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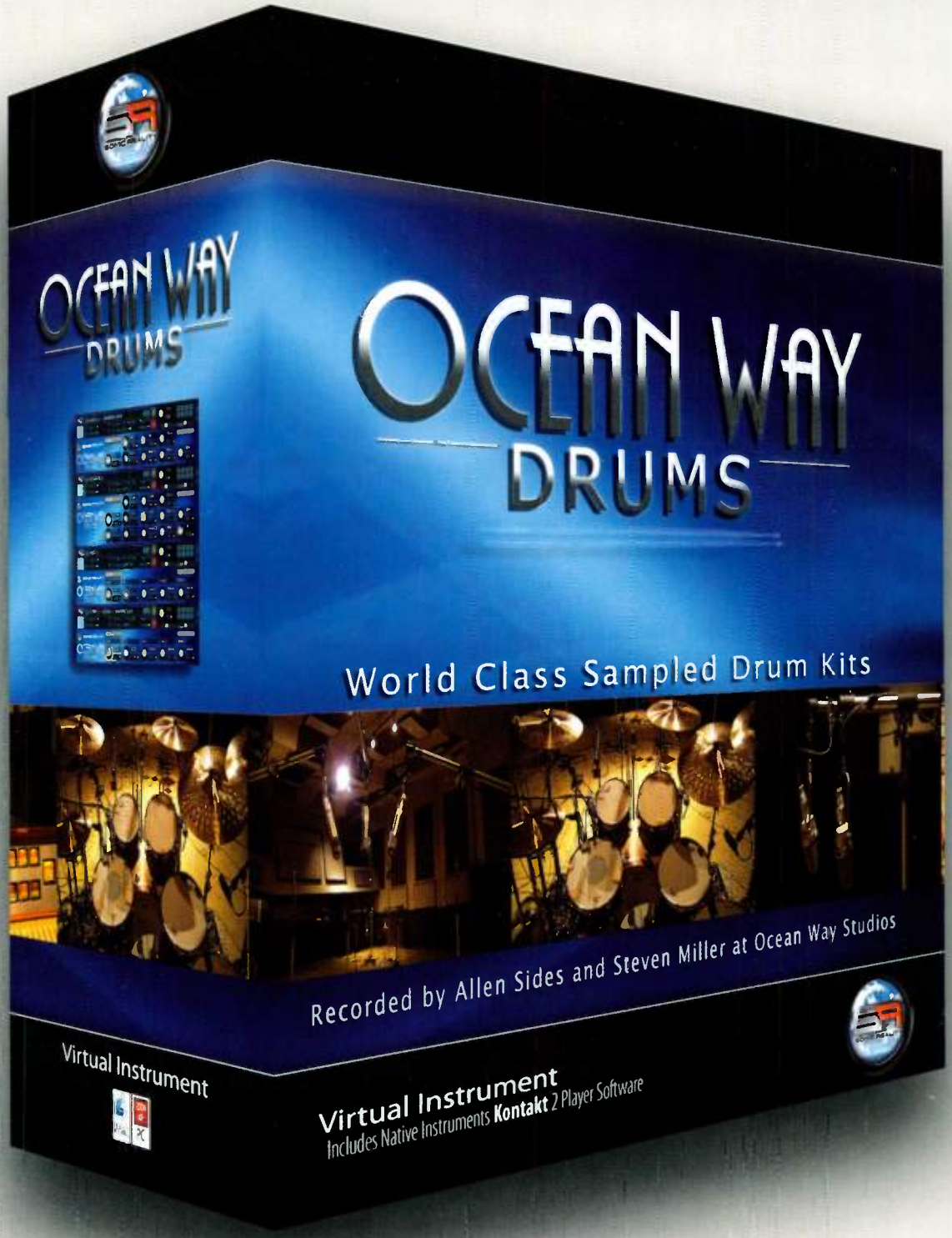

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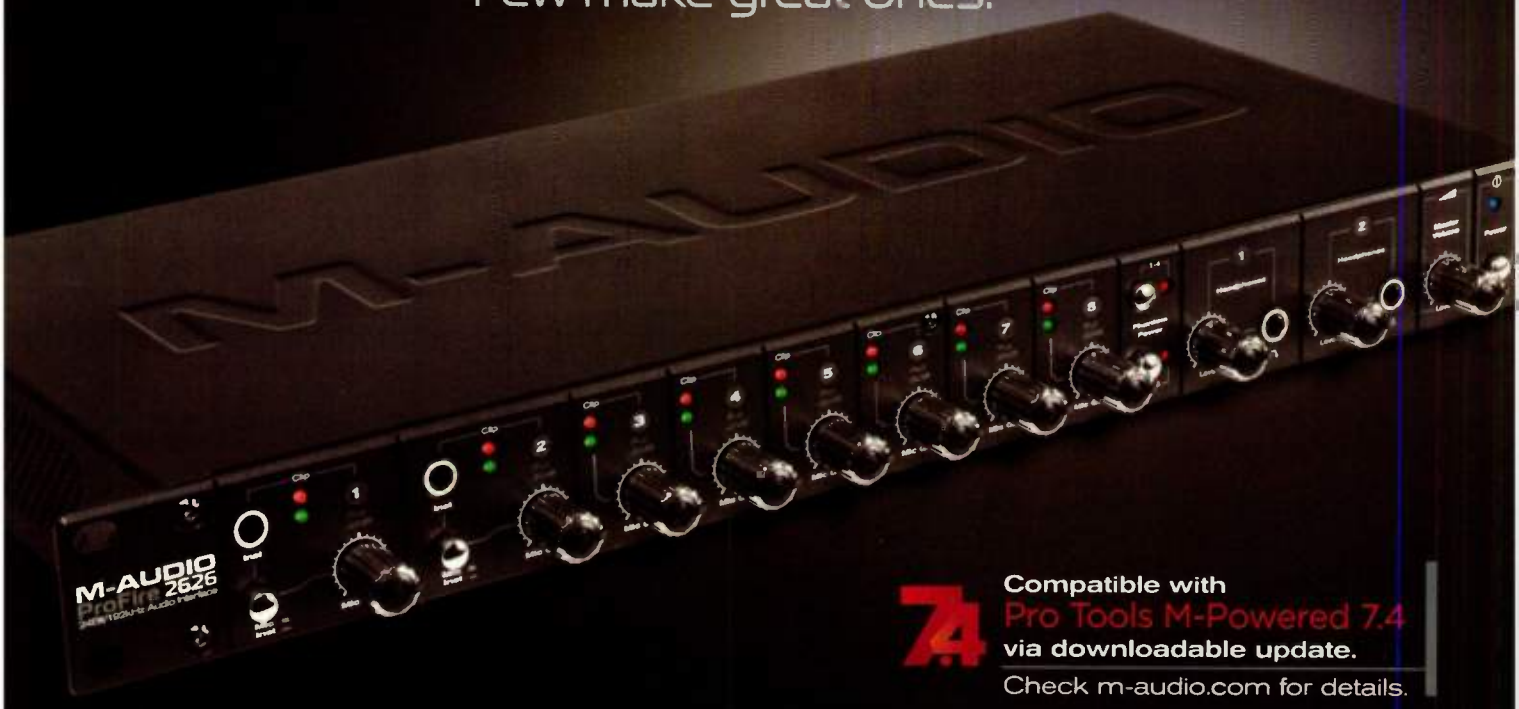

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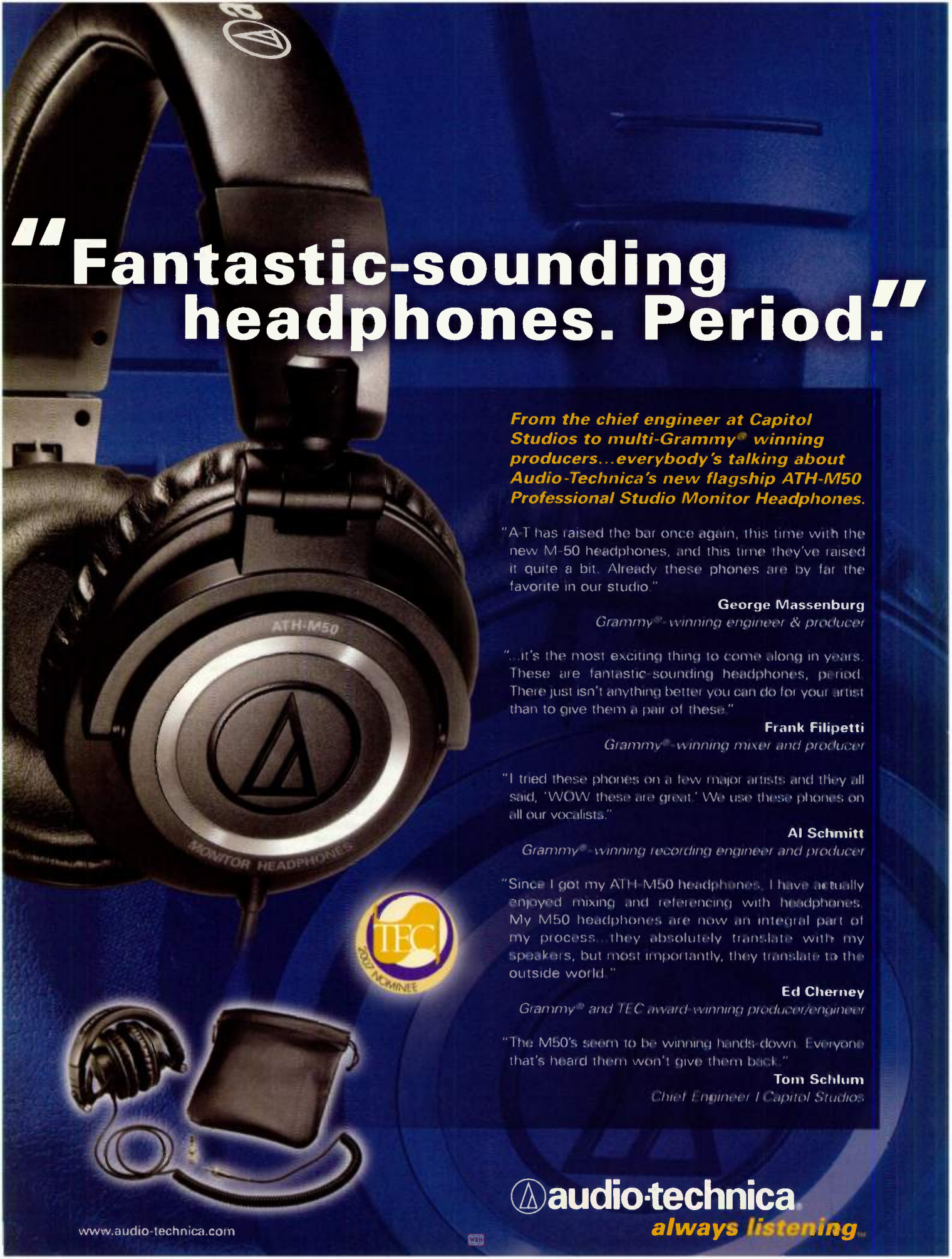
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Talk Box

THE RIAA FLAP

An article in the *Washington Post* from last December (picked up by other news organizations) claimed "the industry [*i.e.*, the RIAA] maintains that it is illegal for someone who has legally purchased a CD to transfer that music into his computer."

You can imagine the outrage; that not only flies against logic, but court rulings that allow, for example, copying a TV show for your personal use so you can watch it later. Only trouble is, the *Post* didn't tell the whole story.

The RIAA was prosecuting someone who had, yes, copied files from purchased CDs to his computer. But the *problem* was that the files were placed in a shared Kazaa folder, thus making the music potentially downloadable to millions. I read every page of the Plaintiffs' Supplemental Brief in Support of Their Motion for Summary Judgment Pursuant to Court's Order of October 3, 2007 (the things I do for you guys!), and the suit is entirely about intent to distribute and actual distribution.

Some point to comments from Jennifer Pariser, Sony BMG's chief of litigation, who testified in court that "when an individual makes a copy of a song for himself, I suppose we can say he stole a song" as evidence that the industry thinks simply copying a song to your hard drive is stealing. But technically, you *are* making a copy, and it *is* unauthorized. So yes, you *can* "suppose" that's stealing . . . except that fair use precedent says you won't get in trouble for it. Has Sony prosecuted anyone solely for copying a CD to their computer? No. In fact, they make software for copying music to their MP3 players.

I believe the record industry and the RIAA have blown it when it comes to dealing with the digital genie that got let out of the bottle: After all, it took a *computer company* to come up with a viable model for digital downloads. The established companies tended to pick the wrong battles to fight, at the wrong times, in the wrong way.

But that has nothing to do with the fact that distributing music without authorization is morally wrong, and illegal. Unless the copyright laws change, the RIAA has every right to go after people who distribute copyrighted material without authorization—but no right to prosecute people who *purchase* music, then copy it to their own computer (or a portable player) for their personal listening pleasure.

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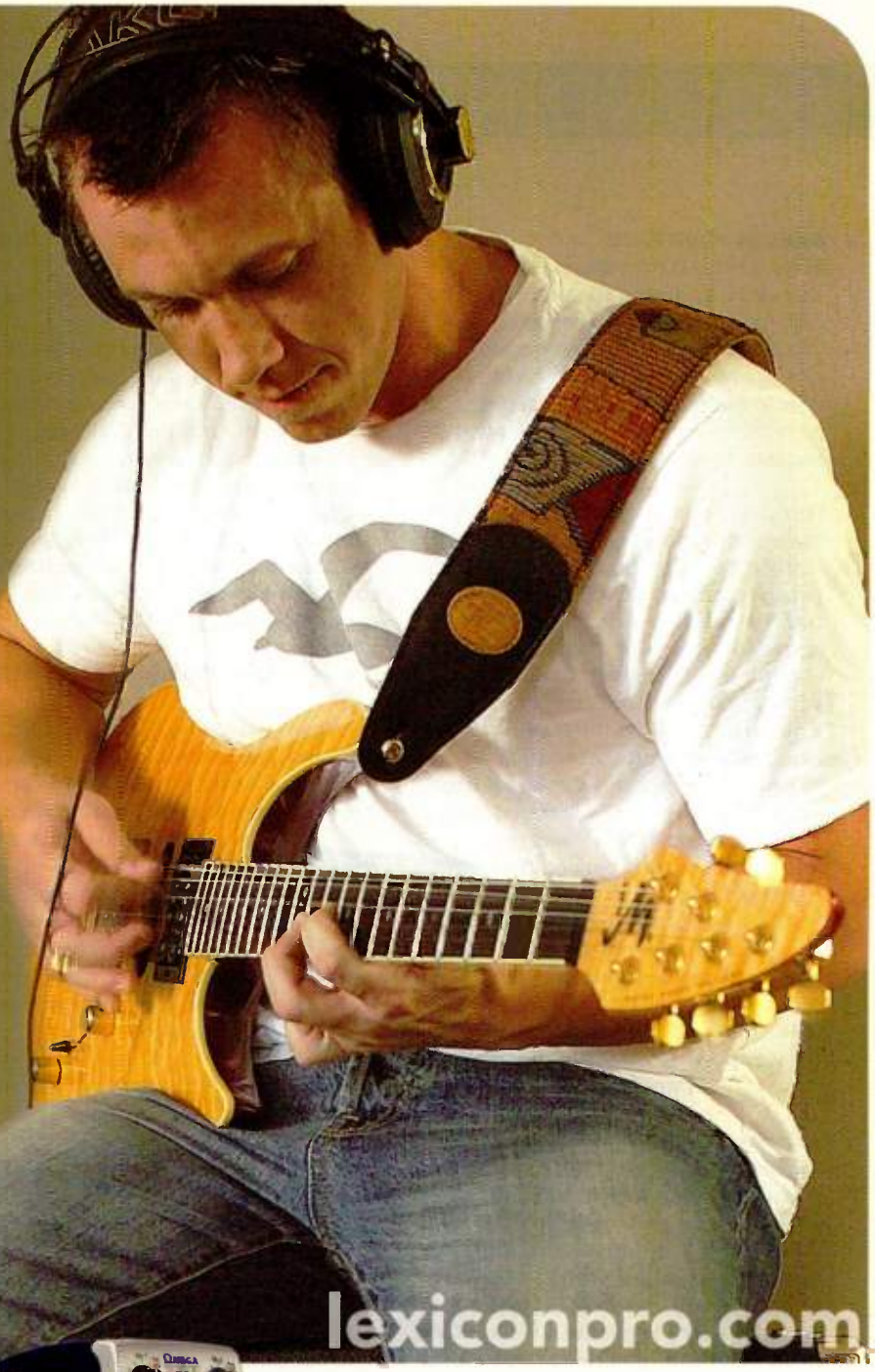

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BASS IN YOUR FACE

Editors note: In the January '08 issue of EQ*, we announced a contest in our Bass Management column, offering copies of The Screamin' Lords' newest release Long Live Me to the first 25* EQ *readers who sent in the hippest bass-recording tips or techniques. Below is a sampling of some of the feedback we received.*

[Do you] need to create the illusion of lower notes than the pitch of your regularly tuned *E* string on a fretted bass [when recording], but don't want to tune down? Try using a double stop a fifth above the root note, fretted an octave above the desired pitch. For example, if you want to hear the *D* below your low *E* string, finger *D* on the *E* string at the 10th fret and *A* on the *A* string at the 12th fret and play them with about equal intensity; a "lower" *D* will sound. Note: This only seems to work well on fretted basses, and only on the *E* and *A* string.

It's illusory, but it can work. Complicated bass lines will be difficult without doubling, but the notes will be implied there. I can make it sound like I'm going all the way down to a low *B* with this.

Dan Daily (via email)

As a bass player first and foremost, my bass recording tip results in a bass sound that stands right out and grabs attention. I begin by tracking the bass direct through my Line 6 Toneport, using what I believe is the Neve 1073 preamp model. I use the preamp's EQ to add low end with a fairly large bump around 700 to 800Hz, with a wide Q. This alone makes the bass stand out quite a bit, but I also make a second copy of the track in my DAW, and drop the low end a bit in the copy. Then, I'll boost the mids again, but a little higher up in the spectrum—usually around 1.2 to 1.8kHz. Then, to top it all off, I add a tiny bit of distortion, not usually enough to hear the actual distortion, but enough to add a tiny bit of edge to the sound. This results in a bass sound with lots of low-end "oomph," but also the mid- and high-end clarity and sizzle that makes it stand out loud.

You can hear what I mean at www.myspace.com/nathanraphael. The first song is called "Bass Solo" and it really shows this technique off well.

Nathan Salter (via email)

For a punchy bass sound that cuts through a mix I use a Fender Precision Bass with Elixir Strings running through a Tech21 SansAmp Bass D.I. I prepare the bass by tucking a piece of soft foam right up against the bridge to lightly dampen overtones and solidify the fundamental. The foam isn't there to stop the sustain as much as tighten up the sound. This works great with either finger or pick playing for that Philadelphia funky sound.

Terry Zimmerman (via email)

When I'm looking to get some good grit on my bass tracks, I run the bass through my Ashdown ABM 500 and mic it for a good solid tone. Then I'll take the amp's effects send out and patch it into a close-miked 15W tube guitar amp, dialing in the desired amount of grit. I usually have both amps running next to each other, then mic the room for a blend.

Dove, Tiger Tiger Productions (via email)

ON THE RZA TRIP

Stopping by to give props on the RZA issue [*January '08*]. It's about time y'all started giving some love to the hip-hop community. RZA is hands-down the most influential producer in modern hip-hop (except for Dre and maybe Timbaland). It was dope to read about some of what he used on the newest album [*8 Diagrams*]. Rich Thomas, if you're reading this, you get my props for writing the best production piece on my man that I've read.

Brooklyn Zoo 4-Ever (R.I.P. O.D.B.)

P-Nut (via email)

DESPERATELY SEEKING TUNAGE

As an open-minded, longtime reader of your magazine, I have noticed one unfortunate trend—one for which you bear no fault, but it exists all the same.

Many of the CDs you recommend for listening and write about, particularly those of a historic/vintage/progressive 1970s/non-Top 40 nature, are relatively hard to find (at least in the Pittsburgh, PA, area I live in), or are out of print, etc. To top if off, most of these relatively hard-to-find CDs are rather expensive when they are found.

I'm not sure what a good solution may be, but I admit it's very frustrating to read about wonderful, groovy albums in your publication that I'll not likely get to hear.

Derrick Demase (via email)

Matt Harper responds:

I'm not sure how much help this is, but as a Pittsburgh native, there is a great store down on Penn Ave. in the Strip District I used to frequent called Eide's. This was a source of constant rare/hard-to-find recordings in my teenage years (admittedly, my personal tastes are very much of the left-of-center variety, and thus I've had the same problems you are encountering now throughout my entire life). Beyond that, just search the Internet—most of what you seek is out there somewhere.

CORRECTION

Jeff Tanner wishes to clarify Fred Archambault's statement on the Aurora GTQ2 Mark 3 that appears on page 35 of the February 2008 issue of *EQ*: "The GTQ2 is not a Neve 1073 copy. It uses circuitry and components unique to our company."

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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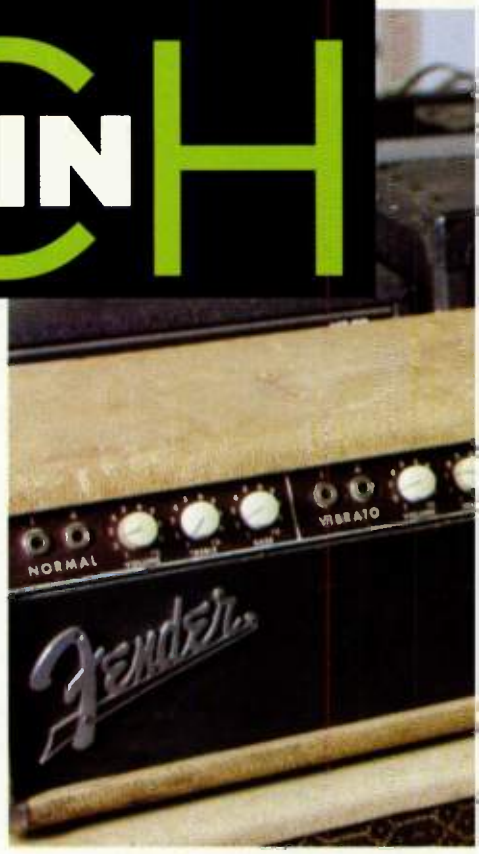


BREAKING THE MOULD

Bob Mould on Capturing Inspiration and Releasing Wild Tone

BY GREG REYNOLDS

Bob Mould's guitar work has been resonating throughout Hüsker Dü, Sugar, and various solo albums for nearly 30 years. His latest release, *District Line*, exemplifies the raw and soulful guitar playing that has inspired countless bands. *EQ* caught up with the singer/songwriter/mixer/producer to talk to him about his current guitar-recording techniques.

What is your approach to recording electric guitar?

For the sake of expediency, I now record a lot of my guitars direct through a Line 6 Pod. I've found it's easier to plug and play, because it allows me to capture an initial feeling. Then, if something needs tweaking, I can get the tone I'm looking for by miking the monitors, or running the signal back into an amp.

How do you go about miking your monitors?

I have a pretty bright and reflective room. My monitors are set up about five feet apart, and I really like the way the room sounds when I'm sitting in that equilateral listener position. If a track needs more ambience—or better positioning in the mix—I'll set up an AKG C 414 in cardioid mode right where my head would normally be. For most applications, I'll use the preamp in the Joe Meek VC1 Studio Channel, because it adds some brashness. If something sounds too jagged, too edgy, or too digital, I'll run it through my Tony Larkin tube pre/compressor to take the spike out of it.

How do you choose and mic your amps?

If I need a very fast and precise low-end, I'll go to my Roland JC-120. If I need even more low-end, I'll use my Top Hat Emplexador. If I want some screaming mids with harmonic overring, I'll go for the Fender Concert with the notch-able midrange boost. Typically, I'll place a Sennheiser MD421 or a Shure SM57 up tight on the cones, and adjust the position until I find the right coherency spots. If I'm really cranking the amps up, I'll run the mic through a Daking preamp, because it handles volume very well.

Do you ever use room mics?

I used to try multiple mics at different locations throughout the room, but I've strayed away from that. I've always played lots of drones with open strings, and when you play like that, and you get too far away from the source with your mic, there are too many harmonics that get cluttered and lost.

You have some huge-sounding guitars on *District Line*. How do you achieve such mammoth tones?

I like a big Strat sound—especially on a chorus. I have a mid-'80s Fender American Strat that has been my primary guitar for 20 years, and I will usually double my parts. I'll start with the humbucker in the lead setting, and when I want to overdub that part, I'll switch to the middle pickup to prevent phase issues during processing. If I'm using the same pedal as I did during the original take, I'll cool down the gain or the effect a bit to get a little more clarity out of the overdub track. The rest of the sound is dialed in at the mix.

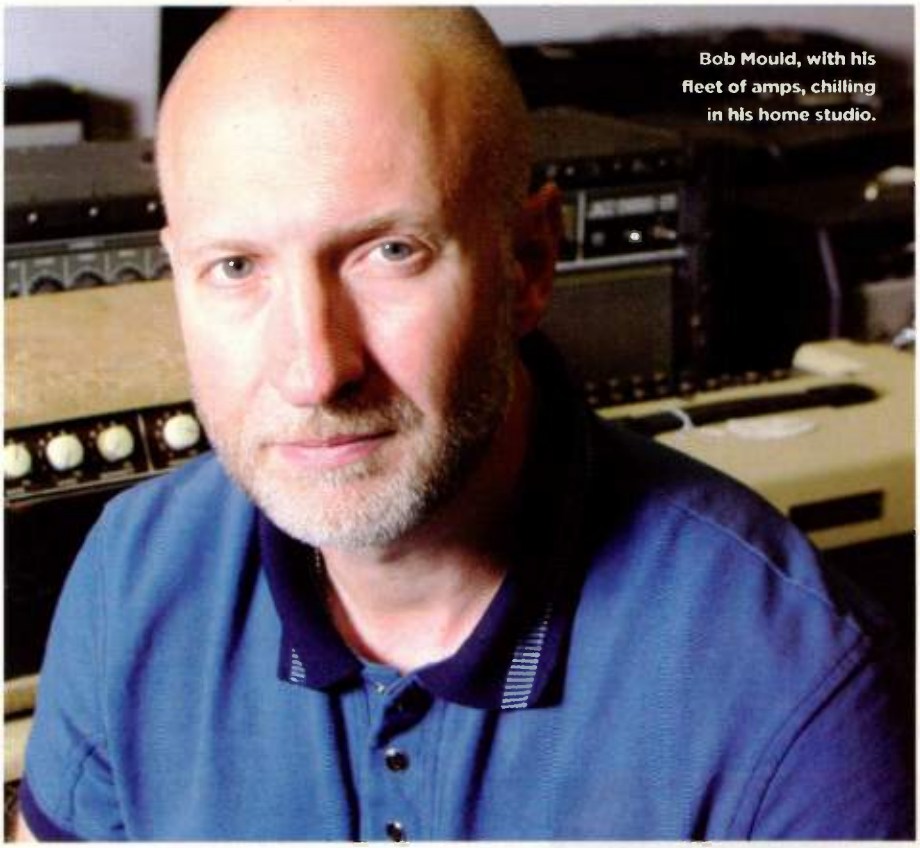
What is your mixing method?

All of my processing is done using the track inserts, because I want to dedicate specific plug-ins to specific tracks. I address guitars individually, then go back and listen to the way they sound in the mix.

Where do you usually begin?

I always start with EQ first. Even if I've cut lows while tracking, I will often cut them again to leave room for the bass and kick. Nothing will ruin a mix quicker than low-energy buildup. Next, I listen to the highs. If a guitar is too brash, I might do a slight high-end roll off. The object is to make it sound natural. Once I have a good basic tone to work with, I may highlight certain notes depending upon the part, and the key it's in. For instance, if it's in *A*, I might give a narrow boost around 2.2kHz to give the part a little color, and accentuate some of the overtones.

And where do you usually go from there?



Bob Mould, with his fleet of amps, chilling in his home studio.

The next thing I address is the temporal aspect. Again, as I use a lot of drone notes in my playing, I tend to stay away from reverbs, because they can muddy the sound. If I have a part that isn't too busy, I may add a little plate reverb emulator, but, generally, I use delays 90 percent of the time. I like to stick with quarter-note and half-note delays that stay in time with the music.

Do you ever add compression to your guitars?

Yes. I like to introduce some harmonic action by adding a bit of compression. I'll start with a typical guitar preset, and then adjust the parameters until it fits the performance. Preset compression sounds can be way too aggravating, so I find myself backing the settings off by 40 to 50 percent, and working with a ratio of around 3:1 or 4:1. I don't want to be able to hear the compression breathing. Finally, I'll throw on a limiter with a super-fast attack, a super-fast release, and a -2dB threshold. If I push the limiter too hard, it starts to color the low mids around 200Hz, so I don't want any more than -5dB attenuation.

Are there any other plug-ins that make your guitars stand out in the mix?

If I have a mono guitar, I may use the DUY Wide Spatializer to spread them out further in the field. Also, the Chandler Abbey Road package emulates old Neve consoles/limiters, and I'll use it to tighten up a track, and give it an older sound and feel.

What advice would you give to someone who is trying to record at home?

There's something to be said about the purity of the first time you do something. You may make some sacrifices on sound because of that technique, but I find that the first time I do something is always the best—flaws and all. EQ

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IN THE HOUSE

Just Jack's Home Recording Ethos Explored

BY LILY MOAYERI

As the stage name indicates, Just Jack is a one-man operation. Working out of a bedroom studio centered around an Akai S950 sampler, triggering beats lifted from funk, jazz, and '70s and '80s pop music, Jack Allsopp is a king of lo-fi recording operations—as evidenced by his newest release, *Overtones* [Universal].

"I like that slightly crusty sound," says Allsopp, as he sits amidst stacks of floppy disks. "Things that are very smooth, and don't have that grit on them leave me quite cold. I like the nastiness. I like the tail you get on snares, the bit of stray reverb, or the crackle from the beginning of the next hi-hat hit. I can't see much point in taking a canned drum sound, putting it with another canned drum sound, and trying to make something that sounds original. I'd rather take a thin snare from an old jazz recording, and boost the low mids to make it sound thick, funky, and hip-hop, than just lift something off of a sample disk."

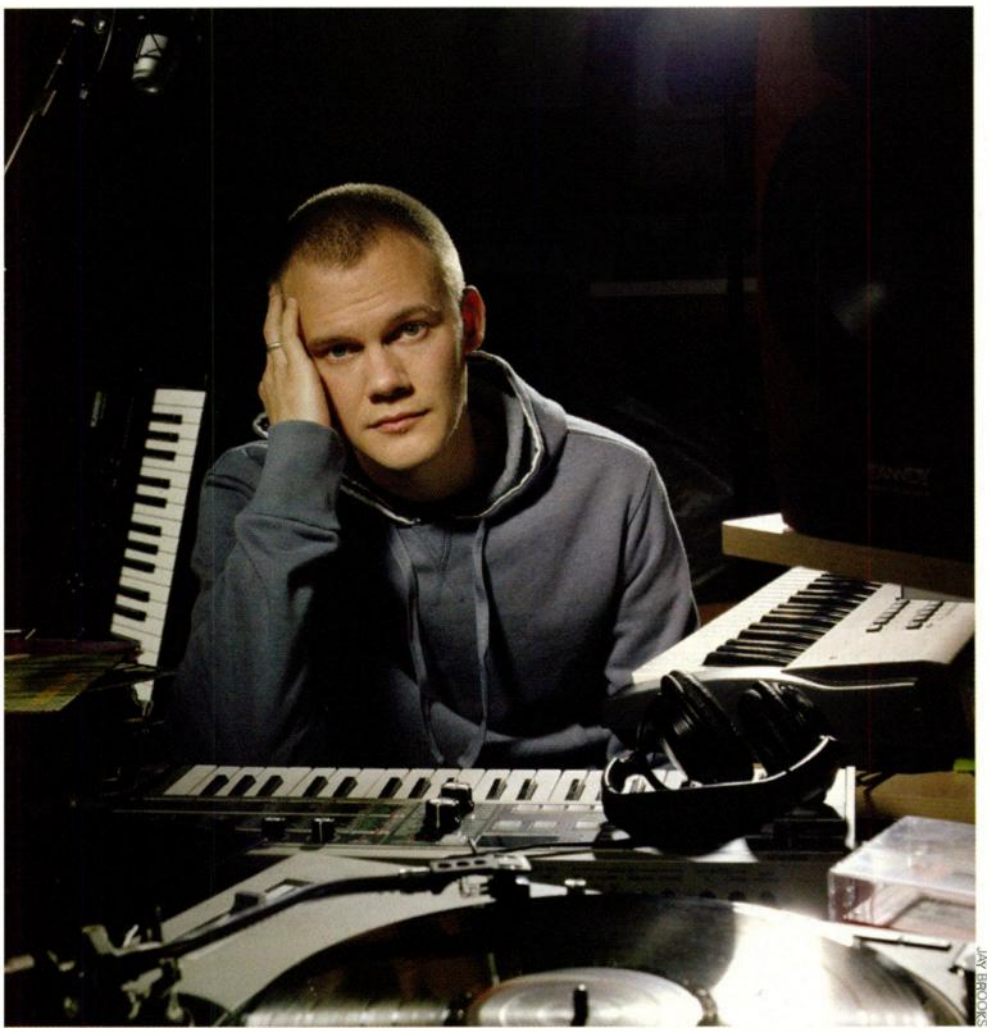
Allsopp, however, isn't one to always rely on what he can muster from the used vinyl bin at his local music store. In fact, many of the drums on *Overtones* were played live in West London's Long Island Studios with engineer Jay Reynolds at the helm. Recording to 2" analog tape, Allsopp laid down his drum lines with the mics running hot and all the recording levels in the red.

"It's not the 'proper' way to record tracks, but the tape distortion sounds nasty, and that's the way I like it," says Allsopp matter-of-factly when questioned as to why he decided to go against the advice of every reasonable professional engineer. "I keep the mids and lows distorted for a really saturated and heavy sound, but I do cut the highs with my API 560 EQ to get that nasty shrill out. I run the overheads through a pair of Urei 1176 compressors set to a ratio of 2:1 to fatten up the sound, and I'm good to go."

By and large, Allsopp prefers to keep most of his work in the home-studio realm, referencing the bass-guitar work on "Writer's Block."

"Ali Love played the bass part in my bedroom," says Allsopp. "We just ran direct into my Digi 001. Then, we copied the track, and boosted the lows on the clone until the bass sounded like a big 'woof.' We mixed that way back behind the main bass line, and it made for a bottom-end monster sound.

"I do a lot of stuff here, because I like to keep a certain amount of control. I like the raggedness you get from working in a bedroom environment with not great equipment. I like the glitches and dodgyness you get—which I think gives things a lot of life. If you don't have that, your recordings can get a bit flat and a bit dead. It's encouraging for people who think, 'I'm not technically minded, and I don't know anything about anything,' because they can still go and make music." EQ



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PUNCH IN

THE FINAL NAIL IN THE MAJOR LABEL COFFIN?

What the "New Model" of Record Deals Means to You. Part One.

BY MOSES AVALON

The new so-called "360 Deals" offered by major labels are simply an attempt at taking a piece of everything an artist makes—from record sales, touring, licensing, publishing, merchandise, etc. These deals offer big bucks and higher percentages, and they look and feel like major-label deals of yesteryear, what with the press releases and label executives shaking your hand in offices perched high amongst some big-city skyline.

But are they fair to the musicians?

Could it be that maybe these deals are merely a façade—one where the label may be committing fraud right at the onset of the deal? Over the next two months, I will be giving special attention to this "new deal" and its repercussions for artists. But first, let us consider an interesting paradox. While labels want more from artists to justify their services, last year Radiohead got away with self-releasing *In Rainbows*, allowing fans to pay whatever they chose to download the release. After the stats came in, it seems the average consumer paid about $9. The bad news was that many chose to pay nothing at all.

"Pay-what-*you*-want" verses "pay-the-label-everything-they-want" may be the model that's more likely to attract the up-and-coming artist, but it's certainly not what will keep the 10 billion dollar music business from becoming a footnote in history. And it doesn't matter that the public thinks an album is worth $9, as a civil jury, in 2007, made a value judgment for them should they choose to download over a P2P site: $9,700 per song (about $100,000 per album.) Now that "the people" have put a price on using illegal P2P sites, you would think that everyone would flock to the "pay whatever you want" model. But no, studies show that P2P file sharing is alive and well—even in the case of Radiohead, who offered *In Rainbows* on an honor system, and, afterwards, went the route of the traditional CD release to bump up revenue.

It wasn't just the invitation that made the Radiohead attempt a failed business endeavor. There were logistical issues, as well. Many people who were attracted to the offer complained the lack of bandwidth caused time delays, and that the Shopping Cart utility jammed. These issues resulted is some people waiting so long for the transmission that they lost interest in acquiring the release.

These problems were are all solvable, but none of them were solved. Why didn't Radiohead hire the best IT people to account for the extra traffic and glitches? It's probably because artists don't think that way. They think about their fans and their product—not about technical minutiae—and, as a result, the very qualities that make you a great artist, often make you a lousy businessperson. And the majors are counting on this lack of business acumen as the commodity they peddle in these new 360 Deals.

But does this mean that, once again, artists are stuck with accepting junk contracts from labels? Maybe. But there are several Achille's heels to the 360 Deals that majors will likely not realize until years from now—*after* they are already entrenched in them. So why are these deals a stupid move for the recording industry?

Aside from CD and download sales, the 360 Deal dips into revenue from merchandising, licensing, and touring. These facets of the business are formally handled by other vendors to the artist—mainly the agent, manager, producer, and publisher (if the artist is a songwriter). If the label takes this cash, where is the vig for these other professionals going to come from? And what if producers and managers want a similar structure? You can't co-op 100 percent of your revenue streams with everyone. This would be like donating your vital organs to several hospitals.

So what will happen then? Two possible conclusions leap to mind. One, the artist will pay a second set of commissions, on top of the split they give the label. This means the artist makes less money—a *lot* less. Two, the artist will decide not to pay two parties for one job, and will not contract with outside vendors.

As number two is the more likely scenario, let us look at its ramifications. It will mean the inevitable extinction of the manger, booking agent, and (some) producers, and *their* managers and handlers. We are talking about roughly a third of the people listed in the *Music Business Registry*.

Labels gauging the income from about a third of the professionals in the business will not be met with any degree of aplomb, I can assure you. They will fight back, exploiting some very alarming weaknesses in the 360 Deal that will leave the labels wondering, once again, how they could have been so short-sighted.

How the fight will be conducted—and what weapons industry pros and artists will use—will be the subject for next month's article in *EQ*. EQ

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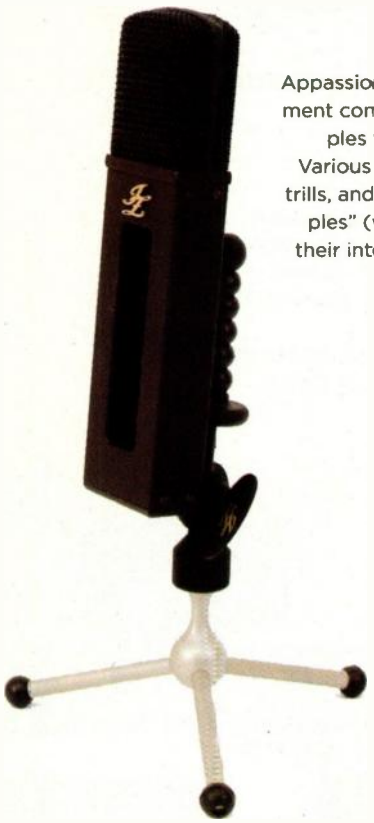

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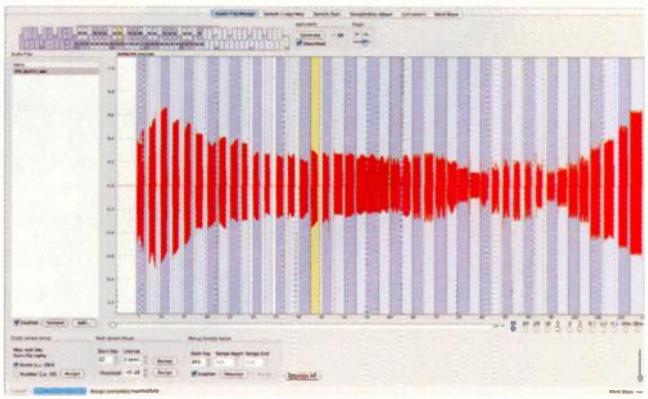

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Mike Portnoy in Avatar Studios, ready to lay down monster drum tracks.

THE ANSWER LIES WITHIN

DREAM THEATER'S PERCUSSION DEMIGOD MIKE PORTNOY AND ENGINEER EXTRAORDINAIRE PAUL NORTHFIELD ON GETTING GREAT DRUM SOUNDS

BY

ROBERTO MARTINELLI

How does Mike Portnoy—one of the most celebrated skinsman of our time—achieve such monstrous drum sounds? Starting with *Awake*—Dream Theater's third foray into the world of modern progressive rock—and peaking with the band's newest offering, *Systematic Chaos*, I have become more and more enthralled by Portnoy's tones. So I decided to finally track down Portnoy and engineer Paul Northfield [Rush, Ozzy Osbourne, Porcupine Tree] to find out how to turn a modern drummer's sonic wet dream into a recorded reality.

After 1992's *Images and Words*, the band's drum sound changed, becoming more distinct on *Awake*. *Scenes From a Memory* [1999] was another sonic leap. What can the changes in sound be attributed to?

Portnoy: *Scenes From a Memory* was a turning point for the band because it was the first album that John Petrucci [Dream Theater guitarist] and I produced. Previously, we worked with outside producers who ultimately had the final say in the production of the record—from the shaping of the songs to the final sounds of every instrument. It wasn't until *Scenes From a Memory* that my drums actually sounded like I wanted them to sound. The drum sounds on *Images and Words* make me cringe.

Northfield: I have no idea how anybody else recorded Mike, but I attribute his change in sound to his change in approach. A lot of what has an impact is really fundamental—such as drum sizes and his attack. Every drummer has a part of the kit that's his main focus. Mike plays a lot from the kick drum. It sets up how he comes into a tom fill, for example.

Mike, you say you hate the sound on *Images and Words*. Part of me agrees—the snare trigger sounds terrible. But, at the same time, I love that record so much that I actually like the bad sounds.

Portnoy: That snare makes me crazy. A lot of people hold that album in such high regard—maybe because it was our breakthrough album. It must be said that when we recorded that album, triggered drum sounds were fashionable. That was right before the grunge wave hit, and drum sounds on popular albums reverted to being very organic sounding. The change in the popular music scene certainly changed the way we approached recording our music.

Was the entire kit triggered on *Images and Words*?

Portnoy: I believe the entirety of what you hear is triggered. David Prater [producer] was a very difficult person to work with. He was the kind of producer who would lock you out of the studio during the mix, and just do whatever the hell he wanted. I made it pretty clear from the beginning that I hated those drum sounds during tracking, but he had just done a popular record with a hair metal band called Firehouse, and he thought it would be a good idea to use all those drum sounds on our album, as well. That kind of sound may work with pop metal, but it was completely out of place with an over-the-top, progressive metal band. But that was our first album for a major label, and we had no leverage. To this day, I love that album musically, but, sonically, I can't stand it.

Did you do any sound replacing on *Systematic Chaos*?

Northfield: No replacing, but I did augment the snare drum to give it a bit more of an explosive quality. Not heavily—because I wanted to preserve Mike's expression on the kit—but for straightforward backbeats I found I could double the snare with a sample without any trouble. In the case of rolls, though, you can't double the drums with samples, and still honor the technique.

You record with a variety of kits—most of which are enormous. Do you have those monsters set up and ready to go in the studio, with each part of the kit assigned to an individual track?

Portnoy: Everything is miked and ready to go. We write and improvise a lot in the studio, so we have to have everything ready and waiting. We can't have any latency in executing and recording.

Northfield: Mike tends to make decisions on which kit to play on the fly, so we set up his kits simultaneously. In the past, that could be a pain, as we were constantly muting and gating tracks, or reassigning faders to different elements due to track-count limitations. As we were using Pro Tools HD this time around, we essentially had unlimited tracks.

Explain the miking strategy for the drums on *Systematic Chaos*.

Northfield: I had about 36 mics set up. Everything on the drum set was miked individually—except for the cymbals—so there were a lot of open mics. For kick drums we used AKG D 112s. We used Shure SM57s on the top and bottom of the snare, and Sennheiser MD421s on all the toms. The octobans had SM57s and 58s inside the tubes. We used an AKG C 451 for the ride and the hi-hat. The overheads were AKG C 12s. Room mics were AKG C 414s. I don't mean to be short in my answer, but the mics and mic placement were nothing special. The sound is good because of the room and the console.

How were the mics placed on the toms and snares? Those tracks, in particular, have a lot of body.

Northfield: They were about two inches from the heads, and two inches away from the rim. For the low toms, the mics were maybe a little closer to the center, but nothing radical. With a big kit like that, it's more a question of "Where can you fit it?" But the benefit of being in a good room—one without any radical reflections coming off the ceiling—is that the signal bleed you get from one mic to another isn't so offensive.

What about the overheads?

Northfield: I always put the C 12s angled on the sides of the kit. I tend not to do the over-the-head-of-the-drummer approach. The reason is that, although you get a nice pick-up on the snare, the cymbals never really sound that good. If

you mic cymbals straight overhead, they sound like big dinner plates—or little gongs—and you end up having to EQ out all the low end to manage them. Those tracks don't have any natural top end. If you mic them totally sideways, they're very thin sounding, and they tend to disappear as the cymbal rocks. I try to get an angle as close to 45 degrees as I can to the cymbals, and about four feet away. The only cymbal I point the mic straight down on is the ride.

You said that the drums were recorded in a good room. To you, what makes a good room for recording drums?

Northfield: An environment with a lot of wood—not a lot of super-hard surfaces. If you have a wood floor, you can always put some carpet under the drums so you don't get the brittle kickback. Ambience should be more low-end oriented, if possible—not hard or bright. Stone rooms, to me, are generally not interesting to record in. I've been in studios that have rooms ranging from very, very dead to rooms with glass and tile—which means the ambience is going to be all cymbals. For a drum kit, neither of those works well.

For me, a great-sounding room is something along the lines of a gymnasium—where you've got a bit of boom in the walls and floor. Stages can offer a lot of those qualities, as well. I remember drummers would complain their kits sounded great on stage, but have all the life sucked out in the studio. The room at Avatar Studios does not suck the life out of your kit. It's not a massive room, but with the kit set up, it's about 20- to 30-feet open in every direction—although we were set up very close to the back wall—and it has a 30-foot ceiling. It's an ideal setting.

> "USE A LARGE DRUM IF YOU WANT A LOW PITCH—DON'T JUST TUNE THE DRUM DOWN."

To what degree did you exploit the possibilities of Pro Tools—besides utilizing the unlimited track count?

Northfield: I used Pro Tools mostly for things like delays. But the biggest advantage with Pro Tools *is* in the sheer amount of tracks available. That inspired us to lay down tons of alternate tracks—extra fills and such that we could edit in at will during the mix.

Portnoy: *Scenes From a Memory* was the first record we did using Pro Tools. Before then, everything was done on analog tape. On *Falling Into Infinity*, for instance, I would do five or six different takes of each song, played all the way through. Our previous engineer, Kevin Shirley, and I would listen, make notes, and then start chopping tape. It was a mess. To think that we used to make records like that blows my mind.

