» CAN VIRTUAL GUITAR AMPS HOLD THEIR OWN AGAINST THE REAL THING?

FEBRUARY 2009

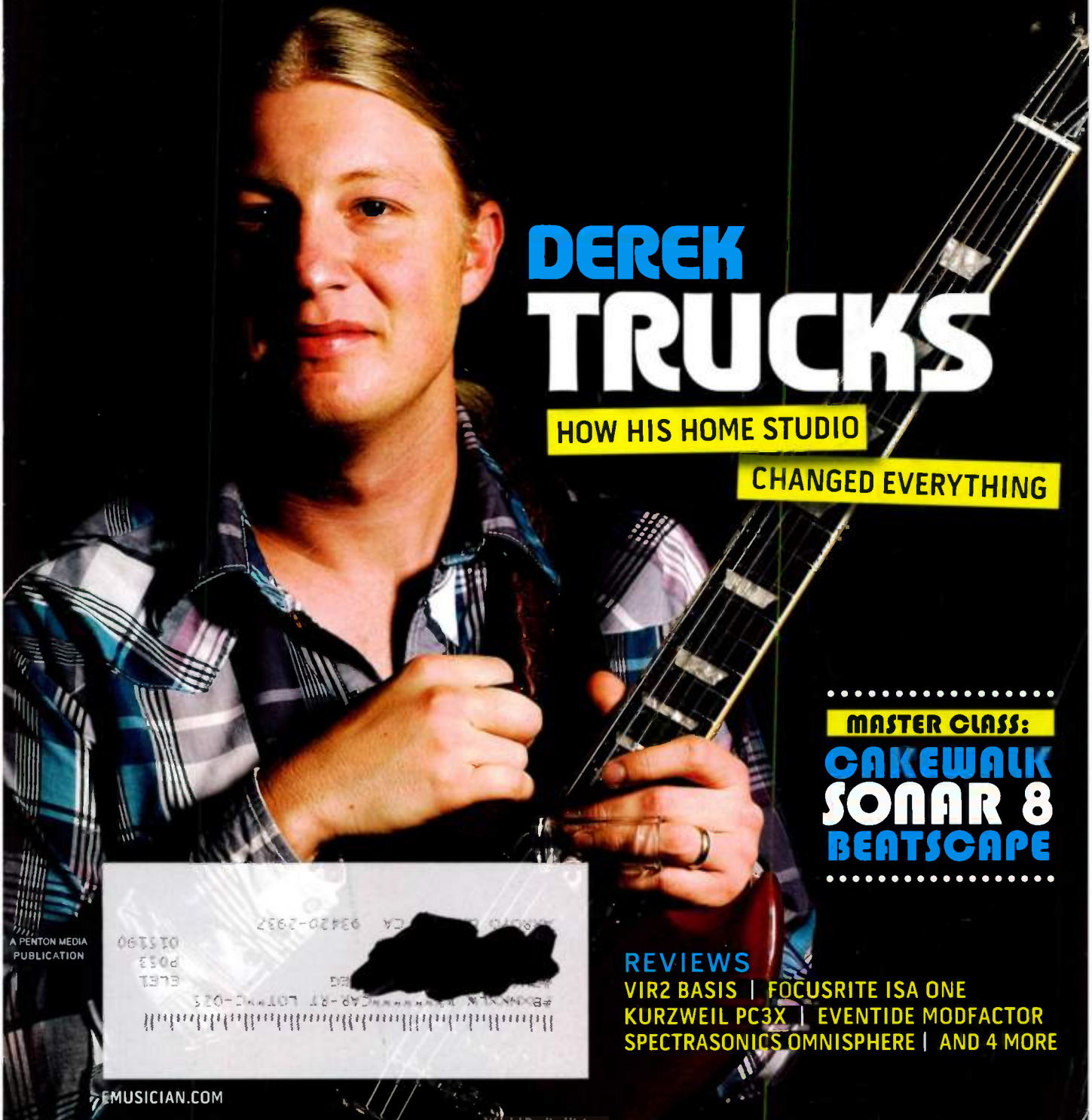
em

ELECTRONIC MUSICIAN

EXPLORING SPECTRASONICS OMNISPHERE'S STEAM ENGINE

TIPS FOR ADDING MOTION TO YOUR PADS

GETTING RID OF AUDIO POLTERGEISTS



DEREK TRUCKS

HOW HIS HOME STUDIO CHANGED EVERYTHING

MASTER CLASS:
CAKEWALK SONAR 8 BEATSCAPE

REVIEWS
VIR2 BASIS | FOCUSRITE ISA ONE
KURZWEIL PC3X | EVENTIDE MODFACTOR
SPECTRASONICS OMNISPHERE | AND 4 MORE

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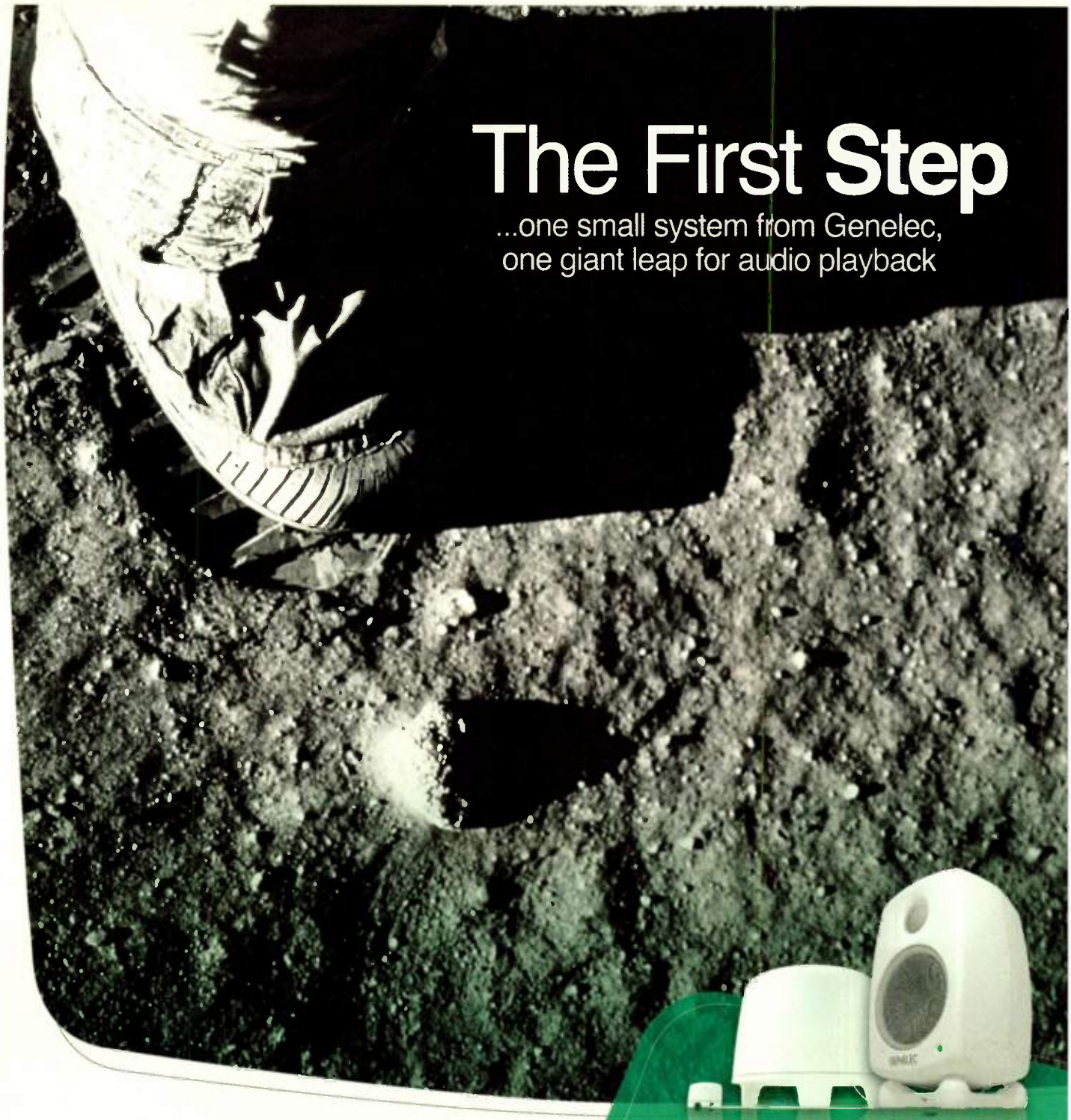

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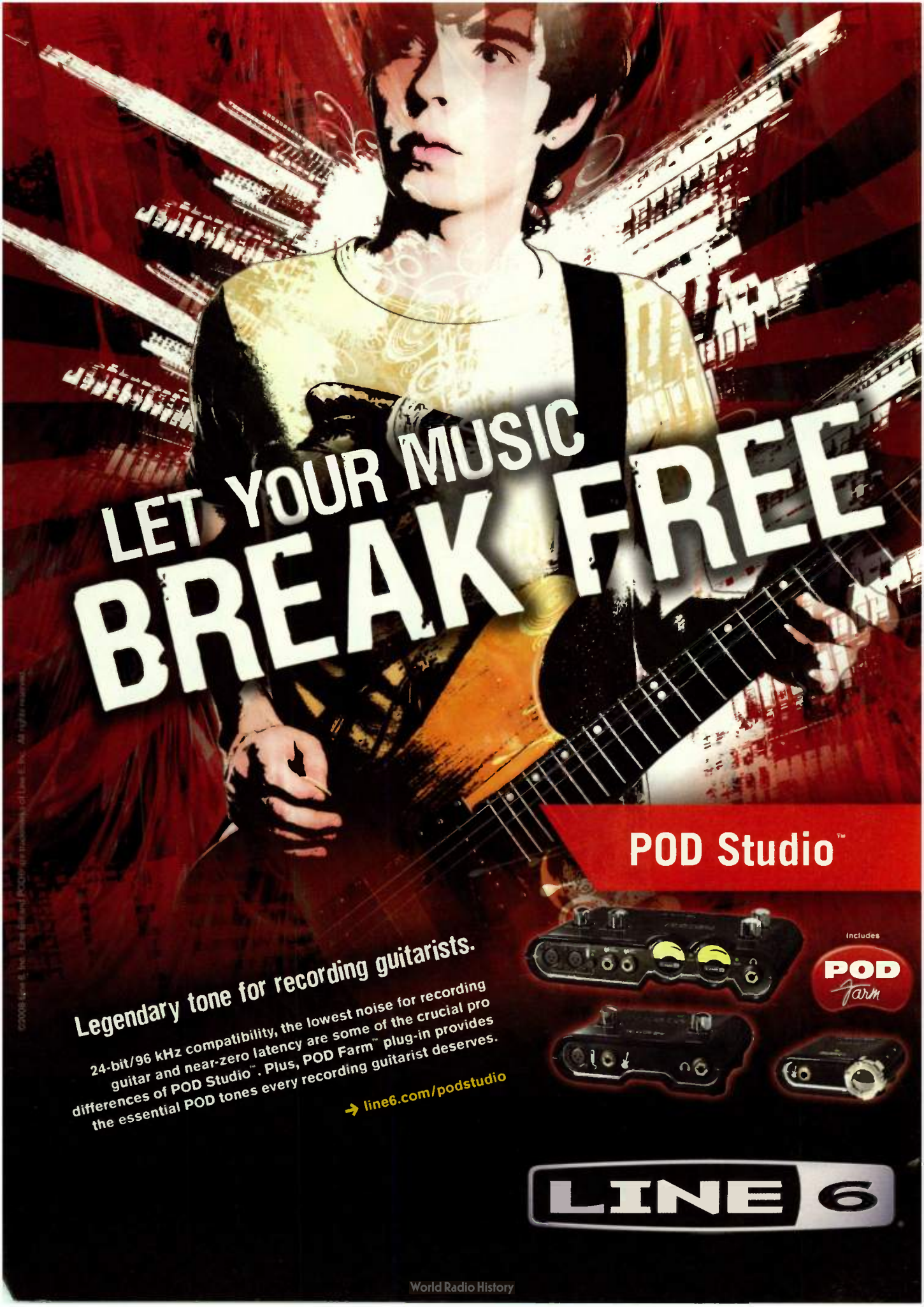

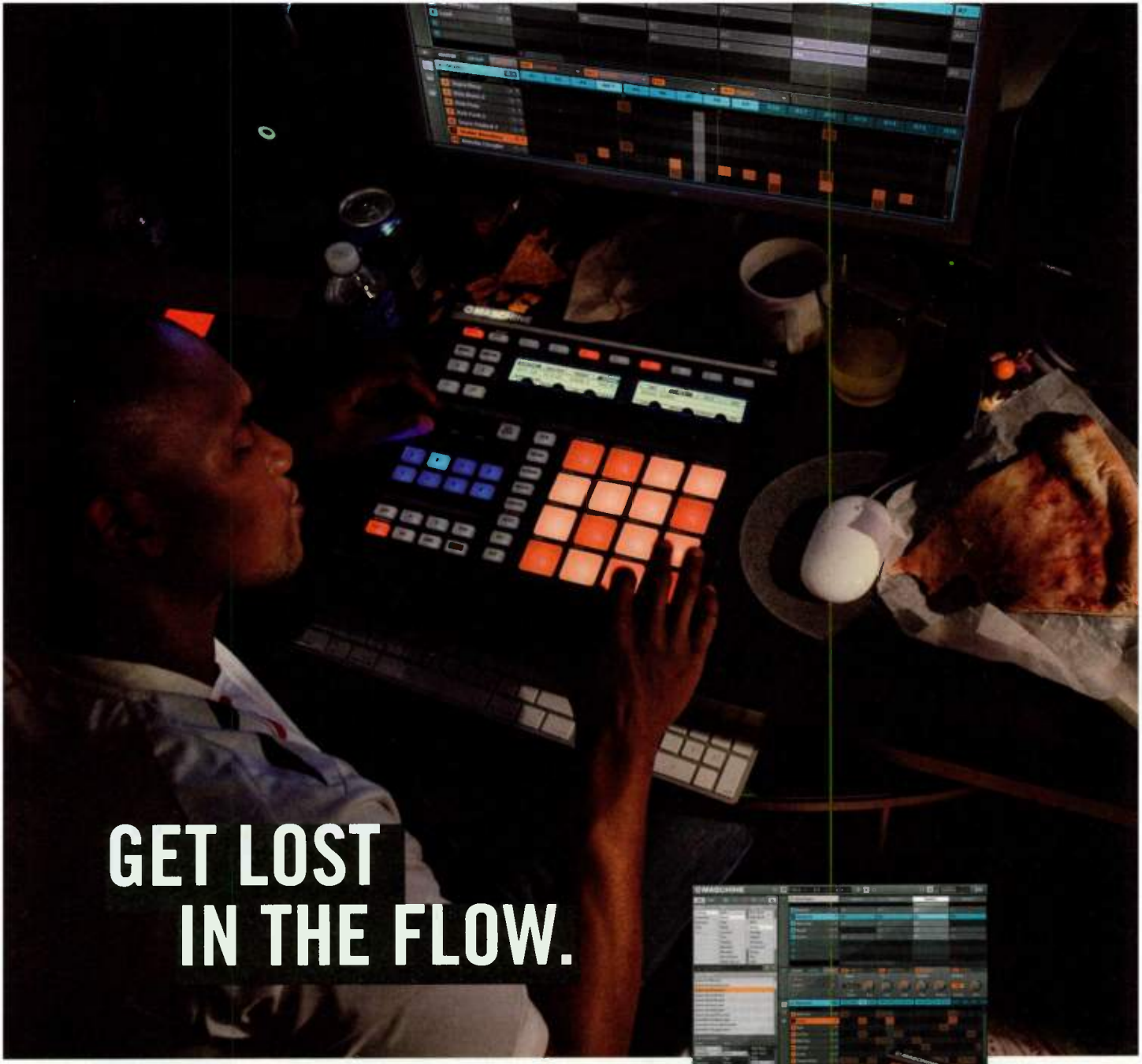

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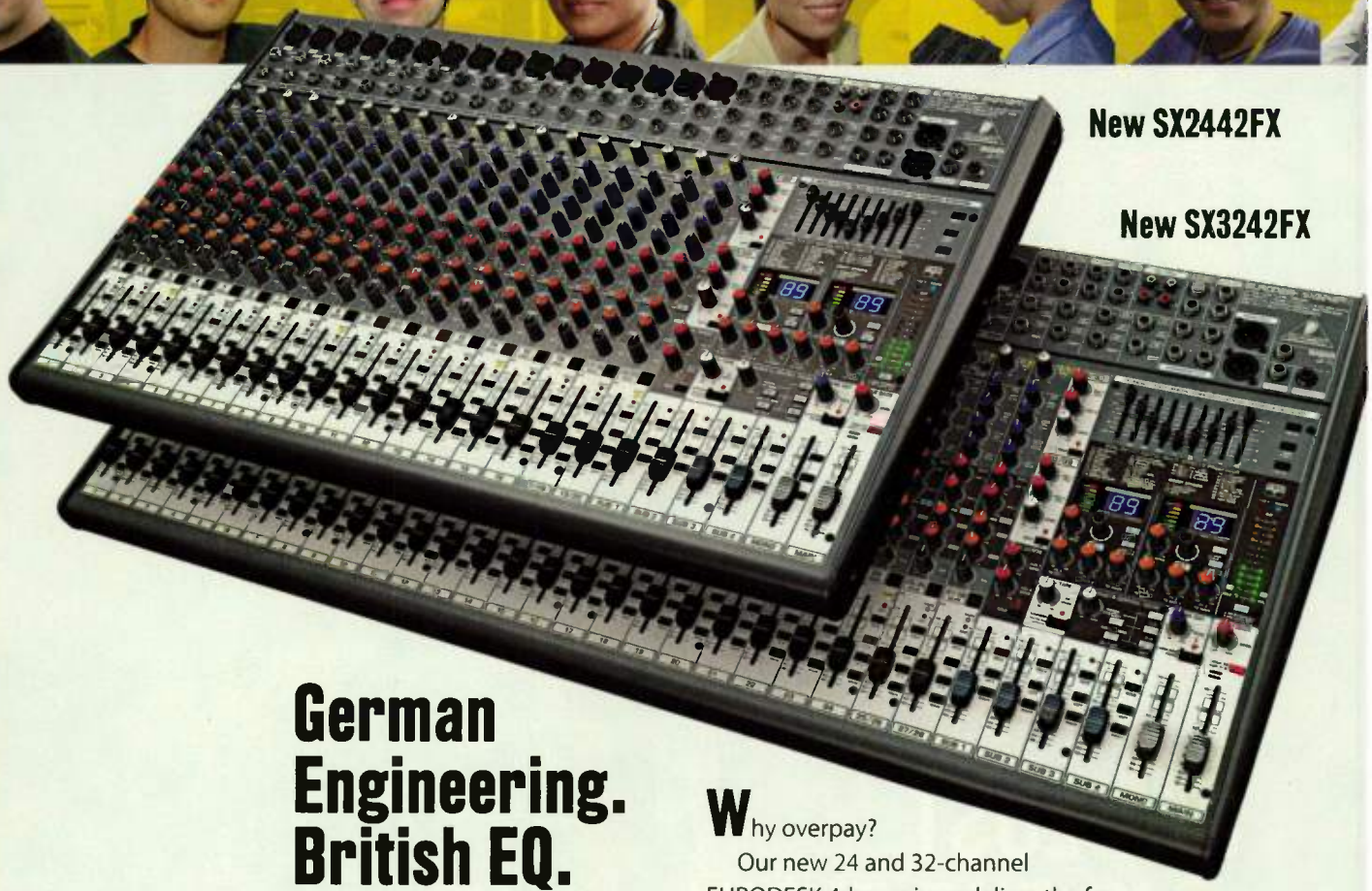

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FEBRUARY 2009 VOL. 25, NO. 2

FEATURES

MAX SPITZENBERGER

38 IT'S GOOD TO BE HOME

Slide-guitar whiz Derek Trucks's latest release, *Already Free*, was tracked in his newly built home studio. In this interview, he talks about vintage gear, approaches to soloing in the studio, and his new outlook on recording.

By Mike Levine

GERRY MONTESANO

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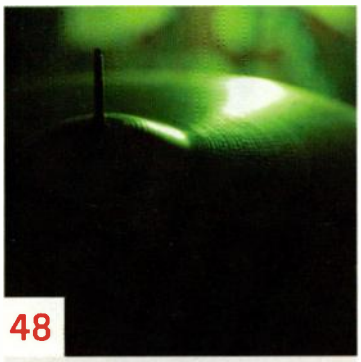
SHOWDOWN AT THE CLUBHOUSE

Can virtual guitar amps hold their own against the amps they're modeled from? EM conducted a blind listening test with five discerning engineer-producer-guitarists who regularly record electric guitars. The results will surprise you.

By Mike Levine



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MASTER CLASS: CAKEWALK BEATSCAPE

Get more from Sonar 8's new Beatscape beat-creation plug-in with these power user tips.

By Brian Smithers

DEPARTMENTS

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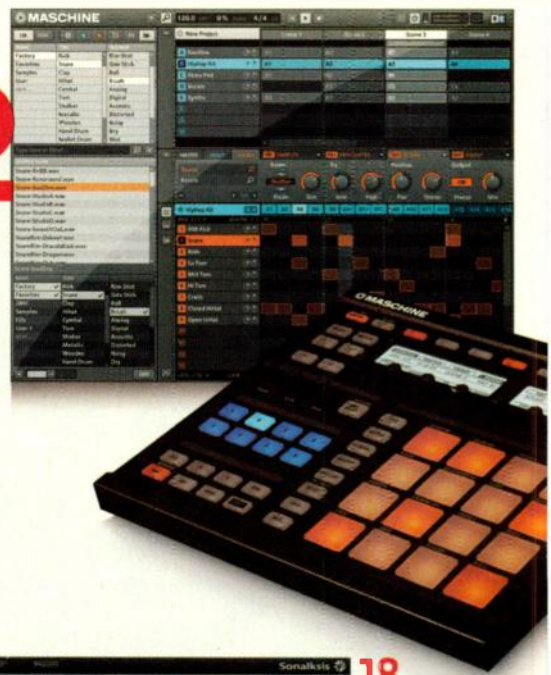

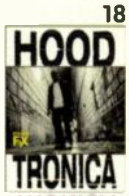

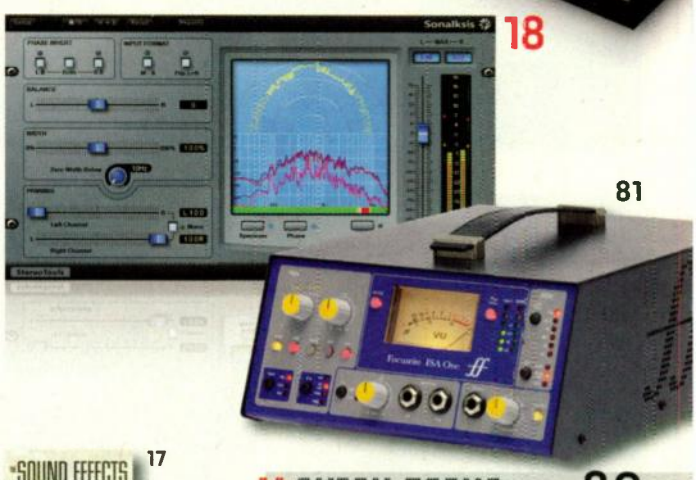

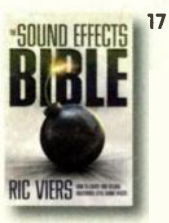

QUICK PICKS 80

- **Eventide ModFactor** stompbox
- **Focusrite ISA One** mic preamp/DI
- **Vir2 Instruments Basis 1.1 (Mac/Win)** virtual instrument
- **X-Tempo Designs Pok** footswitch controller
- **Soniccouture Scriptorium (Mac/Win)** Kontakt instrument library
- **Equipped Music *Slo' Motion: Tokyo Soundscapes*** sample library

REVIEWS

80

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Women's Work

I find it hard to believe that the topic of gender parity in math and science is even an issue anymore. Yet it was one of the most talked-about stories for parents last summer thanks to the study published in the journal *Science*, which noted that standardized tests in the United States indicated that girls score just as well as boys in math. Certainly I'm not the only one who shouted "Duh!" at the top of my lungs when I read that. It seems completely obvious that there are no biological reasons why males and females cannot master the same subjects in school.

