my teacher, and the course used *The Recording Studio Handbook* by John Woram. Our classroom studio had a 16-track 2" MCI tape machine, a Neve 8016 console, and some good mics and outboard gear—such as an Eventide 910 Harmonizer, a Lexicon Prime Time, KEPEX noise gates, and LA-3A Limiters. It was all cool stuff to learn with. Later, at Soundcastle Recording Studios in Los Angeles, I learned a lot from Bill Bottrell, who was the studio's chief engineer in the early '80s.

What was the name of the first song you recorded?

"Man of The North." My best friend, who also took the recording class, had a good band called Byron. They got a great demo for free out of the deal.

What was your first professional paying gig?

At Soundcastle. I worked there from 1980 to 1986, and they paid me a salary as an assistant. All the first engineers were independent, and they were paid by either a record label, an artist, or a producer. The first time I got a check from a record company was for a Weather Report album for CBS. That was my transition from second engineer to first engineer. It wasn't always easy. Sometimes, it was a trial by fire.

When did you feel you had "made it"?

There are always different levels of making it. The first time was just getting a job at a studio. Then getting an engineering credit on a record seemed like making it. Then it was being a first engineer and mixing an album. Whatever is your goal is what leads to "making it." Sometimes we can forget our next goal if we get distracted with the current situation we are in.

What have you learned from Peter?

How to work and enjoy life at the same time! Well, also to use the best equipment, and to hire the best musicians whenever possible.

What was it like working with Joe Zawinul?

Fascinating. He was a master musician and a great human being. I first met him when I was an assistant at Soundcastle. In the beginning, I was getting his lunch, but while assisting on Weather Report's *This Is This!* in 1986, Joe asked me if I had any problem mixing the album. I said, 'No

Paul Ericksen in Peter Wolf's Malibu recording studio.

MR. BONZAI

problem!' Everything he composed and recorded was originally improvised. Then he would transcribe his improvisations, and record them again with all the instruments. After finishing a tune with all the overdubs and production, you could go back to the original demo, and the phrasing would be identical in both versions. He was amazing.

Who are your engineer heroes?

When I was starting out, I really looked up to Bill Bottrell at Soundcastle. My other engineer heroes are Tom Dowd, Bruce Swedien, George Massenberg, Bill Schnee, Alan Parsons, Geoff Emerick, Bob Clearmountain, Tom Lord Alge, Michael Brauer, Tchad Blake, and Steve Albini.

What are your favorite new recording tools?

We recently started using an awesome new mic preamp built by Carl Johnson of CRS Industries in Ventura, California. It's called a DM 2412, and it's incredibly transparent and quiet with a detail I have never heard before. I can't wait to try it on everything we record. Also, Spectrasonics' Omnisphere synth plug-in is really cool. The textures and rhythm patterns are really useful.

Do you have a favorite vocal mic?

The Telefunken ELA-M 250 and AKG C 12.

How do you record Peter Wolf's Boesendorfer Imperiale?

With two AKG C 12s through the new DM 2412 mic preamp. We used to use Neve 1073 mic preamps, which we liked, but this new sound is better.

When you are recording music for film—especially overseas—how do you deliver the material?

Lately, we have switched to yousendit.com, which is great. It's fast and cheap compared to using ISDN. Sometimes, we use FTP or SFTP sites, which also work okay.

What makes a great producer?

Great musicians. eq

Michael Gregory warming up on drums.

Producer/engineer Zach McNees at Mission Sound's Neve 8026 console.

SOUL BROTHERS

The **Gregory Brothers** Bring Some Memphis Soul to Brooklyn

BY JANICE BROWN

It's the second, and last day of recording on the upcoming Gregory Brothers' EP, the five-song debut by the Brooklyn-based indie-soul band. With the basics laid down on day one, today is all about vocals, and capturing the group's rich, soul-crooning harmonies in the tradition of the Motown and Stax records they revere.

"I wouldn't take just anyone into the studio and try to make a record like this—live in two days," says producer/engineer Zach McNees from the control room of Mission Sound in Brooklyn, New York. "But I knew what these guys were trying to accomplish, and that it would be a more vibey record if we booked a nice, big room with great gear and cut it live."

"We've played around 80 shows in the last year and a half," says Andrew Gregory. "So when Zach suggested we go into the studio and track everything in two days, we knew we could do it."

Transplants from Southern Virginia, the Gregory Brothers—Andrew (vocals, guitar), Evan (vocals, keys), and Michael (vocals, drums)—developed their sound while out on a three-month tour behind one of Andrew's solo records, *The Lost Year*, in 2007. With singer/songwriter Sarah Fullen along for the tour, the band expanded on *The Lost Year*'s wistful, acoustic folk songs to perform them as a quartet, and over time, began to realize their potential as a group.

"We started to transform these soft songs off my album into these four-part, harmony-driven soul numbers," says Andrew. "Then we started writing new songs that let us wail more."

"Old Aretha Franklin and Otis Redding records are very inspirational to us," says Evan. "And we've all been inspired by Daptone Records and their commitment to the recording processes of the 1960s—although we need to take advantage of modern technology to get our EP done on time and on budget."

With such a condensed recording schedule for the EP, the Gregory Brothers had to plot out every move during pre-production.

"Everything had to be well-rehearsed—there was really no time for any experimenting," says Evan. "We drew up a list of every element that needed to be tracked, as well as a prioritized list of time-permitting bells-and-whistles."

"The most important things we did happened before we ever set foot in the studio," McNees acknowledges. "I suggested Mission Sound for its spacious live room, isolated areas with clear sightlines, and its vintage equipment—including a Neve 8026 console, and a collection of classic amps and keyboards. To reduce guesswork during the tracking stage, I consulted with Oliver [Strauss, Mission Sound owner] to determine the best mic selection and placement for the room and band. We used two different pairs of room mics. A pair of Royer R-121 ribbons was set up chest high in an X/Y pattern, and placed about five feet from the drum kit. Then I positioned a pair of Earthworks TC30Ks about 1/2-inch off the floor, and an equal distance from the kit so the two mic pairs were phase coherent. The Royers provided a natural signal, and the Earthworks were routed to an Alan Smart C2 compressor set with a fast attack and release."

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Placing the second set of room mics so close to the ground was a first for McNees.

"Oliver suggested it as a sweet spot, and he was right," he says. "The Earthworks mics captured a really good mix of top end and low end. The signal wasn't too bright or too muddy, and it worked really well for compressing heavily. During the mix, I ended up using the heavily-compressed room mics for the intro of 'Cry, Cry, Cry,' because I wanted to go for a more ambient sound."

McNees used three mics on the kick—a Shure Beta 52A stuffed all the way inside, a Sennheiser MD421 pointing into the soundhole, and a modified Yamaha Subkick positioned a few inches from the drumhead near the right rim.

"With those mics and Subkick, it's easier to change your kick sound around without using a lot of EQ," says McNees. "I'll use the inside mics almost exclusively for midrange and top end, while the Subkick captures most of the low end. Then I blend the signals together during the mix. For example, if I push the Subkick and MD421 more, I can get a softer kick sound with more low end."

McNees used Shure SM57s for the top and bottom of the snare, along with Shure SM81s on the hi-hats, MD421s on toms, and Microtech Gefell UM70s as overheads (both mics routed through a Summit DCL-200 compressor/limiter).

"As we were going for more of a vibey, R&B sound, I set the overheads up a little higher than I would for a rock record," explains McNees, "so I can get a little more of the whole kit without getting too much of the room sound. You see, this is a pretty straightforward band, so we decided to cut everything pretty much clean. It's a very old-school recording in that way. No guitar effects or studio manipulation—just classic instruments, classic amps, and classic studio gear."

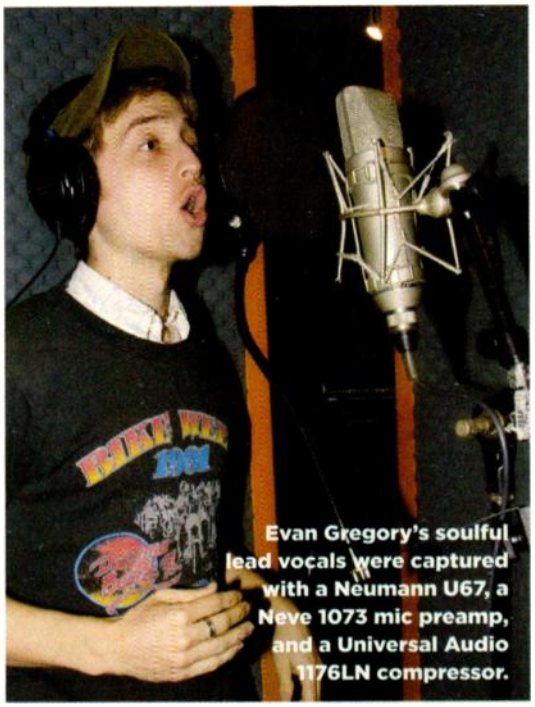
Andrew's Telecaster was amplified by a 1969 Vox AC30, with a Shure SM57 miking the grill—placed just off center from the cone—and a Neumann U47 FET positioned about 18-inches back.

"This way, I get a close sound *and* a more ambient sound that I can blend to taste in mixing," says McNees.

Evan played the studio's Fender Rhodes Mark II, plugging into a Countryman direct box and a '69 Magnatone 2x12 combo (which was miked with a Neumann U87). A Hammond C2 routed to a Leslie 147 cabinet was close-miked with a stereo pair of Audio-Technica AT4033s on the cabinet's horns and an AKG C 414 on the woofer. Doug Hulin's bass was tracked direct (a Countryman again) and through an Ampeg B15 amp miked by a Lawson L47FET.

On day two, *EQ* found the band pumped up to cut vocals, starting with Evan's lead on "Cry, Cry, Cry," and the song's soaring group vocals on the song's reprise.

"Everyone stood around a Neumann U67 set to its omni pattern, because we wanted to capture that Stax and Motown vibe for this song, and that's how the group vocals were tracked on those recordings," says McNees. "You can only get away with this when you have four people who really know how to sing, and who can sing with each other really well. Ultimately, we cut all the group vocals the same way—meaning, live in real time, rather than overdubbing each vocalist separately—although, for the other songs, I arranged the members in a semi-circle with each singer on his own mic."



Evan Gregory's soulful lead vocals were captured with a Neumann U67, a Neve 1073 mic preamp, and a Universal Audio 1176LN compressor.

"We definitely wanted powerful harmonies and group vocals," says Andrew, "which is a bit of a departure from some old soul records where you'll hear the artist—Al Green or Sam Cooke, for example—really upfront with the background vocals somewhere in the distance. But what I love so much about The Band is that when you get to the chorus, you hardly know who is singing the melody anymore—it's just like a big party happening on stage. *That's* the energy of our live shows, and that's what we wanted to capture on the EP—all of us coming in on the choruses and hitting it hard." EQ

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TOOLBOX

by Mark C. Davis

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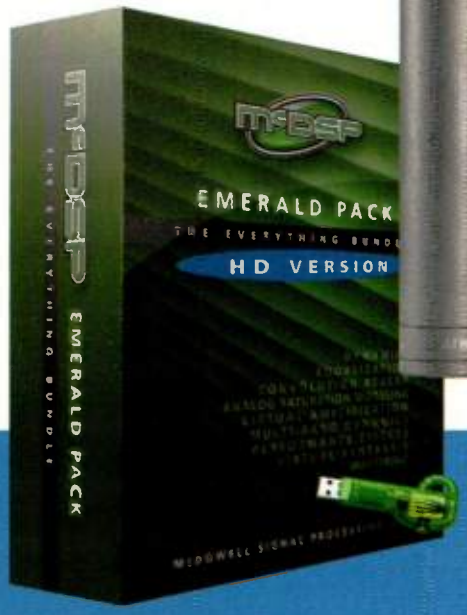

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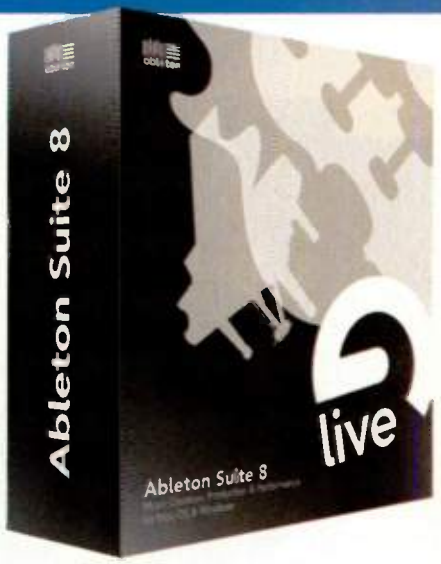

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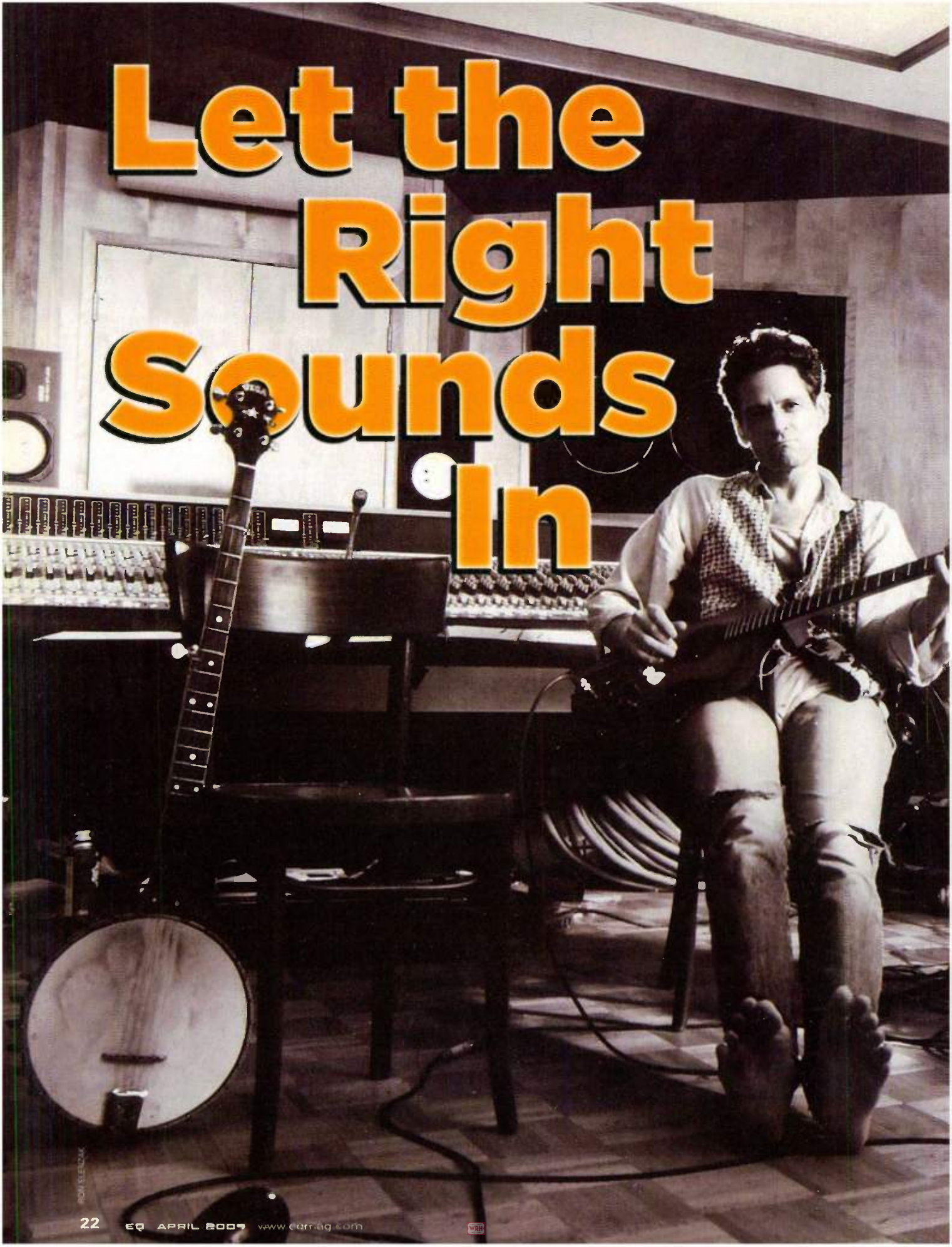
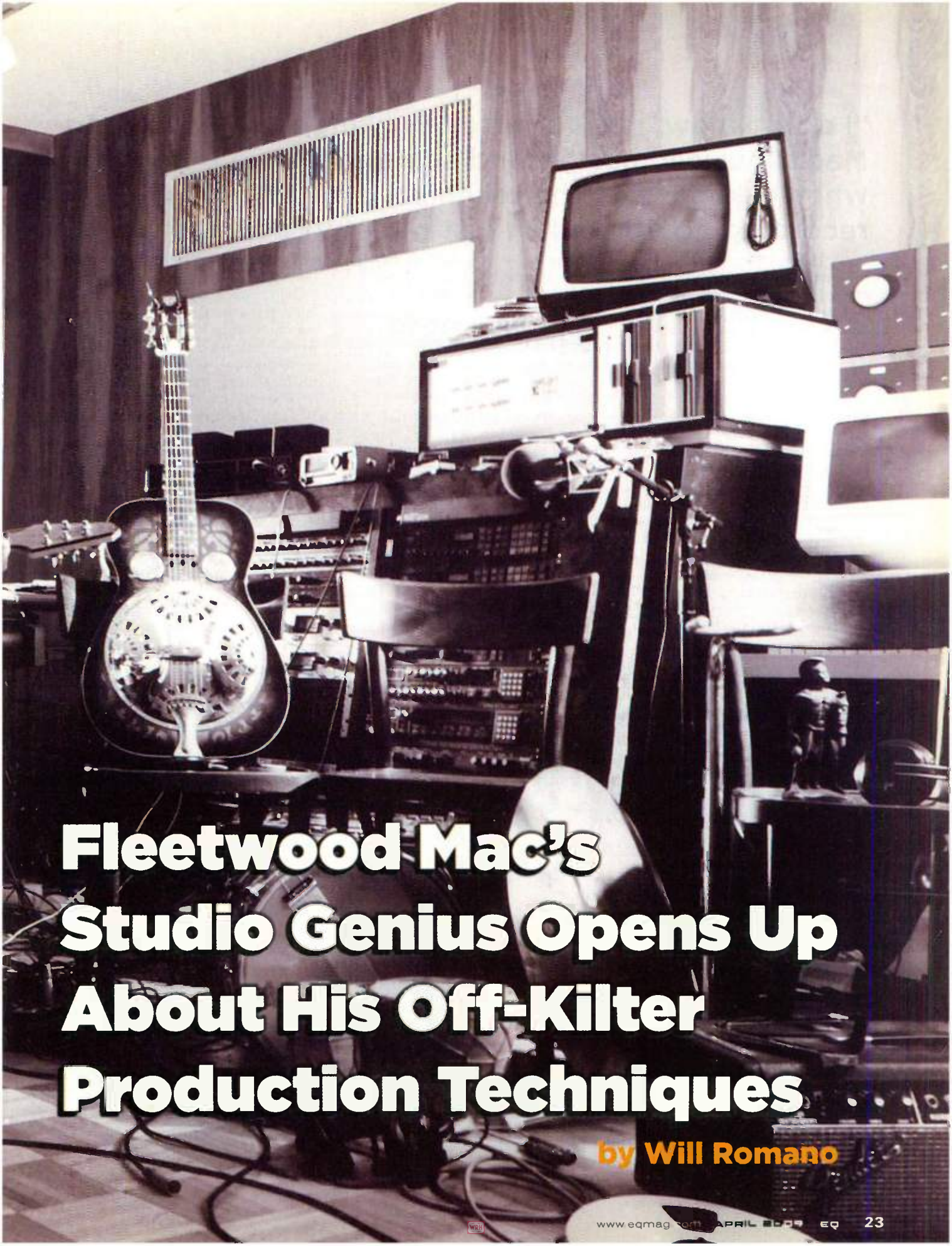




Fleetwood Mac's Studio Genius Opens Up About His Off-Kilter Production Techniques

by Will Romano

"I don't know," says Lindsey Buckingham, Fleetwood Mac's musical mastermind and noted studio hound when asked about the technical aspects of his recording equipment. "I just put stuff down."