Is that the only reason to use Pro Tools? Convenience?

Northfield: Well, I'm a big Logic user. Logic coupled with Apogee converters and a Symphony card is superb. But it's not a good idea to walk into a studio, and ask them to use stuff they're not


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used to. You need support. The basic Pro Tools HD converters are good. Apogees may be nicer, but once they get to be as good as that, there are so many other things you need to worry about—like driving it with the Big Ben clock. The clock is very important in running a digital system, and it makes a noticeable difference on a Pro Tools rig.

What does a clock do that's so important?

Northfield: The samplers that convert from analog to digital are processing information at a very high speed. If the clock driving the whole system fluctuates, it tends to cause brittleness in the sound. With bad clocking, the first thing you notice is the top end is a bit harsher—it seems to separate from the rest of the sound, and the stereo imaging isn't quite as good. When you get the clocking the best it can be, you usually feel like the recording medium starts to disappear, and you're just there hearing the mics coming straight off the console.

What console was used, and why?

Northfield: We used Avatar Studios' old Class A Neve 8058 with the 3-band EQ. It has so many transformers in it—it's unbelievable! Every single strip goes through six transformers before you hit tape, or, rather, the digital converters. Here's what those transformers do: The distortion in a transformer is what is called "first-order harmonic distortion." This makes the distortion characteristics very sweet. Whether you use a Class A circuit such as the 8058, or a Neve with 4-band EQ—like the 8068 and 8078, which is called a Class AB circuit—the transformers are what make it sound the way it does. In my experience, real audio purists like the Class A circuit better. They don't make consoles with that many transformers in them anymore because it's become regarded as not technically a great thing to do to the sound. It's also extremely expensive in terms of construction. But, musically, it's very powerful.

Did you mix the album on the Neve, as well?

Northfield: I mixed on an SSL G Series—though I ran the mix bus through some Neve channel strips to maintain punch and density. The G Series is not as thick and dense. It's more spacious and airy, and not quite as gutsy, although it's stronger in the midrange. I choose a console based on its fundamental nature. Tracking on a Neve gives a thick, dense sound, but, with bigger arrangements, you need the spaciousness and clarity you tend to get from an SSL. The old Neves tend to get very muddy.

Mike, what's the most important advice you can give to a drummer who is trying to emulate your sound, but who doesn't have a great room to record in, or a classic console to mix on?

Portnoy: Don't deaden your drums in an attempt to control them. If you pay attention, most technical drummers don't employ that strategy. They want drums that sound live. And don't tune your drums in ways that aren't natural in regards to the shell size. Use a large drum if you want a low pitch—don't just tune the drum down. Using a smaller drum tuned down won't give you any kickback off the head, and it will sound sloppy. Start at the instrument, and make sure that it sounds good. If you do that, you won't need a million dollars worth of equipment to make a good recording.

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lost boy

Portrait of Nick Drake, taken around the recording of *Bryter Layter*.

by Jeff Touzeau

Nick Drake's musical career was fraught with tragedy. The enormous community of adoring fans left posthumously exalting his every recorded note—as well as the legions of musicians constantly namedropping Drake as an influence in attempts to quantify their street credibility—are testaments to the notion that the greatest artists are never appreciated during their time. And it's almost too much to bear to think that Drake's lack of commercial success—coupled with a debilitating mental illness—may have led him to ingest a fatal amount of amitriptyline one cold November night in 1974.

Nick Drake composing at the piano.

Joe Boyd and John Wood Offer an Exclusive Look Inside Nick Drake's Legendary Studio Sessions

In the course of Drake's short life, not a single album he released sold more then 5,000 copies. Towards his death, he was said to be living off of a £20 a week retainer from Island Records. His music being used in a Volkswagen commercial in 2000, resulted in the selling of more Nick Drake records in one year than the 20-plus that preceded—landing him in amazon.com's sales chart as the top five grossing artist.

Drake's three proper releases (*Five Leaves Left*, *Bryter Layter*, and *Pink Moon*) have stood the test of time, and have grown exponentially popular by the day—so much so that, nearly 30 years after his debut, droves of people from across the globe regularly flock to his hometown of Tanworth-In-Arden to pay tribute to a musician who has dramatically affected their lives.

Victoria Waymouth

These pilgrimages are what inspired Drake's estate to assemble his newest release, *Family Tree* [Tsunami Label Group]—a collection of recorded works that span his entire lifetime. It's in the spirit of those who love his music perhaps just a little too late, that we journeyed across the globe to talk with producer Joe Boyd and engineer John Wood to get some insights into the recording of Drake's limited discography. What we found out about those legendary sessions was inspiring.

The two of you worked on all of Nick Drake's albums. Can you share some of your recollections of the *Five Leaves Left* sessions?

Wood: For the *Five Leaves Left* sessions, Nick would track live, singing and playing along with the string section. We would split the four tracks by virtue of how we wanted the reverb to be. You needed the natural room reverb first, and if you needed to add artificial reverb, you would do it track by track. For example, you wouldn't put any brass on the same track as the strings, because you

John Wood mixing at Sound Techniques.

wouldn't want the same amount of "space" on a string instrument as you would a brass instrument.

Boyd: The best and most memorable sounds, to me, were on "The River Man." This was done with 12-string instruments set up in a semi-circle in the middle of the room, with Nick on a stool in the middle. There were no overdubs. There weren't even baffles between the performers—they were just all there together with a conductor. You could do that kind of thing at Sound Techniques studio, because the signal bleed was nice if you were in the right position, and if the microphones had the right relationships to each other.

You attribute your ability to record the sonic structure for "The River Man" to the room at Sound Techniques. Can you paint a mental picture of what the studio was like at that time?

Boyd: Sound Techniques was situated in an old dairy in Chelsea. There was a big room, and there was an office on one side, and a control room on the other. The control room was deeper. It had a lower floor, and the office had quite a low ceiling. The middle of the room went straight up to the original ceiling of the room. You had three different ceiling heights in the same room, so you could move a musician under the office, under the control room, or out in the middle, and get different acoustic atmospheres based on that.

Eventually, they built a vocal booth under the office, which you entered through a sliding door. You could put strings in there, or just something you wanted to record separately. The best sounds were always in the middle of the room, though. That's where we'd put the drum kit, and that's where we set up the musicians for songs like "The River Man."

While recording "The River Man," how were you affected by Drake's performance?

Boyd: With Nick, it was quite simple to keep focus, and not be overcome with emotion during the session. What I learned very early on while recording Nick was not to monitor what he was doing, because he was always perfect. We just turned his mics off in the control room, and listened to what everyone else was doing. Then, you could really concentrate on whether a violin was out of tune, or notice if somebody came in out of order, or be alerted when there was something wrong with one of the sections. You didn't want to be distracted by enjoying Nick's performance.

Wood: The thing about Nick was that he was so good at what he did. People sometimes ask me, "How do you get the Nick Drake guitar sound?" The simple answer is this—we would just stick a microphone in front of him.

You never had to provide him with any guidance in the studio?

Boyd: We pretty much let him do whatever he wanted. That said, there was obviously a lot of discussion around what we were going to do to streamline the session, how we were going to approach capturing the songs for the album, and the positions we were going to set everyone up in to play.

Did you record everything live?

Wood: All Nick's music just went down live, with just a couple of exceptions. To this day, people cannot believe we made those records that way. For *Five Leaves Left*, we knocked off "Way to Blue," "Fruit Tree," and another track I can't remember in three hours.

Was there any specific gear you used to capture his performance?

Wood: I've always believed that recording studios are nothing more than working environments. I've never

understood waiting for a Neve to arrive, or going to exotic places to track in hopes of capturing some special feeling in the air. It's the artist that matters. I think worrying about what equipment was used is nonsensical.

Sure. But would you mind sharing what a typical signal chain for recording Drake was?

Wood: We used a Neumann U67 as the vocal mic, and a Neumann KM 56—a small valve condenser—on his guitar. We chose the KM 56 because it flattered his vocals, as well. As his vocals were recorded live along with his guitar, we had to make sure the mic we were using for each source sounded good on the other source, as there was a fair amount of bleed.

We placed the mics pretty close to Nick's mouth, and the soundhole of his guitar. We weren't trying to get a lot of the room in his sound, and we had to get some separation from the instruments that surrounded him in the live room. I'd run the U67 into a Fairchild 660. His vocal

Boyd published *White Bicycles: Making Music Inthe 1960s* In 2006.

was the only signal that was compressed on those albums. I'd track with the limiter because I was trying to get as much of the final album sound before we mixed. We wouldn't even use much EQ during the mix. And I'd still work that way—even with what digital affords us. You should be able to pretty much put the entire performance to tape, and be done with it.

Joe, is John's recording and mixing philosophy similar to your own?

Boyd: I've obviously learned a lot from working with John, and he has informed my approach in the studio. However, I think the biggest influence on my listening—and, therefore, mixing—was my grandmother. She was a pianist, and she taught me a rather arcane, highly conceptual and slightly dubious idea that piano playing was about "singing by hand." The concept is that a leading melody isn't necessarily meant to be played louder, but you make it sing out in a way so that both hands stay in balance. A melody is important, and it's at the forefront because of texture—not volume. I've always applied that idea to my mixing. The goal is to make the vocal line—the lead melody, and the romantic, emotional part of the music—clear and alluring without being unnecessarily loud or unbalanced. You want to

suck in the listener. To achieve this, you could pick out positions in the stereo field from which to pan a source, and thus affect visibility, or you could boost or cut frequencies in the name of changing the listener's perspective on an instrument. You have to keep the elements audible, but you shouldn't prioritize them in a way that is unnatural.

How was the recording process for *Bryter Layter* different from *Five Leaves Left*?

Boyd: In a way, *Bryter Layter* became more complex, because the drum kit changed the nature of the compositions, and, therefore, the recording. There was no drum kit on *Five Leaves Left*, just occasional percussion. Once you put a drum kit on, you start doing things with the guitar, bass, and drum track, and Robert Kirby [Drake's string and wood arranger] would write for horns as well as strings, so the whole album got more complicated texturally.

Wood: I spent more time mixing *Bryter Layter* than anything else I've ever spent time on. That's okay, though. Most of the time, you playback an album you've recorded, and say, "I wish I would have done this or that." But on *Bryter Layter*, there is nothing I would have changed. We actually mixed it three times. The first time, we had a go in New York at Vanguard Studios because we liked the echo plate they had there. Then, we had a go at Sound Techniques—which we didn't like. Then, I changed the monitors at Sound Techniques, and we had a second go. Those are the mixes that were released.

Tell me a little about the application of plate reverbs on "The Chime of a City Clock."

Wood: Listening to that song, I think this is one of the best mixes I ever did in my life. It also demonstrates everything I hate about current engineering and mixing. It has perspective and depth—two things that you just don't hear people striving to achieve anymore. For this song, we used two echo plates. I would use varying degrees of each plate, plus tape retard depending on what track it was, so there would be two tape delays for the plates. For the vocal, I would use a longer retard than a sax—which has more of a short plate on it. Strings probably have a mixture of long and short, with the high strings having more reverb on them than the low strings.

I'd like to hear your comments on "Poor Boy."

Boyd: That's Pat Arnold and Doris Troy [from Pink Floyd's *The Dark Side of the Moon*] on backing vocals. For this one, I suppose John Simon's recordings on the first Leonard Cohen album inspired me. I loved "So Long Marianne" with those mocking girl backing vocals. When Nick played me "Poor Boy," I said, "We've got to have girls singing the chorus."

Originally, we went in to do a track with guitar, bass, and drums. The morning we did the track, I had been mixing a record with Chris McGregor—a South American jazz pianist—so my head was full of the sound of his piano. When Nick

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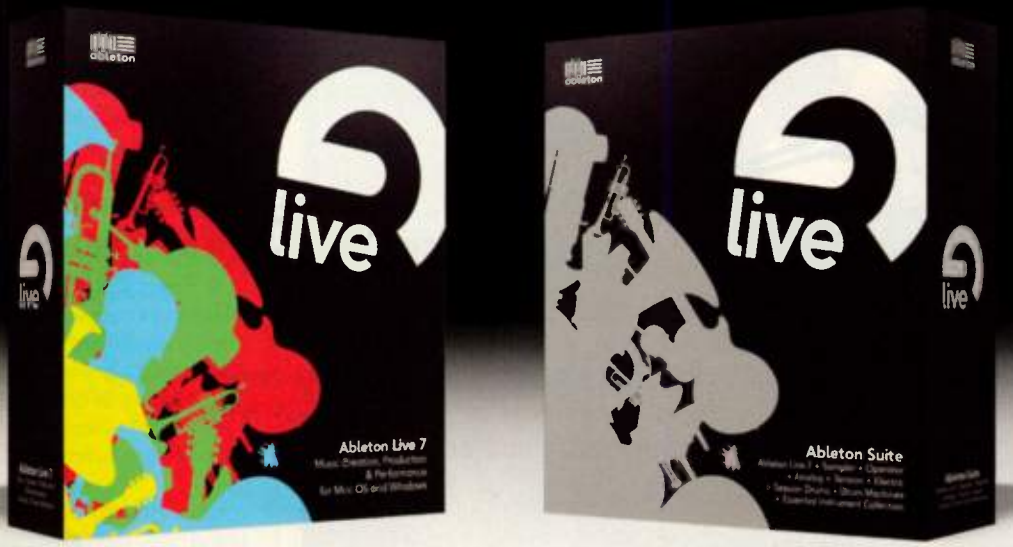

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LO-FI RECORDING: HOW TO TRASH YOUR TRACKS

by Bruce Bartlett

Today's recording tools—low-cost digital recorders and mixers, soft synths, and good-sounding cheap mics—make it affordable to record with sonic purity and accuracy. But now that anyone can record high-quality sounds, it's not such a big deal anymore. While there's always a place for clean, accurate recordings, in many of today's records you'll hear lo-fi sounds: fuzzy vocals, tinny drums, and humming guitar amps.

Lo-fi is the opposite of hi-fi. Technically, hi-fi sound implies a flat frequency response with no noise, distortion, or other imperfections. In contrast, lo-fi sounds might have a narrow frequency response (a thin, cheap sound), and could include artifacts such as aliasing, hiss, distortion, or record scratches and vinyl surface noise.

Lo-fi really took off with rap music, in which the drum sound was the opposite of the usual polished studio sound. Instead of a tight kick, we heard a boomy kick; wide-range snare sounds with a full thump and crisp attack gave way to tinny, trashy snares that were all midrange. Lo-fi is also a component of some dance music and of course, punk is not about polite sounds, either.

No matter what type of music you do, though, lo-fi can add extra textures and colors that make a song stand out from the crowd. So, let's look at a few ways not to take out the trash, but put it in.

LO-FI FREQUENCY RESPONSE

You can easily make a lo-fi effect simply by messing up a signal's frequency response so it's anything but flat. Cut the highs and lows, boost the mids. Or create a raggedy response with lots of bumps and dips. Some ways to do this are with EQ, mic choice, and mic placement. Here are some specific tips on obtaining lo-fi frequency responses:

• Play a snare track through your mixer, and turn down the low frequency and high frequency EQ. Boost around 1kHz or nearby frequencies. Your snare sound will change from high-budget to bargain-basement; Beck's "Soul-Suckin' Jerk" from the album *Loser* is a good example of a lo-fi drum set.

• Find a toilet paper tube, or a flexible plastic tube that extends gutter downspouts. Put the tube in front of a mic and sing through the tube. The resonances in the tube will color the sound in a wild way.

• Plug a set of headphones into a mic preamp, crank up the gain (preferably to the point of distortion), and yell into the phones: You'll have a sound unlike any "real" mic.

• Record a child's drum set with its small heavy cymbals and boomy kick drum. You might loop a hi-hat beat made from this set, and mix it with a full-range recording of a quality drum set.

• Track down some cheap old mics at a garage sale, on eBay, or from vintage mic collectors. Record a few tracks using those mics. Their frequency response tends to be a complex series of peaks and valleys that you can't duplicate with EQ.

• Unusual mic placements are fun: Record a guitar amp or vocal with the mic placed in a wastebasket (Figure 1). Hit a cymbal with a cheap mic while recording its signal. Mic a snare drum from underneath for a thin, zippy effect. If you mic a crash cymbal at its edge, pointing toward the center, the sound will waver as the cymbal tilts when struck.

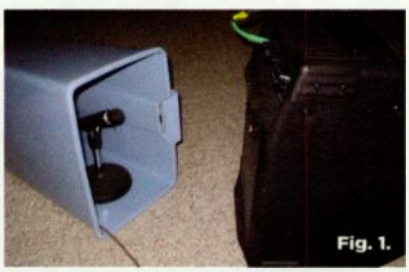


Fig. 1.


Fig. 2.

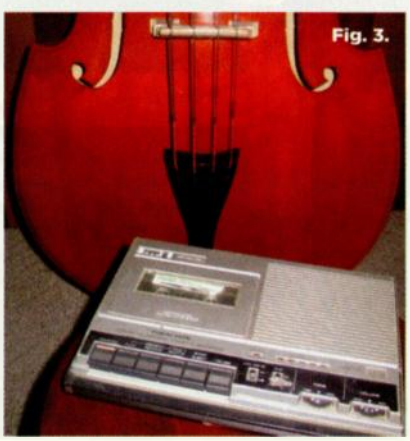


Fig. 3.

DISTORTION

Distortion adds harmonics that didn't exist in the original sound. An obvious way to create distortion is to drive a piece of recording gear at very high levels—well beyond what it can handle. For example, record drums on a cassette recorder with the meters pinning. Or yell into a "bullet"-type harmonica mic so that the mic distorts. In a DAW, use a distortion plug-in such as iZotope Trash (Figure 2; www.izotope.com).

Guitar effects are, of course, great for adding distortion. Run a drum track through a guitar stomp box, or through a broken vintage compressor. Feed a vocal through a Line 6 Amp Farm plug-in, or their POD processor. Also consider recording some instruments on a cheap cassette recorder (Figure 3); the Rolling Stones did that to create the beginning of "Jumping Jack Flash."

NOISE AND MORE

iZotope's free Vinyl plug-in adds record scratches, hum, rumble, and other noises. Another way to have noises in your mix is to record noisy instruments! When the tubes in your tube guitar amp start to go, don't throw them out but keep them in your "Lo-Fi Tools" drawer. Tubes on the verge of death often produce very interesting sounds (as do ripped speakers).

LEAKAGE

If your mixes are too sterile or studio-clean, consider recording some leakage. Leakage (also called bleed or spill) results from picking up an instrument by another instrument's mic, like a guitar mic picking up the drums from across the room. Leakage changes the recorded sound of the drums from tight to muddy. In fact, some virtual drum instruments, like Fxpansion's BFD and ToonTrack's EZ Drummer, allow mixing in leakage within the drum set itself. It's easy to create leakage while recording with mics: Just place them further away from the source than normal, and record all the instruments at once, without any baffling.

ROOM SOUND

In the quest for quality recordings, it's standard practice to treat a studio's acoustics, often to reduce early reflections (echoes that occur less than about 20ms after the direct sound from the instrument being recorded). Those early reflections tell the ear that the instrument was recorded in a small room. Normally we get rid of the reflections and replace them with artificial reverb, but a lo-fi recording often includes the sound of the room as part of the sound of the recorded instrument.

To pick up room reflections, mic farther away than usual from the source and leave the walls uncovered; use the room for its coloration, rather than rejecting the room. For a really spacious effect, consider recording several instruments in stereo with two mics. Pick up instruments or vocals in a hallway, a bathroom, a box, or even outdoors.

LO-FI AESTHETICS

It's common to include hi-fi sounds along with lo-fi sounds in the same mix to make a statement to your listeners: "I can record hi-fi sounds, but I choose not to. The trashy sounds are due to a conscious choice rather than a lack of recording chops." If you have nothing but lo-fi sounds in your mixes, it might sound like you don't know what you're doing. Just remember that the ear delights in complexity; the contrast of clean and dirty sounds, modern and vintage, can add a lot of sonic interest.

(Note: I recommend the album *Mule Variations* by Tom Waits—it's a brilliantly creative lo-fi masterpiece. So is Beck's *Timebomb*. Others are "digital hardcore" genre albums by Ronin, Technology Scum, and Cheap Czad.) EQ

Steinberg's BitCrusher is a "lo-fi" plug-in that allows changing both sample rate and bit resolution.

Digital Lo-Fi Tricks

Lo-fi is not just the province of analog recording; digital technology can create sounds so terrifying that small house pets will flee in terror. Here's how.

Reduce your bits and/or lower your sample rate. Some DAWs offer lo-fi plug-ins that allow dialing in a particular number of bits or changing the sample rate, but if not, export your track and bring it into a digital audio editor. Most of these let you export at various bit resolutions and sample rates, or let you re-sample a file; converting to eight-bit resolution is the quickest way to add noise and hiss.

Abuse data compression algorithms. This again requires exporting a track and processing it in a digital audio editor, but this time, export as an MP3 or Windows Media Audio file with maximum data compression. The highs will get incredibly weird, and the sound will be muffled. Some editors offer algorithms designed specifically for extremely compressed speech; try these on music.

Reduce the level of a track dramatically, then export as a 16-bit file without dithering. By "dramatically," I mean 70–80dB or so. When these low levels turn into 16-bit files, they'll be extremely distorted from the quantization noise that occurs naturally at low levels. The more you lower the signal, the worse the sound.

Use dither as an effect. Try the same technique mentioned above, but this time, add dither to create a blanket of noise. Different dither types have different sounds; experiment to determine which one sounds better . . . I mean, worse.

Sing into a telephone answering machine. This is a little more complicated due to sync issues, but what works is to listen to the tracks on headphones but also send them through speakers. Call your phone number (*e.g.*, call your landline from a cell phone or vice-versa), turn up the speakers before you start singing, then turn them down during the vocals. When you pull the signal off the answering machine, line up the section where you can hear the track with the same section in your DAW; unless your answering machine drifts a lot (unlikely with today's models, which are based on digital technology instead of cassettes) the vocals will stay sufficiently in sync for at least several minutes.

Digital overload. Most DAWs and digital audio editors include DSP for adjusting a track's level. Normalize the signal to reach maximum level, then amplify the level by 200% or so. You may need to do this several times to get an over-the-top distorted sound. Then, roll off the highs to reduce the amount of "spikiness" and round out the sound a bit. Tasty!

—Craig Anderton

THE DISTURBED METHOD

by Michael Molenda

"I think part of our success is because we're not America's favorite band," says Disturbed guitarist Dan Donegan. "We never strive to be part of the in crowd. If you become the flavor of the month, it's only a matter of time before people are over that trend."

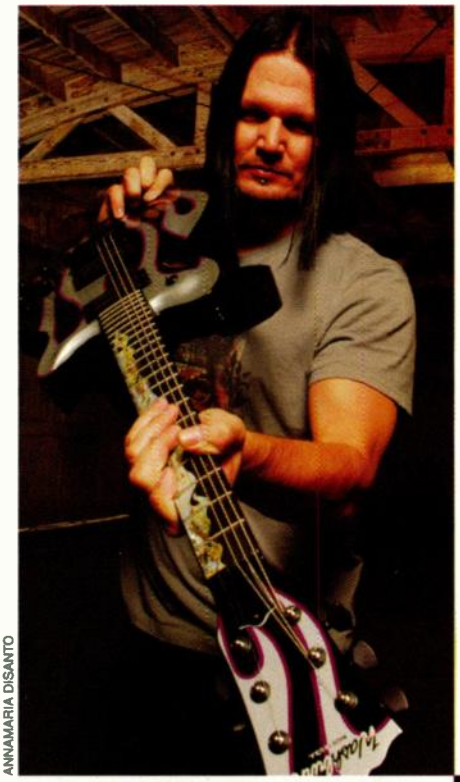
The Chicago-based melodic-metal band has definitely embarked on a slow morphing process throughout *The Sickness*, *Believe*, and *Ten Thousand Fists*, and is now reportedly crafting a denser, darker, and more aggressively textured soundscape for *Indestructible* [Reprise]—which is slated for a May 2008 release. Here, veteran Disturbed engineer Tadpole offers an exclusive insight into recording Donegan's tones for the new record.

What was your basic approach for tracking guitars during the *Indestructible* sessions?

Our main amps were a Bogner Ecstasy and a Randall RM100 with a custom preamp module made expressly for Dan. We also tried a bunch of speaker cabinets. The rest was just mic placement—there was nothing crazy or eccentric. Dan's style is very aggressive and percussive—and he does a lot of palm muting—so a tight, close-mic approach is best for recording him. A really live room and ambient mic positions would diminish the definition of the notes he plays.

As for the miking, I used a blend of several different dynamic microphones. I'd rather not identify them, because they're part of our "secret recipe." Once we found the sweet spot for one mic, we blended in the others, and then we made sure all the sources were in phase.

The reason I like blending so many mics is because one microphone only gives you a certain part of the sound spectrum—a specific color. But when you blend in different mics, you either start filling in the sonic gaps that one microphone may lack, or combine its personality with the other mics to produce a totally different sound. By experimenting with the blend, you can usually find the sonic picture you're seeing in your mind. In addition, you can change the sound of the notes, and, therefore, the perception of the performance. It's very art meets science.



ANNAMARIA DISANTO

Donegan slicing through another meaty guitar texture.

Why all the secrecy about specific mics and positions?

Well, there are a lot of people in the music business who all do the same work, and it's very competitive. It's important that people respect what you can do. So it's nice to hold your cards a little close, and not give away some of the things you've learned or discovered along the way. I think that's probably why some people are a little reluctant to give away their secrets.

Do you have a strategy for keeping all the massive layers of guitars tight and clean?

Layering is a pain. Getting it right does require some editing, but I also record a direct guitar track as a guide to help identify timing issues within the various layers. If something is off, we'll re-record the part to the DI track to ensure it's tight. We like to track things right, and not do much at the editing phase.

Do you process to tape, or wait until the mix?

I'm kind of a believer in getting it to sound like you want it *when* you record it. If that means you have to EQ it or compress it—awesome. I'm not afraid to use any of the available tools. I think limiting yourself with more traditional views such as not printing EQ or effects can cause you to miss out on things that may add interest and impact to the sound. You can do these things later, of course, but doing them as it's all going down can add excitement to the process—as well as help clarify the sound and the performance.

How much does the artist's performance inform your approach to crafting sounds?

I can't stress enough that a lot of the sound is in the player's hands. You can get a great guitar sound, but it's the player who completes the picture. I can make a guitar sound great, but I can't make it *Dan Donegan*. Only Danny can do that. I think some engineers start to lose a little perspective on that fact. As much as the engineering and editing lends itself to the sound—and adds to it and enhances it—it's still about the performer. They're the human element—and *that's* the most important element of the music. EQ

Disturbed (left to right)—Mike Wengren, David Draiman, Donegan, and John Moyer.

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REVIVING THE BOOM FROM A MONO LIVE TRACK

by Michael Molenda

KEVIN JEONG

Patrick Wong churns out the lows during The Trouble With Monkeys gig at San Francisco's Beale Street. Too bad the video camera wasn't buying it.

One of my favorite sayings is, "If you want to make God laugh, tell him your plans." Sound is kind of like that—only more insidious. God is omnipotent and unchanging. Sound messes with you constantly. Just when you think your many years of sculpting audio in the studio and on stage has afforded you a sure, steady, and repeatable facility for controlling signals, you're bedeviled by some ghastly sonic cock-up that butchers your craft and your confidence. And, somewhere, that little imp called "sound" is laughing so hard that it can't draw breath. Nice.

One of these fabulous little challenges occurred recently when my punk-ish power-pop band, The Trouble With Monkeys, was filmed at a San Francisco club. It was just a camcorder recording manned by someone's friend, but it was the only document of the show, and bassist (and *Bass Player* Art Director) Patrick Wong wanted to extract the monaural audio and post it on the band's website. I don't know what brand and model camcorder was used, but its onboard microphone certainly enjoyed screwing with the input signals. As we listened to the extracted audio, the vocals, keyboards, drums, and room sounds were captured quite well. But the guitar was attenuated so much that it was virtually MIA, and the bass was just a ghost. Weird. This meant that the camera "heard" some of the low end (the kick drum and toms were blasting), and some of the mids (as the keyboards and vocals were very audible), but it somehow decided to terminate the guitar and bass at the precise frequency ranges that let them live.

I liked the energy of the performances, so I agreed with Patrick that we should fix up the audio as best as we could. But I didn't want to usurp "on the clock" time at my commercial studio just to be able to pop a CD-R into the car stereo, and get all giddy about hearing the gang and I make noise in a small club. Once again, Apple GarageBand came to the rescue.

SONIC HIDE-AND-SEEK

Upon importing the tracks into GarageBand—via a CD-R made by someone who had transferred the video footage into some unknown software program to extract the audio signal—I used the Multiband Compressor to tighten the overall sound, and hopefully boost any bass content that was swimming low in the mix. I pretty much stayed with the program's presets, only boosting the Post-Gain to 17dB. The live tracks absolutely thickened up, and the vocal balanced nicely with the band sound, but the bass remained elusive—even though the kick drum thumped along with a meaty wallop. It was time for some EQ tweaks.

I launched the 31-band Graphic EQ, and started boosting single bands in the 80Hz–250Hz range—just to get an idea where the majority of the bass lived. Apparently, the instrument had moved to another Zip Code, because the bountiful increase of low end I was expecting never happened. What was up with that camcorder mic? Did Patrick actually *play* the bass, or was he miming?

Somewhat flummoxed, I decided to initiate some "gang tackling," and group my boosts. I boosted 80Hz by 3dB, 100Hz by 6dB, 125Hz by 2dB, and 200Hz by 6dB. Some of the body of the bass line finally started to rise from whatever sonic funk it had been wallowing in. Then, I was able to bring out some of Patrick's attack by boosting 500Hz by 2dB, 630Hz by 3dB, and 1kHz by 6dB.

At this point, the bass was nicely audible, and the band tracks still sounded tight and punchy, but I was missing the exciting wallop and pop that identifies a good live bass sound. The final touch was to launch the Equalizer, and EQ the track *again*—this time, boosting the Bass Gain equally between Neutral and Boost, setting the Mid Frequency to Low and matching the Bass Gain boost, and cutting the Treble Gain by about 50 percent. Finally, a vibrant and badass bass line emerged. All it cost me was a few meters of my intestinal lining, a fat chunk out of my pride, and a couple of incisive EQ tweaks. Never say die!

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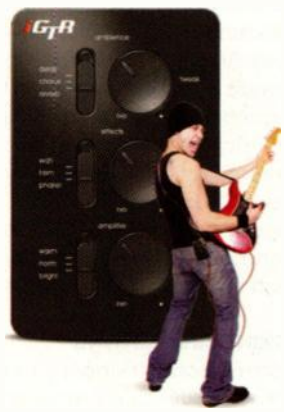

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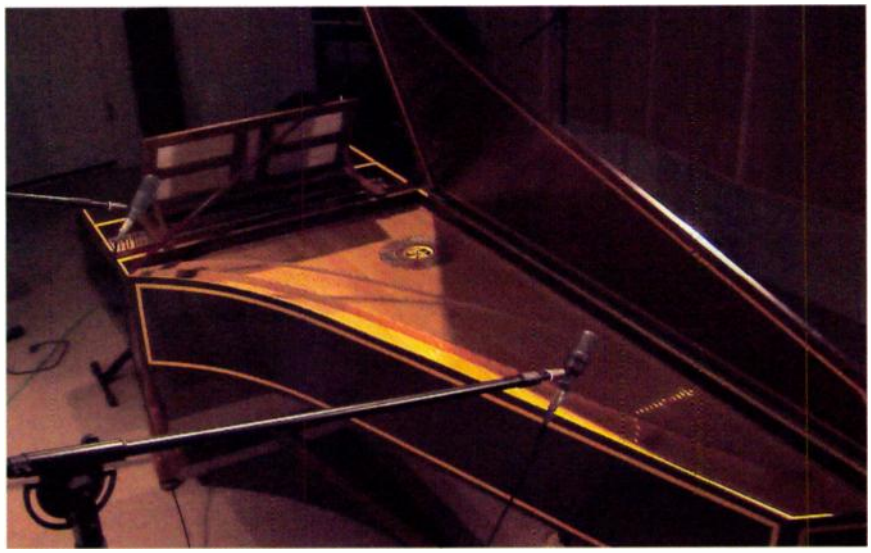
IN SEARCH OF THE LOST (HARPSI) CHORD

by Craig Anderton



Miking the harpsichord with two Gefell M-930 mics.

You've probably figured out that if this had just been a regular harpsichord recording session, it wouldn't have made the pages of *EQ*. But we'll be talking about a very different take on the "classical harpsichord CD," and a lot of what I learned applies to all kinds of music. Such as. . . .

IF YOU WANT TO LOOK GOOD, WORK WITH AN ANTI-DIVA

The harpsichordist, Kathleen McIntosh, has zero attitude, great technique, and is a total workhorse. While a renowned veteran of recording and live performance (she's appeared as a soloist with the Solistas de La Habana in Havana, Chamber Orchestra Kremlin in Moscow, National Symphony Orchestra of Vietnam in Hanoi, Sinfonica de Santiago in Santiago de Cuba, New American Chamber Orchestra in Spain, Camerata de la Casa del Lago in Mexico City . . . and the list goes on), she was open to experimentation to get the best possible sound.

For example, we started the sessions (at Maricam Studio in Santa Fe, NM) using some classic Telefunken mics and completed all the tracks. But then a stereo pair of Microtech Gefell M-930s (personally tuned by the venerable Jochem Kuhnast) became part of Maricam's mic locker, and when we checked them out, there was no question that the high end was better suited to harpsichord. Kathleen was willing to re-record all her tracks—with not one word of complaint. These mics had the side benefit of sounding so "right" I needed EQ later on only to solve some specific problems related to the harpsichord itself.

PERFORMER VS. AUDIENCE PERSPECTIVE

I prefer miking so that the final result sounds like you're the performer playing the instrument, not someone sitting in the audience. Both Kathleen and Pete Sheehey, the producer, were willing to give it a try. So instead of doing traditional miking, I set up one M-930 close to the performer, pointing toward the higher strings. Due to the length of the harpsichord, I was able to set up the second M-930 toward the bass strings end of the instrument, yet have it far enough away from the "treble" M-930 that there were no phase issues when checking in mono.

The resulting sound was very present, recalling the sound of an FM synthesis plucked string algorithm: Metallic, bright, and defined. But I was concerned that it might sound *too* synthetic, so we set up two Dirk Brauner Phantom V room mics to provide a "softer" element (Maricam is designed exclusively for recording classical music; the room sound tends to be warm instead of hard due to having Brazilian rosewood panels). The main mics went through Great River MP-2NV Mercenary Edition preamps, and the room mics through Millennia STT-1 preamps.

TRACKING AND EDITING

Maricam's Scott Irving and I split up the tracking duties. Due to Scott's background with the Los Angeles Philharmonic (and a Masters in music from the Royal Conservatory in Madrid, Spain), he was comfortable tracking by himself, although about half the time we worked on the project together. He tracked with Digidesign's Pro Tools HD3 at 96kHz but when I was tracking, I used MOTU's Digital Performer, again at 96kHz (the studio is Mac-based). Ultimately, though, these DAWs were solely about capturing the sound as cleanly as possible, as I took the audio files back to my studio to edit and mix in Sonar, in large part because of its 64-bit audio engine. Although I remain unconvinced that this matters for most music, with delicate, dynamic acoustic recordings, the 64-bit engine does seem to make a difference.

ARTIFACT PROBLEMS

Harpsichords are noisy instruments, what with string releases and such. But the body of Kathleen's harpsichord has a wicked resonance at around 50Hz, and because of the close-miking, the main mics dutifully picked it up as a booming, distracting "bump." Ultimately, I found that the only solution was to "master" each track individually prior to mixing; I used Har-Bal to zero in on these phantom artifacts, and cut them out. As this was mostly below the "real" range of the harpsichord, I could cut pretty drastically without affecting the tone. Furthermore,

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Ryan Hewitt
(Engineer/Mixer: Red Hot Chili Peppers, blink-182, Alkaline Trio)

IN SEARCH OF THE LOST (HARPSI) CHORD

Har-Bal's filtering engine has been tweaked a lot in recent versions, so it had no negative effects on the sound. In a way, this process was like cutting out subsonics from other sources; it's just that the harpsichord's resonance was a little higher than I would have liked, which made the choice of cut frequencies crucial—the cutoffs were *extremely* steep.

EDITING

The DAW editing process was a bit unusual, as the main focus wasn't fixing mistakes—Kathleen has prodigious, unerring technique, so she'd only do three or so takes. However, the project was based around pieces by Antonio Soler, an 18th century Spanish priest/musician whose pieces recall Domenico Scarlatti but are devilishly difficult and in many places, whimsical. Kathleen loves the pieces, and plays them with a lot of dynamics and feeling; as a result, although different takes could be technically identical, they would often have slightly different "feels" in some sections. I found it almost impossible to choose which individual take was the "best," so I asked Kathleen if she'd be willing to give up creative control of the editing, and let me just pick which parts I liked best from the various takes and put them together. She agreed, which resulted in the unusual situation of my often replacing a perfectly-played part with another perfectly-played part just because I liked some little millisecond timing difference, or some other element of the "feel." Generally, these were broad strokes (*e.g.*, replacing the first half of one take with the first half of a different take) in order to maintain a good "flow" to the pieces.

I also encouraged Kathleen to "annotate" her performances by speaking into the mic between takes (*e.g.*, "I really liked the second half on that one"). It was better than taking notes, because her comments were right there on the track. However, I didn't always agree with her assessments of her playing, so although I trust my artistic judgment I didn't know if Kathleen would agree. Therefore after editing, I would send her "performance checks" in MP3 format to make sure she was okay with my decisions. Aside from a few small tweaks, she was fine with the edits—which also emphasizes just how helpful it can be for an artist to work with someone who offers a fresh perspective. I then sent a CD with all the tweaked performances to Pete, who signed off on them as well.

Another interesting element was that Kathleen wondered about the possibility of using DAW editing techniques to reduce the level on a few of the release sounds. I suppose that would be heresy in some classical recordings, but she identified spots where the music was very soft, and thought the release sounds had a negative effect on the mood. With traditional room miking this probably wouldn't have been an issue, but the close- miking brought up the sounds of the release to a louder level than they appeared to be if you were just sitting in the room and listening. So I isolated the release sounds in a few strategic places and brought them down around 4–6dB, which paradoxically, made the harpsichord sound *more* like "the real thing" that you'd hear in the room.

ALL MIXED UP

Using the four mics gave a lot of mixing options. Panning the "bass" mic to the 10 o'clock position and the "treble" mic to the 2 o'clock position gave a nice psycho-acoustic sense of placement; you could almost "see" the harpsichord in front of you. The room mics were panned far left and far right—something I almost never do (I usually pull back a bit from the extremes). But in this case, I could bring up the room mic levels to just where there was a bit of a soft, "pillowy" component to the sound that contrasted well with the ultra-present main mics.

Kathleen wanted an intimate sound rather than a big concert hall effect; I suggested an ambience as if you were in a small chapel, with about 30 people in the room, and that struck her as the best approach. To get some of the hardness of stone walls into the sound, I used a Waves convolution reverb to add just a bit of ambience, but only to the room mics—not the main mics—and panned it to center. This created an ideal soundstage: Harpsichord front and center sitting in a cushiony room sound, and reflecting off the "virtual walls," a bit of a harder sound to fill in the center "hole" and give more depth.

Basically, I was doing rock miking techniques in a classical context, so I was a bit concerned that it might not sit well with Kathleen and Pete. So, I did two test mixes: One with a full-on, in-your-face, performer

orientation, along with a more traditional classical mix with lots of room and a somewhat more genteel sound. I actually thought it was a very good mix in the classical style, and fully expected Kathleen and Pete to choose it. Yet they had absolutely no interest in the "traditional" sound; both vastly preferred the more present sound. Kathleen said it sounded just like what it sounded like to her as she played, which I later found out was a sound she'd always wanted to hear from a harpsichord recording, but never had. Pete was even more emphatic: When I put on the "traditional" mix, he just said "no way!"

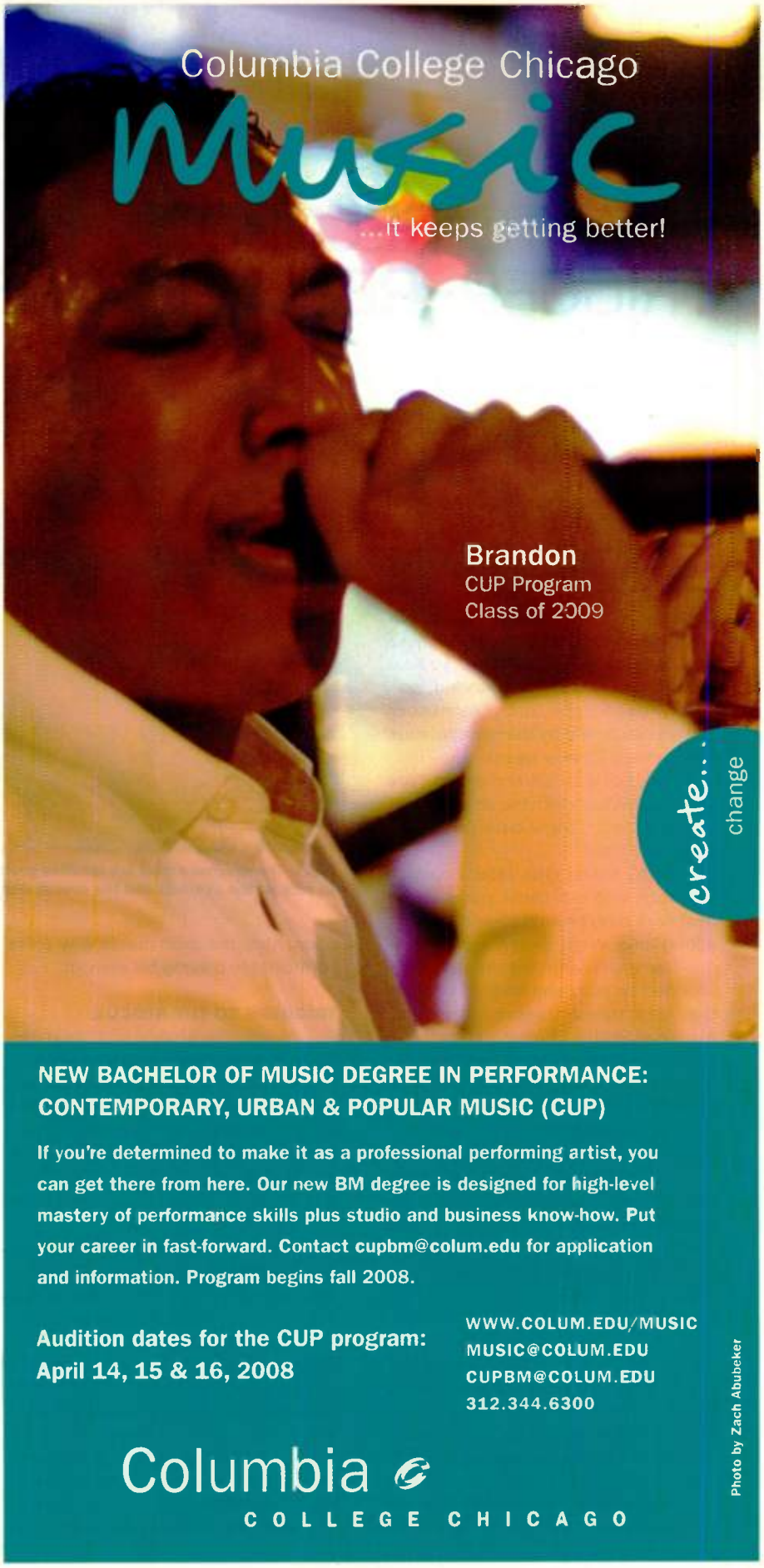
MASTERING

With the individual tracks having already been "mastered," and with the mix doing most of the heavy lifting, mastering was really a question of picking the right order for the 11 sonatas she chose, and doing a few EQ tweaks. In addition to the 50Hz peak mentioned earlier, there was another very strong resonance in the 200Hz range. Although this contributes much of her harpsichord's "character," it was emphasized a bit too much due to the close-miking. I again used Har-Bal to bring this down just a couple dB, retaining the character yet making sure it didn't overshadow the rest of the sound.

The other tweak that surprised me because it worked so well was reducing everything above 15kHz or so. We all wanted a sound that was inherently contradictory: Something brash and present, yet with a smooth, honeyed tone. After experimenting for a bit, I found that cutting off the really high frequencies provided exactly the sound we wanted. I thought about it for a bit, and realized why: The close-miking was picking up all the highs what would normally be lost in a room, if you were sitting back some distance from the harpsichord and there were people soaking up the highs. While part of me chafed at the idea of deliberately cutting the highs, it gave the right sound.

MISSION ACCOMPLISHED

A lot of these concepts apply equally well to recording any solo artist. In fact, I plan to incorporate some of those techniques in two upcoming projects at Maricam, including a project with Kathleen and flautist Eugenia Zuckerman. But flute is a whole other story! EQ



HOW TO RECORD TRIGGER-READY DRUMS

by Jeff Anderson

A new band called Seed started cutting rhythm tracks for their first major record at Sound Logic, my studio in Indiana. As the future mixing engineer, I thought I'd stop in during a tracking session to see how things were going. There was a huge Tama drum set miked up in the studio, and the tracking engineer was Scott Rottler—who is known for tuning a kit and getting stellar drum tones within a very short time. I was excited to hear how the drum tracks sounded, so I eagerly opened the control room door, and was assaulted by the most hideous, boxy sounds I'd ever heard.

I took Scott aside, and asked, "Are you okay? What's with the drum tones?"

He replied, "Come back in an hour or so. You'll see."

Exactly 60 minutes later, I opened the door, and out came some of the best-sounding drum tracks I'd heard in a long time. What gives?

"The main reason the drums initially sounded so boxy and harsh is because they were tuned to serve as triggers," explained Rottler. "I always intended to replace the original sounds with samples."

Of course, that answer only made me wonder why Rottler didn't just use traditional drum-trigger pads, rather than acoustic drums tuned to sound awful.

"I want to capture the full sound of the drum kit," he said, "because I rely on the room mics to add the gloss and polish, and the triggered samples to contribute the velocity and tone of the individual sounds. So the drums that are going to be triggered need to be in tune when they're picked up through the overheads and room mics (see Figure 1). I'm using a beautiful-sounding AKG C12 in front of the kit, and a Neumann U47 behind the kit to pick up all of the room tones. By working this way, I don't have to deal with the overhead and room mics picking up the tick-tick sounds of the drummer hitting trigger pads. Also, the drummer is way more comfortable playing his own kit."

Fig. 1. The overhead mics are handled pretty traditionally to pick up the cymbals and the overall drum sound.

TRIGGERS TO THE RESCUE

Relying solely on a miked acoustic kit can be a challenge. For example, Seed performs quite a few metal songs, and many speed-metal players aren't consistent enough with the way they hit the drums—especially when they're using two kick drums. Triggering drum samples offers a relatively easy solution to some common drum-attack problems.

"It's just not possible to get the same tone and timbre out of each kick drum—especially in certain blast beats, where the drummer is playing two kick drums very fast for a section of the song," says Rottler. "Even if the kick drums are the same model, with the same heads, and both kicks are tuned the same way, it will be very hard for the drummer to apply an equal amount of pressure to each drum—which is the only way to get a consistent tone. It's the same for fast tom rolls. It's nearly impossible for a drummer to always hit each tom with equal power, and, as a result, the drums can sound weak."