This recent study showed that 2nd- through 11th-grade boys and girls tested equally in both subjects. However, the researchers of the current study admit that some parents and teachers still believe that men are better in certain academic subjects. It's interesting to note that in studies done two decades earlier, girls tested equally with boys in elementary school but lagged behind in math by the time they reached high school. Most of us can grasp intuitively that years of negative reinforcement from peers convinced young women at that time that they weren't capable of doing anything technical. That still may be the case with music technology.

JANE RICHEY

This topic really hit home for me at the end of the fall 2008 semester at Diablo Valley College, where I teach a beginning recording class. During our staff meeting, I learned that the California Community College Chancellor's Office lists the recording-arts classes as Commercial Music, which falls under the Nontraditional category, a coded way of saying that there is a gender or ethnic imbalance in a particular trade. Based on employment data collected over several decades, the state has found that in certain fields, one gender is dominant—low numbers of men become nurses and dental assistants, just as few women go into welding, police, fire, and paramedic programs. Although women do take the music-technology courses at DVC, they are far outnumbered by men. Remarkably, the state has plans to actively recruit students to balance out the so-called nontraditional trades.

Despite it being a male-dominated industry, I *have* noticed a significant increase in the number of women in pro audio over the past decade—not only mixing and mastering or running sound in clubs, but also in game audio and other new-media professions. In one sense, females may have a biological advantage over males in this field: it's widely recognized that women retain their high-frequency acuity later in life than men (iPod earbuds and loud rock concerts notwithstanding).

The best encouragement for young women who are interested in the recording arts is through educational and work opportunities, as well as pointing out role models in the industry, such as Leslie Ann Jones, Cookie Marenco, and Emily Lazar. In addition, organizations such as Women's Audio Mission (womensaudiomission.org) in San Francisco and the Institute for Musical Arts (ima.org) in Massachusetts offer programs that allow students to get their feet wet without the major financial commitment of a full-time recording program.

Educational resources should be available to anyone who wants them, and it behooves each of us to encourage young women who show an interest in recording and music technology.

Gino Robair
Editor

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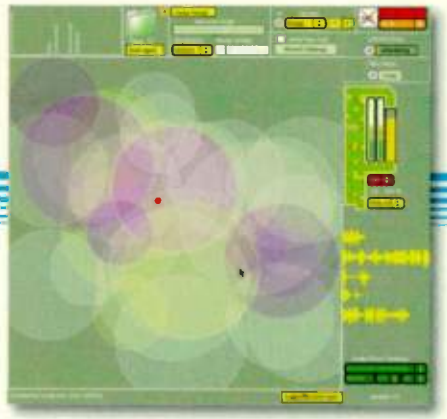
By Gino Robair



Download of the Month

Leafcutter John's Forester 1.4 (Mac) By Len Sasso

Forester (donationware) from Leafcutter John (leafcutterjohn.com) is nominally an audio file looper. But forget everything you know about looping—Forester breaks the mold. You point it to a folder containing audio files, and it selects six of them for its buffers, then extracts loops and applies various effects. Which of Forester's loops play and what effects settings are available depend on the location of a roving cursor in the *forest*, which is a two-dimensional array of circles. You can exert some control over the shape of the forest, and you can refill the audio buffers on the fly, but you are not in charge.

Designed in Cycling '74 Max/MSP, Forester runs as a standalone application (you don't need Max/MSP). It comes with a built-in recorder, but you can also capture the output in your DAW with an audio-routing utility such as Cycling '74 Soundflower (cycling74.com; free).

The effects include delay, pitch-shifting, reverb, and bit reduction, and you can toggle any of these off. Another toggle, called Little Loops, determines whether short loops are interwoven with the longer, more musical ones. Little Loops gives you a constant pulsating undercurrent; otherwise, you get periods of silence that are punctuated with longer audio snippets. You can constrain the area within which the cursor roams, you can turn roaming off, and you can reposition the cursor with a mouse-click. The same position produces roughly the same sound, so with a little clicking, you can ferret out a good roaming region.

As random as Forester is, it can yield musically useful results. For example, if you feed it stubs from one of your songs, turn Little Loops off, and then record the output for a while, you'll get many clips that you can work back into the song (see **Web Clip 1**). On the other hand, the charm of Forester is letting it roam the forest. Feed it a CD from your collection (it will read direct from your CD drive), then sit back and enjoy the ride.

ONLINE BONUS MATERIAL

OPTION-CLICK

By David Battino

Surround Sound . . . CDs?

Discover cool features lurking inside popular products.

In my October 2008 column (see emusician.com), I shared an elaborate recipe for creating surround sound DVDs. Those discs contained 5.1-channel Dolby Digital (AC-3) audio, which is universally supported on DVD players. However, there's another popular way to distribute your surround music on disc, and although it's less compatible, it's far simpler to produce. It's called the DTS CD.

DTS, like AC-3, encodes six channels of audio into a 2-channel file. But it employs gentler compression, so many audiophiles feel that DTS sounds better. The DTS CD variant uses 16-bit, 44.1 kHz WAV files, which you can burn to dirt-cheap CD blanks using any standard program. Play the disc normally, and you'll hear white noise. But send the signal over S/PDIF to a DTS-compatible receiver, and it expands back into 6-channel surround. Incidentally, this DTS pass-through ability is a good test of your audio interface. Unless the DTS signal is "bit perfect," it will remain noise. (If you're using a software CD player, be sure to turn off EQ and other processing—even volume reduction.)

You can create DTS CD files inexpensively with Minnetonka SurCode CD-DTS (surcode.com; $99) and Immersive Media Research Vortex Surround Encoder Pro (im-research.com; $75). (For more about David Battino's work, visit batmosphere.com.)

Mackie: The First 20 Years

1989
The Birth of Mackie
Greg Mackie founded Mackie Designs and unveiled the LM-1602 line mixer.

1991
CR-1604 Compact Mixer
This inexpensive and robust compact mixer started an industry trend and made its way into thousands of personal studios.

1997

Human User Interface (HUI)
Mackie's first DAW control surface was cocreated by Digidesign.

THIS MONTH'S SOUNDTRACK

These releases encompass a diverse range of styles and composition methods, from metal and pop to avant-garde and improvisation.

BEN CONSTABLE

THE SKEIN (ANDREA PARKINS AND JESSICA CONSTABLE): ***CITIES AND EYES*** (HENCEFORTH) Art song meets electro-acoustic and laptop improvisation in a set of wonderful, challenging, and sometimes folky pieces.

ALICE LIN

OBI BEST: ***CAPADES*** (SOCIAL SCIENCE) Charming songs, creative arrangements, and enchanting vocals make Alex Lilly's first album a winner. For fans of the Cranberries or Stereolab.

YXIMALLOO: ***UNPOP*** (ESP) Two dozen catchy, lo-fi ditties by a Japanese outsider who cleverly mixes electronics and microcassette vocal recordings. Musique concrète meets J-pop.

ANDO FUMIYA LEWIS

CHAS SMITH: ***NAKADAI*** (COLD BLUE) Intense and drony, yet luscious. A welcome reissue of microtonal pieces by this important Los Angeles–based instrument builder and pedal steel guitarist.

METALOCALYPSE: ***SEASON II: BLACK FIRE UPON US*** (WARNER HOME VIDEO) Eighteen brutal episodes that chronicle the outrageous stupidity of Dethklok, the world's most popular animated dark-metal band.

COURTESY TITMOUSE STUDIOS

1998
HR824
The company's first active close-field studio monitor.

1999
SRM450
Mackie's first portable powered loudspeaker.

2003
MCU Control Surface
This design update included Mackie Control Protocol integration.

2004
Onyx Small-Format Mixers
Mackie's new line of compact analog mixers could be enhanced by optional FireWire I/O cards.

By Len Sasso

GROOVE ON THE MOVE

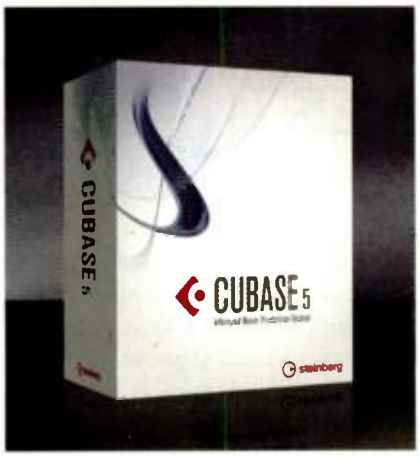
NATIVE INSTRUMENTS MASCHINE

Native Instruments (native-instruments.com) calls Maschine (Mac/Win, $699 [MSRP]) a next-generation groove production studio. This software-hardware combination offers the flexibility of a software plug-in with the intuitive work flow and standalone operation of a classic hardware drum machine. The hardware sports 16 backlit pads, 11 rotary encoders, 2 large LCDs, and a host of buttons, and it doubles as a MIDI control surface for your DAW. Real-time polyphonic-keyboard and drum-machine-style record modes make Maschine equally at home with tonal and percussive material. You also get a 5 GB sound library with Kore-style browser, integrated performance effects, recording on the fly, and live sampling and resampling.

YAMAHA POCKETRAK CX

POCKET CHARM

Yamaha (yamahasynth.com) has just added to its line of pocket-size recorders. The Pocketrak CX ($499 [MSRP]) extends the technology of the earlier Pocketrak 2G to live-music recording with an upgraded stereo microphone system, a variety of recording resolutions in both PCM (WAV) and MP3 formats, and an onboard speaker. The unit accommodates a larger rechargeable battery for up to 40 hours of recording and playback. Memory is expandable using microSD cards from 512 MB to 4 GB (a 2 GB card is provided). You'll find musician-friendly features such as a peak limiter, variable-speed playback, and Cubase AI DAW software.



BETTER BEATS AND VOCALS

STEINBERG CUBASE 5

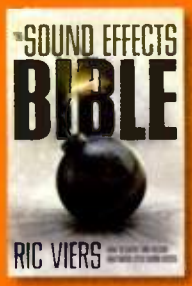
Steinberg (steinberg.net) has upgraded its flagship DAWs Cubase and Cubase Studio to version 5 (Mac/Win; Cubase 5, $599, Cubase Studio 5, $399 [both MSRP]). The emphasis this time around is on beat-creation tools and pitch editing for vocals. New rhythm-oriented tools include the LoopMash and Groove Agent One VST instrument plug-ins and Beat Designer for perfect groove alignment. On the vocal side, VariAudio lets you edit pitch directly in the Sample Editor, whereas the VST plug-in PitchCorrect incorporates Yamaha Pitch Fix technology to correct intonation on the fly. The convolution reverb REVerence rounds out the new plug-in offerings. You'll find myriad under-the-hood and user-interface enhancements, including an improved MediaBay, advanced batch export, and full Windows Vista 64-bit support.

BLUE MICROPHONES ICICLE

Pursuing its stated goal of keeping technology out of the way, Blue Microphones (bluemic.com) has released the USB mic interface Icicle (Mac/Win, $59.99 [MSRP]), which packs a mic preamp, 48V phantom power, and analog gain control into a cylindrical, in-line package. Cable one end to your computer's USB port and plug the XLR cable from a dynamic or condenser mic into the other, and you're ready to record. The unit supports plug-and-play driverless operation on both Mac and PC and offers 16-bit, 44.1 kHz conversion.

GET SMART

Michael Wiese Books' The Sound Effects Bible



If you've heard it in a movie, on the street, or in your dreams, you'll find it somewhere in *The Sound Effects Bible: How to Create and Record Hollywood Style Sound Effects* ($20.21) from Michael Wiese Books (mwp.com). Topics include microphone selection, field recording, digital audio basics, understanding DAWs, sound design, and designing your own editing studio and Foley stage. Sound effects from author Ric Viers's huge library have found their way into products from a slew of major manufacturers as well as soundtracks for productions such as *Desperate Housewives*, *Law and Order*, and *Ugly Betty*.

Course Technology PTR's Going Pro with Logic Pro 8

Drawing on more than a decade of experience using Logic for writing, scoring, and producing music, Apple Logic Pro certified trainer Jay Asher takes you on an expert-level tour in *Going Pro with Logic Pro 8* ($29.99 [MSRP]) from Course Technology PTR (courseptr.com).

Picking up where the manual leaves off, the book guides you through customizing Logic to your studio and work flow; recording, editing, and preparing media for delivery; organizing your sound palette; and integrating third-party hardware and software. Along the way, you'll find countless tips and tricks for getting the most out of Logic.

Grooveboxmusic.com's Elastic Time in Action

Elastic Time in Action ($39.99 download, $44.99 DVD) is the latest Pro Tools 7.4 Power Pak from Grooveboxmusic.com. In 14 video tutorials totaling more than 2.5 hours, multi-Platinum record producer Kenny Gioia shows you how to bend audio to your needs with Elastic Time while avoiding the weird-sounding audio artifacts so often associated with time-stretching. Step-by-step instructions cover tightening up your tracks, extracting and importing grooves, remixing vocals, and creating special effects. Examples cover drums, bass, guitar, and vocals. Check out the examples and order online at grooveboxmusic.com.

Sound Advice

Impact Soundworks' Sitar Nation

Sitar Nation: Classical Instruments of India (Mac/Win, $119) is a 2.7 GB collection of 24-bit, 44.1 kHz multi-sampled instruments for Native Instruments Kontakt 2.4 or later from Impact Soundworks (impactsoundworks.com). It includes 16 close-, room-, and ambient-miked Kontakt instruments covering sitar, tampura, tabla, and baya along with 15 effects patches incorporating built-in and outboard effects processing. A variety of multi-instruments, sampled phrases and articulations, and MIDI tabla and baya percussion grooves rounds out the collection. Impact Soundworks' goal was to capture in full detail the sound of these instruments as played by experienced performers.

Big Fish Audio's Bone Crushing Drums

Bone Crushing Drums ($99.95) from Big Fish Audio (bigfishaudio.com) takes you on a trip to rock's heavy side with 50 drum construction kits covering punk, garage, hard rock, and straight rock. The library's 836 loops come in Acidized WAV, REX (RMX), and Apple Loops formats. Each kit contains dry and stereo room-miked versions of full-kit and kit-piece loops and fills in tempos from 76 to 280 bpm. Submersible Drumcore and multitrack-miked Pro Tools/OMF/AAF versions are available for $79.95 and $199.95.

PowerFX's Hoodtronica

Electronica comes to the hood with the release of *Hoodtronica* ($79) from PowerFX (powerfx.com). This 600 MB downloadable production pack for hip-hop and electronica artists starts with 54 construction kits containing Acidized WAV files. Tempos range from 72 to 120 bpm in a variety of major and minor keys. The collection offers individual as well as mixed drum loops, basses, synthy leads, sound effects, and lots of ambient material. The construction kits are augmented by several hundred bass, drum, and synth loops in both WAV and REX formats.

EXCEEDS EXPECTATIONS

XSEED GAMES KORG DS-10

Xseed Games (xseedgames.com) has packed an enhanced version of Korg's classic MS-10 synth into the Nintendo DS handheld game player. The Korg DS-10 ($39.99 [MSRP]) features two dual-oscillator synth parts along with four drum parts. Onscreen synth controls let you program and patch the synth. You then use a graphical keyboard, emulated Kaoss pad, and 6-track step sequencer to play the synth. You can link as many as four units in Multiplayer mode (for real-time collaboration) or Data Exchange mode (for trading songs).

SONALKSIS MASTERING SUITE

HOW SUITE IT IS

Sonalksis (sonalksis.com) has released a new Mastering Suite (Mac/Win, $599) consisting of four plug-ins: MultiLimit, MaxLimit, StereoTools, and Ultimate-D. The smaller Mastering Tools bundle ($349.99) includes MaxLimit and StereoTools. The plug-ins, which come in VST, AU, DirectX, and RTAS formats (with Pro Tools TDM versions coming soon), are also available individually. MultiLimit is a 5-band EQ with linear-phase crossovers and dynamics functionality. MaxLimit is a limiter optimized for maximizing. Both feature analog-quality smoothing and K-System metering. StereoTools is for stereo-image manipulation and offers detailed visual monitoring. Ultimate-D uses proprietary algorithms for pro-quality dithering. You can download trial versions from the Sonalksis Web site.

LINE 6 POD STUDIO UX2

I POD

Line 6's (line6.com) new USB interface for recording guitarists, the POD Studio UX2 (Mac/Win, $269 [MSRP]), provides 16- or 24-bit, 44.1 or 48 kHz recording and playback. You get assignable VU metering, two ¼-inch guitar inputs (normal or pad), two balanced XLR inputs with mic preamps and phantom power, and S/PDIF digital output. The UX2 ships with RiffWorks T4, the 16-track Ableton Live Lite Line 6 Studio Edition, Propellerhead Reason Adapted, and the POD Farm AU, VST, and RTAS plug-in, which features 50 guitar and bass amp-and-cabinet combos, 35 stompbox effects, and 6 mic preamps.

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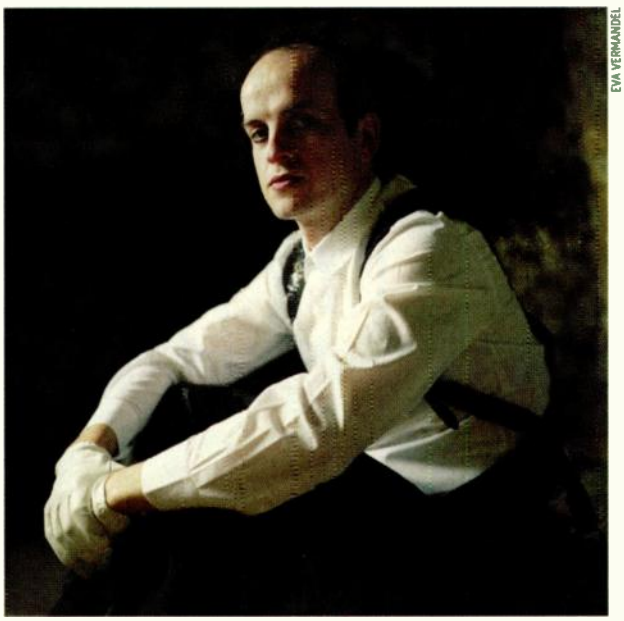

EVA VERMANDEL

Record, Splice, Rearrange

Matthew Herbert's latest is a collage of big-band jazz and field-recorded sounds.

Producers often talk about committing to a sound, as opposed to fixing it in the mix, but very few people take the idea to such extremes as Matthew Herbert does. Long a rebel on the U.K.'s underground electronic-dance scene, Herbert has also made waves with his rigidly conceived and politically charged fusions of jazz and musique concrète (an experimental compositional style featuring the manipulation of natural sounds).

By Bill Murphy

There's Me and There's You (!K7, 2008) is the second release under the ensemble name of the Matthew Herbert Big Band. Although the album bears only a vague resemblance to its predecessor, *Goodbye Swingtime* (Accidental, 2003), the approach taken to create it was similar: bring a large group of jazz musicians into Abbey Road Studios and radically chop up the results in Apple Logic Pro, sometimes running whole sections through two Korg Kaoss Pads. Add a plethora of planned and found sounds, chop and splice again, and then track vocals (here, soulstress Eska Mtungwazi) over the top. Throw parts of the mix through an array of outboard effects chains (including processors by Moog, Helios, API, and Valley People), and you have a way-out jazz collage, Herbert-style.

"When you've just spent two days and thousands of pounds at Abbey Road trying to get the best recording, it does seem a bit rude to start chopping it up," Herbert admits. "But of course, that's exactly the right thing to do—particularly with the way I write, which is so reliant on sampling. Once it's in the sampler and then you play it back on itself, it's always going to be related to what it was originally anyway. I think you get in trouble when you start adding drum machines or synthesizers to it."

This is where the commitment comes in: Herbert works according to a self-imposed manifesto that prohibits him from using samples or synthesized sounds that are not original. He also imbues each song with a message (usually political) and records his sound sources with that in mind. The song "Battery" (see **Web Clip 1**), for instance, includes ambient noise from a McDonald's restaurant on Kensington High Street where, after the 9/11 attacks, Iraqi expat Bisher Al-Rawi met with his handlers in British intelligence. Although he was helping the U.K. counterintelligence, MI5, Al-Rawi ended up spending four years in Guantanamo.

"Even the recording technique that I'm using reinforces the story I'm trying to tell," says Herbert. "You don't necessarily want to draw attention to yourself with loads of equipment in a McDonald's, so I used a little Nagra handheld, which in a way suggests the cloak-and-dagger aspect."

Other songs are more direct: "The Yesness" features the sound of 100 people saying yes (see **Web Clip 2**), while "One Life" uses the beeping alarm of an incubator unit (Herbert's son was born prematurely) to represent 100 people killed in Iraq. "Breathe" incorporates the sound of 70 people blowing over the tops of empty water bottles in the British Museum—a lush, synthlike texture (see **Web Clip 3**) that's a prime example of what Herbert identifies as the accidental rewards of his method.

ONLINE BONUS MATERIAL

"They're the moments that I make records for," he says. "This is a sound that no human has ever heard before, so it's like being an adventurer. It took a lot of organization to get 70 people there, but all I said to them was, 'Can you bring an empty plastic water bottle?' Then we recorded that, which took under a minute. If you tried to program a noise like that on a synth, you'd be there for weeks." em

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MIRANDA PENN-TURIN

Come on in My Kitchen

Theresa Andersson cooks, literally and figuratively, in her studio.

The kitchen is often considered the heart of a home, but for Swedish-born New Orleans transplant Theresa Andersson, it has become the heart of her music as well. With the helping hand of fellow Swede singer-songwriter and producer Tobias Froberg, Andersson cut tracks in her kitchen-based studio for both the demo and the final version of her latest CD, *Hummingbird, Go!* (Basin Street Records, 2008). The final recording features duets with legendary New Orleans producer-composer Allen Toussaint and Norwegian singer Ane Brun (Brun was recorded by Froberg in Sweden). Andersson's CD has received critical acclaim, bolstered in part by her DIY video of the song "Na Na Na" on YouTube, which has had more than a million views.

By Diane Gershuny

Andersson played all the instruments on the project, utilizing elements from her surroundings—some of which were created literally from kitchen trash. That lo-fi creative process is typified on her song "Japanese Art" (see **Web Clip 1**). "You can hear me walking through the kitchen in my clogs. I stomped all the way through the track (which is tricky to stomp [on] only the upbeats), recorded with an AKG C-12. I wanted a xylophone sound, and improvised one by attaching water-filled root beer bottles hanging from a broomstick across two chairs. Because we wanted the natural kitchen sound, a lot of the microphones were far away. And as a result, you can hear the refrigerator humming, birds chirping, sirens wailing, and helicopters flying by. It all became part of the sonic fabric."

ONLINE BONUS MATERIAL

"Birds Fly Away" (see **Web Clip 2**) was inspired by a Smokey Johnson drumbeat, played through a portable Numark record player and a pair of small, cheap speakers. "I set the MacBook up a few feet away on the kitchen table, and recorded a few bars into [Apple] GarageBand to create a loop. Since this was my first solo experience with any kind of multitrack recording or sampling, it was very trial and error. For the [final] recording, we kept that loop and pretty much followed the road map I had demoed."