Buckingham's carefree attitude toward the tools of his craft seems diametrically opposed to his painstakingly layered production approach. Despite his sometimes lo-fi applications, Buckingham consistently turns out musical projects of sonic richness and lyrical depth that reflect the clarity of the conceptual mastermind behind the console. With releases such as Fleetwood Mac's left-of-center *Tusk*, the Fairlight-laden *Tango in the Night*, and his own *Go Insane*, *Law and Order*, *Under the Skin*, *Out of the Cradle*, and the recent *Gift of Screws* [Reprise], Buckingham has built a reputation as a studio experimentalist. He meticulously details every tune with multiple bluesy, folk-inspired, and slightly distorted guitar tracks that dart in and out of the stereo image; blossoming multi-part vocal sequences; and magical, yet almost unidentifiable sonic particles. Now, if only we could corner him on the specifics of how he does it. . . .

THE LONG ROAD TO *GIFT OF SCREWS*

Aside from being one of the most popular records of the 1970s, Fleetwood Mac's Grammy-winning *Rumours* was a milestone in high-fidelity recording. Yet, it was the successor to *Rumours*, 1979's *Tusk*, that transformed Buckingham from international pop star and fingerpicking guitar hero to quirky, Brian Wilson-esque studio maven with an almost reckless disregard for music-industry commercialism.

"I was engineering a lot of stuff myself during the *Tusk* album," says Buckingham, who cut his teeth co-producing *Rumours* (with the band, Richard Dashut, and Ken Caillat) and its predecessor *Fleetwood Mac* (with the band and Keith Olsen). "Making a record like *Tusk* was challenging the status quo. I was following my heart as a producer and writer. With *Tusk*, I was doing what I wanted to do, as opposed to what the machinery around me would have liked me to do."

Today, Buckingham enjoys a safe and sane distance from the Big Mac juggernaut, despite bassist John McVie and drummer Mick Fleetwood appearing on *Gift of Screws*, and tours with the band (sans Christine McVie). Buckingham's new life—which includes his wife and three kids—has infused a "sense of possibility into everything," and this attitude has spilled into his work. At the same time, Buckingham appreciates the unique perspective on the music biz he is afforded as a member of

John McVie, Christine McVie, Lindsey Buckingham, Mick Fleetwood, and Stevie Nicks of Fleetwood Mac in the late '70s.

Buckingham with signature Turner Model One guitar.

KRISTEN BUCKINGHAM

Fleetwood Mac.

"For me, it's a luxury, and it's also very ironic to be in a group like Fleetwood Mac," he says. "It is a double-edged sword. It gives you freedom, and it gives you credibility. But I also have to understand that when I go out and make solo albums—and do things that are pretty much what *I* want to do—I can't expect a record company to get too behind those projects. I have to realize that I am making something that does not have a bottom-line mentality to it. I've always dealt with dead ears from the music industry machine as far as my solo work goes, even though I am in a very successful *other* machine."

Each track of a Buckingham production attempts to unearth artifacts—both aural and autobiographical—that symbolize the artist's inner demons, emotional pain, and manic, celebratory freak outs. Simply put, Buckingham's records—often one-man band affairs—are haunting collections of uber-emotional musical statements resembling his sometimes charged and shattered psyche. So it's no surprise to learn that *Gift of Screws*—which runs along a kind of musical narrative traversing the miles of psychological bullsh*t the songwriter has crawled through to claim some small measure of personal peace—is as fresh, tight, and musically exciting as any Fleetwood Mac release in recent memory.

"I did *Under the Skin* in 2006, which was really about taking a fingerpicking style, having one or two guitars doing the work, and not playing lead or having drums or bass or anything else on the songs," says Buckingham. "*Under the Skin* was sort of an opening act to *Gift of Screws*, as the newer record seems to address a range of things I've done in my career."

THE CREATIVE POSSIBILITIES OF UNKNOWNS

Despite its manic/euphoric energy and orgiastic ballyhooing, the textural flavor of *Gift of Screws* ultimately reflects the psychological catharsis experienced by Buckingham in the last decade. It's also, arguably, as sonically lo-fi and off-the-cuff as anything Buckingham has done in his solo career to date. The record opens with the aerobic "Great Day," moves through tunes that comment on life in-and-out of Fleetwood Mac ("Underground," "Bel Air Rain," "The Right Place to Fade"), and comes to rest on a meditative and cautiously optimistic note, "Treason."

"I don't necessarily think of myself as a writer," says Buckingham, who cites Brian Wilson and Phil Spector as influences. "I think of myself as a stylist, and the process of writing a song is part and parcel with putting it together in the studio. If you are playing the instruments yourself, you're slapping the paint on the canvas, and it leads you in the direction that you may or may not have expected to go. So, you go in and play around until you find the right inversions and the right notes that are going to support the melody. You don't necessarily know what that is. You might think you know, but, most of the time, you try things that may or may not work. You might record twice as many tracks as you end up using. You push the faders up in different combinations until something feels right. All of these actions open up the possibilities to any number of unknowns, and I think this is the way a lot of producers who were interested in pushing the envelope have approached making records."

"Even as early as *Rumours*, we would be working on a song for months, and then, one day, Lindsey would come in and put a counterpoint on the track—something that was always his original idea—and it would turn the song inside out and make it three times better," says Buckingham's longtime equipment tech and recording engineer, Ray Lindsey.

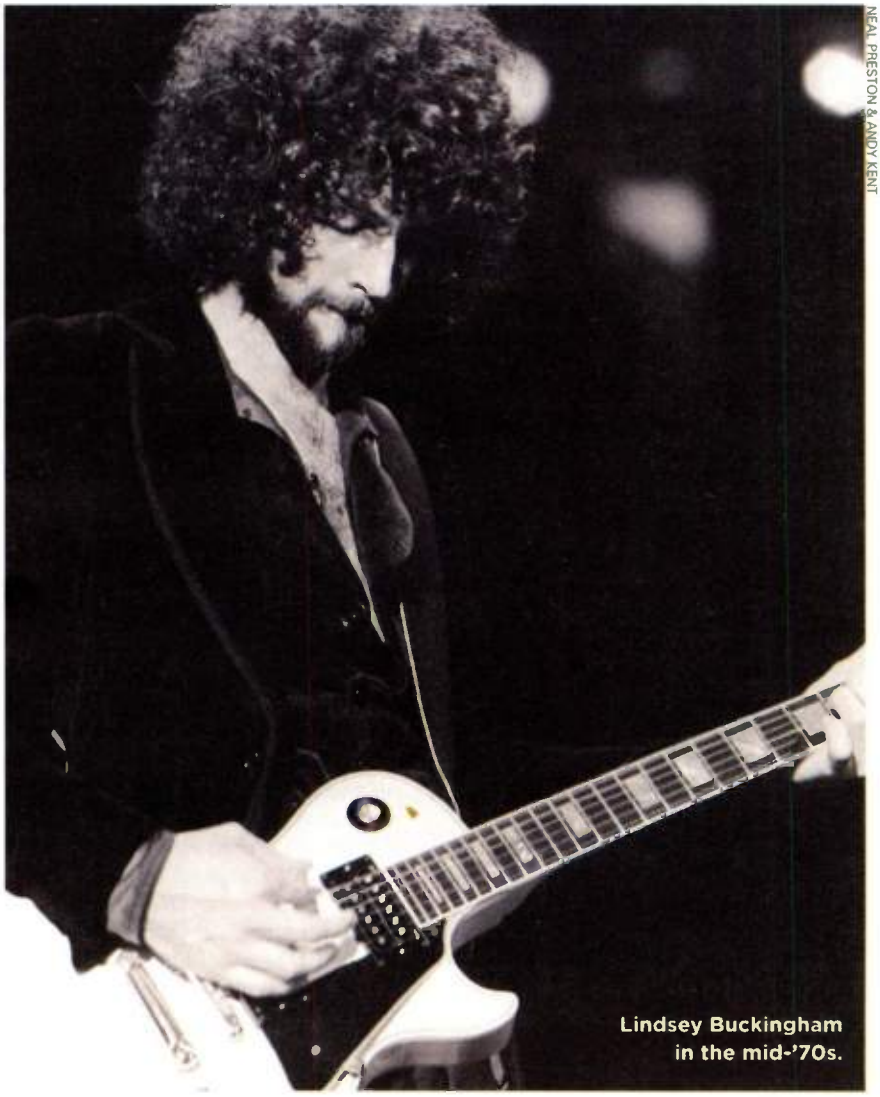
Let the Right Sounds In

The creative benefits of embracing "possibilities" when they present themselves is perhaps best illustrated on *Gift of Screws* by the development of the track, "Great Day."

"I was in the studio, and my son, Will, was hanging out, and he started going, 'Great day. Great day,'" says Buckingham. "I asked, 'What is that?' He said, 'I don't know. I just made it up.' I thought, 'I'm going to see if I can make it into a song.' I don't necessarily think I was intending it, but that song ended up being a capsule report on everything else that followed—in kind of like a 'cubist' sort of way—with its fingerpicked acoustic parts, counterpoint vocals, and flashy leads."

Likewise, the mysterious rhythmic pitter-patter rhythm at the opening of the tune is an example of Buckingham's willingness to use anything at hand to subvert obvious sonic choices.

"You know how mixing consoles have that little padded area where you put your elbows?" he asks. "Well, I pounded on that pad to create that rhythm. Sometimes, I use a leather chair. You set your tempo up with a click track, and you just hit the padding with your hand. This is something I've done over and over again—probably as a reaction to the '70s, where you had this fat kind of very clean and in the forefront sound for the drums. Maybe that was because of disco, but if you go back to the early rock stuff, the drums were more elusive. There was so much more atmosphere. So since *Tusk*, I've often looked for alternatives for the function of things such as the snare and hi-hat—anything that would get away from



NEAL PRESTON & ANDY KENT

Lindsey Buckingham in the mid-'70s.

the norm. I'd think, 'What can I do on the two and four that doesn't sound like a snare?' Of course, in rock, you *need* the action and rhythm of that instrument, but why not subvert the norm and find other things? On *Tusk*, for example, I used a Kleenex box on 'I Know I'm Not Wrong,' and a 24-track tape box on 'Save Me a Place' instead of the snare. Those aren't really big subversions—especially by today's standards—but, at the time, they *were*."

THE GLORY OF DOING THINGS WRONG

While Buckingham's production esthetic can intentionally run towards the trashy at times, he has also taken things even further—in the realm of, well, *wrong*. Consider "Love Runs Deeper" on *Gift of Screws*. Is the volume really supposed to jump up so considerably during the song's big, anthemic chorus?

"That was a tool, if you want to call it that," says Buckingham. "It has sort of become a part of the way I mix. I offset different sections of a song by making one section louder than another. I don't think someone else would have mixed 'Love Runs Deeper' that way. It is probably an outgrowth of not really knowing what I'm doing as a mixer. I don't approach it from a technical standpoint. I don't have any sense of, 'Well, let's cut 80Hz here, because that is what you are supposed to do when this situation comes up.' For me, it's all about turning the knobs until it sounds good. One of the things I was painfully aware of as I was mixing *Gift of Screws* was whether I was getting into bad habits, or actually doing something interesting. I was quite worried during the mastering process that [mastering engineer] Bernie Grundman would say, 'I'm going to have to squash this and completely lose the dynamics, because we can't master it otherwise.'"

"When something jumps like that, if it is exciting, it doesn't bother me," answers Grundman. "I consider it a good musical effect. For any little adjustments on parts that were too dynamic, I marked the tape and did it all by hand, bringing down the level a few dB at different places. I didn't let the compressor do all the work, because with that you get a homogenized sound, and you tend to lose definition. I wanted to keep Lindsey's music open and transient so there was still nice detail. You want to hear his musicianship."

"You can't get too academic about mixing," continues Buckingham, who mixed *Gift of Screws* on a '80s Neotek Elite console he purchased during the 1987 sessions for Fleetwood Mac's *Tango in the Night*. "What you do is you work on a song, shape it, and then get away from it for a while. And when you *do* sit down to mix, you just go until nothing is bothering you. It is not about saying, 'The guitar is not loud enough.' You have to listen to each element within the overall mix, and say, 'Oh, that is hitting some chemical reaction in me. It elevates the song!'"

Buckingham can also be delightfully relaxed in his choice of effects processors.

"I love using plate reverbs and delays, and you could make a case that I overuse them sometimes," Buckingham says. "I just really like what a delay does. It takes something out of sounding too real and makes the elements liquid. I won't go to a piece of outboard gear for these effects, though. I'll typically use a Boss DD-3 Digital Delay, which is about as lo-fi as you can get. But it works. You would be surprised by how low-tech my applications are."

THE BENEFITS OF COMFORT OVER PROGRESS

For *Gift of Screws*, using Pro Tools wasn't an option, but not because Buckingham hates DAWs or digital audio.

"Lindsey is not a gear head at all, and he simply doesn't want to work with anything that takes him out of his creative focus," says Lindsey, who also reports Buckingham used to record with six synced-up ADATs (48 tracks worth) until switching to a Sony PCM3348, 48-track digital reel-to-reel machine. "For example, even though he knows that Pro Tools offers a much faster way to edit, he still does all of his editing on a half-inch Ampex 2-track with boxes of razor blades. You see, if he was working by himself, the whole process of using Pro Tools—managing disk space, managing your CPU, saving and labeling things, and

Let the Right Sounds In

so on—would prevent him from getting on a roll, creatively. Lindsey definitely has a kind of studio comfort zone. He still monitors with Yamaha NS10s, because he knows what the NS10 can and cannot do. As long as the sound is consistently coming back to him, he can compensate for whatever deficiencies or idiosyncrasies the equipment might have in his head—which is crazy and scary. And when we go to master something, he knows exactly where to do a couple of EQ bumps. It's all about being familiar with the equipment."

The familiarity factor was actually a huge part of the *Gift of Screws* process, as the album began its life modestly as a series of tracks Buckingham recorded on his trusty Korg D1600—a portable, 16-track digital machine that some would consider as no more than a "demo" recorder.

"The songs 'Did You Miss Me,' 'Treason,' and some others were all started on that deck," says Buckingham. "I'd grab the D1600, a guitar, one microphone, and a little set of speakers and start blocking out tracks and ideas."

"The D1600 is very important because it sort of bridges the gap between ideas and actual master tracks," says Lindsey. "It was meant to be a writing tool, but approximately half of *Gift of Screws* came straight off it. Lindsey would bring it home, and we'd transfer tracks right to the 3348. And this was all stuff that Lindsey wouldn't have been able to get on the record otherwise."

DIRECT ELECTRICS & TINY ACOUSTICS

For his guitar parts, Buckingham used a Baby Taylor, a Martin D-18, and a Turner Renaissance acoustic and a Model One electric. However, amplifiers weren't usually part of the equation for the electric parts.

"Almost everything on this album is recorded direct with only a few uses of amplifiers," says Buckingham. "Sometimes, I just plugged into a Boss OD-1 Overdrive pedal and went direct."

Buckingham recorded a lot of the guitar tones on *Gift of Screws* direct, but not always by simply plugging into a stompbox. He also employed Roland's high-tech VG-8 V-Guitar System.

"He uses just the presets on the VG-8," explains Lindsey. "What he does is layer and double guitar tracks, using a lot of dry and direct sounds in combination with effected sounds. For a guitar solo to pop out and have the balls it needs, Lindsey is looking for ways for it to live in the track while not cluttering it up, or getting in the way of everything else going on. If something motivates him, he'll go ahead and play a solo with a sound he has chosen. Through that process he is refining what he is playing, what the solo is doing, and what kind of direction he wants the song to take. He's always working in a way to try to spark a creative thing. In fact, he wants everything to change all the time. The last thing I would want in the studio is to set up predetermined guitar sounds for him. Although when he plays on stage, he wants everything static so he can concentrate on his performance and his energy. Once his live sounds are set, he doesn't want that sh*t to change!"