TRIGGER PREP

Rottler's preparation begins with tuning the drums in order to get perfect samples for triggering later on. He does this half by ear by hitting notes on a piano positioned next to the drum kit, and half with a dynamic mic plugged into a guitar tuner.

"We're going after great drum sounds for the sampling session," he says, "so I mic the kit as I normally would, using Sennheiser E604s, E609s, and an AKG C 414 for the tom mics, AKG D 112s for the kick drums, and an AKG C 451 on the bottom of the snare with an E604 on the top. Then, we spent quite a bit of time having the drummer hit individual drums. When the source samples were completed, I adjusted everything to capture drum sounds that would be more conducive for triggering. I lowered the mics so that they were about a finger's width

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DRUM HEADS

HOW TO RECORD TRIGGER-READY DRUMS

Fig. 2. Note the extreme close-miking on the toms, as well as the liberal amounts of Moon Gel.

away from the heads on all of the toms, and I used Moon Gel to deaden the heads as much as possible (see Figure 2). You could still hear the pitch of the toms, but after finding the right positioning of the Moon Gel, I didn't have to worry about any resonance from the toms being picked up in the overheads and room mics. To further diminish signal bleed, I boosted 4kHz by about 6dB on the toms, and rolled everything off below 400Hz. I didn't really care what the drums sounded like while recording, because I knew the drum samples were going to sound great once they were triggered with Digidesign's SoundReplacer."

To deaden the kick drums, Rottler relied on a very common item found in today's recording studio—a pillow (see Figure 3).

"We packed both kicks full of pillows, and put the mic inside the shell, right on the back heads, and maybe two fingers off the beater," says Rottler. "The kicks sounded very boxy, but all I cared about

Fig. 3. Note the relationship between the mics and the kick drum heads.

was getting the attack from the beater. Initially, I had the front heads taken off the kick drums, but the drummer said his pedals weren't reacting the same, so we put them back on. Then, I then built an 'acoustic shell' using Auralex LENRDS bass traps that surrounded the front of the kicks to stop any sounds from bleeding into the room mics. I also rolled off everything below 200Hz in the overhead mics."

UP WITH SAMPLES

There are tremendous advantages to recording drums tweaked for triggering, but let's admit to one failing: The band has to listen to drums that sound "bad" throughout the tracking process.

"I'm very happy that Seed trusted me to try this," admits Rottler. "Even though we tried listening back primarily to the room mics, we still had to turn up the bad-sounding trigger tracks in order to hear everything that was going on. The band members had to sit through two days of listening to floppy kicks and dead-ass toms before I got all of the triggered samples in place."

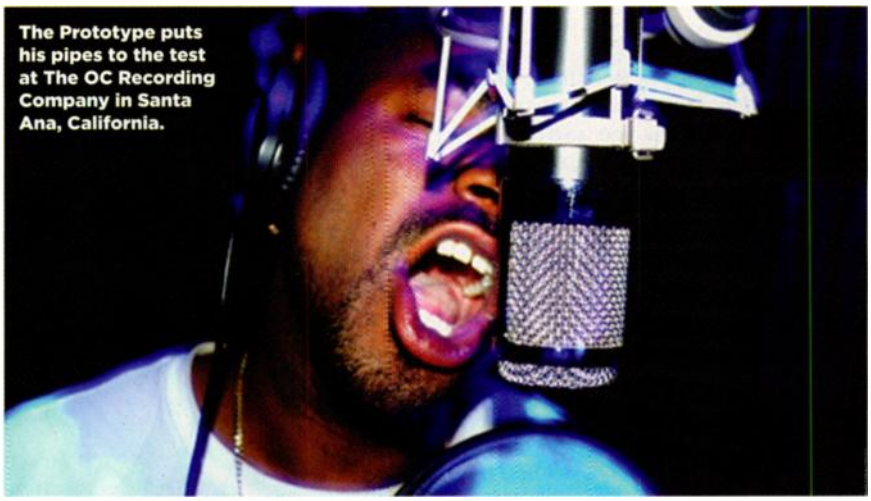
And, as the drum samples were edited and snapped to a rhythm grid, the bliss of triggered drum samples was extremely apparent. For one thing, drummers can't complain about the drum sound, because the source samples are constructed from their very own drums. However, if you want to change the pitch of the drums to better match the key of the song, it's easy to use a plug-in such as SoundToys Pitch Doctor to "tune" the drums to a major third, fourth, or fifth. In addition, punching in is way easier, because the drummer doesn't have to worry about matching the precise timbres of the already recorded tracks.

"We punched in a lot during the drum sessions, and there's no way I could have been able to get the drummer hitting the kick drums and toms with a perfect, repeatable attack all day long," says Rottler. "By not having to worry about the tones, the drummer was free to concentrate solely on the performance of his punches and overdubs, and that definitely made the punch-in process less stressful for him."

To hear the recordings discussed in this article, visit Seed's MySpace page at www.myspace.com/seedfinklestein.

8 WAYS TO HELP A SINGER NAIL IT!

by Michael Molenda



The Prototype puts his pipes to the test at The OC Recording Company in Santa Ana, California.

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One of the most tenuous and frightening "strategic opps" in the studio is coaxing a show-stopping, ear-bending performance from a vocalist. So much is at stake, and so much can go wrong. You can't depend on the other elements of the production to save your ass, either, because a brilliant guitar solo—or a fabulous snare sound, or a mammoth kick drum—won't lift a track into the charts (or blast it on the radio, or seduce downloads) if the vocal sucks. As Bill Murray bellowed in *Stripes*, "That's a fact, Jack!"

Of course, DAWs let you cut, paste, re-pitch, and otherwise wrangle a vocal recording, so you're never truly down for the count. But we're not exploring technological leapfrogging, here. We're talking about capturing all the spine-tingling emotion, phrasing, articulation, power, and timbre right from the source. And, trust me, you're definitely summersaulting on a pin without a net when you face the intricacies of extracting glory from the human voice. Here are a few survival tips.

FOLLOW THE LEADER

A common challenge is when a singer swoops in-between pitches. It can get more confusing if you ask the artist, "Did you mean to sing this note, or *that* note?" Creative whimsy may cause them to rethink the melody and juggle options—which means you may be chasing that line for a while. Consider establishing the final melody line in pre-production, and then laying down a guide track by playing the notes on a piano. When there's a clear reference, there's no room for uncertainty or debate (unless the artist hits a surprise note that's absolutely transcendent—in which case, don't be a slave to the guide), and the singer should be more relaxed and confident. Some producers record guide tracks with another singer, but I prefer using a simple piano track, because I don't want the real vocalist to be influenced by the guide singer's approach.

READING IS GOOD FOR YOU

Many singers are so seduced by the sound of their voice that they don't consider the meaning or inherent musicality of the lyrics. I somewhat unfairly call this the "American Idol Syndrome," because the hit reality show sometimes prompts less-experienced singers to regard a killer vocal as all ornamentation and bombast. Even singers who should know better can fall victim to the "lyric ignorant" approach. Direct your vocalist to read the lyrics several times, because the words offer excellent clues to phrasing, appropriate intensity levels, dynamics, and the critically important art of acting out and conveying a story line (or an emotional landscape) to the listener.

DRY OUT

Reverb is very sexy, but if there's too much of it in the headphone mix, it can mess with a singer's intonation and phrasing. I never put reverb or delay in the cans.

AND YOU CAN GET AWAY WITH THAT, IF . . .

. . . the headphone mix is thrilling and exciting. The closer it sounds to a final mix, the more inspired the singer will be. They might not even notice you've terminated the vocal reverb.

HELP!

Extremely distorted or heavily effected guitars (or keyboards) can make it difficult to find a comfy pitch reference. Turn them down, and/or add a precisely tuned, unaffected guitar to the mix that exists solely for the vocal sessions.

CAN THE CANS

If a singer hates wearing headphones, and is delivering a lackluster vocal—toss 'em. Let them sing in front of the monitors. Very slick engineers put the monitors out of phase so the tracks don't sneak into the vocal mic, but I just position the singer where the signal leakage is minimal. A great performance is way more important than a bit of bleed.

BE A COMPLETIST

Rather than track separate parts, have the singer uncork complete "live" takes so he or she can really lean into the performance with intensity. A great vocal tells a story, and it's tough to nail the narrative if you're focusing only on singing choruses or specific verses. You can comp parts and fix boo-boos later on. It works for Bono.

HAVE MERCY

Don't beat the life out of the vocal and the vocalist. Many singers get no better after three or four takes. If it's not happening—stop. Discuss the rough spots, have the singer go off and refine his or her approach, and schedule another vocal session. Take full advantage of the fact there's no "clock" in the home studio. Perceived deadlines will kill you if you're just concerned with getting something done. The only goal that matters is capturing a transcendent performance. EQ

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THE SECRETS OF HOME TAPE BAKING

by Jonathan Stars

About four years ago, I pulled one of my 20-year-old reel-to-reel tapes off the shelf to do a remix. As it played, I was surprised at the loss of high end, which got noticeably worse during the course of the three-minute song. I cleaned the heads, and was shocked to find the cotton swab covered in what looked like pepper (see Figure 1). Scared s**tless of ruining the only documentation I had of these ancient sessions, I decided to do what any reasonable remixer would do: Take an 8-input interface, and transfer the eight tracks from my tape into the computer in one pass. But as I started the transfers, it seemed I could only play about one minute of any song before I had to stop and clean the tape heads. Otherwise, I could actually see the onscreen waveform grow weaker.

It wasn't too hard to take the one-minute slices of audio, and combine them back into a whole song, but it was tedious. If you don't match up the waveforms just right, you risk getting a click where the audio pieces connect. And a 20-minute tape requires 20 head cleanings. With hundreds of tapes, just the thought of it made me want to take a nap. But what else could I do?

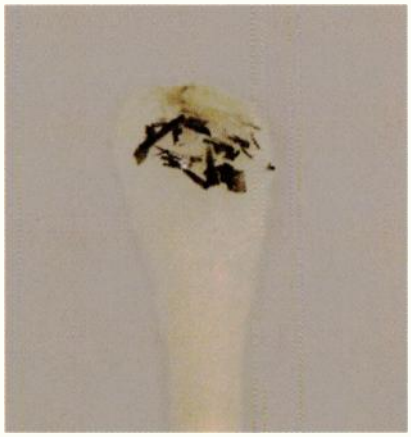

Fig. 1: Tape sheddings on the end of a Q-tip.

A QUICK EXPERIMENT

I knew about tape baking from an article I read about a convection oven method used by the engineers at Ampex, but I certainly couldn't afford to rent time on one of those babies—let alone buy one. I also read about a method using a plate warmer—something apparently used in high-class European households—but, then again, those units are a bit expensive.

Fortunately, a friend told me about a food dehydrator he had been using to bake his tapes. I had my doubts, but I was willing to give it a try. Following his instructions, I put the tapes on the shelves of the dehydrator, set the machine to 120–135 degrees for two hours, and made sure to turn the tapes every half hour. Afterwards, I let them cool for two hours before playing them.

As I was skeptical about this process, I conducted this experiment with some tapes I didn't care much about. Before baking, I verified that the tape stuck to the heads of my machine, and that the audio sounded terrible within the course of a few minutes. After the four-hour-long process, I slapped it back on the machine. It sounded great! Not only that, but after playing the tape throughout the entire reel, the heads were still clean.

WHAT'S GOING ON?

It's called sticky shed syndrome. Your tapes are made of iron oxide, and a backing. The iron oxide is mixed with glue that makes it stick to the backing. It turns out that, over time, the glue absorbs moisture and gets gooey.

There are many variations of how this might affect your precious tapes. I had nearly every symptom there is. Some tapes turned gummy, and I could see shiny, sticky patches on the surface. As

Fig. 2: The Nesco American Harvest Snackmaster Pro FD-50 Food Dehydrator. Note the adjustable black wheel.

For more on The Secrets of Home Tape Baking, go to www.eqtv.com. EQTV.com

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THE SECRETS OF HOME TAPE BAKING

the tapes ran, I could hear snapping and popping as the gooey stuff would release from layer to layer. Other tapes would fast-forward or rewind at such insane speeds, I thought my machine was broken. With other tapes, I could hear a high-pitched screech as the tapes went across the heads. The worst symptom was when bits of the tape got stuck to the heads (and anything else the tape touched along the path between the reels), and literally peeled off—sometimes, in little flakes, and, sometimes, in string-like shavings up to an inch long.

WHAT YOU NEED

The machine I recommend is the Nesco American Harvest Snackmaster Pro FD-50 Food Dehydrator. It costs $80, and can be ordered from www.nesco.com. There are also lots of used ones on eBay, if you want to take that route. Because the sellers use slightly different names, you need to know that it's 220 volts and 500 watts. It should have four trays, and an adjustable thermostat—which consists of a black wheel near the bottom of the unit that goes from 90 to 145 degrees (see Figure 2).

> Watch out for tapes with splices. They tend to break, and heating makes it worse.

American Harvest also sells a 1000-watt unit, and you might think you can process more tapes that way, but I have some concern about the magnetic field a larger motor might produce. As it is, I don't use the bottom tray—just in case the motor might affect my tape. The Snackmaster is expandable to 12 trays, but I'm not convinced the same amount of heat can process a larger number of tapes.

Seven-inch reels will not fit in these machines, but you can customize the units to suit your needs. In the center of each plastic tray is a crown-shaped piece that sticks up to support the trays above. You can use some wire cutters to snip it out. I used a rotary tool, and got very nice results. Then, I filed down

the edges. It leaves behind some plastic dust, which you should vacuum off the tray. Even then, you might work the surface over with some adhesive tape, as static electricity could hold some of the flakes behind.

RULES TO LIVE BY

• Don't run the machine with the translucent fruit roll sheet inside. You want the warm air to circulate.

• Any time you move the dehydrator, check the thermostat, because the knob rotates pretty easily. You don't want to melt your musical babies.

• Don't try to use your kitchen oven for this job. The thermostats aren't that accurate, and they don't move the air around enough to evenly heat the tapes.

• Don't bake acetate tapes. Trust me.

• Watch out for tapes with splices. Old splices have a tendency to break any way, but the heating seems to make it worse. Just keep your eye on them when you play and rewind.

• Clean your heads often.

• Rotate the trays and tapes. The lower trays get a little warmer than the upper ones. So every half hour, move the top tray to the bottom, and the bottom tray moves up one. Flip the tapes over, and even turn the reels so that the part that is near the center of the tray moves about a quarter turn away from the center.

DETAILS, DETAILS . . .

True restoration experts may recommend that you slow wind the tapes onto metal reels before baking. I didn't do that because I was worried about causing further destruction to the tapes. All I can say is I've baked more than 300 tapes—most of them on plastic reels—and I continue to be thrilled with the results. (If you have tapes stored tails out, it's not necessary to rewind them before transfer. In the digital domain, you can play the tapes backward, and reverse the audio once it's in the computer.)

I let the tapes cool by laying them on top of empty plastic yogurt cups. It seems to me that as they cool, the moisture and temperature should have a chance to completely escape. Although all my tapes have been 1/4" and 1/2", you can make the machine work with wider tape. You'll have to make one of the trays into a spacer by cutting the webbing away from the outer ring. (American Harvest also sells a Convert-A-Tray that lets you take the web out.) Then, you put the tape on the tray below, and use your new spacer to support the next tray up or the lid of the machine. When working with wider tape, I would suggest increasing the heating and drying times. Try adding an hour for 1" tapes and two hours for 2" tapes. If the tape still has problems playing, try baking it a second time.

So now that you know the cheap-and-easy story, you don't have any more excuses for not getting started on your transfer project right away. And you can offer your tape restoration services to others, as well. Just don't tell them how inexpensive the "special equipment" is. We'll keep that secret between us.

CHEAT SHEET

PROPELLERHEAD REASON 4

by Craig Anderton

Cheat Sheet delivers concise, explicit information on how to do specific recording/audio-related tasks. This installment describes cool features and techniques involving Reason 4.

BETTER SAMPLE PLAYBACK

Some people erroneously believe that Reason's sound quality doesn't equal dedicated hardware—they probably have the "low bandwidth" option enabled in SubTractor or the NN19 (a holdover from the days when computers had much less power), didn't check "High Quality Interpolation" in the NN-XT, or didn't select "Use High Resolution Samples" under Edit > Preferences > General. If checked, 24-bit samples loaded into the NN19, NN-XT, or ReDrum play back with 24-bit resolution; otherwise, they play back with 16-bit resolution.

COMPRESSOR SIDECHAINING

While DAWs are just starting to implement sidechaining, Reason's MClass Compressor already includes sidechaining—hit Tab to flip the rack around to reveal Sidechain In jacks for the left and right channels. Bonus: The compressor's Gain Reduction signal is available as a control voltage.

BETTER MIXER EQ

On the back of the ReMix mixer, a switch in the lower left chooses between "Compatible EQ" and "Improved EQ." Use Compatible for projects created in older versions of Reason; for new projects, use Improved. The CPU hit isn't much, and the quality is better.

MIDI-TO-CV CONVERTER

The RPG-8 can serve as a MIDI-to-CV converter when the Arpeggiator is set to Off. For example, make the RPG-8's track active in the Sequencer, and send the RPG-8 Gate and CV outs to a SubTractor synthesizer. But instead of routing the RPG-8 Mod Wheel out to the SubTractor's Mod Wheel in (the default), you can send it to Pitch, Filter 2 Freq, or Amp Level, which do not have corresponding amount controls in SubTractor's Mod wheel section.

COMPLEX LFO PATTERNS

Reason can produce sample-and-hold control effects, as well as more randomized modulation, by feeding multiple LFO outputs into a Spider CV Merger, then sending the Merged output to the parameter you want to control. For example, for a synced sample-and-hold filter effect, use square LFO waveforms (try setting sync on one to 1/4 and the other to 1/8T) and send the merged output to something like Thor's Filter 1 Freq input.

REASON'S BONUS EQUALIZER

In addition to the MClass equalizer, PEQ-2 parametric EQ, and ReMix channel EQs, the BV512 vocoder has an equalizer mode with up to 32 bands—select Equalizer instead of Vocoder with the switch to the left of the display. You can even do primitive "room tuning" with this if you insert the vocoder as the last processor in the signal chain.

EFFECT MONO/STEREO IN/OUT

Some of Reason's effects sum the inputs to mono before creating a stereo output, some are stereo in/stereo out, some do mono in/stereo out but not mono in/mono out, etc. To see how a particular effect handles signal flow, Tab to the back of the rack, and check the small graphics toward the left side of a device. For an explanation of what the graphics mean, go to page 334 of the PDF Operation Manual (located in the documentation folder).

MORE HEADROOM

The MClass Equalizer has a low cut switch that reduces response below 30Hz at 12dB/octave. Insert this at the output to remove any subsonics. Patching this before a compressor will also allow the compressor to work more efficiently, as its control mechanism won't be influenced by subsonic signals.

BETTER DISTORTION (AND OVERALL SOUND)

Reason will run at 96kHz (go Preferences > Audio > and choose the desired sample rate from the drop-down menu). Don't think 96kHz makes a difference? Choose a really distorted patch in Scream, and you'll hear a definite smoothness in the high frequencies that you just don't get at 44.1kHz.

THE TRUTH ABOUT CLIPPING

Reason uses 32-bit floating point math for internal calculations, yielding virtually unlimited dynamic range. As a result, clipping that occurs within Reason itself (*e.g.*, an effect meter goes "in the red") won't produce audible distortion. However, clipping at the hardware interface will. It's a good idea to leave the Hardware Device unfolded, and check the Audio Output meters from time to time to make sure they're not distorting.

IF YOU DON'T LIKE PATCH CABLES . . .

Type "L" (not Ctrl-L or Command-L, as erroneously stated in the Operation Manual) to show/hide the patch cords on the back. Jacks that are in use have a colored "hole" with the same color as the patch cord that normally connects to it, and you can see where it connects by placing the cursor over the jack—a "tooltip" style of text appears, describing the connection.

MORE EFFECTIVE VOCODING

You'll get the most noticeable vocoding effects if the carrier sound you use has lots of harmonics (*e.g.*, a synth sound with an open filter and sawtooth waves). Not enough harmonics? Patch a Scream4 between the carrier source and the vocoder carrier input.

COPY RIGHT

To copy a Reason device quickly, Ctrl-click (Windows) or Option-click (Mac) on a device's "rack ears" and drag it into an empty space in the rack.

THE MIDI GUITAR CONNECTION

Reason makes a great sound module for MIDI guitar because it's easy to load up six devices, put the MIDI guitar in mono mode (separate MIDI output for each string over its own channel), and assign each device to a string.

MIDI IMPLEMENTATION

There's some confusion about how to control Reason parameters via MIDI, as it's possible to use custom control mappings. But for most applications, especially when rewiring into a host, it's best to use the default MIDI controller numbers for the various parameters. A comprehensive MIDI implementation chart is located in the Documentation folder (in the Reason directory). EQ

Axel, BEHRINGER Germany Systems Engineer, was the proud father of the ground-breaking XENYX mic preamp.

Thomas, BEHRINGER Germany Technical Director drove the technology of the 2442FX to the limits of physics and then half a kilometer beyond.

Thomas, BEHRINGER Germany Software Engineer, steered the USB interface and ASIO drivers for the 2442FX.

Shou Long helps assemble the XENYX 2442FX at BEHRINGER City, our highly advanced manufacturing complex. He may very well have built a 2442FX 4U!

Bing, one of our R&D Assistant Test Engineers, helped make sure that the prototype 2442FX complied with all internationally-recognized safety and RF emissions standards.

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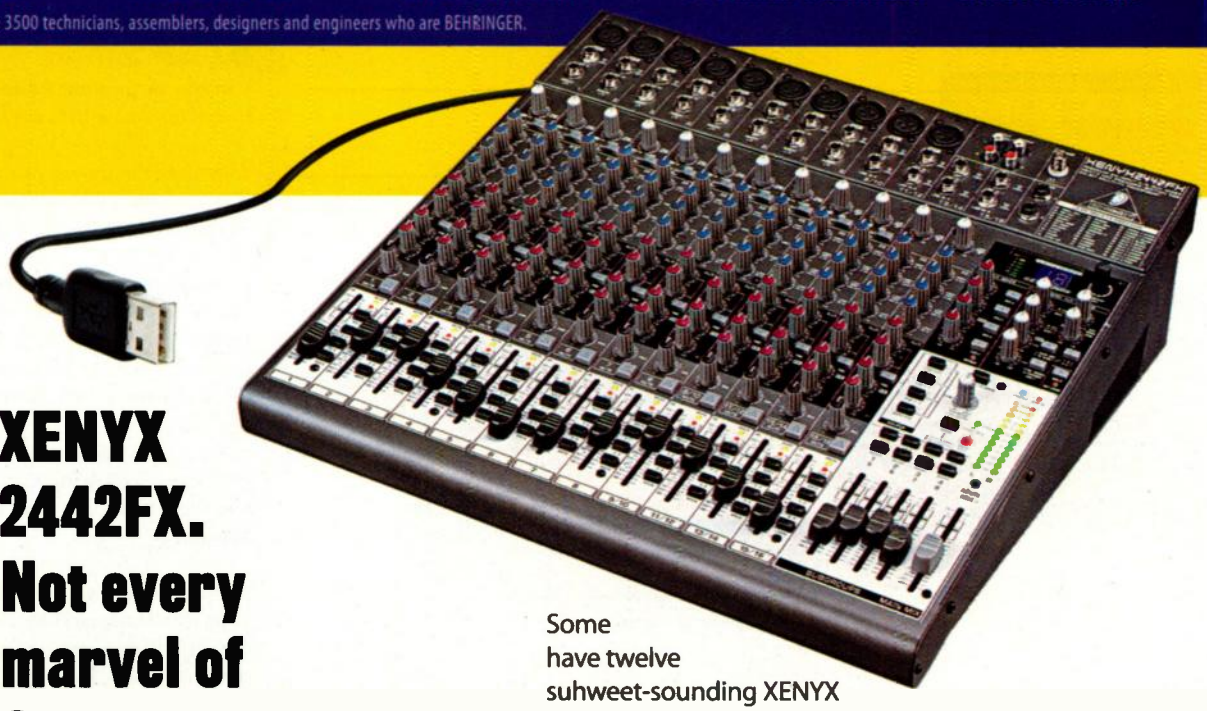

XENYX 2442FX. Not every marvel of German engineering has four wheels.

Some have twelve suhweet-sounding XENYX mic preamps, four buses and an outboard 2-in/2-out USB interface. But the Thomas's, Alex and the rest of the BEHRINGER Germany development team didn't stop there. They included four bands of mellow "British" EQ on each channel. And, so you don't have to spend more bucks on plug-ins or outboard processors, they added 100 24-bit effects including reverbs, delays, phasing and flanging.

Uli Behringer (center) isn't an easy person to please.

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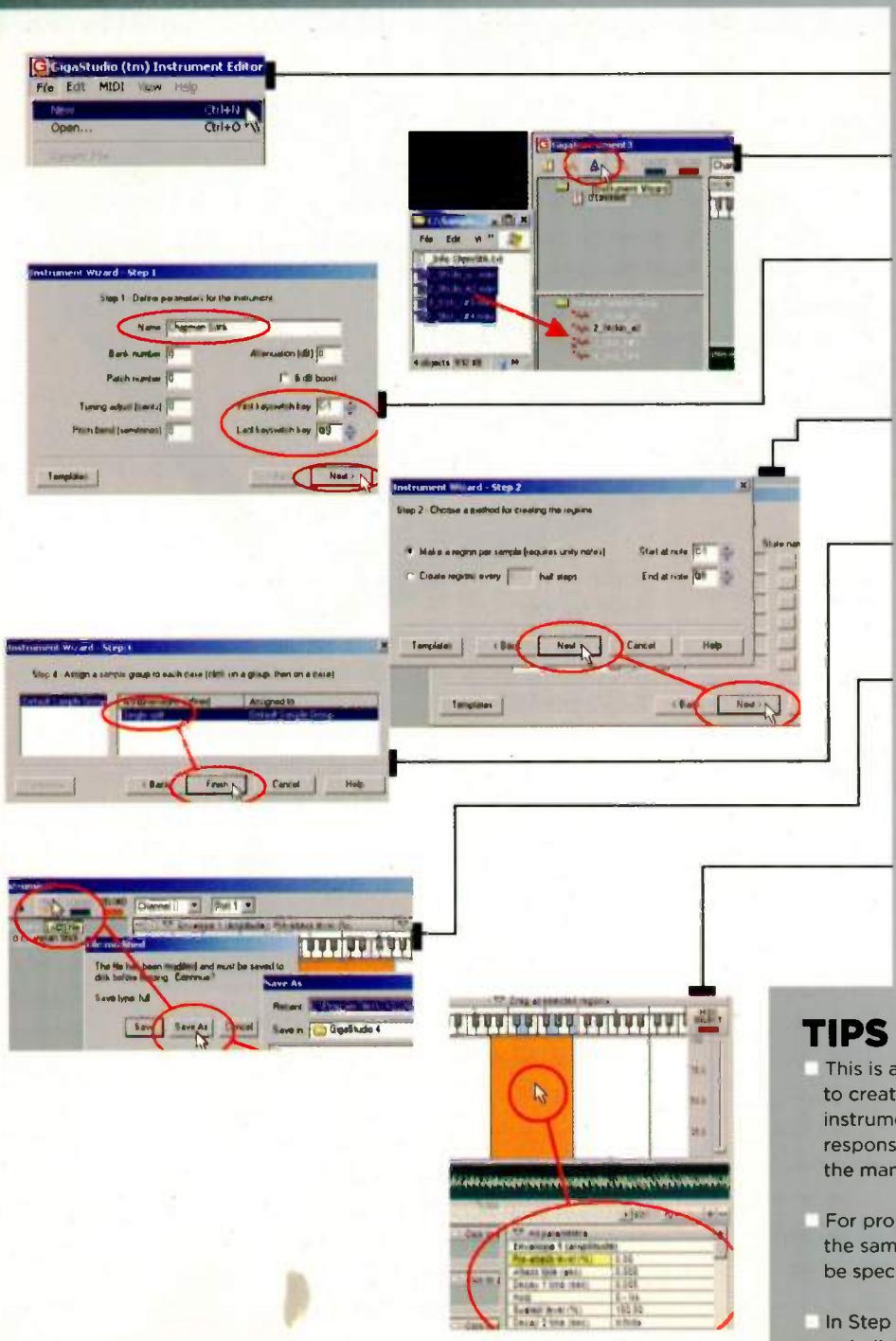
BY CRAIG ANDERTON

TASCAM GIGASTUDIO 4

Create your own GigaStudio instruments

OBJECTIVE: Use GigaStudio's instrument editor to make a GigaStudio-compatible instrument.

BACKGROUND: Although GigaStudio 4 is well-supported by sample libraries, you can also create your own instruments from your own samples using GigaStudio Editor, an additional program included with GigaStudio 4. This example shows how to make an *extremely* basic instrument based on four Chapman Stick samples. Begin by calling up the GigaStudio Editor by going Start > Programs > TASCAM > GigaStudio 4 > GigaStudio Editor.



STEPS

1. In the Instrument Editor, go File > New to call up a new instrument window.

2. Drag the samples you want to use into the Samples window, then click on the Instrument Wizard.

3. The first Instrument Wizard screen appears. Name the instrument, set the First Keyswitch Key to C-1 and the Last Keyswitch Key to G9 in order to cover the full keyboard range, then click on Next.

4. As we are making a very simple instrument, click on Next for the Step 2 and Step 3 screens (this accepts the defaults).

5. In the Step 4 screen, click on Single Split (this assigns it to the Default Sample Group, which contains the samples we dragged over), then click on Finish.

6. Click on the Load File button, and a screen appears prompting you to save the instrument. Click on Save As, then in the window that appears, name the instrument, navigate to where you want to save it, then click on Save.

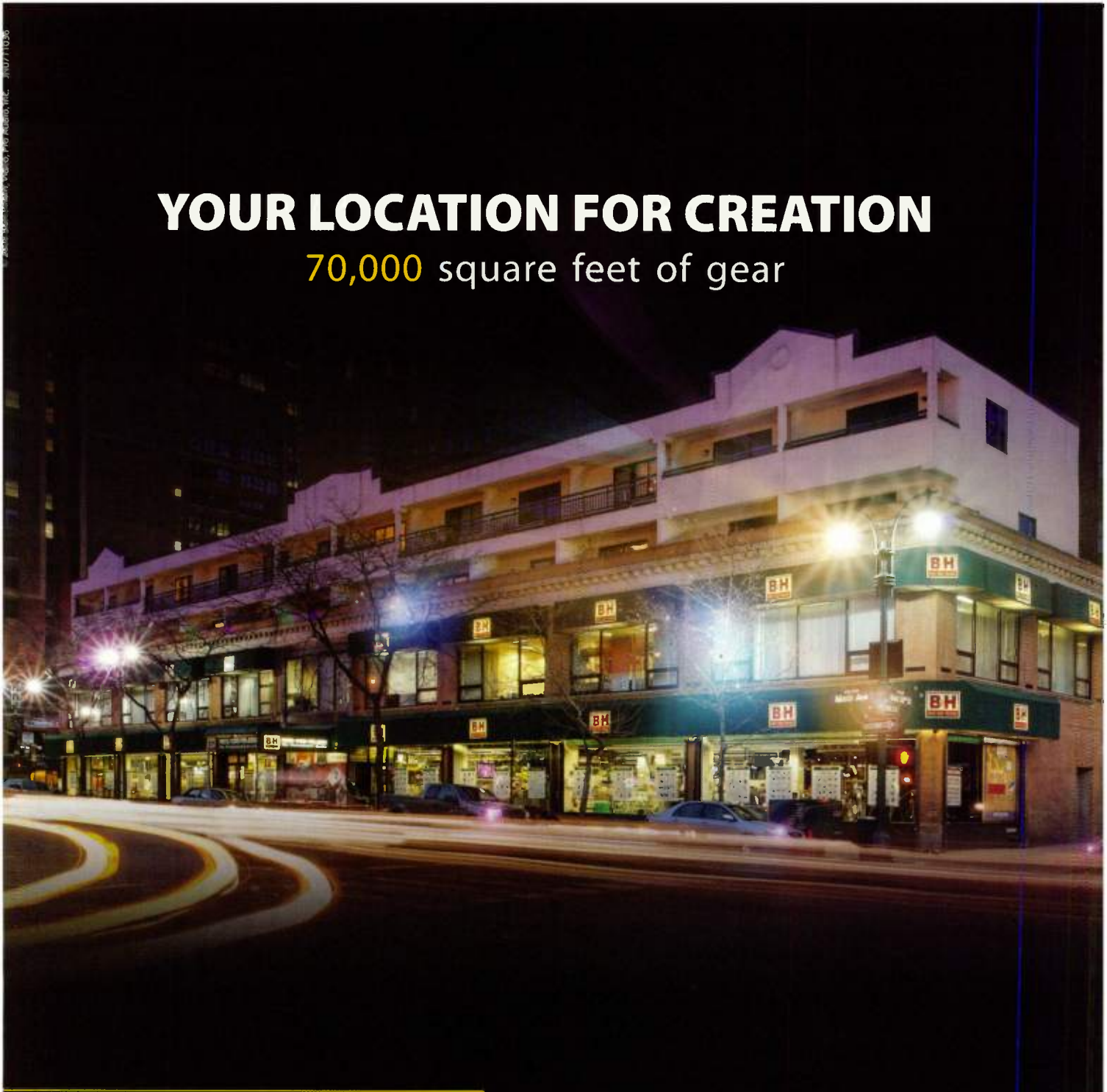
7. Now you can play your new instrument. To edit a sample's parameters, click on it (underneath the virtual keyboard at the top; the sample turns orange), then vary the desired parameter value(s).

TIPS

- This is a very basic example that shows how easy it is to create a simple instrument, but you can create instruments with velocity switching, processing, response to MIDI controllers, and much more—read the manual for details.
- For proper mapping, include the sample's root note in the sample name (or the sample's attributes, which can be specified in various digital audio editing programs).
- In Step 7, to edit multiple samples simultaneously, ctrl-click on the samples to be edited.

YOUR LOCATION FOR CREATION

70,000 square feet of gear



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POWER APP ALLEY

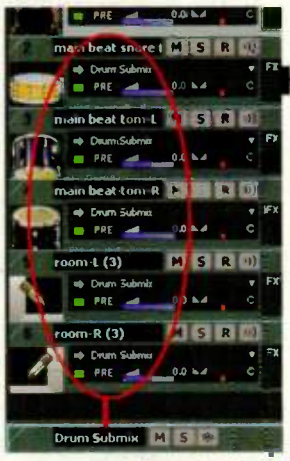
BY CRAIG ANDERTON

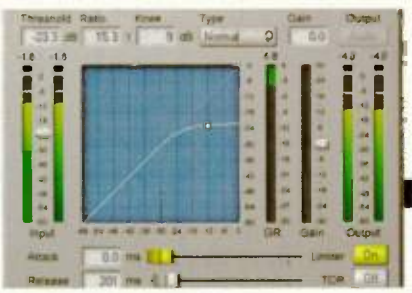
CAKEWALK SONAR 7

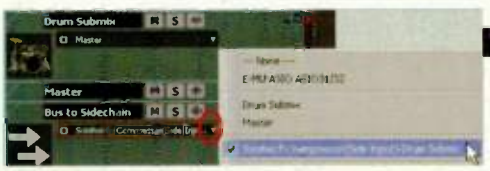
Use sidechained processors for special effects

OBJECTIVE: Create the "heavy pumping" electronica drum sound used by artists like Eric Prydz.

BACKGROUND: Sonar 7 allows sidechaining for several effects, including compression, so that one instrument can control the compression characteristics of another instrument. This offers a variety of effects, including a "pumping" drum sound for multitracked drum parts; we'll do that by setting up the snare to control compression for all drum tracks.







STEPS

1. Create a drum submix bus, and send the drum tracks to it. Turn the individual drum channel faders down so that only the bus contributes the drum sound to the master.

2. Assign the Drum Submix output to your main stereo out (master) bus.

3. Insert the Sonitus:Compressor (which allows for sidechaining) in the Drum Submix bus's effects bin.

4. Set the compressor for really heavy compression—*e.g.*, threshold below –20 and a ratio higher than 10:1.

5. Create another stereo bus and assign its output to the Sonitus:Compressor's sidechain input.

6. Create a second pre-fader send in the snare track, and assign its out to the bus feeding the sidechain input.

7. Start with the compression attack time set to 0ms; the drum sound will essentially disappear when the snare hits because the gain is being reduced so much. Gradually increase the attack time to let through more of the initial snare hit, and add a fair amount of release (250–50ms) to increase the apparent amount of pumping.

TIPS

- In Step 1, make sure to feed the bus pre-fader.
- To create a bus, right-click in an empty space in the bus pane and select "Insert Stereo Bus." To create a send in track view, right-click in a blank space in the track title bar and select "Insert Send." From the menu that appears, select the send destination.
- In Step 4, a softer knee curve often sounds better than a hard knee.

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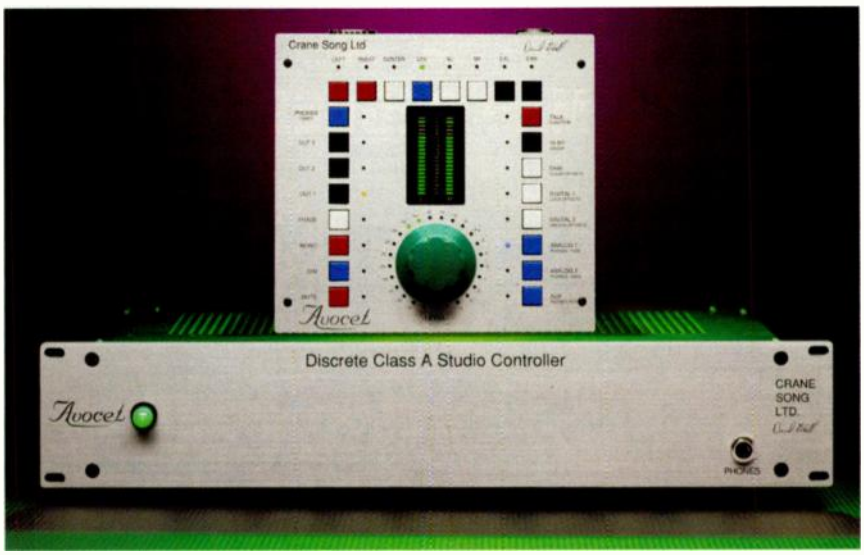
CRANE SONG AVOCET

Discrete Class A Studio Controller with Surround Upgrade



Crane Song's Avocet Stereo Unit.

by Garrett Haines

Crane Song's Avocet is being touted in chat rooms and message boards across the net as being one of the premier studio controllers for mastering and recording control rooms. Users claim that the converters are some of the clearest available, while singing praises about the unit allowing direct comparisons of various sources with level-matched precision. That's all well and good but, in addition to a boatload of desirable features, what piqued my interest were the stories of people upgrading their stereo units to full 5.1. surround monitoring beasts with just a few at-home tweaks. So I sent the local minions to do my evil bidding (*i.e.*, get me an Avocet to break open and play with), and this is what I found out.

OVERVIEW

The basic Avocet system consists of a 2U rack-mounted "core" unit and a remote controller that can be placed on a top of a work area or built into a desk. The standard (read: one unit) configuration can serve as a stereo controller with three digital inputs, three analog inputs, and a headphone system. All digital signals are up-sampled and jitter-reduced to help ensure precision during D/A conversion.

The remote also features dim (which instantly attenuates speaker output), mute, and mono functions. Speaker select switches send line level balanced audio to one of three outputs. As many mastering engineers rely on dedicated metering, the system includes buffered meter outputs. The internal headphone amplifier can be fed from the program source or via external input, with provisions for a talk back function. Additionally, an XLR input rests on the controller, allowing engineers to choose a talk back mic of their liking.

DIY UPGRADE INSTRUCTIONS

The only thing you must do to upgrade existing stereo units to surround is make sure that each unit's internal jumpers are set to force each box to do its core job (L/R), (C/LF), or (SL/SR) and daisy-chain the three boxes with the supplied DB25 control cable. I suggest labeling each unit as "Left/Right," "Center/Low Frequency," and "Surround Left/Surround Right" to make your life easier.

To set the jumpers, remove the top of the unit using a standard Phillips head screwdriver. The L/R unit will be set from the factory, so you only have to configure two devices. Using the furnished manual, find the graphics for the applicable function and set the jumpers according to the photos. This should only take a minute or two per unit. Once the jumpers are set and the case tops secured, you're ready for the last step: Rack the units in the new home, and connect them using the supplied DB25 daisy-chain cable. Make sure to follow the chain as noted in the manual. Hook up your speakers and you are good to go, though I do advise that you level-set your chain, meters, and the unit to common gain after connecting the system. Total running time: less than 30 minutes.

IN USE

Before receiving the Avocet, I used a passive analog controller. There were a few issues with my old setup. . . .

- I was using two different brands of D/A converters—one to feed the mastering chain and one to feed the monitor chain. This meant I was never comparing the audio with the same "lens."
- There was no level-matching feature. Each time I switched between the source mix and the proposed master, the master was much louder. This made hearing equalization and other processing very difficult. [*Note: If you are mastering but lack the means to do immediate*

source and target comparisons, stop immediately and resolve this issue. Otherwise you run the chance of simply making the mix louder, not better.]

• The old unit was pretty pricey. After purchasing matching converters, I had spent much more than I would have on the Avocet, but still didn't have as many features at my disposal.

The converters in the Avocet are impressive: clear, wide-ranged, and invisible—and *much* preferable when compared to some of those hyped-sounding converters that I wouldn't let within 50 feet of my monitoring path. An added bonus comes in the form of the extra digital inputs, which make it easy to attach a CD player's digital out and use the unit's D/As to listen to commercially-mastered discs. Talk about comparing to the other bands on the market!

Offsets for a variety of levels are user-programmable. This allows you to match the loudness of the inputs on the fly. For example, to make the proposed master quieter, simply hit the selector button for your output (it will blink, indicating it's in offset mode), turn the main volume knob to taste, and hit the selector a second time to lock in the amount of boost/cut. That's it. There is no need to go to a control menu, tweak the back of the unit, or burn incense. You can also choose to lock all of the offsets to prevent accidental changes. Hallelujah!

Furthermore, as a surround controller, the Avocet couldn't be easier to use. Soloing, muting, adding, and subtracting speakers form the presentation field are as simple as hitting a button. The individual monitor buttons span the top of the remote in a logical manner, with the center channel in the middle and the left and right channels spreading outward from there. Low Frequency management is a breeze in this setup (as well as for stereo setups where a sub gets involved via the channel 3 override). Seriously, it's idiot-proof in this regard.

CONCLUSIONS

If I've said it once, I've said it a thousand times: After your ears and talent, the most important thing in any studio chain is the monitoring system. But with people in a seemingly constant state of fascination with monitor speakers, it's easy to forget they are only as good as the source they receive. To that end, the Avocet is, in my humble opinion, at the top of the class of monitor control systems. The converters are pristine, the layout is logical, and it's feature-rich and easy to use. Sure, it's an expensive acquisition (especially with the remote), but as far as I'm concerned, it's worth it. eq

PRODUCT TYPE: Discrete Class A studio controller (with surround upgrade).
TARGET MARKET: Higher-level studios needing a high-grade studio monitor controller for recording, mixing, and mastering.
STRENGTHS: Top quality converters in every channel. Easily programmable level offsets. Stereo units can be field-upgraded to surround capabilities.
LIMITATIONS: No headphone jack built into the remote box.
LIST PRICE: Stereo Avocet with remote $2,800; Surround Avocet with remote $6,400.
CONTACT: www.cranesong.com

CAD SIGNATURE SERIES MICROPHONE PACKS

Joe and Al Give Good Mic

by Jeff Anderson

Imagine this, you're a large microphone manufacturer, and you want to know which of your microphones are going to sound best on electric and acoustic guitars. Well, what better way than to send your complete array of products to two of the world's most respected guitarists: Joe Satriani and Al Di Meola.

This is how CAD jump-started its versatile and affordable Signature Series Microphone Packs. The two guitar legends auditioned a ton of the company's mics, and selected the models that best captured their transcendent tones. Satriani picked his two favorites for recording electric guitars, and Di Meola chose a duo that caressed his acoustic-guitar timbres.

MY NAME IS AL

The Al Di Meola Acoustic Mic Pack contains the e60 small-diaphragm cardioid condenser, and the e70 small-diaphragm dual-capsule condenser. The e60 posts a frequency response of 30Hz–20kHz, a switchable high-pass filter (40Hz/85Hz/122Hz), and a maximum sound-pressure level of 140dB (with the 10dB pad engaged). The e70 switches between cardiod and omni polar patterns, has a frequency response of 20Hz–20kHz, offers a switchable high-pass filter (75Hz/150Hz), a switchable pad (0dB/10dB/20dB), and includes a shockmount.

HEY, JOE

The Joe Satriani Guitar Amp Mic Pack contains the Trion 7000 ribbon mic and a D189 dynamic microphone. The spaceship-inspired Trion is a dual-ribbon microphone set to a figure-eight pattern with a frequency response of 25Hz–9kHz. It comes with a very cool spider shockmount and a metal carrying case. The supercardioid D189 posts a frequency response of 40Hz–18kHz.

ELECTRIC SESSION

On a recent project, I had previously recorded a Fender Stratocaster dry in Pro Tools (monitoring through the Amp Farm plug-in), and I decided to re-amp the guitar signal through a Marshall half-stack. There weren't many rhythm overdubs on the record, and I needed a beefy guitar tone to craft a full and thick track. I set the D189 about two fingers from the grille, and a bit off-axis to the top right speaker cone. Then, I placed the Trion 7000 around six inches from the grille, directly in front of the cabinet. Both mics were routed through the microphone preamps of a DDA DCM224 console.

The Trion delivered a full, round sound with a lot of gloss—a nice, warm fullness. Although the D189 captures a very direct, in-your-face type of sound, I wasn't very impressed by its tone when I soloed it. However, I had two mic tracks to work with, and when I blended the two sounds together, the combination sounded simultaneously fat and punchy. But I wanted to dial in the sounds a bit more, so I tried panning the D189 and Trion hard right and left. This wasn't the way to go, as it was unsettling to hear two completely different sounds on each side of the mix. After playing around for a while, I ended up duplicating the Trion track, and panning the two tracks hard right and left. Then, I added the D189 right up the center. I could hear some phase cancellation as I added in the D189, but it served to make the sound much more direct and crunchy. This was the tone I was after.

ACOUSTIC SESSION

To test out the acoustic duo, I enlisted the help of regional guitar hero Scott Greason, who played a beautiful Martin acoustic. We tried both mics in a series of different ways, searching for the perfect tone. My first impression led me to try a standard XY pattern with both mics positioned directly in front of the Martin's soundhole. This did not work out—it just captured a lot of muddy tone. After trying a few other positions, we concluded the best option was to place the e70 around two inches from the Martin, and off-axis to the right side of the soundhole. The e60—with its pad and roll off engaged—was placed about a foot from the soundhole, and directly in front of the guitar. With both mics panned hard right and left, and balanced at the same signal level, we were rewarded with a light, full-bodied sound without too much woof or chug.