For the final, Froberg recorded directly into Digidesign Pro Tools in Andersson's kitchen. "Everything was, more or less, ready to put down on tape when I came to New Orleans," Froberg recalls. "The lyrics were not yet finished, but the song ideas were there. For Theresa's vocals we used a Sony C-37a through a Teletronix LA-2A, and a no-name Neve-clone preamp that sounded really good. I used a bit of filter for the high end on her vocals, but that was it. I actually got to use some old, lovely Neve 1068s and a Pultec EQP1A-3 at the end of the session. But because we'd already found the sound with the other gear, we used that instead. It's not every day you choose *not* to go with the classics!"

Andersson's personal highlight was the Toussaint collaboration. "He pulled up to my humble shotgun house in his champagne-colored Rolls-Royce, dressed to impress," she recalls. "We set up facing each other, with Allen seated behind the Rhodes in an adjacent room and me in the kitchen with Tobias. I was prepared to get this in one take, thinking [Allen might] not want to stick around for very long. But he graciously dug into the song, and we lost ourselves for the better part of an hour. At one point he stood up and I thought, 'Uh-oh, he's leaving.' But he just took off his jacket and sat down again. The Rhodes squeaked a bit, and at the end of the song, you can hear his approving grunt." EM

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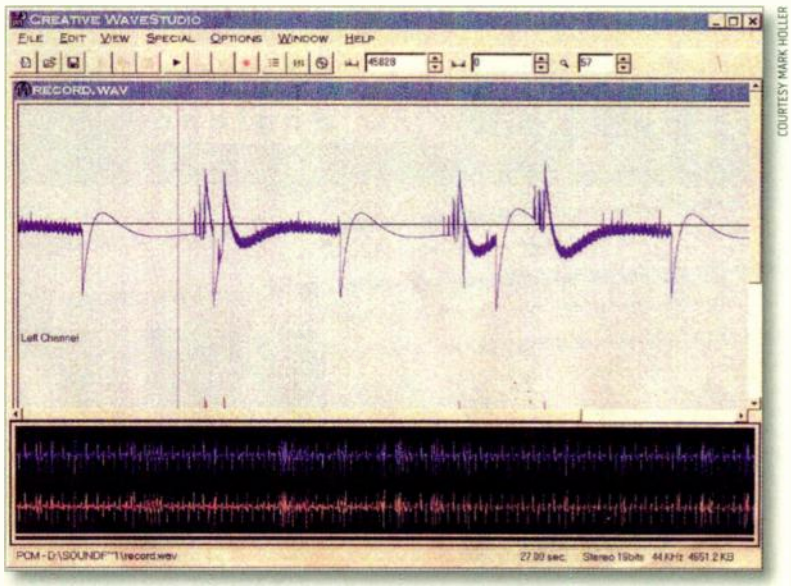

COURTESY MARK HOLLER

This is one of the more exotic waveforms generated by the Music Box 2. The waveforms it produces are sometimes similar to bioelectric waveforms in the brain.

Becoming Neurotic

Neural networks bring new sounds to synthesis | By Scott Wilkinson

When you consider all the different types of synthesis available today—additive, subtractive, sample based, physical modeling—it seems that the potential pool of basic synthesis techniques has been exhausted. However, there is at least one more technique for generating sound electronically that is still in its infancy: neural networks.

Forrest Warthman, president of Warthman Associates (warthman.com), conceived the idea of a synthesizer based on the Intel 80170NX Electrically Trainable Analog Neural Network (ETANN) chip. Working in collaboration with Mark Thorson, who designed the hardware, and Mark Holler, then Intel program manager for neural-network products, Warthman developed the first prototype using a single 80170NX chip. The latest version includes three chips, each performing a specific task.

The 80170NX includes 64 artificial neurons, each with 128 inputs and 1 output. These artificial neurons emulate the behavior of biological neurons, which accept inputs from many neighboring neurons and produce a single output. Each input is connected to all neurons on the chip with a *synapse* that corresponds to the interface between biological neurons. The strength of each synaptic connection is specified with a weighting factor.

If the sum of the inputs (taking the weighting factors into account) is well below a user-specified threshold, called the *sigmoid gain*, the neuron doesn't fire (that is, it produces no output). If the sum of the inputs is well above the threshold, the neuron fires, resulting in a strong, steady output. If the sum of the inputs is at or near the threshold, the output exhibits a linear response in which the output tracks the input value. There is one sigmoid gain for all neurons on a chip, but you can vary each neuron's response by manipulating the synapse weighting factors.

In the current version of the synth, a single input signal passes through a multitap analog delay. The input signal can be from an external source, such as a microphone, or from the synth's own final output. The signals from the delay taps are fed into the first chip's inputs. This chip performs a fast Fourier transform (FFT) to determine the frequency components in the input signal, which determine the outputs from the chip.

These outputs are fed into the second 80170NX, which simulates the behavior of biological neuron bundles called *cortical columns*. The cortical-column chip includes several external inputs as well. This chip adds further complexity to the signals; they are then fed into the third 80170NX, which also includes several external inputs and behaves like a set of oscillators to produce the final output signals. These signals can be directed to a sound system, a visual display such as an oscilloscope, and/or back to the external inputs of any or all of the three ETANNs.

In April 2008, the most recent version of the synth, dubbed the Music Box 2, was used in an unusual live performance by Holler and Scot Gresham-Lancaster, a composer, performer, instrument builder, and educator. Gresham-Lancaster was in Hoboken, New Jersey, at the Stevens Institute of Technology (SIT) controlling the synth, which was located in Holler's garage in Palo Alto, California. They programmed an Arduino prototyping board to stimulate the synth's inputs from the Web, and the audio was then streamed back to SIT using an Ubuntu Linux computer running the MuSE compressor and Icecast2 streaming audio-server software.

Among the many potential applications of this technology are new musical instruments and control devices. It also provides a unique insight into the behavior of neural networks, which should be of benefit to neurobiologists and neurotic musicians alike. EM

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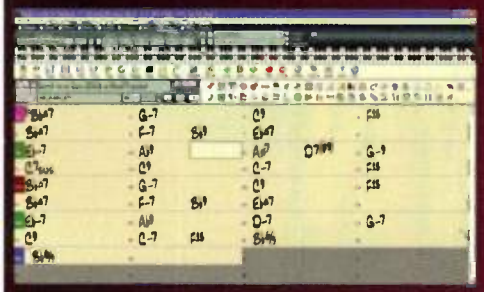

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SHOWDOWN AT THE CLUBHOUSE

AMP-MODELING SOFTWARE AND VINTAGE AMPS GO HEAD-TO-HEAD.

By Mike Levine

Conventional wisdom states that while guitar-amp modelers are good at capturing the essence of the vintage amps they emulate, the actual amp will always sound superior. Naturally, you won't hear that from amp-modeler manufacturers, but you hear it all the time from engineers, producers, and musicians. It's one of those truisms that people in the audio field generally take for granted.

I've been a user of amp modelers (both hardware and software) in my studio for many years. I've used them to record tracks for all sorts of projects, including commercials and albums; in fact, the electric guitar sounds on my own CD were recorded entirely with modelers. I even fooled a "golden ears" engineer colleague of mine who heard my CD and was shocked to find out that no amps had been miked for it.

PHOTOGRAPHY BY GERRY MONTESANO

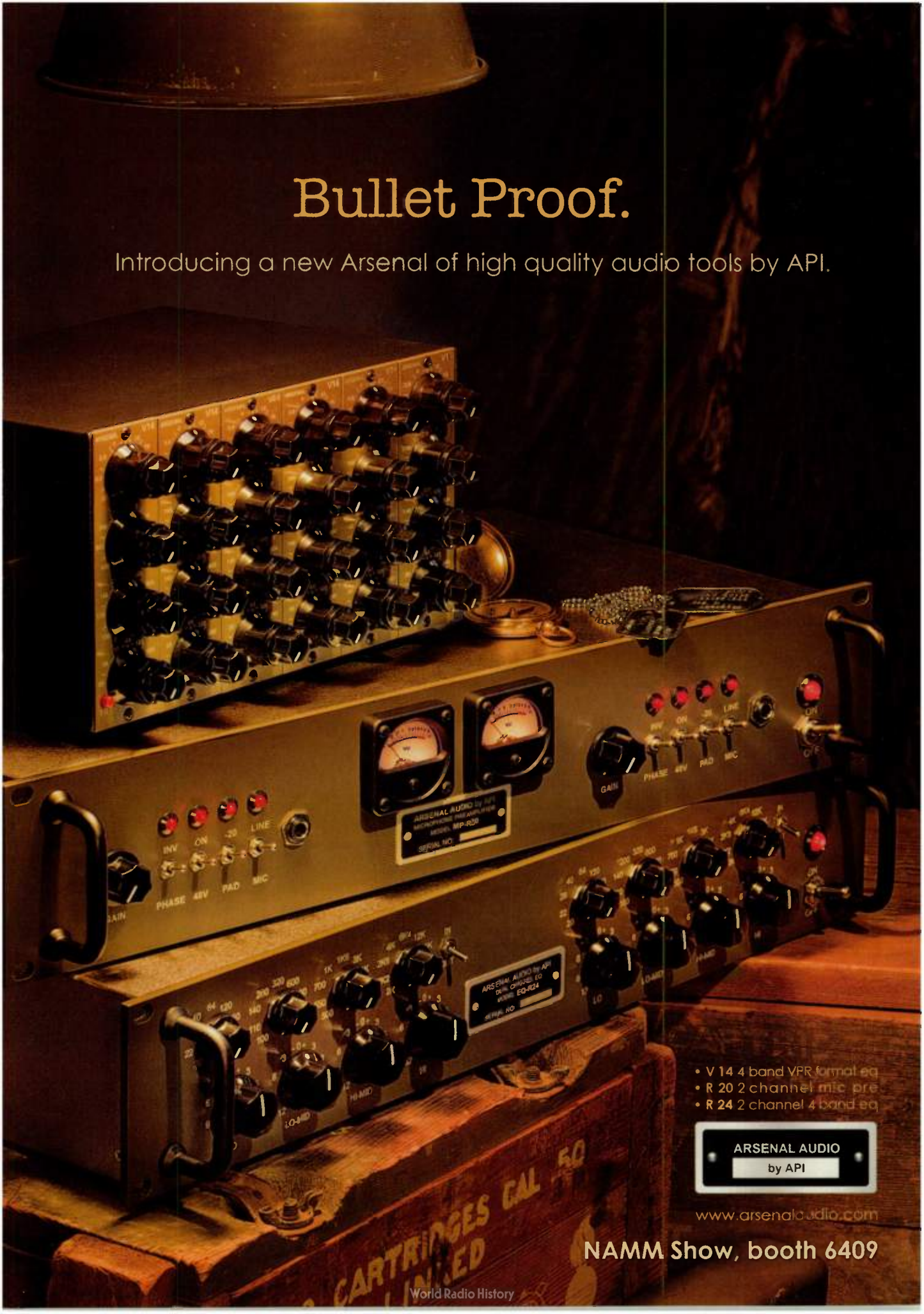

FIG. 1: The panel (from left to right): Pete Moshay, John Holbrook, Rich Tozzoli, D. James Goodwin, and Paul Orofino.

Still, in my mind I've generally subscribed to the conventional wisdom about amp modelers and assumed that if I had, say, a real Marshall JCM 800, properly miked, the British 800 patch in my amp-modeling software would sound inferior by comparison.

Nevertheless, I've also wondered what would happen if modelers were put head-to-head against the amps they emulate. Would it really be that obvious which is which? Would the real amp always sound superior to the modeler? At an editorial meeting last year, while thinking out loud, I raised the possibility of doing such a test for a feature story, expecting the idea to get rejected because of the logistical challenges it would engender. Much to my surprise, EM editor Gino Robair approved it, saying to me, "Make it happen."

The Planning

As excited as I was about the assignment, the idea of turning it into reality was a bit daunting. First, I needed to find someone in charge of a studio that had a vintage-amp collection who would agree to host the testing. Second, I'd need to assemble a group of qualified experts willing to give up an afternoon to serve as panelists. Third, I'd have to acquire the software from the various manufacturers. Fourth, I'd need to work out a methodology for the test that would allow me to make accurate assessments.

The first hurdle was the studio. I initially tried a studio in Nashville that had been recommended to me, but it was too booked up for the owner to commit to letting us use one of the rooms for a day to do our testing. One day I was talking to Rich Tozzoli, who is a friend of mine and an EM contributor. He suggested I try a studio called the Clubhouse, which is located in Rhinebeck, New York. I had recently been in touch with Paul Antonell, its owner, about getting some quotes for an EM story on reamping. Tozzoli said that the studio had an excellent vintage-amp collection (their amps had been modeled by AudioEase for the guitar-amp portion of its Speakerphone software), so I asked Antonell if we could do the tests at the Clubhouse. He said yes, and we set a date of September 13 for the testing.

Paneling

The next challenge was finding the panelists. With the help of Tozzoli and Antonell, I was able to locate a number of producer-engineer-guitarists with excellent credits who agreed to be on the listening panel (see **Fig. 1**).

The panelists were D. James Goodwin (Thursday, Parliament-Funkadelic, Motion Picture Demise), John Holbrook (B.B. King, the Brian Setzer Orchestra, the Isley Brothers, Fountains of Wayne), Pete Moshay (Hall and Oates, Daryl Hall, Paula Abdul, B.B. King, Barbra Streisand, Fishbone), Paul Orofino (John Petrucci, Blue Oyster Cult, Anthrax), and Tozzoli (Al Di Meola, the Marsalis Family, David Bowie).

All of the panelists had lots of experience recording guitars through vintage amps in commercial-studio environments. Most also had experience with amp modelers, especially the tried-and-true Digidesign Pro Tools HD standby, Line 6 Amp Farm.

How to Do It?

I wanted to include all the modelers on the market that emulate specific vintage amps. Because I needed to be able to switch seamlessly between modelers during the listening tests, and in an attempt to keep some limits on the number of products involved, I decided to stick with software modelers only. That ruled out hardware-based modelers. Considering how vital its PODs are to the modeling field, I felt particularly bad about omitting Line 6. I found out through the company that it was on the verge of releasing POD Farm, a software-only modeler, but it wouldn't be available in time for our testing.

The products I ended up selecting were Digidesign Eleven, IK Multimedia AmpliTube 2 and AmpliTube Jimi Hendrix, Line 6 Amp Farm 3.0, Native Instruments Guitar Rig 3, Peavey ReValver MK III, and Waves GTR3.

I initially considered having a guitarist in the studio to play through the amps and modelers live, but I ultimately chose to record DI examples in advance. Once at the studio, I could instead send these files through the amps using a reamping device and through the modelers within Pro Tools.

Some people will say that using a prerecorded track through a reamper takes away from the natural interaction between guitar and amp live in a room and the loading of the pickups that occurs. That is a valid point for certain types of guitar parts, but the truth of the matter is that plenty of tracks get recorded with the guitarist either in a different room from his or her amp or recorded through a DI to be reamped later. I also felt that using the prerecorded DI track would assure that the performance would be identical when it was pumped through the amp and the modelers. This would level the playing field and remove the possibility that a

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FIG. 2: The real things (from left to right): the 1964 Fender Twin Reverb, the 1980 Marshall JCM 800 with 4 × 12 cabinet, and the 1963 Vox AC30 Top Boost.

better performance on a particular pass would influence the panelists as to what sounded best.

I contacted all the software manufacturers to request copies of the software to use for the testing. I was a little concerned that they might balk at being part of a test that could possibly indicate that their products weren't able to duplicate the sound of vintage amps convincingly. However, that was not the case at all. My contacts at the various companies were all quite agreeable to the idea and seemed confident about how their products would fare in the testing.

Methods and Parameters

After doing some research on various product-testing methodologies, I decided that a single, very basic blind test would be the most appropriate—that is, a blind comparison of the same example played through the amp and the modelers, with the panelists voting on which they thought was the real amp. In addition, I would ask the panelists to say which of all the sounds was their favorite for each example.

Particularly tricky was trying to find common amps between the modelers and what was in the Clubhouse's collection. Although the general impression is that all the modeling software emulates the same basic group of vintage amps, it's more complicated than that. The Clubhouse had a couple of amps that most of the modelers did: a Vox AC30 Top Boost and a Marshall JCM 800. The studio had a 1963 version of the AC30 and a 1980 version of the JCM 800, so we were in business with those two.

> The AC30 is an easier amp to emulate than the Twin.

Finding common Fender models, however, was more complicated. The studio had a '69 Bassman, but most of the software packages emulate the '59 Bassman. The circuitry between the '59 and '69 amps is quite different, so I had to rule out using a Bassman. Meanwhile, some of the modelers emulated Deluxe Reverbs, and some Super Reverbs, but the most commonly modeled Fender amp (other than the Bassman) was a Blackface Fender Twin Reverb. Luckily, the studio had such an amp, circa 1964, so that became the third amp in the testing (see Fig. 2).

Get with the Programming

Because there were only three amps that had enough matches among the modelers, I decided to do two tests for each amp, using different settings on the amps and modelers for each test. I recorded a short example through a DI that was stylistically appropriate for the particular amp. I used my ESP 400 Series Strat (with Lace Sensor pickups) for most of the examples, but I also borrowed a Les Paul from a friend for a couple of them.

Once the DI recording was done, I tweaked the software models of those amps in my studio, making the basic parameters (such as the amount of gain and the tone settings) of the various modelers' sounds as similar as possible. The one x factor was that I wouldn't have access to the real amps until the day of the testing. Then, I'd have to quickly adjust them so their settings would be similar to those I'd used on the modelers.

As the date of the session got closer, I realized that instead of trying to run the DI tracks through the modelers in real time at the studio, I could bounce the tracks through the modelers in advance, and just bring those files with me to the Clubhouse. This would make it easier for the studio to run the examples back-to-back for the panelists. Because amp modelers tend to be CPU intensive, having four or five of them open simultaneously would have been a major strain on the studio's Mac Pro and Pro Tools HD system. An additional advantage of using the prerecorded examples was that I could include Peavey ReValver, which, at the time of the testing, didn't have an RTAS version and therefore couldn't be run live in Pro Tools without using a VST-to-RTAS wrapper. (Peavey plans to have released an RTAS version of ReValver by the time you read this.)

The Big Day

On the day of the testing, I arrived at the studio around noon. I'd asked the panel to show up at 2 p.m., figuring that two hours of setup time before they arrived would be sufficient to tweak the sounds on the amps and get the

Manufacturer and Studio Contacts

The Clubhouse	clubhouseinc.com
Digidesign	digidesign.com
Fender	fender.com
IK Multimedia	ikmultimedia.com
Line 6	line6.com
Marshall Amps	marshallamps.com
Native Instruments	native-instruments.com
Peavey	peavey.com
Vox Amplification	voxamps.com
Waves	waves.com

audio files and Pro Tools sessions transferred to the studio's computer. I brought session files for the six examples, which contained the audio files bounced from each of the modelers and the unprocessed DI files to be sent through the Reamp (from manufacturer John Cuniberti) to the actual amplifiers.

One thing that took a lot of time was changing my Pro Tools session files to match the output scheme of the studio's Pro Tools interface. Then it was a matter of getting sounds dialed in on the real amplifiers for each of the examples, writing down settings, and making sure that the volume levels of the actual amps matched those of the files from the modelers. I also had to pay attention to the input trim level on the Reamp, because that governed how hard we'd be hitting the amp, which would impact the sound.

We set up the amps in a room called the Library, which sits next to the main live room. The reason we did this was that we didn't want the panelists in the control room to hear even the faintest bit of amp sound bleeding into the control room when the actual amp was being fed from the Reamp.

Despite the able efforts of Clubhouse assistant engineer Eli Walker, the process of setting up took longer than expected (see Fig. 3), which meant that the panelists ended up sitting around for an hour waiting. Normally this wouldn't have been a problem. It was a nice day, and they were sitting in the studio's backyard, geeking out with tech talk. Unfortunately, one of the panelists, John Holbrook, had a limited time window, and the delay meant that he couldn't stay for all the tests, which was a shame.

ONLINE BONUS MATERIAL

Let the Testing Begin

We were finally ready to start the listening session at about 3 p.m. The panelists sat in the control room, and I handed out scoring sheets to each of them. They would listen to the various versions that were routed through the studio's Neve console and an EMT Plate reverb. The monitors were Genelec 1031s. For each of the six examples, the panelists would listen to the various versions consecutively. They would have no prior knowledge of which was the real amp and which was a modeler. I asked them to write down which version from each group was the amp and which was their favorite.

Amp: 1964 Blackface Fender Twin Reverb
Modelers: Amp Farm 3.0, AmpliTube Jimi Hendrix, Eleven, and Guitar Rig 3

Twin, example 1, was a clean, rootsy, country-influenced example that was played on the ESP Strat and featured both chords and lead work (see **Web Clip 1**). As the five versions were played, the panelists scribbled down notes (see **Fig. 4**). So which was the real amp? "To me, it's obvious," said Goodwin. "I have a couple of ideas," added Tozzoli. When I revealed the answer, sure enough, Goodwin, Tozzoli, and two of the other three panelists had guessed which was the real Twin. The fifth vote was for the Amp Farm version. "If it's this easy to pick out the amp in all the tests, it's not going to be a very interesting day," I remember thinking.

But as it turned out, I needn't have worried. On Twin, example 2 (see **Web Clip 2**), which was more of a rocking rhythm part (although still fairly clean), only two of the five panelists picked out the version with the real amp. Interestingly, the Amp Farm version got the other three votes. Although Goodwin had guessed the real amp, he said that he also liked the AmpliTube Jimi Hendrix version. So did Orofino: "Nice, very tight sound," he commented. Moshay, the other panelist who had voted for the real amp, liked the Guitar Rig version. "It was good," he said, "although a little flat sounding."

Because of the extra time spent during setup, Holbrook had to leave after the Twin examples. Now the panel was down to four.

Amp: 1963 Vox AC30 Top Boost
Modelers: Amp Farm 3.0, AmpliTube 2, Eleven, GTR3, Guitar Rig 3, and ReValver MK III

For AC30, example 1 (see **Web Clip 3**)—a crunchy, British-style, '70s-like rhythm part that I had recorded with the ESP Strat—only Goodwin guessed the actual amp. The other three panelists each chose different models, which indicates to me that either the AC30 is an easier amp to emulate

FIG. 3: The author (left) and Eli Walker (right) work to get the session configured and the volume levels evened out for the testing.

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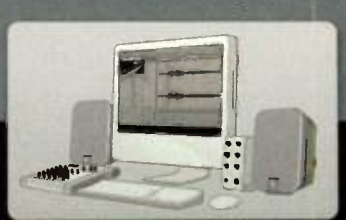

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FIG. 4: Goodwin, Orofino, and Holbrook take notes during the testing session.

than the Twin or a crunchy amp sound is easier to simulate than a clean one. Tozzoli commented that the Guitar Rig version sounded "damn good." Orofino's favorite was ReValver, which he said had more-focused mids. Moshay also liked the ReValver version, as well as the one run through AmpliTube.

AC30, example 2 (see **Web Clip 4**), was another crunchy rhythm-guitar track—this one played on the Les Paul. This time, nobody could tell the real amp from the modelers. Moshay thought that the Waves GTR version was the amp, saying it sounded nice and crunchy. Tozzoli and Orofino guessed it was the Guitar Rig version, while Goodwin thought it was the Eleven version. Interestingly, when voting for which one they liked best (as opposed to which one was the real amp), three panelists chose No. 5, which *was* the real amp. Tozzoli also liked the ReValver version a lot.

This round of listening sparked an interesting discussion. Moshay noted that overall, some of the modeler versions lacked a bit of dimension. "With simulators, a lot of time what happens is that all the time all the tone just comes right to the front; there's no push to the low end," he said. "An amp will have a little push when you're pushing air. It's almost like a multiband [compressor]—we'll just take all the frequencies and flatten them. And they're all like high, mid, low, balanced flat, as if you brickwalled it. Whereas on an amplifier, the bottom end of an amp will push on certain notes and not on other ones; you get a little thrusting going on."