Although Buckingham is a brilliant acoustic player who has tracked more than his share of stunning acoustic-guitar tones, he didn't always reach for a big, resonant instrument to construct the acoustic textures on *Gift of Screws*.

"I loved using the Baby Taylor, but they are not necessarily that great sounding when you play them sitting in a room," says Buckingham. "They don't fill up a room with their sound, but there's something about the way they contain the sound that works very, very well in a recording. Why that is, I don't know. But when you're layering guitars, and you have a few different guitar sounds going on, you're not necessarily interested in capturing the fidelity of what a certain guitar has to offer. It's not about the sound of one guitar on its own, but about how it works with the other elements in the track."

GOING HIS OWN WAY

"Lindsey is all about creating music," says Lindsey, "and working with him is like watching a great composer—like Mozart or Beethoven—who can sit down at a blank sheet of music paper and start scoring multiple instruments. There aren't too many musicians around like him."

"I'm a big believer in 'It ain't whatcha got, it's what you do with what you've got that's important,'" says Buckingham.

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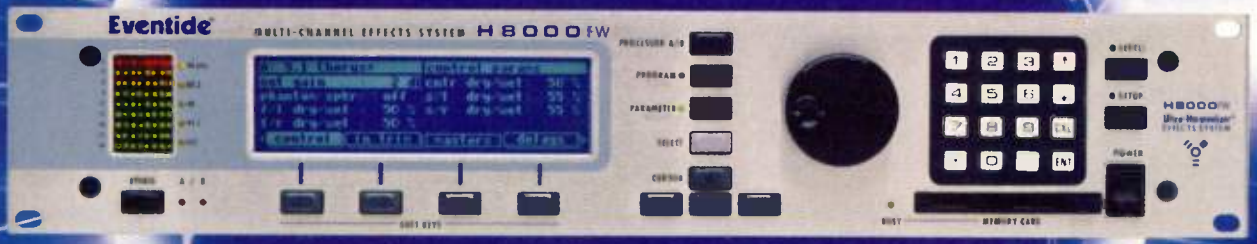

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Sammy Hagar.

SAMMY HAGAR'S RED ROCKER METHOD

by Steven Douglas Losey

When it comes to laying down guitar tracks, Sammy Hagar is a simple guy. He's the first to admit that he's not a technical cat, and that he prefers to be a guitar minimalist in the studio. Still, Hagar has logged more than three decades of studio dates recording with Montrose and Van Halen, and making more than 20 solo albums (the latest being 2008's *Cosmic Universal Fashion* on Loud & Proud Records). As a great player himself—not to mention the fact that he was standing next to guys such as Eddie Van Halen and Ronnie Montrose in the studio—Hagar has quite a bit of experience recording mammoth guitar sounds. Here are a few tidbits for *EQ* readers.

PURITY

I go directly from guitar to amp to microphone with no effects at all in front. I try to get the best tone for rhythm, the best tone for lead, and leave it at that. The truth is, I don't like playing through gadgets. Every time I try a wireless or a cord going into a pedal, I always end up adding another piece of equipment just to get more preamp tone. I can really feel the gain eaten up when I run my sound through anything. Also, if you add a bunch of effects to the signal chain, you might have a "perfect" solo-guitar track that has too much going on to work in the mix. Then, you have to redo the part, and I'm lazy! Of course, many producers these days like you to go dry so that they can try 20 different things in the mix to make the part come alive.

DYNAMIC INTERACTION

I stand next to the amp and wear headphones. I don't ever track in the control room. I really want that interaction with the amp and the guitar. It's the way I play, and it's definitely part of my sound and vibe. If the amp is too loud, I'll just stand behind it.

LIMITATIONS ARE GOOD

I like to get in and get out, and catch inspiration when it's knocking. A lot of people try everything on every song when they record. I don't do that, because you can get bogged down with the endless possibilities.

MULTITASKING SUCKS

It's really difficult to come up with a good guitar part and a good vocal at the same time. I usually have to finish my guitar tracks, and then figure out what I'm going to sing on top of them. It was like working two jobs. In Van Halen, Eddie played guitar, and I sang, and that was cool.

FIND YOUR SPACE

With bands like Van Halen and Montrose, it's all about the guitar and the vocal. Ted Templeman [noted producer] was a genius for finding the perfect slot for the vocal when confronted with a wall of guitars. When I joined Van Halen, one of his favorite things

to say was, "Finally, someone who can sing over Eddie's guitar." David Lee Roth sang in a low register, and you couldn't get the vocal up loud enough without eating up the track, which meant the guitars had to be back in the mix. In the early days, Eddie would only do one guitar track, and as a result, the guitar was very sparse. When I joined the band, the guitars got much louder—and the production got much fuller—because I could scream over a bunch of guitar tracks, a cranked bass, and a keyboard.

DAWS LEVEL THE PLAYING FIELD A BIT TOO MUCH

DAWs tend to allow people who aren't so good singing or playing to be very competitive. I can sing on key, and I can play in time. My band can go in and get an amazing track in one take. But some bands can go in and sound like they're just as good as us because of technology. It's funny—you go and see them and say, "These guys stink!" I don't think being able to fix bad performances is good for the industry, because then it seems like any good-looking chick or handsome dude can go off and have a smash hit. EQ

Don't Eat the Vocal!

Okay, Sammy Hagar can hang tough with just about any raging guitar tone, but your singer might not be as sonically macho. So rather than be an oaf and bury the vocals under a tsunami of 6-string mayhem, here are three tips for crafting powerful guitar tracks that still allow the singer to command center stage in the mix.

Tone Down. Guitars and vocals tend to travel in the same midrange frequencies of 500Hz up to around 3kHz (depending on the singer's range and the tuning of the guitar), so boosting the EQ of your guitars in that range is going to seriously screw the singer. Instead, cut the mid frequencies on the guitar by 3dB or so, and give the vocal its own cozy little home in the mix.

Move 'Em On Over. Panning can also help clear out some real estate for the vocal while letting the guitars rage. Pan your guitars hard right and hard left, and then position the voice dead center.

Dry Heat. Ambience can be used to the vocal's advantage, as well. Employ reverbs and delays on the voice to taste, and then leave all rhythm guitars completely dry. The guitars should rock the foundation, while the vocals float nicely on top of the mix. —*Michael Molenda*

THE TRUTH ABOUT "TOUCH"

by Craig Anderton

Touch: It's what separates the great from the almost-great. It's what every bass player wants, and some manage to find . . . but few have ever really defined. Nonetheless, in addition to the unquantifiable, there is the quantifiable aspect of touch—so let's investigate.

TUNING

Tuning is crucial with bass, perhaps even more so than with other instruments, because of the low frequencies involved. A bass is a resonant system, where even if you're only playing one string at a time, you can't avoid having occasional, sympathetic resonances from the other strings. Even slightly out-of-tune strings will create slow, rolling beat frequencies. This is very different from, say, guitar, where slightly out-of-tune high notes create more of a chorusing effect; chorusing on a bass robs the part of its power.

CHOOSING THE RIGHT NOTES

One of the great things about bass (or guitar, for that matter) is that you can play the same note in different places on the neck to obtain different timbres. Those who play samplers know how valuable "round robin" note assignment can be, where hitting the same note repeatedly triggers different samples to avoid the "machine gun notes" effect. Bass has "round robin" assignments too, but *you* do the assigning.

An obvious example is open versus fretted strings. For example, when going from an *A* to a *D*, don't necessarily go from one open string to another, but play the *D* on the *A* string. That mutes the *A* string so its vibrations don't interfere with the *D* string, and the contrast with the decay can shape the sound as well—going from an open string to a fretted string shortens the decay and "closes down" the line, whereas going to an open string leaves the line more "open" because of the extra sustain.

Fretted notes tend to draw less attention in a mix than open strings, and this can also be used to good advantage. During the verse, try playing fretted notes to give more support to the vocals; but for the chorus, use open strings as much as possible.

PICKUP HEIGHT

The distance of the pickups from the strings makes a big difference on how your touch interacts with the bass because pickups follow the inverse square law, where output drops off rapidly with increasing string distance. Placing the pickups further away makes a heavy touch seem more light and the overall sound less percussive, while placing the pickups closer to the strings makes a light touch seem heavier and emphasizes percussive transients. I prefer to angle the pickup so that it's further away from the lower strings, and closer to the higher strings. I tend to slam the lower strings harder, so this pickup placement evens out the string levels somewhat, even before they hit any kind of amp or compression.

In any event, if you haven't experimented with pickup height, spend some time recording your bass with the pickups at various heights. You might be surprised how much this can influence not only your tone, but the effects of your "touch."

THE TONE CONTROL IN YOUR FINGERS

There are many ways to play bass strings: pushing down with fingers, using a pick, pulling up and slapping, plucking with the fingers . . . and each one gives a different tonal quality, from smooth and round to twangy and percussive. Match your picking technique as appropriate to the song, and your "touch" will augment the arrangement. You can make your bass lay demurely in the background, or push its way to the front, just by what's in your fingers.

TOUCH MEETS ELECTRONICS

Touch also works in conjunction with whatever electronics the bass first sees in the signal chain. The bass reacts differently to your touch depending on whether it first sees a straight preamp, a preamp with saturation, a tube amp, or a solid-state amp. I go for a bit of saturation in a preamp (as long as it's soft, smooth saturation—not hard clipping) as that tends to absorb some of the percussive transients, giving a smoother tone that works well with subsequent compression. But that's because with the kind of music I play, the bass tends to be mostly supportive. In small ensemble situations where the bass takes a prominent role (*e.g.*, jazz trios), a clean preamp will preserve those transients better, letting the bass "take over" a bit more in the mix.

If you're feeding a compressor, its settings have a huge influence on touch. With lots of compression, you can pluck the string softly for a muted tone, but the volume level will still be relatively high due to the compression. Hit the string harder, and if the compressor has a fast attack, the compression will absorb the percussive transient, making the tone more docile. If the compressor has a slow attack, that initial transient will pop through. In this situation, touch doesn't only involve working with the bass, but with the electronics as well.

Before we sign off, remember this: The bass doesn't exist in a vacuum, and your touch interacts with every aspect of it—strings, frets, pickups, and downstream electronics. Optimize these for your touch, and you'll optimize your bass sound. EQ

Acknowledgement: Thanks to Brian Hardgroove, bassist for Public Enemy, for his contributions to this article.

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EXPLOITING VIRTUAL INSTRUMENT OUTPUTS

Fig. 1. Native Instruments' Kontakt, with three instruments each going to different outputs. Each output has different processors (chorus for the pad, limiting for the drum kit, and compression for analog bass); there are also four aux buses, two of which have processors (convolution reverb and saturation).

by Craig Anderton

With multi-timbral keyboards and tone modules, being able to route different instruments to different channels is essential if you want to process them individually. This is true with drum machines as well, as you want at least separate outputs for the kick and snare so you can process them differently compared to the stereo mix.

Hardware devices always have their outputs limited by such factors as the number of jacks you can actually fit in a box and still hit a target price, but virtual instruments have no such limitation—with an instrument like a drum kit, you could literally have every drum on its own mixer channel.

THE VIRTUES OF VIRTUAL

Here's how multiple outs work in today's virtual world. Inserting an instrument with multiple outs into a host like Logic, Cubase, Digital Performer, Sonar, etc., creates a separate audio track for each out. This also applies to instruments that are rewired into the host—but note there might be *a lot* of outputs. For example, rewire in Propellerhead's Reason, and your sequencer will sprout another 64 tracks. As a result, when inserting a virtual instrument, many programs give you the option to either create a track for as many outputs as you want, a track for the main output (usually a stereo mix), or both.

These audio tracks work like any audio track: You can insert effects, mix, pan, automate, etc. Few programs display a corresponding waveform in the track, although you can always see the output in the mixer meters.

PUSHING THE CPU'S LIMITS

With a multitimbral synth or sampler, each instrument would ideally have its own stereo output. But with a 16-channel multitimbral instrument, that means 32 outs. Not only are instruments with 32 outs rare, they devour CPU clock cycles.

One workaround is to insert more than one instance of the synth, but use fewer instruments from each—for example, four instruments from one instance, and another four instruments from another. Although that might seem like a worse option (inserting more instruments stresses out the CPU more), it allows for a CPU-saving workaround: Selective instrument "freeze."

In case you're not familiar with the freeze function, it essentially converts the virtual instrument track into a more CPU-friendly hard disk audio track, then "disconnects" the instrument from the CPU. As long as you retain the MIDI track that drives the instrument, if you decide the frozen track needs further editing, you can always "thaw" it, edit the MIDI track, then re-freeze. So, to save CPU power, you can freeze one of the instruments while you're playing/editing the other one in real time.

APPLYING EFFECTS

One big advantage of a virtual instrument's multiple outs—being able to add effects within the host—has been mitigated somewhat by the many instruments that now include built-in effects. However, these are usually optimized to keep CPU power consumption under control, so you can often get better quality with "outboard" plug-ins.

With effects like reverb, you don't really need an instance on each instrument. So, another option is to use a higher-quality instrument effect like onboard convolution reverb in an instrument aux bus (if that option is available), and send it to the instrument's stereo output—see Figure 1. Or for more flexibility, you can instead disable any effects in the instrument, assign a really good reverb to an aux bus in your DAW's mixer, and use each instrument channel's send control to apply some signal to the aux bus. In this case, the reverb is set for processed (wet) sound only, then brought back into the mix.

Using reverb this way is a fairly traditional example, but sometimes using a processor like distortion or overdrive as an aux bus effect can add a wonderful quality to the sound—when added *selectively* to tracks.

Separate outs have other creative uses. For simulated stereo imaging, load the *same* instrument into multiple channels, and restrict each one to particular note range, panned somewhere in the stereo field. You could pan them so that, for example, lower notes appear from the left, and higher notes from the right. Or, load the same instrument into two channels, but don't restrict the key ranges; instead, tune one a few cents sharp, and the other a few cents flat. This can produce a huge stereo image, but check mono playback—you may need to edit the detuning to avoid "beating" or signal cancellation.

Get the idea? Multiple outputs allow for all kinds of interesting options—try them out. EQ

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IT AIN'T HOW BIG IT IS . . .

by Roberto Martinelli

When recording kick drums for your album, you should consider what the desired effect is based on the record you're making. For example, if you want a powerful impact and attack, you may want to rethink the whole "size" issue, as a big kick drum may not get you there. Massive bass drums are certainly impressive visually, but the bigger the drum's circumference, the greater the boom, and the lesser the definition. As far as depth is concerned, the shallower a drum, the less that note will sustain.

The majority of kick drums on the market today are 22" in diameter, therefore making them the most-recorded bass drums. But if you want your kicks to have more definition and punch, think about going smaller, like 20" or even 18". Yes—even for your rock and roll project. You might think that 18" kicks are a jazz thing only, but it isn't so. Many successful pop/punk albums are made with these smaller kicks precisely because they deliver clear, punchy notes in the studio. Hey, you can still go on stage with your big 22s, and no one will know!

Remember that so much of what makes a bass drum sound like a bass drum is more than its size. It also has a lot to do with what you're hitting it with. After all, a beater has far more surface area, physical mass, and density than a drumstick, and it strikes with greater velocity—all of which translates into a boomier sound. I mention this fact so that you won't worry if you're using an 18" kick and an 18" floor tom in the same session. The impact of the beater will ensure that the two drums don't produce similar sounds. Hit an 18" or 16" tom with a kick-drum beater, and you'll hear how much difference there is. And if you find a floor tom that sounds great as a "bass drum," keep in mind that any floor tom can be easily converted to a kick drum via a number of "lifts" that are available on the market.

After albums of going the standard route of using more commonly-sized kicks, I recently recorded a project using 18" kick drums made by Trick Drum. The kick had to punch through four tracks of distorted guitars, a bass, and multiple tracks of vocals and keyboards, and the uniform construction of the Trick Drum's aluminum shells provided consistent tone and greater low end than wood bass drums of the same size. It also cut through the mix exceedingly well—both in live and studio situations. While these proved to be the right kicks for the track, I must admit that they also delivered the right sound for my style, as I like my kick drums tuned tight for better attack. For heads, I used Remo Coated Powersonics with the external dampener snapped fully in place. The resonant head was left on the kick, and I cut a five-inch hole in the middle of the head.

To mic the drums, we used a handy device called a Kelly Shu—a horseshoe-shaped, shock-mounted mic holder that sets up inside any bass drum with lugs. Although the device made in difficult to use internal dampening—such as a feather pillow—the result was what I had hoped for. We got a tone that had a great deal of piercing attack and definition, while still retaining the oomph and thud that makes a kick drum really drive a groove. The sound was anything but wimpy. Give it a try! EQ

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Fig. 1. A good compressor is just one way to help create a more intimate sound, thus providing a better connection with the listener.

FIXING THE DISCONNECT

by Craig Anderton

The purpose of a vocal is to connect with your audience, but clearly, not all singers do. The reason for that lack of connection is often a reflection of a lack of connection *within* the singer—if the singer doesn't bond with the vocal, there's no way the audience is going to bond with the singer. This can be a particular problem in the studio, where there's no audience to prompt you to remain connected to the vocal; so here are ways to prompt yourself. In the process, you'll connect better with your listeners.

FUSION: IT'S THE *PACKAGE*

As obvious as it may sound, reflect on the fact that music and lyrics are a single package: *One of a vocalist's main tasks is to integrate the two into a single experience*. To put it in tech terms, music and lyrics are each separate data streams, and the singer multiplexes them into a single, cohesive statement. Or, think of the melody as the carrier, and words as the modulator. In any event, the point is never to emphasize one element at the expense of the other.

Aretha Franklin is an outstanding example of someone who fuses lyrics and melody into a single entity. Bob Dylan is another one, whose quirky lyrics match his quirky voice; or consider Bob Marley, whose vocals were sometimes closer to a percussive instrument.