THE PACKAGE RATE

The CAD Signature Series packages offer home recordists some hip miking variations for very little cash—each model has a street price of just $299—and both options deliver good sounds. In a sense, you get a pretty cool "mic cabinet" for around $300, and if you can double the budget, you'll have four versatile mics (ribbon, dynamic, and small-diaphragm condensers) that can ably handle almost any application—from vocals to percussion. That's what I call a sweet deal. EQ

PRODUCT TYPE: Dedicated dual-microphone setups for recording electric and acoustic guitars.
TARGET MARKET: Home-recording zealots looking to expand their microphone options without decimating their wallets.
STRENGTHS: Versatile miking options. Good Value.
LIMITATIONS: Nothing significant—although recordists who have never used ribbon mics might want to do a little research before tossing the Trion (from the Joe Satriani Guitar Amp Pack) in front of a bellowing bull.
LIST PRICE: $399 each
CONTACT: www.cadmics.com

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WAVES GTR3

Plug-in and Rage!

by Michael Ross

Waves has been one of the gold standards of plug-ins almost since the inception of digital recording, so it makes sense that when venerated guitar builder Paul Reed Smith decided to get involved with a digital plug-in, the designer he chose was Waves. Together these industry giants have come up with a hardware/software combination to help guitarists get their sound without any amps or pedals, in both live and recording applications.

In plug-in mode, GTR3 offers two-, four- and six-slot "pedalboards."

OVERVIEW

Smith's involvement focused primarily on the hardware section—an interface that changes the guitar's unbalanced, high-impedance signal into a balanced, low-impedance signal to reduce hum and retain the instrument's full dynamic range. The Waves end of the deal was designing software that offers 19 guitar and seven bass amps, 16 guitar and six bass cabinets, and 26 effects (including compression, gate, noise reduction, distortion, modulation, delay, and reverb). The software works in stand-alone or plug-in mode.

In stand-alone mode, the interface offers pages that include a virtual pedalboard (with slots for a maximum of six effects that can be placed before or after the amp), an amp page offering a pair of amps that can be mixed or matched along with cabinets and mic choices, a tuner page, and a preset page.

In plug-in mode you can instate the Tool Rack—which operates much like the stand-alone mode—or a modular system in which you get a choice of pedalboards containing two, four, or six slots, amp modules, and a tuner module. This allows you to place the amp in the track strip while placing some of the effects in an aux bus. All parameters can be controlled by MIDI—either with a controller or DAW automation. The program requires an iLok authorization and a USB iLok key.

Amps, cabinets, and mics can be mixed and matched.

Routing Mode lets you chain stompboxes in Cascade, Parallel, and Split configurations, while View lets you see how the effects are routed.

IN USE

Though labeled an interface, the GTR3 hardware is actually an impedance-matching device that includes preamp circuitry. Designed expressly to deliver a balanced, hum-free signal into a DAW, the interface offers no direct connection to the computer, and therefore requires an additional Firewire, USB, PCI card, or mixer interface. I ran it into the line input of an M-Audio 1814 FireWire interface for recording in Ableton Live. The unit runs on two included 9-volt batteries in an accessible compartment, or with an optional 12VDC positive-tip adaptor. Originally only available as a hardware/software set, Waves is now offering the software by itself. I found the PRS hardware definitely adds girth to the guitar tone over running directly into the 1814—though a variety of other preamps could very well produce the same effect.

The software is quite simple to use on a basic level—especially if you are in tune with the GTR philosophy. The company's concept is that you are looking for a certain, general type of amp sound—such as Warm, Edge, Sweet, or Shredder—rather than a brand-specific Fender, Vox, or Marshall tone. However, Waves hedges its bets by also providing brand references for their titles if you click on the Help question mark (*i.e.*—"Punchy: Based on a 100W Marshall head"). The same holds true for the effects, though these hold a few graphic clues like the Electro-Harmonix appearance of Fuzz, and the green-colored (Tube Screamer anyone?) Overdrive.

The software interface is well labeled and intuitive. In no time, I was getting all sorts of sounds. And what sounds! The amps appeared big, warm, and decidedly un-digital. Effects such as

pitch shift, delay, and reverb reflected the years of Waves refinement that professional engineers have come to depend on. The dynamics and touch response made playing a pleasure, and all with a relatively low CPU drain. These are sounds that will slot neatly into a professional recording—and not just as an extra color, but as a viable alternative to hardware amps. That said, the sounds are decidedly mainstream—more Maroon 5 than T-Bone Burnett.

Delving deeper into the software, I discovered to my dismay that when attempting to automate GTR3's parameters within a Live track, the parameter controls were displayed as numbers (1-7), rather than names. Once again, I was required to go to the Help menu to determine which number referred to which control. As even my *free* plug-ins provide control names, this seems unfortunate. [*Waves states that Ableton Live—which processes automation using MIDI—is not a supported host. Parameter controls are labeled in Pro Tools, Logic, Cubase, Nuendo, and any host that doesn't process data via MIDI.*] It would also be nice if the hardware interface actually served as a FireWire or USB connection to your computer, doubling as a dongle, to save those increasingly precious USB ports.

CONCLUSIONS

It would have been great to see Waves include some of the cool effects from its plug-in bundles in this incarnation—such as Enigma or SuperTap. Still, this latest version of the collaboration between PRS and Waves offers all the basic, real-sounding and feeling amp and effects emulations a guitarist might need. If your tastes lean toward the radio-ready, you would be hard pressed to do better than GTR3. EQ

PRODUCT TYPE: Amp and effects modeling software bundled with a hardware interface.
TARGET MARKET: Guitarists and recording studios seeking professional amp and effects emulations.
STRENGTHS: High quality, warm, responsive sounds. Easy to use.
LIMITATIONS: Hardware part less than essential, MIDI destinations numbered rather than named.
LIST PRICE: $500 Native/$600 TDM (includes Studio Guitar Interface); software only is $380 Native/$480 TDM; Interface only is $120.
CONTACT: www.waves.com

KJAERHUS MPL-1 PRO SE

Definitely Not "Just Another Mastering Limiter". . .

Kjaerhus' MPL-1 Pro SE.

by Garrett Haines

Do you remember that really cool Golden Compressor GCO-1 plug-in that Craig Anderton reviewed in the February 2005 issue of *EQ*? Well, the company that created that sweet little product has put something new on the market—the MPL-1 Pro SE. In short, it's a cross-platform plug-in that plays nice with both Windows and Mac operating systems, is available in VST, RTAS, and AU formats, and is targeted for mixing and mastering applications. Interested? Sure you are. And we got the intimate details for you, too.

OVERVIEW

There are a few features that make this limiter unique, with the most significant being Kjaerhus' over-sampled peak detecting algorithm (Figure 1). This new approach ensures that high frequency peaks are more accurately detected, resulting in both better high-frequency performance and elimination of output clipping. Another highlight is the stereo linking function, which is a kind of stereo/not stereo/stereo again deal. When enabled, the linking code allows peaks to be limited individually on each channel, while longer-lasting gain reductions remain linked. The benefit in the real world is that peaks in one channel do not produce artifacts in the other channel ("not stereo") while the average compression still remains the same in each channel to avoid disturbances in the stereo balance ("stereo again"). Other nice-to-have features with the MPL-1 Pro SE include silent knobs, A/B comparisons, and parameter control via a "MIDI learn" function.

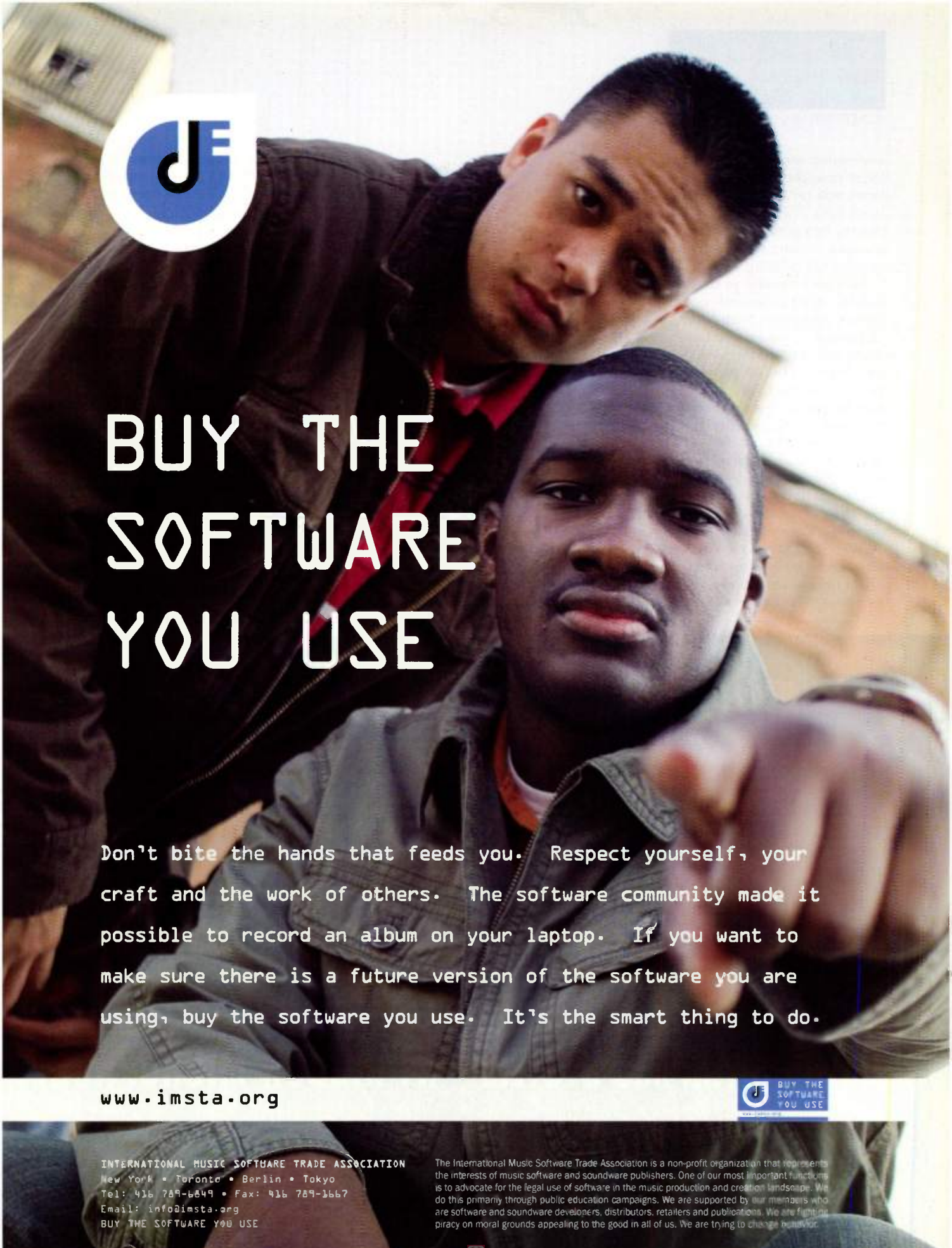
The GUI for the MPL-1 Pro SE has a clean, streamlined feel. Controls are neatly spaced, while values and meters are easy to read. There are four stereo meters (with peak-hold and AES 17 compliant RMS output), and the entire window takes up just enough space to get the job done. This is worth mentioning as lately I've encountered what seems a disproportionate amount of plug-ins that seem to take up too much or too little screen real estate. I guess we must be in a state of flux when it comes to common display resolutions, but it can make day-to-day work a pain.

IN USE

I tried the VST version of this plug-in in mixing and mastering settings with Magix Sequoia. In general, the MPL-1 Pro SE exemplifies how much better limiter plug-ins are getting. Translation: The plug-in imparts little, if any, coloration to the sound.

I was completely sold on the MPL-1 Pro SE as a mixing limiter, as I found it to be unobtrusive on almost any instrument I threw at it. On electric bass guitar, the plug-in was able to tighten up an inconsistent performance on a rock track with ease. On piano it stayed out of the way until the occasional peak tried to sneak through. On drum overheads, the MPL-1 Pro SE retained much of the space and room sound while refusing to be pushed around when limiting time came. I suspect this is a direct result of Kjaerhus' research and implementation of the MPL-1 Pro SE's peak detection algorithm. To test my hunch, I tried similar settings using another popular plug-in limiter. While the results were similar (the benchmark plug-in utilizes a well-conceived auto release control), the MPL-1 Pro SE was just a touch more open and less "in the signal chain." And even with this strong performance, the plug-in was more efficient in terms of CPU usage than most of the limiter plug-ins I use. It would not be out of the question to use a dozen or more mono or stereo instances and put little strain on today's computer systems.

For mastering, the plug-in worked best when each setting was evaluated for each track (meaning preset settings should not be trusted blindly). At light settings (threshold of -1 and ratio of 1.5 to 1), the MPL-1 Pro SE is clear, and, at times, difficult to hear working—and this is good! At these values, the compressor should just smooth out the sound. In terms of the stereo linking function, I found it best to leave the feature off, or to fine-tune the stereo link milliseconds value to the given music. To my ears, using too short a release seemed to pinch the natural width of most tracks, resulting in a tighter, but more mono feel. As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WRH

any mixing engineer probably spent a lot of time setting up the left to right landscape (at least I would hope so), I don't think it would be a good idea to destroy that work without good reason. However, finding the correct link time avoided this problem.

Another parameter to keep an ear on is the program dependent release (PDR) feature. I've always been critical of any "automatic" compressor setting in a mastering situation, and the same holds true with the MPL-1 Pro SE. In short, this PDR varies the release time depending on the dynamics of the piece. When applied to a single instrument (say in mixing), this can be great. For example, the PDR function used on drums could decrease the release time after a dynamic snare hit, but increase the release during a busier segment. To my senses, this adjustable release can increase apparent loudness while avoiding pumping. [*Note: When dealing with a full mix, I caution users to choose an appropriate release value or do several tests with the PDR before trusting it.*]

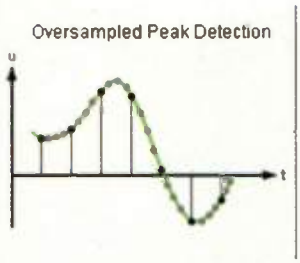

Fig. 1: An example of oversampled peak detection. Note how the reconstructed signal is higher in level than the individual samples would imply.

CONCLUSIONS

The only limitation of the MPL-1 Pro SE, as far as I can tell, is that it isn't as invisible or transparent as flagship digital limiters from TC Electronic's System 6000 or Weiss—but one could hardly expect it to be. The over-sampled peak detection still places this at the top of the pile of currently available plug-in limiters. And I would definitely make this a first-call device for tracking or mixing situations. Given its efficient CPU requirements, I don't think this should be a problem for most users.

When all is said and done, this plug-in is the crown jewel from a company that already has a slew of impressive titles in their catalog. And at this price, you can probably afford to take a chance and give it a spin. I recommend it.

PRODUCT TYPE: VST/AU/RTAS limiter plug-in.
TARGET MARKET: Recording musicians lacking a high-quality, yet affordable, plug-in limiter for mixing and mastering applications.
STRENGTHS: Clean sound. Revolutionary peak detection functions. Not a CPU hog. Cost-effective.
LIMITATIONS: Not as transparent as flagship limiters costing much more.
LIST PRICE: VST (Windows) or VST/AU (OSX) $118; VST/AU/RTAS (Windows and OSX) $148.
CONTACT: www.kjaerhusaudio.com/

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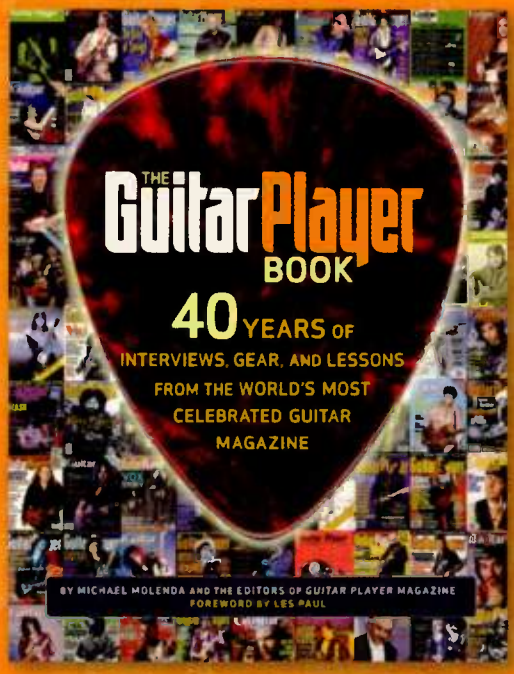

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ABLETON LIVE 7

The Boys from Berlin Serve Up Lucky Number 7

by Craig Anderton

Live's Session View, where a live performance based on a remix of Pink Floyd's "Interstellar Overdrive" is being developed. Note the sliced audio file toward the bottom, and the new instruments in the browser.

Live is a difficult program to describe, because it can be different things to different people—DAW, DJ tool, musical instrument, and even signal processor. It has two personalities living in one program: the pattern/loop-oriented Session view, which is a matrix of "cells" optimized for loading, playing back, and arranging loop-based material on-the-fly; and the Arrangement view, whose linear recording paradigm more closely resembles a traditional DAW. While basically just two facets of the same program, the ability to switch between them at any time—for example, create a rhythmic bed with loops and then overdub on top—helps differentiate Live from other programs.

To experience what Live's all about, download the fully-functional (except you can't save/export) demo from the Ableton web site. (This is actually great for pros as well as those testing out the program: If your laptop blows up on tour, as long as you have your data you can download the demo, load your set, and carry on with a live performance.)

THE DAW DIFFERENT

I use Live's Session View for live performance (and press "record" before each set, so what I do gets recorded in the Arrangement View—cool!), so I've always appreciated that aspect of the program. Over the past few revs, though, Live has added more "DAW-like" features (such as a video window and the ability to add external hardware effects), and now version 7 displays individual lanes for automated parameters that you can "fold" and "unfold." Furthermore, you can treat Session View almost like a console view, as the mixer became far more configurable in version 6.

However, these changes do not really alter the program's core workflow. An analogy is that it's like seeing the program from different perspectives: It's still the same program, but useable in more ways.

WHAT'S NEW IN VERSION 7

You can now do multiple time signatures in Live, and it also performs 64-bit computations on its mix bus for better resolution. There are tempo-nudging controls that are very helpful if you're trying to hand-sync Live to something else. And remember the video import feature added in version 6? Now you can *export* the movie with the soundtrack you create.

My favorite "fun" feature is the slicing (and REX file) support. You can open REX files inside Live, and better yet, take any piece of audio and slice it up REX-style with different slices triggered by different MIDI notes. This allows for a lot of re-combining different elements of loops, extracting portions of loops for dropping into instruments, and the like.

Live 7 also incorporates a feature called "SmartPriming" that de-allocates RAM from samples that aren't being used. This is not a new concept, but it's particularly important with a program like Live, where lots of sounds may be going on at the same time. At least for laptop performances, you often want these stored in RAM so there's not endless accessing of a 5400 RPM hard disk.

You'll also find sidechaining for the Gate, Auto Filter, and the new Compressor that replaces the older Compressor I and II models. I'm particularly glad to see sidechaining on the Auto Filter, so you can control filtering on one instrument with a different instrument. Speaking of signal processors, EQ Eight has been updated as well, including an optional 64-bit high-res mode.

Ableton has also introduced several optional-at-extra-cost instruments, developed in association with Applied Analog Systems: Analog, Tension, and Electric, which resemble AAS's Ultra Analog VA-1, String Studio VS-1, and Lounge Lizard, respectively. These work only with Live, not other hosts. Of them, my faves are Electric—great electric piano sounds—and Tension, which provides modeled, plucked/hammered/bowed string effects. Another "instrument" (actually it's more of a sample library, but comes in the form of presets that take advantage of Live's new Drum Racks feature), consists of excellent samples of vintage drum machines. You can also buy Session Drums, a collection of drum samples *à la* Reason Drum Kits. Finally, there's the Essential Instrument Collection 2 (done in conjunction with Sonivox), which comes with the boxed version and Suite, but is otherwise available for purchase if you bought the downloadable version.

The bottom line is that Live lets you take an *à la carte* approach to adding instruments, but if you need instruments, consider the Ableton Suite: Getting all the above instruments, plus Sampler and the FM-based Operator synth (introduced in previous versions) adds about $500 to the Live 7 download price—very cost-effective.

Q&A

People ask me three main questions about Live:

1. I can't decide between Live and [pick a DAW]. Which do you recommend?
2. I'm currently using [pick a DAW]. Will Live do everything it does?
3. I just can't wrap my head around Live. What am I missing?

As to (1), I need both. Various DAWs have some features that Live simply doesn't have—for example, being able

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to edit Acidized files, or lock sample starts to particular SMPTE times. Conversely, Live has attributes DAWs generally don't have, such as encouraging improvisation and being able to capture multitrack live performance gestures.

If all DAWs disappeared tomorrow except for Live, I wouldn't lose *too* much sleep. I'd miss some pretty important features, but Live can serve as a DAW for many, if not most, users. On the other hand if you don't need Live's unique features, it's more expensive than some other DAWs, which may take care of your needs more completely anyway.

Regarding (2), thinking of Live as a replacement for what you're doing instead of as a supplement is limiting, particularly because you can ReWire Live (which can serve as a client or host) into most DAWs. Then again, if you compare Live's feature list with what you're using from your current DAW, you may not *need* more than what Live has to offer.

As for (3), Live represents a different take on the musical process that's optimized more for composing/improvising than simply capturing a performance. As a result, its interface may seem odd, and take some getting used to. If you're not into loop-oriented music, Session View probably won't make much sense but for me, Session View is the coolest part about Live—once I figured it out! And when you *do* figure it out, it's all very logical.

CONCLUSIONS

Live is an original, unique program that has carved out its own niche—and been rewarded with much success, as it can be used by many different types of musicians for many different applications. Of course, this review only scratches the surface but downloading the program will answer any questions you have in far greater detail. Live impressed me when it first appeared; over the years, it's only impressed me more. eq

PRODUCT TYPE: Digital audio/MIDI sequencer with groove and live performance orientation.
TARGET MARKET: Laptop musicians, DJs, audio-for-video, remixing, live performance, recording studios.
STRENGTHS: Unique paradigm encourages improvisation. Effective, built-in time stretching. Supports multiple time signatures. Good roster of effects and instruments. Video export. Some effects support sidechaining. Smart-Priming uses RAM more efficiently. 64-bit resolution for mix bus. Inspiring.
LIMITATIONS: Still can't record solo button presses. Optional-at-extra-cost instruments add up. MIDI editing, while fast and useable, lacks depth compared to most DAWs.
LIST PRICE: $599 boxed (including Essential Instrument Collection 2 content) or $499 download with no EIC. Ableton Suite (Ableton Live 7 and six instruments, EIC, and Session Drum sample set) $999; for other options and upgrade prices, see the Ableton website.
CONTACT: www.ableton.com

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FUN STUFF TO PLUG INTO YOUR USB BUS

by Craig Anderton

USB buses are good for a lot more than just sticking in printers, mice, and dongles. Want some examples? Sure thing!

CEntrance MicPort Pro

($149.95 list, www.centrance.com)

I've used USB mics for doing video narration in a German hotel room, recording band rehearsals, and grabbing samples with my laptop. But I've often wanted to use my favorite, non-USB mic as a USB mic . . . and now I can.

MicPort Pro is a clever little cigar-shaped interface with a female XLR connector at one end for plugging in your mic of choice, and at the other end, a mini-USB jack, headphone jack, and +48V phantom power switch—which, by the way, is almost impossible to hit accidentally when you have cables plugged into the headphone and USB jacks.

What's more, it sounds really good. The MicPort Pro goes up to 24/96, and the headphone out has plenty of clean volume—it makes a fine laptop audio interface. You get a volume control for the headphones, and a mic level control that also provides zero-latency monitoring. MicPort Pro can work *sans* drivers with Windows XP, Vista, and Mac OS X 10.4, but ASIO drivers are available on the CEntrance website.

The package includes not just the interface, but also a 6' USB cable and carrying pouch—nice for when you want to throw the thing in your laptop bag. But also consider bringing a female-to-male XLR cable; although you can plug a mic into the MicPort Pro, you might not always want the extra length/weight.

Convenient, sounds good, does USB, lets you use your own mic . . . works for me! EQ

Tapco LINK.midi 4X4

($149.99 list, www.tapcoworld.com)

It's not just over-the-hill rock stars who make comebacks: Technologies can as well, and after DAWs binged on new audio features for a while, MIDI is back in a big way—from virtual instruments to master keyboards and particularly, control surfaces.

But a lot of otherwise wonderful audio interfaces skimp on MIDI, giving you just one port (sometimes on some weird breakout cable) or even none at all. That's why Tapco's LINK.midi interface, for Windows XP SP1 or Mac OS X 10.3 (or higher) comes along at just the right time: Its four ports deliver a whopping 64 MIDI channels to your sequencer of choice, and by being USB, it won't upset those FireWire peripherals that you *finally* got working.

The LINK.midi is bus-powered, has front panel MIDI activity indicators (green LEDs for In, red for Out), MIDI thru so you can drive several sound modules from a single master controller, sits on your desktop horizontally or vertically, and has 1 input and 3 outputs on the back panel with 3 inputs and 1 output on the front panel. And I gotta admit, it looks cool, too.

I tested it on a dual G5 Mac; LINK.midi worked as soon as I plugged it in—no weird driver issues or other problems, and within seconds, I had a whole lot more MIDI ins and outs than before. So if you're happy with your audio interface, but it doesn't have enough MIDI for you . . . problem solved. EQ

Multi-Gigabyte USB 2.0 Memory Sticks

($20–$70; various manufacturers)

Sure, you know about USB memory sticks, also called "thumb drives": They've basically replaced the floppy drive for getting data from one computer to another. But note that you can *record* to them, too. Most DAWs and digital audio editors write to a temporary location, which generally defaults to your main drive but can be changed to a different drive—in most (but not all) cases, even a USB drive. And for programs that "collect" all files in a single folder (sequence, audio files, presets, etc.), put that folder on a memory stick and all files will be read from it.

For example, I was developing an Ableton Live project on my desktop that was going to end up on a laptop. By saving the project to a memory stick, all the clips instantly became "RAM clips," and the laptop's hard drive activity plummeted. Furthermore, if I made a tweak in the project while working on the desktop or laptop, I simply saved to the stick and took it to the other machine (and took the stick with me for the performance). Oh yes, and I recorded 36 tracks *simultaneously* with Sonar 7 on a laptop—trying to do the same thing with a 5400 RPM hard drive was glitch city.

With 2 and even 4GB sticks becoming available, that's a lot of audio recording time. Check the Sunday papers for good prices on memory sticks at local office supply stores, and get into RAM recording. EQ

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SOUNDS

DIGITAL REDUX ELECTROTECH

For loops, this collection includes construction kits, beats, percussion, arpeggios, and melodies in Acidized, REX2, and Stylus RMX formats; one-shots include drum kit sounds, basses, pad and synth, glitch blips, and FX. REX editing is good, but while most Acidized files stretch reasonably well, the more complex drum parts often need extra transient markers to stretch properly.

The content covers a wide range within the electronic genre, and it's easy to put together convincing tracks with very little effort. While the files didn't make my jaw drop in awe, readers of these reviews know that I appreciate collections with large numbers of useful, somewhat neutral loops that don't force you in a particular direction, and can slide effortlessly into a variety of projects. That's exactly what you have here. In particular, the beat loops tend to be short (often 2 bars) with lots of variations, so you can put together rhythm tracks that keep the listener's interest. The construction kits are mostly beats with a few melodic parts, so having the additional collections of loops and one-shots comes in handy—especially the arpeggios, melodies, and drum hits.

Overall, this is a coherent collection of grooves that lends itself well to editing and further processing. And at this price, you're getting serious value as well. *—Craig Anderton*

CONTACT: Digital Redux, www.digital-redux.com
FORMAT: DVD-ROM with 2.88GB of content (10 construction kits, about 600 files total, about 300 loops; most available as WAV/AIFF/Stylus RMX/REX2/Acidized WAV; 24-bit/44.1kHz audio)
LIST PRICE: $40

NINE VOLT AUDIO ACTION DRUMS: BOOM JINX BREAKBEAT EDITION

Beats, beats, and more beats—both acoustic and electronic drums, with a well-produced, muscular style that allow these to lay a firm foundation for whatever you want to put on top. All files except the Apple Loops are organized into "beat suites" with a full mix, full mix without snare, another mix without kick, and loops for individual sounds from the full mix. The individual loops are also organized into folders based on sound (kick, hi-hat, etc.)—ideal for "mix and match" applications, or for choosing, say, a particular kick beat for one of the kick-less beat suite loops.

The Acidization is a disappointment (missing transient markers), but the REX editing is excellent, and extra credit for the Apple Loops: They're all recorded at 80BPM, because loop aficionados know it's easier to stretch faster than slower. Also, additional props for including 30 Stylus RMX multi presets.

Stylistically, these have a definite "Euro" vibe with groovacious use of swing, appropriate processing, and lots of attitude—as a result, you can just bring them into a project and your foundation is set. But you can also get creative through the ability to do easy mix and match.

If you like club music with a bit of a hip-hop vibe, these are powerful, beefy loops; there's not a dud in the bunch, and they'll get people moving on the dance floor. *—Craig Anderton*

CONTACT: Nine Volt Audio, www.ninevoltaudio.com
FORMAT: DVD-ROM with about 600 loops duplicated in REX2/Stylus RMX/Reason ReFill/Apple Loops/Acidized WAV; 16- and 24-bit/44.1kHz
LIST PRICE: $79.99 (download or DVD)

BIG FISH AUDIO HADEETH 2

These construction kits with Middle Eastern rhythms are typical Big Fish: A mixed file, along with the various elements that make up the mix (usually 4–6 loops). There are also 121 files of hits for the seven individual percussion instruments used to make the files—valuable not just for augmenting these loops, but for loading into a sampler if you want a fine set of exotic percussion sounds.

The music is what you'd expect, consisting of rolling, hypnotic hand percussion grooves that range from 80 to 150BPM. While the full mixes have their uses (particularly for layering on top of dance mix grooves), you may find the individual loops more useful as they add an exotic accent without "taking over" a track. I even tried some of these with rock drum tracks; they worked surprisingly well together, as the Hadeeth 2 loops added a loose, swinging type of feel. The loops have just enough room ambience to give an organic, "real" vibe, but definitely not enough to get in the way. Recording quality has both accuracy and presence—you won't need to add any EQ to these puppies.

For fans of adding "ethnic" touches to their music, this is a tight, consistent, well-rounded library with plenty of inspiring grooves. Imagine a drum circle with people who actually know how to play, and you'll have a pretty good idea of what's going on. *—Craig Anderton*

CONTACT: Big Fish Audio, www.bigfishaudio.com
FORMAT: DVD-ROM with 66 construction kits duplicated as WAV/REX/Stylus RMX/Apple Loops; 24-bit/44.1kHz
LIST PRICE: $49.95

AD INDEX

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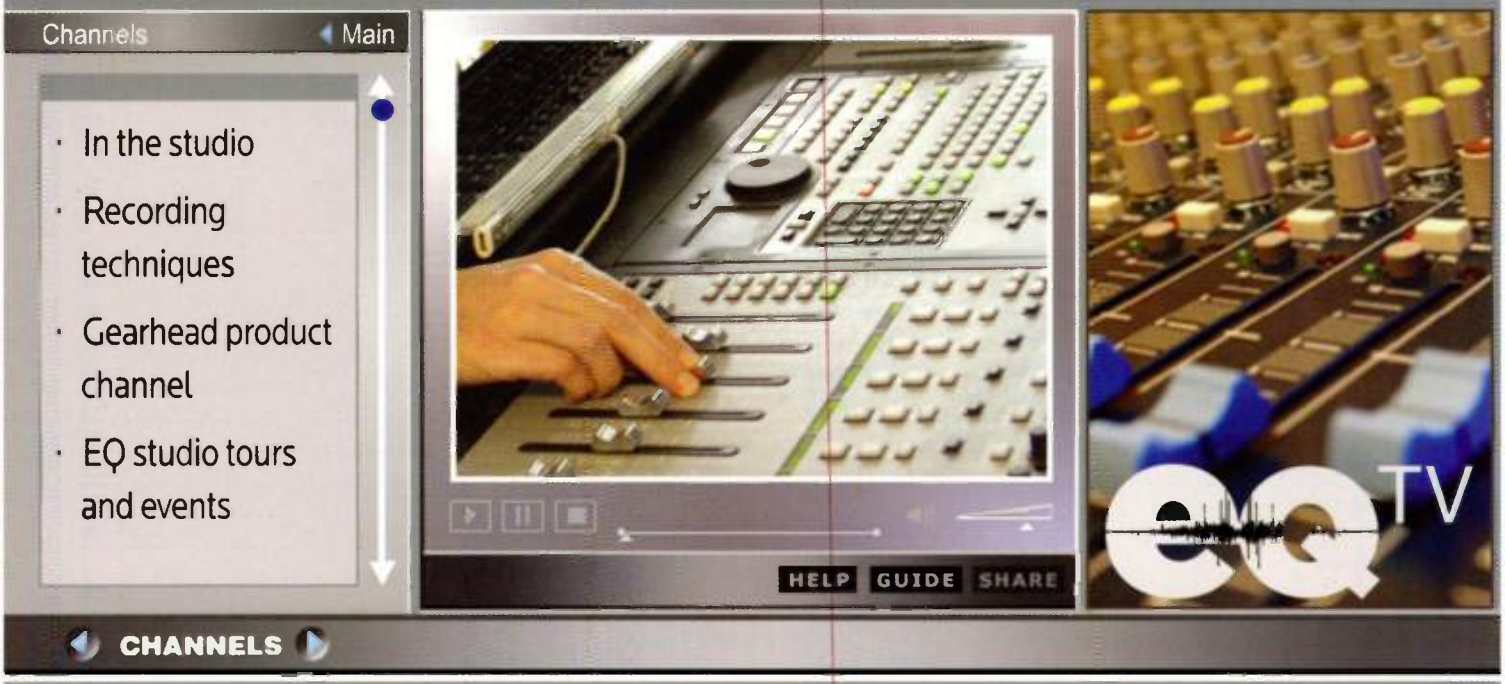




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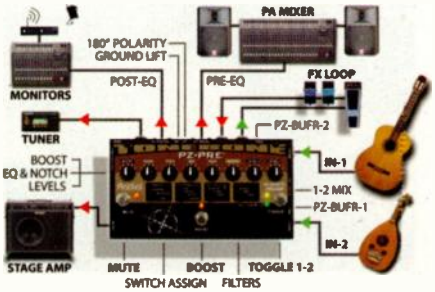

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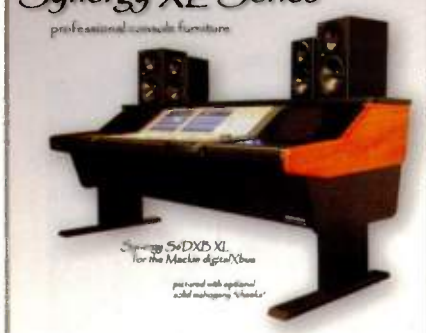

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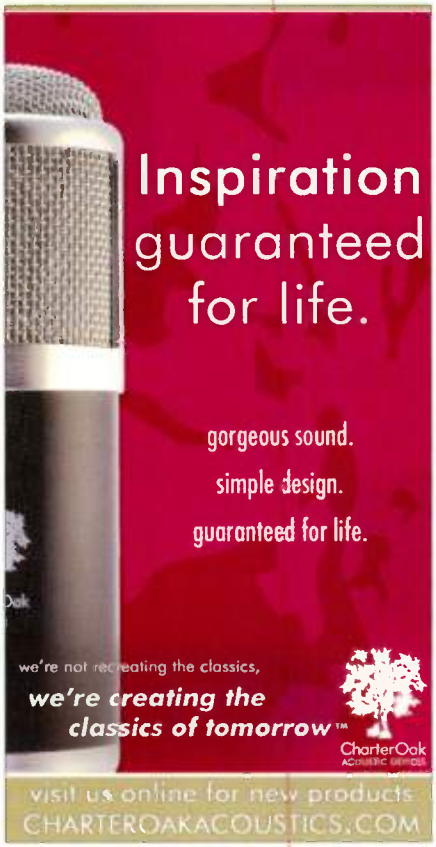

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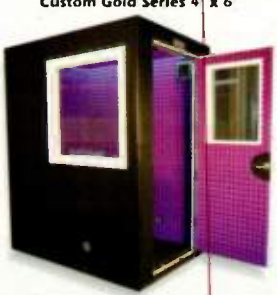

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ROOM w/a VU

by Greg Reynolds

STUDIO NAME: Booze, Babes, and Bad Guys
LOCATION: "BFE," AR
KEY CREW: Riggs
CONSOLES: Digidesign Digi 002 control surface; Mackie 1202-VLZ Pro
INTERFACES: Digidesign Digi 002 Rack
COMPUTERS: Macintosh G4, G5 Quad
SOFTWARE: Digidesign Pro Tools LE 7, Producer Pro plug-ins, Bomb Factory plug-ins; Waves Diamond Bundle
RECORDERS: Alesis HD24
MONITORING: Event 20/20
MICS: Audix i5 (4), OM5, OM6; Neumann TLM 49; Shure KSM44 (2), SM57 (4)
OUTBOARD: Chameleon Labs CPS-1; Palmer PGA-04 ADIG-LB
INSTRUMENTS: ESP Explorer w/ EMG pickups; Fernandes Vertigos w/ Bill Lawrence hand-made Keystone pickups, Seymour Duncan Full Shred pickups, Invader pickups (5); Custom-made blood-filled guitar, Custom-made human skin guitar; Korg Trinity; Warwick 5-string thumb, 5-string Corvette $$ (Double Buck)
AMPLIFICATION: Ampeg SVT-5 Pro w/ 8x10 cabinet; Diezel VH4; Line 6 Spider III; Marshall G100R CD; Mesa Boogie Triple Rectifier; Randall Isolation Cabinet
NOTES: You know the old saying—you just can't judge a corpse by its coffin. And the same goes for home studios. Sure, great gear that costs a ghastly amount of money is always nice to have (and it certainly won't hurt your sound to have a big old SSL console to mix on), but you can do a whole lot with very little these days.

Scum of the Earth frontman Riggs knows this all too well. The former Rob Zombie guitarist is no stranger to spending hours and fortunes in sterile professional recording facilities, and doing such left him with a bad taste in his mouth. "I've been in studios where we'd spend $3,000 a day to have 20 engineers and a bunch of people running around serving coffee and donuts," the grisly guitar ghoul says. "It can be completely ridiculous and uninspiring." In order to write and record songs such as "Bombshell from Hell," "Macabro Expectaculo," and "Corpse Grinders" for his latest album *Sleaze Freaks*, the vocalist/guitarist/producer needed an environment that would exhume and exude inspiration everywhere he looked.

Enter Riggs' modest personal project studio—a place where his blood-spewing and skin-covered guitars can be wielded to execute tracks of decapitating solos just as soon as they pop into his head. Appropriately decorated with monsters and other macabre accents, this little shop of horrors is fully customized to meet the rigorous demands of a rock legend (Riggs is quick to point out that "the most important part of the whole studio is the Jagermeister tap machine"). With all this motivation at his disposal, Riggs recorded everything on his newest release (except the drums) entirely into his Pro Tools LE system whenever he felt most possessed.

Riggs' home recording philosophy is, to say the least, simple and pragmatic. "Home studios are popping up all over the place. Anyone with a couple of bucks can throw one together," he says. "I can't even tell the difference anymore between something that was recorded in an expensive studio and something done in somebody's bedroom. That's what prompted me to put together this little place. I figured that I might as well build my own studio for the day when the record companies die and turn to dust. That was just a few years ago. I can't help but think that I made the right choice." EQ

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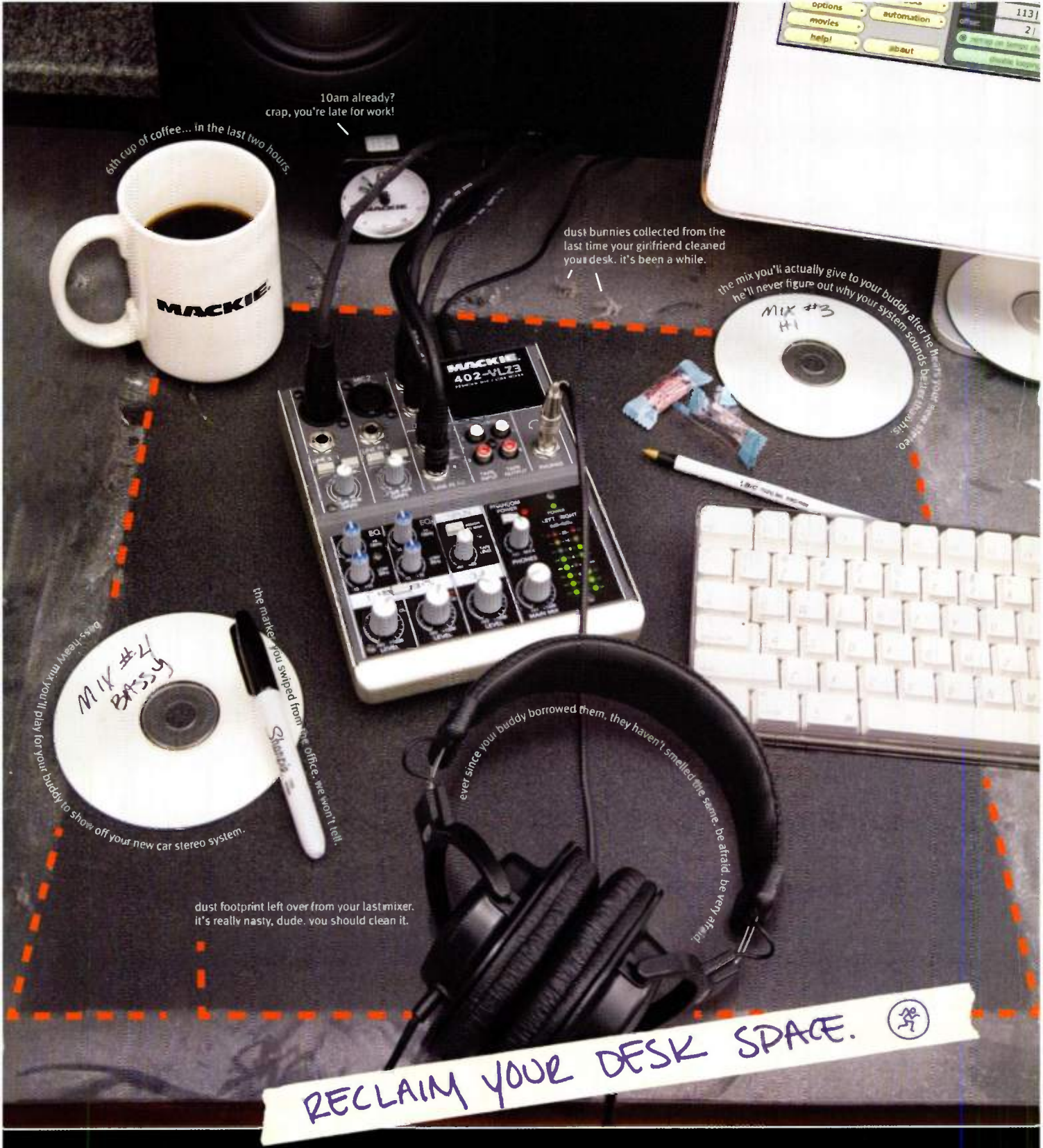

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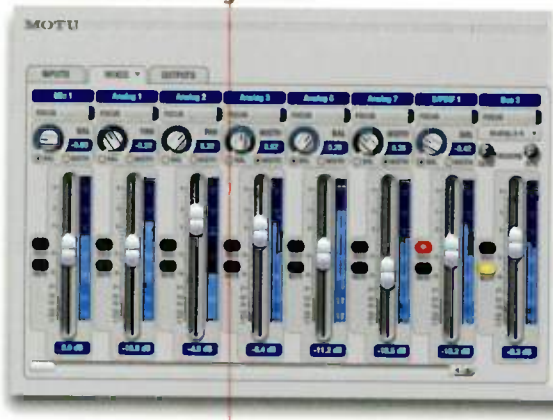

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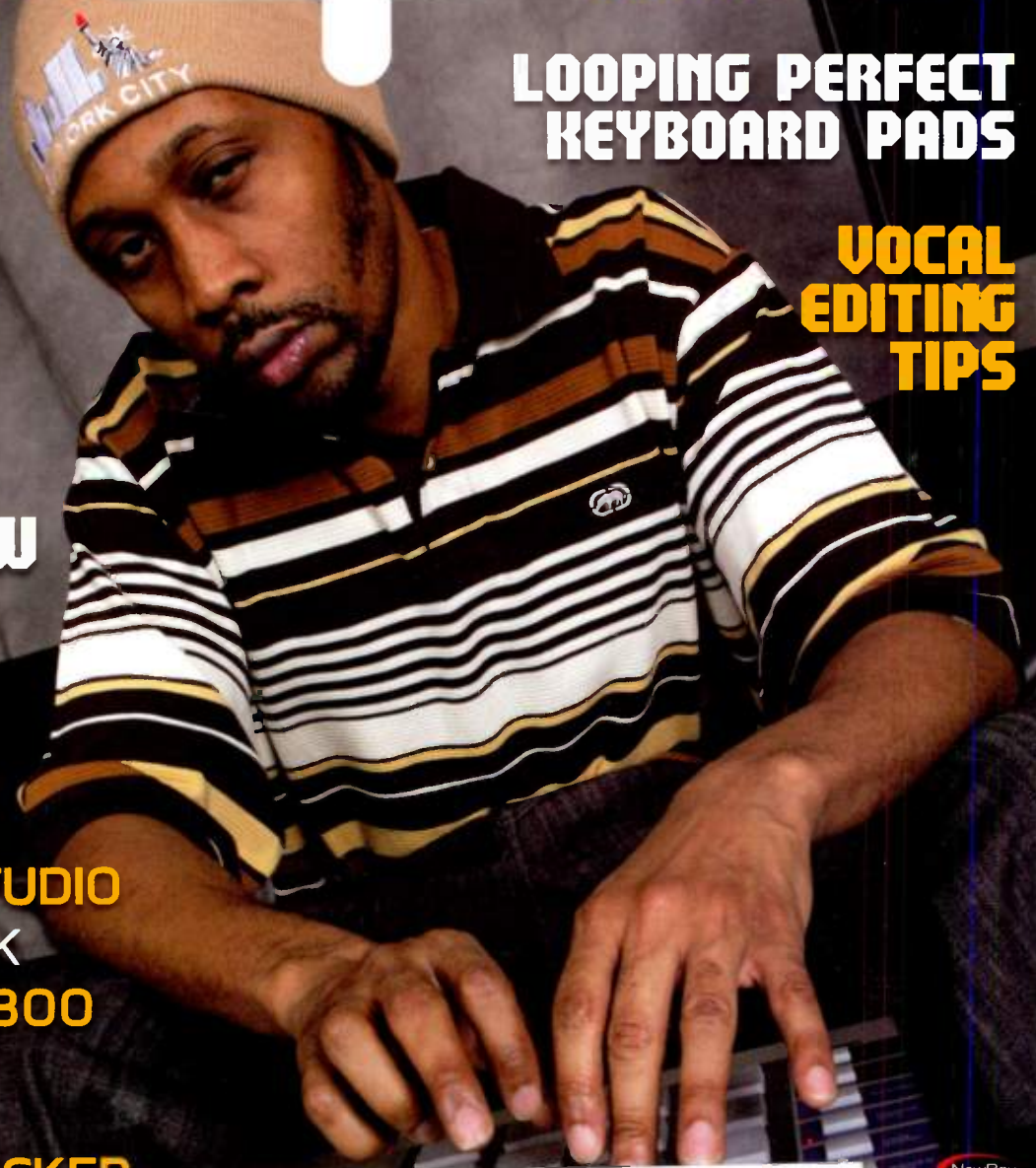

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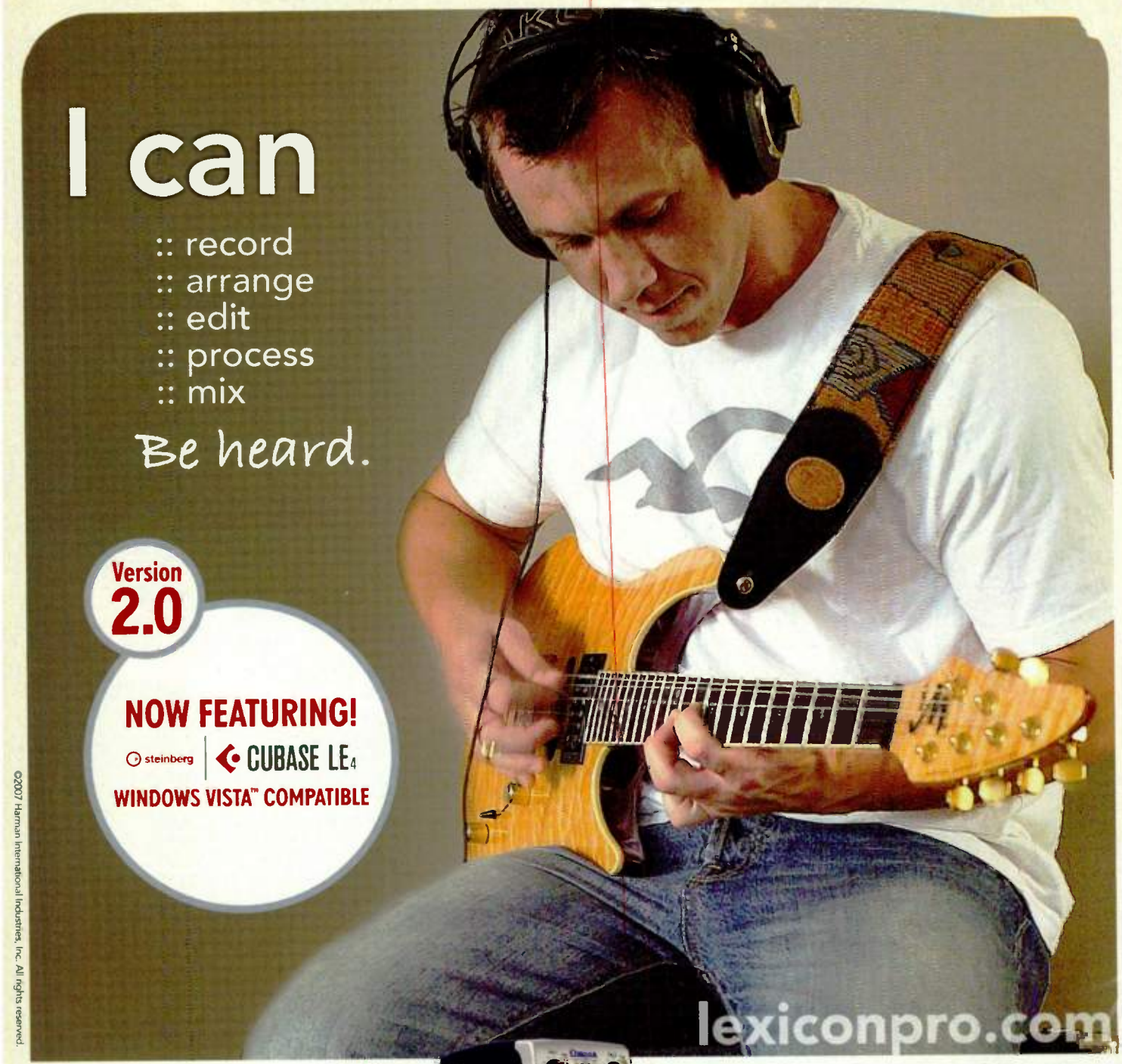

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IT'S THE END OF THE WORLD AS WE KNOW IT

Or is it?

