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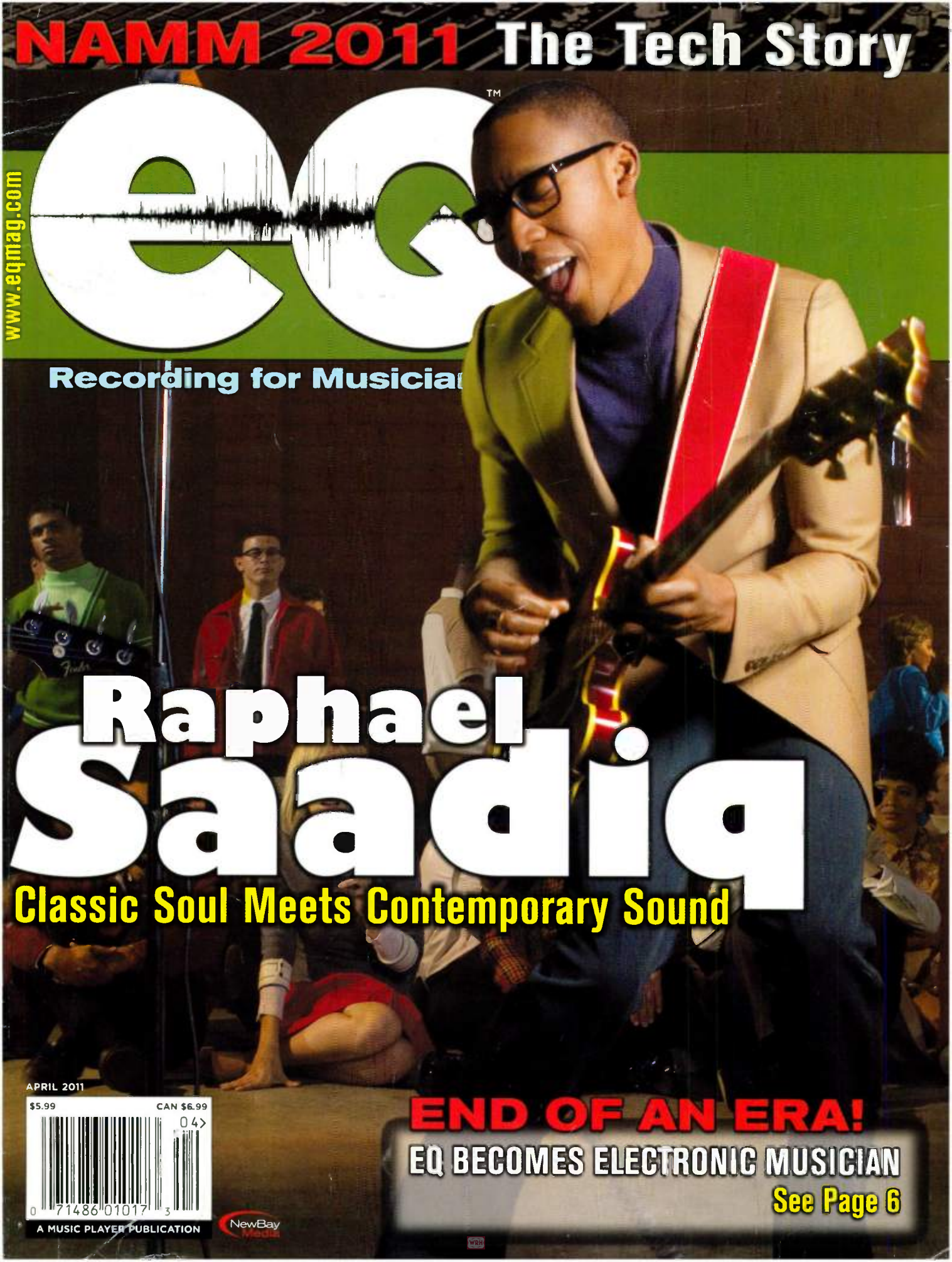

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EQ BECOMES ELECTRONIC MUSICIAN

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COMMUNITY

TALKBOX

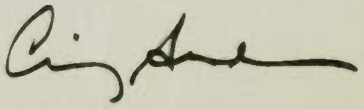
DOES "PAD" STAND FOR "PRO AUDIO DEVICE"?

So, which company had the biggest pro audio presence at NAMM—Roland? Yamaha? Presonus? Answer: Apple. Yes, Apple, who didn't even have a booth, but whose iPad dominated the floor. Presonus had a remote mixing app for their StudioLive Mixer, Alesis showed a pro audio-oriented iPad dock, Yamaha was turning their Motif XF into a recording studio with their control surface app—and that's just the tip of a *very* large iceberg. It's almost enough to make you forget all the "What a stupid idea!" comments when Apple's tablet first appeared.

The single most glaring omission with many digital music products has been the control surface—whether the problem is paging through menus, mixing with a mouse, trying to access a zillion parameters via a teeny keypad, or watching a product's list price soar if a manufacturer decides to add physical controls. But just as the music software industry rode the coattails of the personal computer revolution, our next generation of music gear (for both studio and stage) will ride the coattails of tablet-based control surfaces.

There's a dark side, though: Technology changes so fast you just know there's going to be an iPad 2 any day now, and it's also clear that Android OS-oriented companies are not planning to sit this one out. As a result, software and applications might become even more ephemeral than they are now—all of us have run into situations where new computers simply don't accommodate our older hardware, or software was never revised for newer operating systems. Of course, if you're paying $10 for an app, you're not going to get too upset if a couple years from now, you have to shell out $10 for a newer version. What's more troubling is that much of what we do involves developing a skill set on our instrument, and when that instrument becomes obsolete, we have to re-learn that skill set all over again.

But we'll worry about that when the time comes. For now, the iPad is here—and the music industry has embraced it big-time. Well, actually . . . make that *huge*-time.



Craig Anderton, EQ Executive Editor

We have exciting news! Starting next month, *EQ* magazine will become *Electronic Musician*. We're combining the best of both magazines to bring you more tools, more tips, and more techniques—everything you need to make better music, on stage and in the studio. Stay tuned! –*The Editors*

LETTER OF THE MONTH

My Favorite Way To Mike Piano

Though I would not call it my favorite method . . . a surprisingly effective way to record a piano is with a Shure Beta 57 and a Beta 58!

First, have the piano at "full stick," then centrally place the two mics in an xy pattern about foot back and six inches up from the hammers. The beta 57 should be on the bottom of the pair pointing almost directly at the center-point of the bottom octave of the piano. The beta 58 should be directly above the 57 but directed at the upper-mid registers of the piano, airing to the high end. (When viewed from the keyboard, both mics should be aimed toward the hammers and directed slightly down from the horizontal axis.) After recording, balance the two tracks and hard-pan the 57 left and the 58 right. Then pass both tracks through some gentle compression and EQ to taste. This method provides a punchy but brilliant piano sound. An example of a Steinway B recorded with this method can be heard at http://lifeclock.bandcamp.com/track/jetaime.

Makoa
via email

ASK EQ

I see a lot of audio interfaces that advertise "zero-latency monitoring." I thought there was always at least some amount of latency when using DAWs, so how do they pull this off? And why would anyone use other interfaces if some offer no latency when monitoring? I get different answers from different people, so I thought I'd indeed "ask *EQ*."

Troy "TJ" Jeffers
Las Vegas, NV
via email

Focusrite's Pro 24 DSP is just one of many audio interfaces that includes a mixer application for zero-latency monitoring.

EQ: You're correct, there's always some degree of latency when using a DAW and monitoring through a computer, but understand this isn't necessarily a constant amount, nor does it relate solely to the interface—a faster computer, simpler projects, and better drivers are just some factors that contribute to lowering overall latency.

Latency occurs because audio is a realtime process, but computers are constantly being distracted by other tasks—monitoring keystrokes, checking ports, etc. So, storing some audio in a memory buffer means that if the computer can't deal with audio at any given moment, there's some in reserve that can be streamed to keep the audio flow going. The amount of audio you put in reserve translates to the overall amount of latency.

Interfaces with zero-latency monitoring get around this problem by bypassing the computer altogether, typically through a bundled mixer application that allows patching the interface inputs directly to the outputs. However, the biggest disadvantage to zero-latency monitoring becomes clear if you need to hear the sonic effects that plug-ins impart to a sound, such as when recording guitar with amp sims. With zero-latency monitoring, you'll hear the guitar's dry sound that feeds the input, not the sound processed through the amp sim. (Incidentally, zero-latency monitoring is seldom true *zero*-latency monitoring, as putting a signal through A/D and D/A conversion typically adds about 1.2ms of latency at 44.1kHz. But most would consider this negligible, because 1ms is roughly equivalent to moving a foot further away from your speakers.)

Some interfaces incorporate hardware DSP to provide effects that don't require plug-ins. For example, if the interface includes reverb, then it's usually possible to add reverb to the monitored signal so a vocalist can hear their voice with reverb—without having to use a reverb plug-in, or recording the voice with reverb.

Bottom line: Use zero-latency monitoring if you don't need to hear the results of any processing applied by the computer; otherwise, do what you can to minimize latency, with the main improvement coming from (sorry about this) upgrading to a more powerful computer.

Ask EQ a technical audio-related question, and EQ will answer it. Send it to EQeditor@musicplayer.com.

EQ POLL Do you use outboard effects or emulations?

49% **Both**

40% **Plug-ins: everything's in the box**

11% **All hardware, all the time**

Send *EQ* Your Stories, Win Gear!

Talk to us! Share your studio stories with *EQ*, and we'll print our favorites in an upcoming issue. And if we choose you as the "letter of the month," you'll win sweet gear! This month, we're giving away a Glyph GT 050Q—a desktop hard drive that's purpose-built for audio storage, with FireWire 800 and 400, USB 2.0, and eSATA connectivity.

Question:

What's your most creative trick with an iPad audio app?

Send your answers to EQeditor@musicplayer.com.

HOORAY FOR EARTH

Accidentally, On Purpose

"We had zero money and we had no plans. There was no label attached to it, and we just wanted to make something as awesome as we could."

Hooray For Earth's Noel Heroux is talking about the humble beginnings of *Momo*, he and drummer Josh Ascalon's breakout EP released this past summer. The quote could easily be attributed to any of today's talented and resourceful indie bands, most of which forego dedicated studios for nimble laptop setups. At times, however, that kind of finished product can end up sounding a bit sterile. Not the case with Heroux. Hooray For Earth's new album, *True Loves*, is a depth charge of tweaked samples, pedal-infused guitars, and hefty drums that mixes unhinged experimentation with just the right amount of DAW know-how.

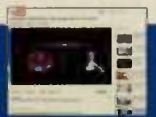
"A Roland Juno-6 was used on occasion, but most of the album's synth-sounding melodies were played out on a low-tuned Japanese Fender Mustang re-issue run through pedals like the DOD Thrash Master and Stereo Chorus, along with an Electro-Harmonix Holy Grail for reverb," explains Heroux. "Samples are torn apart and rebuilt using [Sony] Sound Forge, then cobbled together using [Cakewalk] Sonar 3.

"People are like, 'What's wrong with you?'" says Heroux, referencing the eight-year-old version of his preferred software. "But it's comfortable for me, and I never use a grid. I know it's not the most time-saving method, but I enjoy editing. A lot of people use Ableton, and I know it works great, but it gets under my skin when everything is hitting perfectly all the time."

Nowhere is this more relevant than with the drums, which were recorded on a rooftop using a Shure Beta Kick, an SM57 for the overhead, and an old MiniDisc recorder "to grab some stereo audio." By blending the rooftop tracks with overdubs, percussion samples, and staccato bass, the songs take on a hybrid feel that sounds truly three-dimensional. These unconventional tactics are nothing new to Heroux. The crunchy drums on *Momo*'s "Surrounded By Your Friends" were recorded using a Fostex 8-track with a busted preamp. In fact, the old, brittle preamps on the Yamaha PM1000 that *Momo* was recorded through gave the entire EP a blown-out feel. Subtle melodies in ambient wind noise from the outdoor drum sessions provided the foundation for one of Heroux's favorite songs on *True Loves*, though he won't reveal which one.

"I'd prefer to keep that one to guessing," he says, smiling. "Everything on this album is straight from my head and straight into the computer. I wouldn't call that song an accident, but it was definitely not planned at the time of tracking!" **Richard Thomas**

Interview extras with Noel Heroux.



Check out "Surrounded By Your Friends."

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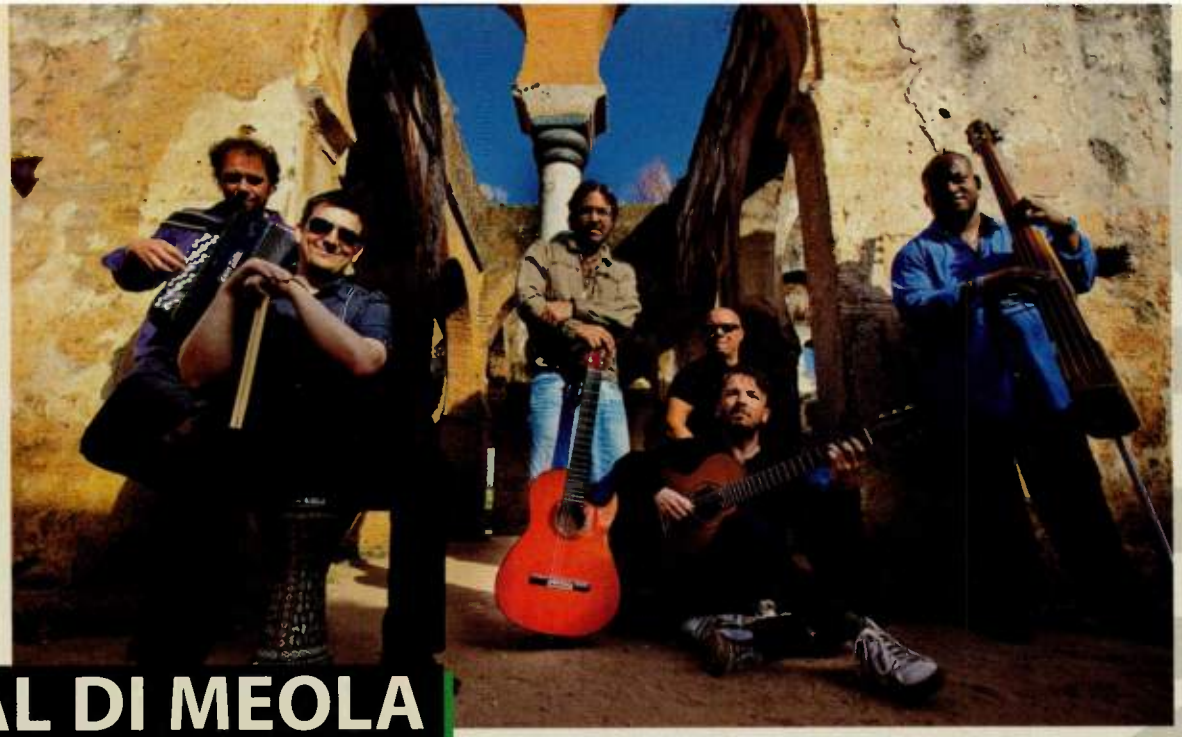

AL DI MEOLA

Soars on *Radical Rhapsody*

Guitar titan Al Di Meola has been astonishing music fans since the mid-'70s, first as a member of fusion pioneers Return to Forever, and since, over the course of about 30 solo albums. His playing has only got richer through the years, as he's incorporated more influences in his music, including Latin, North African, his Italian roots, Argentine tango, heavy rock; you name it. His newest album, *Radical Rhapsody*, gives a great snapshot of where he is today, with nearly all those influences present over the course of 13 originals, mostly featuring his five-piece World Sinfonia touring band, and then two wonderful covers—"Somewhere Over the Rainbow" and a fantastic "Strawberry Fields Forever."

This latest project began at Di Meola's Florida writing retreat (his main home and studio is in New Jersey), writing on nylon or steel-string acoustic guitar, then employing a Roland VS-880 digital studio workstation, which he calls "the perfect writing tool—I've probably had it for 14 years." He'll write parts for his band by putting pencil to paper: "I write everything out and then I record them first [using keyboard voices for the non-guitar parts] to see how it sounds before I do any actual recording. I'll work with someone like Barry Miles to lay everything out and see how it sounds, and then make minor adjustments in the actual written parts."

In the case of the new album, five of the songs are ones he had been playing live for some time with his group, so cutting the basics at Avatar Studios in NYC with producer/engineer Frank Filipetti was relatively straight-forward. The other tunes required more arrangement work at Di Meola's Churchill Studio, as well as sessions at the Hit Factory in NYC and Henson Studios in L.A. with engineer Katsuhiko Naito, who has worked on and off with Di Meola for a decade. Naito comments, "His songs are pieces of art—there's so much going on in them and he's always trying new parts and new ideas, like a painter, so the songs sort of grow on their own."

In the studio, Di Meola usually plays his Spanish-made Conde Hermanos nylon string guitar, captured with a Schoeps CMC 64 stereo pair "X-Y, pretty close to the guitar," Naito says. "He has a nice-sounding guitar booth in his studio that was designed for that guitar, with a wood floor and some ambience."

Di Meola also uses a Roland VG-88 guitar synth on his axe "for places within the composition where I need to soar," the guitarist notes. "At that point, my nylon guitar has a pickup that enables me to access different sounds, one of them being a Les Paul through a Marshall. It really cuts through when the music gets thick. Then I can back off the pedal and go back to pure acoustic. But at no point do I eliminate the acoustic sound, so it's usually a blend of both." **Jack Britton**

Read extras with Al and engineer Katsuhiko Naito.