For some examples of people who don't fuse music and lyrics, just tune in to any American Idol show where they're auditioning singers. Some of them are so into screaming and overemoting with their voice they forget that they're also supposed to be telling a story. Sometimes I almost feel you could go up to these people, say "What were you singing about?," and they wouldn't be able to tell you.

SURPRISE—YOU'RE A SALESPERSON

When you're singing, you're a salesperson—because you need to *sell* the listener that you believe in what you're singing, that you know how to sing, and that you're worth listening to.

They say the best salespeople are those who believe in the product they're selling, and that includes singing. But this doesn't just mean confidence; plenty of lousy singers truly believe they're great. Of course, believing in yourself never hurts, but believing in the *song* is key. There's no point in singing lyrics you don't believe in, whether it's a cover song or something you wrote. If you ever find yourself "going through the motions" when singing a song, strike it from your repertoire or album.

AUDIO "EYE CONTACT": INTIMACY

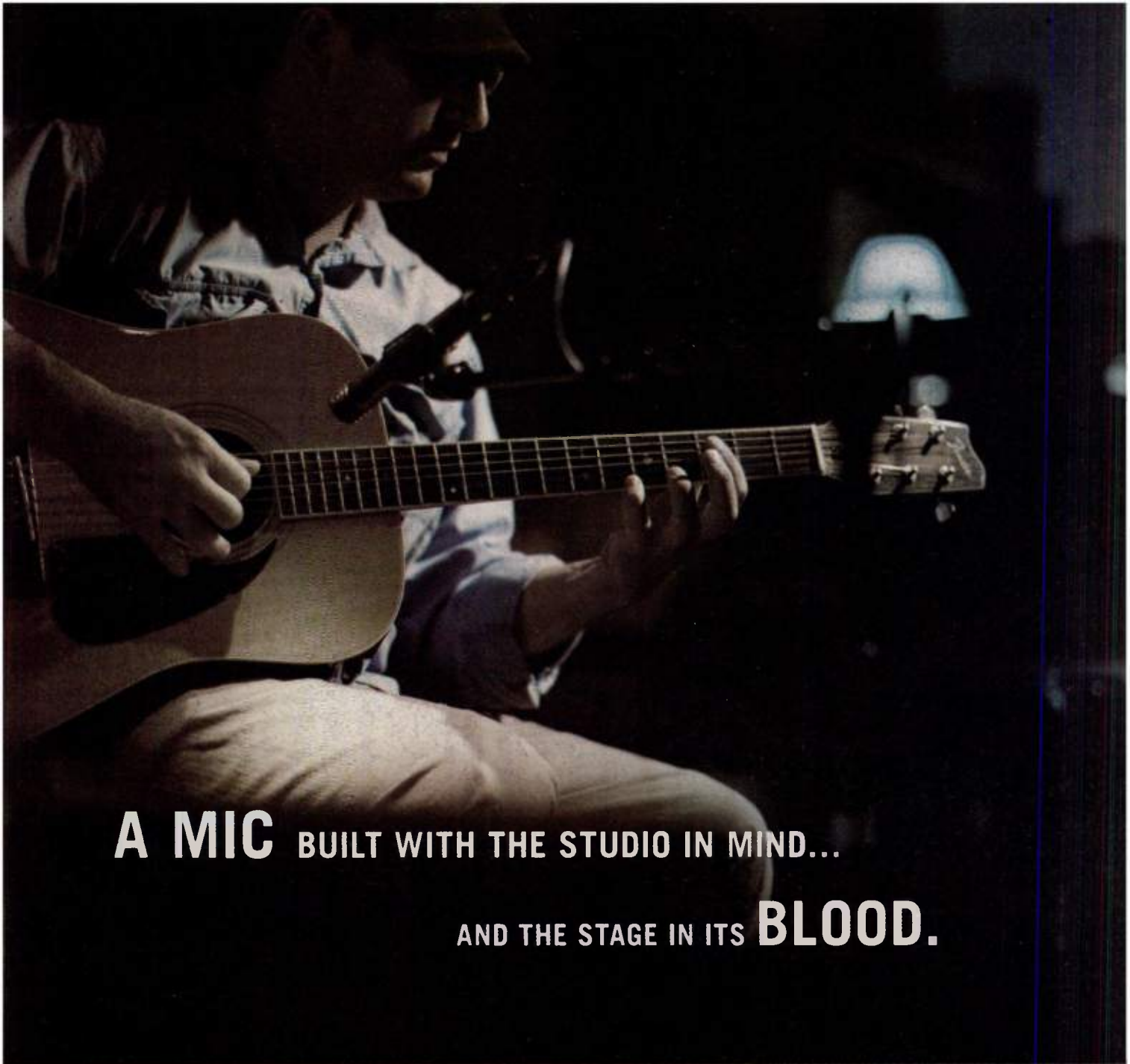
When singing live, eye contact is crucial for establishing a connection with the audience. When I go on stage, the most amazing thing is all those eyes looking at me—which immediately makes me want to look into the eyes of everyone there. We're human; we long for contact and communication, and singing *to* people means you not only have to believe in the song, you have to believe that someone else does, too.

But how can you possibly simulate that in the studio? Although you can't make eye contact with your listener, you can increase intimacy in two ways: Use the proximity effect to add bass and warmth, and/or use compression or limiting (Figure 1) to make you sound "closer" to the listener.

Generally, intimacy implies a natural, close-up sound—something almost conversational in nature (although possibly a loud conversation!). But intimacy has other facets. Getting back to the "fusion-of-two-data-streams" concept, sometimes the way the voice connects is by being distant and ethereal—sounding more like a voice from *inside* the listener, rather than being *outside* the listener (for a prominent example of this style, think Enya). It's even possible to combine both; this is something Dido does well, with a voice that's both evocative, but conversational.

WAIT UNTIL PLAYBACK BEFORE YOU JUDGE YOURSELF!

When you cut a vocal, you *must* turn off the internal critic that apparently lives in just about every artist's head. Don't attempt to judge yourself when you sing. Don't think "On my next take, I need to do that phrase better." It's harder to turn this off than you might think, because self-judgment is something that happens almost sub-consciously—you'll probably find that once you become conscious of that internal critic, first you'll curse me for making you aware of something you now can't ignore, and second, that it's hard to turn off. But you must turn it off. Remember, you're selling that vocal to the listener, not just yourself. Put everything you have into projecting that vocal outward. Listen to yourself only enough to make sure you're on pitch; put all your energies into your voice. It's like baseball: You don't look at the bat, you look at the ball and you naturally move the bat to hit it. Always keep the end listener in mind, and your vocal will flow naturally toward that goal. EQ



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24 WAYS TO BUST HUM

by Bruce Bartlett

You patch in a piece of audio equipment, and there it is—*hum*! This annoying, low-pitched sound is typically a tone of around 60Hz (50Hz in Europe and other parts of the world), as well as multiples of that frequency. Hum is caused mainly by ground loops. A ground loop is a closed loop made of two separated pieces of audio equipment each connected to power ground through a three-prong power cord, and also connected to each other through a cable shield. The ground voltage may be slightly different at each piece of equipment, so a signal can flow between components along the cable shield. Other causes of hum can be guitar pickups, cables, and mics that pick up hum fields radiated by power wiring and transformers—especially if the cable shield connection is broken.

Here are the most important points to remember about hum prevention:

1. To prevent ground loops, plug all equipment into outlet strips powered by the same AC outlet. First, make sure that the sum of the current draws of the equipment does not exceed the breaker's or outlet's amperage rating (typically 15 or 20 amps).

2. Never use an AC 3-to-2 adapter to disconnect the power ground, as this is a safety hazard.

3. Use short cables.

4. Some power amps create hum if they don't get enough AC current. Therefore, connect the power amp's (or powered speaker's) AC plug to its own wall outlet socket—the same outlet that feeds the outlet strips for the recording equipment.

5. If possible, use balanced cables going into balanced equipment. Balanced cables have XLR or TRS connectors, and two conductors surrounded by a shield. The cable should use twisted-pair wires to reject magnetic hum fields, and it should have heavy braided copper shields to reject electrostatic hum fields. Optional: At both ends of the balanced cable, connect the shield to a screw in the chassis—not to XLR pin 1. Or, use modern audio gear whose XLR connectors are wired with pin 1 to chassis ground, rather than to signal ground. There should be a continuous connection from one chassis to another through the cable shields.

6. Transformer isolate unbalanced connections. To stop a ground loop when connecting two devices, connect between them a 1:1 isolation transformer, direct box, or hum eliminator—such as a Jensen Iso-Max CI-2RR, Behringer HD400, Rolls HE18, or Ebtech He2PKG.

7. Don't use fluoresecent lights. Don't use conventional SCR dimmers to change the studio lighting levels. These clip the AC waveform and generate lots of harmonics. Use Luxtrol variable-transformer dimmers, or multi-way incandescent bulbs instead.

8. If you are working with a recording that already has hum on it, apply narrow notch filters at 60Hz, 120Hz, and 180Hz (or 50Hz, 100Hz, 150Hz in countries with 50Hz power). Raise and lower those frequencies slightly to find the best hum-rejection points.

9. If hum is coming from a direct box, flip its ground-lift switch. Usually, but not always, you may need to lift ground if the musical instrument has a power cord, or is connected to an amplifier.

10. Check cables and connectors for broken leads and shields.

11. Unplug all equipment from each other. Start by listening just to the powered monitor speakers. Connect a component to the system one at a time, and see when the hum starts.

12. Remove audio cables from your devices, and monitor each device by itself. It may be defective.

13. Lower the volume on your power amp (or powered monitors), and feed them a higher-level signal from your mixer or audio interface.

14. Use a direct box instead of a

guitar cord between instrument and mic preamp.

15. If you use a snake box to route mic signals in your studio, make sure it is not touching metal, which can cause a ground loop.

16. To prevent accidental ground loops, do not connect XLR pin 1 to the connector shell.

17. Try another mic. Dynamic mics have a coil of wire which can pick up hum radiated from power wiring. Some dynamics have a hum-bucking construction.

18. Turn down the high-frequency EQ on a buzzing bass-guitar track.

19. To reduce buzzing between phrases on an electric-guitar track, apply a noise gate with a fast attack and moderate decay.

20. Route mic cables and patch cords away from power cords. Separate them vertically where they cross. Also, keep recording equipment, instruments, and cables away from computer monitors, power amplifiers, and wall warts.

21. If you hear a hum or buzz from an electric guitar, have the player move to a different location, or aim the guitar in a different direction. The guitar pickup is sensitive to magnetic hum fields, which are directional, so moving about can sometimes do the trick.

22. If you're playing a guitar with single-coil pickups, see if another instrument with humbuckers can do the job.

23. If the electric-guitar hum stops when the player touches the strings, that indicates the player is picking up hum radiated from the AC wiring, and is re-radiating it into the pickup. When the player touches the grounded strings, their body becomes grounded, and no longer radiate hum. In this case, ask the guitarist to keep at least one hand in contact with the strings while playing.

24. When you're recording a live concert, power all instrument amps and audio gear from the same AC distribution outlets. This is also a safety issue, as electric-guitar players can receive a shock—or cause hum—if they touch their guitar and a mic simultaneously. This occurs when the guitar amp is plugged into an electrical outlet on stage, and the mixing console (to which the mics are grounded) is plugged into a separate outlet across the room. If you're not using a power distro, these two power points may be at widely different ground voltages, and current can flow between the grounded mic housing and the grounded guitar strings. Electric guitar shock is especially dangerous when the guitar amp and the console are on different phases of the AC mains. If you lack a power distro, run a heavy extension cord from a stage outlet back to the mixing console (or vice versa). Plug all the power-cord ground pins into grounded outlets. That way, you prevent shocks and hum at the same time. EQ


Chris Basile.

THE ELEMENTS OF DEATH METAL

by Robert J. Shimonsky

Chris Basile of SubSonic Studios in New York has spent more than 25 years behind the console working in the extreme metal arena. A member of Pyrexia—which formed in the late '80s—Basile also launched in 2001, working alongside Jaime Locke (Agnostic Front, Prong, Cro-Mags), who has collected six gold and platinum album awards. In 2005, Basile decided to launch his own production facility that specializes in the art of extreme metal.

What are you currently working on?

We are working on multiple productions simultaneously, such as a new Pyrexia album that's mixed in 5.1 surround sound, mixing TenPoint's debut—which features Metal Blade recording artist Mike Dimeo on vocals—and releasing a podcast series with Focal Press Books. I can't stress how important it is to build a great team. With all of these critical projects going on, it's important to have good people around you to keep everything running smoothly.

How are you approaching the 5.1 mix?

We are looking to do things in this mix that we've never done before with Pyrexia. In addition to the 5.1 version, we are also doing an entire mix of the album with sound effects and other sonic imagery. If your home-audio system is set up for surround, you will literally be able to

hear a demon come up from behind you, and it will feel like things are coming at you from the sky. Surround sound is a huge creative advantage, because it adds a new dimension to the mix. Also, for this production we decided to purchase three separate sets of monitors in order to get a perspective on how our music will sound when played back in different formats. Remember, music can now be heard online, on your phone, and in Starbucks. You need to mix and master multiple versions of your songs for each format so you get the best-sounding version for each medium. It is also a big help to mix your work in mono *and* in stereo.

In general, how do you achieve a great metal drum mix?

I like to use specific panning techniques. For example, I make sure the snare comes straight down the middle of the mix, whereas I like to place toms across the stereo spectrum where you would imagine them spatially—as if the drummer were playing directly in front of you. Cymbals are obviously panned in stereo, as well, and how hard I pan them right and left depends on what sounds best in the final mix.

Triggers can also make mixing difficult if you are not used to using them. Triggers are devices you connect to a drum so that the stick hits can be isolated, which lets you replace the acoustic drum sounds with samples. Many Death Metal drum recordings made today rely on the use of triggers to get a clear, consistent, and accurate sound. You can also keep a drummer who may make inconsistent hits on the drum honest. This process actually helps the mix process tremendously by cutting a lot of time editing drums. If you are not using triggers, then you will probably have to rely on mix automation to ensure clear and accurate hits. You can also use a plug-in such as Drumagog, which can be used for re-sampling when building the drums in the mix. If the samples you use sound bad, or if they sound over produced, they can ruin your mix. DDrum and Roland both offer great sounds.

What do you do to get great-sounding guitars in your mixes?

Loud, heavy, and low-tuned guitars are the hallmark of any great death metal recording. Being a guitarist myself, I know the intricacies of getting different sounds for different types of recordings, and the quality of your instrument plays a large part in it. For example, because of the low tuning, specific adjustments need to be made to your guitar, as the strings are looser than when they are tuned to standard

pitch. This may cause the guitar tone to lose clarity, and you may also get fret buzzes. If you tune low, it's important to have a repair shop or guitar tech adjust the action for optimum playability, tone, and intonation. You should also consider using strings that help accentuate the frequencies that you want to capture in your recording. GHS, for example, makes strings specially designed to enhance low tunings. This helps tremendously, and you can hear the difference in your final mix. Of course, not every death metal band tunes low, but it's common, so you have to prepare for it in your overall mixing strategy.

Also, make sure you fatten the guitar sound by recording multiple takes with different amplifiers, cabinets, microphones, and instruments. Plug-ins should be used sparingly, as they tend to make your guitar tone sound over-produced. Lastly, be aware of using too much compression, because squashing dynamics aggressively can ruin your guitar sound. It's recommended that you try not to use compression on the guitars at all until the final mastering stage.

In many death metal recordings, the bass tends to get lost in the mix. How do you overcome this situation?

Most often, a bass tone is compromised because the guitars are overpowering the mix with *their* low frequencies. So if you put the bass in the same frequency range as the low-tuned guitars, you're going to lose it. I find that it's important to let the bass take care of the low end, so I usually carve out with low- and high-pass filtering any unwanted frequencies that may collide with the bass in the mix. I also recommend using multiple types of basses in your recordings. For example, we sometimes use a 12-string Dean bass—rather than a typical 4-string, passive bass—because of its unique ability to cut through a mix. It all depends really on what we are trying to achieve, but, primarily, it's critical to ensure your bass tone is equalized correctly.

Any recommendations for new mixers?