The digital genie is out of the bottle. Anything that can be copied digitally has become de facto public domain. Music has been devalued to the point where bands are expected to give away their music to promote their gigs . . . which unless they're at the top of the heap, usually don't pay very well.

With CD sales tanking, major bands want to make more money off tours. So we're seeing astronomical ticket prices that effectively bar the kids who don't have a lot of bucks—precisely the people the industry needs to cultivate for the future.

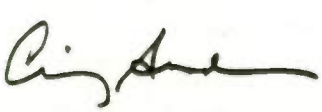
Now, there's no doubt that the traditional record labels fumbled their opportunities. But that's a separate discussion. The question here is whether musicians will be able to make any money in this brave new world.

One possible model is that music will go back to the way it was for centuries: A recreational activity for individuals and groups of people, with occasional royal (or in today's terms, corporate) sponsorship of a select few musicians. Is Wal-Mart doing an exclusive deal with the Eagles any different than the king being a patron of the arts?

In any event, the days of "I'll get signed to a major label, tour, and make money" are, if not over, in their twilight. And if musicians don't make money, then studios don't make money . . . and neither do the companies that make gear for studios.

Yet, as has been pointed out many times, there's more music around than ever before. There are millions of tracks being "traded" at any given moment. The major music industry trade shows have ever-increasing attendance. *EQ*'s circulation is going up. Apple sells millions of iPods, and trust me, people aren't using them just to store photos.

Many pundits are forecasting doom and gloom for the record industry, and they're probably right. But for the *music* industry? They're probably wrong. True, we're going through a period of change and realignment. True, we don't know how it's going to turn out. Yet you never know what's just around the corner: No one in 1962 could have predicted the Beatles, and how they would change the music industry. And we can't predict with certainty what will happen next year. But be ready to roll with the punches, because there will indeed be opportunities in the future—although it's highly unlikely they'll be the same opportunities that existed in the past.



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SOUNDING BOARD

FIRST HAND NEWS

I was rather surprised to read in the [11/07] "First Hand News" story what Richard Dashut had to say about using safety copies of Fleetwood Mac's *Rumours* album.

It's true they wore out the original masters, such that the high end on them was pretty well trashed. But, from there, what actually happened is only remotely close to what he described.

I'm the one who explained the technique of simultaneously running the master and backup, and syncing them manually with a VSO. This was done by placing grease pencil markers on both reels, using these markers to precisely align the reel positions, and starting both tape machines at the same time. The position of one is adjusted via its marker such that tracks on both are in sync at the top of a song. The person controlling the VSO then listens to, say, the snare track of each tape, on headphones, with one track in each ear (this makes it very easy to hear the direction of drift) and adjusts the VSO as necessary while playing through a song to achieve precise sync. It takes several attempts for each song, as the VSO operator has to learn the drift(s) before a successful complete pass can be accomplished. SMPTE timecode was recorded on an open track of each tape at this time, so that they could later be easily synced together, and this is how the final mixes were done.

I offered to do this for them, but as it turned out a gentleman whose name I can no longer recall actually did the job at a studio I believe was named Lions Gate, in Los Angeles. My involvement was as an electronic maintenance guy for Wally Heider Recording, where Fleetwood Mac was working at the time (Ken Caillat had also been a staff guy there).

Cheers,

Billy Youdelman (via email)

SPRING FORWARD

[I] just read the Tiger Army story [10/07] and I had to email you guys and congratulate you on another issue well done. The magazine just keeps getting better and better.

I've been a fan of theirs since their seven-inch on Chapter Eleven. Where some fans have written them off for getting more poppy on *Music from Regions Beyond*, I think it's the best album of their career. And it sounds fantastic.

The story was very thorough and I learned a lot about how they record. Great job guys!

Sincerely,

Greg the G (via email)

IN ABSENTIA

The Tiger Army article was pretty rad. I have one question though: Why isn't Jerry Finn quoted in the article? McGrath has a lot of cool things to say but Finn *did* produce the album.

Anonymous (via email)

Matt Harper responds:

Finn doesn't do press, I was told. This is unfortunate as it would have been cool to hear what he had to say about the making of the album. I didn't want to nuke the piece just because he wasn't willing to participate, so I refocused it to cover just the tracking of the album, which is what Joe was responsible for. The story is complete, in my eyes—we got all the engineering info down, we just didn't touch on Finn's mixing techniques.

SAFF IT IS

I found the Grails article [8/07] quite by accident the other day, and noticed that I am credited with mastering in the article, but that my name is misspelled.

My name is "Carl Saff" not "Carl Saph."

Thanks!

Carl Saff (via email)

WUNDERFUL . . . BUT WRONG

Small point, but Garrett Haines wrote that Wunder Audio makes preamps based on the custom Helios modules made for John Paul Jones [8/07]. The "John Paul Jones console" was actually an Allotrope rather than a Helios. I don't know if Dick Swettenham was involved with the Allotrope, but I thought I'd mention it.

Cheers,

Creston Funk (via email)

THE RIGHT WAY

I just finished re-reading your interview with Phil Ramone [4/07]. You really captured his perspective on recording techniques as it relates to his history in the studio. What comes shining through [in the article] is the man's simple philosophy of working with whatever technology is at hand to record the most natural feel of the artist. He doesn't seem to be hung up on any one particular method but, rather, is always curious to try another approach—even if it flies in the face of "proper" recording, such as bringing a live PA into the studio to enhance the singer's performance. Leakage be damned!

This is great news for us home studio buffs who are always seeking ways to measure up to these great "performance recordings" by trying to do things by the book. You need to know the rules before you can break them . . . but you need to break them to create something really unique.

Inspired by Phil, I went into my modest home studio and re-did a vocal track using the PA whilst tracking. And you know what? It worked like a charm. It added a whole new "live vibe in the studio"—the mic bleed added more punch and presence.

So thanks for the great article on a true studio pioneer, and the encouragement to your readers to continue to use technology creatively.

Kris Baldwin (via email)

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

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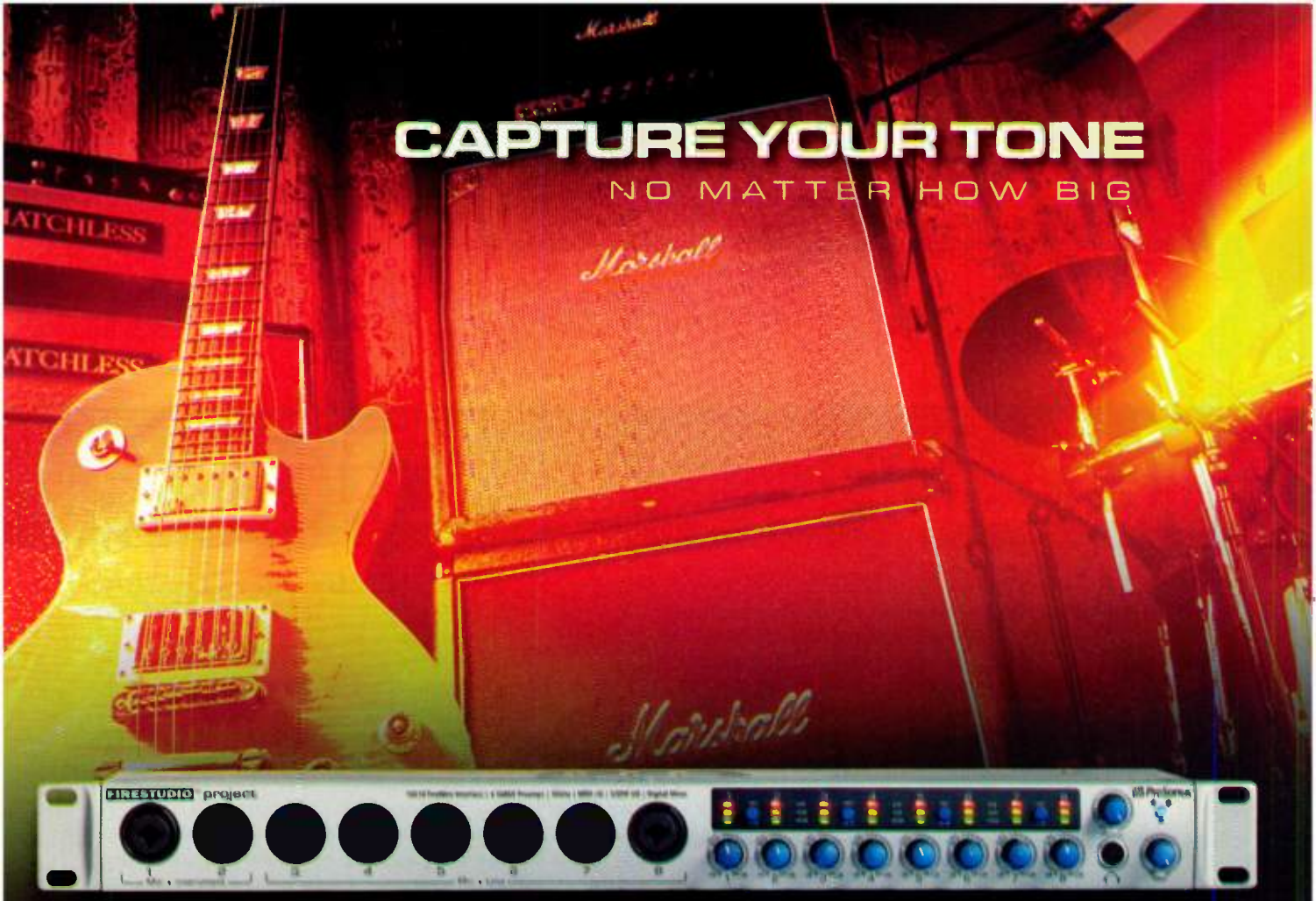

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PUNCH IN

Tensions in the Groove

BY JEFF TOUZEAU

PHOTO BY JASON PARRY

"IN the beginning, we had a lot of big ideas," Robbers on High Street's lead singer and principal writer Ben Trokan recalls of the composition process for *Grand Animals* [New Line]. "I was writing arrangements on piano for other instruments, and I thought, 'I have zero experience writing a string part.' So, originally, we thought we would find someone to help bring a kind of soundtrack experience to the project."

Scheduled to enter Sonora Recorders in Los Angeles in the not-so-distant future, Trokan and crew called upon Italian film composer Daniele Luppi in hopes that the cinematic mastermind could help take the band's raw, relentless rhythms and unorthodox melodies to a grander level. As luck would have it, Luppi was up to the challenge, and with engineer Seth McLain in tow, the unlikely conglomerate entered Sonora. There was a slight problem, however. The drummer had quit, and the recording budget wouldn't allow hiring session musicians.

THE DRUMMER QUIT. THE SINGER'S ON THE KIT. THE TUMULTUOUS RECORDING OF ROBBERS ON HIGH STREET'S *GRAND ANIMALS*.

"Ben was put in the position of playing about 75 percent of the album alone," says Luppi. "He had to play a zillion guitars, piano, and all the drums and percussion."

Did I mention that Trokan is not really a drummer?

As a result, the basic tracks were recorded by dialing in a click track, and then praying that Trokan could hold the beat together. To help keep the grooves on track, Pro Tool's Grid feature was employed to quantize Trokan's somewhat naïve bashing. However, when it was time to layer instruments, Luppi didn't want to grid the overdubs in order to sync the tracks with the time-corrected drums.

"We just kept the drums on the grid, and then tracked the rest of the instruments, which produced this surreal push-pull effect," says Luppi. "There's an enormous tension between the overdubs and the drums on the grid. It doesn't always match up, but it works."

Luppi also pushed the band to perform many of the sonic sweetening parts themselves, rather than rely on samples.

"'Guard at Your Heel' is a good example of that approach," Trokan says. "We wanted some tuba and a marching bass drum, so Luppi gave Morgan [King, bassist] a tuba, placed a Royer R-121 in front of it, and then handed me a marching bass drum with an RCA 44 mounted about four inches off the skin. Then, he said, 'Here you go. You want a circus sound? Make it.'"

"I'm convinced a human being will always do it better than a sample—even if it's not right," explains Luppi. "I don't ever want to use a GigaOrchestra, or whatever. Why even bother staring at a computer, looking for sounds, when you can just have a person play the instrument?"

The recording of *Grand Animals* wasn't entirely reckless, of course. Luppi is incredibly sensitive to mic selection and placement, saying that, next to the players themselves, this is the most important part of making an album.

"They had a 1965 Ludwig drum kit in the studio," Luppi says,

"A human being will always do it better than a sample."-Daniele Luppi

Robbers on High Street (left to right)—Ben Trokan, Steve Mercado, Morgan King.

"and I wanted to capture as much of the instrument with as few mics as possible. We put an Electro-Voice 666 right on the head of the snare, a pair of Neumann U67s about three feet up—one pointing at the snare and hi-hat, the other at the floor tom and ride—and an AKG D-112 a few feet out from the kick."

For Robbers' guitars, Luppi and McLain settled on miking Trokan's Vox AC30 and Fender Deluxe Reverb with a Beyerdynamic M 160 ribbon positioned right on the grille cloth, pointed at a 90-degree angle to the speaker cone. King's bass was also miked, rather than taken direct, with an Electro-Voice RE20 positioned right on the cone. For mixing, the gang decided to go analog, burning the songs to 1/2-inch tape at 30 ips.

Though it was a somewhat arduous journey, both Luppi and the Robbers are glad to have collaborated.

"Luppi really helped us develop our compositions," Trokan says. "The songs are more refined, and the scope is broader than ever."

"Every song is a little gem," Luppi adds. EQ

This Month on EQtv

Join us at EQtv—*EQ*'s own video channel chock full of tips, tricks, tutorials, behind the scenes footage of some of the hottest sessions, and tons more. To check it out, visit www.eqmag.com and click the pretty little link, or go direct to www.eqmag.tv. You'll be glad you did. This month you'll see:

- Behind the scenes with Rahim for the recording of their latest release.
- In the studio with mega-drummer Brain (ex-Primus/ex-Guns 'N' Roses).
- Bass and classical guitar recording tips with OTR's Cookie Marenco.

AND TONS MORE!!!

Chicken Tracks

RAFTER ROBERTS

on Improvisational Recording

By Roberto Martinelli

There are no steadfast rules to recording, but, sometimes, it helps to be reminded of that as you spend countless hours trying to figure out how to record a zither. That's why, in the middle of a hair-pulling, teeth-gnashing session, I decided to call producer Rafter Roberts (Arab on Radar, Black Heart Procession, Tarantula Hawk, and Upsilon Acrux), and ask him to wax sentimental on the recording of his latest album, *Music for Total Chickens* (Asthmatic Kitty). Here's what he had to say about throwing caution to the wind, and tracking one of the past year's most intriguing releases.

There's a lot going on stylistically on *Music for Total Chickens*. There are tracks that remind me of John Carpenter's soundtrack work set up against really clangy, dissonant songs. But what strikes me most is a perceived lack of compression on many of the instruments.

I love abusing compression, but, for this record, I went for a very naturalistic approach. I tried to keep what little compression I used on some instruments as transparent as possible. But the drums *are* pretty squashed. They were run through the PSP VintageWarmer with some serious headroom reduction. I did that to add body, and to rein in the dynamics, as there is a lot of ticky-ticky, crash-heavy percussion that can get real washed out.

How did you achieve the quiet, lilting tones on "Encouragement"?

That was recorded in a completely dead control room, with a Neumann U87 a few inches away from the guitar. I didn't do any distant miking on this record. I'd record in different-sized rooms, but I'd always have the mic close to whatever instrument I was playing. I wanted everything to be precise and detailed—which doesn't lend itself to a really live feeling.

Rafter Roberts getting acquainted with his alter-ego.

Matt Fowler

No room miking? Then, why are the stick clicks as loud as the drums themselves?

That has as much to do with compression as it does with mic placement. I used only three mics for most of the kit. It was the "John Bonham method"—one overhead mic above the snare, one mic by the floor tom, and one mic on the kick. Of course, it doesn't *sound* like Bonham [*laughs*].

What was *Music for Total Chickens* recorded on?

It was tracked entirely on a PC running Sony Vegas. The album took three years, so I started it on version 4.0, and I finished it in 6. Thankfully, there were no backwards compatibility issues. That software is awesome.

Why Vegas?

I've gone back and forth between different DAWs throughout the years, and the Vegas interface has always struck me as the most intuitive. I come from a 4-track and 8-track background, so the way Vegas handles bussing and effects routing makes sense to me.

How do you approach recording guitar for your albums?

I love recording guitars direct, but not through a Line 6 POD. I'll run the guitar into an old Radio Shack Realistic Electronic Reverb I got in the early '80s. It's more like a weird little delay box. If you plug the guitar into the mic input of that thing, and crank the input, it gets the most delicious distortion. So I'll play a chord, reach over to the reverb knob, and give it a turn. It sounds great.

There are some "bite-y" guitars that serve as accents, and those were run through a crappy, no-name preamp I got as a teenager. A friend and I opened the unit up, started soldering things together randomly, and then we'd see how it altered the sound. We turned that thing into the gnarliest monster. The EQ got screwed up, and now it makes a biting, harsh, and unpleasant sound. Also, the reverb circuit somehow got soldered back into the input channel, so when you turn it up, you get some really crazy feedback. You can hear it on "Tragedy." I also love the Z. Vex Fuzz Factory. It's total chaos! When I wanted the guitars to produce an uncontrolled feeling, I'd run them through the Fuzz Factory, and then into an API 512.

What was the songwriting process like for this album?

The entire album was born from drum improvisations I recorded. I would just set up mics very haphazardly, and record a few friends and myself banging away. I'd guide the players by telling them things like, "Play a beat until you understand it, and then switch," or "Play eighth notes, and vary the dynamics by starting quiet, getting as loud as you can in the mid-section, and then quieting down in the end." Then, I'd go back and play guitar in, say, 15-second spurts over the drum tracks. I'd chop up the drum and guitar tracks into some sort of structure, and, from there, it was just a matter of layering. I'd add pianos, horns, strings, and, finally, vocals. None of the songs were songs until they were almost completely recorded and mixed. EQ

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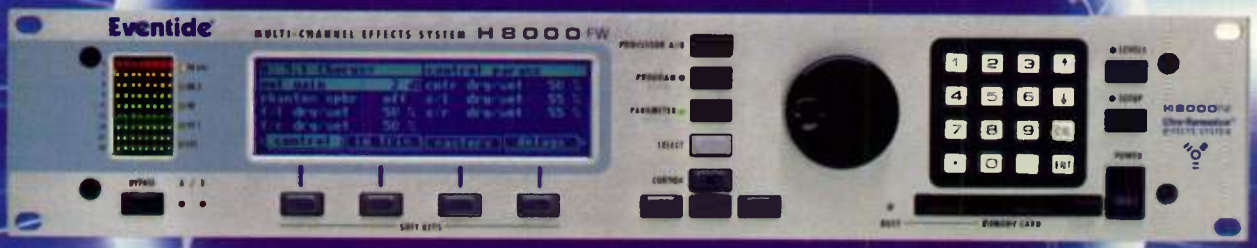

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TERMINATOR RTX

Jennifer Herrera (left) and Brian McKinley (right) in the studio.

Analog and Digital Worlds Collide on RTX's *Western Exterminator*.

by John Payne

RTX's newest release, the aptly titled *Western Exterminator*, is not designed to be easy on ears. That would defeat the band's belief in a kind of ugly beauty to convey the harsh, yet fantastical realities of vocalist Jennifer Herrera's scabrous stories. The album's sound pays tribute to much of the classic analog rock and metal of the '60s and '70s, jacked up by the band's enthusiastic embrace of state-of-the-art recording devices.

"We didn't say, 'How do we make it sound like high fidelity?' The point of the record wasn't to sound as warm and round as possible," says producer/engineer Naday Eisenman. "The record is beautiful, but it has some bruises and scars on it."

"Bruising" is an appropriate descriptive term to use when one hears Herrera's raspy, crackly vocal exorcisms blending with guitarist Brian McKinley's colossal orchestrations of Boston-esque guitar squall, fired across listeners' faces with triple leads *a la* Thin Lizzy. It's largely McKinley's contribution that sets *Western Exterminator* apart from retro-rock worshippers attempting to tow the line between vintage sounds and modern methods. Updating

Tools of the trade: one of Eisenman's racks stuffed full of front-end goodies.

> "The band wanted the end product to be as thick and chaotic as possible."
>
> —Eisenman

his approach by coming into the studio with a Gibson HD.6X-PRO Digital Guitar, McKinley sought to change not only the way he recorded his instrument, but how he wrote his guitar lines.

"It's basically just a Les Paul," he says of the HD.6X-PRO. "But it has a hex pickup near the bridge that converts the audio of each string to digital information. You can go straight into Pro Tools with this guitar. You can affect the spatial qualities of different strings, assign different sounds to each string, mute strings—there's really *too* much you can do with this thing. It totally opened up the possibilities for me in terms of composition."

Eisenman, who engineered most of the album's ground tracks totally live in the studio, says the guitar was tracked direct, as the band was inspired by the '70s recording technique of running a guitar right into the board.

"We think you can utilize modern technology to make better-sounding records these days," says Herrera, "but that doesn't mean we're turning our backs on past methods that created amazing albums."

"I like to build a good front end to ensure that the signal going into Pro Tools is warm and mostly tube," adds Eisenman, who fancies himself a connoisseur of gear integration. "I have racks of great outboard gear—an Empirical Labs Distressor EL-8X compressor, a Chandler TG2, a Neve 1272, a Universal Audio LA610, and Ampex Vintage Tube preamps—but once I get in the box, I have no problem using the plug-ins on my Universal Audio UAD-1 card, or the Massey and McDSP plug-ins. It's amazing what some of these guys are doing. Look at the EchoBoy—its tape emulation is unbelievable!

"I also can't live without the Chandler Limited Germanium Preamp/DI. It can produce a very strange overdrive, and I've never heard anything thicker. We only had to put the Feedback knob at about 10 o'clock to get a totally overloaded sound."

Herrera says that she went into the *Western Exterminator* sessions looking to diversify her vocal portfolio by going balls-out with processing. So Eisenman ran the lion's share of Herrera's vocals through the Tritone Digital ColorTone-Pro plug-in, which custom-designs reverb effects via impulse-response technology. The rest of the vocal chain was an AKG C 535 EB mic running through a Chandler TG2 dual channel and the Empirical Labs Distressor EL-8X compressor (set to a 2:1 ratio).

"The AKG 535 is one of the only condenser mics Jennifer will use," Eisenman explains. "Her voice is really strange—it has a crackle to it—and most condensers make her sound too odd. But the 535 brings out all the right frequencies. We didn't have to EQ our way to a sound in the mix—we just threw the fader up."

Of course, Herrera's insistence on massive ambience resulted in washes of reverb-laden vocals that added to the band's tidal wave of sound. They also fought for frequency space with McKinley's guitars.

"That was a conscious decision by the band," says Eisenman. "They wanted the end product to be as thick and chaotic as possible." EQ

Sharon Jones (center), Gabe Roth (fourth from right), and the Dap-Kings.

Deep Soul

SHARON JONES AND THE DAP-KINGS GO FOR THE LIVE VIBE.

By Shane Mehling

"I don't really care about what people are doing nowadays," says Sharon Jones and the Dap-Kings bassist Gabe Roth. "It's not that I have an agenda against the digital world, but higher signal-to-noise ratios, conversion rates, and transparent frequency response have very little to do with music. Most records today don't have the charm of the albums I listened to when I was young, and that's a damn shame."

Not surprisingly, Roth looks to sounds that are decades old for inspiration, and his band's latest release, *100 Days, 100 Nights* (Daptone), can sit comfortably beside the jewels of '60s soul. From the 8-track Ampex 440 that occupies one corner of his 25' x 15' Daptone Studios to the Otari MX-5050 1/4" deck that sits on the other side of the room, Roth is old school through and through. At a time when DAWs offer more than 100 tracks to work with, Roth feels that even 16 tracks are too much to handle. But, in spite of his thoroughly vintage rig, Roth is quick to point out that a few pieces of choice equipment aren't enough to guarantee a recording that hearkens back to the golden age of audio production. You also must adopt the old techniques.

"I don't want everything neat and isolated," says Roth. "I don't close mic the drums. I place a Shure 556S dynamic a few feet out, and a few inches from the ground, pointed between the hi-hat and kick. Every inch from the ground gets you a lot less bass drum in this application, so you have to keep the mic low. And I'll do anything I can to keep the mic away from the head of the bass drum—that just sounds awful. I route the bass through a cheap direct box and a dbx 160A compressor, put a single Shure SM57 right on the speaker grille for guitar tracks, and I record the horn section—who are always ordered to dance through the takes—with a Shure 315 ribbon positioned three feet away."

Roth's organic approach had to evolve a bit when dealing with Sharon Jones' voice. The diva of Dap sang the entire album live, but there was a bit of a snag when it came time to mix.

"The ADL compressor we were using when tracking Sharon's vocals had a bad tube, and it was sounding really thin," explains Roth. "As a result, Sharon's vocals ended up too far back in the mix. I liked the way the band sounded, so I had a challenge on my hands. Luckily, I had done instrumental mixes on the 1/4", so I flew them onto the 8-track machine. Then, I remixed Sharon's vocals on the 16-track, and flew them onto the 8-track deck, ending up with a mono vocal track and stereo instrumental tracks. I had to sync-up the two machines by hand to get the vocals on the right beats. It was worth the trouble, though, because her vocals were round and upfront."

Roth also opened up the sound of *100 Days* by hard-panning the band, and positioning Jones' voice in the middle.

"The drums and guitar number one are panned all the way to the left," says Roth, "and the bass, horns, and guitar number two are panned hard right—just like it is live. I also like having things either too loud or too quiet. Listen to a Sly Stone record—there are horn lines that are buried in the mix, but they still dominate the arrangement. There's character to that. I don't want each instrument having its own little compartment—which is why I'll EQ the entire mix instead of single instruments. I want the mix to have a live vibe."

Roth's barebones studio approach is a testament to the belief that all you need is a good band and a good song to make a good album. And his live-in-the-studio method is also the perfect match for the band's sultry, sensual, and electrifying singer

"I'm 61 years old," says Jones, raising her eyebrow, "and I don't need to sound like I'm chasing any trends, or doing any of that bubblegum pop. I want to make records that sound like the records I love." EQ

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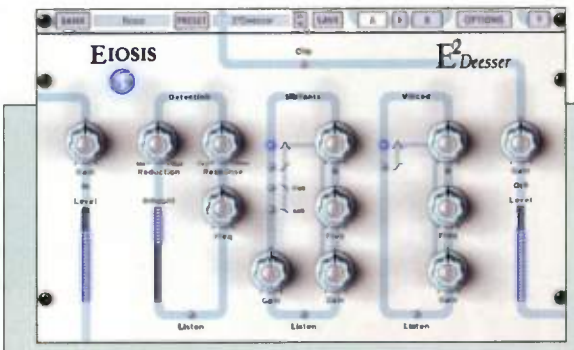

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Rahim—(left to right) Michael Friedrich, Phil Sutton, Chris Bordeaux.

Buckets N' Bass Drums

J. Robbins Goes for Massive Grooves on Rahim's Latest Album

by Janice Brown

It's the hottest day of summer, and New York-based indie rock merchants Rahim are once again making the trip to Baltimore to team up with producer J. Robbins. The mission: Record the as-of-yet-untitled follow-up to 2006's much celebrated *Ideal Lives*.

A D.C. music scene legend in his own right, Robbins has sat behind the board for bands such as The Promise Ring, Dismemberment Plan, and Jets to Brazil. But it's not just his production chops that make him a perfect match for Rahim—a post-punk band born from the influence of the famed Dischord, Jade Tree, and DeSoto records movement. Robbins is also one of Rahim's musical inspirations, having served time in seminal D.C. punk-rock bands such as Government Issue, Jawbox, Burning Airlines, and, most recently, Report Suspicious Activity.

"We wanted to work with J because of a couple records he has made—especially the Faraquet album [*The View From This Tower*]," says Rahim drummer/percussionist Phil Sutton.

The admiration is reciprocal.

"I love Rahim," says Robbins. "They're the only band I know with an equal abiding love of no-wave post-punk, African music, and the Beatles—and they still sound only like themselves."

Entering Robbins' Pro Tools HD2-equipped Magpie Cage studio, Sutton and bandmates Michael Friedrich (lead vocals, guitars, keys) and Chris Bordeaux (bass, guitar, keys) had ten days to record and mix 12 new songs chock full of buzzing synth lines and pulsing rhythms. In addition, Rahim was looking for a more intimate sound than what the band achieved on *Ideal Lives*.

"We wanted the listener to hear everything up close," says Sutton, "as if he or she is watching us practice in our basement."

First things first—get a tight drum sound. To do this, Robbins deadened the Magpie Cage live room.

"I have two big plywood panels that hang off the wall at about an 80-degree angle to the floor," he says. "One side is very reflective and the other is dead. For *Ideal Lives*, we had the live side turned out, so for this session, we'll turn the panels around."

Then, Robbins drew from what he calls "the Steve Albini" files: Tune the drums meticulously, avoid muffling, use condensers as close mics, and employ the M/S (mid-side) stereo-miking technique to capture a room perspective of the kit. The M/S setup consisted of a Neumann M147 (mid) and AKG C12VR (side) placed about head level, directly in front of the kit above the kick drum. For the snare, Robbins captured the attack of the top head *and* the rattle of the snares by placing a beyerdynamic M201 on the top head, and a Shure KSM 141 on the bottom head. A Shure Beta 98 mini-condenser was clipped on the rack tom, and an AKG C414 was positioned directly over the floor tom.

"Phil's kick drum has both heads on it," Robbins remarks, "so I miked both the inside and outside heads. At the mixdown, I occasionally used a ducker to key off the bottom snare mic to

control the bleed from the snare onto the beater-side kick mic. That's something I learned about from a band that had recorded with Albini."

Robbins also placed two Crown PZMs on the floor—approximately six feet back from the kit—and a single Oktava ML52 positioned roughly one foot above Sutton's head. The Oktava was run through a TL Audio Ivory 2 5050 Valve Preamp/Compressor combo with the input gain cranked and the compressor engaged. With the basic drum tracks down, Rahim and Robbins begin experimenting with various percussive overdubs.

"Going into this record, Rahim talked about the way Brian Eno made those Talking Heads albums [*Fear of Music, Remain in Light*], and the Eno/David Byrne collaboration *My Life in the Bush of Ghosts*, where each song was basically a jam, and then all these overdubs would get stacked up on top," says Robbins. "The final arrangements were determined by suotracting certain elements throughout the song. It's a really cool way to make records—although if you only have ten days to make an album, it's probably something to keep in the back of your mind, rather than apply to every song."

While it wasn't the most time-effective approach to assembling a record, Rahim were dead-set on following the overdub method. Laying down basic tracks quickly, the band began chipping away at an ambitious list of overdubs that was affixed to the control room wall.

"We were going for more of an industrial-percussion feel," explains Sutton. "Instead of using bongos to get that world beat sound, we incorporated really raw and abrasive sounds—like garbage cans and Spackle buckets—to bring in a sort of urban-style groove."

All three members contributed percussion overdubs. Robbins had never miked a bucket or a trashcan before, and the operation was further complicated by the fact the musicians' feet would tip the bucket up while they were playing.

"On some tracks, we put a Shure Beta 52 under the bucket for that deep 'P.A. kick drum' low end," says Robbins. "Otherwise, we miked them at a distance of about four or five feet away with either the M147 or the M147/C12VR M/S array."

Rahim's main goal in the studio is to make a record capturing the energy and immediacy of its live shows. So, percussion overdubs notwithstanding, the band decided to stick pretty close to its stage instruments for the new recordings. Robbins miked the guitar amps with a beyerdynamic M500—complete with a Steven Sank ribbon-stock mod—and a Royer R121, both placed off-axis, at about five inches away from the speaker, and run through API 312s. For the acoustic guitar tracks, Robbins aimed a M147 at the soundhole, and also pointed an AKG C414 TL2 toward the soundhole from the 12th fret. For Bordeaux's bass, Robbins used an Electro-Voice RE20 and Audio-Technica AT4033, both run through a Universal Audio 2-610.

"I used no compression on the bass," notes Robbins. "They have a weird Fender Bassman cabinet with 12" speakers aimed in at each other at a 90-degree angle. So I took off the speaker grille, and put the mics inside the cabinet—each on-axis to an opposite speaker, but 90 degrees away from each other."

If any studio techniques pique Rahim's interest, it's the tactics used on early Beatles recordings, such as panning instruments hard left and hard right.

"For *Ideal Lives*, we panned the bass and guitar across from each other," says Robbins. "This time, because there are so many more overdubs, we had to pan things a little differently. For example, we used two mics on the guitar amp, so I panned one mic to the left, and one to the right. It's hard-panned, but it's still a fairly narrow stereo image of the guitar. Then, we brought in the 'extras' in a kind of fun way, so you may hear the cowbell all the way over to one side, and the tambourine coming in way over to another side."

Ten and a half days after hitting Magpie Cage, every song was recorded and mixed—a feat Robbins attributes to strong and decisive songwriting and pre-production.

"The mix is really mostly about balancing the tracks," he says. "It's down to the band's sense for arranging its material and their sounds. Rahim knew exactly where everything belonged before they got into the studio, and that, to me, is the best way to work." EQ

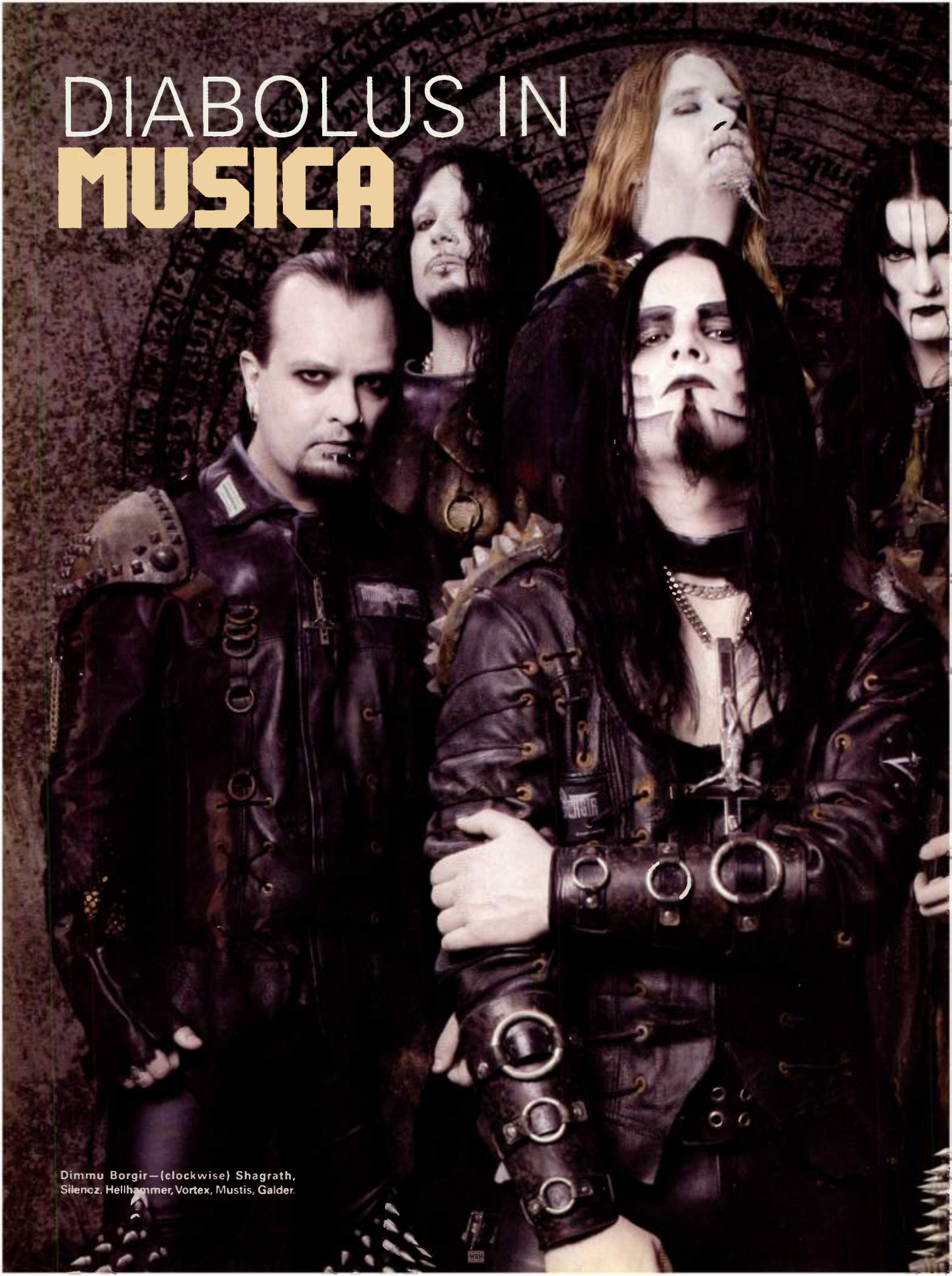
HOME COOKING

Adding and subtracting percussion overdubs to basic tracks is a technique that has been employed, to varying degrees, in a number of different genres. The trick, of course, is ensuring that all those cool overdubs actually add rhythmic interest, rather than run the groove off the rails, or gum up the percussive impact. Happily, Rahim also wanted to evoke the panoramic stereo of old Beatles records, and savvy panning and positioning of mix elements can help clarify even the densest amalgam of overdubs.

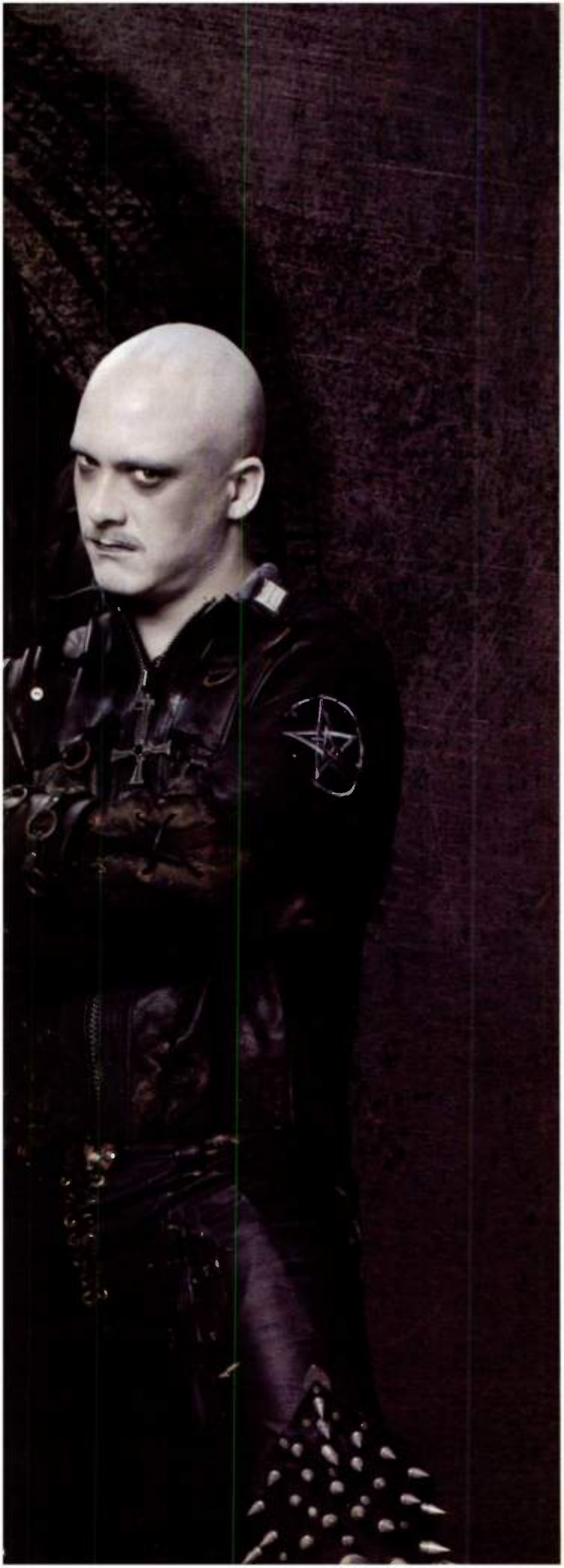
The first step to percolating rhythmic layers is to consider narrowing the stereo spread of the drum kit. Pan the kick and snare to center, and pan the toms and overheads no wider than 10 o'clock and 2 o'clock. Now, experiment with moving the percussion overdubs around the basic drum pulse based on their frequency ranges (low end, midrange, high end). Try doing a bit of a Phil Spector-ish, monaural wall of sound with bass-oriented instruments—such as big floor toms and congas—and pan them in the middle. You'll also need to tweak the relative volumes of these overdubs to ensure that the low end delivers a propulsive, dance-club boom, rather than just a bunch of muddy bass. If anything starts getting goopy, pan the offending low-end overdub ever so slightly to one side, but leave most of the hard-right and hard-left space for midrange and treble elements. I tend to pan midrange sounds (slapped congas, tablas, wood block, etc.) between 9 o'clock and 3 o'clock, and high-end parts (tambourines, triangles, hi-hat counter-rhythms, etc.) full left or right at 7 o'clock and 5 o'clock, taking care to nudge level relationships so as not to have everything chattering right in the listener's face. I also mute parts here and there to open up mix space, and then add elements back to punch up a song section as needed. Ultimately, you should go with whatever methodology works for you, and as long as the groove cooks, you can rest assured you've managed your percussive textures brilliantly. —*Michael Molenda*

EQ tv.
See exclusive footage of Rahim at www.eqmag.tv.

DIABOLUS IN MUSICA



Dimmu Borgir—(clockwise) Shagrath, Silencz, Hellhammer, Vortex, Mustis, Galder.



FREDERIK NORDSTRÖM TELLS HOW HE RECORDED DIMMU BORGIR'S DEVILISH NEW ALBUM *IN SORTE DIABOLI.*

by Roberto Martinelli

Dimmu Borgir. The name has been synonymous with grandiose, symphonic black metal for more than ten years. But that probably means very little to many *EQ* readers, as black metal is not a style that has garnered much of a fan base on American shores until very recently. Tabloid stories of the murderous, building-torching proclivities of a few early '90s Norwegian black-metal bands aside, the genre has largely been ignored by the popular American music press. And that's a shame.

Sure, black metal is a bit subversive for many tastes—if not downright off-putting in its aural extremity and Lugosian aesthetic. But the music is (generally) expertly crafted, and it makes for a unique listening experience.

However, black metal's relative obscurity is coming to an end, thanks to Dimmu Borgir. Though widely celebrated abroad (2003's *Death Cult Armageddon* sold more than 200,000 copies internationally), increasingly regular rotation on MTV2 and Fuse, as well as some Ozzfest stints, are opening the band up to a wide audience of American metalheads. And now, sporting a revamped lineup, and a superior new album, *In Sorte Diaboli*, the boys in black are poised to further their sonically unholy evangelism.

EQ caught up with Swedish producer Frederik Nordström (Arch Enemy, In Flames, At the Gates), who gave us an exclusive look into the recording techniques used to track, mix, and pre-master Dimmu's latest sinister opus. So sit back, ready thy goat horns, and read how the best-of-the-best records the blackest-of-the-black.