Download Di Meola's "Siberiana."

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BASTIEN LATTANZIO

HEARTS REVOLUTION

A Riot Grrrl-Led Hip-Hop Dance Rock Blitz

Some artists have lofty goals. And some, like NYC dance punk duo Hearts Revolution, want to change the world. "I want to make something new," says singer/rebel Leyla "Lo" Safari. "I want a revolution."

Inside Gigantic Studios, where Lo and her musical other half, Ben Pollack, have been working on their debut full-length, *Ride or Die*, with producer Chris Zane, there is an air of anything being possible.

"Imagine back in the era of *American Bandstand*, when kids were listening to rock-and-roll for the first time and figuring out how to dance and express themselves, it's *that* kind of dance music," says Lo of the *Ride or Die* sound. "A hip-hop inspired rock-and-roll dance record . . . if Ad Rock and Kathleen Hanna finally made their love child, it would be born of *Ride or Die* essence."

The album began in typical Hearts Revolution fashion—Ben producing the beats and synth-based dance music in Ableton Live, and recording Lo's riot-grrl-style vocals and other out-of-the-box sounds via a cheap audio interface. Then they hit the studio with Zane.

"Our demos are like pencil drawings," says Ben, "and I wanted a producer to take these pencil drawings and render them in 3D."

Of late, Zane has worked with a number of electro- and synth-based artists including Passion Pit and The Hundred In The Hands, and he's rooted in post-punk and indie-rock, as demonstrated on records with Les Savy Fav, The Walkmen, and Tokyo Police Club. Sonically, Hearts Revolution lives where those worlds collide, applying the DIY punk aesthetic and ethos to dance music, and dipping it in florescent pink.

"So much of the presentation of this music *is* the sonic character," says Zane. "It's all built-in." That is: "everything in the red in Ableton. A compressor on the master fader—everything just clamped down, super compressed."

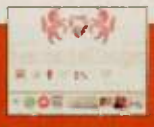
The challenge for Zane was to keep this sonic character that's inherent to the songwriting, but elevate the sonic quality with better equipment. They replaced soft synths with analog synths, recorded guitars, supplemented drum parts with samples from Zane's library, and recorded live crashes.

Lo's vocals were largely re-recorded in the studio, though a few tracks that she recorded in the bathtub via the stock iPhone hands-free mic made the cut. In the studio, the vocal chain was consistently "an AKG C12 destroyed through a preamp destroyed through an 1176 destroyed through a Distressor."

Mixing *Ride or Die*, Zane applied some unorthodox techniques to approximate that "clamped down" Hearts Revolution sound. "I'm compressing the hell out of the stereo bus with the Alesis 3630 that Daft Punk is famous for using. That 3630 is doing at a minimum of 6dB of gain reduction on the whole mix."

"I always do a lot of layered compression and usually get some very drastic sounds, but with this record, everything is pushed way too far and then brought back over the edge a tiny bit," Zane describes. "It's the loudest record I've ever mixed. We're printing back into Pro Tools at like –1. Crazy loud. But that's just what we're going for." **Janice Brown**

Read our extended feature on Hearts Revolution.



Learn about the pink Hearts Revolution trunk.

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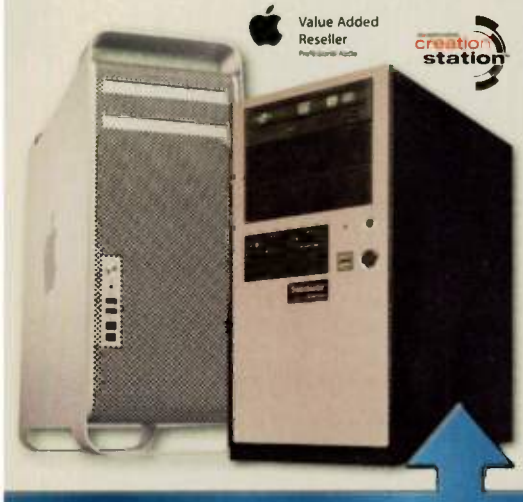

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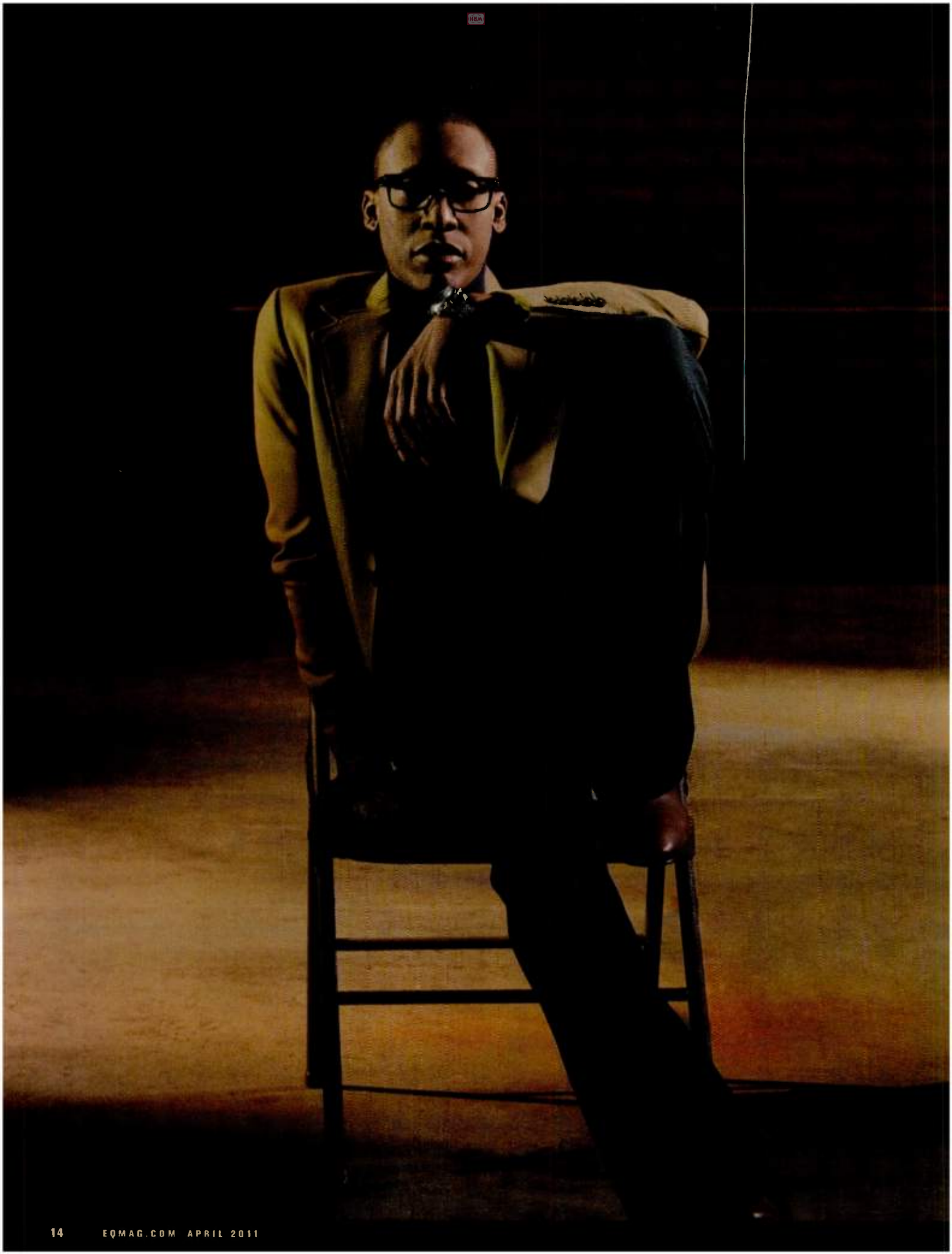

A Modern Throwback

On *Stone Rollin'*, Raphael Saadiq moves away from a Motown sound to pay homage to broad influences ranging from Sly Stone to Johnny Cash

by Jack Britton

Singer/songwriter/multi-instrumentalist/producer Raphael Saadiq is living a pretty good life right now. On a cold Thursday night in January, we find Saadiq and his quintet (guitar, bass, drums, two singers) sitting on stools under a dimly lit crystal chandelier in a spacious suite on the 16th floor of San Francisco's classy Clift Hotel, breezily running through a few tunes from his new album, *Stone Rollin'*. If you've ever seen clips from Hugh Hefner's late-'60s TV series *Playboy After Dark*, which was shot on a set made to look like a swinging bachelor's penthouse apartment, that's what this room looks like. And by the time Saadiq casually kicks into the album's first tune—"Heart Attack," which he admits is a nod to one of his idols, Sly Stone—the crowd of about 75 local writers, music biz types, and a few friends from his days across the bay in Oakland, is well-lubricated and in a good mood. Just like Saadiq. Handsome, relaxed, dressed head to toe in black (including his trademark black-framed glasses), and cradling a Telecaster on his lap, Saadiq tells stories about his new songs and even takes questions from the audience. The handful of tunes he performs run the gamut from the rockabilly shuffle "Daydreams" (inspired by Ray Charles and Johnny Cash, he says) to traditional soul-flavored tunes more reminiscent of his hugely popular 2008 album *The Way I See It*.

Engineer Charles Brungardt and Raphael Saadiq at Ocean Way Recording in Hollywood.

That disc, with its uncanny extrapolations on the traditional mid-'60s Motown sound, created quite a sensation and brought Saadiq a whole new audience—mostly young, mostly white folks who frankly were unaware of his long and illustrious history dating back to the smash late '80s, early '90s Oakland soul and new jack swing group Tony! Toni! Toné!; the short-lived R&B supergroup Lucy Pearl (Saadiq, En Vogue's Dawn Morrison, and A Tribe Called Quest's Ali Shaheed Muhammad); and his solo albums. No doubt many of the audiences who saw him play huge festivals such as Bonnaroo, Outside Lands, and Bumbershoot (he's playing Coachella and South By Southwest this year) thought he was a new artist who'd just stepped off a bus from Detroit in 1965. The crowds ate it up—loved the tight-fitting yellow suit he often wore, loved the Temptations dance moves, loved that smooth, elastic voice that moves so easily into Marvin Gaye/Eddie Kendricks territory but still sounds original—and Europe and Japan both fell in love with him, as well.

Of course the *easy* thing for an artist who is clearly cresting and in-demand—when I interviewed him a few days after the Clift event, our conversation was interrupted by a call from Mick Jagger!—would be to offer audiences more of the same sound they love. But on *Stone Rollin'*, Saadiq has moved away from the hard-core Motown sound and embraced a whole new set of influences, like the ones mentioned above, and also the more expansive orchestral sound of post-Detroit Motown recordings and the great Philadelphia soul records of the '70s. It's a more eclectic album all the way around, but in the scope of Saadiq's whole career, just another synthesis of his roots and current fascinations. After all, he first tackled Motown-style songwriting with "The Tonys" (as he calls them), and his first solo album was called *Instant Vintage*. In short, this is what he's been doing all along, or as he puts it with a laugh, "You could say my whole career is paying homage to everybody . . . but I've still always got *my* sound."

For the past several years, Saadiq's principal sonic partner has been an engineer named Chuck Brungardt. Originally from Modesto, in California's Central Valley, Brungardt got a degree in computer science from the University of San Francisco but fell into the recording world. Working at a software company by day, he also interned at Moulton Studios in San Francisco for a period and eventually "caught the ear of the producers Jake and the Phatman [Glenn Standridge and Bobby Ozuma], and they worked with Raphael a lot," Brungardt explains. "I ended up working with them for six months to a year, and eventually, when I graduated college, those guys were in L.A. a lot working on stuff with Raphael at his studio. It was right when he finished

RECORDING · MICROPHONE

Steve Stevens
Grammy award winning guitarist for Billy Idol

"The AKG 214 is nothing short of a revelation for my live guitar sound. No more adding EQ at the console, this mic translates exactly what is coming out of my speaker cabs and does so in a huge 3D way. The peace of mind it has given me, knowing that my tone is kicking ass out in the house is worth it's weight in gold."

Martin Strayer
Sound engineer Joe Cocker, Dixie Chicks

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FOH for Trey Songz

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Dave Natale
FOH engineer Tina Turner world tour 09

"I am very impressed with the AKG 214's ... they are now my new standard. The older mic's I use are becoming harder and harder to find and it is great to find alternatives. This is truly the first microphone that I have ever used flat with no EQ needed."

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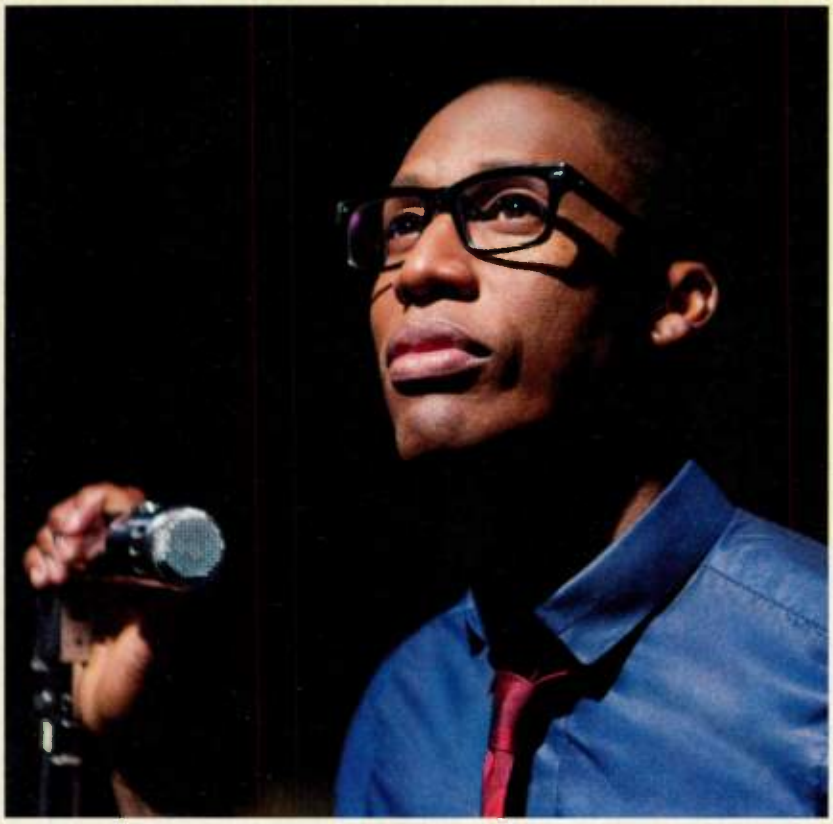

"You could say my whole career is paying homage to everybody... but I've still always got my sound."
—Raphael Saadiq

the *Ray Ray* album [in 2004]."

Brungardt interned at Saadiq's Blakeslee Studio in North Hollywood and learned more about engineering there from Standridge and Danny Romero. When Standridge moved in to more of a business role in his partnership with Ozuma (who was mainly a writer/producer), Brungardt started engineering more, and by 2007 Saadiq had brought him onboard to help engineer and mix the *Introducing Joss Stone* album, which Saadiq produced. (Saadiq has a long production history, too, having presided over his own albums since The Tonys, and helming tracks by The Roots, Mary J. Blige, The Isley Brothers, Macy Gray, Snoop Dogg, D'Angelo, and many, many others; Brungardt worked on a few of those, too.)

Saadiq and Brungardt obviously connect strongly on a work level—Saadiq likes to layer multiple instruments himself; he and Brungardt have spent countless hours together in the studio, and temperamentally, they are clearly suited to each other. But another bond they share is their love of collecting gear and musical instruments, and a fascination with historic recording techniques. "I was always into collecting gear on eBay, even back in San Francisco," Brungardt comments, "so we started buying things like [Telefunken] V72 preamps and old Ampex tape machines—we'd take the preamps out of those and rack them up. Those kinds of things helped us get closer to the sound we liked, and we also studied the *Recording the Beatles* book, which was awesome. Those engineers really knew what every piece of gear could do."

"I love gear!" Saadiq adds. "Old keyboards, like [Hohner] D6 clavinets, Hammond B-3s and tricked-out Leslies, old mics . . . I'm still collecting. I never stop collecting. Guitars, basses . . . that's part of what keeps you making records. You have to have the tools you need."

"Before we did Joss' album," Brungardt notes, "we are already playing with doing Raphael's *The Way I See It*, and the idea was, 'Let's buy old equipment and make samples, and also let's try to make live playing *sound* like samples; maybe we'll put drum machine programming over it. Because real players are more interesting and dynamic than an 8-bar or 16-bar loop. After we'd worked on Joss' album and we got back to Raphael's, we wanted to take it in an 'older' direction, it became almost like a bet with some of the guys who were saying, 'You can't really re-create this old-sounding stuff because the power-flow back then was different, or the way this worked or that worked was different.' So Raphael and I just locked ourselves in the studio and tried *everything*, from bouncing tracks to a cassette tape to get that noise—trying get it to sound dirty and old—to distorting vocals in various ways, because they didn't have the compressors that we have now; they had slower attacks. So that became part of the sound. We had Motown books and we'd see pictures of the guys in the studio and how their drums were set up, how the mics were placed. So we started out copying that, but as the process went on, we sort of found our own sound within that: 'Let's try to re-create that sound, but also modernize it by making the bass heavier and the kick drums pretty slammin'. It was a fun, experimental project."