There is no way one can summarize all that goes into producing death metal in one article—this is simply a list of items one would definitely want to consider when doing their work. When mixing death metal, it is extremely important to have a working knowledge of what sounds good, and what does not. So spend time listening to your own work, and the work of other artists who you like or respect, as this process will help you find a reference point for your own mixes. EQ

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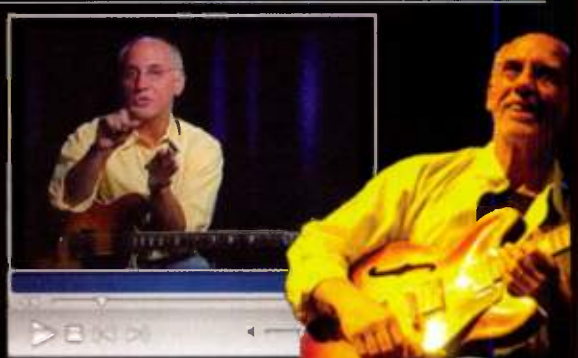

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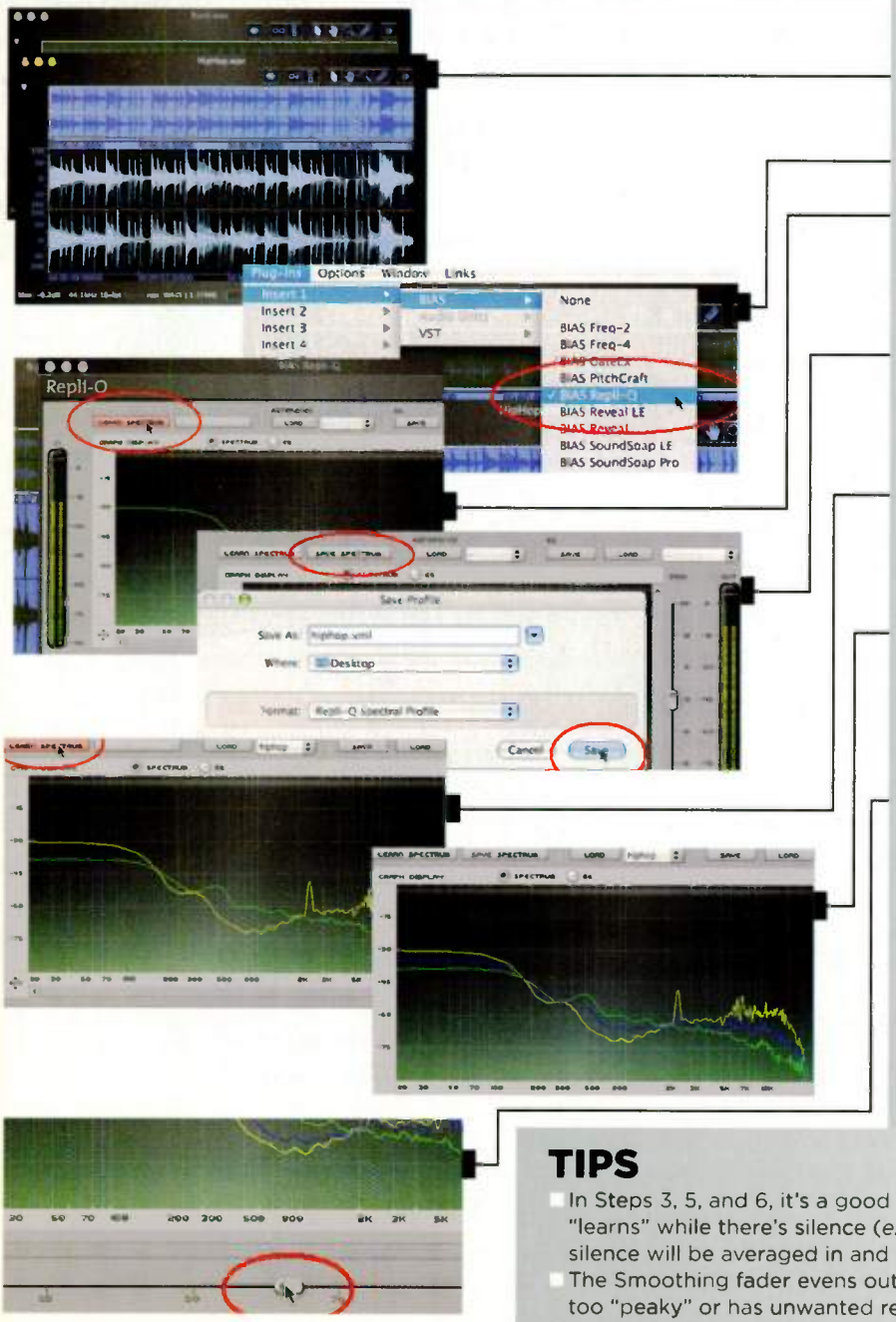
BY CRAIG ANDERTON

BIAS REPLI-Q PLUG-IN

Impose one file's audio spectrum on another

OBJECTIVE: Change the spectral response of a target file so that it matches, to a greater or lesser degree, the spectral response of a reference file.

BACKGROUND: It's possible to analyze a reference signal's spectrum, and match a target signal's spectrum to the reference so that their tonal qualities are similar. For example, an album might have one cut that was mixed at a different studio, and sounds out of place with other cuts; spectrum-matching can even out any differences. In this example, we'll use Repli-Q (an Audio Units plug-in that's part of the BIAS Master Perfection Suite as well as BIAS Peak Pro XT, but is also available separately) to apply a hip-hop drum spectrum to a rock drum loop, giving a stronger bottom and brighter highs.



STEPS

1. Open the reference file and the target file to which you want to apply the reference.

2. Insert Repli-Q as a plug-in.

3. Start playback for the reference file, then click on Learn Spectrum. Click Learn Spectrum again to turn off the "learning" process, then stop playback.

4. Click on Save Spectrum. Once saved, this spectrum can also be used for future spectral matching, and loaded from the "Load" field.

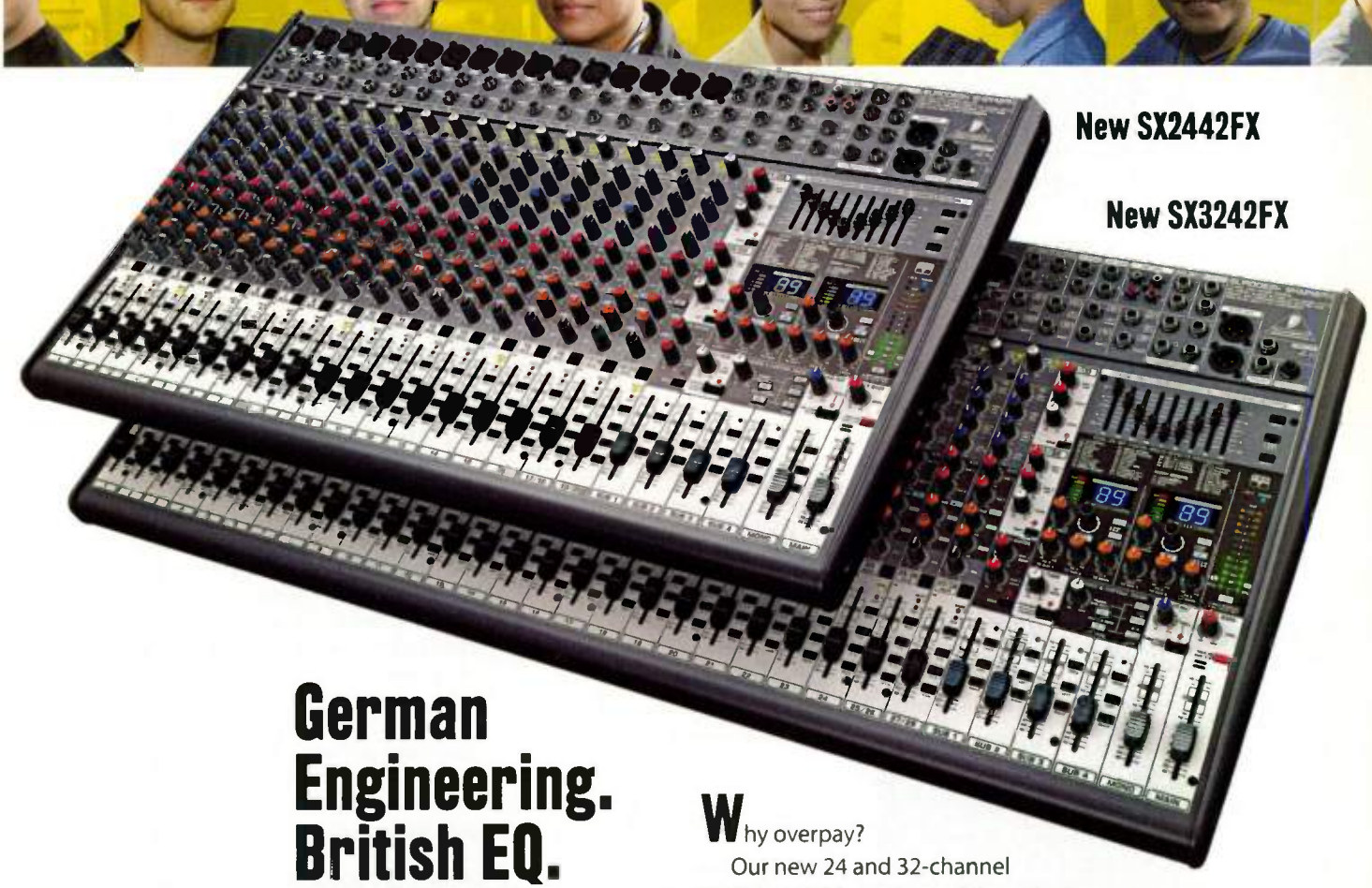
5. Start playback for the target file, then click on Learn Spectrum. The reference file response is the yellow line, and the target file response is the green line.

6. Click Learn Spectrum again to turn off the "learning" process. A blue line appears that shows the target file's new spectral response. This response depends on the setting of the Matching slider (see next).

7. Adjust the Matching slider for the desired spectral response. At 0, the target response is unchanged. At 100, the target response matches the reference response. Often, you'll want a setting between these two extremes, where the reference "influences" the target rather than "takes it over." Once you've nailed the sound you want, perform a bounce or apply the Repli-Q effect.

TIPS

- In Steps 3, 5, and 6, it's a good idea to loop short samples. If the program "learns" while there's silence (*e.g.*, if you hit Learn before initiating play), the silence will be averaged in and give a false reference.
- The Smoothing fader evens out the response a bit in case the target sounds too "peaky" or has unwanted resonances.



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Uli Behringer was involved in every detail of these two new live/studio mixers.

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POWER APP ALLEY

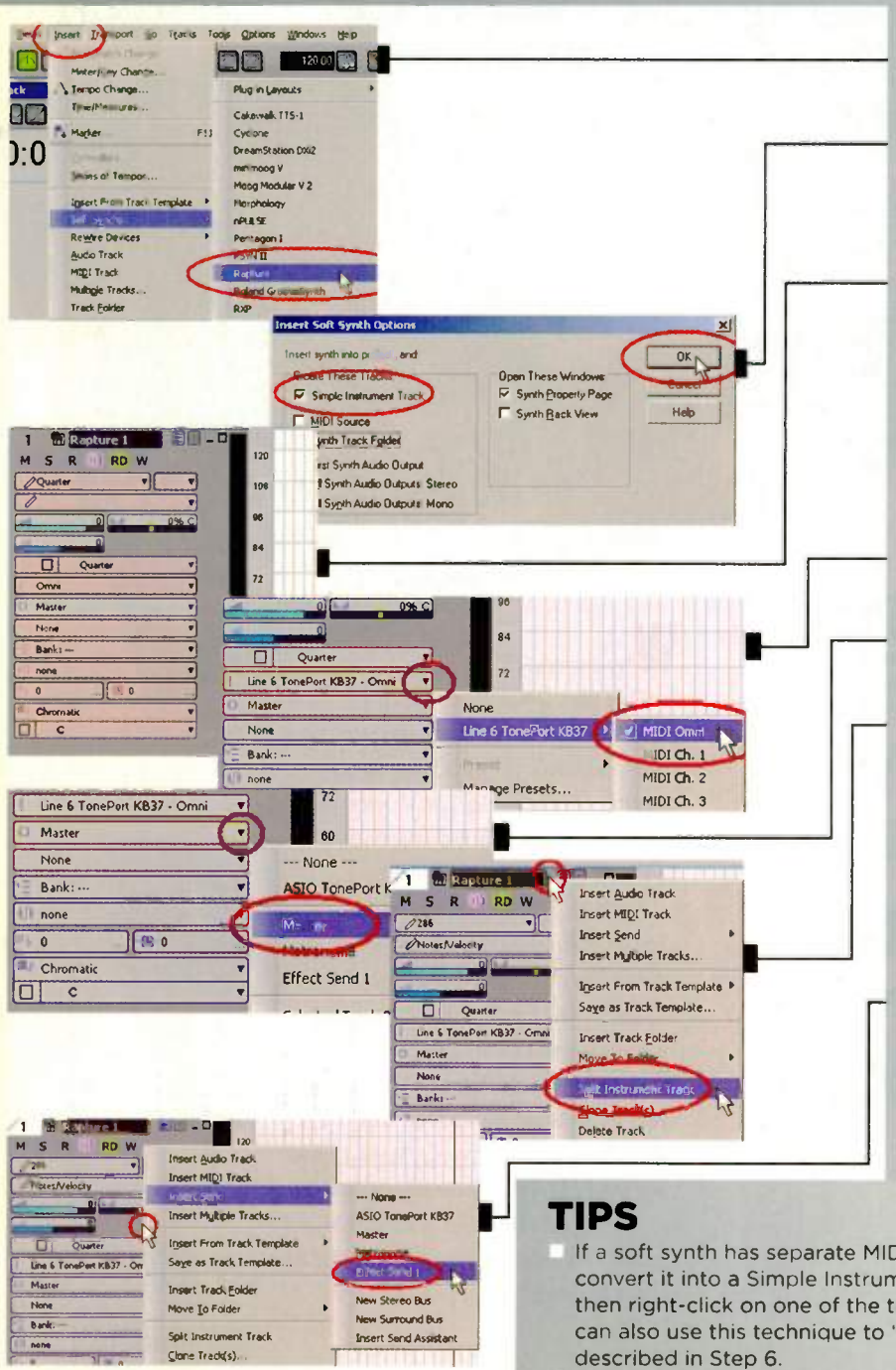
BY CRAIG ANDERTON

CAKEWALK SONAR 8

Use the new Simple Instrument track option to streamline workflow

OBJECTIVE: Simplify the process of inserting and working with soft synths by using Sonar 8's Simple Instrument Track, which combines audio and MIDI data.

BACKGROUND: Originally, Sonar required separate MIDI and audio tracks for software instruments. Then a command was added to create both track types at once when inserting an instrument. The new Instrument track combines both MIDI and audio soft synth functions into a single, streamlined track.



STEPS

1. Go *Insert > Soft Synths*, then click on the soft synth you want to open.

2. Check the "Simple Instrument Track" box. If you want the synth GUI to open when you insert the instrument, also check "Synth Property Page." Then click on "OK."

3. The Track appears, with the default name being the instrument you inserted (in the screenshot MIDI parameters are highlighted in red; other parameters, including Mute and Solo, are audio parameters). Pull the bottom track splitter line down to reveal all available parameters. The screenshot also shows PRV (in-line MIDI editing) enabled.

4. Use the (I)nput drop-down menu to select the MIDI input (*e.g.*, keyboard controller).

5. Use the (O)utput drop-down menu to select the audio output (*e.g.*, Master bus).

6. Because the MIDI and audio tracks have been condensed into one, some features of individual tracks are not available. For example, Volume and Pan affect audio, not MIDI. Also, the FX bin accepts only audio effects, not MIDI effects. To split the Instrument track into separate Audio and MIDI tracks, right-click in the track's title bar and select "Split Instrument Track."

7. Because the Simple Instrument Track outputs audio, you can add sends and do read/write automation as you would with standard audio tracks. To add a send, right-click on a blank space in the track, select "Insert Send," then click on the desired send.

TIPS

- If a soft synth has separate MIDI and audio tracks assigned to it, you can convert it into a Simple Instrument Track. Select the audio and MIDI track, then right-click on one of the tracks and select "Make Instrument Track." You can also use this technique to "unsplit" an instrument track that you split, as described in Step 6.
- If you export or bounce a Simple Instrument Track, the MIDI data will feed the instrument during the bounce and generate the audio—as if the track was frozen.

ROUNDUP
MASTERING TOOLS

by Craig Anderton

The controversy is over: We all know there's a reason why pro mastering engineers using high-end analog gear are pros, and we also know it's possible to do a more than credible job of mastering in the project studio with plug-ins. The whole point is to make your final mix sound better—and no one really cares how you get there, as long as it sounds great.

This special section on mastering has several elements. This month, "Sounding Board" features comments from project studio owners about how they master in the "real world"—sometimes under major time and money limitations (and there's additional info from them at www.eqmag.com). The second section is a roundup of affordable software mastering tools with highlights, strengths, and limitations. Next, we approached some of the top mastering engineers on the planet to get their exclusive take on what it's like in the high-end world—with many lessons that apply to the project studio. And finally, we've included links for the companies mentioned in all of the mastering-related sections—a good thing, too, because most of the software that's covered has downloadable demos so you can give the programs a spin in your studio.

But even all this isn't everything we wanted to cover, so stay tuned to future issues of *EQ* for more on project mastering. After all, we want to help you make the best-sounding recordings possible.

SOFTWARE MASTERING TOOLS

Want to master "in the box"? You can: The difference between quality software tools and quality hardware continues to narrow.

We won't cover individual plug-ins; there are a zillion companies making individual plug-ins, and we can't do justice to all of them. But we can cover the main editing platforms, as well as a few plug-in suites that are representative of the genre.

As to detailed comparisons and evaluations, it's not really necessary: Almost all of these programs have downloadable demos. Grab 'em, do your homework, and figure which works for you. But the following—in no particular order—should point you in the right direction. (All prices are MSRP/list prices.)

Sony Sound Forge 9
(Windows, $319.95)

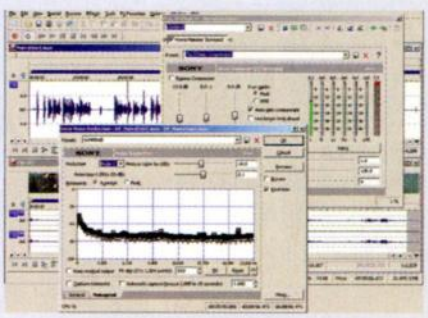
Sound Forge has been around since the mid-'90s, which in software years, makes it about 3,000 years old. So why is it still successful?

First, it's a boring program—and I mean that in a *good* way. It doesn't crash, it doesn't pout, the learning curve is almost a straight line, and perhaps most importantly, Sony hasn't messed with an exceptionally straight-ahead interface. When changes have been made, they've made sense—for example, including noise reduction tools and CD Architect as part of the program rather than optional extras, supplementing their original plug-ins with mastering-quality plug-ins from iZotope, and integrating surround/multichannel operation in a simple, obvious way.

Sound Forge is a workhorse. When someone from a competing company asked me why I still use it, I said "Well, there's this one keyboard shortcut that has probably saved me dozens of hours when doing narration" (it pre-rolls audio before a splice, then immediately picks up after the splice). That's why being around for a while has its advantages: There are lots of little goodies that come only from a user saying, "You know, it would be really great if you just . . ." and then having someone implement it.

Strengths: User interface so simple you could be unconscious and still make it work. iZotope plug-ins. Very useful noise reduction tools. Includes CD Architect.