You've recorded real orchestras for accompaniments in the past, but decided against it for *In Sorte Diaboli*. Why?

For past records—namely *Death Cult Armageddon*, where we tracked the Prague Philharmonic—we would have up to 80 players all being recorded simultaneously through five mics. This created problems, because the entire orchestra would be on just five tracks, and we couldn't raise the volume of the cellos, and lower the horns, for example. So Mustis [Dimmu keyboardist] spent weeks creating a virtual orchestra in TASCAM's GigaStudio 3 in order to have each instrument as a separate track.

But don't the orchestral players control the dynamics of a piece? If they are conducted properly, the levels between sections shouldn't be that much of a problem.

True. If it was an orchestra alone I would agree, but it's an orchestra performing within a song like "Progenies," and the instruments function differently in the context of a heavy metal song. Metal is not dynamic like classical music is—its purpose is to make your ears fall off [*laughs*].

Do you find that sampled strings lack the depth and dynamic impact of a real string section?

It was a big challenge for Mustis to create these parts and make them sound realistic. It sounds awesome, but does it sound totally like the real thing? No. This is where being thoughtful with your mix will help a lot. I envisioned where the players in an orchestra sit, for example. Horn players are always far back, so I put a lot of reverb on the horn tracks to make them sound farther away. And the tympani is usually to the left, so I panned it that way.

How did you record Mustis' keyboards?

Just through a DI box into Pro Tools. I prefer this method to running the signal through a cabinet and then miking the cab. You get the true sound of the keyboard through a DI. A keyboard is a very full-range instrument, so running one through a guitar cabinet will limit its sound. Now, some say that miking a cabinet makes for a fuller sound, and I think it sounds cool for some bands, but it's not appropriate for Dimmu Borgir.

How digital is *In Sorte Diaboli*? The last time we spoke, you were recording to tape, dumping the tracks to Pro Tools, and then mixing on an Amek Angela II.

Everything was done in Pro Tools HD3, and mixed using the Icon D-Command, so that I wouldn't get "mouse arm" [*laughs*]. We used two Digi PREs and two 192 I/Os—that's it! I call it an upgrade, though purists will argue that. I think each generation of Pro Tools just gets better and better.

Perhaps it sounds *too* good. Maybe that's everybody's problem with it? I figure I can always use the Lo-Fi plug-in the D-Fi bundle to make things sound more retro. Or Crane Song's Phoenix, which rules for tape emulation. I record vocals through a Tech 21 SansAmp to get a dirty sound, and I use Waves SSL 4000 G and E EQ, which sounds very hard and icy when you crank the treble. It's perfect for black metal.

What mic and preamp combinations did you use for Shagrath and Vortex's vocals? For Shagrath, we used the Shure SM7. We call that the "Metallica vocal mic," because that was James Hetfield's sound on those old Metallica albums. For Vortex, we used a Neumann U67 because his parts are all clean, and that mic matches his voice perfectly. Both signals were run through the channel strips from my old Amek Angela II.

What equipment did you use to get the guitar tones on the new album?

The guitar sounds can be attributed to the Engl E670 Special Edition amps I have in the studio. We would match each guitar with an Engl 4x12 cabinet, and then slave the preamp signal from the heads to an Engl Savage 120 and an old Marshall 4x12. I put a Shure SM57 straight on the cone—about two inches from the grille—of the Engl cab, and another SM57 right on the grille at a 45-degree angle from the cone of the Marshall. Each was assigned to a separate track. The straight-on SM57 sounds very bright, and the off-axis SM57 is very dark. Galder and Silenoz each did two tracks on each song, for a total of four. All their effects came from the Roland GP-8. The guitars sound way better than what they did on *Stormblast*—that sounded like they ran their distortion pedals straight into the console [*laughs*].

What about Vortex's bass?

It's only one track. His Warwick bass ran through an old DI box I stole 20 years ago [*laughs*]. Real simple—which is good, considering how difficult it can be to record Hellhammer's drums.

His kit makes Neil Peart's look minimal!

His kit is all close-miked, heavily gated, and he has DDrum triggers on everything, as well—two kicks, six toms, two snares. All in all we had 30 tracks of drums on this album. We did record the drum shells, but most of what you hear are the triggers. He plays so fast that it's impossible for him to hit hard, so we'd run the trigger signals directly into SoundReplacer, and get our sounds in the program. We only had four mics as overheads—two Neumann KM 184s, and two KSM 141s. If you place them equidistant from the source, then everything is okay. In this case, each mic was about 50cm above the cymbals. The only immediate issue is that the roof of the live room is very low, and that creates a peak around 3kHz that needs to be immediately cut with EQ.

What about the close mics?

I used a Sanken CU31 for the snare, and Shure Beta 56s on each tom. There were no mics on the kick drums—they're 100-percent triggered. Each mic was placed within a half-inch of the head. We did this because—as I said—he hits quite soft. This can be tricky—especially with the cymbals. He keeps them real tight so they don't move much, so he can hit them multiple times very quickly. That's why the overheads were only 50cm from the cymbals. We had to make sure we were picking everything up. We'd keep a certain amount of the miked tracks, as that adds a human quality to the recording. It's maybe 20 percent real drums on the album.

Is it a concern that so much triggering and replacement of the acoustic drums might not sound natural?

Triggers won't make you sound bad if you know how to use them, and the drum plug-ins of today are really good about giving you optimum control of your sound. You just need to know how to handle them. If you understand drums, then you will be fine. You just have to understand the instrument you are emulating. Same goes for things like GigaStudio. Mustis understands how strings are played, so he can compose with that tool, and make it sound good.

Beyond that, there are many practical reasons for triggering, or using a program like SoundReplacer in the studio. I don't think EQ works all that well for changing the sound of certain drums without making them sound unnatural in the process. If you're lacking bottom end on a snare track, boosting the low frequencies doesn't magically fix the problem—it usually just makes it sound muddy. In that case, you're better off substituting the track you recorded with one that has more low end built into it.

For example, just today I recorded a snare that was very short and crisp. It had tons of attack, but no ring or ambience. So I found a sampled drum that was mostly ring, and almost no attack. Blending the two tracks together made for a very live sound. It's about picking the right samples, and making them complement the song.

Records keep getting louder and louder as mastering engineers continue to crush the mixes to death in an attempt to appease the label guys who only care about getting radio airplay. What do you do to your mixes to try to keep the mastering engineers from killing your dynamics?

I try to give them limited room to work by getting the mix as hot as I can before sending it off. I've been using the new TC Electronics MD3 plug-in before I send the mix off. I'll run the final mix through a tape emulator to give it some warmth, and then I'll throw that through the MD3. It's pre-mastering. You can get the meters to stand on 0, and it still sounds good. The mastering guys can't do anything to surprise you after that [*laughs*]. EQ

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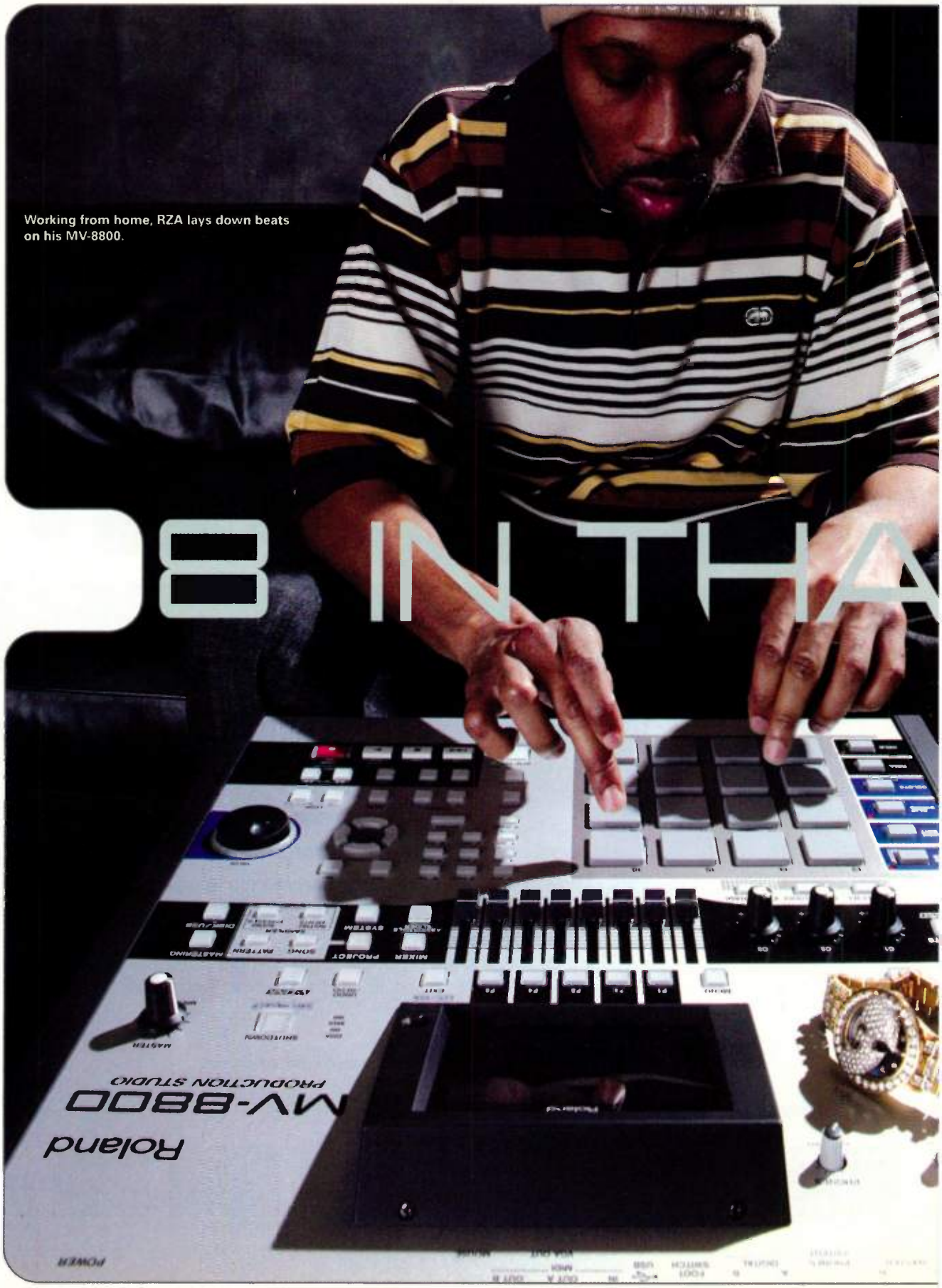

Working from home, RZA lays down beats on his MV-8800.

> "I told them the next five years would be guided by the force of will, and that those five years I was the answer. There was a certainty that nothing could hold us back. I would tempt death because I knew I couldn't die. I told them that if each put their solo careers on hold, we could work together for something much bigger. I told them, 'If ya'll give me five years of your life, I promise you in five years I'm gonna take us to the top.' And so we gave each other our word. The Wu-Tang Clan was born."

by Richard Thomas

CHAMBER

RZA and the Wu-Tang Clan Are Back with a Dream Team of Collaborators for *The 8 Diagrams*.

The above passage was taken from the Capitalism chapter of the *Wu-Tang Manual*, a 240-page manifesto written by the East Coast group's principal producer and strategic mastermind Robert Diggs, *a.k.a.*, the RZA. After the success of the Clan's first independently released single, "Protect Ya Neck," RZA convinced the other eight members—Ghostface Killah, Masta Killa, U-God, the GZA, Raekwon, Method Man, Inspectah

›››

Method Man (left) and RZA (right) going over notes at Legacy's Studio A509.

"We ended up working on the record for three months, and it was definitely one of the more creative sessions I've ever been on."

››› Chris Soper

Deck, and Ol' Dirty Bastard—that before they could divide and conquer the industry, they had to stand financially and creatively united. What unfurled over the next decade would affect nearly every facet of the rap game, from the music to the contracts to the clothing.

The band's first full album, *Enter the Wu-Tang (36 Chambers)*, redefined the boundaries between underground and mainstream hip-hop. While Dr. Dre and the rest of the West Coast was falling in love with the cleanliness of the Roland JV-1080, RZA crafted *36 Chambers* almost exclusively on the Ensoniq ASR-10. Smoldering with opaque bass and dusty drum grooves, the album underlined RZA's love of funk and soul music. From the heavenly piano trill in "C.R.E.A.M."—lifted off the beginning of The Charmels' "As Long As I've Got You"—to the oft-sampled "Synthetic Substitution" on "Bring Da Ruckus," RZA sliced and diced his parts in the ASR-10, pushing the machine's meager 16MB capacity to the limit.

Wu-Tang Clan's second album, the Grammy-nominated, two-CD epic *Wu-Tang Forever*, dropped in 1997. Though RZA began to farm out production duties to Wu family affiliates such as True Master and 4th Disciple, *Forever* featured RZA's most eclectic gear combinations yet. Looking to obtain a richer drum sound, he made use of a ddrum prototype on "Hellz Wind Staff" and "Severe Punishment," as well as a prototype Nord Lead, and a hard-to-find Oberheim OB-Mx rack module. RZA's sound was still raw and grimy, but his palette grew larger, and he relied less and less on samples to dictate a song's melody and progression.

The next two Wu-Tang albums, *The W* ('00) and *Iron Flag* ('01) never reached the stature of their predecessors, but RZA maintains that *Iron Flag* touched upon nearly every production tactic he had uncovered, from the triumphant string patches on the Kurzweil K2500 to the highly stylized, synth-heavy instrumentals he coaxed out of the Ensoniq TS-10. He continued to let protégés like True Master and Mathematics contribute to the Wu-Tang sound, but RZA's sonic imprint was the lynchpin that held each Clan member's distinctive style together.

"I think the Wu mentality still exists in hip-hop and entertainment," says RZA. "I know

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corporate has been shuttin' it down, but it's there. Is the record company gonna let another wave like that come through? I don't know if they will or won't, but I think they *need* to. When we did this the first time with [Loud Records founder] Steve Rifkind, record companies *and* hip-hop itself grew."

As fate would have it, RZA and the Wu-Tang have found themselves right back where they started, partnered up with Rifkind at a freshly resurrected Loud for the release of the band's fifth studio album, *The 8 Diagrams*.

Most of *The 8 Diagrams* was recorded at Legacy Studios in New York and Paramount Studios in Los Angeles with RZA's custom-painted, yellow-and-black Roland MV-8000 as the cornerstone for most everything you'll hear off the album. (He began using the MV-8000 while working on the soundtrack to *Blade: Trinity*, and he's currently scoring the Vin Diesel film, *Babylon A.D.*) Recording sessions at Legacy would usually commence with RZA dialing up a beat from his MV, and pumping it through the studio's custom-built Augsperger monitors and subwoofers. Combining the fat analog signals of the Roland JV-1080 with the tactile flexibility of the MC-909, the MV has streamlined the way in which RZA is able to chop up and sequence his samples. In addition to its MIDI capabilities, the MV is able to handle up to eight tracks of audio, which allowed RZA to overlay his own bass and guitar instrumentation over the beats he created.

The MV was run through a Whirlwind passive direct box and into the mic preamps on a SSL 9000J console. RZA would either EQ sounds on the console, or in the box, using Sony's Oxford plug-ins for Pro Tools. Vocals bypassed the console all together, being sent to Pro Tools through a pair of vintage Neve 1081 preamps. A dual-microphone configuration was set up for each MC to catch different elements of the performances. RZA and lead album engineer Chris Soper would alternate between a Neumann U67 and a U87 used in conjunction with an AKG D12e to retain the classic vocal rawness of the early Wu-Tang tracks. Though he used the Sony Oxford Limiter for rough mixes, the Waves Renaissance Compressor was Soper's go-to plug-in for vocals, usually dialed up with a ratio of about 4:1.

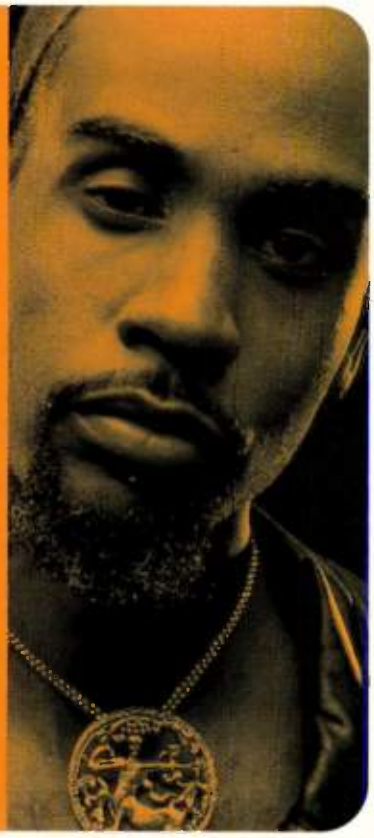
"It was a lot like a sports team that has been to the playoffs many times," says Soper of the vibe in the studio. "They were extremely confident in what they did. If somebody wanted to try something, they'd try it. We ended up working on the record for three months, and it was definitely one of the more creative sessions I've ever been on. RZA kept the craziest hours ever. He'd only stop if we had another session coming in the next morning. People would come and go, but he was always there."

"We got some ill sh*t," RZA smiles. "So many people came through. Nile Rodgers gave me three old songs with Bernard [Edwards] playing on them!"

P-Funk maestro George Clinton dropped by Legacy to freestyle the hook to "Wolves," an old-school track with an indie-rock bounce that RZA pieced together on the MV-8000. It features a choice horn performance by Uncle John

CONTINUED ON PAGE 30

THAT OLD BOOM BAP



"When I go into a lot of studios, I see a whole lot of equipment not being used, or I see people who have a lot of equipment they don't even know *how* to use," says producer and RZA collaborator Trú James. "For me, it's knowing how to use what you have, and my setup is pretty simple. I have one mic that comes right over the top side of the snare, and I don't put any mics on the bottom. When I hit the snare, I want a thick, solid signal coming in. I don't like to do a lot of messing with it afterwards. Old wooden snares are my preference, because they have a thicker, warmer sound. I found a nice ten-inch Pearl at a pawnshop while I was on the road. It's a small, stinging snare, and it's just incredible-sounding. For miking, I use an old Shure mic kit with a PG56 for the kick and a PG52 for the snare. I keep a blanket inside the kick, and I set the mic back just a touch from the beater to get a signal that has a good attack and nice roundness. You can put the mic closer to the beater for more attack if you want, and if you loosen up the back skin you get an 808 thing happening.

"Then, I have an old Sony condenser mic I put face down right over the top of the hi-hat, close to where the stick will hit because I like to hear the attack. I use Zildjian A Custom 12-inch hats that, like the snare, have a lot of sting to them. My crash is a Zildjian A Custom medium. For my overheads, I use a pair of AKG C-1000 S mics. I set one up closer to the right side in between the floor tom and mid tom, and I have the other hanging over the crash, which gets the high tom and crash side of the set.

"Once I have it all set up, I mute everything except for the mic I'm working on. The key is making it sound like I'm sitting there playing the set. You'll hear the snare because it's right there next to you. The hi-hat is heard a little off-center to the left, but it's not as strong an attack as the snare. The kick and the snare I usually keep in the center of the mix. My goal in mixing in the overheads is just to add a little dimension to the sound—kind of like how James Brown used to record back in the day." —*Richard Thomas*

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Editor - EQ magazine

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Engineer/producer - U2, Bob Dylan, Peter Gabriel, Emmylou Harris, Ron Sexsmith, Robbie Robertson

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"Anything I make, I run through my ASR, because that's what I started off producing with. It gives me a certain type of old-school sound."

››› Mathematics

CONTINUED FROM PAGE 28

recorded with RCA 77 ribbon mics. Q-Tip arrived at the studio with an armful of LPs that were sampled into an MPC 3000 for the creation of "Kids With Words" (which may end up as a B-side), while RZA used the MPC 4000 for the slow rolling "Weak Spot." Though it didn't make the album, the cinematic RZA/King Tech collaboration "Thug World" features System of a Down bassist Shjavo Odadjian, who is currently working with RZA on a side project that's tentatively titled Achosen. Hip-hop legend Easy Mo Bee—an early studio mentor and producer of RZA's first-ever single for Tommy Boy in 1991, "Ooh I Love You Rakeem"—came through with co-production on "Take It Back." Created using a combination of the E-mu SP1200 and Akai S900, "Take It Back" features Raekwon, Ghostface, Inspectah Deck, and a strong verse by U-God. Not wanting to skimp on strings, RZA enlisted the help of violinist Marco Vitali, who is featured on "Gun Will Go" and "Starter." Recorded with a single Neumann U67 and run through the 1081s, Vitali's performances were processed through a high-pass filter, layered by Soper for a full-bodied sound, and then treated with healthy amount of reverb—usually from the Waves Renaissance Reverb plug-in or a Lexicon 480L.

Mathematics, the group's go-to graphic designer and touring DJ, contributes one of the album's strongest tracks, "Stick Me For My Riches," which originally appeared as an instrumental on one of his mix tapes.

"I've always been a big fan of Gerald Alston, who sings with the Manhattans," says Mathematics. "I was sitting in my apartment in Queens after I completed the beat, and the track was giving me this certain vibe, so I just started writing some words to it. I got in touch with Gerald, and we came together to lay the vocals. I made it on my ASR-10, and I used some sounds from my Yamaha Motif Rack. Anything I make, I run through my ASR, because that's what I started off producing with. It gives me a certain type of old-school sound."

"Riches" was rearranged by RZA, graced with flows from Meth, Deck, RZA, and GZA, and touched up with a new bass line courtesy of Stone Mecca's Trú James. The newest addition to the Wu-Tang family, Stone Mecca is

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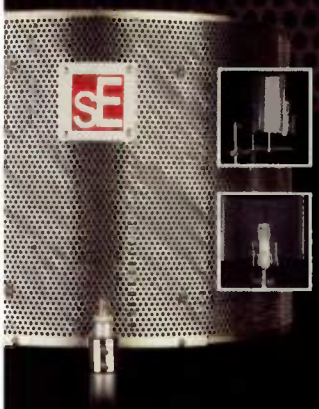
Engineer of Santana



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responsible for the majority of the backing instrumentation on *The 8 Diagrams*. Their presence does more than just build a bridge between the classic sound of *36 Chambers* and the crisp, sparse programming of RZA's *Bobby Digital*-era production. It affirms RZA's development as a composer and arranger.

"This is a natural progression for RZA," says James. "He's always going to have the same ear for making that Wu-Tang sound, but now he's able to understand things like instrumentation and style. I think throughout the years he has learned to add his own musicianship to the overall picture. He shocks me on the piano, and now he's playing a few guitars."

Stone Mecca also appears on the brooding Beatles' interpolation, "The Heart Gently Weeps"—which features a hook sung by Erykah Badu, lead guitar by the Red Hot Chili Peppers' John Frusciante (who also appears on "Windmill"), and some additional guitar by George Harrison's son, Dhani.

"Me and Russell Crowe did *American Gangster* together," says RZA, "and he gave me this 1961 Gretsch guitar at the end of the film. I gave it to Dhani to play on 'The Heart Gently Weeps.'"

The track was co-produced by George Drakoulias at Paramount Studios. Harrison's overdubs were handled in New York, where Soper ran the Gretsch through a Music Valve Vacuum Tube direct box, and then into Pro Tools, where Harrison tweaked the sound using Line 6 Amp Farm. The track is set to be the first single off *The 8 Diagrams*, taking the place of the cello-infused posse cut "Watch Your Mouth," which had to be removed due to sample clearance issues.

"Even though we kept sampling to a minimum, we still ran into problems with that song," says RZA. "The sample is from *Mission Impossible*, and it's turning *into* a mission impossible."

"Watch Your Mouth" is featured on the group's MySpace page, and it can also be found (along with "Thug World" and the ODB tribute "Life Changes") on a downloadable *8 Diagrams* mix tape available on loud.com. You can tell, however, that RZA is still frustrated at its lack of inclusion on the album.

The consummate perfectionist, RZA was still sitting in on mastering sessions up until this article went to press, and due to each Clan member's personal and professional commitments, few have even heard most of the songs in their entirety.

"GZA loves it, Rae said it's different, and Meth says he's digging it, except he don't like 'The Heart Gently Weeps,'" laughs RZA.

Someone consistently in tune with the album's evolution, of course, is Rifkind, who has been a part of the group's collective efforts since it brokered its deal with Loud in 1993.

"*Iron Flag* never got the opportunity to do what it was supposed to do because of everything that was going on with Sony," says Rifkind, alluding to the lack of label support he received once Loud fell under the Columbia Records umbrella. "Everybody went off to do their solo things, but there was never really closure with Wu-Tang. So you couldn't ask for a better time for this album." EQ


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MASTERING FOR MUSICIANS

How To Add that Final Polish To Your Mixes

By Craig Anderton

The article title alone is enough to cause some professional mastering engineers to run to the various forums and start complaining. "That's what's wrong with this industry—these kids don't know how to master!" "You gotta have a professional do it." Blah, blah, blah.

Normally, I'd be a lot more deferential if I didn't hear so many horrible mastering jobs from professional mastering engineers. Will people mastering at home just add to this mess? Very possibly, but, then again, maybe the home recording masses will be able to restore some sanity to the overcompressed, over-hyped style of mastering that has ruined many a good recording.

Of course, there *are* excellent mastering engineers, and how they take a recording from "okay" to "wow" is a thing of beauty. And, to be fair, many of them are pressured by record companies to make ever-louder recordings. If you can afford a truly good mastering engineer, you won't regret it. But if you can't—or if you want to get started learning a new skill—consider trying your hand at mastering your material.

WHAT DO WE MEAN BY "MASTERING"?

Let's define "mastering" as taking a mix and making it sound even better—then, if applicable, assembling these mixes into a great listening experience. A really good mastering engineer can make the mastered version sound *way* better than the mixed version, but any improvement is a good thing.

BUT ISN'T MASTERING TOO ARCANE FOR THE AVERAGE MUSICIAN?

Yes and no. There are three main benefits of using mastering engineers: ears, objectivity, and technological mastery. Mastering technology used to be much more complex than it is now, because of the limitations of vinyl and cassettes. The gear required was hellishly expensive, and the tradeoffs between album length, level, distortion, and other factors required serious expertise. Mastering wasn't something the average person could do.

The digital-audio revolution has changed that. Digital can be a forgiving medium with plenty of dynamic range. Quality audio plug-ins and processors have become ever more affordable. For musicians who want to master, gear is not the issue.

But ears still are. A veteran mastering engineer will know how to bring out the best in a piece of music. Maybe you have good ears, which means you can probably do good mastering. But *exceptional* mastering requires exceptional ears—something no plug-in can provide. Mastering requires not just learning about how to use technology, but also the ability to hear the *gestalt* of a piece of music—not just individual instruments.

FIRST, THE ACOUSTICS

You can't mix or master well in a room with bad acoustics, but even minimal acoustical treatment can help. Rather than re-hash acoustic principles (which we already covered in the June '07 issue of *EQ*), here are some links with useful information.

The Auralex site is a great place to start. There's a wealth of information, audio examples, and links at www.acoustics101.com and www.auralexuniversity.com.

The RealTraps site at www.realtraps.com has articles, calculators, a downloadable test tone CD, and more. Click on the "Acoustics Info" tab.

The Primacoustic site has a basic primer on acoustics (www.primacoustic.com/primer.htm) that's good for novices.

You'll find useful background on acoustics at Acoustical Solutions' Acoustic Education page (www.acousticalsolutions.com/education/index.asp). It even includes info on hearing and how the ear works.

The MBI site has a Room Acoustics Calculator, and other resources, at www.mbiproducts.com/room.

RPG Diffusor Systems' library page (www.rpginc.com/news/library.htm) is a little more advanced than the other references, but definitely worth a look.

The UCSC Electronic Music Studios, has a useful article on acoustics basics at http://arts.ucsc.edu/ems/music/tech_background/TE-14/teces_14.html. Also from UCSC, http://arts.ucsc.edu/ems/music/tech_background/TE-02/teces_02.html concentrates on acoustics and music.

FLOW

One of the most important aspects of mastering is determining an album's flow. It's one thing to master a track—it's another to master a complete album, and make it a cohesive listening experience. Here are some tips.

- **Make a rough CD with all cuts from the album, and listen to it on random shuffle.** Sometimes hearing a certain order of songs will sound right just because you're used to it. Listening randomly gives a better understanding of each piece on its own.
- **Check the key for each song.** All things being equal, I try to arrange the song order so that the keys ascend, and avoid having two songs in a row with the same key. Just as individual songs use modulation to change the vibe, you can do the same thing for an album. Of course, key shouldn't be your only criterion for choosing order, but it's important.
- **Determine the tempo for each song.** Do you want the album to start off slowly, and build? Hit the listener hard, and then go through variations? Choosing a proper tempo flow can help. An obvious example: For a dance music CD, you can manipulate how your audience reacts by building ever-increasing tempos, then pulling back if you want to chill things a bit.
- **Consider song pairs.** Some songs dovetail naturally into each other, so consider these as individual entities to be arranged with other songs and song pairs.
- **Lead off with your strongest material.** Many people will listen to only the first 15 seconds of your album, then decide whether to continue

ANALOG MASTERING, AND WHY IT LOVES DSD

TASCAM's DV-RA1000

Korg MR-series mastering recorders

Digital mastering is the most accessible and affordable mastering option, but there's much to be said for a sweet analog mastering chain, with perhaps some tube EQs and classic compressors. Analog processing imparts its own sound quality, and some engineers even master to tape, because they like the effect tape imparts to the sound.

The big problem with analog mastering is what to save it to, because converting it to digital defeats some of the reasons for keeping things analog in the first place. However, I've been very impressed with the Korg MR-series mastering recorders and TASCAM's DV-RA1000. Both record using DSD (Direct Stream Digital, which employs 1-bit technology). To my ears, DSD has the accuracy of digital without the brittleness, and the warmth of analog without the imperfections. Granted, there's no widespread delivery system for DSD, but even if you convert the recording to 16/44.1kHz, it sounds better than recording to 16/44.1kHz in the first place.

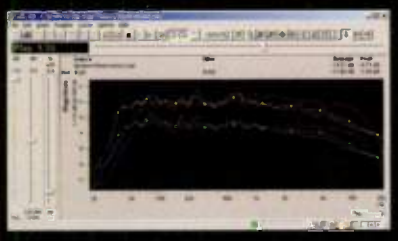

Fig. 1: Har-Bal is a mastering program designed specifically for equalization. The spectrum display identifies possible problem areas, making it easy to do corrections if you can distinguish between unwanted peaks/dips, and the ones that are part of the music.

Fig. 2: iZotope's Ozone 3 is a suite of mastering tools that works as a plug-in under Windows.

Fig. 3: Adobe Audition comes with a wealth of noise-reduction tools: click/pop elimination, clip restoration, noise reduction (shown), and hiss reduction.

listening. I prefer an album that develops over time—which may involve starting off slow and easy. But that's taking a chance in today's hyperactive world.

- **Crossfades can be effective.** Fading out one song while fading in another can ease the transition from one song to the next.
- **Consider a short transitional piece.** I once mastered a CD where everything held together perfectly except for one pair of songs. They didn't really match thematically, and putting the songs elsewhere upset the balance of the other songs that did work together. The solution: a 30-second transitional piece, mostly a drone with no tempo, that crossfaded with the end of one song and the beginning of the next.
- **Don't necessarily normalize all the tracks to the same peak level.** Normalization can work if all the songs have the same basic average and peak levels, but that's not always the case. I generally normalize all tracks to the same level as a diagnostic tool, then listen to the complete CD. If some songs stand out as objectionably louder, I'll bring them down in level. If all the songs seem okay, but one or two seem overly soft, rather than bring down all the louder songs, I'll add a little dynamics control to the softer ones so they have a higher apparent level.
- **Ignore all the previous tips.** The point of assembling an album is to take listeners on a journey that holds them rapt with attention. Although the above tips have worked for me, assembly is *not* a science. Maybe you *do* want two songs in the same key in a row. Don't be afraid to cut test CDs with different orders, analyze them, and keep tweaking.

MASTERING TOOLS

Mastering tools used to be pretty specific, but now people are even using host programs like Samplitude and Sonar to do their mastering. I'm more old school, and use the following:

- **Digital audio editor for working on individual cuts.** Common Windows programs are Adobe Audition, Sony Sound Forge, Steinberg Wavelab, and Magix Sequoia. BIAS Peak is the standard editor on the Mac.
- **DAW for assembling the different cuts to check out song order, do crossfades, etc.** For this, I use a multitrack host. It's easy to just drag the cuts around on different tracks, burn a CD, and live with the song order for a while to hear if it works or not.
- **Har-Bal EQ program.** This clever stand-alone program (Figure 1) is great for fixing EQ issues because it excels at identifying rogue peaks (such as peaks caused by room acoustics, microphone response anomalies, etc.).
- **EQ and multiband dynamics mastering-quality plug-ins.** Mastering quality plug-ins aren't afraid to devour CPU cycles in the name of more accurate calculations, and they may have long look-ahead buffers, making them unsuitable for automation and general-purpose track EQ applications. For an all-in-one Windows solution, iZotope's Ozone (Figure 2) is a great suite of mastering-related plug-ins, but you may prefer to go *à la carte* so you can pick and choose particular processors. Of these, Waves plug-ins get the biggest buzz for audio quality, but there are plenty of other excellent contenders from Sonnox, Universal Audio, PSP, WaveArts, Sony, Cakewalk, etc.
- **Noise reduction.** This includes getting rid of hiss, clicks, and the like (Figure 3). Careful, though—noise reduction can affect the file and create artifacts. But it's usually not a problem to get rid of subtle amounts of hiss, such as the residual effect of using lots of mic pres.
- **The occasional special sauce.** I'm reluctant to use stereo wideners, harmonic enhancers, and similar plugs, but, sometimes, they can help bring sparkle to a less-than-optimally-mixed song.
- **A loudness maximizer.** This is a type of limiter, but use it, don't abuse it, to trim up just a few of the peaks that prevent getting a higher average level. And if you follow the "Loudness Without Overcompression" technique described later, you won't need much maximization at all.

MASTERING STRATEGIES

Being a great mix engineer doesn't necessarily make you great at mastering—the skill set is different. While both activities are subject to Newton's Third law ("Every action has an equal and opposite reaction"), with mixing, all the elements that need balancing are isolated. For example, if the kick drum fights with the bass, you can work on the sound of one or the other to fix the problem. In mastering, nothing is isolated, and everything interlocks. Let's discuss some strategies for mastering individual tunes.

- **Listen to the song all the way through—several times.** Don't touch a control—just listen. Take notes. Understand what the artist wanted to communicate. I feel the purpose of mastering is not to impress a "sound" on the artist, but to bring out the best of what's already there.
- **Fix technical problems, such as clicks or hiss.** This is also your last chance to edit the guitarist's overdulgent 32-bar solo into a svelte, four-measure statement.
- **Fix EQ problems.** You'll likely run into two types of EQ problems: specific (such as

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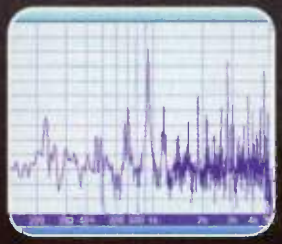

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Fig. 4: Pro Tools includes an AudioSuite plug-in that can remove DC offset. In other hosts, you might find DC removal in a DSP menu.

resonances) and general (such as the track needs more treble, or less midrange). Because an EQ change at a specific frequency affects *all* instruments at that frequency, changes in EQ while mastering are often minuscule. Changes of even a quarter or one half of a decibel—which you would never really hear on an individual track—can have a huge impact on a final mix.

- **Fix dynamics problems.** With multiband dynamics, getting the right settings takes a lot of expertise and experimentation. Start with subtle changes in only one band, and bypass individual bands frequently to get a reality check. If multiband compression is too overwhelming, you can often gang all the bands together, so it operates like a single-band compressor, but without as much pumping or breathing. Or, just use a standard, two-channel compressor if you don't need much dynamics control—you'll get decent sound without pumping.
- **Do the final trims.** Once you're satisfied that a song is complete, trim the beginning and end, but don't necessarily take it right up to the signal. Leave at least a few dozen milliseconds of "air" to soften the transition between silence and music.

LOUDNESS WITHOUT OVERCOMPRESSION

Dynamics are an essential component of a tune's overall emotional impact. Yet some engineers kill those dynamics with excessive compression and limiting, because "everyone else does it," and they don't want their songs to sound weak compared to others.

I'm often asked to make a CD loud, but I can't bear to wreck a great song. So, I've come up with a compromise: Finding that sweet spot where you preserve a fair amount of dynamics, but also have a master that's loud enough to be in the ballpark of today's music. If you follow these techniques, maybe your tune won't be quite as loud as everyone else's, but it just might elicit a more emotional response from those willing to turn up their volume control a bit.

- **Remove subsonics.** Digital audio can record and reproduce energy well below 20Hz. While inaudible, this energy still takes up headroom. You may be able to reclaim a dB or two of level by simply removing everything below 20Hz. However, if you can find individual tracks that create subsonics, fix those rather than apply filtering to the final mix.
- **Remove DC offset.** DC offset can also reduce headroom because positive or negative peaks are reduced by the amount of offset. Removing residual DC offset, using the "Remove DC offset" function found in most digital audio editors and many host programs (Figure 4), "centers" the waveform around the 0 point, thus allowing a greater signal level for a given amount of headroom.

> "Being a great mix engineer doesn't necessarily make you great at mastering—the skill set is different."

- **Be cautious with bass.** The ear is less responsive to bass frequencies, so those who lack mixing experience, or have rooms with poor or non-existent acoustic treatment, often crank up the bass. Using no more bass than needed can open up more headroom for other frequencies. To create the

MORE INFO!

MASTERING AUDIO: THE ART AND THE SCIENCE
by Bob Katz

Bob Katz has been a voice of reason in the mastering community. He seems a lot more interested in finding out the truth of a situation than proving only *he* knows what's good for you, and that everyone else is wrong. This book demystifies some pretty advanced subjects in a surprisingly accessible manner. It covers bread-and-butter topics such as monitoring, decibels, typical gear, and mastering techniques (dynamics, noise reduction, equalization, etc.), but then moves into more advanced concepts such as high sample rates (do we really need them?), jitter, and various useful appendices.

Aimed at intermediate to advanced users, what sets this book apart is the liberal inclusion of practical tips, and the author's ability to be authoritative without being didactic. Even if you already do mastering, this book will help you do it better. Focal Press.

MASTERING MUSIC AT HOME
by Mitch Gallagher

Full disclosure: Mitch is the former editor of *EQ* magazine, and he interviewed me for this book. But if you're looking for mastering info with a practical, hands-on approach, *Mastering Music at Home* is ideal. It describes how pro mastering engineers approach the task, gives helpful background information on the physics of sound and analog/digital technologies, then covers mastering techniques and gear including acoustics, mastering for the Web, and even small-run CD duplication. Sprinkled throughout are interviews with mastering engineers that give a real-world perspective to the topics being discussed. There's even a CD with unmastered tracks from a variety of artists so readers can practice their new-found skills. It's good stuff, and it's written in a clear, non-intimidating style. Thomson Course Technology.

illusion of more bass:

[1] Use a multiband compressor on just the bass region. The bass will seem as loud, but take up less bandwidth.

[2] Try the Waves MaxxBass plug-in (a hardware version is also available), or the Aphex Big Bottom process (hardware only). MaxBass isolates the signal's original bass and generates harmonics from it. Psychoacoustically, upon hearing the upper harmonics, your brain fills in the bass's fundamental. The Big Bottom process uses a different, but also effective, psychoacoustic principle to emphasize bass.

- **As you mix, find/squash peaks that rob headroom.** This is the real secret, but it involves an understanding of peak vs. average levels. For example, consider a drum hit. There's an initial huge burst of energy (the peak) followed by a quick decay and reduction in amplitude. You will need to set the recording level fairly low to make sure the peak doesn't cause an overload. As a result, there's a relatively high peak energy level but a low average energy.

On the other hand, a sustained organ chord has a high average energy. There's not much of a peak, so you can set the record level such that the sustain uses up the maximum available headroom.

Entire tunes also have moments of high peaks, and moments of high average energy. Suppose you're using a hard-disk recorder, and playing back multiple tracks. Of course, the stereo output meters will fluctuate, but you may notice that, at some points, the meters briefly register much higher than for the rest of the tune. This can happen if, for example, several instruments with loud peaks hit at the same time, or if you're using lots of filter resonance on a synth. Setting levels to accommodate these peaks reduces the song's average level.

You can compensate for this while mastering with limiting or compression. This can bring the peaks down, thus allowing a higher average level. However, if you instead reduce these peaks during the mixing process, you'll end up with a more natural sound because you won't need to use as much dynamics processing while mastering.

To do this is, as you mix play through the song until you find a place where the meters peak at a significantly higher level than the rest of the tune. Loop the area around that peak, then, one by one, mute individual tracks until you find the one that contributes the most

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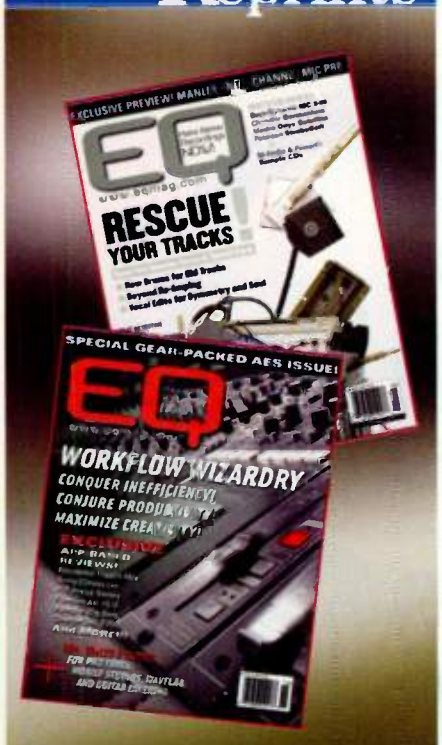

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Fig. 5: Note how a rogue peak is about to be tamed to the level of other peaks using Wavelab's Normalize Sound Level function, which will trim the peak to –5dB.

Fig. 6: The Wave Hammer plug-in in Sony Sound Forge has two stages, one for compression and one for volume maximization. This example shows a maximum gain reduction amount of 2.9dB.

amount of signal. For example, suppose a section peaks at 0dB. You mute one track, and the peak goes to –2. You mute another track, and the section peaks at –1. You now mute a track and the peak hits –7. *That's* the track that's putting out the most amount of energy.

Zoom in on the track, and use automation or audio processing to insert a small dip over a very narrow region that brings the peak down by a few dB. Now play that section again, make sure it still sounds okay, and check the meters. In our example above, that 0dB peak may now hit at, say, –3dB. Proceed with this technique through the rest of the tune to bring down the biggest peaks. If peaks that were previously pushing the tune to 0 are brought down to –3dB, you can now raise the tune's overall level by 3dB and still not go over 0. This creates a tune with a 3dB hotter average level, without having to use any kind of compression or limiting.

- **If you can't fix it in the mix, fix it in the mastering.** If a 2-track file has rogue peaks, use a digital audio editor to locate the ten to 20 highest peaks in the file. For example, suppose most of the levels in the file don't go above –5dB, but there are 12 peaks that hit above –5dB. You can select just the individual half-cycles that go to 0, and normalize them to –5dB (Figure 5). You have not affected the song in any way other than trimming those 12 peaks, yet now you can raise the overall level by +5dB, making a much louder sound that doesn't mess with the dynamics or add artifacts. If you now add a few dB (like 2–3dB max) of loudness maximization (Figure 6) or multiband compression, you'll get an even louder sound that still retains the dynamic feel of the file. To anyone who's about to write in about how normalization is evil, I'll just respond with "Try it. It works."
- **Cheating with frequency response.** The ear is most sensitive in the 3kHz–4kHz range, so you can use EQ to boost that range by a tiny amount—especially in quiet parts. The tune will have more presence and sound louder. But be *extremely* careful, as it's easy to go from teeny boost to annoying stridency. Even 1dB of boost will almost certainly be too much.
- **Consider making a second master for the Web.** Data compression actually allows for a reasonable amount of dynamics. If you're streaming audio, then the sound quality is already taking a hit. Preserving dynamics can help the music sound a little more natural. If you work with streaming audio, try the techniques mentioned above instead of heavy squashing, so you can judge whether the resulting sound quality is more satisfying overall. Doing two different masters isn't unprecedented. Record companies frequently did different masters for vinyl and cassettes.

IF YOU'RE STILL NOT HAPPY WITH THE SOUND . . .

Go to a professional mastering engineer, but keep two things in mind: Provide the raw, mixed tracks at the highest possible resolution (such as 24-bit/96kHz), and don't do any compression, EQ, or trimming of heads and tails. And, don't assume the engineer is good. Listen to examples of his/her work, and make sure it isn't squashed to death.

Mastering is a crucially important part of the recording process. Don't fool yourself into thinking you can do a good job when you can't. But don't fool yourself into thinking you *can't* do a good job, either. Give it a shot, and if everyone who listens to it says, "Wow, that sounds fantastic," consider yourself a mastering engineer. EQ

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THE GYM CLASS HEROES' GUIDE TO HIP-HOP GUITAR

by Michael Molenda

Ever since Run-D.M.C.'s "Rock Box" blasted airwaves as one of the first rap singles to incorporate heavy-as-a-freight-train guitar riffs (courtesy of Eddie Martinez) in 1984, urban dance music and electric guitars have enjoyed a raucous alliance. Sometimes that partnership has involved actual performances (as in Martinez's case), and, other times, it has embraced sampling of pre-existing guitar parts. But whether the "live" or "Memorex" approach has taken the popular lead throughout the years, the very nature of constructing a stylistic hybrid—such as rap-rock—places some creative heat on both instrumentalists and producers. For the guitarist, playing over rap or hip-hop music typically requires parts and tones that propel the rhythm, but steer relatively clear of the sonic space and impact of the all-important groove.

To dance amidst the driving rhythms unleashed by his popular hip-hop crew Gym Class Heroes, Disashi Lumumba-Kasongo takes an almost emo approach, eschewing obvious rock riffery in favor of ambient arpeggios, old-school wah chatter, and shimmering single-note lines. On the group's most recent release, *As Cruel As School Children*, Lumumba-Kasongo also displays a tremendous amount of musical empathy as he slyly darts in and out of classic soul, R&B, lounge, rock, and pop motifs.

Your parts are so clean, light, and bouyant—what tools do you use to craft those guitar sounds?

Since 2000, my main guitar has been a Parker Fly—although I also used a Gibson SG and a Fender Stratocaster on the album. The Fly is really light, so it's a great guitar to gig with, and it's also extremely playable. As the name signifies, it kind of flies as you play it. Before I joined Gym Class, I played a lot of rock and roll through Marshall amps because they drive really well. But I needed something different for this band, so I switched to Orange amps and cabinets. The clean tones on the Orange are so crisp that I feel like every note I play is kind of shouting out at the audience. I don't have too much going on as far as effects go. I used to use a Boss RC-2 Loop Station to trigger a couple of samples—like on the song "Papercuts" [from 2005's *The Papercut Chronicles*]—and a Boss delay, but I ended up switching to the Line 6 PODxt Live. It's a pedalboard version of the POD, and it's really convenient because I can tweak all the sounds I need, and then name the preset. For example, I'll just have my "Papercuts" program that will bring up all these delays. It's a super intuitive and versatile pedal. It's really fantastic. I also went from using a .010 set of D'Addario or Ernie Ball strings to a .012 set. I like the resistance of the heavier strings—they hold back a bit more. It was definitely brutal on my fingers for like a week or so [laughs], but all you have to do is play a whole bunch, and you get used to it real quick.