"On the amps, I've noticed consistently that you hear more of the guitar," said Goodwin. "You hear more of the character

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of the guitar, whereas the modelers seem to homogenize the character slightly more," he added. Orofino noted that on some of the modeled tracks, there was a compressed sound that was a giveaway.

Amp: 1980 Marshall JCM 800 through a Marshall 4 × 12 cabinet
Modelers: Amp Farm 3.0, AmpliTube 2, Eleven, and Guitar Rig 3

Marshall, example 1 (see Web Clip 5), was a heavy passage played on the Les Paul, with both chords and lead, and was intended for a high-gain sound. Two of the four panelists, Moshay and Goodwin, were able to discern the real amp, but notably, none of them chose it as their favorite. Moshay said, "If I were mixing, I'd choose No. 1," which was the Eleven version. Tozzoli liked that one best, too; he thought it was warm sounding. Goodwin and Orofino liked the Guitar Rig rendition best.

On Marshall, example 2 (see Web Clip 6), which was played on the Strat, only Tozzoli guessed the real amp. Moshay and Orofino thought it was the Eleven version. Goodwin guessed it was the AmpliTube.

As for favorite sounds, Orofino picked the one played through Eleven, which Goodwin thought was a little more open sounding than the others. Moshay also chose that as his favorite. Tozzoli and Goodwin liked the AmpliTube version best. Thus ended the testing session.

Lessons Learned

In total, the panelists were able to tell the real amp from the modelers only 38.5 percent of the time. Although this wasn't a huge sample, I think it's fairly safe to conclude that given the right conditions, modelers can sound as good as the amps they emulate. The fact that these panelists, who work with amped guitar sounds virtually every day, couldn't distinguish the amps from the modelers in so many instances presents a very strong case in favor of amp modelers.

There were times when the simulated amp sounds were more obvious, especially with the clean-sounding Twin examples. That jibed with my own observations over the years that modelers have a much tougher time getting realistic clean sounds (in the Twin examples, the panelists picked the real amp 60 percent of the time). But on the crunchy and distorted sounds, the modelers were able to fool the experts 75 percent of the time.

If I had it to do over again, I wouldn't have done as much advanced tweaking to the modeled sounds in an attempt to make them sound similar. In some ways, I may have detracted from their sound by doing so. This was especially true for Eleven on the AC30 examples, which I had to program rather hastily on the day of the testing. In retrospect, a better approach might have been to use the modelers' own presets for the various amps being tested, which might have shown off the software's abilities better.

It should be noted that these tests were set up to compare the sound of the amps against that of the modelers, so I have stayed away from drawing any conclusions about which of the modelers sounded best. That would have required a whole different approach to the testing. In fact, all of the modelers in the tests elicited positive responses from the panelists at one time or another during the day. (See Web Clip 7 for a wrap-up discussion by the panelists about the testing.)

Overall, I was very satisfied with the results of this experiment. Although vintage-amp aficionados might disagree, my take-away from the day was that modelers are not the second-class substitutes for actual amps that they're often portrayed as being. Rather, they're an excellent alternative that can often sound just as good as the amps they emulate. And, of course, modelers give you a choice of many different amp tones and cabinet configurations, are much cheaper (not to mention lighter) than real amps, come with tons of built-in effects, allow you total recall, and often have automatable parameters. Sure, there are times when nothing beats a vintage amp. But according to what I observed in the testing session, that's certainly not a hard-and-fast rule. EM

Mike Levine is the executive editor and senior media producer of EM. He wishes to thank Paul Antonell from the Clubhouse, the panelists, and the software manufacturers. To listen to the same files that the panelists did, and to see if you can guess which sounds are the real amps, see Web Clips 1 through 6.

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It's Good to Be Home

Having his own studio has changed the way Derek Trucks looks at recording.

By Mike Levine

Arguably one of the top guitarists on the music scene today, Derek Trucks's blues-, jazz-, and world-music-influenced slide and lead playing is melodic, inventive, and incredibly expressive. Trucks, who is not yet 30, was a child prodigy who started gigging at age 11. He has had no shortage of accolades in his career, although he still flies a bit under the radar considering his immense talent. But one thing he hasn't had much of is time off from the road. Between his own band—the Derek Trucks Band (DTB)—the Allman Brothers Band (ABB), and the other artists he's toured with (including Eric Clapton), he's been on the road almost constantly for 16 years.

FIG. 1: *Already Free* is the first DTB album to be recorded in Trucks's studio.

But while many musicians take a hiatus from touring to hunker down in a studio and create, Trucks's busy performing schedule has made his recording experiences, by necessity, more hurried. He and his band have often been dropped off by their tour bus at the door of a commercial studio in a city on their tour route, with finite time to complete the recording before moving on. Although the results have been excellent, Trucks frequently has had to rush through the production and work really hard to get the project done under intense deadline pressure.

Before the release of his new CD, *Already Free* (Sony/BMG, 2009; see Fig. 1), his studio projects have included six Derek Trucks Band CDs, an Allman Brothers studio release (Trucks has also played on a number of ABB live albums), and guest spots on albums for artists ranging from Gov't Mule to Béla Fleck to David Sanborn to Phil Lesh. But the combination of having a tight schedule and taking an admittedly purist attitude on some of his previous DTB albums (many of which were essentially live-in-the-studio productions) left Trucks feeling that he wasn't reaching his full potential as a recording artist. "He was never comfortable; he could never settle down as an artist," says Bob Tis (pronounced *Tees*), who designed Trucks's studio and is the father of Bobby Tis, who engineered most of *Already Free* and is Trucks's monitor engineer on the road (see the sidebar "Talking with the Techs").

Trucks began to branch out in the studio on his previous CD, *Songlines* (Sony, 2006), which is the first of his solo projects to contain extensive overdubs. But the situation changed radically with the recording of *Already Free*, because not only did Trucks produce it himself, but it was also the first CD he recorded in his studio, which is located next to his northern Florida home.

Having a home setup totally changed the recording experience for Trucks. It gave him a chance to be off the road for an extended period. He drives his two young kids to school every morning (Trucks is married to singer Susan Tedeschi), and then settles in for a relaxed day of creative inspiration, including both

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FIG. 2: Trucks's control room features a vintage Neve 8048 console, which was formerly used at Ray Davies's Konk Studios n London.

songwriting and tracking with a revolving cast of his musical friends. Trucks told me that unless there is a compelling reason to record elsewhere, he intends to do all of his future projects in his studio. "He can walk into that building and close the doors, he can write, he can play, he can flip a knob and record it. He captures all his ideas," says Tis Sr. "I think that comfort level was something that he wanted for a long time."

I visited with Trucks before a recent show in New York City, and he talked about his studio, his gear, his new CD, and his attitude and approach to recording.

What made you decide to build your own studio?

I wanted to do a rehearsal room away from the house; I just drew it up on a legal pad originally. And I showed Bobby [Tis] and he said, "Why don't you let me send that to my dad? He's kind of in the studio design business." And I got back these insane blueprints—the floating slab and the faux walls—and the next thing I knew, we were building a world-class studio.

How did you decide what gear to get?

We had been collecting stuff over the years, always thinking that eventually we'd get around to doing a studio. Marty Wall is our sound engineer on the road. Whenever we're playing a nice theater or a club and there's a great compressor that doesn't seem to be used, he always wheels and deals with whoever is running the sound in that venue. [We'll buy gear]—old DBX stuff, great mics—whatever we can find. So we've kind of accumulated a good amount of stuff, and when we got serious about the studio, when we got serious about designing the building, we called David Lyons from Sonic Circus. They specialize in everything from the board to the mics. He flew down and looked at the place, just to kind of get a handle on it, and we threw out a number that we were willing to spend on just making it right. And he tracked down this vintage Neve 8048 [see Fig. 2] that was owned by Ray Davies and the Kinks. It was in Konk Studios [in London] for years. And we ended up having that thing shipped down. It sounds unbelievable.

You record to a Pro Tools HD system?

Right now, that's what we're running. I was really fortunate that [both] Bobby Tis Sr. and Jr. thought so many steps ahead, so that we can really add on. So we have the place wired for tape machines; we have it wired for everything at the moment.

And so you have a live room and a control room?

Yeah, the live room is pretty big [see Fig. 3]. It's 20 by 25 feet and has 12-foot ceilings. And then there are vocal booths, there are amp rooms, and there are a few really good hallways leading between the live room and the control room. And we did it right: we did the floating slab, and the control room was designed really well. When we had the board shipped out, Fred Hill, who's kind of the Neve guru, came down for a week—two different times—and just completely went through the thing, top to bottom. It was fascinating for me to go out there and just look at this huge folder with the schematics from Rupert Neve and to watch Fred Hill, who knows it inside and out, just like a mad scientist. They worked 12 hours a day out there. Man, it was beautiful.

So the live room sounds good?

We really lucked out. It was a combination of luck and having the right minds on it. You never know until the building's up and the room's there, how it's going to sound.

Do you feel that it's a versatile enough space to handle a variety of musical situations?

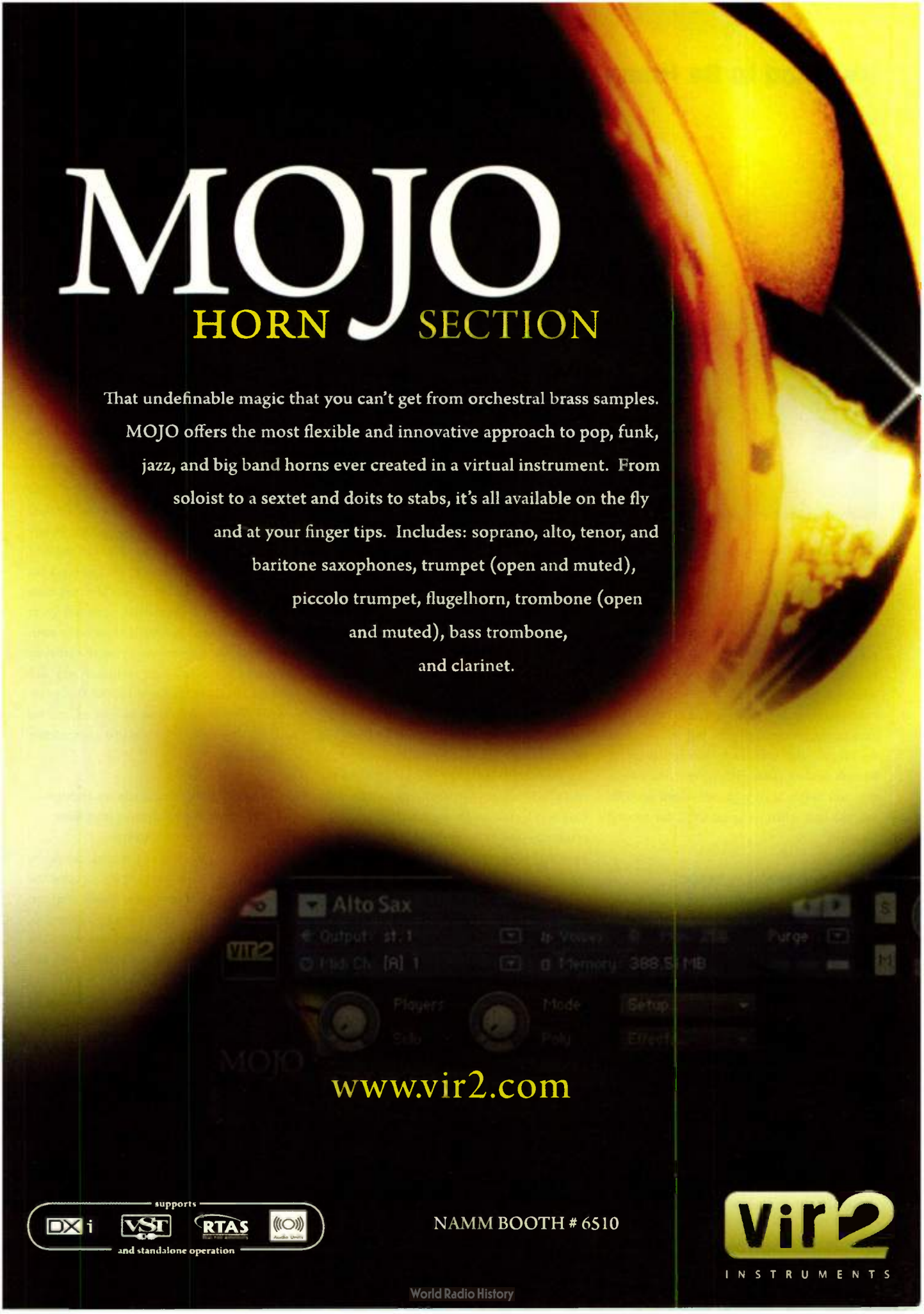
I feel we can do about anything in there. We could record an orchestra in that room—it's big enough—and we're getting to the point where we have enough gear. Over this whole year, the band has just reinvested everything into the studio. If we have a good month, and we buy a great microphone *[laughs]*, it's kind of feeding itself at this point. And we've lucked out. Recently Sony, RCA, and Columbia studios consolidated their New York studios and had this massive auction, and so we jumped in there. The Sony artist discount helped us out *[laughs]*. We bought these beautiful microphones—we found a great U47, we got an old RCA Ribbon mic, we got an AKG C12. Sinatra sang into some of these mics, Miles Davis recorded into them. We got an old EMT 140, the 8-foot-by-4-foot plate reverb. So the studio is loaded up with some amazing vintage gear. And we've been fortunate, [because] the vintage gear we have has an amazing track record, too. These things have been on classic recordings.

So there's kind of a vibe to them?

There really is. And before that, about eight years ago, I stumbled across the timpani that Elvin Jones, John Coltrane's drummer, played on *A Love Supreme* [Impulse, 1964]. They're the 1959 Ludwig timpani that close out the *[A Love Supreme]* recording. So we have things like that. Jaimoe, one of the drummers for the Allman Brothers, gave me one of his drum kits for the studio that he played on the road for the first eight years I was in the band. So when I'm in there and I look around, it's not just some fancy new gear. It's stuff that sounds great, and, if you know what it is, it feels even better.

How much of the production of *Already Free* did you do at your studio?

We tracked everything there. We got into the routine of recording: I would drive the kids to school in the morning, and just come up with some seed of a song. And whoever was around—me and Mike Mattison, who's our vocalist, it was Doyle Bramhall for a while, Warren Haynes for a while—I would get with




ERICA TRUCKS

FIG. 3: Trucks is very happy with the sound in his spacious live room.

them, and we would finish the tune off. [Then we'd] bring the band in and track it. And as we were tracking it, if there was anything anyone heard, any extra vocals, any studio magic you wanted to throw on it, we would do it all while we were in the moment. And then that evening, if we felt that we had it, we would do a pretty good rough mix, just in case. And we found, with that track that ended up on Susan's record ["Butterfly"], that the rough mix was better than what we ended up with months later when we spent a full day mixing *[laughs]*.

That always seems to happen.

Yeah, because sometimes, when you're in the moment and you're writing a tune and you're hearing things, you never quite hear it the same again. But the bulk of *Already Free* was mixed at Electric Lady Studios here in New York with Chris Shaw, who's done the last half-dozen Bob Dylan records—and he's a total pro.

Compared with your previous recording experiences, how did it feel to record this one at your own place?

It was unlike any other recording I've ever been a part of. It felt so natural and organic. There's something beautiful about drawing something up on paper, and then seeing it come to fruition beyond any of your wildest expectations. My younger brother, David, for the last five or six years has been helping build houses. He's like a handyman, and he's devoted all his time to the studio—he really helped build it. So David and Bobby Tis were there every day for months. There's something really satisfying about building it by hand and then recording in it. One of the most exciting moments was that once we finished the record and we got the tracks up to New York City at Electric Lady, we were pulling each track up—the kick, the snare. And it [had] sounded really great in our control room, but we were just hoping that it translated to a room that's tried-and-true. And Chris Shaw had come down towards the end of the tracking. Once the label realized that we were doing it ourselves, they wanted to send somebody that they trusted and knew. So they sent Chris down, and he said, "Sounds great, it seems to be working." We really hit it off with him. And once we began pulling all the individual tracks up at Electric Lady, a huge weight was lifted off of our shoulders. It was as good as we thought it sounded. We weren't fooling ourselves. There was a lot of time and energy thrown into that, and you hope it's not for naught.

Did the process of recording feel different to you without having the commercial-studio time constraints that you worked under on previous projects?

Yeah, not being under the gun. When we went out there [home], it was January or February. I think it was the longest break I've had from touring in maybe 16 years. So I was planning on just doing nothing, just decompressing. After a week, I realized that I'd decompressed and was ready to do something. So I called Bobby and called Mike [Mattison], our singer [see Fig. 4], and said, "Why don't you come down and hang?" The studio was just coming together. Fred Hill had just finished fixing the board up. And I was like, "We'll feel this thing out, see what kind of sounds we can get." And the first day we wrote two tunes and tracked them, with me playing multiple guitars, Bobby Tis playing percussion, and Mike singing and playing acoustic guitar. And the last track on the record, "Already Free," was the first tune we recorded. It immediately sounded great and felt great, and we realized we were onto something. So without notifying the label or anyone else, we just kept rolling. Every day we'd go out there, and not having that pressure of "This is a record we have to do, and we have ten days to do it," it was just a completely natural thing.

On *Already Free*, it sounds as though you did more overdubbing and less live-in-the-studio recording.

Yeah, when we did our last record, *Songlines*, it really opened up my eyes to the fact that the studio is a different beast. You should and can use it that way. You can go in and play live, too, and there are amazing recordings that have come out that way. But especially with the music that we play, you don't have to be afraid to use the studio. Everything we did up to *Songlines* was pretty much done live in the studio. There was a rare overdub here and there, but for the most part it was just taking what we do on the stage, miking it up well, getting a decent headphone mix, and doing a record. So this was a different beast. But within that, there were tracks on the record that were recorded live because, when we tried it the other way, the feel wasn't what we wanted [see Web Clip 1].

ONLINE BONUS MATERIAL

"I Got a $ix-Figure Indie Label Deal Because I Joined TAXI"

Jenna Drey – TAXI Member – www.jennadrey.com

My name is Jenna Drey. That's me sitting next to TAXI president, Michael Laskow.

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Is your approach to soloing different in the studio than it is when you're playing live?

Maybe. I think you think more as a composer in the studio, so you maybe compose your solos more. Sometimes you're just like, "Roll tape, let's see what happens" or "Do it again." And then sometimes, every time you try a solo, you try to come about it from an extremely different point of view. And there's other times when you have something else in mind and you keep working until you get there. You have a few melodies that you hear, and you know you want it to end up here. Sometimes you keep track in a solo and compose it along the way until you get it the way you finally want it. [For more on Trucks's approach to improvising, see **Web Clip 2.**]

Do you ever punch in a little bit at a time to build a solo?

There are maybe a few on the record that are a Frankenstein of two or three solos where I loved this section, I loved that section. You make sure [to ask] when you listen back, "Does that sound like it's chopped up?" But for the most part, most of the solos kind of go down as they go down.

Did you do any editing within Pro Tools, experimenting with the arrangements and so forth?

We weren't afraid of any of that this time. There have been records where I've been a total purist. It's got to be 2-inch tape, and there's got to be one take and no overdubs. This is what it is. With this record, I really felt free to try anything.

Did you use any plug-in effects on the tracks?

A little bit. If we had it analog [the processor], we would go there first. We don't have a Fairchild laying around, so if you were looking for that sound, you'd go to the Fairchild plug-in. If it works, it works. I didn't want it to sound like it was done in Pro Tools. Because *Songlines* is a record that if you were versed enough, you'd know that it was done in Pro Tools because there are plug-ins. It was what it was; it was the band experimenting at that time. But for the most part, it's an "analog" record.

COURTESY DEREK TRUCKS

FIG. 4: Derek Trucks and his band in the live room (from left to right): Yonrico Scott, Mike Mattison, Trucks, Kofi Burbridge, Todd Smallie, and Count M'Butu.

Was this your first time engineering?

I had fumbled with it a little bit. This was the first time that I was involved. It was mainly Bobby Tis and Chris Shaw doing the engineering. But there were times when everyone was gone and I was at the house, and there was a rhythm section [around and we wanted to record]—and I was like, "All right, I'll see what we can do." A lot of times I had to get on the phone and go, "All right, walk me through the patch bay again" *[laughs]*. It's coming together.

So you had never recorded yourself in the past? You didn't have 4-tracks and stuff?

No man, I've lived in a bus for 20 years! *[Laughs.]*

Let's talk a little about the guitar sounds you got on the album. I know that live you just go right into a Fender Super Reverb with your SG and no effects. Is that how you recorded your guitar in the studio, too?

Yeah, I didn't use many effects pedals on this record. I don't know if I used any. I used the vibrato from the Super Reverb on one track. What we did on this one for different sounds was just different miking techniques. There was one track . . . I think it was a bonus track where I was just hearing this real nasally sound. So I have this really tiny Gibson amp from the '50s, throw it on a chair in the middle of the room, make a cone out of cardboard, and throw a 58 down at the end of it. And it instantly gave it that weird, distant, nasally, hollering-down-a-hallway sound. Once again, the beauty of not being under a time crunch is if you have crazy ideas, you just try it. You're not worried about it working or not. We did a lot of things like that: putting amps in hallways, putting amps in front of the drum set, behind the drum set, using the cymbals for reverb, doing all kinds of things.

For the most part, what was the miking setup on the amp?

We used a Royer [121] ribbon mic. We used that a lot. We also used a [AKG] 414 a lot, and a [Shure SM]57.

Close-miked?

Yeah. We would use a room mic, too. We would always have one up for the amp when I was cutting without the band in there.

You were basically getting the same sound you do live?

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Talking with the Techs


MAX SPITZNOGLE

FIG. A: Bobby Tis and Trucks. Tis, who is the monitor mixer when DTB tours, helped build the studio and engineered much of *Already Free*.

I had a chance to sit down and talk about Trucks's studio with three of the key people involved in the building and operation of it. Bobby Tis (see Fig. A) is Trucks's monitor engineer on tour. In addition to helping with the construction of the studio, Tis engineered most of *Already Free*. His dad, Bob Tis, has been designing studios for 30 years, and he drew up the plans for Trucks's setup. Marty Wall is Trucks's FOH engineer and was also involved in the recording.

Talk about the design of the studio.

Tis Sr.: What Derek wanted was a classic recording environment, in the vein of real recording studios historically. So we took a large playing room and put in an old vintage [Neve] console, which has been completely renovated.

How many inputs does the console have?

Tis Jr.: It has 32 inputs, but it's got what Neve calls a Jukebox monitoring system, so we've got another 24 faders besides our 32 input faders that are just returning from Pro Tools all the time.

What are you using for converters?

Tis Jr.: We're using Apogee converters. For the money and for what we wanted to do, Apogee was the way to go. To be honest, at 96 kHz, 24-bit, I haven't heard much that sounds better.

Wall: With the sweet stuff we have running through it, it all gets through.

Tis Sr.: The idea was to get as much of the analog and vintage sound. To be able to capture that convincingly, use the Pro Tools just as a storage system for the efficiency. For all the main parts and main instruments, we're using really high-quality analog gear on the front end, and then just using the Pro Tools as storage.

What did you use for compression?

Tis Jr.: We've got some random stuff, like Drawmer, on the side. But our main compressors were an LA-1A, and we've got a Manley Slam that we love the hell out of. The DBX165 and the 165A have been our kick and snare combo.

So you're tracking to disk with those.

Tis Jr.: Yes. And we've got a bunch of [Empirical Labs] Distressors. We had some API 525 comps for a while. We've got 1176s. We've got some good stuff, we just don't have piles of it like a commercial studio.

Wall: I think you just named it all.

When Derek was tracking his guitars, did he use the reverb on his amp?

Tis Jr.: Yes, he used the spring reverbs on his amps. We must have gone through 10 or 12 mic setups.

You used mainly close-miking on Derek's amp?