Limitations: No spectral editing. CD Architect doesn't do ASIO. Some of the older plug-ins are showing their age—the time-stretching needs work.



Sound Forge's noise reduction window is in front, with the Wave Hammer level maximizer behind it. The lower file includes video as well as audio, the top file is narration.

Steinberg Wavelab

(Windows, $699.99)

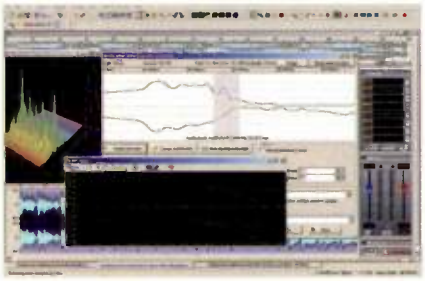
This is a program where if you say, "Can it do this?" the answer is invariably "yes." Multitrack editing? Yes. Burn data CD- and DVD-ROMs of audio and video projects? Yes. Author DVD-A? Yes, with remarkably complete authoring facilities. Includes cool plug-ins? Yes. Ah, but I bet it can't print labels or covers for your CDs, right? Wrong. The answer is "yes."

Remarkably, Wavelab is essentially the work of one person, but that hasn't slowed down progress. Wavelab 6 adds really good spectral editing, and superb pitch-shifting/time-stretching. Surround editing is offered, as is downmixing. Wavelab also has great mastering tools, including Bob Katz's K-Metering system, loudness corrected bypassing (very cool), analysis tools, and of course, lots of plug-ins as well as the ability to host other plug-ins.

Even more interesting, Wavelab segregates its various functions well so you're not faced with unneeded options—you could go for years without knowing it does multitrack processing unless you investigate the "Montage" feature. Although Wavelab is an extremely deep program, you seldom feel overwhelmed.

Yes, it's not cheap. But if you don't need all the functionality, there are two "lite" versions that have most, if not all, of what you need.

Strengths: Adopted the motto "Yes, we can" long before the Obama candidacy. Great authoring options. Extremely complete feature set, with each update adding significant enhancements. Stable.



Wavelab has multiple analysis and correction features in addition to a wide range of editing options and effects. Here, an error detected in the audio is about to be corrected. There are also two analysis windows.

Limitations: The interface could use a few cosmetic tweaks, and a really good loudness maximizer wouldn't hurt.

BIAS Peak Pro 6 XT

(Mac, $1,199)

This is the version with *everything*—Peak Pro itself, Master Perfection Suite of mastering tools, and SoundSoap Pro restoration software (if you do restoration, you want this) as well as the standard SoundSoap. Peak Pro, which lists for $599, lacks only the Master Perfection Suite and restoration tools (although it does have SoundSoap LE and Reveal LE). And, the Peak LE version (covered in the 01/09 issue) does what most people will need for $129.

While I've used Peak for Mac projects since version 1.0, it was never my go-to editor But over the years, BIAS has been relentless about improving Peak to the point where now, it's my first-call editor for several applications, including sound design (their DSP menu has no equal), and sample rate conversion. In fact, when working in Mac-based studios, I insist they have a copy of Peak for editing and even back in my studio, where I have no lack of software, Peak 6 often gets the call. The interface is appealing (visually as well as functionally), with a very creative vibe—it's difficult to describe, but it's like a piece of art that decided to be a digital audio editor.

Props to BIAS for never being satisfied; that's what has made me satisfied with the program.

Strengths: The plug-ins have a smooth sound, and don't add coloration other than "niceness." Good playlist, CD authoring, burning, and loop tuning options. Artistic-level interface. Good workflow.

Toward the left of Peak Pro 6, Vbox is an insert that hosts other effects—in this case, EQ in parallel, with one EQ stage followed by compression. Reveal diagnostic plug-in at the right.

Limitations: The full package isn't cheap. No spectral or surround editing.

i3 DSP-Quattro 3.0

(Mac, $199)

Remember TC Electronic's Spark audio editor? The man behind it, Stefano Daino, has transformed it into DSP-Quattro 3.0. Don't be fooled by the price: This is a very capable program with quite a few interesting features, like being able to host virtual instruments.

DSP-Quattro does resampling, records multiple inputs in real time, offers scrub mode with a "virtual ribbon controller," and has a robust list of editing functions (most with realtime previews) and plug-ins. The interface is appealing, too.

In addition to mastering tools, laptop fans will appreciate that DSP-Quattro can host multiple instruments and plug-ins not just for off-line editing, but for realtime performance. It won't replace MainStage, but comes closer than other digital audio editors, and supports MIDI well. And, there's hardware sampler support—which is getting hard to find these days.

You can assemble your album, too; there's a playlist with per-track insert effects and crossfades between tracks, image file export, and of course, Red Book CD burning.

Strengths: Exceptionally cost-effective. Many unexpected functions, like instrument hosting for live performance. Kind to your CPU. Batch processing and other advanced functions.

A typical DSP-Quattro waveform editing window is at the top. Below, you can see a playlist with automation curves, and some input recorders.

Limitations: No dynamics processors included with the package. No noise reduction/restoration tools.

Adobe Audition 3

(Windows, $349)

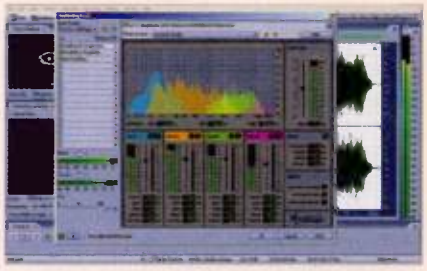
Audition evolved from Cool Edit Pro, a popular Windows digital audio editor that later added multitrack capabilities. Although recent revisions have concentrated on beefing up the multitrack aspect—rewritten audio engine, mixer, MIDI support, etc.—Audition has retained what made Cool Edit Pro desirable, including a comprehensive suite of plug-ins (now augmented by some iZotope technology, including their time-stretch algorithms) and nearly artifact-free sample rate conversion.

For mastering, Audition offers superb spectral editing so you can surgically remove specific frequency ranges; for example, breathing sounds from a classical guitar recording, or *only* the kick drum and triangle from a drum loop. Overall, the noise reduction, restoration, and analysis tools are excellent. I've even used the click remover on guitars sent through digital processing to smooth "spikiness."

Navigation is a little more awkward than some other programs, but you get used to it. Plug-in chaining is done through a "rack" plug-in. Overall, many studios that could afford anything do their mastering with Audition—which tells you something right there.

Strengths: Very complete feature set with outstanding restoration tools. Cost-effective. Switches easily between multitracking and editing views.

Limitations: Multitrack capabilities don't equal programs like Pro Tools, Sonar, Cubase, etc. Navigation could be smoother.



Audition 3, showing the phase analysis, frequency analysis, and iZotope multiband compressor.

iZotope Ozone 4

(Windows/Mac, $249.99)

Ozone, long a mainstay mastering plug-in for Windows, now supports the Mac. Ozone is the choice of many project studios for mastering, with good reason: There's a complete suite of mastering tools, including EQ, analysis, multiband compression, limiter, high frequency "exciter," stereo widener, mastering reverb (don't laugh, I use it often for narration), and a variety of test equipment. That may sound like a Ronco commercial—"It equalizes! It compresses! It whitens and brightens!"—but especially considering the cost, you get a lot for your money.

Ozone 4 has a redesigned, friendlier interface with far better preset management, along with new presets. But the biggest update is Mid-Side processing (which allows for more flexibility when using EQ, exciter, reverb, and dynamics), and the option for multiband processors to "learn" the frequency spectrum and create bands based on that data. This makes it *much* easier to find a good starting point. The maximizing processor has been improved too, and preserves transients better.

Strengths: One-stop shop for your mastering needs, presented as a plug-in for your digital audio editor of choice. Set up everything, save it as a preset—done.

Limitations: Relatively inflexible approach compared to the *à la carte* approach to plug-ins.

Ozone 4's multiband dynamics module is selected. You select one of the six modules for editing by clicking on one of the buttons in the lower left.

Har-Bal Harmonic Balancer

(Windows, $95)

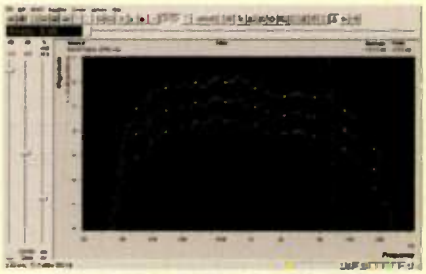
This arrived with a flurry of controversy due to the over-the-top marketing, but after the smoke cleared, Har-Bal has gone on to become many a mastering engineer's "secret weapon." A stand-alone program, Har-Bal presents a tweakable graph of a file's spectral response, averaged over time, into 1, 1/3rd, 1/6th, or 1/12th octave responses. Click/dragging the graph changes the response.

It takes some practice to recognize the difference between, say, a rogue resonance introduced by a room (which you want to draw out) and a resonance that's part of an instrument (which you want to leave intact). Once you figure that out—and throw on just a teeny bit of their "Air" effect—Har-Bal makes a very easy-to-tweak EQ.

Some people still think Har-Bal is spectrum-matching EQ; it isn't, although you can compare spectra. Har-Bal is much more than that, and personally, it is the one mastering tool I use on almost every project, regardless of genre.

Strengths: In the right hands, Har-Bal is a novel, useful mastering tool that excels at putting EQ under the microscope, and showing you where it needs to be fixed.

Limitations: Stand-alone only. Takes serious practice to use it well.



Har-Bal showing the Peak, Geometric Mean, and Average curves (yellow, pink, and green respectively) for a file at various frequencies. The gray curve is the original file's spectrum. The graph is set to 1/6th octave resolution.

IK Multimedia T-RackS 3 Deluxe

(Windows/Mac, $499.99, standard version $229.99)

IK was ahead of the curve with the original T-RackS; although limited by the digital audio technology of its time, many musicians took to it as a quick, easy way to improve the quality of mixed sound files.

The new Deluxe version has nine processors (Classic Compressor, Classic Multiband Limiter, Classic Clipper, Classic Equalizer, Brickwall Limiter, Linear Phase EQ, Opto Compressor, Vintage Compressor, and Vintage Program EQ), while the standard version has the four "classic" modules. These are connectable as two 4-stage parallel chains feeding a 4-stage series chain, and the modules can go in any order. T-RackS 3 introduces extensive metering capabilities, as well as internal oversampling. (Note that while it can work in stand-alone mode, it's not a digital audio editing program—*e.g.*, no waveform editing, doesn't host external plug-ins.)

Aside from the gorgeous look, T-RackS 3 excels at making things sound good. It skirts the analog/digital divide, offering both warmth and precision; it's also clearly designed to "master" individual tracks, like drum loops or vocals, as well as program material.

When I tried the first version of T-RackS, I thought it had potential but I didn't really get into it. T-RackS 3 fully realizes that potential.

Strengths: Mastering chain allows for novel processor patching. New metering goes way beyond previous versions. Stand-alone or plug-in mode. Very easy to get good sounds out of it.

Limitations: No surround mastering.

T-RackS 3 can be a plug-in or work stand-alone, as shown here. The Opto Compressor is just one processor in the chain; there are also two EQs and a brickwall limiter. Note the various displays for Spectrum, Phase, Peak, and Perceived loudness.

BIAS Master Perfection Suite

(Windows/Mac, $599)

This cross-platform plug-in suite includes GateEx gate/expander, SuperFreq EQ (4-, 6-, 8-, and 10-band versions), PitchCraft pitch correction, Repli-Q spectrum matching/smoothing, Reveal audio analysis tools, and Sqweez multiband compressor (3- and 5-stage versions). Each plug-in is available separately; most are $149, but GateEx is $59 and SuperFreq, $79.

While it's good you can buy the plug-ins individually, there's no filler. The EQ has a smooth, "non-digital" sound, as does the compression. Repli-Q is the best of the spectrum-matching programs (see this month's Power App Alley on page 46), and PitchCraft works well for transposition and pitch correction, including formant preservation. For some, though, the "killer app" is Reveal, with its oscilloscope, phase scope, peak/RMS/pan metering, spectral analysis, and much more. This is the kind of plug-in you open when the session starts, and close when the session ends.

Strengths: Excellent sound quality and very useful functions cover a wide range of mastering needs. Individual plugs are available separately. Reveal rules.

Limitations: No level maximizer per se, although Sqweez comes close.

Four plug-ins from the Master Perfection Suite. Clockwise from upper left: SoundSoap Pro, Sqweez-5 multiband compression, GateEx gate/expander, and SuperFreq-10 ten-stage EQ.

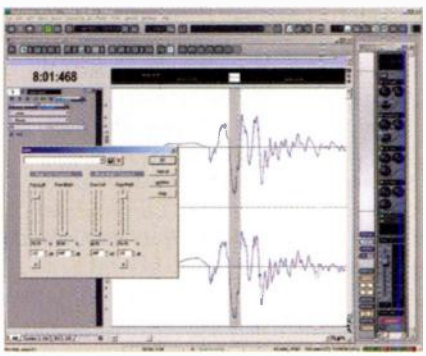
Mastering in DAWs

(Windows/Mac, prices vary)

Can you master in a DAW? These days, that's getting more likely. Magix Samplitude was the first program to promote—fairly, I might add—its ability to master and create CDs from within a DAW. But now other programs have joined the club; Cakewalk Sonar seems to be making the most concentrated effort at become a mastering platform, thanks to the addition of phase-linear processing tools, 64-bit audio engine, and customization (the screenshot shows a custom layout I did for Sonar that emulates Sound Forge's menus, Wavelab's Master section, and uses the new linear phase processors). You can send the output to an archiving medium, such as the Korg MR-series of 1-bit DSD recorders, or back into the DAW for saving the mastered file in the same project as the original file. If you can't afford a dedicated audio editor, your DAW might have most of what you need.

Strengths: No need to make an additional purchase. Stay within one environment throughout an entire project. Most DAWs also handle video, so you can edit to picture.

Limitations: Bundled plug-ins may be designed for CPU efficiency, not mastering quality. Navigation may not be conducive to straight-ahead mastering. Analysis and restoration tools, if present, are generally limited.



Cakewalk Sonar has been customized to have the look, feel, menus, and navigation of a digital audio editor rather than a multitrack recording DAW.

THE MASTERS ON MASTERING

THE IMPORTANCE OF THE SIGNAL PATH

A mastering engineer's signal path, and complete familiarity with it, are key. It's so important that everything in the path is transparent and adds no unwanted coloration to the audio signal. Because I often use analog, even in these days of all-digital mixes, the heart of my analog signal path is as important as ever.

In 2007 we installed Sound Performance Lab's DMC 2-channel mastering console in my studio. The DMC sounds amazingly transparent and clean; I know I'm hearing the details of what I put through it. Ergonomically, it's great as well. I also use SPL's MasterBay insert switcher, which allows adding or removing my favorite analog devices from the signal path.

The proper digital audio workstation for mastering applications is also crucial. While many DAWs can get the job done, given the amount of complex work I do, great sound and efficient workflow are key. In 2005 I (and eventually all of Gateway Mastering) adopted the Merging Technologies Pyramix system, and we haven't looked back since.

The Pyramix sounds great, and is by far the most efficient DAW I've used for editing, creating references for clients, and creating masters for manufacturing. The ability to network multiple Pyramix machines at Gateway has also been a huge advantage—we presently have five Pyramix systems running and networked together. *—Multiple Grammy Award-winning **Adam Ayan**'s list of credits includes projects for such artists as Nirvana, The Rolling Stones, Linkin Park, Faith Hill, Sarah McLachlan, Tim McGraw, Rush, Kelly Clarkson, Foo Fighters, Carrie Underwood, Nine Inch Nails, Bob Marley and Incubus, to name a few.*

THE SUM OF THE PARTS

My favorite "tool" for mastering is the sound of the signal path itself. The sound of your masters is really the sum of whatever comprises that chain, and a big factor in my sound is a Lavry DA-924 digital-to-analog converter—which I think sounds amazing.

Next in line is a Dangerous mastering router, which is a very large part of why all the gear I use works so well as a chain. It's very functional, but almost more importantly, super-clean. At the end of the analog chain, a Lavry AD-122 converts back to digital. In between the analog chain is a somewhat revolving cast of characters (it's not much fun to use the same boxes day in and day out!), but one constant is an EQ that started out as a Millennia NSEQ-2, and then became a totally different beast when I installed a Fred Forssell motherboard. Love affairs come and go, but the combination of the Dangerous, Lavry, and Forssell NSEQ-2 has been a constant that I don't see changing for some time.

I also use the dbx Quantum a lot—amazing bang for the buck, but you have to spend quality time with it to see what it'll do. I haven't seen any other box or plug-in that handles multiband compression similarly. I do think it sounds far better at 96kHz, so I've been capturing at 96kHz, routing to the Quantum (and a few other digital goodies), then sample-rate converting in real time through a Lavry 3000S to the destination session at 44.1kHz. This results in sound quality (especially from mixed in-the-box digital sources) that never makes the cat's ear twitch, if you know what I mean! *—**David McNair** masters full time and has a room at Masterdisk in New York City. He mastered Angelique Kidjo's* Oyaya!*, and is currently working on Somalian poet/rapper K'Naan for A&M/Octone, as well as Parachutes Va. for Island Def Jam.*

MAKE IT SOUND GREAT!

The most important and simple lesson of mastering: Make it sound great.

I always start with a limiter or compressor. Even if I know a track is muffled and needs attention in the highs, or is conversely crispy, I always compress or limit first because I find that brings out the "space" the track will provide far more than any EQ adjustment. I pass just about everything I get through the Waves Puigchild; it's an instant "vintage" switch, where just the act of having it on gives the track warmth and presence.

For more modern sounds, I use the Waves API 2500 as a mastering compressor. It's surgically precise, while still retaining that '70s feel. When a track has already been smushed during the mix, I like to limit. The Waves L3-LL series has been my go-to limiter; my first big record using it was the JXL remix of Elvis Presley's "A Little Less Conversation" in 2003. All I used on that album was a Waves L2 limiter and the Waves Linear Phase EQ.