But it was not something they were interested in repeating exactly on *Stone Rollin'*. "That last album was a lot of fun to make," Saadiq agrees. "Being in the studio and miking things up in certain ways, and studying up on the Motown EQs and all that, figuring out exactly the right tone for that rhythm guitar part. We spent *hours* on that stuff, and not just trying to make it sound 'old,' but to put our stamp on it. Chuck really goes to the wall for me when I'm dreaming all this stuff up. He's there going, 'We can do this! We can do this!'" he laughs.

Saadiq says that though *The Way I See It* strongly reflects the Motown aesthetic, *Stone Rollin'* is more in keeping with his other projects that have drawn from more influences: "I've never shut my ears to anything, really. It's not like I'm always looking for things, either, but I can't close my ears to any music. Any guitar, any drums, any rhythm section—I've always been open to those things, trying to

understand what makes them work in a song."

Brungardt reveals that the move away from the Motown sound "was kind of an accident. The first time we recorded 'Heart Attack' was maybe six months after *The Way I See It*, when he was taking a break from touring. Originally it sounded more like that record—it was more of a Motown shuffle. We always loved the vocals, but we weren't so set on the music. At the same time, we started listening back to the few songs we had when we went full-steam into this project and we both felt it wasn't the direction we wanted the next album to go. We wanted to evolve the songs, and I wanted to evolve the engineering, as well. On *The Way I See It*, everything was pretty much tube pre's and tube compressors. On this one, I wanted to play around with some of the more solid-state gear, like using some Neve pre's and EQs [1037s and 1272s] and some Scully pre's.

"Later, we revisited 'Heart Attack' and a lot of the music we were listening to at that time was indie rock—groups like Spoon and MGMT," Brungardt continues. "I loved the sound of those. In so much R&B, people want it up-in-your-face and polished, whereas indie rock was going the other direction. They were looking back at some of the same records Raphael was inspired by—Howlin' Wolf and Sly, and all that—and taking elements from them and using them in different ways. So I was trying to push Raphael to be a little more gritty with guitars and use a little more distortion."

"Heart Attack" is one of several songs on *Stone Rollin'* that feature Saadiq playing nearly all of the instruments. "I feel pretty comfortable playing whatever's in front on me," he comments, "though live, I guess I'm most comfortable playing bass [his main instrument for many years] or guitar. On 'Heart Attack,' the drums came first, then I'd do guitar, lay the bass, one part at a time." In the case of that tune, everything but the original vocal and some of the drums were stripped when Saadiq decided to take the song in a different direction, and then he rebuilt the parts.

Since he's often recording one instrument at a time, Brungardt is able to use one or both of his beloved Neumann U47s on almost everything. "I use it as a mono overhead, I use it on guitar; if we did a bass amp, I'd use a 47 as well," he says. The process of layering to a create a basic track can be quite fast—literally just a few minutes per part—or take several hours. More complicated parts and solos generally take more time and involve greater experimentation. Saadiq likes to record his vocals alone in the control room, and uses a dynamic mic, usually Shures. "This was something Gerry Brown pushed him to use back in the *Instant Vintage* and Tonys days," says Brungardt. "His voice benefits from a dynamic mic because it tends to give him more bottom and presence. Plus dynamic mics can sound a little older when pushed."

Among Brungardt's other favorite techniques to get Saadiq's characteristic sound is cranking the gain on a Fender Twin to get more distortion. "One of my favorite plug-ins is Tapehead [by Massey], and I'll use that on a lot of things to get a little more grit," he adds. "It thickens stuff up nicely if you record something that's a little too bright. I usually go a lot for darker tones when recording and mixing. Another thing we like to do is re-amp guitar parts. He'll go through one of those Avalon DIs, and we'll take that signal and re-amp it through a '67 Twin, or on some songs we've used an older Vox AC-30. Some of the songs even used Amp Farm: He might use that if he's just trying to get an idea down quickly. Then, if it's something he really likes, we'll go back and clean it up and re-amp it."

On the new album, Brungardt used a McDSP FilterBank plug-in to deal with excessive high end in spots, as well as the Waves Renaissance EQ, and though he is a fan of the Line 6 Echo Farm, for this

"I can't close my ears to any music. Any guitar, any drums, any rhythm section—I've always been open to those things, trying to understand what makes them work in a song."

—Raphael Saadiq

Orchestral sessions took place in Ocean Way's Studio B.

project, he turned to an Echoplex clone. He also utilized a Roland Space Echo during mixing, which was done on the SSL 9000 in Blakeslee's "C" room. (The album was cut to Pro Tools in Blakeslee Studio A, using the SSL 4000 Series desk mostly for monitoring.)

One of the most striking features of *Stone Rollin'* is the lush orchestrations that appear on several songs. Saadiq has always had a fondness for strings, but rarely have they been featured so prominently. "Instead of just having a string section off in the background," he explains, "I wanted on certain songs for the strings to be more expressive, so I talked to [arranger] Paul Riser about the titles and what I was going for in the songs. I'd say, 'For *this* word, I want it to be orchestrated *this* way. When I listen to the song "Go to Hell," I want to hear the winds in the valley rushing into me.'"

What are his orchestral influences? "Just music; music of all kinds. There are a lot of orchestral arrangements in dance music. And also from watching cartoons! There are a lot of orchestras in animation. I just thought [the orchestrations] would fit well with some of the new songs I was doing."

The orchestral dates took place at Ocean Way Studio B in L.A., with Gerry "The Governor" Brown engineering—Brown has worked with Saadiq on projects dating back to The Tonys, and Brungardt volunteers that he has learned much from him through the years. Brown also did some tracking with Saadiq at Blakeslee when Brungardt was off doing work for the videogame company he and Saadiq run, called Illfonic (whose games include *Ghetto Golf* and the first-person shooter *Nexuiz*). The horns were mostly done at Blakeslee, too.

A few tracks feature musicians from Saadiq's band, such as drummer Lemar Carter, bassist Calvin Turner, and guitarist Rob Bacon. And there are also a few guests, such as steel-guitar wizard Robert Randolph, former George Clinton associate "Amp" Fiddler (the song "Go to Hell" began with one of his Mellotron ideas), guitarist Wah-Wah Watson, and Earth, Wind & Fire keyboardist Larry Dunn.

But mostly, it's the versatile Saadiq, layin' every part down with authority and finesse. "I know I'm lucky," he says. "I get to dream and create things and work in the studio, and then I get to go out and watch people enjoy it."

Chuck Brungardt elaborates on studio sessions.

Watch the video for "Radio."

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"I did it myself...
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A conversation with jazz/blues guitar legend Scott Henderson
(Tribal Tech, Chick Corea, Jean Luc Ponty, Joe Zawinul, Jeff Berlin, Victor Wooten)

Scott, tell us about your studio.
It's a two room overdub studio - a control room and a room to mic guitar cabs, horn players, singers, etc...

What do you do there as opposed to in commercial studios?
I use commercial studios when there's a drummer involved, but I get the best guitar tones at home.

What were some of the problems you noticed with the acoustics?
Actually I never thought there were any problems, until I A/B'd the Primacoustic Broadway panels with what I was using before.

What type of panels did you have?
I had a popular brand of foam and I needed to take it down because after 3 years it started to crumble and fall apart.

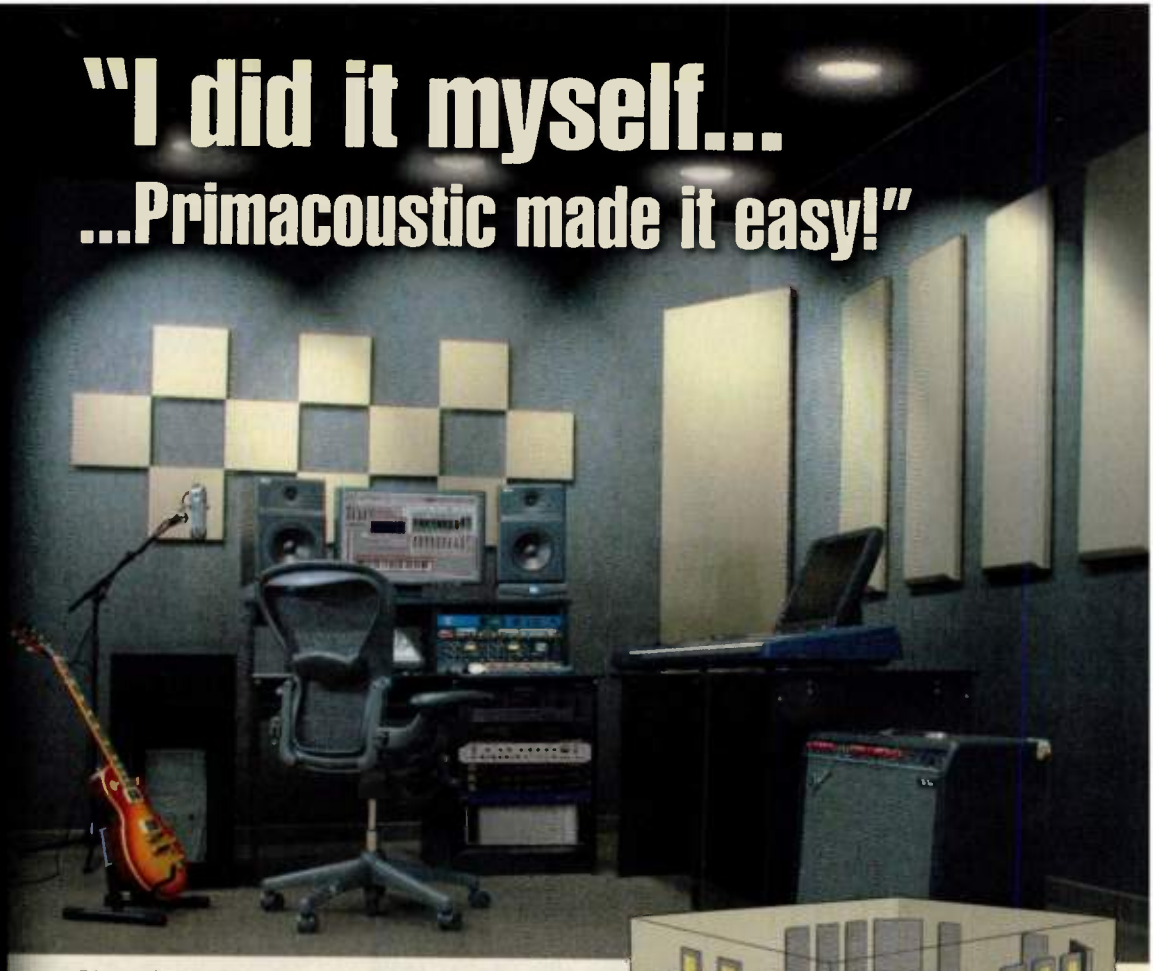
Did you do the set up yourself?
I did it all myself. Primacoustic made it easy and fast. Believe me, if I can do it, anyone can. All you need is a drill, screws and a level.

How did you configure the panels?
In the control room, because there's a lot of gear to work around, I just put them where they fit. The mic'ing room was just bare walls so it required planning. I configured them randomly to cover about 30% of the walls.

What improvements did you hear?
A big difference! Tighter low end with more of it, plus a sweeter top end and a clearer, open sound.

How would you compare it to foam?
The foam gave the guitar a bit of a nasal sound - more emphasis on mid frequencies, and not good ones in my case.

What would you tell someone thinking about acoustic treatment?
Whatever you do, don't use foam, especially attached with glue. The foam turns into dust after a while and is a total mess. Even worse is trying to get the glue residue off your walls. Mine had to be completely sanded and re-painted. Plus foam doesn't sound nearly as good as the Broadway acoustic panels.



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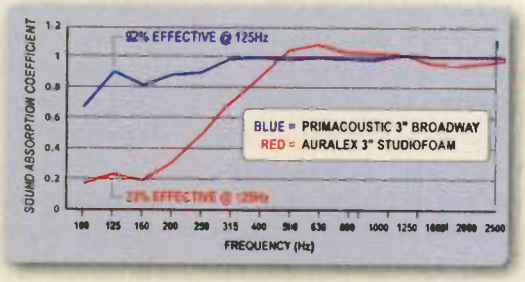

Tests performed by Riverbank Labs on 3" Primacoustic Broadway panels and common acoustic foam. Both absorb high frequencies but as sound shifts to bass, the foam stops working.

Installation is easy: unlike foam that ruins your walls, Broadway panels hang like pictures. They take no time to put up and look terrific! Each panel features resin hardened edges and is individually fabric wrapped in a choice of three architecturally neutral colors.

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Mastering Mastering Mastering Mastering

Understand Your Mix's

They're mysterious, they're straightforward. Their work is ubiquitous, but their credit is overdue. Their job comes after recording and mixing, but they're often expected to fix past mistakes. Their gear is esoteric, and though their exact role is often misunderstood, it's an essential component to every record ever made, from *Meet The Beatles* to *The Fame*. The mastering engineer is the final link in the recording chain and the first stop for mass production, but what exactly does he or she do?

To answer that question (and a few more), *EQ* spoke with four prominent mastering engineers: Gavin Lurssen of Lurssen Mastering, Michael Romanowski of Michael Romanowski Mastering, Andrew Mendelson of Georgetown Masters, and Joe Palmaccio of The Place. . .For Mastering. They don't agree on everything, but their goals are the same–to make each master all it can be. But questions remain. Like, what exactly is the role of the mastering engineer?

"Mastering is the final step in the artistic process of making a record, and the first step of the manufacturing phase," Michael Romanowski explains. "You're taking sounds, which are songs, and listening to them in an extremely tuned room; listening for frequency, level, how the sounds sound within the song, and how they sound with the songs when they go together. Mastering is the final check for quality control in the sonic presentation. It takes years of ear training and listening and focus to get to where you're paying attention to the bigger-picture details and not the smaller-picture content."

Andrew Mendelson relays the nuts and bolts." We are taking the completed mix, and using tools not too different in principle from the tone controls on a radio or playback device," he says, "and trying to fix any issues, and present the mixes in the best possible way. We're ensuring that the mixes translate well to all listening environments. Then we work on the final master, which is delivered to the pressing plant, download service, or label production department."

"When working with an established client, my role is that of a trusted and objective listener," adds Joe Palmaccio. "Established mixers and producers who have long-standing work relationships with me trust my judgment. Another role occurs when working with first-time clients–both first time for mastering and perhaps the first time making a finished recording. Today it is common for a first-time client to meet with me before they've recorded a note of music. My job includes becoming a trusted advisor to the overall production in addition to carrying out the traditional mastering duties I perform with

Matters Matters Matters Matters

Essential Final Step

by Ken Micallef

established clients."

But with Pro Tools, plug-ins, and in-the-box recording, who really needs a mastering engineer? Sure, superstars can afford the ultimate finished touches on their recordings, but for Joe Average in his bedroom studio, cost is anything but no object.

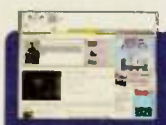
"A mastering engineer offers a specialty position, a lot of human experience; he or she can advise the artist on the tonal structure of the music," Gavin Lurssen explains. "The mastering engineer offers gear that goes much deeper than a piece of software. We use very intricately and carefully designed tools to dig into the audio that go far beyond what any software can do. Until the industry is further developed, automated software designs generally emulate the craft best performed by a human.

"Technically, you don't need a dedicated mastering engineer," Andrew Mendelson adds. "The essential part of the process is the creation of the deliverable master. People can do that at home, but when we create a master it goes through a rigorous quality-control process that ensures the client that everything is being done properly. People tend to think of mastering as just the processing stage, but it's the attention to detail and creating the deliverable master that is truly the fundamental part of the job."

"Producers and mixers can lose their objectivity," Palmaccio says. "The most important reason they seek out a mastering engineer is to have someone to objectively comment on the good and bad, catch potential problems and offer solutions to fix those problems before they release their music. It's true that there are tools one can use for mastering inside Logic and Pro Tools, but without experience, the tools are limited to the skill of the user."

With their specialized experience and specialty gear, mastering engineers are truly deep listeners. But what are they listening for? Romanowski listens to "get an overall feel for presentation. Is it too loud, too quiet, too bright, too boomy? Is the frequency response from low to high well-represented?" Mendelson also has a well-honed laundry list, perking his ears for "Tonal balance, sibilance, apparent levels, mouth noises, broadband noise, level and balance between songs."

"I want to see if the recording elicits any sort of



Learn how Lurssen mastered Elvis Costello's *National Ransom*.

Read more about the albums mastered by the engineers here.

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Gavin Lurssen.

emotional response," Palmaccio says "Then I listen to the actual mechanics—what is the instrumentation, and how is that affecting the musicality of the song itself? Enhancing or correcting a mix includes adjusting equalization, applying compression or limiting, adjusting the stereo spread, and adjusting the level of the entire song or certain parts of the song."

We've all seen the mighty toys of the professional recording studio, but the mastering room is a decidedly more foreign place to most of us. Its rig in total is typically minimal, its gear purpose-built.

"The mastering engineer's chain is a very intricate look at EQ and limiting and it also takes into account the gain structure of the audio going through that gear," Lurssen explains. "And because we deal with digital mixes, the gain structure coming out of the digital-to-analog converter into our gear and getting reconverted back from analog to digital is a big deal. Each mastering engineer generally designs their own gear for true transparency; Lurssen Mastering's equipment chain is all customized with emphasis on a combination of tube and solid-state analog processing gear. When you're working with two-track final mixes, you are working with something that has already gone through a digital or an analog summing bus," says Lurssen. "An analog summing bus usually provides a more palatable or three-dimensional sound but these days there is a lot of mixing within a workstation, which leads to digital summing. When it comes through the console at our studio it will all be processed analog and all of these details need to be taken into account."