Tis Jr.: Mostly [Shure SM]57s, close-miked, and the Royer 121. That became the clutch mic by the end of the session for guitars in the close-mic situation. In almost every solo that we cut towards the end of the sessions, we put up a room mic. We were actually using the one room mic that we used when we tracked the band. And anything that we used when we tracked the band, we left that up for the whole session in the same place. And anything we'd put in the room, we'd just record that room mic with it.

Yeah, the difference on this record is that we have a bunch of old funky amps, and we tried a bunch of different things. I have this old Airline guitar, like those old Silvertones where the guitar case was the amp, so there's a few tunes where we used that. I got away from just using the Super Reverb on that. For most of the big solos on the record, I would resort to my old sound. But for the secondary and kind of the ear-candy sounds, we would mix it up.

So you don't generally use pedals in the studio? How do you vary the amount of distortion? With volume?

With volume, making the tubes hurt *[laughs]*.

There was one tune with some really cool distortion—I guess it was "Get What You Deserve." It was also on "Down in the Flood." It was a crunchy sound, but it was on more than just the guitar.

Those sounds, especially "Get What You Deserve," that was just two guitars, no bass. And the solo was overdubbed, but everything else was just balls out. I think Doyle was playing through that Airline amp, which cannot handle any low end. So whenever he would go low, you would get all these weird overtones. It sounded like the speaker was exploding. When we finished that track, it was one of those where we went back in the playroom to listen to it, and it was comical it was so good. We really thought we'd blown something up, and I was like, "That's the sound!" EM

Mike Levine is EM's executive editor and senior media producer, and host of the monthly Podcast "EM Cast." He wishes to thank Erica Trucks for the great studio photos.

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Cakewalk Beatscape

Find the groove with Sonar 8's new beat-creation plug-in.

By Brian Smithers

Beatscape is a new plug-in included with Cakewalk Sonar 8 Producer Edition that offers a friendly and appealing interface for manipulating loops and other samples. You simply map samples to its 16 onscreen pads and trigger them with MIDI notes: Beatscape takes care of tempo matching the beats. We'll dig deep into this plug-in's bag of tricks to help you wield its power most effectively.

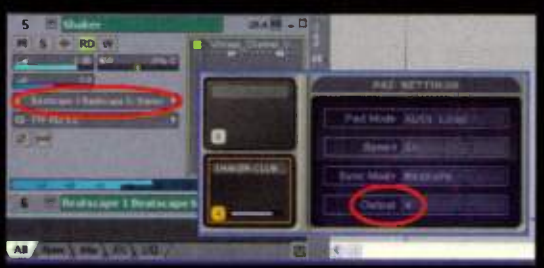

FIG. 1: Beatscape's multiple outputs (right) appear as available inputs to audio tracks (left).

Get Current, Stay Current

First, download and install the Beatscape 1.0.1 update from cakewalk.com. The free download offers more than the expected first-generation bug fixes; most significantly, it allows you to assign each Beatscape pad to one of 17 stereo (or 34 mono) outputs. Although each pad has its own set of up to three insert effects, the ability to return each pad into Sonar on its own track for separate processing is enormous.

Each Beatscape output appears as an available input to an audio track (see Fig. 1).

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FIG. 2: The first 16 notes of Beatscape's keyboard, starting at C3 (Note Number 36), trigger the 16 pads. Each pad's audio slices are mapped to MIDI notes starting at E4 (Note Number 52) on the channel corresponding to the pad's number.

Whether you create and assign these audio tracks yourself or have Sonar do that for you from the Synth Rack dialog box (check All Synth Audio Outputs: mono or All... stereo) depends on how many independent outputs you expect to need. Automatically creating 34 mono audio tracks is probably overkill for any application, but autocreating outputs automatically assigns each pad to a different output.

To assign pad outputs manually, click in the Output field within the Pad Settings pane as shown in Fig. 1. As with most Beatscape properties, left-clicking increases the value and right-clicking decreases it. (As of this writing, the output numbers assigned in Beatscape are offset from the Beatscape outputs listed as track inputs by one. For example, a pad assigned to output 4 will return to a track on output 5. Cakewalk is aware of this discrepancy and promises a fix in the next update.)

Obviously, having your pads on separate outputs allows you to EQ, pan, and process them independently. Go beyond the obvious and run one or more of them through an amp simulator, such as Guitar Rig 3 LE, which is now included with Sonar 8 Producer Edition. A classic drum-machine technique is to run a loop through the audio input of a Minimoog. My favorite soft synths for this treatment include Arturia's Minimoog V and Software Technology's VAZ2010. Alternatively, you could assign the pad's output as the modulation input of a vocoder plug-in such as Native Instruments Vokator.

Got Mono?

Having too many stereo sources results in what mix engineers call "big mono," meaning that panning options are somewhat reduced. Because Sonar's stereo tracks feature balance controls instead of true stereo panning, this is especially dangerous, as hard panning effectively mutes the opposing channel. The simple solution is to set the track's channel interleave button to mono, which causes Sonar to sum the left and right channels. If you have loops that don't react well to being summed, you may want to re-create them as mono loops. Mono loops will also react better to step editing of pan within Beatscape, in which case the track interleave must be stereo.

In general, I keep keyboard and guitar loops in stereo and use mono for drum and percussion parts. I especially want any parts from which I will end up playing individual notes to be mono.

Having too many stereo sources results in what mix engineers call "big mono."

Playing the Field

Beatscape pads can be triggered in a variety of ways by combining the plug-in's four different pad modes, which control a sample's sustain and loop characteristics, and four different sync modes, which control its alignment with the timeline. For a classic subtractive loop-and-mute technique, set all pads to Auto Loop and Measure, then assign buttons on a MIDI controller to each pad's Mute button. Start all pads at once and then selectively mute and unmute pads to build or deconstruct the loop. This is often preferable to triggering pads because you can play the mutes rhythmically and get tight musical response.

With some careful planning, playing Beatscape can feel very much like playing an instrument. For occasional 1-hit sounds, such as a cymbal crash, put the pad on Auto Play so it won't retrigger accidentally. Be sure the sample is trimmed properly, though, as you'll have to wait for it to finish playing before you can retrigger it. Put one copy of a hi-hat loop on Manual Play and Immediate Sync so you can trigger it on offbeats and change up its length. Right-click on the pad to copy and paste the hi-hat to another pad set to Auto Loop and Measure (or Beat) for set-and-forget playback. Little things like this help you get more out of your samples.

Beatscape maps every slice of a pad's audio to MIDI notes on the corresponding channel (see Fig. 2). Although this allows you to dissect a loop and create new patterns from its individual hits, it complicates mixing and matching hits from different loops. To get around this, create a Sonar drum map that maps incoming MIDI notes to the specific notes and channels needed to trigger the components of any Beatscape pad. Note that if you inserted Beatscape on a simple instrument track, you would need to create a separate MIDI track to control the drum map. The MIDI output port of an instrument track is assumed to be the

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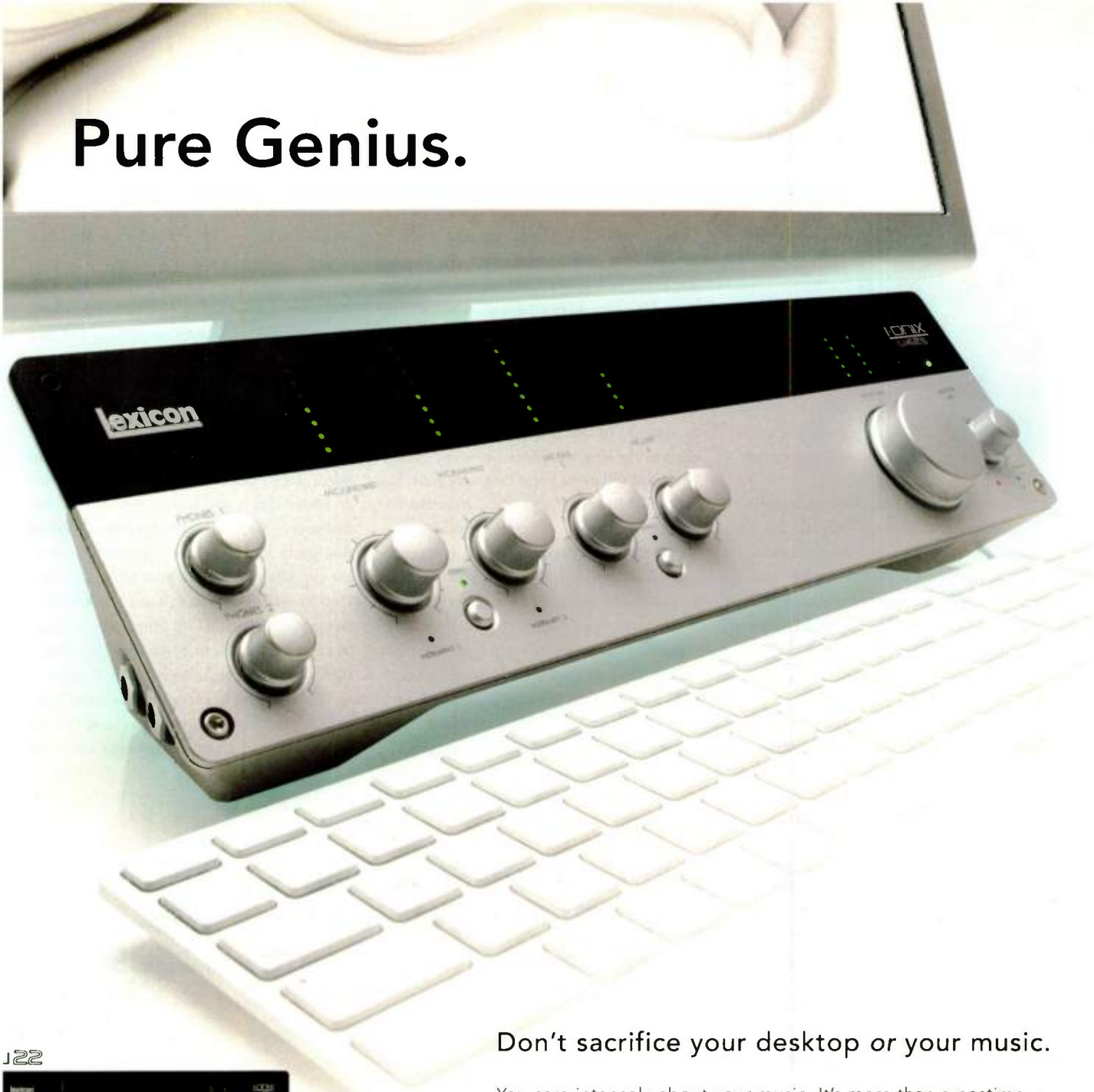

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FIG. 3: Samples imported into Beatscape are saved in the User folder. Subfolders can easily be used to organize these files.

track's soft synth and cannot be reassigned.

Remember that Sonar's step sequencer is designed to work with drum maps, so as soon as you've mapped some Beatscape hits, you can play them with the step sequencer. Beatscape thus becomes a simple sampler for the step sequencer.

Beats Working

Beatscape copies any imported audio files to a user folder (C:\Documents and Settings\All Users\Application Data\Cakewalk\Beatscape\User Samples\Imported), causing them to appear in the User tab of the browser. They are not, however, copied to the Sonar project folder. You will need to do this manually when it's time to archive a project, or your samples will not be archived. Before opening an archived project, simply copy the relevant loops from the archive's User folder (or whatever you chose to name it) to Beatscape's User folder. If you observe the original folder hierarchy exactly, Beatscape will never know they were gone. You can select Browse User Data... from the File menu to get to the user samples quickly.

Once you start creating your own loops for use in Beatscape, you'll find that the User folder gets cluttered quickly. In Windows Explorer, create subfolders within the User folder to organize your loops by tempo and style (see Fig. 3). The Beatscape browser sorts alphabetically without distinguishing between files and folders, so you'll probably want to start your folder names with numbers (for example, 01_Boogaloo102). Starting your folder names with an underscore, which works fine in Explorer, does not help in Beatscape.

Once you have thus reorganized your files, Beatscape will no longer be able to find them. Using the file name displayed on the pad as a guide, you can drag the original file back to its pad to relink them. All pad settings, including effects and step editor patterns, will be retained.

Beatscape can import files directly from Sonar audio tracks, but if you try to import an edited clip, it will import the entire unedited source file. Select the clip and use Edit→Bounce to Clip(s) to make a new file out of the clip. (Be sure your Render bit depth under Options→Global→Audio Data is set to 24.) Name the clip (under Clip Properties) so it will be easily identifiable in Beatscape's User folder, then drag it to a pad. Press Ctrl + Z twice to undo the naming and bouncing. Because Undo doesn't affect anything in Beatscape, the file import and pad assignment remain while the

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track edits are rolled back. Should you want to import a phrase from a larger clip without leaving the clip chopped up, you can select the phrase, choose Split at Selection, bounce, name, drag, and then undo three times to restore the source clip.

I don't generally recycle Beatscape configurations, so I wasn't originally impressed with the idea of saving programs. However, having a program archived along with all of your samples allows you to restore your Beatscape configuration quickly and accurately in the event of a corrupted project file.

Although Beatscape is a great tool for tempo matching complementary loops, it does not currently conform one groove to another—although that would be a great addition. To get around this, use AudioSnap to conform your grooves first, and then import them into Beatscape. To keep things tidy, you might prefer to do this in a separate project dedicated to beat harvesting. Once the samples are in the User folder, they're available to any other project.

Ch-Ch-Changes

The range of the Step Editor's grid is so wide for such a small area that it is often misaligned with the loop's rhythm. As a result, it's not very useful for pan, volume, and pitch changes. (The Step Edit menu has an option to snap the steps to incremental chunks, which can help make this feel more controllable.) This problem notwithstanding, the Step Editor is handy for making relatively smooth changes in cutoff and resonance. In the Step Edit menu, choose No Snap for smoother parameter resolution, then draw the shape you think you want. Listen and redraw until you get the sound you're after. The only drawing technique that's really useful is holding Shift as you draw, which enables you to create a straight line. Try using Mirror Step Levels to make the second half of the loop reflect (literally) the values you drew in the first half.

The Step Editor's filter is a 2-pole resonant lowpass filter, fine for basic timbral tweaks. It becomes more interesting when you give it beefy overtones to sculpt. Four of Beatscape's effects—FM, AM, and the two distortion effects—are especially useful at creating harmonics to chisel. (FM and AM were added as part of the 1.0.1 update.) Put FM and AM on subsequent effects slots of a kick drum and crank up the wet mix and octaves, and you have a completely different beast. Automate a bandpass filter on the third slot or sequence the Step Editor's filter to shape the timbre rhythmically.

Beatscape's outer simplicity can be deceptive: it's easy to get started, but when you dig around, you find a deep tool set. Whether for remixing, deconstructing samples, crafting beats, or designing sounds, it brings a lot to the table. EM

Brian Smithers plays woodwinds, arranges, conducts, and records in sunny Florida. He is department chair of workstations at Full Sail University.

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Locomotion

Spice up your pads with multichannel effects. | By Jim Aikin

The humble synth pad is designed to be heard without being consciously noticed. It fills in the background in the mix, adding warmth and spaciousness while staying out of the way of the more interesting foreground parts. But rules are meant to be broken. If you would like to make your next pad track worth listening to but still have it be relatively unobtrusive, try splitting it apart and processing it through three different auxiliary mixer channels at once.

To illustrate this process, I will use Steinberg Cubase 4. You can accomplish much the same type of effect with almost any digital audio workstation, though the details will vary.

Lay It Down

A pad track is not usually the first thing recorded into a new project, so open up a project you're already working on and add a pad if the song doesn't have one already. Cubase's built-in Embracer synth (see Fig. 1) is ideal for this, but almost any synth will work. The mixer patch you're going to create will work best if you select a preset that has a fairly wide range of frequencies, such as Embracer's The Abyss.

Even a vanilla pad sound in a virtual analog synth will work well, because you're going to add interest to the tone at a later stage. Use three sawtooth oscillators slightly detuned, leave the filter open wide, and add medium-length attack and release times to the amplitude envelope. The sustain level should be close to 100 percent.

Create three FX Channels from the Project→Add Track submenu (see "Step-by-Step Instructions"). Choose a narrow-band graphic EQ, such as Cubase's built-in GEQ-30, for the first effect in each FX Channel. The effect you choose in the dialog box will appear as the first insert in the new channel strip in the Mixer window.

Open the Mixer window, and click on the Show All Sends icon in the left column. In the channel strip for the pad soft synth, select each of your new FX Channels as a send. Switch them on and move the level slider for each—maybe not all the way to the right, but somewhere past the middle. (Cubase doesn't

STEP-BY-STEP INSTRUCTIONS

Step 1: Choose a pad-type patch for a soft synth and record some sustained chords.

Step 2: Create three send channels. Choose a graphic EQ as the first insert effect for each.

Step 3: Assign the first three sends from the pad channel to the three send channels, switch on the sends, and raise each to a suitable level. Switch the pad channel's main output off.

show the exact values for these sliders, so just set them so that they're all at about the same level.) Next, switch the main output for the pad channel to No Bus. At this point, the pad will be heard only through the FX Channels, but the pad-channel fader will still control the overall level of the pad.

Channel Madness

Open up each of the graphic EQ plug-ins in turn, and edit its response curve. You're going to use the EQs as frequency gates so that each FX Channel will be processing and outputting a different set of frequencies. The easiest way to do this is to pass the low frequencies through the first channel, the mids through the second, and the highs through the third, but you may find that more-complex comb-type settings work better, depending on your source material.

Pan one of the FX Channels hard left and another hard right. Leave the third panned center. Wide panning on closely related sounds creates the impression of a single sound that has great breadth.

Insert a Cubase Step Filter in each FX Channel, and edit the patterns so that they're different. You may want to set the Sync parameter of the Step Filters so that the center channel syncs to eighth notes while the left and right channels sync to 16ths. This will put more activity at the outer edges of the pad, whereas the middle of the sound will remain stabler, providing an anchor.

Edit the patterns while the sequencer is running in loop mode. By clicking on the little boxes almost at random, you should be able to come up with an interesting rhythm. If you need more animation, add a mono or ping-pong delay (synced to eighths or quarters) to one or more of the FX Channels. This will cause the peaks in the Step Filter patterns to bounce around.

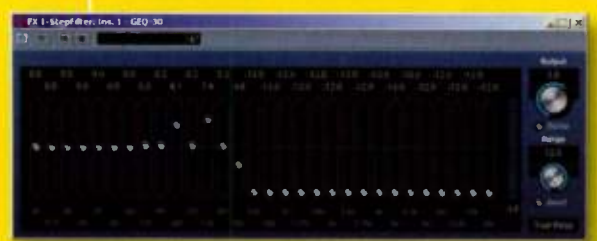
You can redefine or expand this mixer patch in many ways. You might try replacing the Step Filters with phasers, for instance, and set each phaser's LFO to a different sweep rate. This will produce a much richer phasing effect than a single phaser by itself. If your effects arsenal includes a dynamics processor with a sidechain input, you can gate the FX Channels from various drums in your percussion loop. Automating the panning of the FX Channels, or their input EQ, is also worth trying.

ONLINE BONUS MATERIAL

With this type of effect, the danger is that the pad will become too interesting. That's why in my example I've used a riff with no chord changes (see **Web Clip 1**). In the absence of harmonic movement, the pad won't jump out and rip the song's face off. em

FIG. 1: Cubase 4's Embracer synth is optimized for producing rich pads.

Jim Aikin composes and records in his home studio and writes about music technology for various magazines. You can visit him online at musicwords.net.



Step 4: Create frequency gates with the graphic EQs so that each send channel processes different frequencies from the pad.

Step 5: Insert a Step Filter as the second insert in each of the send channels, and edit the patterns.

Step 6: Add delay to taste.

FIG. 1: Use Omnisphere's Granular sample processor to add motion and harmonic interest to vocal presets.

Steam Powered

Get creative with Spectrasonics Omnisphere's synthesis engine. | By Len Sasso

With Spectrasonics Omnisphere's extensive library of Multis and patches, it's easy to get complacent and ignore the powerful Steam engine under the hood. In addition to clever takes on frequency and ring modulation, waveshaping, and voice multiplication, you get a host of modulators and a robust modulation matrix. Here are a couple of examples of how to add some steam to your patches.

Voices Adrift

Start with a new instance of Omnisphere or clear the Multi in an existing instance. That leaves you with the default patch, in which only Layer A is active. Select the Edit tab, display Layer A, select Sample mode, and load the sample Boys Choir Ah-Eh-Ee-Oo from the Human Voices category in the Sample Browser. Play a sustained note, and you'll hear the boys choir cycle through the four phonemes indicated in the name.

Activate granular synthesis under Layer A's Mult tab to add some motion and harmonic interest. With the Grain Depth slider at its default (full left), you'll hear a series of grains of varying lengths. Increase the slider, and you'll get more grains, which overlap and fill the gaps. Higher values take more CPU, and settings in the first third of the slider's range usually work well. Also increase the Intensity slider to vary the grain spacing.

Increase the Pitch Grains slider, and some of the grains will jump in pitch by the amount set with the Interval slider (12 semitones by default). The choice of interval depends on context, but five semitones is a fairly neutral choice that avoids wide jumps. The buttons in the middle of the two columns of sliders set the shift direction, and the bottom button gives the most variety, allowing random shifts in both directions. Use the Gliding and Smoothing sliders to smooth pitch and volume transitions. Use the Spread slider to distribute grains across the stereo field (see Fig. 1).

A quick way to expand on this patch is to copy Layer A to Layer B and then choose a different vocal sample. For easy auditioning, right-click on the Mix A slider and select MIDI CC Learn. Next, assign it to a convenient controller, and assign the same controller to Mix B using MIDI CC Learn Inverted. You can then change samples for Layer B in the browser while adjusting the mix.

Once your Layers are set up, try transposing one by a fourth, a fifth, or an octave. Even though this patch is fairly thick, it works well with chords (see **Web Clips 1 and 2**).

Organic Alternatives

The most obvious way to build an organlike sound is to use the Harmonia processor on the Mult tab, and the factory preset Organ Sines 1 does just that. But Omnisphere's ring modulator, because it is polyphonic and offers keyboard tracking, provides a quick, flexible, and less CPU-intensive alternative.

Starting with the default patch, activate both Layers in Synth mode and set their waveforms to Sine. Activate each Layer's ring modulator with a sine-wave waveform and set the Layer A and B Frequency sliders to 0.333 and 0.750, respectively. (All multiples of 0.250 and 0.333 produce musically useful ring-modulator sidebands.) The Depth sliders control the level of the sidebands relative to the fundamental: full left for no ring modulation and full right for no fundamental. These sliders make good MIDI CC targets, letting you dial in the fundamental and sidebands.

Hard sync is a nice addition to this patch; its sound is still organlike but has more bite. Try mapping MIDI CCs to both Layers' Hard Sync sliders and moving Layer A's Shape slider full right. Pan the Layers slightly apart. Click the Link button on and turn the Analog and Phase knobs up as well, then click the Link button off. (Using the Link button is a quick way to make the same adjustment to settings on both Layers, which is also handy for envelope settings.)

You can use host automation along with MIDI control, but unlike with most plug-ins, you need to set up automation targets manually. Omnisphere presents automation slots (how many depends on the plug-in host), and the first eight are mapped to the eight Multi part levels. To automate any other knob or slider, right-click on it and choose Enable Host Automation from the contextual menu. The knob or slider will be assigned to the next available slot and accessible in your host's automation setup (see **Web Clip 3**). EM

Len Sasso is an associate editor of EM. For an earful, visit his Web site at swiftkick.com.