Considering your rock and roll past, what was the main challenge of incorporating guitar into a hip-hop rhythm section?

Well, it's always kind of a mind trip playing with other bands. I was definitely used to rocking out with the distortion full up, but that approach didn't really work with Gym Class because it was too dense and messy. Those kinds of tones just ate up everything. I quickly realized that if I wanted to make it work with Gym Class, I'd have to play pretty much 95 percent clean tones. So that was the first challenge—playing without distortion. But that actually forced me to become a better guitar player, because there's nowhere to hide when you're playing a straight-up clean tone—every note is clearly heard. Another benefit was that I fell in love with more expressive chords, such as minor sevenths. I never experimented much with other chords before because I was stuck with power chords. Playing clean opened up my brain in really surprising ways.

Did any particular sounds inspire you while you were developing your clean tones?

I really got into the Cardigans a lot. The band's melodies are beautiful, and the songwriting is amazing. They also have good rhythm-guitar parts, and they use these fairly clean and breezy guitar tones. They're not a crazy lead-based band, but I definitely respect what they're doing.

Playing conventional rock guitar typically means dealing with a fairly straight 4/4 drum-kit groove. But hip-hop rhythms often involve layers of live drumming, samples, and sequences with top-line percussion that's quite syncopated. Did you have to reorient your internal clock to nail the rhythmic accents just right?

Well, that wasn't too hard for me, actually. Even though I played in rock bands before, I listened to a lot of hip-hop and dance-oriented music. Also, my parents were really into Afro-Cuban music, so I already had a little bit of background in terms of rhythm. A lot of rock music is rhythmically driven, as well. Listen to Jimi Hendrix or Stevie Ray Vaughan—they're pushing and pulling the beat in subtly different ways. It's not all bam-bam-bam-bam.

True—but making a transition from, say, old-school blues-rock to hip-hop seems a bit more difficult than just critically listening to Stevie Ray.

Well, yeah. I'd say that you have to cut back on your parts, but you have to cut back in the right way. For me, a big part of the whole process was listening to the music, and saying, "Okay, what's the right thing to do in this specific part right *now*?" I had to pay close attention to the kick drum and the bass—because those are the things that are really holding it down—and play around them. You have to nail the feel. It's kind of a lot of pressure, because while you may not be playing as complex parts as you might in a straight rock band, the parts you do play have to be seriously locked to the song's groove. I found I could get away with being a bit sloppier when I was playing rock.

Do you miss stepping on a fuzz box and blasting it out raw?

I can still do that—the tone just has to fit. But I will say, for me, it's harder to imply emotion when the majority of the parts are a clean guitar or an acoustic guitar. I had to learn a lot about developing the right tones to fit the song. It's hard to be explicit about what I did, other than that I was doing some very subtle tonal shadings to change up the emotional impact of various parts. A strummed part might go totally clean or with a bit of an edge, and a melody line might get

Gym Class Heroes—(left to right) bassist Eric Roberts, Lumumba-Kasongo, vocalist Travis McCoy, and drummer Matt McGinley.

some delay—you know, little audio-sweetening sounds to help the parts stand out. I looked to Hendrix for some inspiration, actually. Not for his tone or style, as much as for his ability to think beyond the boundaries, and be creative. I think a lot of the influences I draw from are subtly thrown into the music—they're not direct.

Is there anything else about arrangement or sounds that you learned during the process of making *As Cruel As School Children*?

I learned a huge amount about songwriting from the album's producers, S*A*M and Sluggo—Sam Hollander and Dave Katz. I learned different things from each of them. Dave taught me a lot about patience, as well as when to cut back, what to cut back, and how to use different tones to produce different feelings for the songs. From Sam, I learned a great deal about song arrangement and song structures. A lot of the lessons were about subtle stuff, such as using pre-choruses, or cutting back on the pre-chorus so that the chorus seems louder. I even learned when it sounds cool to repeat a chorus. Both of them really charged up my interest in production and arrangement, and, as a result, I've actually been listening to a lot of Billy Joel. I just downloaded "Honesty," in fact. That arrangement is classic—there are no parts that feel awkward unnecessary. Everything is there for a reason.

Uh, Billy Joel?

[*Laughs.*] It's crazy! I heard "Honesty" in some department store while we were on tour, and I was like, "Billy Joel wrote this?" Then, I started spinning through his repertoire, and I discovered a whole chunk of songs that I liked. It kind of impressed upon me that writing a great song takes a lot of work, and I'm trying to bring a better focus on details, arrangement, tones, and emotion to my work with Gym Class Heroes. EQ

JOSE FERRO ON LOW-END DEFINITION

Ferro working the board solo during a bass overdub session for The Screamin' Lords' *Long Live Me*.

by Michael Molenda

When The Screamin' Lords bassist and producer Jose Ferro started tracking his group's riff-rock album *Long Live Me*, he made sure to bring on the heavy guitars, courtesy of guest artists George Lynch, Chris Poland, Gus G, and Loren Molinare, and band mates Jason Gile and Dustin Boyer. But he also celebrated the importance of groove to the strut and swagger of the acts that influenced his sound—supercharged, super-loud party rockers such as AC/DC, Judas Priest, and Sweet.

"The number one rule—at least as far as classic-rock grooves go—is that the bass has to lock in with the kick drum," says Ferro, who is also vice president of ESP Guitars. "I'm always real anal about that, and the bass tone needs to have enough definition and clarity so that you can distinguish between the bass and the kick. A lot of guys lose that definition, and the tones blend so close together that you can't tell which is which."

To ensure the kick drum and bass lived in their own sonic spaces, Ferro employed a combination of recording techniques and arrangement chops. The project was tracked to Pro Tools LE, with drums, vocals, and some guitars laid down at Command Studios in Los Angeles, and the bass and a few rhythm tracks recorded at Ferro's home studio. His bass was a custom ESP Vintage-5 with EMG pickups, and the amp was a '70s Ampeg B-15 that delivered the ballsy, round sound Ferro was looking to achieve.

"We recorded three separate bass tracks, so I could decide at the mixdown whether it was best to use one track or the other, or to blend the different sounds together," he says. "We used a Y-cable to route the Vintage-5 into a dbx 160X compressor—which was then sent direct to Pro Tools—and the B-15. Then, we miked the amp with a Sennheiser MD421 positioned right on the speaker cone, and a Shure Beta 52 moved a little off-center. The compression ratio on the 160X was a light 4:1, because I wanted the bass to breathe, rather than sound squashed. I also wanted to get as much of the sound as possible from point A—meaning the live performance

WIN THIS!

Brannick Records will give away 25 copies of The Screamin' Lords' *Long Live Me* to the first 25 *EQ* readers who send in the hippest bass-recording tips or techniques. Just e-mail your entries to eqeditor@musicplayer.com, and be sure to write "*EQ* Tip" in the subject line. We'll notify you if you're one of the lucky winners, and your tips will be published in a future issue of *EQ*. Rock on!

from the instrument and the amp. We hardly used any plug-ins at all. I hate the phrase, but it was important to me that the sounds on *Long Live Me* were 'old school.'"

With a somewhat strict "no plug-in" rule in effect, mix engineer Mudrock (Godsmack, Alice Cooper, Avenged Sevenfold) was challenged to find hardware solutions to processing needs. To pump up the bass, he resorted to an old re-amping trick.

"Andrew played back the direct bass track through a Genelec studio monitor, and miked the Genelec using the woofer of a Yamaha NS10M speaker," explains Ferro. "It's a trick that he usually does to capture more lows from a kick drum, and it added some nice subwoofer-type bottom end to the direct bass track. During the mix, we always used a blend of the direct tracks and the two miked tracks."

Of course, this approach produced mammoth booty for the bass, which limited how much low-end wallop could be generated by the kick drum.

"The bass definitely had more low end than the kick drum," says Ferro. "So we boosted the midrange on the kick a bit so that it had some bite. We also added a little high end so that the impact of the beater against the kick drum had a nice snap, but wasn't too clicky in the mids. You need to ensure that the bass frequencies don't get too muddy, but you still want the rhythm section to be thick and powerful."

Keeping frequency ranges relatively separate wasn't the only strategy Ferro employed to ensure his bass punched through the mix with authority. He also worked to craft arrangements that kept the musical parts from smacking sloppily into each other.

"I wrote the parts so that each instrument had a specific role," he says. "For example, I was adamant that the two guitarists never played exactly the same parts, and I was just as adamant that the bass didn't compete with what they were doing. I lock into [Lords drummer] Chris Collier's kick drum, but I tend to be right on top of the beat, or a little bit in front of it, and I made sure the guitars played complementary parts that stayed out of my way. I was also careful that my parts didn't interfere with the guitars. Most every song was played with a pick so that my attack was clean and clear enough to ensure people could hear these rhythmic distinctions [*the lone exception was "Say What You Will," which Ferro performed using his fingers*]."

A final creative decision to mix to analog tape—and then run the mastering session completely from the analog mixes—really served to capture the classic-rock vibe that Ferro wanted for the album. Mudrock mixed the Pro Tools sessions to a Studer A80 2-track running 1/2" tape at 30ips. He also calibrated the deck at +6dB to slam some hot levels to tape for maximum warmth and coloration.

"I didn't want a new-metal-type sound—all super clean and layered to death," says Ferro. "This album is pretty much all room mics and direct mics, and the mixes are just saturated to tape to get all that wonderful bottom end and midrange grit. But, at the end of the day, whatever we did, we did to get the song across. That was the big concern—not how loud the bass was going to be." EQ

LOOPING THE PERFECT PAD

by Craig Anderton

Pads can add beautiful atmospherics to a recording, but if you've ever tried to loop a pad, you're probably aware that it's not an easy task. Any kind of discontinuity as the loop jumps back to the beginning interrupts the pad's flow, creating anything from a jarring effect to a massive click or pop. Although there are sample editing programs (like BIAS Peak 6) that can loop these complex sounds, you may not realize that the tools needed to create perfect loops are available in just about any DAW.

First, an assumption: The pad will have some sort of interesting attack that you want to retain. As a result, you'll want the loop to occur sometime after that initial attack. As pads don't have rhythmic components, it doesn't really matter whether you repeat a two-, three-, or four-bar section of the pad following the attack (or even a longer loop, if you're so inclined). For our example, we'll take a four-bar pad and loop the last three bars.

1. Record a little more than four bars of the pad.

2. Enable snap on your DAW (a half or whole note snap works well).

3. Split the pad audio clip at the start of measure 2. Now the first measure is a separate piece of audio. Also split the pad audio clip at the start of measure 5, and discard everything after the start of measure 5 (Figure 1).

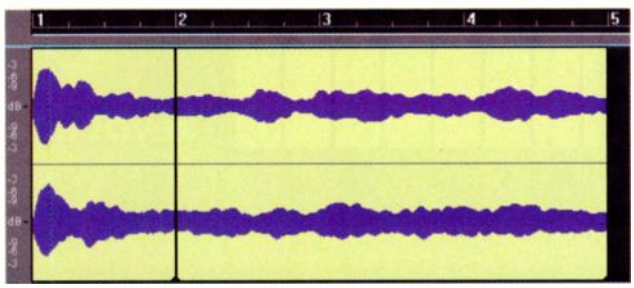

Fig. 1: Note that the file has been split at measure 2; everything after the start of measure 5 has been discarded.

4. Next, we'll need to crossfade measure 1 with the last measure of the pad (the one starting at measure 4). If your DAW offers automatic crossfading, you should simply be able to drag-copy measure 1 on top of the last measure. Make sure you use equal power crossfading. If your DAW can do this, skip steps 5 and 6, then continue.

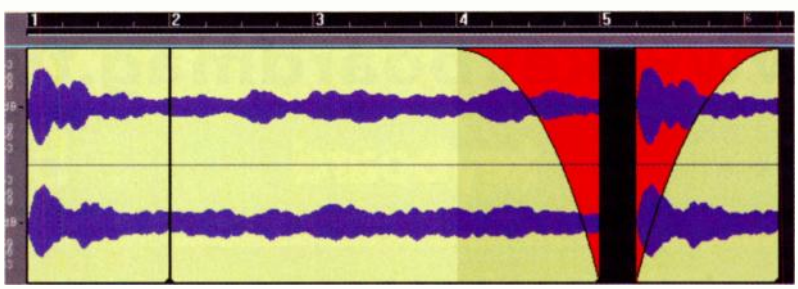

Fig. 2: A one-measure fade-out has been applied to the end of the file, and a one-measure fade-in to a copy of the first measure (placed temporarily after the end of the file).

5. If your DAW doesn't do automatic crossfading, copy measure 1. Use a convex fade-in curve for the copied measure 1, and a convex fade-out curve that extends from the start of measure 4 to its end (Figure 2).

6. Next, layer the two sections together (Figure 3) to create a crossfade. At this point, you have several options. If you want to create a loop out of the last three measures, bounce measures 2, 3, and 4 to a separate clip. This will loop perfectly at the host's tempo. If you want it to loop at other tempos, or in other keys, you can either apply time-stretching DSP, or create an "Acidized" file with metadata that tells the file how to stretch (Sony Acid or Cakewalk Sonar can do this). Note that trying to stretch pads using ReCycle to create a REX format file won't work very well; REX files work best for percussive loops.

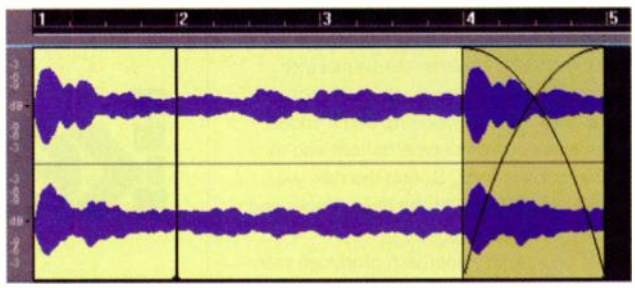

Fig. 3: The two areas with the fades have been layered to apply a crossfade.

If you want to use the attack too, it's still available as the single measure we split off in step 3. Simply paste it in front of the loop, and you'll hear the attack followed by the loop. Extend the loop for as long as you'd like.

Yet another option is if you want to use the loop in a traditional sampler, either software or hardware. In this case, you want the audio (including the attack) to start playing when you play a key or trigger a note-on, then as the note sustains, you want it to loop. To do this:

1. Bounce all four measures to a single audio file.

2. Use the DAW's time ruler to locate the precise start of measure 2, using either samples or milliseconds (whichever format your sampler uses).

3. Import the audio file into your sampler.

4. Set the loop end to the end of the file. Set the loop start to the location you determined in step 2.

5. Play the sampler. You may need to jog the sample start or end point a bit to get a perfect loop, but you should be able to obtain a loop with no glitches or pops.

Now you've transformed your pad into a loop you can "roll out" in a DAW track to provide a background, or load into a sampler. And it will loop perfectly! EQ

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WAVES

7 COMMON PITFALLS OF RECORDING DRUMS

by Jake Wood

The last thing an engineer wants at a session is an overprotective drummer hovering over his shoulder, making passive-aggressive mixing suggestions. But look at it from the drummer's perspective: One of the most frustrating situations he or she deals with is the loss of control over the drum tones on a recording. While there is always room for interpretation of what a drum set should sound like, if the mix doesn't sound good to the drummer, then maybe something wasn't done right. Most drummers really take care to find the tones they want, and they want them represented accurately in the mix. The drum sound should be just as inspirational as the performance—one part wood, one part snap and pop, and one part magic. Here are some common ways that engineers can destroy your groove.

Jake Wood in action.

UNDERBELLY UGLINESS

Some engineers mic the top and bottom of the snare, but the best mixes use the bottom signal solely as a reserve source for additional attack. Keep in mind that nobody actually hears the drums from the perspective of the bottom snare mic, so it should not be prominent in the mix. Turn that bottom mic up, and two problems arise: The warm and wooden tone gets buried, and every snare hit starts to sound like paper (which serves to give ghost notes a new and undesirable characteristic). Add that bottom mic with caution, and remember that one well-placed mic is more valuable than three poorly-placed mics.

GAGGED SNARES

While there is a time and place for both harsh, ringing snares (as on any Soul Coughing album) and dead, cardboard-box snares (as on Neil Young's *Harvest*), many engineers are terrified by ring. Now, while it may be a safer route to record a muted snare, the annoying ring that drives engineers up the wall is actually a vital element of the snare tone. Try and work with the ring rather than killing the tone with duct tape.

STYLISTIC IGNORANCE

A typical jazz kit and a typical rock kit are drastically different in how they produce tone, dynamics, and attack. Engineers who only listen to rock should do some homework if they have a jazz session coming up, and vice versa. Jazz drumming doesn't sound too good when it's played on a rock kit, and it won't sound good if it's recorded and mixed like a rock kit, either. Sadly, many home and studio engineers default to the same methodology no matter what kit—or what type of player—they are recording. Before you dive in and destroy the nuances of a jazz kit, or neuter the attack of a rock kit, listen to the sound of the drums in the room. You should also reference good recordings in the appropriate style. Then, set up the mics to best capture the tone in front of you, rather than the tone your assumptions and biases are playing in your head.

REMIXING

Drummers are very aware that timbre will change depending on the force they use to strike a drum, and, as a result, they become their own four-limbed mixing machines. While it's common practice to boost the kick and snare, and keep the other drums in the background, it's also important to capture accurate volume levels of the individual drums as the drummer plays them. The drummer plays something hard or soft for a reason, and when a part of the kit is turned up or down, the blend can start to sound lopsided. Just imagine what would have happened if someone cranked Stewart Copeland's kick and snare, and buried his genius hi-hat work on those classic Police hits.

OVER-COMPRESSION

Many engineers binge on compressors. While compression can certainly fatten up the tone, *over*-compressing can cause the loss—or over-amplification—of ghost notes, which alters the drum performance. This is bad. And if you haven't matched the release setting of the compressor to the song tempo, you'll likely have sustained tones and decays stepping all over the groove. A little compression goes a long way if you want a natural and organic drum performance that captures the player's dynamics and tone.

TRIGGERING SAMPLES

Replacing natural drum sounds with samples can be much like a breast implant that's a few sizes too big. It might sound good at first, but, ultimately, it can easily become cheap and tacky.

CONTROLLING THE CONTROL ROOM

Making a record takes cooperation, but some engineers think the control room is their place to be in total control of the tonal landscape. It should really be called the "listening room," and everyone should be able to share ideas and be heard. Above all, everyone should be listening critically to the tracks, and seeking ways to make all the instruments and voices sound wonderful in the context of the musical work. A good engineer with sonic defaults and a god complex can absolutely craft a good, conventional drum sound. However, a great engineer who really listens—and who seeks to manifest the sounds the musicians hear in their heads—can improvise around stylistic and tonal idiosyncracies to deliver magic. EQ

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RECEPTOR MUSE RESEARCH

REMOVING SIBILANCE AND PLOSIVES

by Cliff Goldmacher

Removing sibilance (harsh "s" sounds) and plosives (boomy "puh" and "buh" sounds) from a vocal recording all begins with the microphone setup and the singer. The pop guard (or pop filter) is your first line of defense. Unlike the fitted foam covers often seen on dynamic mics—which can muffle or overly diffuse the sound of the vocal—pop filters are generally made up of a fine mesh stretched over a ring-like loop. This filter is then placed about six inches in front of the mic. Given that the cause of harsh sibilance and plosives is the way the air from the vocalist passes over the diaphragm of the microphone, these filters serve two purposes. First, they keep a little distance between the vocalist's mouth and the mic, which lessens the effect of any "esses" or "puhs." But, most importantly, filters actually serve to "break up" the energy and force of the breath coming from the singer. In most cases, this is enough to do the trick.

Another safety measure used to avoid sibilance and plosives has to do with the position of the microphone in relation to the singer's mouth. Assuming you're using a mic that's hanging upside down, you can angle it slightly back and away from the singer's mouth so that the vocalist is singing a little under and/or below the mic. Also, consider asking the performer to sing slightly to the right or left of the mic to avoid the problem of direct blasts of air hitting the diaphragm. Be careful not to make the singer too conscious of his or her mouth position, as this might come at the expense of a free and unfettered vocal performance. Ultimately, you want vocalists to focus on singing, rather than worrying about where to put their mouths.

But even the most careful recording techniques won't be able to completely diminish artifacts from a vocalist whose voice is naturally sibilant. Likewise, some words naturally produce plosives, and, in some cases, no amount of mic/mouth positioning is going to totally neuter those little low-end concussions. In these instances, the wonders of hard-disk recording and signal processing offer simple and effective ways of removing unwanted noises.

Fig. 1. The "fuzzy football" ain't cute. It's sibilance. Terminate with extreme prejudice.

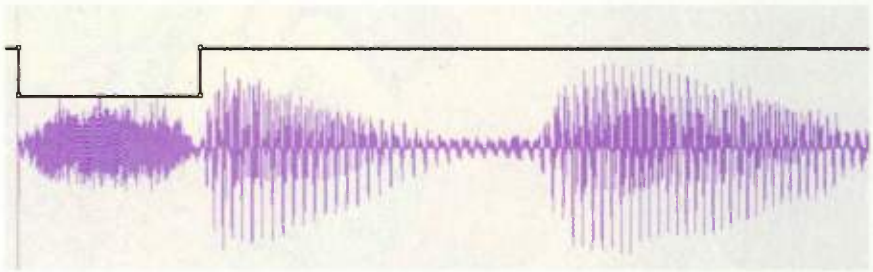

Fig. 2. Automating a dip in volume at the point of sibilance can help diminish the harsh "essss" sound.

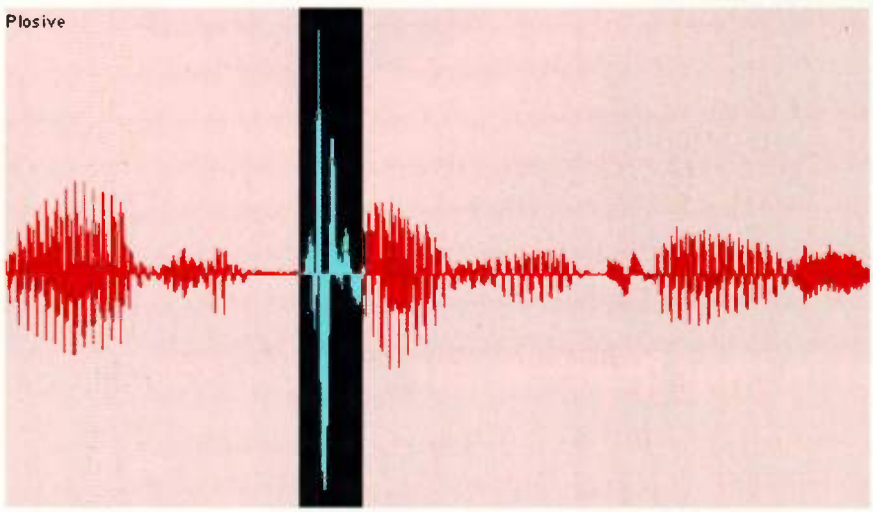

Fig. 3. Plosives are usually easy to spot within a vocal performance, as the waveform often exhibits extreme peaks and valleys.

DE-ESSING

A de-esser is essentially a frequency-specific compressor that can be set to minimize "s" sounds while otherwise leaving the vocal track unaffected. There are a few general settings on the de-esser to consider, and the main one is frequency range. In my experience, most harsh sibilance sits somewhere between 6K and 8K. The best way to pinpoint where the main part of the sibilance resides is to loop a particularly obvious sibilant passage, and then watch how many dBs of gain reduction your de-esser is applying to handle the problem spot. The greater the gain reduction, the closer you are to the "center" of the sibilance. Once you've found the problematic area of the frequency spectrum, your next job is to adjust the de-esser threshold so that you're pulling out enough of the "s" to remove the harshness, but not so much that

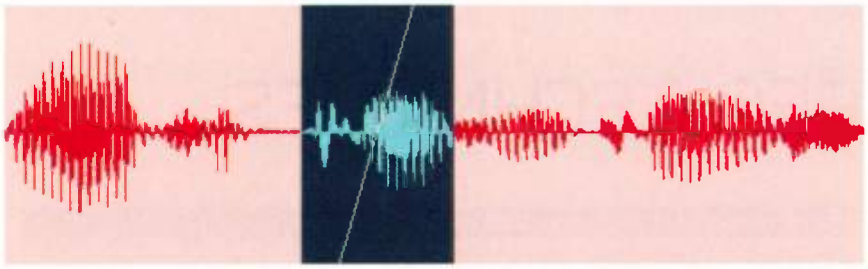

Fig. 4. Fading up from the plosive's point of impact can neuter the boom without damaging articulation or intelligibility.

you're dulling the vocal, or giving the singer a lisp.

FADER AUTOMATION

If you're looking for a more detailed, incident-specific approach, you can automate fader moves for the sibilant spots. The key to this approach is to recognize what the sibilance looks like. As a rule of thumb, sibilance looks like a fuzzy football (Figure 1). Once you've found the proper spot, automate a volume dip of around 5dB or so. The result should sound natural, yet remove the harshness (Figure 2). Remember to make sure the overall vocal level is where you want it in the mix before you start automating the vocal fader, because once you begin the automation, your overall vocal level becomes essentially set where it is.

WAVING AWAY PLOSIVES

When it comes to killing plosives, my tried-and-true method entails editing the actual waveform. Just like finding sibilance, you need to know what a plosive looks like on the screen. The best way I know to describe it would be to say it looks like a combination of steep peaks and valleys right at the beginning of the word in question (Figure 3). The key here is to separate the audio region right at the beginning of the plosive, and create a fade that comes up steeply from there through the beginning of the word. You'll probably need to experiment a few times to know how steep or gradual a fade to make, but, generally, it should cover the peaks and valleys of the plosive, and go a small way into the rest of the word (Figure 4).

CLEAN IT UP!

To recap, the best way to handle sibilance and plosives is to avoid them to begin with. This starts with your mic setup and singer's vocal approach. If, despite your best efforts, you end up with some "esses" and "puhs" that need removal, use the above methods to take away any distracting artifacts in your vocal. A final word of warning—it's easy to overdo it when removing sibilance and plosives, so make absolutely certain the vocal sounds natural. You want the words to be crystal clear when you're done mixing and editing. EQ

6 SLICK STEREO TECHNIQUES

by Craig Anderton

Stereo placement isn't just about realism—it's also about keeping instruments from interfering with each other, as well as adding special effects. Here are some tips designed to help further your skills in the art of stereo.

PERSPECTIVE

As you set up stereo placement for instruments, think about your listener's position. For a drummer, the hi-hat is on the left, and the toms on the right. For the audience, however, it's the reverse. I generally go for the performer's perspective, unless the object is to emulate a concert experience.

FREQUENCY RESPONSE

Low frequencies are fairly non-directional, whereas highs are very directional. As a result, pan low frequency sounds (kick drum, bass) toward the center of a mix, and higher frequency instruments (shaker, tambourine) further out to the left and right.

WET/DRY

Placing a delay effect in the same spatial location as the sound being delayed may cause an indistinct sound. One fix is to weight your instrument to one side of the stereo spread, and the delayed sound (set to full delay—no dry signal) to the opposite side. If you're using stereo delay on a lead instrument panned to center, you can get some lovely results by panning one channel of echo toward the left, and one toward the right. If the echoes are polyrhythmic, this can also give some ping-pong type effects. Of course, this can sound gimmicky if you're not careful, but if the echoes are mixed relatively low, and there's some stereo reverb going on, the sense of spaciousness can be huge. Another option: Filter the echoes so they have more midrange or highs than the sound being delayed.

MAP

Sure, you can just move pan knobs around arbitrarily until things sound good. But consider drawing a diagram of the intended soundstage—much like the way theater people draw marks for where actors are supposed to stand. When it's time to mix, this diagram can be a helpful map.

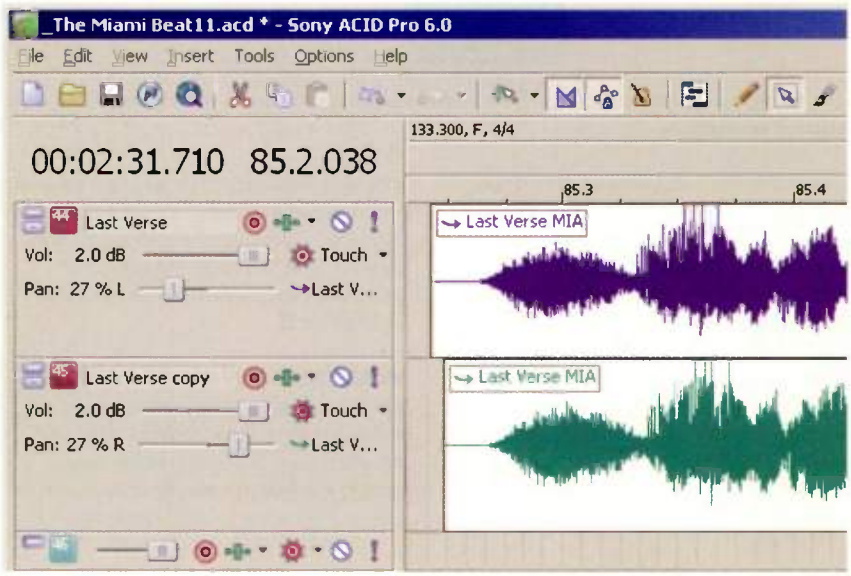

Fig. 1: Two copies of the same vocal track in Sony Acid. The lower track is delayed by about a 32nd note. Note that the upper track is panned 27 percent toward the left, while the lower track is panned 27 percent toward the right, to create a stereo effect.

CLONE

Here's a tip from Spencer Brewer (Laughing Coyote Studios) regarding an effect that Alex de Grassi uses a lot on his guitars to create a wider stereo image with two mics. This effect also works well with piano.

- Pan the right mic full right.
- Pan the left mic track full left.
- Copy the right-mic and left-mic tracks.
- Pan the duplicated tracks to center.
- Bring the duplicated tracks down about 5dB to 6dB (or to taste). This stereo strategy fills in the center hole that normally occurs by panning the two main signals to the extreme left and right.

SLIPPIN' & SLIDIN'

Many signal sources are still essentially mono (voice, vintage synths, electric guitar, etc.), but there are ways to "stereoize" sounds. The easiest option is to copy a track and slip it ahead or behind the original track to create a slight delay between the two, then pan the two tracks opposite each other (Figure 1). In some cases, it's most effective to slip the original track ahead of the beat, and the copy a little late, so that the two end up averaging out and hit in the pocket. But you can also use slipping to alter the feel somewhat. To drag the part a bit, keep the original on the beat, and slip the copy a little later. For a more insistent feel, slip the copy ahead.

How much slip to add depends upon the instrument's frequency range. If the delay is too short, the two signals may cancel to some extent, and create comb-filtering effects. This can result in a thin sound—much like a flanger stuck on a few milliseconds of delay. Lowering the copied signal's level can reduce these negative effects, but then the stereo image will be correspondingly less dramatic.

If the delay is too long, then you'll hear an echo effect. This can also be useful in creating a wider stereo image, but then you have to deal with the rhythmic implications—do you really want an audible delay? And if the delay is long enough, the sound will be more like two mono signals than a wide stereo signal.

Thankfully, it's easy to slide parts around in your DAW and experiment. Just be sure to check the final result in mono. If the sound ends up being thin or resonant, increase the delay time a tiny bit until both the stereo and mono sounds work equally well. EQ

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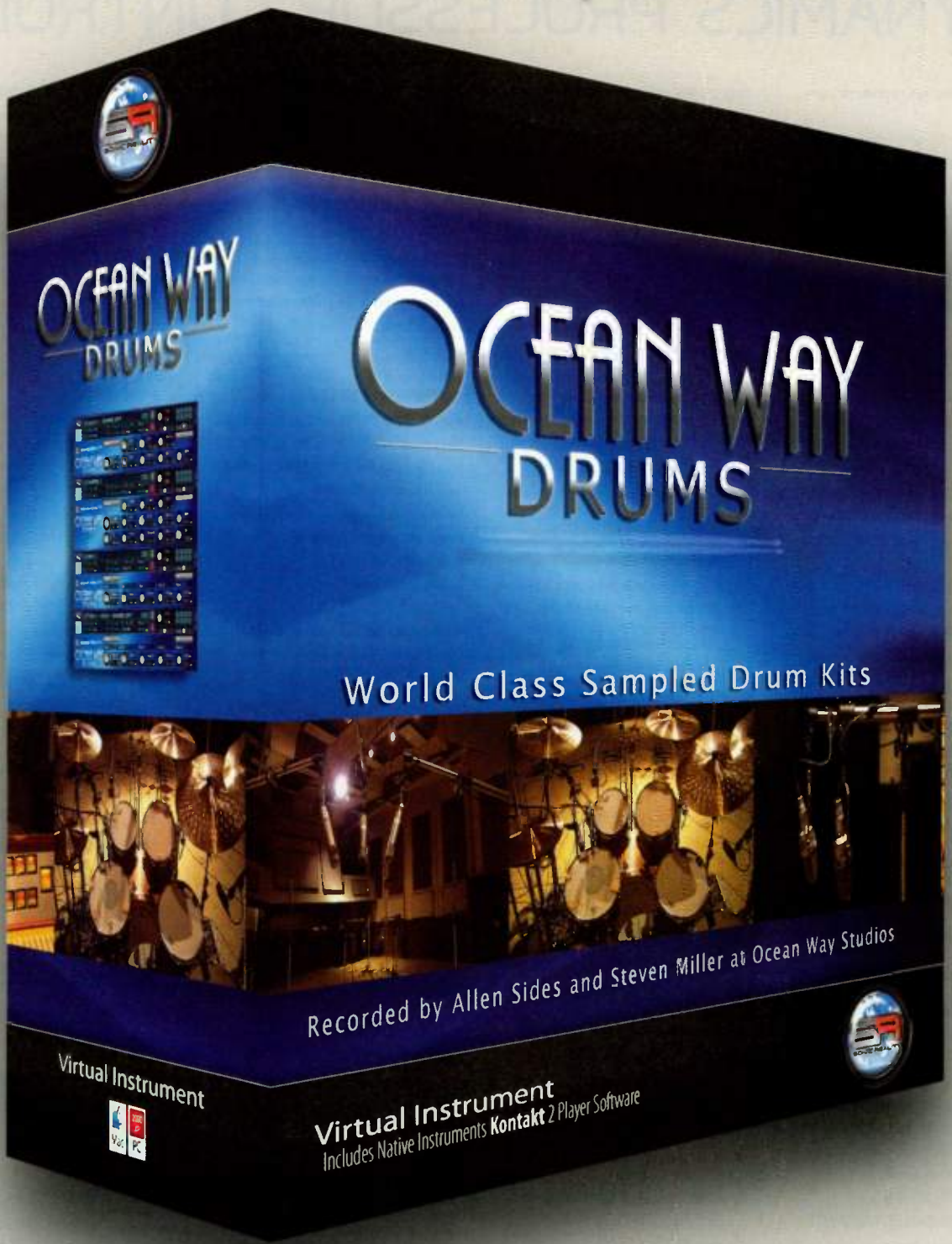

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CHEAT SHEET

DYNAMICS PROCESSOR CONTROLS

by Craig Anderton

Cheat Sheet delivers concise, explicit information on how to do specific recording/audio-related tasks. This installment describes dynamics control parameters; the first set of parameters relates to compression, followed by parameters for expansion and gating.

INPUT LEVEL

Adjusts the signal going into the processor. To avoid clipping the input, don't slam a compressor with too much input, even though this gives more compression; for more compression, reduce the Threshold control and/or increase the Ratio control.

THRESHOLD

Sets the level above which signals will be compressed. With a lower threshold, more of the signal crosses this threshold, compressing more of the signal. Once the signal drops below the threshold, the compressor leaves the signal alone until it exceeds the threshold again.

RATIO

Sets how the output signal changes in relation to the input signal, once the input signal exceeds the threshold. For example, with a 4:1 compression ratio, if the input increases by 8dB, the output increases by only 2dB.

ATTACK

Determines how long it takes for the compression to kick in once the signal goes above the threshold. Longer attack times let more of a signal's natural dynamics through, but those signals are not being compressed. If it's really important to clamp peaks, a short attack time works best.

DECAY (ALSO CALLED RELEASE)

Sets the time required for the compressor to "let go" of the signal once the input passes below the threshold. With short release times, the compressor tracks even very slight level changes, but this can produce a "choppy" sound; turn up the release time for a smoother sound.

AUTO

If present, an "auto" control automatically sets appropriate attack and decay times, based on the incoming level.

OUTPUT CONTROL

Compressing peaks reduces the overall peak level. Increasing the output compensates for the volume drop. Turn this control up until the peak levels of the compressed signal match the peak levels of the bypassed signal; in other words, there's unity gain between the input and output.

AUTO MAKE-UP GAIN

This function automatically increases the output gain to make up for any signal level loss from compression.

MIX

While not a common parameter, this sets a blend of processed signal and input signal. The input signal contributes the original transients to give a "punchier" sound.

HARD KNEE/SOFT KNEE SWITCH

With soft knee, when the input exceeds the threshold, the compression ratio is less at first, then increases up to the specified ratio as the input increases. With hard knee, as soon as the input signal crosses the threshold, it's subject to the specified compression amount. The hard knee action creates more punch; soft knee may work well if the level variations are extreme, as this better preserves the sense of dynamics. While typically a switch, this also can be a continuously-variable parameter.

SIDE CHAIN JACKS

These let you insert filters in the compressor's feedback loop to restrict compression to specific frequency ranges. Another use is to trigger compression from a different audio source.

LINK SWITCH

With stereo compressors, this changes the operating mode from dual mono to stereo. Linking the two channels together allows changes in one channel to affect the other channel, which is necessary to preserve the stereo image.

GAIN REDUCTION METER

Indicates how much the signal is being compressed at any given moment. Watch the gain reduction amount carefully to avoid overcompression.

OUTPUT LEVEL METER

Shows the signal level coming out of the compressor, and might be switch-selectable to monitor the input as well. The output level can show how much overall output level you've lost by adding compression, which makes it easier to set the output level control correctly.

PEAK/RMS METER SWITCH

Determines whether the meters will display peak or RMS levels.

PEAK/RMS DYNAMICS RESPONSE SWITCH

Sets whether the dynamics control responds to peak or RMS levels.

LIMITER SWITCH

Clamps all peaks to a particular level, usually 0dB. This can be useful with longer attack times, as the attack time may let peaks through that without limiting, could overload your system.

TYPE

A compressor may offer different sonic characters, such as "vintage," "optical," and the like. These typically alter the compression curve, or some other aspect of the sound.

BYPASS

Takes the effect in or out of the signal chain. Use this switch often to compare the processed and straight sounds.

Some dynamics processors include dynamic expansion options as well as compression and limiting. Expansion helps minimize noise by reducing low-level signals like hiss. If present, you'll find controls like the following.

EXPANDER THRESHOLD

Adjusts the level below which signals will be *expanded* (*i.e.*, the output level drops off at a faster rate than the input level). Once the signal goes above the threshold, then the processor leaves the signal alone until it goes below the threshold again.

EXPANDER RATIO

Sets how the output signal changes in relation to the input signal, once the input signal goes below the threshold. For example, with a 4:1 expansion ratio, if the input decreases by 2dB, the output decreases by 8dB.

Some dynamics processors include noise gates, which minimize noise by reducing or muting the signal level when the signal goes below a certain threshold. If present, you'll find controls like the following.

GATE THRESHOLD

Sets the level below which signals will be attenuated or muted. Once the signal goes above the threshold, then the noise gate leaves the signal alone until it goes below the threshold again.

GATE ATTENUATION

Determines how much the signal is reduced once it goes below the threshold. This may mute the signal completely.

GATE ATTACK

Adjusts how long it takes for attenuation to occur after the signal goes below the threshold.

GATE DECAY

Determines how long it takes for the signal to go from the attenuated condition to normal after the signal rises above the threshold.

GATE ON/OFF INDICATOR

Shows whether the gate is in an "open" or "closed" (attenuation active) condition.

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POWER APP ALLEY

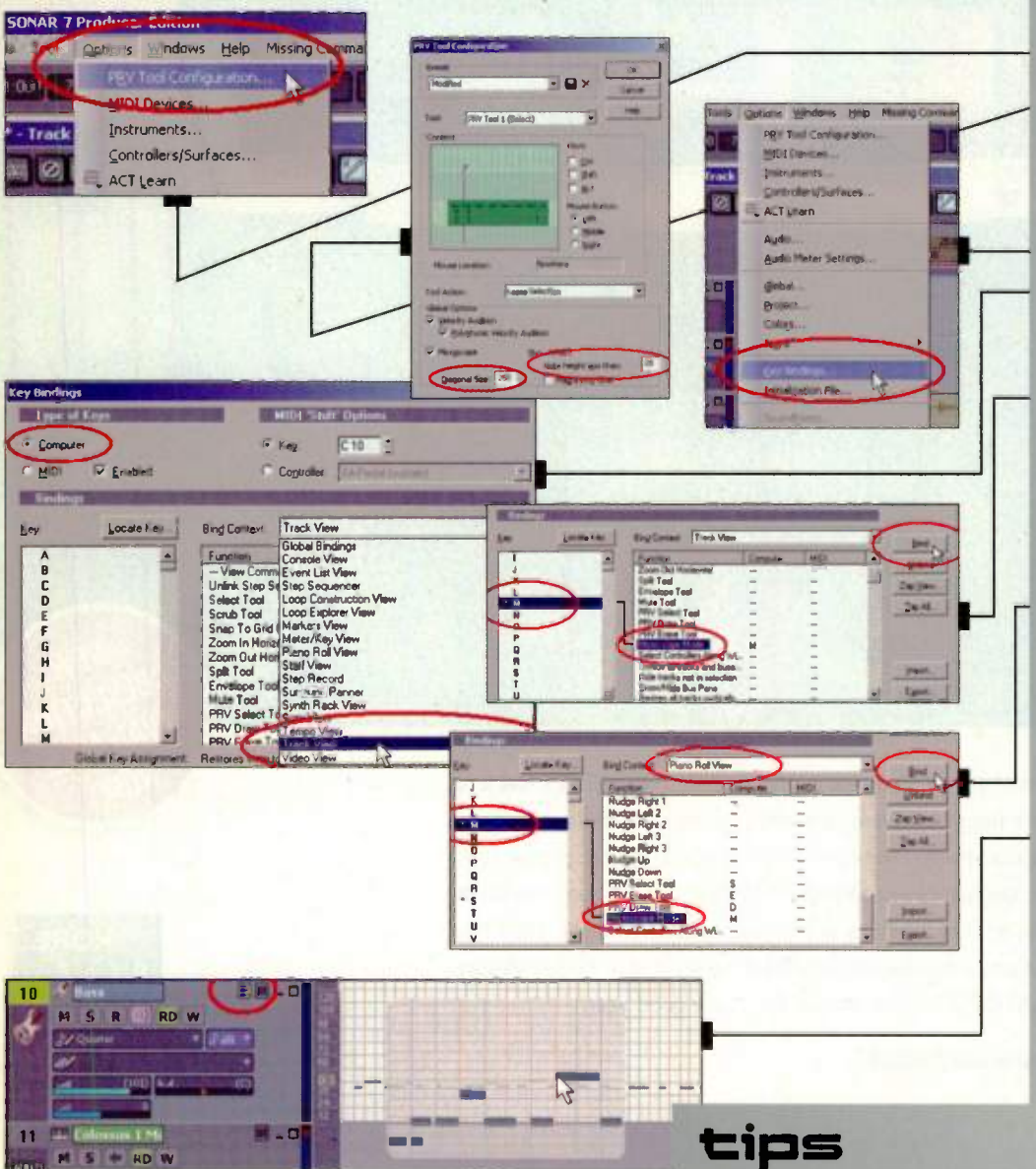
BY CRAIG ANDERTON

CAKEWALK SONAR 7

Simplify MIDI editing with the MIDI Microscope function

OBJECTIVE: Integrate the MIDI Microscope function into your workflow by tying it to key commands in both the Track View and Piano Roll View.

BACKGROUND: Sonar 7's MIDI Microscope function is exceptionally convenient when dealing with dense MIDI tracks in the Piano Roll view or the inline Piano Roll in Track View, as it minimizes the need to zoom in and zoom out. Normally, the Microscope becomes available when notes are less than a user-specified height in pixels; but by setting the note height to maximum, the MIDI Microscope is essentially available all the time, and you can then use key bindings (key commands) to enable or disable the Microscope.



steps

1. Go Options > PRV Tool Configuration.

2. Enter 250 for "Diagonal Size" (the biggest possible magnifier size; you can always change it if you find it's too big) and 20 for "Note Height less than." Click on OK.

3. Go Options > Key Bindings.

4. For "Type of Keys," choose Computer. From the "Bind Context" drop-down menu, choose Track View.

5. Scroll down the Key column until you locate M, then click on "M" (assuming you want to use this as your keyboard shortcut). In the right-hand page, scroll down until "Microscope Mode" appears, and click on it. Then, click on "Bind."

6. Similarly, while still in the Key Bindings screen, choose Piano Roll View from the "Bind Context" drop-down menu, and bind the M computer key to Microscope Mode. Now the computer keyboard's M key will toggle Microscope mode on and off both in the Piano Roll View and the Track View.

7. When in Track View, don't forget to click on the PRV Mode button if you want to use the MIDI Microscope function on a MIDI track.

tips

- In step 1, if you check the "Magnifying Time" box, the Microscope will provide horizontal (time) magnification when the Piano Roll view is zoomed out so far that the notes become very narrow.
- In step 2, 20 is the maximum value you can insert.
- You can also customize the toolbars to add a MIDI Microscope button. This lets you toggle the Microscope function on and off at the toolbar in addition to, or instead of, using key commands.