Michael Romanowski.

"Most recording engineers work with small nearfield monitors, Palmaccio says. "Most mastering engineers use larger full-range systems. Another difference is the number of channels that mastering engineers work with. Recording and mix engineers are working with lots of channels, but most of the time I am working with two channels: left and right. Cable runs between gear are short and minimal because I want to maintain as high-quality a signal path as possible. Much of my processing gear is mastering-specific from the manufacturers. This includes features like easy reset ability and L/R channels matched to exacting tolerances."

Tracks come into mastering in every incarnation imaginable. Lurssen says he "gets every file type available, including stems [grouped tracks]. Stems do offer flexibility in the ability to make fine-tune adjustments to the mix, but it is important to maintain the notion that the mixes should not be altered in the mastering room if at all possible," he says. "Mix choices being made before mastering generally keep everybody focused in the right areas."

Romanowski prefers to get AIFF (.aif), Wave (.wav), broadcast Wave, and FLAC; Mendelson has received "half-inch, quarter-inch, CD, DAT, VHS tape, even cassette," he says. "Sometimes we're pulling something off vinyl for a movie soundtrack. But it's primarily PCM files, followed by DSD files and tape."

Another ubiquitous bit of business is the constant call to "make it louder!" How do mastering engineers preserve musical dynamics while meeting the needs of clients who seek out ultra-compressed, "competitive" mixes?

"I tell people that I've never in all the years I've done this heard of a consumer returning a disc or a download because it wasn't loud enough," Lurssen says. "We maximize the level at which we print a mix while retaining the musicality every time. If someone wants to go louder, it's not advisable. But some music *can* be super loud; it's part of the vibe. We're just aware of it and we're responsible with it."

"With no dynamic range, it's very fatiguing to the ears," Romanowski plainly states. "A really loud record means you will listen to it less often. People think loud means better MP3s, but they're actually worse because there is no low-level information. You can automatically gain-match your playback; iTunes's Soundcheck will do that. But people are

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Andrew Mendelson.

starting to pull back as they understand the ramifications of over-compressing your music."

Palmaccio takes a pragmatic approach to the loudness quandary. "There's an optimum point where loudness and musical impact meet. Once you push loudness beyond a certain point, you lose the musical impact. The mix, in effect, sounds smaller and sometimes downright unpleasant. Sometimes clients just want it really loud at the expense of everything else. By simply showing them two approaches—one maxed out and one not—they hear a loss of musicality and often go for the second approach. Ultimately, it is the artists' decision as to how they want their music presented."

Beyond loudness debates, mastering engineers face a variety of challenging situations in the studio. "I usually have one of my assistants go through and manually de-ess each 's,'" Mendelson explains. "Maybe they didn't have the tools to properly mix, or maybe the mix was dull to begin with, so that by the time we got the mix sounding good, the 's''s sound too bright. We're always going through and taking out some kind of mouth noise or cable noise. I would rather do that manually than use some broadband processor which will inevitably remove stuff you don't want taken out."

"The hardest mastering sessions are those when the artist and/or producer didn't really get what they wanted in the recording or production process and are hoping mastering can save their artistic vision, Palmaccio confides. "Unfortunately, it just doesn't work like that. Most of the time it requires an honest conversation. Not the most fun day, but honesty is a very important part of being on a creative team."

No matter the experience and talent of the mastering engineer, some mix issues simply cannot be resolved in the mastering process. "Mastering is not a fix, although we are being relied on more to fix people's mixes," Romanowski says. A lot of people who are making records shouldn't be making records. There are a lot of demos being released and they're relying on the mastering engineer to fix it."

"Phase issues are often difficult to deal with," Mendelson says. "For example, when you have two instruments in the same frequency range that are panned

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Joe Palmaccio.

the same way; if you have a dull vocal and a bright vocal, that will be trouble. If a mix is balanced, it doesn't bother me, but if you have issues you want them to be consistent across the mix."

Near the end of their job, or even at the beginning, the mastering engineer addresses the format that the music will be released on. Some mastering engineers take a a consistent approach, regardless of release format; some see each format as requiring a unique creative process. But at the end of the day, whether it's for vinyl, CD, or a download, the priority is to perform sonic issues in the mix.

"If [the mix] sounds good on one format, it should translate to the others," Mendelson says. "Sometimes you have a severely compressed CD that is going to be cut to vinyl and we will back off on the limiting a little bit. And sometimes there is a different mix for radio, and you will do what that mix warrants. I mastered a single yesterday and there were six different versions—same song, different remixes, and they all sound drastically different."

Joe Palmaccio sums it up. "I will master slightly differently when I know the final product will be vinyl. Vinyl by its nature has some limitation with regard to frequency response and loudness. There are three main components that change for me when mastering for vinyl as opposed to CD or digital release. The overall disc level is not as hot; the bass content has to be controlled with either filtering or elliptical EQ, and high-frequency limiting is used if there is an inordinate amount of treble content in the mix."

But at the end of the day, whether the music is released on vinyl, CD, or as an MP3, mastering engineers strive to make the final product sound as good as it can, whenever the mix is under their control. "Somebody needs to take a stand somewhere in order to get the fans something palatable to listen to," says Lurssen. "If we start changing what we do to accommodate new technologies, it's all going to fall apart. We just do what sounds good in the studio. Someone has to take a stand, and it's important that it's the person at the last stage of the process. Sure, you'll make minute adjustments here and there for vinyl or other specific applications, but generally speaking, you set boundaries. It's all about having confidence in what you do." eq

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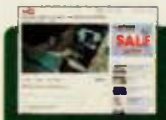
Punch and Presence

On *Electric Love*, Dirty Vegas concentrates on intricate loops, complex effects, and a big bottom end

by Tony Ware

South London house trio Dirty Vegas drove full-speed into the public consciousness in 2002 when the band's Grammy-winning debut single "Days Go By" was featured in a Mitsubishi commercial. The song rode an aqueous melody, directed by an electrohaus thump and persistent five-note bassline. A seemingly simple formula, perhaps, but the balance of elegiac and driving proved an immense hit. The band would then go on to release a self-titled full-length debut, with several charting singles, as well as a second full-length in 2004, before parting to pursue solo efforts in 2005. In 2009, however, Dirty Vegas reformed, and now Steve Smith, Ben Harris, and Paul Harris (no relation) have completed a third album, *Electric Love*–a 10-track record "marrying song structure with a dancefloor-oriented sound as well . . . concentrating on melody, harmony, vocals and chordal work, but with a prominent low-end punch," says Ben Harris.

Dirty Vegas may have taken a hiatus, but technology kept right on evolving. So in the interim between 2004's *One* and the writing process for *Electric Love*, the band transitioned its demoing process away from sequencing analog synths routed through outboard processors and an analog desk into a Mac tower, and instead packed sessions into a MacBook



Watch "Dirty Love."

Visit the band's MySpace page.

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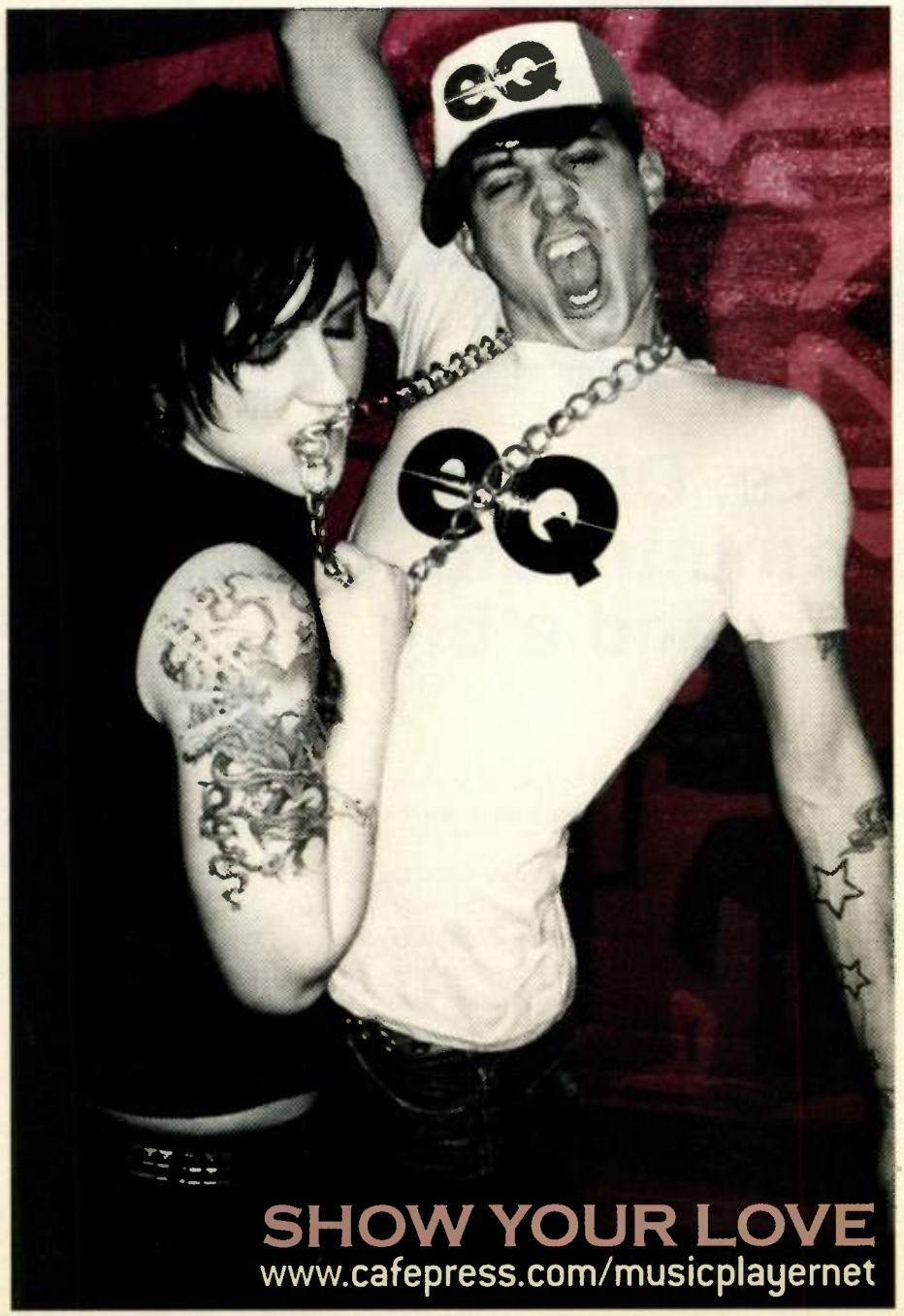
Pro running Ableton Live Suite 8 rewired into the Logic Pro 9 mixer alongside additional soft synths. Having each member in possession of a portable, standardized set-up allowed the group to sketch while on the road, as Dirty Vegas gigged heavily to support the self-funded recording sessions, and to float ideas to one another when they weren't together–Smith lived in Boston and Ben Harris and Paul Harris were spread out across London.

Long a performance tool for the group, Ableton Live has also proved to be an essential studio component, and not only for jamming out ideas. While an initial use of the program was for in-time auditioning of loops and to establish rough arrangements, it was the program's ability to draw on the clip envelope that had the most tangible effect on the final album. For example, on lead single "Electric Love," there is a rising, sliding pitch effect on the guitars in the chorus, and that was established through Ableton's automation. Logic, meanwhile, allowed the group to put aside its Akai hardware samplers and have a hub for comping and further processing.



Once initial demos were complete, Dirty Vegas set up a tracking session at Fish Factory Studios in Willesden, Northwest London, to take advantage of its 32-channel API Legacy Plus console. Smith, the group's vocalist and drummer, was recorded on a full kit freestyling over the virtual percussion, and these recordings were mined for loops and one-bar phrases that could be further warped in Ableton Live and through Logic's Flex-time. Additionally, Ben Harris' guitars were recorded both amped in the live room and through a DI box to balance grit and definition. While most overdrive processing was left for the DAW, certain synths were put through pedals, including the warm, diffusing Lovetone Big Cheese fuzz, in order to craft eight-bar loops that would easily be able to stand on their own in the mix (heard in songs such as "Never Enough").

Vocals were demoed in hotel rooms with a Neumann TLM 103 through an Apogee Duet, and when the time came to replace the guide takes at the Fish Factory, Steve used a Neumann U47 through a Telefunken preamp. Paul Harris and Julian Peak, another production partner, maintain a studio in Chelsea with a collection of analog synths, such as a Roland Juno 106 and Jupiter 8, and these were captured to augment their digital counterparts.

With all the materials compiled, the band set out to develop its sonic real estate. With *Electric Love* intended as a more forward album with greater bass presence than previous projects, Dirty Vegas had a lot of high-frequency energy to take into consideration. On a track such as "Little White Doves," which has a very full midrange with vocal, guitar, snare, weighty keyboard parts, etc., sidechaining with a compressor slide allowed elements to duck eachother's volume a dB or two, tightening the mix up. Hard-panning with a short delay created a nice whip to help guitar and synth parts separate, while sharp EQ filters with large slopes provided the abrupt cut-off points needed to carve kicks to stand out, especially on smaller speakers. SoundToys' Decapitator Analog Saturation Modeler, Nomad Factory's Blue Tube valve driver, and Ohm Force Ohmicide were

extensively used to (re)contour edges when certain sounds were fighting for their seating.

"Analog-style distortion is a great way to get some separation, because it adds harmonics generated from within the sound itself, so it can further highlight difference between the competing sounds," says Ben Harris. "You can use tricks to compensate for a lot. But I think ultimately, it's about getting the best recording of something that's integral to the song, and also understanding arrangement rather than trying to scoop things out and boost things up with EQ for hours."

Simon Duffy, who handled the mixdown of *Electric Love* in Logic and Ableton on an eight-core Mac Pro with external compressor over the mix out, agrees to an extent. While he certainly appreciates and celebrates the contribution of plug-ins such as the Sonnox Oxford EQ and Dynamics, and he recommends creative use of SoundToys' EchoBoy for slow LFO and random filter detuning on bass synth to fill things out with personality (especially effective in the song "Today"), Duffy feels that Dirty Vegas established tones that really cut through the mix even prior to his involvement, especially on the vocal front.

"I've always thought what made Moog basses great was the constant weight of the sound...it gave you the ability to put it 10dB up or down in the mix, and it'd always sound right and never lose its weight...and Steve's voice has the same quality," Duffy says. "I did compress him a lot–I love hearing all the breaths and movement in a vocal–but apart from adding a slight shelf from 8k up, I didn't really have to worry too much."

That doesn't mean a boost can't be a good thing, however. "Another very useful technique for Steve's vocals was pushing the knee on Vintage Warmer without pushing the gain," says Duffy. "As the last bit of processing on his lead, this would give him a uniformity of presence throughout the mix that made riding vocals an absolute pleasure later in the mixdown...a great presence without that awful over-compressed sound anything else would give you. It's also great for bringing the sound of the room it was recorded in right up. This is really apparent in 'Emma,' which has a lovely, dry vocal sound that keeps all the inflections and emotions of the performance without covering it in sugar."

As for the main instrumentals, Duffy mixes with a lot of high-pass filters engaged, to allow for the sensation of a full, fat sound without a bloated bottom end, allowing for the final placement of "a real meaty bass drum and bass with no interference from anything else." He then puts the mix through at least one trip out of the box and back before bouncing a mix, in order to "round out the wave."

"In most cases, the songs were built like jigsaw puzzles, so you wouldn't get a complete picture until the last synth had been locked into place...the guys' arrangements are very clever in this respect," summarizes Duffy. "Everything that was in there was exactly what was needed to make the song stand up, and if you took any one piece away, it would all fall down! So my job was mostly to get the punch and pressure in to the songs and thicken things up where it was needed." EQ

RECORDING

BY GINO ROBAIR

Frequency and Mic Polar Patterns

Despite the seemingly impenetrable set of numbers on a mic's data sheet, there is a wealth of information that even casual users can understand and that will increase their intuitive awareness of what the transducer can offer. It all starts by spending a little time staring at the frequency-response and polar-pattern charts.

Typically, the information from these two diagrams is derived from sound captured at a distance of a meter from the mic element. However, anyone who has placed a directional mic—one with a cardioid or figure-8 pattern, for example—closer than three feet from a subject knows that you get a boost in the bass frequencies as a result of the proximity effect. So even though the frequency response chart only represents a mic's potential sound reproduction at a specific distance, it nonetheless gives you a gestalt of that transducer's behavior that you will measure against your experience.

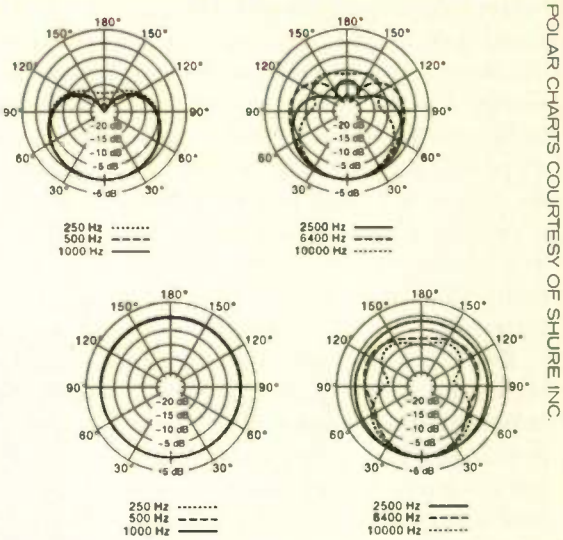
But there is another side to the frequency response that you'll want to pay attention to: how it affects the pickup pattern.