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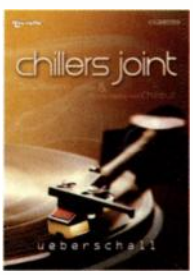

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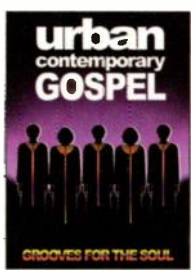

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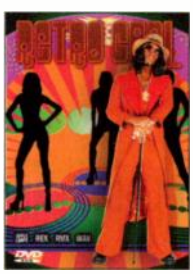

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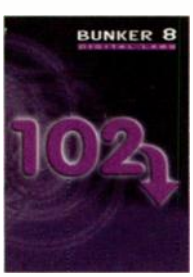

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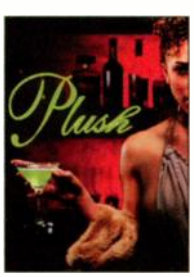

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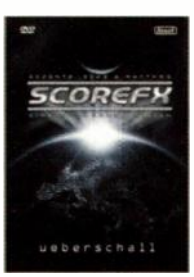

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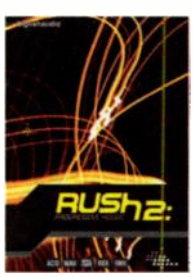

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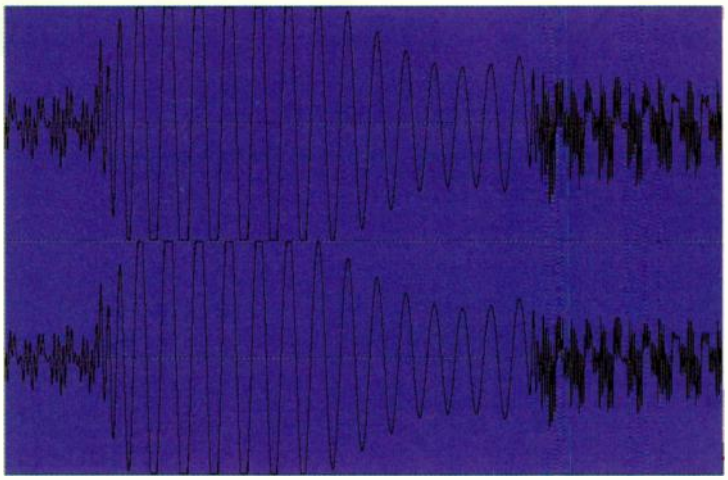

FIG. 1: Digital clipping is as obvious to the eye as it is to the ear. The characteristic flat-topped waveform usually means that the signal coming from one device overloaded the input stage of the next device in the chain. Repairing the clipped peak requires specialized software.

Audio Poltergeists

How to exorcise an assortment of sonic spooks. | By Brian Smithers

The venerated sage Murphy declared that anything that can go wrong will, and tradition holds that this will occur at the most inopportune moment. Smithers's Corollary to Murphy's Law asserts that the only defense we have is to attempt to understand every type of problem that can be anticipated and have a plan to prevent it and a contingency plan for when it happens anyway.

With that in mind, here's a laundry list of pesky poltergeists ready to ruin your audio adventures. I won't discuss distortion problems (except for digital clipping) and A/D conversion issues because those were discussed in recent "Square One" columns (see "Sonic Mayhem" in the August 2007 issue and "Preaching to the Converted" in the June 2007 issue; both are available at emusician.com).

One Foot in the Ground

For electronic musicians and audio engineers, squeaking chalk is nowhere near as annoying as 60 Hz hum. Two common causes of this pesky noise are ground loops and induced hum.

Ground loops occur when electricity has more than one path to ground, creating noise in the signal path of the equipment. Because AC power is delivered as a 60 Hz sine wave in the United States (50 Hz in Europe), the noise is heard as a 60 Hz tone. The best fix is to avoid or remedy the ground loop, which is easier said than done because ground loops can form in a number of ways. Use nylon hardware to mount metal equipment cases to metal racks, and avoid metal-to-metal contact between pieces of gear. You can "lift" the ground by disconnecting the shield at one end of an audio cable or by using the ground lift on a DI box, but this is not always the best approach, and you should never lift the ground on a power cord.

Induced hum is most often caused when audio and power cables run alongside each other. The magnetic field surrounding a power cable induces current into the audio cable. Although balanced audio cables are better at resisting this type of interference, the best solution is to keep audio and power cables apart; if they must touch, cross them at a right angle.

Hum can also be introduced by air-conditioning units, refrigerators, and lighting fixtures (especially lights with dimmers) that are on the same circuit or ground plane as your studio. A good power conditioner with filtering can manage many such problems, but this is much like fixing bad tracks in the mix—you're better off avoiding the problem to begin with by putting your studio on a separate AC circuit with an independent, true-earth ground. (For an in-depth explanation of grounding issues for audio gear, including true-earth grounding, see "On Solid Ground," originally published in two parts in the September and October

> The solution is to *turn it down.*

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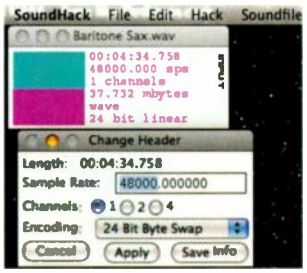

FIG. 2: SoundHack is a venerable freeware program that offers many useful, if sometimes obscure, functions for operating on audio files.

1992 issues of EM and available at emusician.com.)

Sometimes audible hum is caused by the inherent noise of a component, made louder by poor gain staging. When several devices are connected in series, such as a microphone into a preamp into a compressor into your DAW, it's essential to optimize the signal-to-noise ratio at each step. If the preamp is turned way down, the makeup gain on the compressor will have to be cranked up to compensate, which amplifies the inherent noise of the preamp along with the signal. It's best to set the preamp loud enough to maximize its signal-to-noise ratio so the compressor doesn't boost the noise floor.

Binary Bugaboos

The most obvious problem that crops up in digital audio is rapidly becoming a deliberate effect, even a trademark sonic signature for certain engineers. I'm referring, of course, to clipping, the flat-topped waveform that occurs when the signal level exceeds the system's headroom, most commonly at the input stage (see **Fig. 1**).

If you overdrive an A/D converter, you will hear distortion ranging from clicks and pops to static to edgy harmonic distortion. Unlike analog circuits, which usually overdrive gradually and clip forgivingly, digital devices simply run out of numbers to describe an excessive input level, which sounds nasty. Clipping also occurs when you overdrive a DAW's mix bus or D/A converters.

The solution is to *turn it down*. Lower the preamp's gain; turn down your source tracks or master fader. Know your device's meters and respect what they tell you. If you still find yourself with a clipped waveform, a couple of fixes are available. I once salvaged a live brass quintet recording by carefully lowpass filtering a clipped phrase. Because the squared-off top of a clipped waveform resembles that of a square wave, it creates similar high-frequency components. Filtering the signal rounds off those corners much like the smoothing (antialiasing) filter of a D/A converter does to a stair-stepped PCM output signal. More-sophisticated repair is available from audio-restoration software, such as the declipper found in iZotope's RX suite. But it's better to avoid the problem to begin with.

Time to Worry

Several types of timing problems can be hazardous to digital audio. The most obvious timing problem is a file with the wrong sampling rate. There are various ways this can happen, most of which boil down to somebody or something telling the DAW one thing and the master clock another. In this way, a file gets recorded at an actual speed of, say, 48 kHz when its file header identifies it as a 44.1 kHz file. Import it into another session—or play the original session back with the master clock set correctly—and it will sound almost a whole step lower than it should. The easiest fix is to edit the file header to reflect the proper sampling rate, using software such as Tom Erbe's SoundHack (soundhack.com; see **Fig. 2**). In some DAWs, you can accomplish the same thing by importing the file into a 48 kHz session without sampling-rate conversion, then importing it back into the 44.1 kHz session and letting the DAW convert the sampling rate.

Jitter is the inherent irregularity of a clock signal, and it causes converters to sample earlier or later than they should. Jitter in A/D conversion captures that distortion to the file, whereas jitter in D/A conversion has no permanent effect on the file or sessions being played back. Use high-quality converters, and use a stable word-clock source when synchronizing multiple digital devices. If you have no master clock and are simply daisy-chaining the word-clock signal, use your A/D converter as the master clock when recording and your D/A converter as the master when mixing or printing a mix.

Jitter between digital devices is irrelevant as long as all devices follow the same clock. If there is any confusion about the clock chain, however, samples will be dropped or doubled as clocks drift apart. Use the correct cables, terminate the end of the chain, and learn your gear's temperamental side. When rational analysis fails, don't be afraid to move past what *should* work and experiment with different chain orders.

Ex Files

Applying lossy data compression, such as MP3, inescapably reduces the audio quality of a sound file, and converting the file to an uncompressed format such as WAV does not undo the damage. A less obvious artifact of data reduction is a tendency for a waveform to drift out of sync compared with the original. Trying to remarry a soundtrack to a video when each has been compressed can be frustrating. Careful editing and judicious use of time compression and expansion can save the day. It's better to use the uncompressed originals if they are available.

> Ground loops occur when electricity has more than one path to ground.

Sampling-rate conversion is sometimes a necessary evil, but it should be handled with care. Always use your DAW's highest-quality conversion algorithm. When possible, don't convert between multiples of 48 kHz and multiples of 44.1 kHz, as the required math is complex. (For an explanation of the math involved in converting between 44.1 and 48 kHz, see en.wikipedia.org/wiki/Sample_rate_conversion.) I may say "24/96" for simplicity, but I actually record CD projects at 88.2 kHz. If you can, leave the sampling-rate conversion to the mastering engineer.

There is, however, no sonic difference between the various PCM formats. You can convert from WAV to AIFF to SDII and back to WAV and never alter the sound.

Keeping Murphy's Law at bay means using the left side of your brain to manage your right-brain activities. Plan ahead for your creative sessions so you can face the music with as few distractions as the law allows. EM

Brian Smithers is department chair of workstations at Full Sail University and the author of Mixing in Pro Tools: Skill Pack *(Cengage Learning, 2006).*

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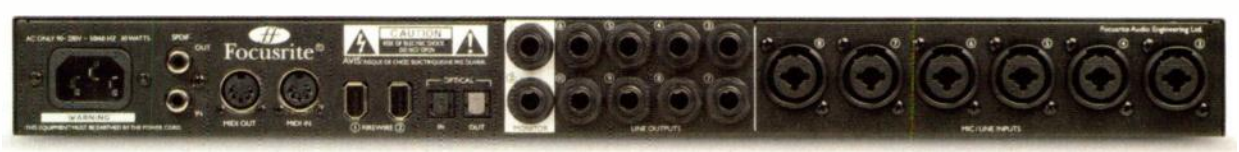

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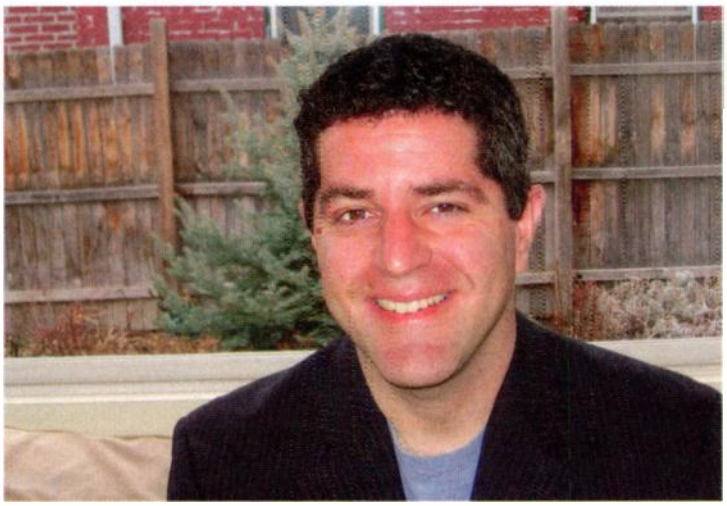

COURTESY STEVE KNOPPER

FIG. 1: Author Steve Knopper is a longtime music journalist whose work has appeared in such publications as *Rolling Stone*, *Spin*, and *Billboard*.

Q&A: Steve Knopper

Chronicling the slow death of the major record labels.

One of the most stunning declines in recent years has been that of the major record labels. From their once-lofty position as powerful controllers of the musical world, they've become stripped-down shells of their former selves, another medium turned upside down by the Internet. But did things have to happen this way? Not necessarily, says Steve Knopper (see Fig. 1), author of the new book *Appetite for Self-Destruction* (Free Press, 2009). The book (see Fig. 2) chronicles the labels' fall and provides context by examining what led up to their undoing, starting with the introduction of the CD.

By Mike Levine

The major labels didn't exactly embrace the CD format when it was first proposed, right?

Yes. There was a lot of resistance at first, because record-label people felt like they'd been burned by a lot of different technologies in those years. They struggled with formats. The LP was successful, but the 8-track kind of came and went. There were all different kinds of formats throughout the '70s and '80s, and then all of a sudden here were these foreign guys from the Netherlands and Japan—Philips and Sony—coming into their offices saying, "This is the future." And old-school record guys said, "What? Are you kidding me?"

How did this resistance manifest itself?

It kind of ranged from clueless idiocy all the way to just "We're not doing this, forget you. We're not going to let Sony and Philips come in and take our business." Actually, there was a major meeting—kind of an infamous one—in Athens [Greece]. It was a *Billboard* meeting when Sony and Philips tried to introduce the CD, and the people who were opposed to it, including Jerry Moss from A&M, literally screamed. They were shouting. I talked to Jan Timmer, who was then the head of PolyGram [which was owned by Philips], and he said that if they'd had rotten tomatoes, they'd have definitely thrown them.

But eventually, the label people realized that they could actually make a lot of money from CDs.

Yes, that's it. Money talks.

And starting in the mid-'80s, it talked a lot. You point out that the labels entered a boom phase of music sales, fueled initially by Michael Jackson's *Thriller* album (Epic, 1982). Then toward the end of the '90s came the teen-pop era. Do you agree with the observers who postulate that the questionable quality of the pop music from that time contributed to the labels' later problems?

My theory is that those acts were actually good. I mean, Britney Spears released some really excellent pop singles. I'm saying this with a straight face. But the problem—and this is where my thesis comes in—is that these were singles acts. On their CDs, they put probably three or four of these great pop singles that I'm talking about, and the rest was filler. And [the record companies] sold them for $18 a pop. At the

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> If they'd had rotten tomatoes, they'd have definitely thrown them.

time they came out, Napster had just hit, and people were still in the habit of buying CDs. And if you wanted to get the two or three good Britney songs or the one Third Eye Blind hit or Chumbawamba's hit, you had to buy the whole CD. In my book, I have these chapters called "Big Music's Big Mistakes." I said that one of the biggest mistakes that the music industry made was going completely in the [direction] of "one size fits all," [or] "We're only going to sell one $18 product, whether it's good or not."

So when Napster came along . . .

When Napster came along—in addition to there being piracy and theft, which should not be discounted—the consumers were ready for it. They were angry because they didn't want to buy the Chumbawamba song for $18. That's not a good deal.

The labels had some chances—during the period after they'd sued Napster, but before the case was concluded—to settle. What would such a settlement have meant, do you think?

I think it's not an unrealistic fantasy to say that had they made a deal at the right time with Napster, they might have avoided some of this pain completely. And that they'd at least be on the road to much bigger margins in the future. But I don't see it now.

Why didn't it happen?

I think there was arrogance [on the part of] the labels; they liked the profits they were making at the time and they just could not see past them. And they also felt (I think legitimately) that this was theft—"Why should we let a bunch of people stealing stuff completely destroy our business and take it over?"

But couldn't they see that the technology would have been useful to them if they were able to control it?

Some people saw that. A minimum of people, a minority of people.

What could have evolved had the labels made a deal with Napster?

The most common model that I've seen that people proposed would have been sort of a monthly paid-subscription service. On one level, they could have built their own iTunes using the Napster technology. And it could have been even more flexible. It could have been an iTunes that mixes in Rhapsody. And you could have charged people different price levels for this. My idea is that they [the labels] could have absorbed the Napster user base. Probably some of the users would have fled when it was not free anymore, but not all of them.

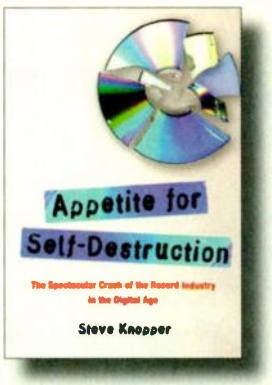

FIG. 2: This impressively researched book begins its account in the 1970s and goes up to the present in an attempt to pinpoint the reasons for the record industry's current malaise.

What would have stopped another piracy site from coming online if Napster had made a deal with the labels and gone legit?

The answer is that nothing would have stopped them. But Napster could have conceivably been such a better service that people would have used that instead of going to the renegade services.

How does the Apple Store fit into the picture?

The Apple Store, obviously, came along after Napster was killed in court. So Napster was gone by that point, and it was 2002. And the basic way that the Apple thing came about was that Steve Jobs called some people in the record industry and said something like, "You guys are idiots. You're not doing it right. You've stamped down on digital music and Internet music at every turn, and my customers don't want that. My customers, Apple's customers, want something that's easy to use for consumers." And out of that was born a lot of simple, commonsense solutions, like the 99-cent-per-song price and the pay-by-the-single model as opposed to a subscription. All of that came from Steve Jobs.

Where do you think the labels stand today?

The days of the incredible profits of the '80s and '90s all the way through the teen-pop era are gone. That ship has sailed. Eventually they're going to bottom out, and then they'll bounce back a little bit. But they'll be in a reduced form.

How do you think this new environment impacts musicians?

The Radioheads of the world, the Wilcos, the Ryan Adamses—those guys are fine. Basically what we're seeing now, in terms of money, is a sea change, a shift, from selling records to touring. The way you make your money now is off tours. So the superstars and the midlevel bands who've already made their reputation off CDs and the radio are fine. The younger bands, if they want to stay small, they're fine, too. They have a lot of new tools, as you guys write about all the time—MySpace and all of that. The thing that I think is going to be the hardest—that's still being worked out and may never be the same again—is the idea of the young band trying to become the huge hit band. There are still some that do it on the radio, and radio is still the most efficient way of doing that. But it's harder and harder to get access to the radio. So can you use MySpace to become a star? Well, yeah, some have done it, like Secondhand Serenade or Tila Tequila.

Or Ingrid Michaelson.

Right. There are some big Facebook and MySpace bands, but so far we're not seeing in those outlets evidence that they're turning into the next FM radio. So the jury is still out. Right now, as it exists in this moment today, the only way to take that step from being kind of a small local act to being a huge act, really reliably, is to get a major label and have them get you on the radio. That's still the reliable way. And so far there hasn't been anything that's reliably moved into the vacuum. That may be coming.

Mike Levine is EM's executive editor and senior media producer.

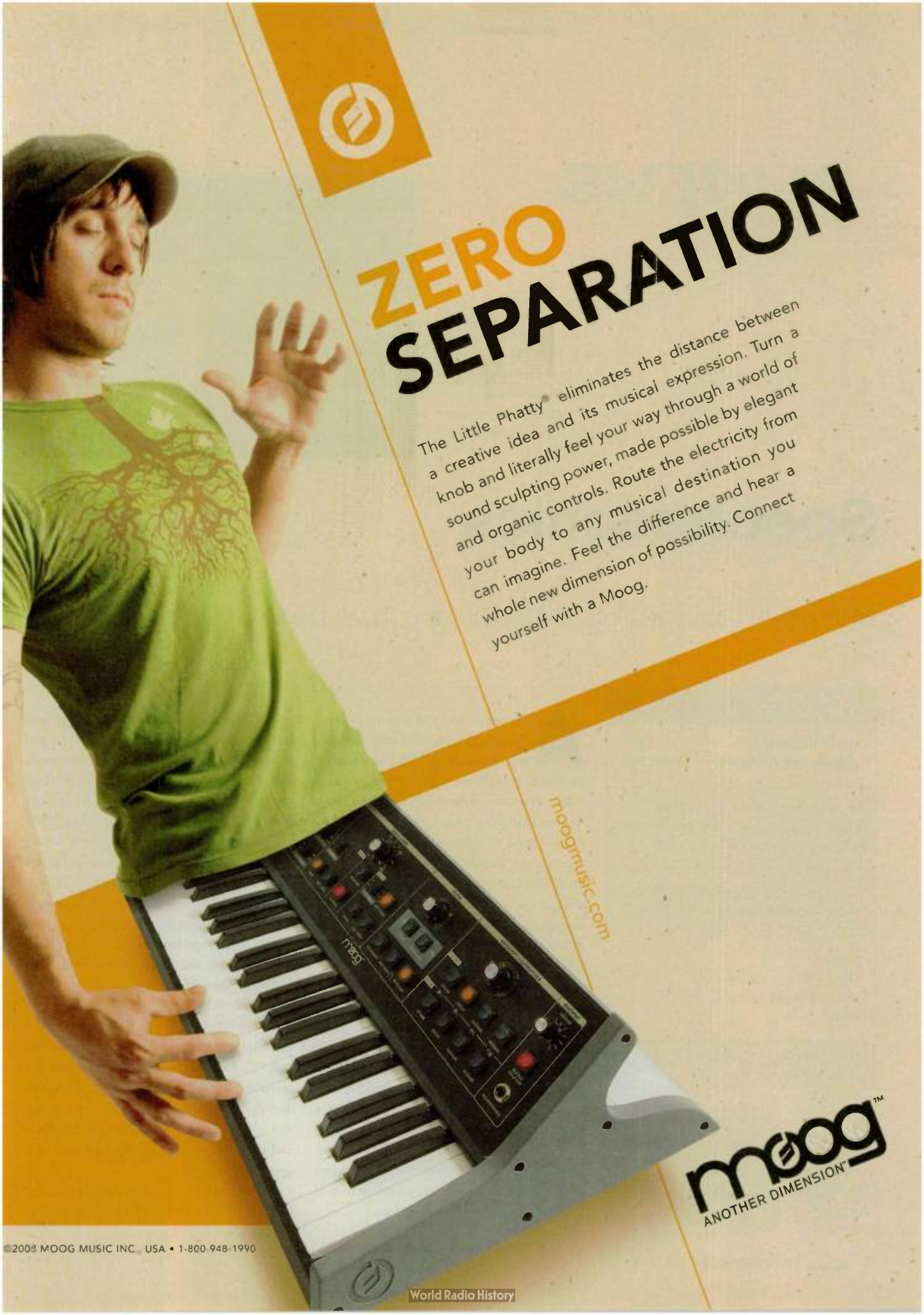

FIG. 1: Despite its functional complexity, Omnisphere maintains an intuitive user interface throughout. Clicking on the magnifying-glass icons opens additional pages for deeper editing.

Spectrasonics

Omnisphere 1.0.2 (Mac/Win)

Believe it: this synth is everything you've heard.

PRODUCT SUMMARY

synthesizer plug-in	**$499**
upgrade from Atmosphere	**$149–$249**

PROS: Extreme flexibility. Deep synthesis capabilities. Tons of terrific source material and patches. Reasonably intuitive.

CONS: No standalone version. Browser hides controls. Some functions are resource intensive.

FEATURES	1	2	3	4	5
EASE OF USE	1	2	3	4	5
QUALITY OF SOUNDS	1	2	3	4	5
VALUE	1	2	3	4	5

Spectrasonics
spectrasonics.net

>> In our reviews, prices are MAP or street unless otherwise noted.

ONLINE BONUS MATERIAL

GUIDE TO EM METERS

5 Amazing; as good as it gets with current technology
4 Clearly above average; very desirable
3 Good; meets expectations
2 Somewhat disappointing but usable
1 Unacceptably flawed

By Geary Yelton

A few years after I had begun using synthesizers, I wondered what the ultimate synth might look like. I wanted abundant polyphony, complex oscillators, a ludicrous number of filter types and modulation routings, and infinite patch memory. Eventually the list grew to include user-programmable arpeggiators, studio-quality effects, and a variety of synthesis types. When soft synths came along, it occurred to me that what I had imagined might someday become possible. And now that Spectrasonics has launched Omnisphere, that day has finally come.