"Great" shouldn't require a lot of tools. Often I find that if a track is really well-mixed, then my job is to try and stay out of the way—make it sound big and loud, but don't color the sound.

A new Waves plug-in called Center is fast becoming part of my mastering rig. It lets you manipulate what your ear perceives as the middle of the mix . . . *i.e.*, where the vocal lives. You can push the vocal up without affecting the rest of the track, or dial it down. It's incredibly useful.

As to software editing: BIAS Peak. It's stable, and the perfect host for plug-ins. I leave its Reveal metering tool running all the time; the oscilloscope, spectral analysis, phase scope, and pan power meter are essential—and having them all in one window is a real plus.

The most recent addition to the toolset is the ability to assemble and deliver DDP masters without ever leaving the program. Assembly is much like the editing environment, and when everything is living just where you want it, you simply click to export the entire project to a new folder containing everything needed to send off to duplication. They've also added a new dithering algorithm that sounds spectacular; I really appreciate that they never stop improving the platform. *—**Drew Lavyne** has worked with artists such as Dave Matthews, Foo Fighters, Jennifer Hudson, Aretha Franklin, Sting, The White Stripes, Prince, Santana, Jamie Foxx, and Christina Aguilera. He mastered the*

remix of Elvis Presley's "Too Much Conversation," which went #1 in 26 countries.

KEEP THE CLIENT SATISFIED

I use both analog and digital tools, depending on the project. It's probably best to have an abundance of tools so you can provide the exact sound the client wants.

Unfortunately most people don't seize their tools' fullest potential, so they never realize 100% of the benefit. Regardless of how inexpensive or costly a tool is, if you can't grasp its total functionality, then it's useless.

Here's what I use for my mastering chain:

Har-Bal (PC-based): Provides an instant snapshot of the spectral content of the track, which can be corrected with a few mouse clicks.
Limiter: TC Finalizer. I use only the dynamic EQ function as a DeEsser. I also use the Expander if the track lacks punch. I set the limiter default to -0.1dB to limit any major spikes I may have missed. I'm able to correct any out-of-phase issues, as well as do MS Encoding correction if needed.
Compressor: Avalon 747sp. Anything passed through this machine sounds lovely—the SC Listen function is a lifesaver. Use minimum compression here.
Equalizer: I use the Avalon 747sp's EQ function (seasoned to taste). Some clients prefer it crispy, while some look for warmth. Make major EQ corrections in the beginning of the chain.
Multiband compressor: Aphex Dominator 720. When used accurately, it's literally transparent. This is a real secret weapon that glues the track together nicely.
Limiter: L2 Ultramaximizer (hardware version). Yes, this beast *can* be tamed when necessary! I connect the L2's digital outs to the inputs of a TASCAM CD RW700.

I have a host of plug-ins for doing surgical corrections if necessary. Learn what these tools can accomplish if you want to become more proficient in your sound sculpting! —*Atlanta-based **Earle Holder** has collaborated on projects with platinum artists such as Public Enemy, B5, Tameko Starr (MCA Records Europe), Chuck D, Kenny Banks, Tuere, Houseguest, Ayana, 4ize (Disturbing tha Peace, part of the Ludacris crew), JD Lawrence, and countless others.*

THE IMPORTANCE OF CLEAN

If you've never used or seen Algorithmix's reNOVAtor, think of it as Adobe Photoshop for audio—you can remove disturbances, clicks, pops, and even vocal sibilance. Select an area of the audio with a problem, and reNOVAtor displays it as a 2D spectrogram. Often, you can actually see the offending click or pop. Draw over the audio nasty, then hit process; reNOVAtor extracts the selection, then "heals" the resulting silence. Somehow it determines what would have happened (audio-wise) if the disturbing event didn't exist. The manufacturer terms this as localization, or the identification and precise removal of unwanted events without affecting audio you want to keep. I call it a Godsend.

Did a cough blow the F decay of a chamber recording? Grab the audio, feed it to reNOVAtor, visually outline the cough, hit process, and it's *gone!* Other disturbances that have no chance against reNOVATOR include plosive explosions, accidental stick clicks, thumped mic stands, and, of course, the garden variety clicks, pops, and blips (especially digital clocking glitches)—something I see all too much in this era of a deteriorating U.S. electrical infrastructure.

While many people use reNOVAtor to totally cut out audio events, there's a gain control for taking only part of a "bad" event away. With sibilance, if you take out only part of the "sss" the resulting sound can be like you went back in time and reduced the offending frequencies during the original recording.

While it might not be as sexy as a vintage compressor or top-end digital EQ, I use reNOVAtor on almost 60% of the projects I work on. It salvages track after track, making it one of the tools that I couldn't work without.

Two other tools that I couldn't live without are my Dorrough Meters (the hardware units) and Crane Song Avocet. The Dorrough Meters give me a neutral third-party perspective on loudness and dynamic range. The Avocet is great because it plays both source and target through the same converters (you would be shocked by the number of mastering engineers who use different converters to compare source and target!). Additionally, you can level-adjust the source mix to give it relatively equal loudness to the proposed master. Without a way to turn the mix up to the proposed master level, it's difficult—if not impossible—to tell if your equalization and other changes are helping or hurting your client's audio. —***Garrett Haines** runs Treelady Studios in Pittsburgh, PA, which has mastered Kiss Kiss, The Starlight Mints, and Dressy Bessy, and re-mastered releases by Pete Seeger, Gene Autry, and Malvina Reynolds.*

MASTERING ON THE MIX BUS

For my mix bus, I recently started using T-RackS 3 and it instantly became essential. My typical mix bus chain includes the Vintage 670 compressor, followed by the Vintage EQ1A, to shape the broad strokes; the Brickwall Limiter at the end of the chain makes sure the mix is nice and loud, without sounding crunched. The 670 is great—you can just pound it and it sounds like a real Vari Mu-type compressor. For individual tracks, I've also found T-RackS 3 useful on bass and vocals (usually the 670 and EQ1A), as well as a plethlora of other sounds. —***Ken Lewis** has produced or mixed artists like Kanye West, John Legend, CeCe Winans, Fallout Boy, Beastie Boys, David Byrne, Lenny Kravitz, Usher, and many others.*

MASTERING TRACKS DURING THE PROJECT

I am not sure if my approach to using mastering tools is

normal or not, but I kind of master a couple times in whatever session we're working on. I'll take all of the drums, bus them in Pro Tools to an aux track, and put a T-RackS 3 on that aux . . . so it's like "mastering" the drums. Then I do the same thing with keyboards, and instruments—then one more aux for the vocals. I'll put a [T-RackS 3] on my master fader too, to control the overall mix. Even if we are just recording beats, they have to be on point for [Jon] to write to, or to send to other artists to write verses/hooks to, so they need to be "mastered" as well.

I usually start with a preset and work off of it, whichever way it needs to go. When working with someone like Lil Jon who has so many things going on at once, you have to be fast, and stay fast. The T-RackS plug-ins are fast to navigate and the interface is very user-friendly, so that's important. But also, everything sounds good with them, and they can take a beating. I just keep hoping for an update that lets you use the different EQs and compressors on their own. ***—Mark Vinten*** *is the engineer and producer for Lil Jon, and also has engineering credits for Nas, Ciara, Usher, Fat Joe, and Method Man, to name a few.*

HIGH-END MASTERING WITH ANALOG AND DIGITAL

A standard mastering session starts, after having a conversation with my client about their goals and desires, by *listening.* The most important pieces of gear are the room and my ears. My environment needs to tell me what's happening sonically—good and bad. Only then do I start making adjustments.

Most releases today are 44kHz/16-bit, and although some clients mix to analog tape, the majority bring in files from a workstation at a higher sample rate and word length and that's where the mastering occurs. Instead of using sample rate converters, I prefer a D/A/D conversion, using the Pacific Microsonics Model 2.

Generally, I make two types of adjustments. The first is general, "broad stroke" shaping. After converting to analog (if needed), I go to the EAR 660 compressor. It smooths out the dynamics without killing the transients, and helps "glue" the musicians together. The EAR 825, and sometimes the EAR 822/823, allow cutting or boosting wide tonal bands.

Next, I use the Weiss EQ-1—an excellent-sounding EQ, capable of very precise control for notching out problem areas. It's also very useful for adding narrow boosts at attack frequencies to help give a little punch when needed. The top end shelving is very smooth, and opens up "air" without adding overall brightness.

After that, the Weiss DS-1 mk3 is an extremely transparent compressor/limiter with many uses beyond compression—the look-ahead feature catches dynamics in a very musical way, without getting rid of the transients. It now features parallel compression where it splits the signal, applies its compression settings to one split, then re-combines that with the dry signal. This invaluable process retains the transients and dynamics, while pulling the music forward.

Both of the Weiss pieces can do M/S processing (*i.e.*, they change the standard Left/Right signals to Mid/Side for processing, and then back to Left/Right). Having separate control of the dynamics or the EQ for the sides vs. the middle opens up a whole new world of control. In the past, most engineers would send several different mixes of each song to mastering: A standard mix, mix with vocal up, with vocal down, maybe bass up, etc. Mix engineers don't do that as often these days. So, being able to affect the level of the mid signal vs. the side signal is huge. Now add the ability to modify the mid and side EQ/dynamics—huge. Consider a mix where the vocal is dull but the guitars are bright. The vocal is usually in the center of the mix while the guitars might be panned to the sides. M/S capability allows opening up the vocal and even pulling back the guitars so everything sits just right in the mix. You can apply compression similarly.

I rely on Sonic Studio's soundBlade for capture, editing and master creation—the sound is good and honest. I also use Sonic Studio's NoNoise and iZotope's RX for cleanup and repair

work, and the Crookwood Mastering Bricks to tie together every piece of gear, from tape decks to DAWs to outboard gear and converters. Sonic Studio and Metric Halo interfaces get audio in and out of my computers. The majority of my work is done with outboard equipment, but if I need to make some adjustments in the box, the Metric Halo +DSP Transient Designer, EQ and Compressor are the best-sounding tools for me.

I sometimes use TC Electronic's TC6000 for adding a touch of space. Or, if the client faded their mix a little sooner than intended, I capture a reverb trail and edit it back together at the end of the file to create the illusion of a longer tail. But I don't use multiband compression; I don't like how it changes the mix and sacrifices one segment of an instrument's audio component for another.

As to monitoring, I use only one pair of speakers. For mixing, multiple monitors can help the engineer but for mastering, I need to know my room and playback system deeply and unequivocally. My job is to make the audio as translatable as possible to as many different types of playback environments. The only way to do that is to know precisely what the sound is when I listen in my studio.

When it's time to make the CD reference and ultimately the master, I prefer the sound of the HDCD dithering scheme to go to 16 bits from 24. ***—Michael Romanowski's*** *clients include Pete Ham, Paul Jackson, Norton Buffalo, Jacqui Naylor, the Radiators, and Runaways UK.*

THE DANGEROUS WORLD OF MASTERING

What matters most to me, doing this crazy and exciting task every day:

1. A true "Mastering Transfer Console." By using a Dangerous Master console, I get clean analog gain before the input stage. Many times I've solved 80% of my EQ work by simply adjusting the gain stage on the console before I ever have to reach for an EQ. It's clean and accurate.

2. An adjustable insert path, with sum and difference integration. Being able to do a touch of pre-limiting, spacialization, correctional EQ, and final limiting/color can all be achieved simply and phase-accurately with the Dangerous Master. I can't imagine needing more than the three inserts that are provided; along with my patch bay, it's perfect. The second insert point can do a sum and difference matrix decoder/encoder on the send/return (analog!), which allows for discreet control of the center and stereo channels.

3. Synchronous D/A converter for pre-vs-post mastering analysis. The Dangerous Monitor lets me compare the source mix against a full-round-trip mastered track—with the gains matched—using the same D/A converter (built into the Dangerous Master). The converters, system calibration, gain stages, and A/D input stage manipulation all affect the results just as much as signal processing, so you want to judge those along with the rest.

4. Reliable visual cues. The two meters on the MQ show the analog and digital status. While I'm mainly an "ear guy," I also want to know "where things are at" as concrete supplemental information.

5. A dedicated room for mastering with known acoustics. Every room is different, every speaker and speaker design is different. Your room and speakers should work for you, not against you.

6. Top end and dither. Hard truncation to 16-bits and avoiding dither has become more popular on big records, and on certain genres, it can sound really good. Try it! If you're working on "softer" music, see how dither affects your top end. My current dithering favorites are: None at all, the Weiss POW-R series, David Hill's "Analog Dither," and iZotope's MBit+. ***—Mike Wells*** *Mastering hosts the San Francisco Bay Area's only Aria-equipped ATR Services 1" 2-Track recorder for use as a layback processor during mastering. A sampling of his mastering clients include Jello Biafra, Jackie Greene, John Vanderslice, WHY?, The Mother Hips, and Sound Tribe Sector 9. Photo credit: Chuck Revell (www.revellray.com/).*

DIGITAL MEETS ANALOG

I use BIAS Peak Pro XT 6 for digital processing and assembling the final master and production parts for the Redbook PMCD and DDP File Set. And

in this world of digital format mixes, my best friend is my Ampex ATR 102 tape recorder, tricked out at ATR Services by Mike Spitz.

I get so many digital mixes that are too loud to have the headroom for proper mastering; also the extra analog generation [from tape] enhances the sound in a good way, beefing up the tracks and correcting the time domain before re-importing back to a G5 dual 2.5 at 24-bit into Peak 6 at optimum levels.

Once back in the digital world, I select a few equalizers. They can range from the URS (Unique Recording Software) api, Neve, Pultec, SSL, and other clones of classic modules to the BIAS SuperFreq EQs, the EMI Abbey Road Brilliance Pac, and the EQs within the BIAS Sqweez multiband compressors.

My favorite compressor/limiters are the Waves L3, BIAS Sqweez bundles, EMI Abbey Road TG12413 1969 & 2005, and PSP Vintage Warmer. The biggest issue for me is to use very small boosts from each device. I get more dynamic range, less distortion, better tone and more volume by using three to five gain devices in small increments than putting the task of all the volume makeup on any one device.

I also use BIAS's Sqweez 5 multiband compressor to push down or reveal certain instruments that don't sit right in the mix, and prefer the Sqweez 5's EQ module over many dedicated EQs.

After gain makeup, I'll use EQ to balance out the deficiencies or overpowering areas with some (usually subtle) cuts/boosts. I'd say the URS A10 graphic and A parametric are my favorites.

In the final analysis, the less I have to do to a track the better the result—which means the mix is very good. Once again it takes me back to where I started—using tape to do most of the work and make everything sound better, with the most emotional impact, dimension, and that subtle ingredient that makes people want to buy records. *—Nashville-based **Ray Kennedy** has worked on projects from Solomon Burke, Delbert McClinton, Steve Earle, The Slips, Waylon Jennings, Lucinda Williams, Johnny Cash, and many others, as well as several movie soundtracks.* EQ

LINKS

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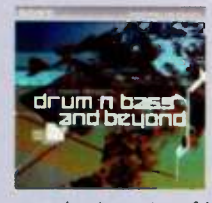
SOUNDS

SONY: DRUM 'N' BASS AND BEYOND (DJ SAWKA)



A lot of really good sound libraries come across my desk, but this one is definitely a cut above. Few DnB libraries have done the genre justice (*BiPolar* being a notable exception), but *Drum 'n' Bass and Beyond* truly captures the grit, power, and oddly angular beauty of hardcore drum 'n' bass.

Files include plenty of beats and bass (both offer loops and one-shots)—they take up over half the CD-ROM. The beats also include some righteous fills and breaks, and the drum one-shots are very handy when you want to throw in a few off-beats or accents. Folders of FX, Pads, Strings, Swells, and Synths/Melodies round out the rest of the collection; they're the perfect foil to the other loops.

I connected with the first loop I auditioned, then was delighted to find that the rest of them were all at the same level. However, if you want something malleable, this isn't it: Everything is infused with character that is anything but neutral, and there's gobs of processing. You're taken in a direction—but it's a direction well worth taking.

Best of all, *Drum 'n' Bass and Beyond* is as good as it gets when it comes to throwing just about any loops together and having them work. There's zero filler—everything is useable, and the "mix and match" factor is off the charts (the superb Acidization helps here too). The verdict: thumbs way up. —*Craig Anderton*

Contact: Sony Creative Software, www.sonycreativesoftware.com
Format: CD-ROMs with 640MB of mostly Acidized WAV loops, but also including some one-shots; 16-bit/44.1kHz
List price: $59.95

NINE VOLT AUDIO: BIG BAD GUITARS

I keep being impressed with Nine Volt Audio libraries, and despite the difficulties of translating a rock guitar vibe into samples, they've done a highly credible job (although having Michael Wagener dial in the amp sounds surely didn't hurt).

There are 16 folders, each a sort of "construction kit" with multiple variations on progressions, riffs, chords, ends, breaks, etc. Helpfully, mono Strat and Les Paul files, as well as stereo loops, have identifying letters in the filenames. There are also some "remix" loops that are derived from the stereo loops, but are heavily processed to add more flavors to the collection.

As each folder typically has 40–50 files (and often more), that's a lot of variations and you can put together convincing guitar parts with ease. There are also two general-purpose "Toolbox" folders with "chugga-chugga" 8th- and 16th-note muted chords that work very well in the background to drive a song. (However, as with any guitar samples, don't stray too far from the original key—that's a limitation of the sampling process, not this library.)

Acidization, Apple Loop, and REX editing is excellent (I don't get to say that very often!), and the guitar sounds have the appropriate amount of snarl and swagger. If you can't hire a "real"guitarist, use these loops—few, if any, will notice the difference. —*Craig Anderton*

Contact: Nine Volt Audio, www.ninevoltaudio.com
Format: DVD-ROM with 925 loops (1.33GB original WAV content) for each format: REX2/Stylus RMX, Acidized WAV, Apple Loops; 24-bit/44.1kHz
List price: $99.99

BIG FISH AUDIO: LATIN JAZZ

Figuring I'm on a roll this month with sample libraries, I thought I'd throw another challenge at my DAW: Can hot jazz translate to loops?