Top of the Charts

Like the frequency response chart, a polar plot tells only part of a microphone's story. The directionality of the majority of mics these days isn't consistent throughout the frequency spectrum: The polar pattern changes based on the wavelength it's picking up, as well as the size and shape of the mic element and housing. Typically, a mic's pattern will become more directional when it is capturing higher frequencies, which have shorter wavelengths, and less directional with lower frequencies, which have longer wavelengths.

This is clearly visible if a plot of the products' performance across the spectrum is provided with the mic. Because Shure provides this information, I've selected two charts from its new Beta 181 line—the omni and cardioid plots. Keep in mind that the Beta 181 uses interchangeable capsules that are small and side-address; a mic's physical design plays a big role in how the pickup pattern changes with frequency.

The nominal measurement you'll see for most microphones is based on a tone, or set of tones, played at some distance from the mic—typically 1kHz at a distance of 1 meter. As you can see in Figure 1, the Beta 181 cardioid capsule gives you a near-perfect cardioid pattern at 1kHz, with the strongest output at 0 degrees (directly in front of the mic) and a gradual decrease in level as you approach 90 degrees off-axis. By the time you get 180 degrees off-axis, the output has decreased by more than



POLAR CHARTS COURTESY OF SHURE INC.

Fig. 1. Top, cardiod pattern; bottom, omni pattern.

20dB, which is very significant. However, it's worth noticing that the rear pick-up is not completely zero, and it rarely is with studio mics. Although, theoretically, the null point at 180 degrees of a typical cardioid mic has no output, there is indeed signal present, though it is made up primarily of low frequencies at very low levels. But for practical purposes, the drop of 20dB in the rear results in a recognizable cardioid pattern.

Next, note how the pattern changes at two octaves below 1kHz. The resulting increase in output at 180 degrees creates more of a subcardioid pattern, while the levels at the front and side remain consistent.

The biggest surprise for me when I first saw this plot was how the pattern transformed at higher frequencies. At 2.5kHz, the shape begins to move toward hypercardioid, then reverts back to cardioid at 6.5kHz before changing into a hybrid shape at 10kHz that approaches a figure-8.

Now let's examine the omnidirectional capsule. The omni shape remains completely stable at frequencies below 1kHz and very close to its intended shape at 2.5kHz. By the time it gets to 10kHz, however, the output from the sides decreases well over 10dB, with slightly less decrease in output at the rear, yielding a shape similar to the cardioid at 10kHz.

Although these changes in shape look dramatic when plotted, they aren't inherently bad; a mic's response is part of what lends the transducer its character. But by understanding, say, the polar response of the omni capsule at all frequencies, you can judge whether it's the right mic for a given situation. EQ

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GRACE DESIGN

MIXING

BY MICHAEL COOPER

For a Mix That Delivers, Fine-Tune Your Arrangement

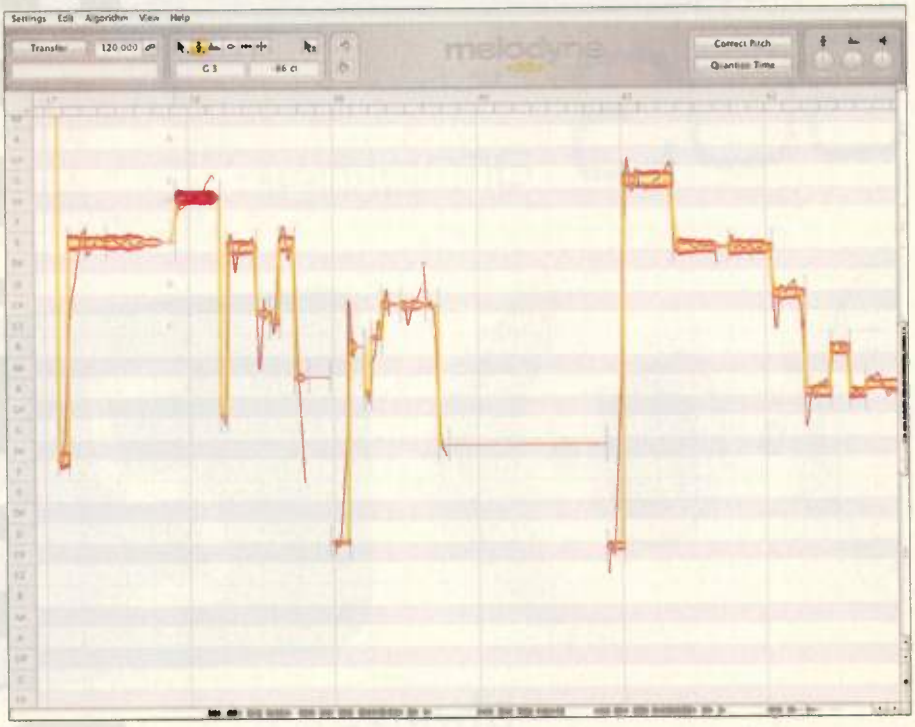


Fig. 1. In Celemony Melodyne Editor's GUI, individual notes of a melody can be dragged up or down graphically to change their pitch.

Killer music productions start with great arrangements. On the other hand, if you find yourself struggling to improve a seemingly unmanageable mix, the song's arrangement is probably the culprit. No amount of mixing will fix a broken arrangement—but that doesn't necessarily mean you have to dump the whole thing and start over from scratch. A little nip and tuck can give your mix a fresh coat of paint. Try these six arranging tips.

Kill Your Sacred Cows

You may love the five intertwining guitar parts you labored so hard to record, but do they all really help your song? Generally speaking, having more than two melody parts (including the lead vocal) voicing at once is a recipe for sonic confusion. Remember that most listeners focus on the lead vocal on a recording. Anything that distracts attention away from that "money track" weakens your mix, so make sure every part supports it and makes the song stronger. No matter how much you may love a particular track, you must remain objective about how it contributes to—or detracts from—the entire arrangement. Ferret out musically unimportant tracks and be ruthless with their mute buttons.

Breakdown Here

A good place to get fast and loose with muting tracks is during a musical break or on a verse of your song. Try paring down the tracks to just drums, vocals, and either bass or guitar, even if only for a few strategic bars. Alternatively, take the drums completely out of the mix until the next section of the song hits. This arranging technique is called a *breakdown*, and it's very effective in creating a contrast between song sections and providing a respite from a constant wall of sound. Nashville-based session players refer to a breakdown as "clearing out" the song section, and it's an apt colloquialism—sometimes having too many tracks play at once can muddy a song's waters and lessen its impact.

Double Up

It might sound too wimpy to have a single guitar part accompany bass, drums, and vocals, but that also might be all that the song's arrangement needs. Resist the temptation to clutter the production with additional tracks simply to make it sound more full. Instead, make the single guitar part sound bigger by doubling it. You can do this by setting up a Haas effect with a modulating delay (see last month's Techniques

article "Use Psychoacoustics to Craft a Huge-Sounding Mix" for more details), but you'll get an even bigger sound by playing the same guitar part again and recording it onto a new track. Make sure your timing for both tracks is pretty much *locked* as much as possible; very slight differences in articulation are okay. Hard-pan the two guitar tracks left and right, respectively, for a huge, double-tracked sound.

Use Chord Stacks

An alternative to double-tracking is playing chord stacks. Instead of having one rhythm guitar play all the notes in each chord, divide and conquer: Play the root and fifth, for example, on low strings on one guitar track and the fifth and third on higher strings on a second guitar track. Hard-pan the two guitars opposite each other. The effect will sound like your head is placed midway between lower and higher groups of guitar strings—big and wide! By splitting a sole vamp into two halves this way, you retain your arrangement's laser-focus simplicity without sacrificing size and power.

Turn it Upside Down

If your piano part, for instance, clashes with the lead vocal at a specific point in your song, but you know it's playing the right chord there, try inverting the piano's chord. For example, say the lead vocal sings a *C* note where the piano plays a *Cmaj9* chord. If the *B* and *D* notes in *Cmaj9* are played in the same octave as the lead vocal's *C* note, dissonant minor and major 2nd intervals will form between the piano and vocal tracks. Unless you like the dissonance, use a different inversion for the *Cmaj9* chord that places the *B* and *D* notes at least a 7th interval away from the vocal's *C* note. Look for similar dissonances throughout your song, and fix them by using different chord inversions where necessary. Smart chord inversions are the key to a harmonious arrangement.

Tweak the Melody

In the 11th hour of mixdown, you realize for the first time that the lead vocalist sang an *F♯* against a *G7* guitar chord. Yikes! Don't bother re-recording the vocal track, though. Use Celemony Melodyne Editor plug-in (see Figure 1) during mixdown to transparently shift the pitch of the *F♯* note up or down a semitone to fit the guitar chord. MOTU Digital Performer users can enlist that DAW's outstanding pitch-automation function to do the same thing. eq

TRACKING

BY BUDDY SALEMAN

Improve Your Session With Better Headphone Mixes

The quality of a headphone mix can make or break a recording session. No amount of amazing microphones, preamps, or compressors will change that. A bad headphone mix will leave the client wanting and you with holes in your studio calendar.

The purpose of the headphone mix is to give the musician everything he or she needs to give their best performance while recording a track. It's a delicate balancing act: If the mix is for a vocalist, for example, there needs to be a strong pitch reference in the mix; if it's for a bass player, then rhythmic elements are important in the mix.

Common Problems to Avoid

What defines a bad headphone mix? Mostly, a lack of clarity. Some of this quality is in the ear of the beholder, and depends on the recording context: When you're recording basic tracks, the mix battle is between the live instruments in the room and their representation in the performers' headphones; during overdubs, the battle is between live instruments and recorded tracks. That said, here's a general list of mix pitfalls to avoid at any time:

- Unclear basic pitch or rhythm elements.
- Lack of clarity of performers' own parts.
- Weak signals that cannot be made louder than the actual live performance.
- Distorted signals that cause pain to the performer.

Mix Send Configuration

I send my mixes from Pro Tools into an Oz Audio HM6 QMix Headphone Amplifier and Mixer, which has six headphone out channels and four aux inputs, as well as stereo main input and effects sends. (Hear Technologies' Hear Back Four Pack and the Furman HDS-6/HR-6 are comparable units.) This configuration allows me quite a bit of flexibility in sending out my mixes–I can set up four mono sends or two stereo sends. I then take one of two basic send approaches:

The "Whole Shebang": In this case, I premix the signal in Pro Tools and send out a stereo send to the QMix. This means that any mix tweaks that performers want need to be made by me. I almost always exclude a huge amount of information in this mix: I don't add effects (unless they are pertinent to either the song or singer). I omit stacks of guitars in favor of featuring one that provides the most harmonic and rhythmic information. I leave as much room in the mix as possible so the performers can focus on what they are doing in the moment and they aren't confused or distracted by what they are hearing.

The "Matrix": Here, I send four mono instrument sends and let the musicians adjust the levels themselves: Typically, I send the drums and bass on input one, guitars and keyboards on two, vocals on three, and whatever is being performed live on four. I usually set up a preliminary mix to give the musicians a point of reference to start from.

Recording Scenarios

Basics: This is the initial recording session, when all of the musicians come in to record their original tracks. This scenario is the hardest to create mixes for because of the sheer volume of the live instruments compared to the headphone mixes. Also, in basics, getting a great drum track is key, so the mix is almost always skewed toward the drummer. At this point, I like to run The Matrix. I find that the more control the band has over the sound of the headphones, the happier they are. The mixes tend to be cleaner, and only the musicians who want a loud click track or a drummer in their ears have it.

Overdubs: Here, I generally like to send the musicians a stereo mix from the board so I can control the individual mix elements. During this recording phase, there is a whole lot more information in the mix, which needs to be controlled with a firmer hand so mud is not sent to the headphones. Secondly, I can send effects into the mix without it gumming up the works.

All in all, providing a great headphone mix in the studio will give your musicians the ability to move beyond the technical morass of the recording process and get to the heart of the matter faster, and have more fun while they're at it! eq

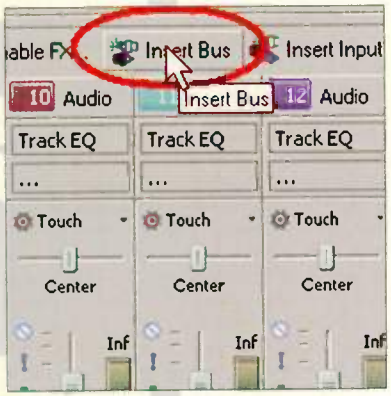
SONY ACID PRO

BY CRAIG ANDERTON

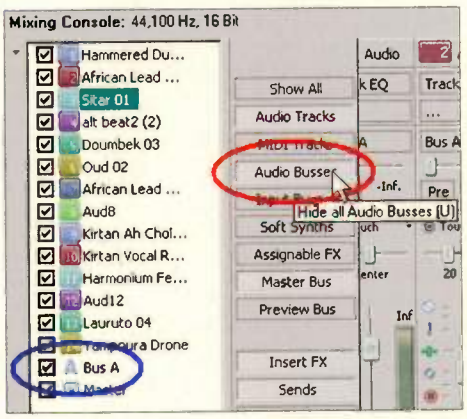
Use buses to expand your mixing options

OBJECTIVE: Route tracks to buses to create submixes.

BACKGROUND: Buses are often used to route the audio from various channels to send effects, but they can also serve as *submix* buses so the bus's level control could, for example, raise or lower the level of multiple tracks simultaneously. A default Acid Pro project routes all tracks to the master bus, so to create submixes, you need to assign track outputs to buses instead. Here's how to do this.

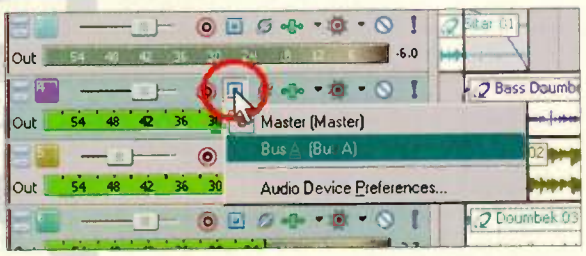


1 **In the toolbar at the top of the Mixing Console, click on the Insert Bus button.**



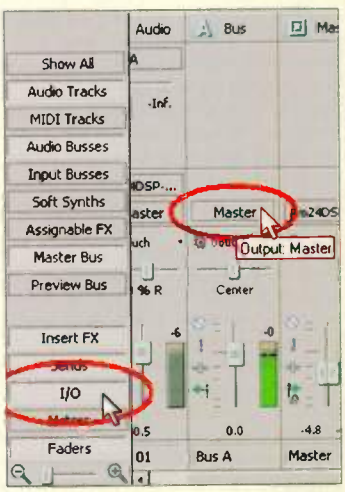
2 **In the Mixer View Pane, click on Audio Busses (outlined in red) to display buses in the console. You'll also see any buses in the Channel List pane (outlined in blue).**

3 **For tracks that you want to assign to a submix bus instead of directly to the master bus, ctrl-click on the track number in each track's header. The track headers become highlighted; here, tracks 4 and 6 are selected.**



4 **Click on the Bus icon for any of the selected tracks, then choose the desired bus destination (in this example, Bus A).**

5 **Assuming I/O is selected in the Mixer View Pane, check that the submix bus output is assigned to Master so that the bus output can be mixed in with the other, individual tracks.**



Tips

- To name the bus, double-click on the name at the bottom of the bus in the mixing console, then type in a new name.
- To add automation to a bus, go *Views* > *Show Bus Tracks*. You can add Volume, Pan, Mute, and FX automation to a bus track as you would to a conventional audio track.

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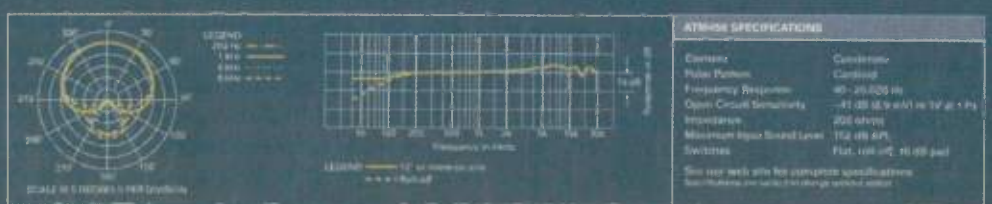

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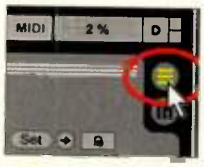
BY CRAIG ANDERTON

Automate Live's tempo based on clip tempo

OBJECTIVE: Adapt Live's tempo to the native tempo of designated clips.

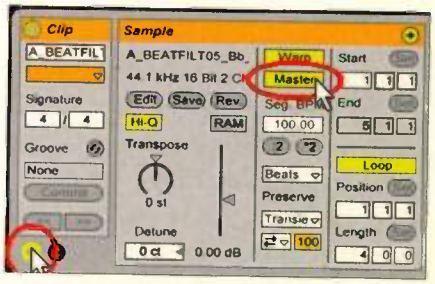
BACKGROUND: There are several ways to adjust tempo in Ableton, but one is automatic, and works only in Arrangement view: Defining a clip as a *Master* clip turns off warping for that clip, but causes all other clips to warp to its tempo.