Omnisphere is the brainchild of Eric Persing, a man who has contributed as much as anyone to the state of electronic sound design. Persing first attracted attention as a sound designer for Roland, eventually founding his own company—Spectrasonics—and developing sample libraries that have helped shape the direction of popular musical genres, from rock to rap and from movie soundtracks to electronic breakbeat. Indeed, many of Omnisphere's sounds originated in earlier collections such as *Distorted Reality* and *Heart of Africa*.

In 2003 Persing's company launched three software instruments—Trilogy, Stylus, and Atmosphere—incorporating a customized version of French developer UVI's sample-playback engine. Atmosphere was an especially versatile synthesizer based on a 3.7 GB sound library, with samples taken from the entire lexicon of vintage hardware synths, from the Minimoog to the Matrix-12. In September Spectrasonics discontinued Atmosphere and included all its content in Omnisphere, which in total features a 42 GB sample library—perhaps the largest of any dedicated soft synth, and many times larger than that of any hardware synth.

Welcome to My World

Omnisphere runs as a plug-in in AU, RTAS, and VST formats; a standalone version is not available. The software comes on six double-density DVDs. After installation, you authorize it with an online challenge and response and then download the latest updates from Spectrasonics' Web site.

I ran the AU version in Apple Logic Pro 8.0.2 on a dual 2.3 GHz Mac G5 with 4 GB of

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Higher Learning

Even a function as ubiquitous as MIDI Learn gets the deluxe treatment in Omnisphere. You can assign virtually any function to any MIDI CC message, Note, or Program Change, and you can automate those functions in your host program. You can save MIDI Learn templates and load them into any Patch, display an HTML report of all MIDI Learn assignments, and more. Not every control responds to modulation, but every knob, slider, and button does respond to external control sources and automation.

RAM running Mac OS X 10.4.12, and the VST version in Ableton Live 7.0.10 on a 2.3 GHz MacBook Pro with 2 GB running 10.5.5. I had to clear some space off my laptop's hard disk to make room, leaving me wishing I didn't need to install the entire 42 GB library of multisamples (called Soundsources). I could have installed them on an external disk if I'd wanted, however.

Steam Powered

At its core is a proprietary sound engine (developed in-house) called Steam (short for Spectrasonics Team). Despite its somewhat cutesy name, the Steam engine is an extremely well-designed framework for sound synthesis. If you're familiar with Stylus RMX's groove-focused SAGE engine, you'll have a head start finding your way around Omnisphere's graphical user interface.

A multitimbral setup (called a Multi) comprises as many as eight Parts. All of Omnisphere's settings are presented in the context of a Multi, whether you're working with all eight Parts or only one. Each Part contains a single Patch, and each Patch consists of either one or two Layers. Each Layer has its own oscillator, one or two filters, and envelope generators for filter and amplitude. The two Layers (which can be linked for simultaneous editing) share four modulation envelopes, six LFOs, and up to 24 modulation routings.

Omnisphere has numerous views you select by clicking on tabs and buttons, some of which allow you to zoom in on certain functions (see Fig. 1). The top of the screen displays the current Multi's name and buttons for switching between the eight Parts, a Multi mixer, and system preferences. A pop-up Utility menu lets you save and clear Multis and Patches, copy and paste Parts and Layers, and access MIDI Learn and online help; practically all that's absent is an undo function (which I frequently wished for).

> Omnisphere's oscillators are nothing short of amazing.

If a Part is selected, four buttons beneath the Patch name switch between four pages: Main, Edit, FX, and Arp. The Main page offers three views: Visualizer, Info, and Controls. The Main Controls page shows the most useful collection of real-time buttons, sliders, and displays for making quick changes. The Edit page (whose GUI resembles Atmosphere's at first glance) affords deeper access to oscillator, filter, and modulation parameters. A pair of tabs let you toggle between Edit pages for Layer A and Layer B.

Just Browsing

With so much content, a quick way to find exactly the sound you want is essential. Omnisphere has three browsers, one each for Multis, Patches, and Soundsources. When it's open, the browser window obscures most other sections; you'll need to close it to see what's behind (see Fig. 2). Because any plug-in is limited to a single-window interface, that's one reason a standalone version would be desirable.

You can categorize, organize, and locate a sound using criteria such as keyword, category, type, and even the first letter of its name. The browser can display information about the sound's author, keywords, and size, as well as playing suggestions and notes on how it was created. You can scroll though lists using your mouse or use MIDI Learn to control selection with MIDI CCs (Control Changes) or key-switching (see the sidebar "Higher Learning").

Not Your Average Oscillator

Omnisphere's oscillators are nothing short of amazing. Each Layer has one primary oscillator (along with less obvious oscillators I'll describe in a moment), which plays either Soundsources drawn from its Core Library or DSP-generated synthesizer waveforms. If you select a Soundsource, you can change the sample's start time, apply bit-crushing distortion, or alter the timbre by transposing the sample map without changing pitch.

For synth waveforms, you can choose SawSquare (Fat or Bright), Triangle, Sine, or Noise, with the current shape drawn in a display. SawSquare is continuously variable from sawtooth to pulse wave under the control of the Shape parameter. The Symmetry slider governs width; for traditional pulse-width modulation, just apply a mod source. The Analog knob introduces slight variations in pitch to make the DSP waveforms behave more like real analog waveforms, and the Phase knob affects the oscillator in one Layer relative to the other.

Omnisphere offers a unique approach to traditional oscillator sync; the Hard Sync slider accesses a hidden audio oscillator that slaves to the main oscillator. I had great fun modulating hard sync with the mod wheel, and I got all kinds of organ tones just by applying varying degrees of hard sync to a sine wave (see Web Clip 1).

Also hidden is the modulating oscillator for FM synthesis. Omnisphere's FM synthesis is not nearly as comprehensive as you'd find in a dedicated FM synth, but more akin to the FM capabilities of a good analog synth. Along with the ring modulator, Omnisphere's FM is most useful for generating clangorous sounds.

The oscillators sport some unusual parameters; for one thing, a pop-up menu lets you save, copy, and paste oscillator presets (you also get similar presets for LFOs, envelopes, effects, and other functions). A Wave Shaper section changes a waveform's spectra by introducing polyphonic distortion. You can insert waveshaping before or after the filter or amplifier if desired.

Much more interesting is the Oscillator Voice Multiplier, which has Unison, Granular, and Harmonia modes. Unlike traditional unison mode, Omnisphere's version works

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polyphonically, each note with up to eight unison voices out of phase, detuned, or octave shifted. Omnisphere's rather comprehensive granular synthesis applies only to samples, of course. I used it to create some truly bizarre variations on some of the more offbeat samples (see Web Clip 2).

Harmonia is a type of additive synthesis that blends in as many as four more single-oscillator voices per Layer. You control the level, detuning, and panning of each additional voice; for synth waveforms, you also control the symmetry, relative phase, and other parameters. You could spend an entire afternoon experimenting with Harmonia mode without exhausting its possibilities (see Web Clip 3). You can save your Harmonia settings as presets, and nearly 30 factory presets are included.

Omnisphere's synthesis capabilities go much deeper than I have space to cover in these pages. If you want to read about the filters, envelopes, effects, arpeggiator, and performance modes, it's essential that you visit emusician.com and read the **online bonus material** "More Building Blocks."

A Library Like No Other

To produce Omnisphere's Core Library, Spectrasonics went to great lengths (and, I'd guess, spared no expense) pursuing even the most outrageous ideas in its quest for unique sample content. The burning piano, for example, was legendary even before the plug-in was released, and it sounds much more useful than I expected.

Spectrasonics has managed to breathe real life into most of Omnisphere's Soundsources, and you're bound to find hundreds of sounds you won't find anywhere else. Ever wonder what it sounds like to bow a spinning bicycle wheel? How about tapping a lightbulb and recording the resonating filament? I can scarcely imagine all the sounds that must have been discarded to distill only the most usable source material.

Many Soundsources aren't even used in the Patch library; creating Patches from those ensures that your original Patches will be yours and yours alone. But the easiest way to produce new sounds is to open a Patch and simply swap out one Soundsource for another. If you enjoy exploring new sounds, you could easily spend entire days browsing Omnisphere's Patches; I know I did (see the **online bonus material** "Timbral Territory").

FIG. 2: One of three browsers, the Patch Browser makes quick work of finding the sound you need. To avoid the habit of choosing Patches near the beginning of the alphabet, you can shuffle or reverse their order.

Fun for the Whole Family

I was almost instantly impressed with Omnisphere's ease of use, especially considering the inherent complexity of such a sophisticated instrument. Balancing depth with accessibility must have been a considerable challenge for the user-interface design team. Its GUI makes it equally usable for both beginners and advanced synthesists.

In many ways, I consider Omnisphere the Photoshop of sound design. You can go very, very deep, but you can also create new and original sounds quite quickly without ever consulting the documentation. Speaking of which, the Utility menu opens the HTML-based Reference Guide. You can also access online support and download a dynamite collection of tutorial video clips. Some topics covered in the videos aren't mentioned in the current version of the Reference Guide, but Spectrasonics expects an expanded version to be available before you read this.

What Dreams May Come

This was a difficult review to write, mostly because Omnisphere pulled me in the moment I began investigating any of its features. I'd discover something it could do, and before I knew it an hour had passed. I could scarcely believe how easy it was to create cool new sounds from the materials it provides (see Web Clip 4).

With so much sample content, you might expect Omnisphere to be a virtual rompler; it isn't. If you need a gigantic raft of versatile orchestral instruments or drum kits, you'll want to look elsewhere, but what you do get is absolutely outstanding. Omnisphere offers the advantages of both sample playback and traditional synthesis, which you can easily combine in a 2-Layer Patch. Most of its focus is on electronic, often organic, sounds rather than traditional acoustic instruments, but that's what synthesizers are for, isn't it?

Omnisphere comes awfully close to fulfilling my vision of a dream synth, and it's already becoming an extension of my musical persona. True, its additive and FM capabilities won't replace instruments dedicated to those types of synthesis, and its lack of a standalone version is disappointing. (You could run a lean host such as Defective Records' VSTi Host or Brainspawn Forte, but it still wouldn't be the same as a free-standing soft synth.) It wasn't difficult to push my computer's CPU to its limits, and at least once I encountered a redraw bug.

Is it worth half a grand? Undoubtedly, and it's a bargain at that. I'm telling everyone I know: do not walk, run to your computer and order Omnisphere. Whether you want a huge, ready-made selection of first-class synth sounds or you want to build your own timbres from the ground up, I promise you won't regret it.

Senior Editor Geary Yelton's 41-year fascination with synthesizers (since the release of Wendy Carlos's Switched-On Bach*) continues unabated.*

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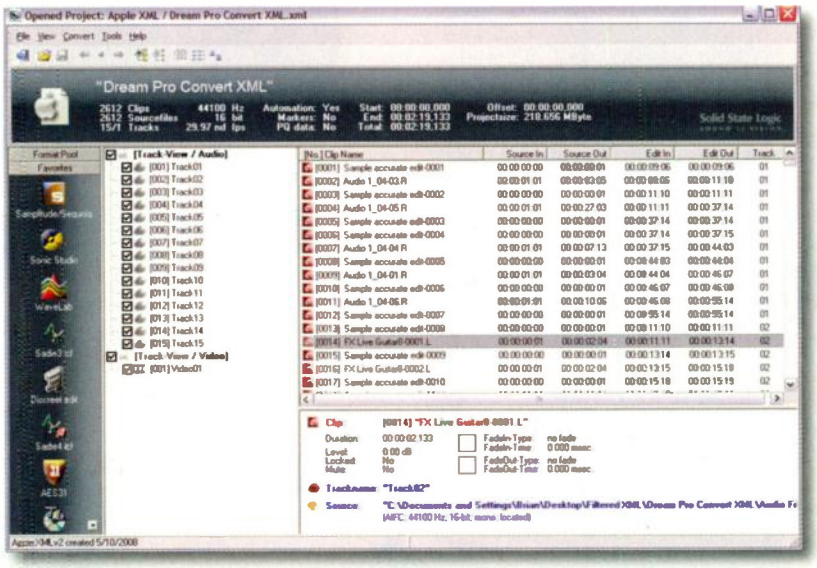


FIG. 1: Pro-Convert's main screen shows detailed information about the current project and its assets.

Solid State Logic

Pro-Convert 5 (Win)

Session interoperability made easier.

By Brian Smithers

PRODUCT SUMMARY

session-interchange utility	$699

PROS: Reads and writes many different project formats. Translates numerous session parameters. Useful audio-file batch-conversion tool. Recognizes Pro Tools alternate playlists.

CONS: Windows only. Still requires most applications to import or export third-party formats such as OMF, XML, and AES31. Doesn't support multichannel files or tracks. Doesn't support Pro Tools tick-based tracks.

	1	2	3	4	5
FEATURES			■		
EASE OF USE				■	
DOCUMENTATION				■	
VALUE			■		

Solid State Logic
solidstatelogic.com

ONLINE BONUS MATERIAL

Moving multitrack recording projects between software applications has always been a difficult undertaking, to say the least. OMF (Open Media Framework) and AAF (Advanced Authoring Format) were created to provide standard formats for session interchange, but they have met with limited success. Now Solid State Logic (SSL), maker of venerable large-format consoles and longtime champion of analog production tools, has stepped into the fray with Pro-Convert, its DAW project conversion tool.

Pro-Convert grew from an application called EDL Convert after SSL purchased its maker, Cui Bono Soft. It is ironic that a program devoted to session interchange would be Windows only; Pro-Convert supports any 32-bit version of Windows since Windows 98, but not Mac OS X. Although I successfully used the application to exchange sessions between Mac- and PC-based DAWs, a Mac-based studio would need to keep a PC around or install Windows on an Intel Mac just to run it.

Pro-Convert uses a USB dongle from CodeMeter called a CM-Stick. For Digidesign Pro Tools and Steinberg Nuendo users who already use an iLok or Syncrosoft dongle, this means one more item hanging from your USB hub. The Pro-Convert and CodeMeter software installed smoothly, and I immediately updated to the most current version (5.0.774). I tested Pro-Convert on a Dell Pentium 4 desktop and a Toshiba Centrino notebook, and the software ran without a hitch throughout the review period.

Tower of Babel

The list of applications Pro-Convert can handle is quite long and includes most of the popular DAWs (Pro Tools, Apple Logic, and Steinberg Cubase), some important but less common ones (SAWStudio and Sonic Studio), and some of the various existing standards (OMF, AES31, and OpenTL). For a complete and current list of supported formats, check solid-state-logic.com/support/Pro-Convert/format_overview.asp. On that page, you'll also find a chart of parameters (volume, pan, mute, and so on) that the program can translate to or from a given format.

FIG. 2: Pro-Convert's Audio Tool offers batch conversion of file format, bit depth, sampling rate, and channel interleave.

Note, however, that in most cases Pro-Convert does not read an application's native file format (Pro Tools is a notable exception). Instead, it reads one of the various session-interchange standards, trying very hard to cater to the customizations manufacturers can't seem to resist adding. Why, for example, is there a difference between Steinberg's XML files and Apple's XML files, and which company is correct? The idea is that if you have Pro-Convert, you needn't care.

Sophisticated software almost by definition is rarely idiotproof, and it took a couple of trips around the block for me to sort out Pro-Convert's inner workings. Luckily, SSL offers a succinct and helpful tutorial in the manual and on its Web site. I have to give kudos to the company for its thorough manual and Web-based FAQ. Once I got the basics down, I was able to convert projects easily and relatively quickly. Pro-Convert didn't object to converting sessions on my network drive, but that slowed it down considerably.

When moving a project from one DAW to another, the first step is to export it from the original DAW to a format that Pro-Convert supports. You then open the project in Pro-Convert, which lists the project's tracks and assets along with detailed information about the project and individual audio clips (see Fig. 1). Choose a target format, and Pro-Convert will prompt you to define how it should handle all the little things that don't translate directly from one format to another, such as clip-based gain, fades, automation, and so forth. Pro-Convert will prompt you to find any files that it can't easily locate. Files can be copied and optionally converted to different resolutions and file types.

Pro-Convert also includes a dedicated batch converter called Audio Tool (see Fig. 2). You can use it to convert a folder or disc full of samples or loops to a different file format or to render a project's files you originally saved as 32-bit floating-point files to 24-bit files so they can be read by another DAW. Audio Tool is a nice addition to Pro-Convert's bag of tricks.

Lost in Translation

Pro-Convert supports so many applications that it simply wasn't possible to test them all. I moved several projects back and forth between Pro Tools M-Powered and LE 7.3.1, Logic Pro 8, and Cakewalk Sonar 7. For comparison, I also moved OMF versions of the same project between applications.

Saving an OMF file in Pro Tools or Sonar and converting it to an Apple XML file didn't appear to improve the project's translation. In some cases, fade types were jumbled in XML when they weren't in OMF (Pro-Convert's online FAQ suggests that this problem was caused by a bug in Logic's XML implementation).

However, Pro-Convert can read Pro Tools alternate playlists and place them in new muted tracks at the bottom of the session. Doing that with an OMF transfer would require creating those tracks in Pro Tools manually before saving the OMF.

Pro-Convert does not support multichannel files. It will split interleaved stereo files into multimono files, but it will not recognize surround tracks or files at all. The utility doesn't support MIDI tracks or instrument tracks, either. You will need to save sequence data to a Standard MIDI File to transfer those tracks. Like the session-interchange formats with which it works, Pro-Convert cannot transfer signal routing or plug-in information between DAWs.

One of the biggest challenges of session interoperability is keeping up with revisions of individual DAWs. For example, Pro-Convert does not support tick-based tracks in Pro Tools. SSL recommends converting them to sample-based tracks before attempting to translate the session. Fortunately, SSL's FAQ answers questions about specific incompatibilities.

One Small Step

I had hoped Pro-Convert would make sharing projects significantly easier, but ultimately it battled OMF to a draw, at least for the handful of DAWs I tested. However, Pro Tools users will need to spend $495 to purchase Digidesign DigiTranslator to import and export OMF. Spending a bit more on Pro-Convert buys a couple of conveniences and compatibility with more DAWs. If you have a PC available to do the conversions, Pro-Convert could be a worthy alternative.

If your business puts you in the position of receiving sessions from all sorts of different DAWs, Pro-Convert may well earn its keep. Remember that it does not convert directly from most DAW project formats, though, but from the various interchange formats. If someone sends you a Samplitude project, you'll still need to ask the sender to export and resend the project as an EDL before Pro-Convert can read it.

Even with Pro-Convert, session interchange is fraught with difficulties, and patience is your best ally when sharing projects between DAWs (check out the **online bonus material** at emusician.com for helpful tips). Pro-Convert is not the holy grail I'd hoped it would be, but it's a step in the right direction.

Brian Smithers is department chair of workstations at Full Sail University.

FIG. 1: Kurzweil's keyboard synth and controller features an 88-key weighted action, outstanding sounds, and an improved version of the company's awesome V.A.S.T. programming architecture.

Kurzweil Music Systems

PC3x

A performance keyboard that pulls out all the stops.

By Jason Scott Alexander

PRODUCT SUMMARY

keyboard synthesizer	$3,630

PROS: The impeccable Kurzweil sound. Inspiring keyboard action. Extensive master-controller features. Dynamic V.A.S.T. and Cascade mode redefine flexibility in hardware synthesizers. KB3 and VA-1 engines built in. Onboard sequencer and 16 arpeggiators in Setup mode. Studio-quality effects.

CONS: No sampling or sample RAM. Only 64 MB of factory sample ROM. No sound-expansion cards available at this time.

	1	2	3	4	5
FEATURES				4	
EASE OF USE				4	
QUALITY OF SOUNDS					5
VALUE				4	

Kurzweil Music Systems
kurzweilmusicsystems.com

ONLINE BONUS MATERIAL

For much of the past two decades, the core of Kurzweil's amazing V.A.S.T. (Variable Architecture Synthesis Technology) synthesis architecture remained essentially unchanged except for a few noteworthy additions. But with the new PC3 keyboard synth, the company introduces Dynamic V.A.S.T., which picks up where the venerable K series left off and goes considerably further, while expanding on the live-performance features of the popular PC series.

The PC3 is available in two models that differ only in their keyboard actions: the PC3x ($3,630; see Fig. 1) features an 88-note weighted action, and the PC3 ($2,830) has a 76-note semiweighted action. (A model with a 61-key synth action should be shipping by the time you read this. Its price has not been announced.) The synths provide 128 voices of polyphony and are 16-part multitimbral. Powered by Kurzweil's newest custom chip set, the PC3 comes loaded with 64 MB of sample ROM—small by today's standards, but Kurzweil's programmers are masters at stretching sample memory. The 800-plus factory programs include the company's acclaimed Stereo Triple Strike Piano, Orchestral and Contemporary sound blocks, Classic Keys, and new Strings.

The PC3 also introduces a completely overhauled KB3 Tone Wheel Organ Simulator, which offers improved real-time controls. To top it off, Kurzweil has resurrected the VA-1 Virtual Analog Synthesizer, which it had previously shown but never released.

Box Full of Ivory

Although the PC3x isn't the heaviest piece of gear, at 54 pounds, it is hefty. The all-metal chassis is rugged and beautifully sculpted, with smooth curves and a slightly effervescent, deep cobalt-blue paint job that appears black under dim lighting.

The Fatar TP40L fully weighted hammer-action keyboard is the lead-free successor to the TP10 MDF, which was used in the PC2 and K2600. This new assembly features Velocity and Aftertouch sensitivity and a quick-release spring, providing an ideal balance for playing both piano parts and synth/organ parts. I'm not a fan of the slippery, high-polished plastic keys found on most digital keyboards; the slightly "flat" finish of the PC3 keys felt a lot more elegant, reminding me of a glorious old grand piano with real ebony and ivory. The new action feels solid and wonderfully realistic.

The angled, graphic, backlit LCD is a major improvement over the PC2's dual-line display. The streamlined page layouts and intelligent

FIG. 2: In addition to its audio, MIDI, and sync ports, the PC3x has plenty of controller inputs, including ports for three switch pedals, two continuous controller pedals, a breath controller, and Kurzweil's optional Super Ribbon Controller.

soft-button choices on the PC3 convey only the information you need, when you need it. To the right of the display is a block of 24 buttons that allow you to select favorite sounds by program or category—great for one-touch retrieval during performance.

Conveniently situated to the left of the panel are nine sliders (increased from four on the PC2) for real-time parameter editing in Program mode and for tonewheel-organ drawbar emulation in KB3 mode. The unused space on the far right is perfect for a tabletop sound module or a mouse pad.

The PC3 provides plenty of pedal and switch inputs, as well as a Yamaha-style breath-controller input and a modular telephone-style jack for Kurzweil's proprietary Super Ribbon Controller ($59.95). Two internal sockets accept 64 MB and 128 MB sound-expansion ROMs. The USB port enables MIDI transmission, firmware updates, and connection to a PC or Mac. Currently the computer connection is for loading and saving program and song files, but it will soon work with a cross-platform PC3 editor-librarian by Soundtower, which should be available by the time you read this.

My review unit arrived with OS 1.0 installed and a very incomplete, preliminary hard-copy manual. I immediately upgraded to OS version 1.21.9030 from the Kurzweil Web site—it took less than 20 seconds to install and reboot—and proceeded to download a very thorough, 308-page PDF user guide. The internal power supply is selectable between 120 and 240 VAC. A metal piano-style, KFP-1 sustain pedal is included.

Be the Architect

Unlike many hardware-synth architectures, V.A.S.T. lets you build sounds from a combination of internal samples and waveform generators, and then modify those sources using a wide range of low-level DSP functions. These can be anything from oscillator blocks to freely assignable filter blocks, signal shapers, mixers, and so on. The functions you choose, and their arrangement into algorithms, essentially define the type of synthesis.

Programs in the PC3 can have up to 32 layers, each with programmable Velocity switching and note range. The DSP functions within a layer's algorithm can be independently controlled by a variety of sources, including LFOs, an ASR envelope generator, 7-stage EGs, a set of unique programmable Boolean logic/math functions (FUNs), and any MIDI control message. The entire concept descends from the K2000 but has been greatly improved. (Explore the differences in the **online bonus material** "V.A.S.T. Improvements" at emusician.com.)