Latin Jazz uses the standard Big Fish format: construction kits (40 total), typically with around 20 files each, along with a mixed file of the individual loops (bass, bongos, congas, piano, trumpet, sax, timbales, guitar, percussion, etc.). The recording quality stands out, and all the instruments have above-average clarity and definition. This isn't surprising: The producer is Peter Michael Escovedo.

Stylistically, *Latin Jazz* is a diverse collection, from hotter-than-red-chile salsa to tunes that border on smooth jazz, with some almost straight-ahead jazz—albeit with a strong Latino accent. While it might seem this would push you toward staying within individual construction kits, that's not the case; I was surprised how effortlessly the percussion slides into dance music, and some of the brass solos make great punctuation for anything from house to funk. Sure, if you're scoring "Night Life in South Beach," you're covered. But the loops are more universally applicable than the title might imply.

REX and Apple Loop editing is decent, but I suggest you stick close to the original tempos anyway; that's where the music really grooves. This sample library makes me want a *mojito* now! —*Craig Anderton*

Contact: Big Fish Audio, www.bigfishaudio.com
Format: DVD-ROM with about 1.03GB of unique 24-bit/44.1kHz WAV content, duplicated for Apple Loops, REX files (where possible), and Stylus RMX
List price: $99.95

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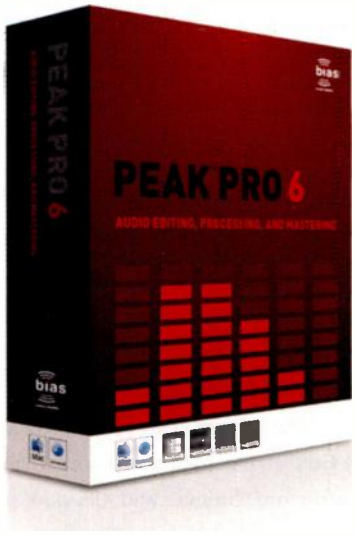

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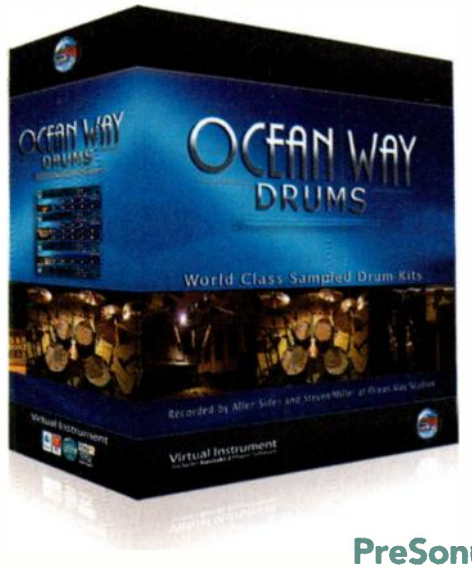

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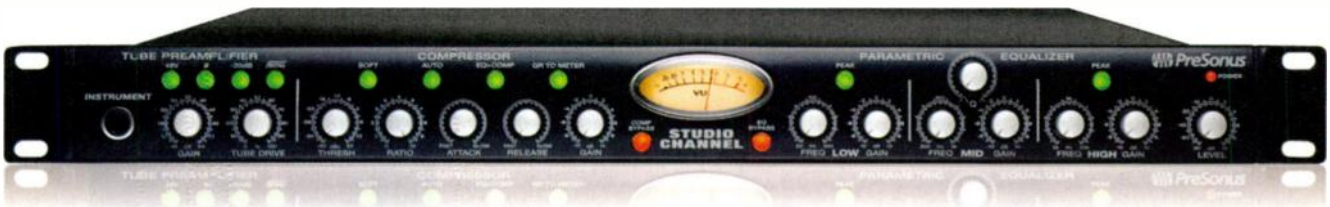

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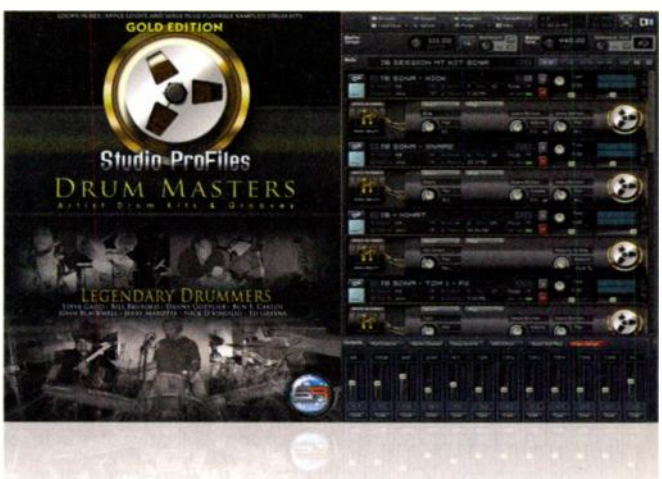

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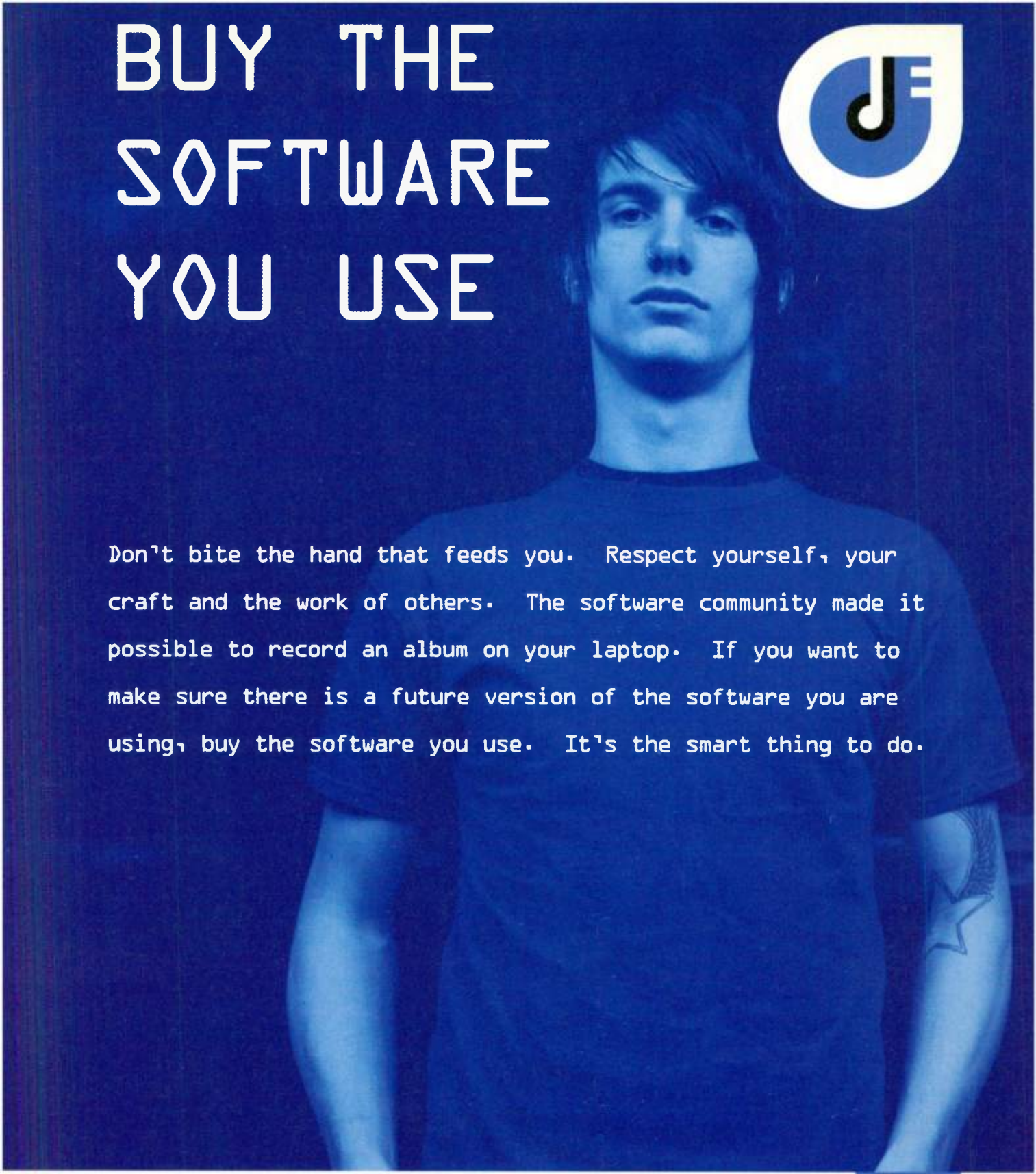

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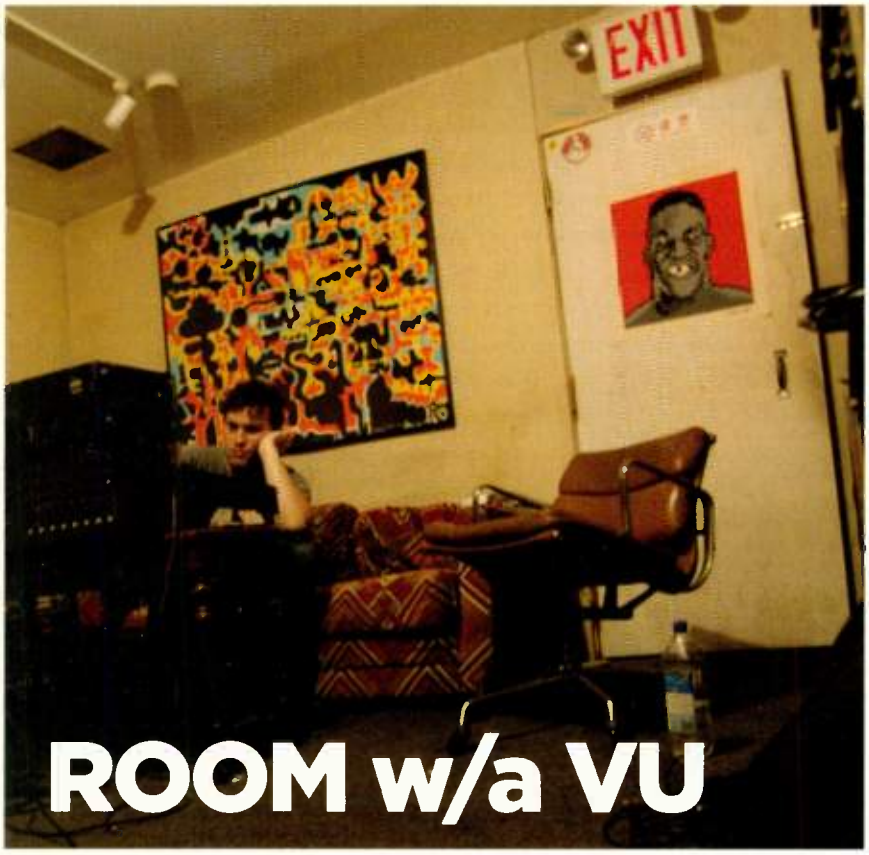

ROOM w/a VU

by Angelina Skowronski

STUDIO NAME: Truth & Soul Studios
LOCATION: Brooklyn, NY
CONTACT: www.truthandsoulrecords.com
KEY CREW: Jeff Silverman, Leon Michaels, Clay Holly
CONSOLES: Soundcraft 200B
COMPUTERS: Mac G5
TAPE DECKS: Otari 1/4" 2-track, TASCAM 388b recorder/mixer, TASCAM MSR 1" 16-track, TASCAM 1/2" 16-track, TASCAM 1/4" 4-track
RECORDING SOFTWARE: Digidesign Pro Tools 7.0, Digidesign Drum Rehab plug-in, SSL plug-in bundle
MONITORS: KRK V6, Yamaha NS10
MIC PREAMPS: Altec 1592 and 1606, Avalon 737sp, Neotek Series One (strips wrapped by Wells Electric)
MICS: AKG D12, AKG D112, AKG C1000, AKG MD30, Audio-Technica 4030, Sennheiser MD421, Shure SM54, Studio Projects C1, Telefunken D9A
OUTBOARD GEAR: Blonder Tongue Audio Baton EQ, CBS Labs stereophonic peak controller and 440A limiter, vintage DAP 310 limiter/expander, Korg Stage Echo, Roland Space Echo, TASCAM spring reverbs, Universal Audio 2192 Master Audio Interface, Vesta Fire spring reverbs, Wells Electric 1175 compressors/limiters
NOTES: Truth & Soul Studios lives true to its name. Originally, Soul Fire Records under eclectic music collector Phillip Lehman, Leon Michaels, and Jeff Silverman took over the operations after Soul Fire Records lost its flame, but the men kept the soul in the studio.

Lovers of soul, funk, Latin, and afro grooves, Michaels and Silverman's goal for the studio is to "re-create the kind of music they love with their own signature aesthetic."

"We're attracted to lo-fi music that was typically recorded in small studios with limited equipment," says Silverman. "It's hard to get that aesthetic with modern studios with state-of-the-art equipment."

The studio itself highlights the duo's aim of meshing the lo-fi and hi-fi worlds together. The walls house some of the best gear—both new school and vintage—while the walls themselves are done up in a budget art-school style for acoustic treatment.

"The room was built by some hippie/rambler from the neighborhood," explains Silverman. "He just stapled fabric to frames, but it's a perfect dead room."

With its passion for lo-fi aesthetics, Truth & Soul found its niche in the soul revival sound, and their gear proves worthy to the genre's vinyl roots.

"A rack of Altec 1592 and 1606 mic preamps are our favorite gear at the moment," says Silverman. "They have a certain rugged sound to them that's hard to emulate with other gear. Another favorite is the Wells Electric 1175 compressor/limiter, which is modeled after classic 1176s. We use compression on a lot of our sessions—it's kind of a *must* for analog recording."

Truth & Soul Studios is also the main hub for its Truth & Soul Records artists. Everything for the label has been recorded and mixed behind the Brooklyn studio's doors, including El Michels Affair, Lee Fields, and remixes of Amy Winehouse and Gabriella Cilmi.

As advice to others getting their foot in the door of the recording world, Silverman says: "The amount of equipment you acquire doesn't make your studio—it's how you use it. Although it doesn't hurt to have some good mics!" EQ

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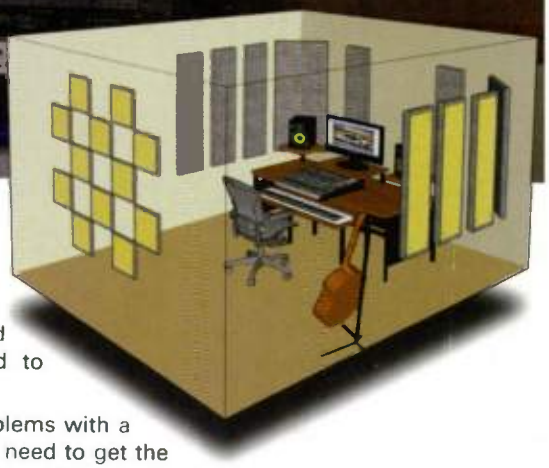

ProAudio Review Magazine

~ From review by Strother Bullins

"With Broadway, my audio workspace sounds like I never imagined it could. As a result, my work has never been better or more satisfying. Without a doubt, the Primacoustic Broadway system is the most significant pro audio investment I have ever made."

TapeOp Magazine

~ From review by Andy Hong

"I had the room treated in 4 hours, installation couldn't have been easier. We heard an obvious difference: mud gone, imaging cleaned up. Now the highs are crisp, the midrange is well defined, and the low end is right where it should be. When it came to choosing an acoustic treatment, it was an easy decision: Primacoustic was the clear winner."

Electronic Musician Magazine

~ From review by Jeff Burger

"The London 14 is a welcome addition to my studio. The effects in controlling unwanted acoustic artefacts have been significant... Primacoustic's kit approach strikes a great balance in price and performance."

Audio Media Magazine

~ From review by Paul Mack

"The most telling track was Joni Mitchel's 'Big Yellow Taxi'. It's a great acoustic work that gave us the real story. In short, we could hear the room that the track was recorded in, plus the room we were listening in. I'm not sure there is anything that advocates the acoustic treatment as effectively as this."

Recording Magazine

~ From review by Bob Rossr

"Imaging has improved dramatically. Mixes now display a depth that previously never translated in this room. It's as if the front wall behind the monitors has disappeared. I'd give Primacoustic a qualified thumbs up."

Sound On Sound Magazine

~ From review by Paul White

"I found the installation simple and was pleased with the results — there was a noticeable improvement in clarity, imaging and evenness of bass. The Primacoustic approach certainly works and I look forward to doing more mixes using it. Primacoustic have come up with a pragmatic and versatile solution to small studio acoustics that is affordable, effective and visually attractive."

It's all about balance...

Would you mix a record using a monitor with a blown speaker? Not likely. The same applies to acoustic treatment. You cannot simply absorb the high frequencies and expect the results to be balanced. You need to control the mid range and the bass too.

The London 12A room kit solves all of the problems with a complete package that includes everything you need to get the job done right. Scatter Blocks™ tame flutter echo while retaining a sense of air. Control Columns™ handle the powerful mid range and primary reflections. Broadband corner traps reduce standing waves and manage bass. And at just $599, it is a spectacular value.

And we are not talking low density, low performance foam that just barely treats the highs. This is the real stuff! Each Primacoustic Broadway™ panel is made from 6lb per-cubic-foot high density fiberglass, encapsulated in micromesh and then covered with acoustically transparent fabric. You get the same look and performance that real studios insist upon at a fraction of the price.

The Primacoustic London 12A Room Kit... balanced sound absorption, attractive finish, easy to install.

Problems solved!

PRIMACOUSTIC®

... take control of your room!™

* Estimated street price in USD.

www.primacoustic.com