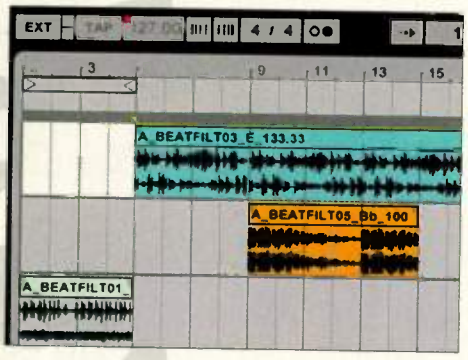
1 **Click on Arrangement view–you can't set clips to Master mode in Session view.**

2 **Make sure EXT sync is disabled, or this technique won't work. If necessary, set a default tempo for when no master clip is playing.**

3 **Select the clip whose native tempo should serve as the project's tempo while the clip is playing, then click on the Clip Overview tab.**



4 **Click on the Show/Hide Sample Box button to show the Sample Box. Below the Warp button, click on Slave so it indicates Master.**



5 **With multiple Master clips, tempo will be set by the currently-playing, lowest-placed Master clip in the Arrangement view. In this screen shot, the clip on the left is not a master clip, so it will play at the default tempo. When playback hits the blue Master clip, the tempo will change to 133.33 bpm. When playback reaches the orange Master clip, the tempo will shift to 100 bpm because the orange clip will then be the lowest, currently-playing Master clip. When the orange clip finishes playing, the blue Master clip will again set the tempo.**

Tips

- Step 4: Warp must be enabled.
- Step 5: Note the small red square in the tempo field's upper left, which indicates that tempo is being automated.

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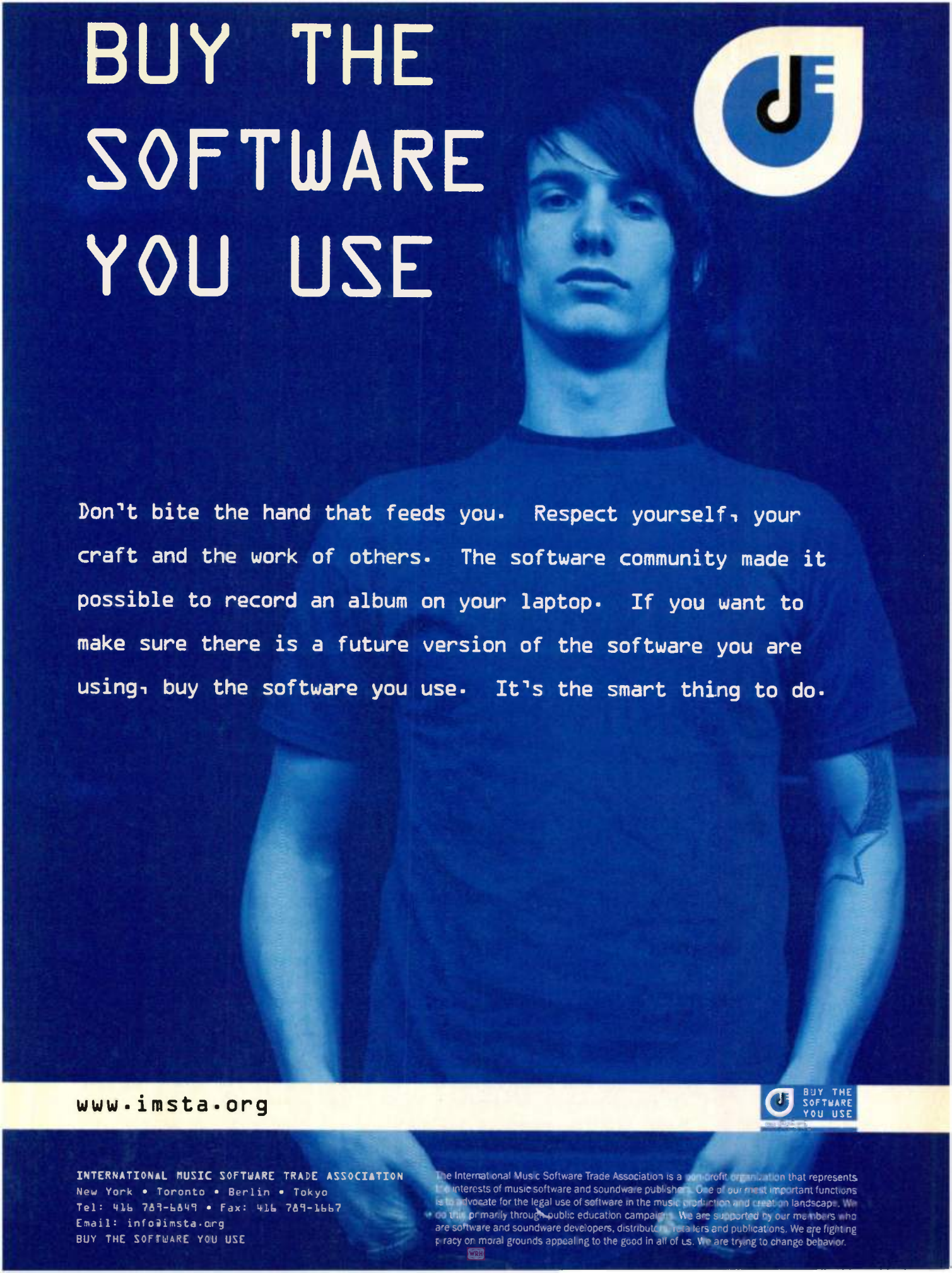

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ROUNDUP

THE BEATS GENERATION

VERSION 2011

NOT JUST FOR DJS ANY MORE

BY CRAIG ANDERTON

Music and motion have always had a very close relationship, whether you're talking classical ballet, '50s/'60s "dance craze" rock (like the Twist, the Swim, and the Hully-Gully), the Sufi trance masters of Joujouka, or for that matter, the trance masters of today's club scene in Berlin. And what gets your body up and moving is *beats*–whether it's the pounding of drums, the steps of an arpeggiator, or even a rhythmic wah-wah applied to a bass line.

The four products in this issue's roundup are all about beats, but each adds a novel twist to the subject. Roger Linn's AdrenaLinn Sync translates his hardware Adrenalinn into a virtual world, Drumagog 5 goes beyond drum replacement to drum enhancement, while iZotope's Stutter Edit is a truly novel processor . . . or maybe it's an instrument . . . or both . . . whatever . . . you'll have to decide for yourself. And SONiVOX's Pulse, while not a radical re-thinking of the MPC concept, nonetheless brings along several interesting new twists–one of which is a very attractive price.

What's more, all of these made their "official trade show debut" at the 2011 Winter NAMM show (actually, AdrenaLinn Sync came out over the summer but didn't make it to the 2010 Summer NAMM show). Unfortunately, we ran out of room before we could review some other hot new products, like FXpansion's Geist (the "spiritual successor" to their Guru software), the latest MIDI and audio expansion packs for Toontrack's superb Superior Drummer 2, and M-Audio's Venom–yes, it's a keyboard, albeit one that includes an audio interface and has a heavy beats/electronica orientation. We'll be covering these in the not-too-distant future, but meanwhile, you can get more information on them in our NAMM show report on page 54.

Ready to get off your butt and move? If these kinds of musical tools won't do it, you'd better check your pulse just to make sure you're still alive.

Roger Linn Design

AdrenaLinn Sync 2.0

The uncluttered, straightforward interface both encourages and simplifies tweaking.

Why this relates to beats: The AdrenaLinn stomp box is my favorite hardware guitar effect—so much so that I once did a sample library based entirely on sounds created with the original AdrenaLinn. When doing dance music gigs in Europe, it's the only box I take; what with amp simulation, delay, dynamics, filtering, and other effects—all controllable with synced LFO and stepped modulation—it's a complete effects setup for beats-oriented music. AdrenaLinn Sync 2.0 is a VST/AU/RTAS plug-in that provides most of these functions, as well as some the hardware box doesn't have.

First contact: AdrenaLinn Sync's readable, clean interface is stellar. The signal flow is presented unambiguously (in true 3D), and the color choices make it easy to parse settings. The window takes up a fair amount of screen space, but there are lots of parameters, and it's still legible with high res monitors.

The plug-in concept makes sense. One of the biggest problems with any rhythmic hardware device is that if it's not receiving a MIDI clock, it's difficult to sync precisely to tempo. The plug-in doesn't have this issue, as it can sync to the host DAW's tempo (and even track tempo changes).

Digging deeper: The AdrenaLinn Sync's heart is arguably the filter (which offers highpass/lowpass/bandpass/flanger/phaser responses), coupled with a 32-step sequencer that provides modulation. The pair produces the pulsing, distinctive AdrenaLinn sound that imparts motion and rhythm to guitar parts.

However, level and panning can tie to the sequencer too, as well as to a very complete LFO (six waveforms with range and phase controls) that can also modulate the filter, level, or pan. Furthermore, three types of synchronized delay offer yet another rhythmic element.

The sequencer incorporates two distinct modulation sources: a series of steps with adjustable levels that can repeat over two bars, and an envelope at each step with adjustable attack and decay (global for all envelopes). Step size choices are 1/8-note, 1/8-note triplet, 1/16-note, 1/16-note half-swing, and 1/16-note full swing; the 1/16-note options use all 32 sequencer steps, the 1/8-note options use every other step, and the 1/8-triplet options use the first three of each group of four steps. LFO and sequencer modulation sources are available simultaneously for all destinations.

One *very* cool feature is the ability to snap the signal controlling the filter to any of 14 scales. With resonant filter settings, this adds a "pitched" quality, although you need to specify the scale—AdrenaLinn Sync doesn't figure out the key automatically.

Note that you won't find the multiple amp models or drum machine from the hardware box, because the

plug-in is all about the beat-synced effects—the assumption is that most musicians who use a computer will have amp sims, reverb, a drum instrument, etc. Nonetheless, the Distortion section lets you dial in many satisfying distortion sounds. There are also several improvements over the AdrenaLinn III's beat-synced effects: analog-modeled lowpass filter from Way Out Ware's ARP 2600 emulation (as well as analog-modeled bandpass and highpass variations), added phaser, stereo signal path, eight-measure stereo ping-pong delay, LFO phase adjust, random LFO peak level, random sequence levels and envelope probability both in real time or writing to sequence, and limiter attack/release times.

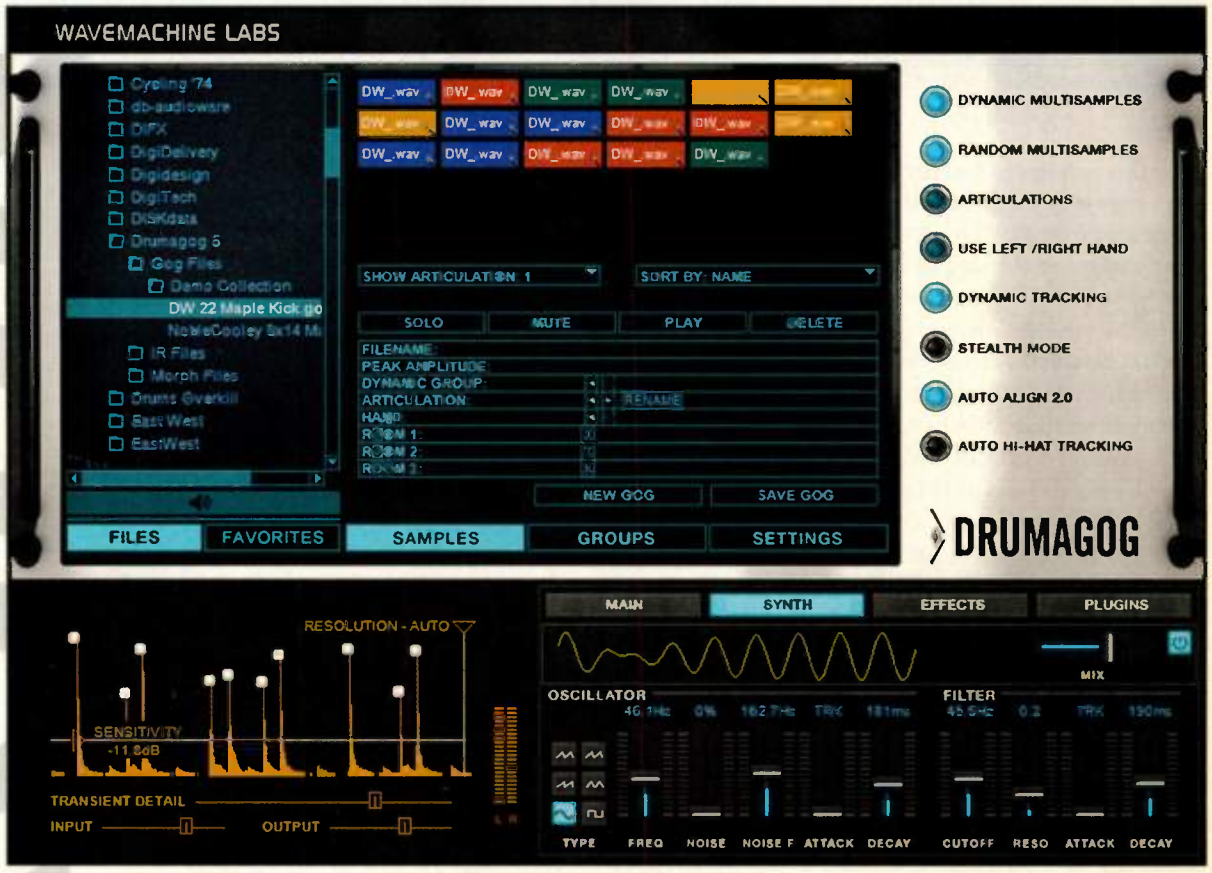
The bottom line: AdrenaLinn isn't for everyone. Guitarists can be pretty conservative, and this is definitely not a Tube Screamer: It's a sophisticated, yet easy-to-use, marriage of synthesizer control/processing and organic guitar audio. However, one reason I'm an AdrenaLinn fan is that it fits the kind of music I play like a glove—in fact, a lot of AdrenaLinn's functions duplicate (and improve upon!) hardware units I put together back in the '80s because I wanted these kinds of sounds.

You may think you're not into rhythmic guitar warpage, but play with the free trial—you might find yourself becoming addicted to the exceptional creative possibilities that AdrenaLinn offers. Often, just playing through it is enough to give you compositional ideas.

Price: $99

Availability: Download from www.rogerlinndesign.com.

Wave Machine Labs
Drumagog 5



Version 5 isn't just about a new interface—especially with the Platinum version, which offers some ground-breaking features.

Why this relates to beats: Not all recorded drum sounds are wonderful, what with problems from bad tuning, to bad miking, to bad timing. Drumagog is a drum-replacement plug-in (AU, VST, RTAS; 32/64-bit operating systems; 64-bit hosts require a 32-bit bridge) that analyzes a track, identifies drum hits, then lets

you replace those hits with other drum samples. However, it's not just about fixing bad drum parts. For example, for dance music, you can take a drum part played by a human drummer and replace the drums with samples from a drum machine or the internal drum synthesizer–get the "politically correct drum sound" for dance music, but the human playing of a real drummer.

Drumagog works on individual drum tracks; don't expect to pull a tom out of a mixed drum track, although with some of the program's onboard trigger filtering options, and depending on how the drums are mixed, you may be able to do something like pull out a kick or snare drum sound.

First contact: There are three different versions–Basic, Pro, and Platinum. Pro will handle most people's needs, but Platinum's hi-hat tracking, morphing effects engine, built-in convolution reverb, and plug-in hosting are very useful features. The Basic version is indeed basic, but does fundamental replacement at a reasonable price. Copy protection is your choice of iLok or challenge/response.

If you've worked with Drumagog, you might be shocked by the new user interface; it's a big visual improvement, but also gives a more "pro" vibe. When inserted on drum tracks, the default settings worked perfectly for me–within minutes I was replacing parts from the Discrete Drums library with TR-909 samples.

Digging deeper: Some of the new features are highly compelling. Platinum's hi-hat detection algorithm is surprisingly effective, as it recognizes different hi-hat articulations (*e.g.*, closed, open, half-open) and triggers appropriate samples if you load a suitable hi-hat Gog file. The second-gen Auto-Align function is also improved to the point of sample-accurate drum alignment. This was easy to confirm by using the blend control to mix the original and replaced sounds together: Even with tough replacement situations, I didn't hear flamming or other issues due to misaligned attacks. I also really like the Synth option, which allows replacing or augmenting drums with analog drum machine-type sounds. This is welcome for dance and hip-hop tracks.

Platinum's VSTi hosting means you can load a program like Kontakt with drum sounds, then trigger them directly from within the program. While not essential, this is an important convenience feature. On the other hand, the Morphing Engine effects processor is unlike anything I've ever heard–it adds an electronic overlay to drum sounds that varies with the drum dynamics, and while I wouldn't expect to use it with rock music, for electronica I feel this feature alone justifies the extra bucks for Platinum.

The bottom line: Although Drumagog always had a well-deserved reputation for excellence in drum replacement, Version 5 ups the ante considerably. But also remember that Drumagog does drum *enhancement* as well as replacement–sometimes adding a drum sample to an existing drum sample gives exactly the sound you need, especially when you toss in the Morphing option. I've also used Drumagog to lock bass guitar samples to drums. And while we can't go into all the features due to space considerations (besides, you can try it out for yourself), all the outstanding features from previous versions (like "Stealth" mode for isolating one part from a track with more than one sound, the tight dynamic tracking, and clever triggering of multi-sample replacements) remain in equal or better form.

Drumagog 5 gets a major thumbs-up–not just because it does what it says it does, but because it does considerably more.