POWER APP ALLEY

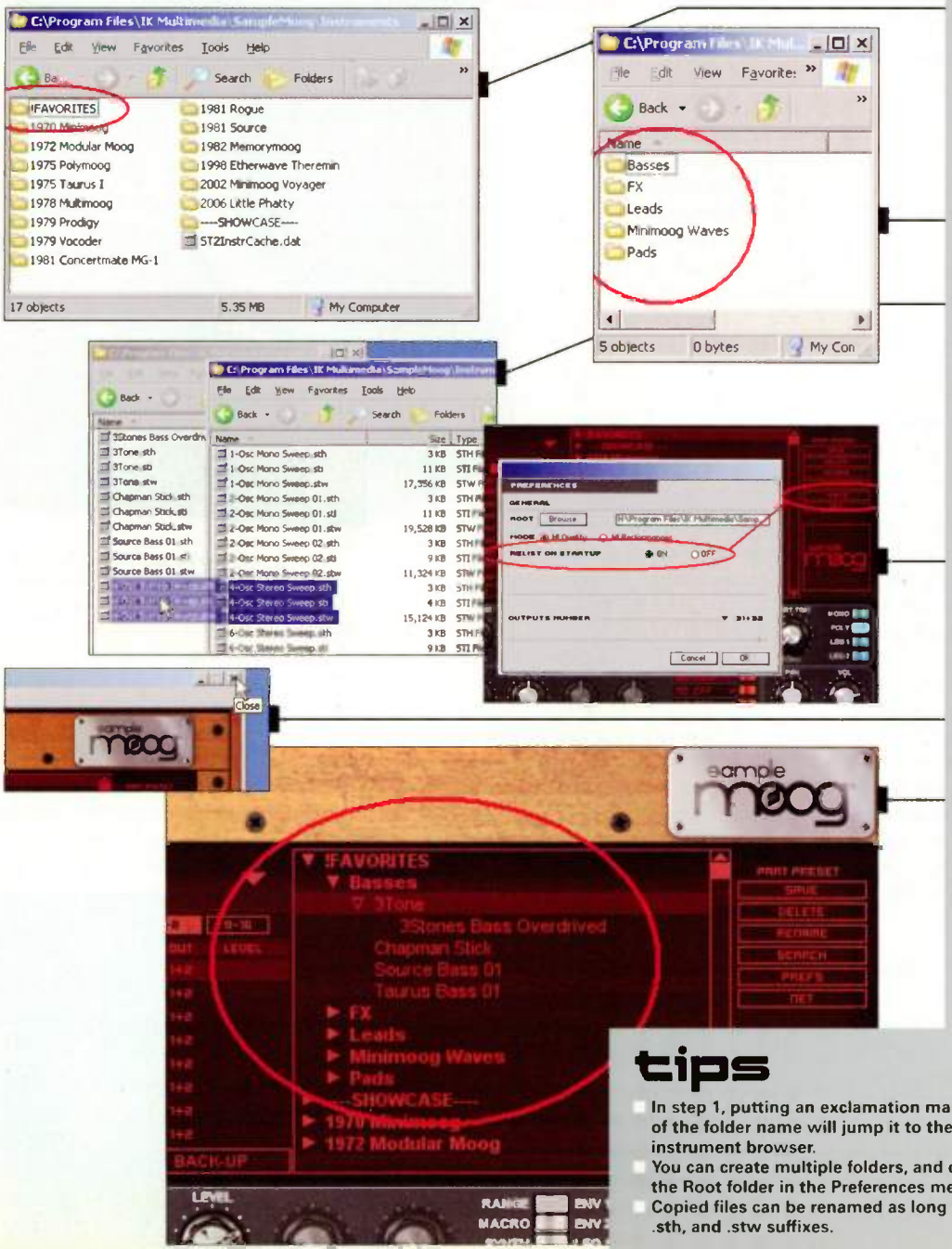
BY CRAIG ANDERTON

IK MULTIMEDIA VIRTUAL INSTRUMENTS

Organize and manage your presets

OBJECTIVE: Create "favorites" or other types of folders, then group and rename presets in a way that optimizes your workflow.

BACKGROUND: IK Multimedia's instruments based on the SampleTank engine (SampleTank 2.5, Miroslav Philharmonik, Sonik Synth 2, SampleMoog, etc.) include so many presets that you might want to organize them differently than the default. For example, you could create "favorites" folders for sounds you use a lot, or make folders for sounds used in particular types of projects. Here's how to do it.



steps

1. Locate the Instruments folder associated with the particular IK instrument (default is [root drive]\Program Files\IK Multimedia\[name of instrument]\Instruments) and create a Favorites folder. Of course, this could be named anything you want.

2. Create any sub-folders you want within the Favorites folder.

3. Each preset is made up of three file types, each with its own extension (.sth, .sti., and .stw). For each preset you want to copy to the Favorites folder, make sure you drag over all three files. In this picture, the 4-Osc Stereo Sweep patch is being copied from the Instruments folder to the Bass folder in favorites.

4. Open the instrument program and click on Prefs. When the Preferences window appears, set Relist on Startup to "On." This is necessary to recognize any changes you make.

5. Close the program, or if you're using it as a plug-in, close the host program.

6. Re-open the program (or instantiate it as a plug-in), and your new folder(s) and presets will show up in the browser.

tips

- In step 1, putting an exclamation mark (or other symbol) in front of the folder name will jump it to the top of the list in the instrument browser.
- You can create multiple folders, and choose any of these folders as the Root folder in the Preferences menu.
- Copied files can be renamed as long as you don't change the .sti, .sth, and .stw suffixes.

YAMAHA MSP7 STUDIO MONITOR

A Better NS10? Yes.

by Tony Gross and Roy Stein

In the audio world, lineage matters—and the daddy of Yamaha's new MSP7 is none other than Akira Nakamura, the designer behind Yamaha's famed NS10M studio monitors. Although the NS10s have proponents and detractors, there is no disputing that a huge number of hit records have been mixed on them. Are the MSP7s destined for the same fate?

THE SPECS

The front-ported MSP7 differs physically from the lightweight NS10's sealed-enclosure, infinite-baffle design. At approximately 8.5" W, 13" H, and 9.2" D, the MSP7 may seem similar, but appearances can be deceiving: When I first picked one up, I almost blew out a few vertebrae—the magnetically-shielded MSP7 weighs in at over 26 pounds!

Unlike the passive NS10 the MSP7 is self-powered, insuring a better match between amp and speaker. This biamped monitor touts an 80W amp section driving a 6.5" polypropylene woofer and a 50W amp section driving a 1" titanium-domed tweeter; the crossover point is 2.5kHz, with a 30dB/octave slope (both LF and HF).

Along with the power switch, IEC line cord receptacle, and balanced female XLR input connector, the MSP7's rear panel includes a 31-position rotary level control and a triple array of slide switches that control Low Cut (Flat/80Hz/100Hz), High Trim (+1.5/Flat/-1.5dB at 15kHz) and Low Trim (+1.5/Flat/-1.5/-3dB at 45Hz). However, there was an anomaly in the MSP7s we received: The surrounds on the outside of the woofers were two different colors—one charcoal grey, the other jet black. While just a small aesthetic issue, it does raise some concerns about whether quality control might overlook something else.

THE NEW GENERATION'S SOUND

After setting up the MSP7s in the studio control room on sand-filled pedestals in the preferred equilateral position away from all walls, an engineer for whom I have great respect entered the room. I had just pulled up a nearly completed mix of a new song by a well-established alternative rock act that had upwards of 90 tracks—it required a real balancing act. The engineer had heard the tune several times in this nearly finished form in two different rooms, both with costly, high-end monitoring systems. This time, he congratulated me on really nailing the mix—yet I hadn't touched a thing from the last few times he had heard the mix. The MSP7s made a nice first impression on him . . . and me.

NS10 critics sometimes cite mid- to high-end brittleness, and ear fatigue over time. We highly doubt anyone will feel this way about the MSP7; the general consensus of numerous engineers and producers in our studio was that they were extremely detailed, yet smooth. The mids were very musical, the imaging focused and articulate, and the sweet spot was larger than anticipated for a speaker this size. And no one complained of ear fatigue.

We do wish Yamaha had also shipped the complementary SW10 subwoofer ($999.99 list); although the MSP7 has more punch in the lower frequency ranges than the NS10, its 6.5" speaker still can't pack a gut-rumbling low end. Still, we all agreed that for transferability, mixes done on the MSP7s translated very well to other environments.

We also tested the MSP7s with trusted reference CDs, including "Lithium" from Nirvana's *Nevermind*. The sound of this song is as honest as it gets; the dynamics are still intact from not being overmastered, and it gives me all the information needed to tune in a mix. After a close listen, the MSP7s again exceeded my expectations.

We then fed the speakers a 20Hz–10kHz sweep and monitored the levels on a hand-held dB meter. Below 80Hz we noted a hefty, yet reasonable, decline in emitted energy, as expected with an enclosure of this size. The SW10 subwoofer would likely address this.

SPEAKER TO ME: THE FINAL WORD

Over the past year we've reviewed some very fine self-powered studio monitors. The MSP7s are as good as any of them and maybe even better than most, including some higher-priced competitors.

Will the MSP7 achieve the NS10's classic status? Check back in a decade or two! But there's no denying that designer Akira Nakamura, who recently retired from Yamaha, has left us with a studio monitor that has the potential to exceed the NS10's legacy. EQ

The Yamaha MSP7 is giving the NS10 a run for its money.

PRODUCT TYPE: Powered two-way studio near-field monitor.
TARGET MARKET: Recording studios and post-production suites.
STRENGTHS: Fantastic imaging and brilliant mid- to upper-range response. Decent low end for a 6.5" woofer. Very inviting to work with. Translates well.
LIMITATIONS: Has the lack of low-end punch characteristic of small near-field monitors.
LIST PRICE: $699 each.
CONTACT: www.yamahaproaudio.com

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SHURE KSM137/SL STEREO MIC PAIR

Some Mics are a Shure thing. . . .

by Jeff Anderson

Like most engineers, I've always been a big fan of Shure mics. How can you not? There's a good chance the SM57 was the first mic you ever owned, and your favorite hit record has an SM81 in there somewhere—besides, just try finding a studio that doesn't use some sort of KSM condenser mic. So, I jumped at the chance to review a brand new stereo pair of KSM137s.

Shure KSM137.

OVERVIEW

The KSM137 is set to a fixed, highly consistent cardioid polar pattern; a 3-position pad switch chooses 0, –15, and –25dB. With this pad, the KSM137 can handle extremely high SPLs (Sound Pressure Levels) up to 152dB. (Remember, 135dB is the human threshold of pain, and 140dB is the sound of a jet taking off.) The frequency response covers 20 to 20,000Hz and includes two low frequency filters which, when activated, roll off the mic's low end starting at either 80 or 115Hz. The KSM137/SL (stereo pair kit) includes two foam windscreens and a solid carrying case.

APPLYING THE KSM 137

I've been working recently for Levi Riggs, a contemporary Christian artist, and the acoustic tracks are crucial to his music. For one song, we used a beautiful Marin acoustic guitar for the main rhythm track; it needed a full, wide, and warm sound as the song was very pure, without much production or instrumentation.

We started out by listening to the 137s in an X/Y miking configuration. With a standard coincident X/Y miking position, it's typical to have the two mics on top of each other forming an X. The angle of the two mics can range from 80–130 degrees, depending on the size of the source you're recording and the tone you want. I positioned the two mics around 6" in front of the sound hole in an X fashion at around a 100-degree angle. One mic faced toward the edge of the sound hole next to the fretboard, while the other pointed to where Levi's fingers were picking the strings.

One advantage of this particular X/Y pattern is that it minimizes phase cancellation issues. As the two KSM137 mics are virtually identical and the capsules are positioned closely together, the sound travels through the air to them for almost the same distance, so the two recorded waveforms will be very similar.

I engaged the 115Hz rolloff switch on both mics, plugged them into two pres of our DDA console, then ran the signal straight to Pro Tools. The sound was phenomenal: It was wide, and the mics seemed to roll off just enough of the low end "thumps" that I usually need to filter with EQ when I use other mics in the same situation. After EQing down about 2dB at 8kHz on the finger mic and 12kHz on the other mic, we had the sound we wanted.

Next up: piano. My studio houses a 4'7" Ridgewood baby grand, and it's always a challenge to achieve a wide stereo spread with such a physically small piano. The piano sounds best when jammed in a corner nook, with the lid all the way open so that the sound can project across the room. I remove the top of the piano (which holds the music stand) and use a pencil mic (*e.g.*, AKG 451 or Shure SM81) on the high end, around 6" from the dampers; a tube mic set to a cardioid pattern on the low end around 8" off the bass strings gives some beef and warmth, and then I'll often use a room mic (centered in front of the open lid, about 12' back and 5' off the ground) to add a natural gloss.

I compared the KSM137, an AKG 451, and a Shure SM81 on the piano's high end to determine which would provide the best mix with my beefy low end. The vintage AKG 451 sounded good, but could be just a little harsh (also, a few strings really seemed to "chime"). The Shure SM81 (which I normally use) had a nice, accurate tone, and the mic's cardioid pattern picked up just the right amount of piano. The Shure KSM137 and the SM81 both sounded somewhat similar; the 137 had just a bit more high end around 10–12kHz and a noticeable difference in the low end, almost as if there is a very fine natural rolloff.

CONCLUSIONS

Shure has definitely kept up with the standards set by its predecessors. I'm very impressed with the KSM137 for piano and acoustic instruments in general, and the stereo pair will become the "go-to" choice in my studio for these types of applications. For the money, the KSM137 is a great buy. EQ

PRODUCT TYPE: End-address condenser mic with cardioid polar pattern.
TARGET MARKET: Recording studios.
STRENGTHS: Serious value. Sounds great. Suitable for many applications.
LIMITATIONS: Nothing significant.
LIST PRICE: $575 each, $1,150 for stereo pair
CONTACT: www.shure.com

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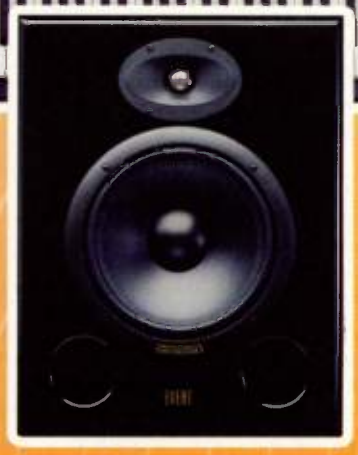

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KLEIN + HUMMEL O 300 ACTIVE STUDIO MONITORS AND O 800 ACTIVE SUBWOOFER

Accuracy and Pleasing Sound? Yes, But There's a Price to Be Paid.

K+H's O 300.

by Garrett Haines

The Klein + Hummel O 300 is one of the nicest studio monitors I've heard: You have to jump to larger models, audiophile makers, or mastering-grade speakers for better performance. The horizontal design is smart. And combined with a proprietary wave guide implementation, the O 300s produce an accurate sweet spot in nearly any production environment.

The speaker is an active 3-way model fabricated from premium materials. The 8" woofer is lightweight polypropylene; the midrange comes from a 3" treated fabric dome, and the high-frequency driver is a combination of titanium (for accurate transient response) and fabric (for smoothness). All drivers are magnetically shielded. The horizontal form makes it easy to get your ears at tweeter level, though K+H tells us that doing so narrows the sweet spot significantly. (Note to speaker makers: Engineers want horizontally-capable monitors. Meter bridges and speaker stands are often too high to get tweeters at ear level without tilting speakers down, leading to comb filtering.)

Each of the drivers has its own amp with high quality crossovers—critical for proper phase and frequency response. We noticed none of the frequency bumps or dips associated with poorly-implemented crossover technology.

The driver protection scheme doesn't limit all potential spikes, as this could include musically-important transients, but limits (as indicated by a blinking K+H logo) only when a voice coil is in danger of thermal overload or a power amp could overheat. Well done.

IN USE

At the risk of sounding like an audiophile mag reviewer, I'd describe the O 300 as detailed, wide-ranged, and effortless—no ear fatigue here. Playing our favorite commercial CDs revealed depth and width in the soundstage. It seemed we could hear where the horn section players were standing on Calexico's "The Black Light," and double kick lines were punchy and defined in Lamb of God's "As the Palaces Burn."

At the micro level, the O 300s produced extensive detail. This was a great help for catching potential tracking issues. From a ticking pendant timepiece, to low-level HVAC noise, to where sampled piano notes looped, nothing got past the O 300s.

While the O 300s didn't lack low end, Dave Hidek, our chief mixing engineer, wanted a sub's extension and accuracy beyond the ported cabinet's frequency response, which extends to 33Hz. Enter the O 800: Designed as a component to this system, we could skip the obligatory crossover point setup as the sub's 24dB/octave Linkwitz-Riley filter (at 90Hz) dovetailed perfectly with the O 300s, and the rear-panel level and low cut controls allowed fine-tuning the O 800 for our room. The driver features a long-excursion design type (a full range of about 40mm), which contributes to an articulate low end that is delightfully free of tubbiness, while helping to avoid damage to the cone. If anything, the sub was a little too much for rock and country applications in our room; however, H, a visiting rap engineer, was very pleased with the output, and the sub does have a level control, which makes situations like this a bit more manageable. If you're looking for a sub (whether with K+H mains or not), consider the O 800—it provides a great mix of extension and precision. And while cosmetically attractive, the fine-mesh wire also protects the loudspeaker cone from the wayward foot. Smart!

CONCLUSIONS

Reviews often pigeonhole monitors as either "accurate" (and possibly fatiguing over long hours) or "pleasing," which may gloss over sonic problems. The O 300 proves that a speaker can deliver the best of both worlds, as this design is both revealing and a pleasure to use. Granted, the O 300 won't produce the "ear-bleed" levels of some other monitors (though they play to a max SPL in half space at 3-percent THD/1m of 112.8dB/SPL and adding the sub adds another 10dB above that), but that won't matter to pros who value their hearing. And while not K+H's fault, the U.S. dollar's weakness vs. the Euro will put a damper on North American sales. But minor items aside, these are some of the best mixing speakers I have ever heard. It was a sad day here at Treelady when we had to return them.

PRODUCT TYPE: High-end, three-way monitor speakers (and sub-woofer).
TARGET MARKET: Recording studios and mastering suites.
STRENGTHS: Accurate, yet pleasing sound reproduction. Non-fatiguing. Horizontal design fits contemporary studio setups. Wave guide implementation provides accurate sweet spot without comb filtering. Voice coil protection circuitry.
LIMITATIONS: Dollar vs. Euro exchange rate makes them pricey. Not as loud at max volume as competing monitors.
LIST PRICE O 300 $2,495 each, O 800 $2,795
CONTACT. www.klein-hummel.com

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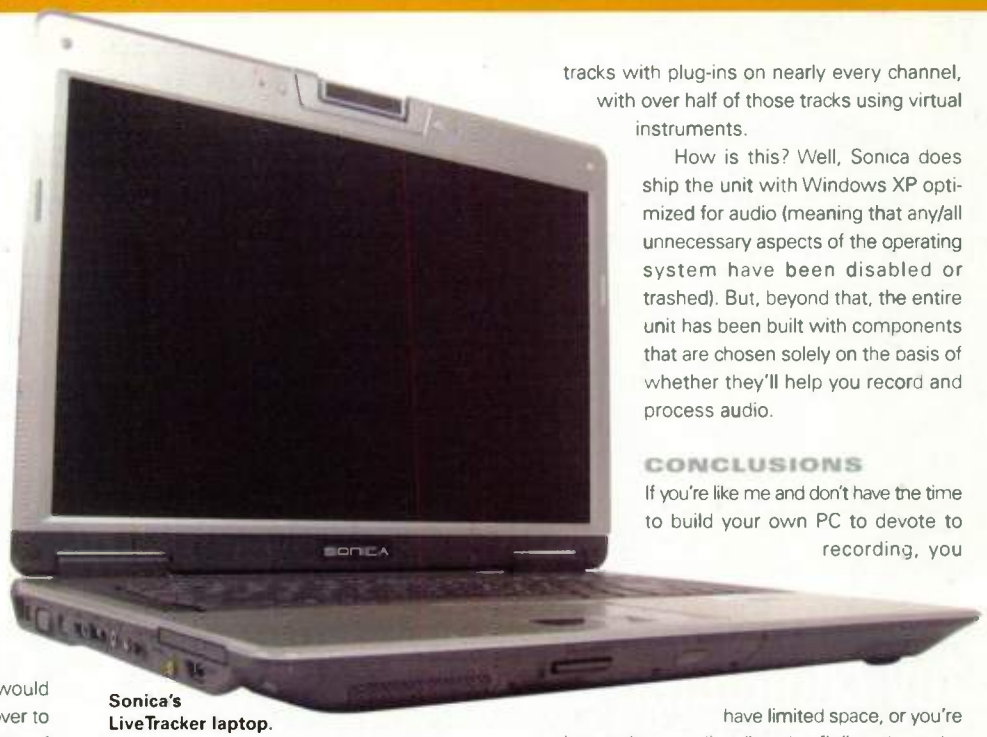
SONICA LIVETRACKER

Serious Get Up and Go for the Recording Musician on the Move

by Matt Harper

You'd think that the editor of a magazine with *EQ*'s stature would have one of the most hopping studios west of the Mason-Dixon, but that couldn't be farther from the truth. Actually, my apartment is probably smaller than many of your live rooms, and my "studio" is literally in a walk-in closet. Ah, the joys of living in downtown San Francisco. . . .

But I make do with what's available. Given my space constraints, even an old Apple G5 tower was crowding my style. I had to free up some space for my rack . . . and pronto! So I contacted the folks at Sonica and asked them to send me their newest laptop—the LiveTracker—to see if their take on the "laptop recording revolution" would suit me.



Sonica's LiveTracker laptop.

OVERVIEW

To rattle off all the LiveTracker specs would probably constitute tree abuse, so head over to www.shop-sonica.com for the nitty-gritty of what's beneath the casing. Beyond my sparing you a thesis length dissertation on all the unit's features, it's important to note Sonica offers a proverbial ton of options assuming that you're looking to build a rig from scratch, or just looking to customize the computer to your liking.

You can, however, count on the basic LiveTracker version including: Intel 64 Bit Core 2 Duo 2.0GHz processor, 2GB RAM, 100GB 7200RPM SATA II (with 16MB buffer) hard drive, 4MB processor cache memory, a 15.4" wide screen display (with support for dual display), a Super-Multi DVD/RW–CD/RW optical drive, three USB 2.0 and three FireWire 400 ports, one PCIe ExpressCard 34/54 slot and one PCMCIA type II card slot, Intel High Definition 2-channel audio subsystem, a six cell battery with four-hour battery life, and Intel Quiet Technology (no noisy fans here)—all in a nice little 5.5 lb. bundle.

IN USE

No, we're not going to measure Doom frame rates or do whetstone benchmarks; that's for the PC mags. All I care about is does the thing work, and that's probably all you care about too.

So I'll be honest: I tried to hurt this thing. Having used this computer for the greater part of 2007, I put it through every test I could imagine, being sure that somehow, somewhere, I could make this thing freeze up.

I couldn't.

I tried every compatible interface at my disposal—from the TC Konnekt 24D to the MBox Pro, the Mackie Onyx Satellite to the PreSonus Firepod—running everything from Sonar to Audition to Pro Tools. Everything played nice on the LiveTracker.

I tend to track in a rented room and then bring everything back home to mix in my little cubicle . . . er . . . studio. As you can probably deduce, beyond a couple Empirical Labs Distressors, a Universal Audio 1176, a Chandler Germanium, and a few other pieces of outboard gear, I'm working almost solely with plug-ins. For the soundtrack I've been slaving away on, I've been using everything from Reason to a googol of VST instruments, composing and recording entirely "in the box."

No buffering issues, no crippling latency, no session-threatening crashes—and we're talking a lot of projects here. We're talking 24-plus tracks with plug-ins on nearly every channel, with over half of those tracks using virtual instruments.

How is this? Well, Sonica does ship the unit with Windows XP optimized for audio (meaning that any/all unnecessary aspects of the operating system have been disabled or trashed). But, beyond that, the entire unit has been built with components that are chosen solely on the basis of whether they'll help you record and process audio.

CONCLUSIONS

If you're like me and don't have the time to build your own PC to devote to recording, you have limited space, or you're into truly recording "on the fly" and need a computer that you can pack up and take from session to session, room to room, and then back to your modest home operation to mix, consider the LiveTracker. While Sonica isn't the only company offering custom PC recording solutions (ADK, PC Audio Labs, and Rain Recording come to mind as also producing workhorse machines), they do produce a damn fine product—and with their offer of free unlimited support and a 2-year warranty, I think it's safe to say that they're confident in the computers they build. And after many months of putting the LiveTracker to the test, I have to say that I am too. EQ

PRODUCT TYPE: 15" Core 2 Duo laptop optimized for audio
TARGET MARKET: Recording musicians with either home studio space constraints or who want a mobile recording solution
STRENGTHS: Serious performance. Made to order with tons of customizing options. Unlimited customer support. Inviting price point
LIMITATIONS: Nothing significant
LIST PRICE: $1,749
CONTACT: www.shop-sonica.com

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Peterson Electro-Musical Products, Inc.	708-388-3311	www.petersontuners.com/strobosoft	37
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APPLE LOGIC STUDIO

Are You *Sure* That's the Price?

by Craig Anderton

Steve Jobs' "to do" list for the last several years:

1. Save company on brink of destruction.
2. Invent new way to create movies, make several blockbusters.
3. Re-invent the Walkman and dominate portable music market.
4. Beat cancer.
5. Push new model of music distribution, become dominant player in same.
6. Re-do operating system and hardware from scratch.
7. Invent new type of cell phone, sell a gazillion of them.

So perhaps it's not surprising that "update Logic Pro" may have fallen a little further down the list. But apparently Apple doesn't believe in "little" updates. The long-awaited (some would say overdue) Logic Studio package goes beyond "update" to "remake," as it's a suite of programs wherein Logic Pro can keep its pro core audience but the suite itself is positioned to extend its reach into the more prosumer field—like those who want to move beyond GarageBand.

The "dual strip inspector" is toward the lower left, and the ultra-cool Delay Designer takes up most of the screen toward the right. Toward the bottom, you can see the tabbed views, with the much improved Sample Editor shown; above that is the Arrange area.

THE BIG DIFFERENCES

Logic Pro 8 drops the dongle (in favor of a serial number), drops the price, and drops new elements into the "studio" package. Of these, the one that surprised me the most is MainStage, which you can think of a different "shell" for Logic that optimizes its various elements (in particular, effects) for live performance. Think of it as a virtual stage rack setup, including the option to accept control surfaces. While this isn't the first such program, Apple has done it right—especially when you look at it in the bigger context, namely, Apple wants to sell hardware. With a program of this caliber designed specifically for onstage, and given that you'll likely dedicate a laptop to live use, a Windows user might give serious consideration to buying a Mac laptop just to run MainStage.

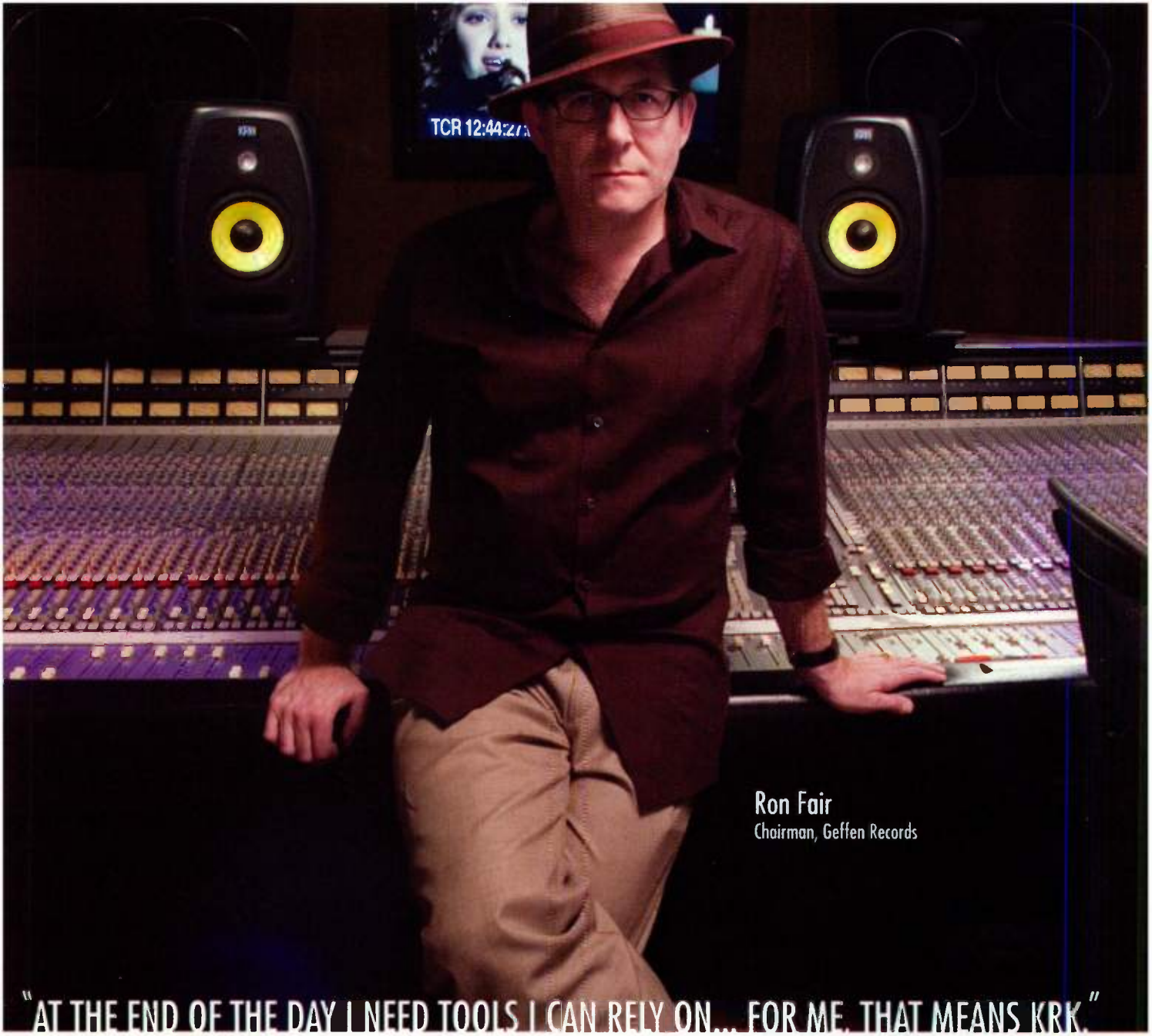
And I also think Apple's up to the same game with the Logic Studio package as a whole. They like the idea of people switching platforms, and Apple has certainly given several incentives to do so, including lower prices, Boot Camp, and a hardware base that's easier for developing cross-platform applications. I couldn't really picture a Windows-oriented musician switching to the Mac just for Logic, but Logic Studio is another matter. For under $500, in addition to Logic and MainStage you get SoundTrack Pro 2, Waveburner, an encoder for mastering music in Dolby AC3, 39GB of additional content spread over 6 DVDs (18,000 Apple loops, 1,300 EXS instruments, 2,400 channel strip settings, 575 Space Design impulses, and surround goodies including surround channel strips, sound effects, and music beds), an Apple Loops Utility for creating your own Apple loops, and an Impulse Response Design utility for creating impulse responses in Space Designer. (However, note that the Jam Pack files are in CAF format—so don't expect to use them with other programs until they're updated to recognize this format.) But all this content does come with a price: If you're doing a fresh install, you can take in *Star Wars* and a good part of *The Empire Strikes Back* before it's all installed.

Someday, you'll be doing video—which is why including Soundtrack Pro 2 is big deal. Furthermore, hidden in there are features like spectrum view editing for cleaning up tracks and other restoration features, multi-take dialog options, and easy transportability with Final Cut Pro.

USING LOGIC PRO 8

When I opened up Logic Pro 8, I was immediately struck by the streamlined, single-window interface with tabs for Mixer, Sample Editor, Piano Roll, Score, and Hyper Editor. Another surprise: The inspector has grown a second channel strip whose display varies based on what you've selected in the standard one. For example, click on Send, and it shows the send (or you can make a manual selection). Being able to access mixer functions from the Inspector, without accessing the mixer itself, is a major time-saver. And speaking of the mixer, it has three separate views (Single, Arrange—shows only active tracks, and All). Single view is like a "super inspector" that shows everything related to a specific track and its signal flow, and is fantastic when you're zeroing in on working with a single track.

I never found Logic intuitive, but the new workflow made total sense to me, and I was



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flying around the program in no time. But was it because I jumped off the Logic bandwagon around version 4, thus giving me the advantage of seeing Logic 8 without preconceived notions? I canvassed some long-time Logic users about Logic 8. Amazingly, there was virtually no blowback—I heard a few grumbles about having to get used to some structural and terminology changes (presumably implemented to bring Logic 8 into closer conformance with other Apple Pro products), but that was it. The general sense I had was that Logic veterans were even *more* pleased than newcomers, because while the newcomers just assume this is the way the program should be, the old-timers truly appreciate the workflow improvements.

In terms of finding stuff, there's a file browser (with Spotlight-style search) within the program itself, for locating Logic-specific files. An additional Library browser finds EXS instruments, channel strip settings, presets, and the like—if you've used Ableton Live, you'll feel right at home. You can still work with multiple windows if you want, but the question is—why?

It was with some trepidation that I approached ReWiring Reason into Logic, as ReWire used to be such a pain in the butt it's one of the reasons I stopped using Logic. No more: Just make some buses, select your ReWire client from the bus menu—done. (However, note that Logic can't serve as a ReWire client, and neither MainStage or Soundtrack Pro 2 implement ReWire.) Another bonus is that Logic can not only import REX files, but batch-convert them. You can just throw them into a project, or convert them to Apple loops so they show up in the browser.

As the (extensive) collection of plug-ins remains more or less the same, some Logic users have dismissed this upgrade as just a new face for old code. I disagree. Sequencing applications have reached a certain level of maturity, and the one maddening thing about Logic to me was always the workflow. It didn't matter how many cool features it had if I pulled my hair out every time I used it, but Logic Pro 8 changes that. The program as a whole is *dramatically* easier to use.

Besides, there *are* several changes to the plug-ins other than just an "interfacelift." Delay Designer is the coolest delay I've seen since Native Instrument's Spektral Delay. The 26 delay taps have resonant filtering and pitch shifting, so you can enter melodic as well as rhythmic territory. There's also a bare-bones phaser and echo plug-in; while neither is a *ne plus ultra* kinda device, they work and they're fun. The binaural panner, like most binaural effects, is great for headphone fans (a concession to the prevalence of earbuds?), and there are improvements to the Compressor (new modes), the AutoFilter's gone multi-mode, Space Designer and Sculpture now do surround, and Ultrabeat has gotten a significant makeover.

"Once again, Apple has shaken up the market–big time–and delivered."

BUMPS IN THE ROAD

Despite Internet rumors, Logic *will* run on a G4 or G5—but it sure runs better on an Intel-based Mac (I was loaned a Xeon-based machine for this review). I installed the software on my dual G5, and performance was certainly acceptable; but really, Logic wants an Intel-based Mac. A more significant issue is that Logic has changed the rules about AU plugs with multiple outs, as it differentiates between those that simply have more outs and those designed for surround. Apparently it's not a huge deal for companies to update their plugs for compatibility, but third party companies are known to complain about "Apple moving the goal posts" with respect to AUs, and this seems to be an example of exactly that.

Another limitation that remains is you can't undo at the parameter level, even though you can undo changes to arrangements. This would be high on my list for the next update. On the bright side, though, plug-ins now have a compare option.

CONCLUSIONS

I have to hand it to Apple: When they decide

to do something, they almost always do it right. They weren't the first to come up with the portable digital music player, graphical user interface, computers using Intel chips, portable computers, or cell phones. But when Apple makes a move, they do so dramatically and effectively.

The cynical might say that Apple has put this much value into Logic Studio to seduce people into buying Mac hardware. There is likely some truth to that; and the "Apple-is-as-ruthless-as-Microsoft" crowd will note that seeing software as a way to spur hardware sales puts software-only companies that support the Mac at a disadvantage.

Yet I doubt that Apple *needs* Logic Pro; I assume that dropping it tomorrow wouldn't cause a ripple in their bottom line, and with the long wait for version 8, the Logic faithful were starting to wonder if Apple had lost interest in favor of consumer electronic goodies. This update shows that Apple has well-defined plans for Logic: part of a suite of programs (not unlike the Final Cut Pro "bundle"), with more features to keep the pros happy, and new features to bring in a new crowd.

I'm not an Apple partisan or detractor; I use both Windows and Mac. But kudos to Apple for remaking Logic without losing its essence, while expanding the market to new users *and* keeping their base happy. That's a tough feat for any company to pull off. Once again, Apple has shaken up the market—big time—and delivered. They deserve the success Logic Studio is certain to bring them. EQ

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LIMITATIONS: Some AU plug-ins with multiple outs need updates to work with Logic 8. Doesn't recognize Acidized file markers. Logic Pro no longer available separately (but at this price, do you care?). No pitch correction.
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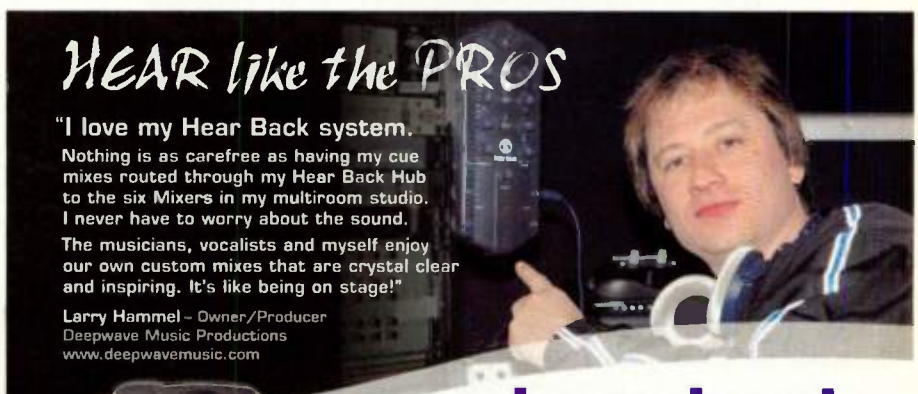

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HERE'S GEAR TO GET MORE OUT OF YOUR LAPTOP

by Craig Anderton

Given how much I travel, I'm always looking for a better, smaller laptop setup—and recently, three products came through the EQ office with serious laptop potential. Here's why.

Novation XioSynth 25.

Audio-Technica ATH-M50 Earphones.

Samson G-Track.

Novation XioSynth 25

($549.99 list, www.novationmusic.com)

The internal sound chips on most laptops have only one purpose: to be immediately disabled (in Windows systems, do this via Device Manager) so you can use a *real* interface. In the past I've carried around a mini-keyboard controller and USB MIDI/audio interface, but the USB-friendly XioSynth is a better bet. It's small, has XLR mic and instrument/line audio ins, stereo outs, and includes a fine-sounding synth you can play live, or record into an audio track in your laptop's DAW. It's plug-and-play, or you can install ASIO/Core Audio drivers (Windows/Mac respectively). If you're playing the internal synth, you'll hear it in the output—this is basically like zero-latency synth monitoring—although you can also monitor through your computer.

What really adds utility for life on the road is a template editor so you can create custom MIDI control surfaces for the 11 knobs (switchable as two banks), two-way joystick, and (yes!) X-Y control pad. There are also "hybrid" modes where you can use XioSynth as a control surface while it's acting as a synth; when used purely as a synth, the knobs control synth parameters (a cool thing in itself).

The XioSynth comes with several controller templates, but many are for older versions of programs, so it's good you can roll your own. And for those of you with big suitcases, a 49-key model is available. EQ

Audio-Technica ATH-M50 Earphones

($199 list, www.audio-technica.com)

The other thing you need for a laptop is a quality set of earphones, and my preference is a good closed-ear type to block out the noise of airplanes, hotel air conditioners, or shootings outside the hotel (I don't always stay at the Four Seasons). And as a veteran of tons of earphones, the ATH-M50 gets major kudos. It's not particularly small or light, but the sound quality is about as close as you'll come to bringing a quality set of speakers on the road.

The most surprising aspect to me is that the bass is really present, but without being "hyped"; I've even found these phones very useful for checking "bass reality" in studios where I don't know the acoustics particularly well. The overall response is smooth, not peaky, and there's enough isolation so that if I'm doing narration or vocals, there's no bleed from the phones into the mic. I'd even go far as to say that if you need to mix something on the road, you can do it with these puppies (and you won't get ear fatigue in the process).

Note that the lower part of the headband and the ear cups themselves are very well padded. This helps in terms of comfort, particularly because you'll likely want to have the ear cups pressing firmly against your head to keep out noise and improve bass.

Bottom line: These are truly fine phones. But treat them well—they aren't cheap. EQ

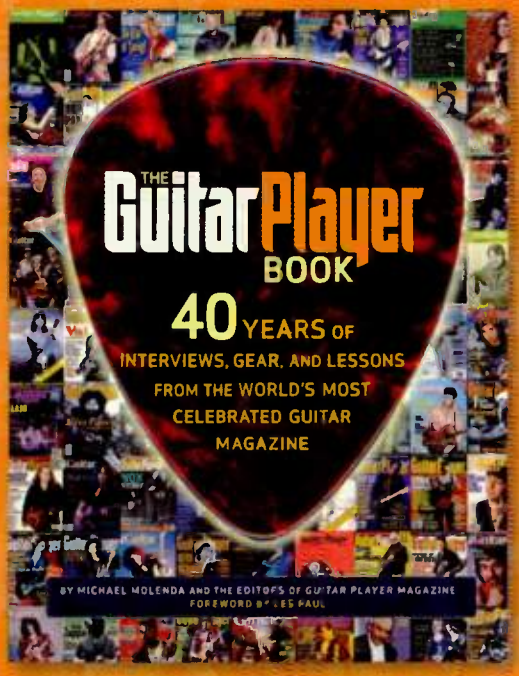
Samson G-Track

($199.99 list, www.samsontech.com)

Although pitched to the singer/songwriter—which does make sense—this is the kind of interface I'd take to a trade show for editing show videos on a laptop, where I need narration, and sometimes, recordings from Minidisc of instrument sounds or interviews. The last few years I've been using a USB mic, but this goes one better: It's a USB interface where you can choose mic in, instrument in, or stereo line in. It also has level controls for headphone/line out volume, mic sensitivity, and the instrument/line ins. There's zero-latency monitoring in mono or stereo from the inputs, as well as the option to monitor playback from the computer.

The package includes a desktop mic stand and extension cables for instrument and headphones (a good idea, as their jacks on the G-Track are 1/8"), and USB. It's class-compliant so there are no special drivers, and an optional shock mount is available.

G-Track is fairly heavy; I'd put it in my suitcase, not carry-on. Also if you use a Mac, try before you buy—some people have reported problems with MacBooks, while others haven't. Nonetheless, the combination of a good-sounding mic, interface, mixer, and monitor, all in one relatively compact package, is very appealing. If I needed a MIDI controller and sounds I'd go for the XioSynth mentioned above, but for a pure recording device, the G-Track hits the spot. EQ



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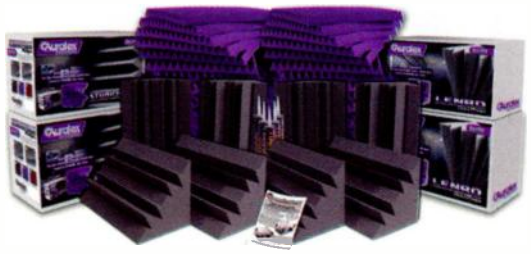

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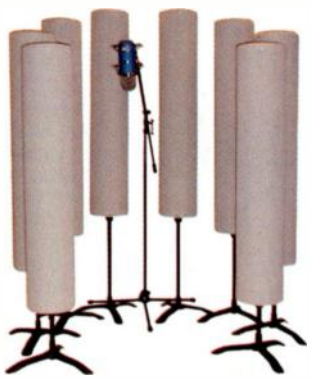

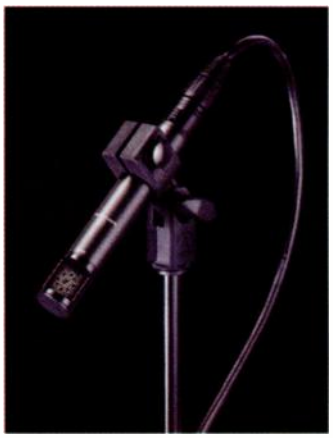

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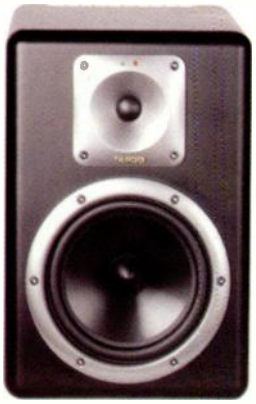

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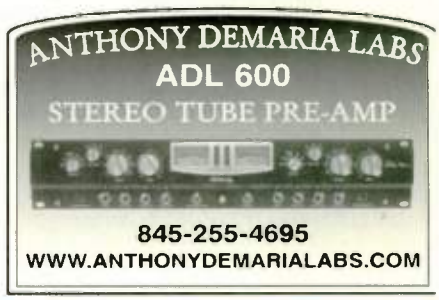

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ROOM w/a VU

by Roberto Martinelli

STUDIO NAME: The Atomic Garden
LOCATION: East Palo Alto, CA
CONTACT: www.theatomicgarden.com
KEY CREW: Jack Shirley
CONSOLE: Digidesign Control|24
COMPUTER: Dell 4600 Pentium 4 2.8GHz, 4GB RAM, 2TB Western Digital storage
DAW: Digidesign Pro Tools HD2, HD 7.3
INTERFACE: Digidesign 192 I/O
SOFTWARE: Access Virus Indigo soft synth; Antares Auto-Tune 4.0; Digidesign ReVibe, SoundReplacer, Velvet; Focusrite d2, d3; Line 6 Amp Farm, Echo Farm; Massey L2007; Propellerhead Reason 2.5; Sony Oxford Inflator; Trillium Lane Labs TL Space; Waves Diamond Bundle 5.0
MONITORING: Event Precision 8 (2), TR8-XL (3), 20/20 Sub
MICS: AKG C414 B-XLS (2), D112; Audix D2 (2), D4 (2), i5; Røde NTK, NT1 (2), NT5 (2); Sennheiser e609, MD421II; Shure Beta52, Beta57, Beta58, Green Bullet, SM7, SM57 (3), SM58
OUTBOARD: Chameleon Labs 7602 (12), 7622 (2); Chandler Limited TG1; Empirical Labs Distressor EL8-X (2); Radial J48 (6), X-Amp (2); Universal Audio 2-1176
INSTRUMENTS: Ernie Ball StingRay; Fender American Deluxe Jazz Bass, '73 P-Bass; Gibson Les Paul Standard, SG Reissue Bass; Gretsch G6118 Anniversary Edition w/TV Jones pickups; Martin D-15 Custom
AMPLIFICATION: Acoustic 150; Ampeg '74 V4, SVT Reissue; Fender '66 Bassman 50, '73 Bassman 100, Blues Junior; Marshall JCM2000 DSL 100; Mesa/Boogie Bass 400+, Dual Rectifier; Top Hat Emplexador 50w; various Ampeg, Marshall, and Mesa cabinets
NOTES: Years ago Jack Shirley found himself waking in the middle of the night, drenched with sweat, vividly recalling a recurring dream in which he and his cohorts in the Bay Area's own Comadre had converted a warehouse into a top-notch Pro Tools HD facility. Tired of relying on outside service providers to handle his band's recording and merchandising needs, Shirley (and the friends that would soon be known as The Bloodtown Collective) had long wanted to bring everything in-house, securing the band unlimited tracking time to lay down its patented discordant jangles and unrelenting percussive battery, while also offering a home to like-minded musicians to indulge in their musical proclivities—off the commercial recording facility grid.

But the Bloodtown gang knew well that simply building a recording studio and opening its doors to the punk rock circle was about as fiscally responsible as buying stock in Betamax. So Shirley and crew opted to a take a three-pronged approach and offer an all-inclusive package for the bands they love by marrying Atomic Garden with Heart Side Out Press and Bloodtown Records, effectively giving bands the option to not only record, mix, and master on-site, but also design and press their merchandise and, just maybe, release their music through a full-fledged indie label—all without leaving the confines of a single East Palo Alto warehouse.

It's a venture that's proved fruitful: Atomic Garden has managed to bring in over 100 bands in the recent past, turn their revenue into rent, amass a pretty sweet little collection of studio toys, and support the scene that birthed them.

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So head on over to their website and give them a shout when you get a chance. Ask Jack how he likes his newly acquired 2-1176, why the Massey L2007 is his go-to plug-in limiter, and what it's like running a great studio tailored for a great cause. We're sure he'll tell you all about it.

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— *Kevin Antunes*
Musical Director / Keyboards / Programmer
Justin Timberlake
FutureSexLoveShow 2007

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