Price: Basic $149, Pro $289, Platinum $379

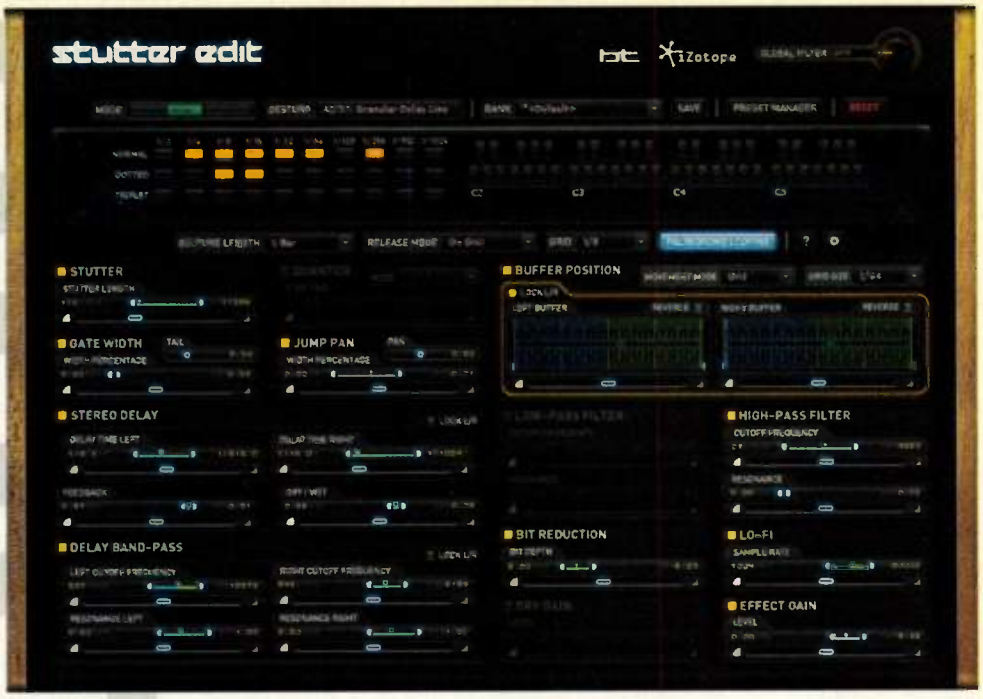
Availability: Download from www.drumagog.com; also available from retail stores.

iZotope
Stutter Edit

Why this relates to beats: The ability to chop, slice, and process samples is a fundamental aspect of creating beat-oriented music. However, much of this is done on an *ad hoc* basis, where you cobble together different capabilities of different programs to assemble the sound you want. Now iZotope, in conjunction with beatmeister/composer BT, has created a program designed specifically to streamline this process with samples. It's possible to mutate samples in tons of different ways, and in the process, you can also make sure that anything you do syncs to the project tempo.

That's a brief technical description. The musical description is "Wow, this is really cool."

First contact: Stutter Edit isn't a trivial plug-in; it's a deep and complex program that, while easy (and fun) to use on a "dial-up-a-preset" basis, takes some effort to master. First off, it's an audio processor that



No, this isn't a synthesizer—it's an effects processor. Actually, scratch that; in a way it's both, and in any event, it's something entirely new and different.

you play like an instrument since optimally, you'll trigger its effects from a MIDI keyboard (or at least from MIDI notes in your host's sequencer). In fact, because both audio and MIDI tracks need to be in play, the documentation devotes several pages to info on how to instantiate Stutter Edit with Live, Logic, Pro Tools, Sonar, Reaper, FL Studio, Digital Performer, Studio One, and Cubase/Nuendo.

There's no question that Stutter Edit is initially daunting. But not unlike an analog mixer, once you figure out how to control one processor, you can pretty much have the key on how to control them all.

Digging deeper: You know how a DJ will suspend a loop for a measure and put in some amazing breakbeat before crashing back into the loop? Well, Stutter Edit would consider that breakbeat a "gesture," in that it adds a variation—simple or complex—to what you're doing. But Stutter Edit can place extremely complex processing gestures on a single key, which you trigger by hitting the key. The gesture could be as a simple as repeating a section of audio like a stuck CD, to adding complex delay, lo-fi mangling, and even generated noise to create transitions or sweeps.

If you're not coming from a DJ background, then think of this as a sort of *musique concrète* generator that messes with the sound the same way that tape composers chopped up tape and put it back together again. Granted, I'm not explaining it that well, but no matter—try out the demo, and you'll see why it's not easy to explain.

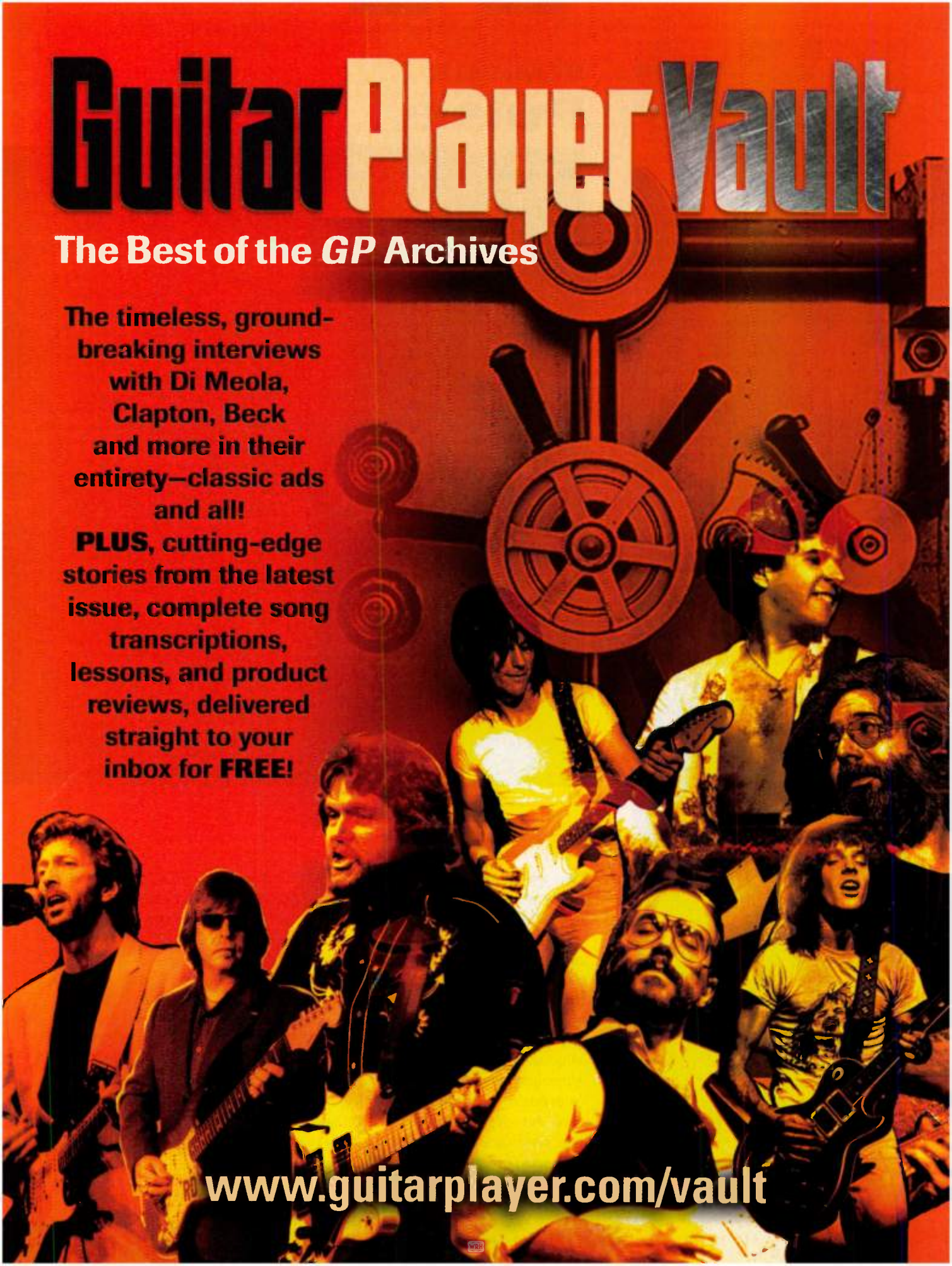
A gesture can be as short as a 16th note or as long as two bars, and sets an overall range over which effects settings change or sweep. If you're familiar with Live, you can quantize the initiation of a gesture the way you can quantize a loop in Live's Session view. Gestures can play as long as you hold down a key, end at a specific time, have quantized duration, or be triggered and then play all the way through.

Effects that you can use to mutate the sound include gate, delay, pan, bit reduction, lo-fi, filtering, etc. You can specify a range over which parameter changes occur—for example, changing the amount of delay feedback over the course of doing the gesture—as well as determine whether these changes occur over a linear, logarithmic, or exponential curve. You can also specify which portion of sampled audio will be "stuttered," and even repeat audio at a high enough rate that it turns into discernible, pitched notes—even create musical scales. And don't overlook the Generator, which is mostly about injecting a variety of controlled noise options into your music.

The bottom line: I give extra credit for products that avoid the "me-too" syndrome, which means Stutter Edit gets a ton of credit. Like the AdrenaLinn Sync, this isn't for everyone: DJs reading this will probably "get" immediately why this is so cool (if I owned a music store, I'd sell a bundle of this and Ableton Live), but if you're a Tele-and-tubes kind of musician, your reaction to Stutter Edit might well be "why?" Well, here's why: because Stutter Edit streamlines the process of combining multiple processors, MIDI control, and playability into a single, fun, innovative plug-in. I don't know how much I'll use this in the months ahead, but I do know two things: I will definitely use it, and when I do, nothing else will do the job as cleverly and efficiently.

Price: $249

Availability: Download from www.izotope.com; also available from retail outlets.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SONiVOX
Pulse

Of course Pulse gives you 16 virtual pads (actually 64, as there are four banks) . . . but also note the browser toward the left, the step sequencer at the top, and the modulation/effects sections toward the lower right.

Why this relates to beats: Roger Linn's MPC series of beat-oriented instruments set the standard for hip-hop, rap, a variety of dance music styles, and more. Pulse virtualizes an MPC-style instrument that supports VST/AU/RTAS plug-in formats (as well as stand-alone mode), Windows XP/Vista/7, and Intel Macs running 10.4.1 or higher; but being software, Pulse has a few additional tricks up its sleeve.

First contact: Pulse is as much about the 5.5GB library as it is about the instrument, and SONiVOX is at an advantage–the company has been involved in sound design for years. However, you're not restricted to using Pulse's sounds, as you can load multiple file formats–MPC 60/II/3000/2000/2000XL/1000/2500/500/5000/4000 and AIFF/WAV/Broadcast WAV/ACID/MP3 files (but no Apple Loops). Although Pulse can't import REX files, you can divide a sample into up to 16 slices (with editable slice boundaries), then map the slices to the pads. You can also carve out a longer slice than needed and use a pad's waveform editor to trim it to size, create a shorter slice from a longer waveform, and assign multiple samples to the same pad.

Most of the main elements–pads, a waveform editor, effects, and the like–will be

familiar, but Pulse takes some creative detours. There's a modulation section (global or per-pad) with AHDSR amplitude envelope, filter with 10 different responses, AHDSR filter envelope, and three LFOs (assigned to amplitude, filter, and pitch). With four separate pad banks, you have a total of 64 pads.

Digging deeper: The deeper you dig, the more you find sampler-type functionality. First of all, unlike some "virtual samplers," it can actually sample, not just play back. What's more, each pad has "round-robin" capability where successive pad triggers cycle through the samples loaded into the pad in one of four different ways: forward,

backward, bidirectional, and random—crucial for avoiding the "machine gun" effect of retriggering the same sound repeatedly. You can assign pads to "choke" groups (*e.g.*, hitting a closed hi-hat "chokes" any open hi-hat assigned to the same group), as well as set pads to retrigger at a specific resolution, quantize the input as you play, add swing, etc.

One unusual, yet very helpful, feature is what Pulse calls "auto pitch map." You start with an empty instrument, drop a sample on a pad, and then hit auto map to "auto pitch" the sample across the pads.

There are global effects, but the roster is minimal (EQ, stereo delay, and reverb). The delay offers tempo sync or manual delay time for each channel, but sync choices are limited to standard note values except for a 1/12th-note option—for example, there's no dotted half-note delay, which is a very popular choice for dance music. However, you can run 16 multiple outputs in multi-output mode, which makes it easy to add "external" plug-in effects.

The waveform editor is basic as well, offering sample start and end, root key, pan, pitch, and volume—no normalize, pitch envelope, or similarly advanced features. Presumably, you would do more complex edits on the samples before loading them into Pulse, or do some with the modulation (*e.g.*, using the amplitude envelope to add a fadein or fadeout).

One of the coolest features is a step sequencer with variable step resolution (up to 32nd notes) and number of steps (up to 32). Triggering pads from the step sequencer is a hoot; it's realtime, fluid, and musically useful. My only complaint is that if you want to play with more than 18 steps at a time, the display scrolls—making it difficult to do changes on the fly. Then again, the archetypal step sequencer is limited to 16 steps, and in that case, you can see and edit all steps at once. I also really like the way you can store up to seven step sequencer presets, select them in real time, and have patterns change seamlessly.

The bottom line: Pulse has plenty of competition—not just from products like Native Instruments Maschine and MOTU BPM, but also samplers (*e.g.*, Kontakt) and bundled instruments like Sonar's BeatScape. But where Pulse stakes its claim is by offering a comprehensive sound library, straightforward playback engine, solid workflow, and some novel features, at a budget price. Overall, Pulse is about bang-for-the-buck—which is exactly what it delivers.

Price: $199.99

Availability: Download from www.sonivoxmi.com; also available from retail outlets. **eq**

More Online!

Check out videos of Stutter Edit at www.izotope.com/products/audio/stutteredit, and download a free 10-day trial version from www.izotope.com/products/audio/stutteredit/download.asp.

Download a free 14-day trial version of AdrenaLinn Sync from www.rogerlinndesign.com/products/adrenalinnsync/index.html#download_demo.

Download a free 14-day trial version of Drumagog 5 from the home page at www.drumagog.com.

Check out video demos of Pulse at www.sonivoxmi.com/ProductDetail.asp?Item=CDPulse.

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NAMM-O-RAMA

IT WAS THE HOTTEST, MOST "UP" NAMM SHOW IN YEARS—READ THIS, AND YOU'LL KNOW WHY

BY CRAIG ANDERTON AND SARAH JONES

TASCAM TA-1VP

The annual Winter NAMM Show in Anaheim, CA, is the second-largest music trade show in our solar system, attracting music and technology manufacturers, retailers, musicians, and hardcore tech groupies from around the world seeking to network, conduct business, jam, enjoy a tax-deductible trip away from winter weather, and play "shipping date betting pool." The mammoth exhibition sprawls across five exhibit halls and an arena, with each booth revealing just a little more of the totality that is NAMM until nothing is left to the imagination . . . except, of course, for the occasional imaginary shipping dates, specifications, and sometimes, even the products themselves.

Concerts run practically 24-7, with wall-to-wall music filling the Anaheim Convention Center and surrounding hotels, in performance venues throughout Anaheim, and in the artificially surreal town center that is Downtown Disney. Indeed, NAMM provides a fifth, unofficial theme park—Hypeland—to complement Tomorrowland, Fantasyland, Frontierland, and Adventureland.

You're reading an article written in February, about a trade show that took place in January, published in an issue that says April and appears in March. That kind of insanity is a perfect counterpart to the insanity that is NAMM, what with a lizard man playing keyboards, decibel levels capable of killing rodents (well, you didn't see any mice on the show floor, did you?), food that could survive a tactical nuclear weapons device, mohawks that required lights on the tips to warn low-flying airplanes, and of course, the twin bars at the Marriott and Hilton hotels, where deals are made, partnerships are forged, and livers are damaged—often all at the same time. And we haven't even mentioned Hall E, the basement space where newcomers are initiated, karaoke systems and Chinese PAs co-exist with beautifully-made acoustic guitars and weird (yet cool) effects like the "Cube of Destiny," and there are more mad scientists per square foot than at a Gyro Gearloose cartoon festival.

Okay, now that we've set the stage, let's look at the gear—but let's also go beyond the gear, and give some meaning to the trends that will influence us for years to come.

I THINK, THEREFORE iPAD

By now, we all know that iPad apps were huge. Allen & Heath showed the iTweak iPad controller for their iLive mixer; PreSonus' SL Remote lets you control their Virtual StudioLive software from an iPad (custom monitor mixes done by musicians, anyone?), Yamaha was tweaking parameters on a Motif XF, and IK Multimedia showed their iRig voice processor, which features a unidirectional electret-condenser microphone capsule. Alesis scored a major hit with the StudioDock, which provides pro audio shelter for homeless iPads (balanced I/O, video out, a sturdy frame to hold it in place, and more), while Akai showed the SynthStation 49—slide your iPad into this keyboard controller's dock, and you're good to go, whether you want to play Way Out Ware's SynthX iPad synth from a real keyboard, or practice scales to an iPad piano method.

Don't like 49 keys? Then head over to StudioLogic's 88-key equivalent, the Acuna 88. There

was even an iPad app for a slide trombone you could "play" on the touchscreen. TASCAM ported the PortaStudio over to the iPad, complete with a virtual moving cassette transport. It's cute, fun, and might help get a new generation into recording–just like the original PortaStudio.

And let's not forget MOTU's free DP Control, which gives iPad-based virtual control over Digital Performer. Guitar players weren't left out, either: Agile Partners, the company behind Peavey's AmpLink software for the iPhone, showed their Ampkit iPad app.

But we would be shirking our journalistic duties if we did not consider the Dark Side of the iForce, as alluded to in Talkbox. Think about it: We are now dependent on a piece of consumer electronics that was designed more for grandma to read e-books than to be a serious musical instrument. It's a good thing apps are cheap, because we've now entered Disposableland. Think about that Motif XF: You'll be able to get years and years of use out of it, but will you be able to say the same for the iPad controlling it?

Still, the music industry has always ridden the coattails of the real world–that computer you're using to host your DAW wasn't designed with musicians in mind, unless you're still running an Atari 1040ST. So let's just say, "Thank you, Apple" for creating the iPad (and devaluing software, but hey, it's just lines of code, right?), and marvel at all the cool stuff you can do with it. If you didn't want an iPad going into NAMM, you probably wanted one on the way out.

DAWS AND PLUGS

Avid made their big splash with Pro Tools 9 at AES, and the stampede from Cakewalk fans to upgrade to Sonar X1 was already straining Cakewalk's servers before NAMM started. There was no new Logic, and Ableton wasn't at the show–but don't think they're sleeping.

This meant Steinberg rose way above the noise with their introduction of Cubase 6 (and Cubase 6 Artist for the economically-challenged), which zooms in on workflow improvement and does so very elegantly. And Acoustica, whose Mixcraft is getting the attention it deserves, showed a pro version (Mixcraft Pro Studio 5) with new plugs and new instruments, including a bitchin' CS-80 emulation. It remains highly cost-effective. We like.

While it's not exactly a DAW, we were floored by FXpansion's Geist, a beat-maker/sampler's dream come true. The "spiritual successor" to their Guru software, Geist makes it easy to take samples, rip them apart, put them back together again, and mutate them in ways both strange and wonderful

Alesis StudioDock

(and possibly illegal in some states–check with your local law enforcement agencies). They have what they call a "free demo" online, but really, it's just a sneaky way to get you addicted.

Of course, you need an interface for your DAW, and Roland's Octa-Capture has a lot going for it aside from the reasonable price: eight very sweet mic pres, and onboard DSP–so yes, you can control dynamic range on the way in to avoid blowing a take, or use equalization to get rid of those nasty subsonics and room rumble. It's even compact and cute. However, when it comes to looks, the Akai EIE interface (EIE I/O, geddit?) wins the Cool-Looking Steam Punk award, what with its beveled corners, analog VU meters, and general Captain Nemo vibe. Fortunately, it's a more than just a pretty face.

Loud Technologies followed up their Onyx Blackjack interface (whose specs would still be very impressive–we measured them ourselves–even if the price wasn't as low as it is) with the Onyx Blackbird, which is like a bigger Blackjack but retains the Onyx preamps and user-friendly ergonomics. And while we're talking Loud, we just have to slip in that their Ampeg division re-released a limited quantity Ampeg B-15 bass amp. If you know what we're talking about, we understand completely if this brings tears of joy to your eyes.

As to plug-ins, Softube raised a few eyebrows with their TSAR-1 algorithmic reverb and mixing/mastering-oriented Mix Bundle Studio Collection plug-ins. Waves showed an emulation

PreSonus SL Remote

Mackie Onyx Blackbird

of the original, rent-by-the-minute Aphex Aural Exciter and yes, it does give *that* sound. And, have you heard? Waves has slashed prices across its entire line. And if you're in the mood to emulate vintage consoles, check out what Slate Digital is up to with their Virtual Console Collection.

Waldorf had the NAMM debut of their PPG 3.V soft synth, which can emulate all the PPG variants from the original 8-bit grunge monster that birthed serious wavetable synthesis to the state-of-the-art 2011 version. Focusrite, whose plug-ins are sometimes overlooked because people are too busy lusting after their hardware, introduced the Midnight plug-in suite with Compressor and EQ (and there's good news for fans of Focusrite's Virtual Reference Monitoring technology that makes mixing on headphones sound like speakers: the technology is now available in a separate VRM Box hardware, not just in their Pro 24 DSP interface).

Electronica fans and DJs will be pulling out credit cards around the world to get iZotope's Stutter Edit, designed in conjunction with beatmeister BT. It's s-s-s-s-so cool to be able to warrrrp and tweeeeeeeeeeeeak sss-sss-sss-sounds to where everything is a potential breakbeat. Get it now, before it's on a million commercials–and check out the review (along with reviews of the AdrenaLinn Sync plug-in, the outstanding Drumagog 5 drum replacement software, and SONiVOX's Pulse, all of which made their Winter NAMM debut) in this very issue you're holding in your hands.

Mastering engineers, listen up: Sonnox introduced a Fraunhofer codec plug-in. You can tweak it in real time, which is just what the Data Compression Doctor ordered.

One major piece of plug-in news was actually a "plug-out"–Universal Audio launched their Satellite, a DSP farm that's not a card, but connects to your Mac (sorry, Windows fans) via Firewire 400/800. It's basically like having a UAD-2 Dual or Quad card, but without needing a PCIe slot. Cool.

Samson Meteor USB mic

PAGING MR. MICROPHONE

On the mic front, we're seeing a continuation of the more-for-your money trend, which frees up some bucks for luxuries like, y'know, food. Audio-Technica's AT2022 features two condenser capsules in an X/Y pattern, and a 3-pin XLR out. The Blue Reactor multipattern condenser lets you select pickup patterns by adjusting a swiveling capsule head, and it looks so cool that you could always treat it as an *objet d'art* when not in use. Fans of the venerable EV RE20 will dig the Electro-Voice RE320, which is modeled after the RE20 but adds a switchable EQ curve with a setting optimized for kick drum. The MK4 condenser is Sennheiser's first large-diaphragm, side-address mic. And DPA's 2000 Series mics are the company's first models coming in below $1,000. Meanwhile, Telefunken (we love that name–it's soooo Kraftwerk meets James Brown) had two new mics at NAMM: the CU-29 "Copperhead" condenser mic with vintage NOS tube, and the M80-WH wireless microphone capsule head.

But NAMM also showed some mic accessory love, with one favorite being the JZ Mics pop filter. You can blow through it, and not see a Kleenex on the other side move. Impressed? No? You say your mic pop filter is almost as good? Then go to their website, where they do the same thing with a blast of compressed air. 'Nuff said.

Of course, you could find USB mics as well. Blue's Yeti Pro is a high-resolution mic (24-bit, 192kHz) with USB and XLR outs, so you're covered whether you're with Team Digital or Team Analog. For those enamored of 1950s sci-fi flicks, Samson's Meteor USB mic looks totally cool. If this had been around when the original "Star Trek" was being made, it would have made it on to the set . . . guaranteed.

And the Cloudlifter, from Cloud Microphones, is one of those "so obvious no one ever thought of it before" ideas. It inserts between a ribbon or dynamic mic, and uses phantom power to provide 25dB of extra gain. So it not only protects the mic from accidental phantom power invasions, but it has what plants crave–it has electrolytes. Ooops, wrong movie . . . it has what ribbons crave–it has extra gain.

MR. SPEAKER

No, not John Boehner . . . but the cool speakers that bring higher performance at lower cost. Granted, some of these were introduced at AES, but they still were a big deal at NAMM: ADAM Audio's compact AX Series features the same X-ART ribbon tweeter design as the company's costlier brethren, and the entire series has garnered rave reviews. Focal showed the SM9, also introduced at AES but still very noteworthy for being switchable between 2-way and 3-way operation. Sonodyne presented the SM50Ak, which is the newest, most compact monitor in the Sonodyne family, and Neumann proved

you weren't hallucinating at AES by having their new monitor speakers at NAMM as well. sE Electronics showed The Egg, a radical new monitor design. Guess what it's shaped like. . . .

Let's not forget headphones, either. JH Audio, formed by the founder of Ultimate Ears, introduced a bunch of very high-end in-ear monitors, starting at $399. Meanwhile, Shure had their SRH940 headphones, which, perhaps not surprisingly to those who know how to count, are a step up from their SRH840 phones and cost around $300.

GUITAR PLAYER

There were several interesting guitar developments at NAMM. The Kemper Profiling Amp analyzes the sound of your amp, then transfers those settings into a power amp that mimics the sound. They did an A-B demo, and yes, it was impressive. And speaking of impressive, Avid Eleven Rack fans can rejoice over the $99 upgrade that adds multiple amp models and other goodies to the surprise hit of 2010.

Sonuus introduced the G2M2, a second-generation of their inexpensive monophonic guitar-to-MIDI converter, as well as the i2M, a small audio interface/converter. We all know MIDI guitar will never replace "real" guitar, but now guitarists can step into the MIDI world without huge complexity or cost.

BATTLE OF THE BOARDS

Recording isn't just about mixing boards (although we were rather impressed by the MIDAS Venice series for live or studio use), but keyboards too. One

Dave Smith Instruments Tempest

of the coolest and most bizarre is the OMG-1, designed by Eric Persing. It's one of a kind–literally–and you can't buy it: It will be the grand prize in a contest Spectrasonics will be running to benefit the Bob Moog Foundation. The OMG-1 combines a Moog Little Phatty analog synth, Spectasonics' Omnisphere software synth, a Mac Mini, dual iPads (or is that "dueling iPads"? We must seek clarification), dual iPods, and Spectrasonics' new Omni TR Omnisphere iPad app, all in a curvy maple cabinet.

But that's not all–the most-hyped keyboard event would have to be Korg's Kronos. Think of it this way: You know that computer you have that runs a bunch of soft synths? And has Gigabytes of samples, iLoks, a dependency on whatever Microsoft or Apple says we should like, and crashes at inopportune moments? Well, imagine putting that technology into a real keyboard, with a solid-state drive for instant loading and no noise, multiple synth engines, and no reliance on computer operating systems–that's the Kronos in a nutshell. Think of it as porting studio technology over to live performance, which you can then take back to the studio.

Nord had their Nord Stage 2, and we like Nord keyboards because they come from Sweden, they look great, and they have lots of knobs that impress the heck out of people. Oh yes, and they sound really good.

Arturia continued their Analog Experience line with The Laboratory, a hardware/software combination with a tasty, aftertouch-toting 49-note keyboard, and 3,500 sounds you can edit on the GUI of the

Arturia Analog Experience
The Laboratory

instruments from which they came. Very nice.

The synth that got not only buzz, but a little head-scratching, was M-Audio's Venom synth. It's tailor-made for electronica, and delivers rhythm 'n' rudeness in spades. Want to get a dance floor moving? This is your baby. Want to drive your nosy neighbors insane? Just turn the volume up to 11. We think it's really cool, and it's under $500. It also has an audio interface, along with a great software editor.

And while drum machines aren't really keyboards, they're hardware and have buttons, so let's go for it. The big show-stopper was Dave Smith Instruments' Tempest, designed in conjunction with Roger Linn. For many people, that's enough to get them communing with their bank account; for the rest, one good demo is all it takes to define the word "covet." It's great for realtime performance, with a killer workflow and great sounds. Not surprising, given the parents.

Speaking of drum machines, Arturia showed Spark, which is basically drum software with a hardware controller. As with Tempest, its strong point is workflow, but with the cost advantages of piggybacking on to a computer.

ALL KINDS OF AWESOME

NAMM is about more than new gear; it's also about *crazy/genius* new gear. TASCAM's solar-powered tuners were darling little multi-colored affairs that looked like tuners Barbie would design, if she designed tuners and had an IQ above that of a banana slug. We were also totally rocked & shocked by the "hybrid" analog/electric cymbals in Zildjian's Gen 16 line. These perforated metal cymbals model all sorts of sounds through DSP, but we won't even try to describe it–check out the video at www.eqmag.com.

In terms of cool hardware, SSL showed us a new X-Rack goodie–a stereo dynamics module. TASCAM has collaborated with Antares to produce the TA-1VP, an Auto-Tune rackmount unit. Granted, Auto-Tune sales suffered terribly after the Spice Girls broke up, but with a new generation of singers discovering that they can do really weird stuff to their voice, Auto-Tune is riding a crest of popularity that seems unlikely to go away any time soon.

On a more utilitarian level, Radial Engineering bought Re-Amp. In case you hadn't noticed, Radial is really on a roll these days . . . and the Workhorse "lunchbox" module frame is just starting to ship, which is going to make them roll considerably faster. Good stuff.

If you're into wireless, Shure introduced both low-end and high-end systems. We were particularly intrigued by the Axient, which represents the apogee of their wireless technology; it looks like it was meant to survive the most hostile possible stage conditions and come out alive. Also in wireless world, Lectrosonics introduced the Quadra digital wireless monitor (IEM) system, which consists of a belt-pack diversity receiver and half-rack transmitter. The system features digital RF modulation, two or four channels of 24-bit/48kHz digital audio, analog or digital inputs, and a mixing interface so users can create their own monitor mix.

We also dug the Olympus LS-7, their smallest and least-expensive portable recorder yet. It records (in WAV/MP3/WMA formats, with up to 24-bit/96kHz resolution) to 4GB of internal memory (expandable with a microSD card), and incorporates three mics: two condenser stereo mics and a center, omnidirectional mic that can capture bass down to 20Hz. Yes, 20Hz.

So, did we cover everything? *Are you insane?* NAMM lasts 1,860 minutes, and there were more than 1,400 manufacturers to check out. Assuming an average of at least five relevant new products per booth, that would give us a little under 15 seconds to check out each product, assuming that we didn't eat, never went to the bathroom, and could teleport ourselves instantly from one booth to another. Then again, we hear that Ableton is working on a teleportation module for Live that will be introduced at Musikmesse . . . so maybe next year, this will be doable. Wait–were we under NDA? Not sure . . . NAMM haze, and all that. Oh well.

Meanwhile, two things are obvious from this year's NAMM show. The music industry never got the memo that there's a recession going on, probably because even in good times, the music industry is in a perpetual state of recession, so a little more recess won't make any real difference. The other is that the MI business is no longer in a holding pattern; some companies are making bold moves (like Avid dropping their "world's biggest dongle" requirement to run Pro Tools, and Cakewalk reinventing Sonar) while exploiting technology to a level that borders on the magical. Stay tuned as we put these new products under the microscope in the months ahead.

Oh, and one last piece of advice: Pack your own lunch for NAMM. We're serious about this. Don't say we didn't warn you.

More Online!

Get links to all the manufacturers mentioned in this article, as well as links to the Sarah Jones Chronicles (her very own NAMM show blog), picture galleries, and some cool videos at www.eqmag.com.

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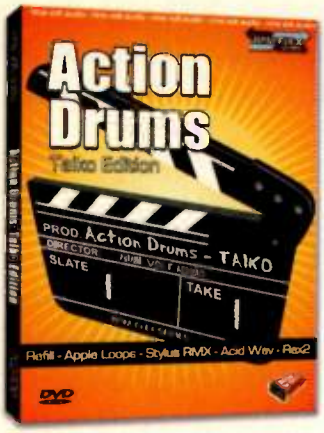

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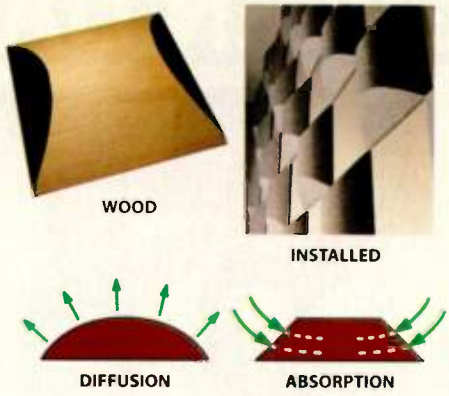

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GREEN DAY

BY KEN MICALLEF

The following interview with Green Day's Billie Joe Armstrong and producer Butch Vig is excerpted from "A Simple Plan" (July 2009 *EQ*), a look at the studio sessions for *21st Century Breakdown*.

Billie Joe Armstrong, on finding melody in the moment...

On our previous records, we were gathering experiences and allowing ourselves to write songs from exactly where we were at that moment. With this one, I really wanted to go deeper than I've ever gone before. This is the first time I've written songs at the piano, which allowed me a lot more freedom to use falsetto, and experiment with chord progressions I've never used before. I also wanted to hear melody—a line could be inspired by a musical or something Randy Newman would write. I love songs that are based in some tradition, from The Ramones to Simon & Garfunkel to the Beatles. My DNA is finding melody.

Butch Vig, on pushing the band's creativity...

After mega success, a band will often return to their roots to make a stripped-down record. I was not into making that kind of record with Green Day. What I loved about *American Idiot* was that they were shooting for the stars. I was trying to push them to go into areas that were almost uncomfortable for them, but still make it sound like Green Day. How wide of a palette can they paint on? Where can they go in terms of style and execution, but still make sure it felt like them as a band? They would record, I'd make suggestions, then they'd go and rehearse for hours, and then they'd record some more. This went on for weeks. By early summer, we had a good rapport.

Vig, on his streamlined signal chain...

As high-tech as we are with current recording technology, we *did 21st Century Breakdown* as old-school as possible. We used signal paths with the least amount of EQ and processing involved so what was playing back sounded amazing. That is always a good step when you are starting to record an album—making sure everything sounds good dry with nothing done to it. As soon as you start over-processing, you will hit more problems down the line.

Armstrong, on his vocal method:

I've always been quick at recording vocals. It's about warming up, getting my throat and chest in the right position, and then emotionally preparing to go for it. When you go through the demo process, you know what kind of emotion the song will need, and when to scream and when to whisper. This is why I like to take time and really get all the arrangements done and know what kind of vocal take I am going to end up doing before I start recording the album tracks. I sing about eight inches from the mic, and throw down around three takes. We'll comp performances if necessary, but, most of the time, it's all pretty much live takes.

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