The new Dynamic V.A.S.T. lets you "wire" your own algorithms beyond the 56 that ship from the factory. A new Cascade mode lets you route any layer of a program into the DSP of any other layer for truly complex results. However, I sorely miss the K series' sampling features and RAM for importing prerecorded samples.

The PC3 offers more than twice the effects-processing power of the old KDFX engine—even more than Kurzweil's acclaimed KSP8 studio-effects module. Programs have access to a maximum of 16 insert effects units and 2 aux sends, which can be placed pre- or postinsert. Effects can be chained together in series or distributed among the PC3's 16 multitimbral channels. A global Master FX section provides a 3-band compressor and 5-band parametric EQ that can be applied globally to the signal at the main outputs.

Natural Born Player

This is one of those rare keyboards that make me want to sit and play for hours. Every preset is extremely musical and sits very well in a mix. As a serious gigging musician, I'd buy the unit for its pianos alone. The acoustic pianos are more natural sounding and timbrally balanced than those in any other keyboard I've played. Intelligent programming in V.A.S.T. results in synthesized string resonance (when the damper pedal is depressed) and sustain and key-off sample triggering comparable to top software pianos. Though the samples are small and looped, they're still the best I've found in a hardware synth. The sounds respond to the keyboard beautifully thanks to sample/zone mapping and Velocity scaling in the samples that are much better than in previous Kurzweil instruments.

You'll find every shape and form of electric piano, and Kurzweil includes tons of hybrid programs with synth layers and alternate states that you can activate by pressing the programmable switch located above the mod wheel. The Classic Keys bank is a highlight, with some of the strongest renditions of mellotrons, RMIs, Farfisas, and Clavs you'll find. Of course, you also get the expected guitars, basses, drums, and other meat-and-potatoes sounds.

Orchestral sounds are by far the PC3's strong suit. Over 300 presets provide breath-taking solo and section strings, ranging from intimate chamber ensembles to lush symphonic and movie pits, lively horns, flute and woodwinds, choirs, and a bevy of brilliant orchestral percussion programs. No other keyboard synth can touch these orchestral sounds. For an in-depth look at the presets, check out the **online bonus material** "The Factory Tour."

The VA-1 engine is a monster. Because it's

> The new action feels solid and wonderfully realistic.

completely integrated within V.A.S.T., you can pass its signals through any of the standard DSP filter or modulation blocks, and you can daisy-chain VA-1 layers with the conventional V.A.S.T. layers in Cascade mode. This is incredibly powerful. The oscillators are truly gorgeous, especially the fluid new Supersaw and Hard Sync Saw algorithms from the latest OS update.

Another spectacular feature is the enhanced KB3 mode. Rather than using layers or algorithms, a bank of 96 oscillators (2 per voice) is dedicated to tonewheel emulation. Having all nine drawbars and the mod wheel is pure luxury compared with the PC2. Buttons above each slider control effects such as Leslie, vibrato, chorus, and percussion. I like how Kurzweil tweaked the Leslie ramp-up times and added some cool tricks with gain staging and distortion. The sound designers even took into account the way older organs start to sound different as their capacitors begin to leak, including a parameter that lets you vary the amount of grunge.

Songwriting Partners

In Setup mode, the PC3 allows you to become a one-man band. You can have up to 16 zones, each assigned to any range of the keyboard (overlapping or split). Each zone can have its own program, arpeggiator, MIDI channel, and MIDI- and physical-controller assignments. Every zone can also have its own Riff, which is a completely independent phrase, such as a simple drum groove or walking bass line, that you can snag from any sequencer track.

The onboard 16-track sequencer is fairly straightforward; the basics are easy to grasp without reading the manual. You're given a fairly typical set of track-edit commands, and each function has a set of parameters that control how the function operates and on what region of the selected tracks. Real-time input quantizing is a new addition in the recent OS release, allowing for quantized loop recording. It's a welcome feature, but I'd like to see step recording as well.

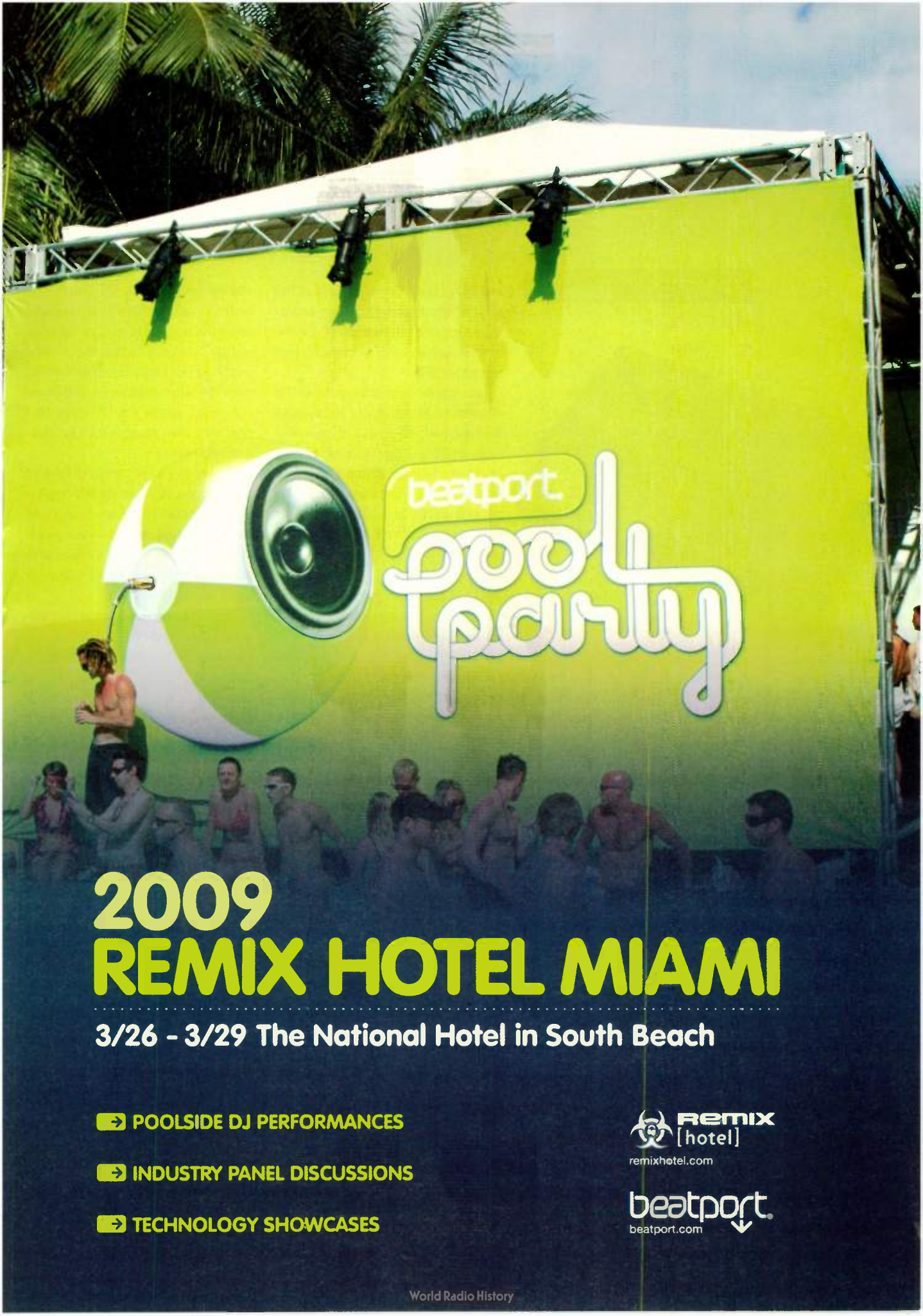
Any of the song's tracks can be defined as Drum Tracks so that their note events do not get transposed when a transposition is applied to the song. I like how you can maximize effects DSP: if there's a program with a particular effect or chain that you want to share between programs on other tracks, you can assign it to an Aux FX channel that the others can tap into. MIDI data on each track can be assigned to any combination of local, MIDI, or USB MIDI destinations. The PC3's compatibility with Type 0 and 1 Standard MIDI Files also makes the instrument ideal for playing back elaborate MIDI sequences created in a software DAW.

All You Need

I cannot think of a more thorough and better-implemented performance keyboard than the PC3x. The sounds are rich, expressive, and natural. Learning to become an expert V.A.S.T. programmer is difficult, but maneuvering around the instrument for typical live tasks couldn't be simpler. Quick Access mode puts you one button away from whatever sound or preprogrammed setup of splits/layers you need, and there are numerous other shortcuts and button combinations. The user definability of every real-time control is beyond that of any other hardware synth.

Best of all, the PC3x is an honest-to-goodness synthesizer at heart. The VA-1 marriage with V.A.S.T. is brilliant, and you get an overwhelming number of usable preset sounds. Whether your interests are classical, pop, rock, jazz, or urban, the PC3x will become the centerpiece of your composition duties and the star of your stage performance. It's a beautifully crafted instrument that's a pure joy to play.

Jason Scott Alexander is a regular contributor to Mix *and* Remix *magazines and runs a mix/production facility in Canada's capital, Ottawa.*



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EVENTIDE

ModFactor

By Rich Tozzoli

With power to spare, the Eventide ModFactor delivers studio-quality modulation effects in a compact form factor.

The sign of a good effects pedal is that as soon as you plug in your instrument, it inspires you to create. That is certainly the case with Eventide's new modulation-effects stompbox, the ModFactor ($399). Developed from the roots of the company's classic effects while pointing to the future, it gives performing musicians (particularly guitar players) studio-quality modulation effects, even onstage.

Weighing just over 2 pounds and housed in a small, sturdy cast-metal chassis with a brushed black surface, the ModFactor connects to a 9 VDC power supply (battery power isn't an option). The top panel is laid out in three sections. The upper section has ten dedicated control knobs, a rotary encoder you can push like a button, and Tempo and Peak LEDs. The middle section has a list of effects and a scrolling display indicating the selected effect. On the lower section are three footswitches with associated LEDs.

Back-panel connectors include pairs of unbalanced ¼-inch inputs and outputs, ¼-inch expression-pedal and aux-switch jacks, a USB 2.0 type B socket, and the power jack. Switches for input level (guitar or line) and output level (amp or line) are also on the back, and MIDI In and Out/Thru jacks are on the side.

MOD SQUAD

The ModFactor provides ten modulation effects: chorus, phaser, flanger, vibrato, rotary, panning tremolo, ring mod, Q-Wah (a resonant autowah), ModFilter (an evolving filter), and Undulator (two delays with frequency-modulated tremolo). Using the footswitches, you can instantly access any 2 of the 40 user presets at any time. Use the top six control knobs to adjust the selected preset's main parameters and the bottom four to control LFO ranges. Hold down the rotary encoder to quickly save your changes.

You'll use the footswitches most often in Play mode and Bank mode. In Bank mode they recall pairs of presets; in Play mode they control preassigned aspects of each effect. To switch between modes, simply press and hold the footswitch on the right.

In Play mode, the left footswitch toggles between Active and Bypass functions. The center footswitch is labeled Slow/Fast; pressing and releasing it toggles Slow mode on and off. Slow mode reduces the LFO rate, creating a cool Leslie-like effect. Holding down the switch engages the Brake function, which ramps the LFO down to a dead stop, then ramps it back up again when you release it.

It takes only a few stomps to get used to the ModFactor's flow. My only niggle is that you cannot step down through the banks unless you connect an aux switch. However, you can program the footswitch to scroll through a limited number of banks instead of all 20.

Many small touches, such as USB software updates and expression pedal control, show that Eventide clearly built this stompbox for players. For example, you get two kinds of bypass: the default DSP Bypass sends audio from the inputs directly to the outputs without any processing, and Relay/True Bypass completely disconnects the electronics from the signal path.

> The true stereo effect simply blew me away.

IT'S ALL ABOUT THE SOUND

For my first test, I connected the ModFactor between a Telecaster and an old Gibson amp. The default Bank 1:1 setting produced a nice shallow chorus, and switching to Bank 1:2 gave me a deeper, richer chorus. Stepping through the sounds further, I especially liked the flanger, vibrato, and rotary effects. Slowing down the speed with the Slow/Fast footswitch and tapping various tempos was a pleasure; it made me feel like I was actually playing the pedal.

Next I hooked up the ModFactor's second output to my trusty old '66 Magnatone M-10 amp. Stepping again on that Bank 1:2 chorus, the true stereo effect simply blew me away. I must have played open chords for 20 minutes straight (see **Web Clip 1**).

ONLINE BONUS MATERIAL

After that, I ran a Fender Jaguar Baritone guitar into a good preamp and got great results with some deep stereo flanging (see **Web Clip 2**) and phasing. I also connected a high-string electro-acoustic guitar; I was impressed by how thick the ModFactor's effects sounded on such a thin-sounding instrument. Then I took an EBow and played with the Undulator presets; again, inspiration took over and I captured some wild sounds (see **Web Clip 3**).

Although intended primarily for live performance, the ModFactor is also a serious and flexible studio tool. With its line-level connections, you could easily route it to the send/return loop of a mixing console or recording setup. The ModFactor is equally at home onstage or behind the glass.

Value (1 through 5): 4
Eventide
eventide.com

FOCUSRITE

ISA One

By Eli Crews

EM HOT PICK

The ISA series is based on the circuitry of Focusrite's legendary Forte consoles from the mid-'80s. The line's newest addition is the ISA One ($799), a portable single-channel mic preamp and DI that caters to smaller studios.

FACE OFF

The ISA One's faceplate will be mighty familiar to users of the other ISA units; it has the same primary color scheme and large VU meter. The slanted front panel is jam-packed with controls, from the basic preamp features (Gain, +48V, 75 Hz HPF, and so forth) to the clock settings for the optional ISA Stereo ADC card ($399). The features that distinguish the ISA One from your average preamp are the four input impedance settings for the microphone preamplifier, two impedance settings for the DI, both a VU and an LED bar-graph meter, a parallel output to feed an amp from the DI input, and an integrated headphone amp.

> It eliminates the need for an external headphone mixer.

On the back, you also get balanced Send and Return insert points, meter calibration pots, separate outputs for the DI and Main Input section, and two inputs (one stereo, one mono) for feeding the headphone amp prerecorded signals from a mixing console or DAW. This last feature will be extremely handy for a small studio in which most of the recording is done by a single musician doing overdubs, as it eliminates the need for an external headphone mixer.

IN USE

Having been turned on enough by the ISA preamps to buy a couple of ISA 428 PrePacks about four years ago, I was interested to see how one of my most-used preamps survived the repackaging. I was immediately impressed by the box's solid feel and intrigued by the possibility of using it in my studio's live room as an oversize direct box. That was actually my first use of the ISA One, on Fender Rhodes as a DI. I'd recorded that particular instrument many times, and the ISA One quite ably captured the richness of the sound that I'm used to.

Over the course of the next couple of months, I used the ISA One anywhere I'd use the ISA 428, which is to say on just about anything. I especially love how it treats vocals, bass guitar, drum-room mics, horns, and strings; there's a huskiness to the sound that I attribute to the Lundahl transformer. Additionally, the four input impedance settings let you tune your microphone somewhat. Higher settings tend to bring out more detail and clarity, and lower settings generally soften the tone for a rounder sound. The only feature I miss from the ISA 428 is its awesome variable-frequency highpass filter, but the ISA One's 75 Hz filter is more than adequate for most applications.

COMPARED TO WHAT?

In direct comparisons with the ISA 428 on both voice and bass through the DI, I could hear no discernible difference

The ISA One offers most advantages of Focusrite's ISA 428 multichannel preamp and DI in a more portable, single-channel configuration.

between the two cousins. In comparison with the Millennia Media TD-1 HV-3 preamp, I found the TD-1's DI (which has three different impedance settings) to exhibit a hair more detail, but keep in mind that unit is twice the price of the ISA One. The ISA One's DI input did have more clarity than that of the Vintech X73i, but the latter had a fatness and warmth that none of the other DI inputs really had. On male vocals through three different large-diaphragm condensers, the differences between the ISA One at high impedance and the reference preamps were very subtle (they were all highly usable). I heard way more difference when I used the ISA 110 impedance setting; at this setting the vocals had a more natural response, whereas in the higher settings the vocals came forward a bit, with more of a modern, present sound. In any case, the option of different sounds from a single mic is clearly quite useful.

SUM AND DIFFERENCE

I really have no choice but to give the ISA One the highest rating possible. It is functionally packed and sonically sublime. Even though our studio already possesses eight channels of ISA preamp, I'm pretty tempted to buy this box for the portability factor alone. Having an extra DI of this quality is in itself almost worth the price. Add to that the fact that you can run the mic pre and DI simultaneously on different sources, along with all the other features I've described, and you have quite a bit of bang for your buck.

Value (1 through 5): 5
Focusrite
focusrite.com

VIR2 INSTRUMENTS

Basis 1.1 (Mac/Win)

By Marty Cutler

After drums, basses are the instruments that I most often need to update and expand. Slap bass doesn't always work in ballads; a plaintive, vibrato-drenched fretless bass is probably too nuanced for an up-tempo rocker, and picked bass might have too much attack for a jazz standard. Additionally, sampling's snapshot nature doesn't always convey the instrument's tonal dynamism.

Vir2 Instruments Basis uses Kontakt Player 2 to gather a collection of bass instruments and a variety of performance- and tone-shaping tools.

Hosted by the Native Instruments Kontakt Player 2 (KP2) engine, Vir2 Instruments Basis 1.1 ($299.95 [MSRP]) delivers a representative handful of electric bass instruments, an upright acoustic bass, and a side order of synthesizer bass sounds. A terrific set of sound- and performance-shaping tools exact an impressive amount of adaptability from the samples.

As with all KP2-hosted instruments, Basis offers AU, RTAS, and VST versions for Mac, RTAS and VST for Windows, and standalone instruments for both of these platforms.

ALL YOUR BASS

The Basis library gathers about 7.5 GB of samples, including multisampled acoustic and electric bass instruments with release samples, scrapes, harmonics, and other artifacts. In addition, a large number of synth basses deriving from a variety of source instruments cover a lot of sonic territory, although they are hampered by the lack of filter and envelope controls.

In contrast, the electric bass patches have a good complement of features for expressive performances, and they include sound-shaping tools appropriate to bass instruments. Foremost among these is the Sustain Legato keyswitch, which suppresses envelope-attack retriggering when you hold down one note while triggering another. That lets you re-create typical hammer-on and pull-off maneuvers. The keyswitch a whole step below returns the patch to polyphonic performance. Sustain Legato proved particularly effective with a Multi I created

for my Axon MIDI guitar rig, in which each string has its own MIDI channel.

Basis provides no Multi presets, and it would have been nice to have a few. For example, I would have liked a Multi combining a Velocity-crossfaded fingered bass with a slap bass with Velocity control. On the other hand, after a few minutes of futzing with the Velocity curves, I was able to cobble together a reasonable simulation on my own.

The electric basses have both amped and direct-injected (DI) samples; you adjust the balance between them with the DI/Amp knob. More DI provides a brighter, more detailed instrument, whereas more amp provides warmer, beefier tones. Other knobs set Pitch Bend range, adjust pick and fret noise, and control the release-samples level. Amplifying the noise artifacts adds realism to the instrument, as do having Velocity-initiated string and fret rattle and having alternating samples for each note.

BASIS LOADED

A series of vertically arrayed buttons on the right side of the panel reveal settings for effects and a few unique performance features. You get a nice-sounding set of effects, including compression, chorus, delay, Octaver, saturation, Lo-Fi, and more. Given the minimal real estate on the front panel, it's great that these effects are tucked out of the way and inactive until you need them.

Basis lets you handle vibrato in a very realistic, human way. It holds models of human vibrato as waveforms for its LFO, and you modulate vibrato depth, rate, and type with MIDI continuous controller messages. It does require a steady hand as well as a judicious touch with the Mod Wheel to regulate depth, as a little bit goes a long way.

The oddly named Gospel bass is among my favorites. It is enlivened by plenty of low-end growl, lots of detail, and a real three-dimensional presence. Upright, an acoustic bass, delivers a nice Ron Carter–type groan when you dig into the keys. Motown has a terrifically warm tone with a blooming low end (see **Web Clip 1**). Macca's Hoffner delivered an authentic Beatles-era bass sound, especially with the Amp controls set way up. I'm always skeptical of any fretless bass with Jaco's name attached, but I'll cut Fretless Jaco a bit of slack because of its aggressive front end coupled with the very human vibrato programming. You also get three Fender Jazz Bass patches played with different pickup settings—a Precision, a Musicman, and a Rickenbacker—and each has a distinctive tone. Clearly, the programmers lavished their attention on the electric bass.

Few recent sample collections I have heard place such a thoroughly voiced collection of electric basses at your fingertips. Although I might look to other sources for synth bass, the sets included are useful and varied. Basis delivers a solid collection of electric bass sounds in an expressive, ready-to-play package. Check them out.

Value (1 through 5): 3
Vir2 Instruments
vir2.com

X-TEMPO DESIGNS

Pok

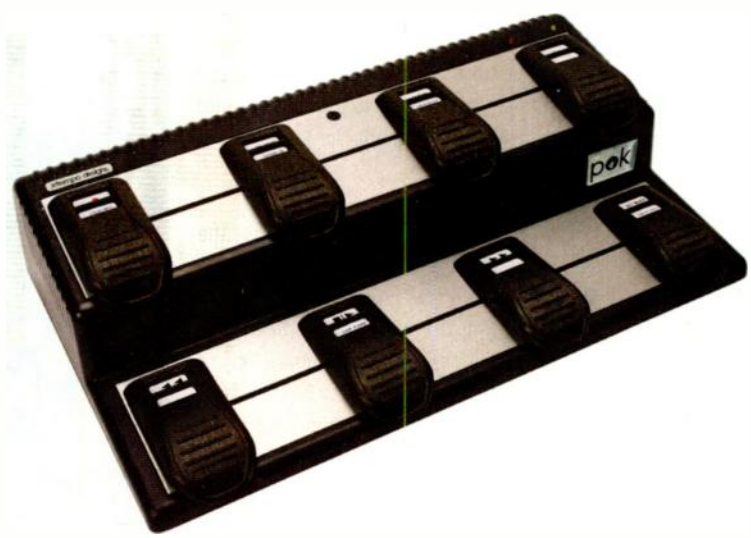
By Jon Margulies

The X-Tempo Pok is a foot controller designed for controlling DAWs. Foot control for recording isn't a new idea—people have used footswitches to punch in and out while recording themselves for years. However, a product with the flexibility and great design of the Pok is something new and exciting.

What makes the Pok unique is that rather than communicating with your computer via MIDI, it emulates a computer keyboard and sends keystrokes. It's fully programmable, so you can control any function that can be accessed via shortcut keys. Even better, it's wireless, so you're free to use it in your vocal booth or just about anywhere else you choose.

POK PETITE

The main unit is small, measuring only 12.2 by 7.1 by 2.7 inches, and has eight switches, three LEDs, and nothing else, not even a power switch. The Pok runs on three AA batteries, and because it operates like a computer keyboard, it draws no power unless a switch is being pressed. The Pok feels very well made,



The X-Tempo Pok is a wireless footswitch controller that allows hands-free operation of your DAW. The unit supports up to 22 commands in a single profile and can operate within a range of approximately 30 feet.

> On the gig, the Pok worked flawlessly.

although I wouldn't recommend stomping on it like you would your guitar pedals. Communication with the computer is done via the USB module, which is about the size of a standard memory stick.

The Pok has been cleverly designed to pack a lot of functionality into a very small space. Each switch can send different commands for single and double presses, and switch 8 can be configured as a "function" switch, making a third set of commands available to the other seven switches. This makes a total of 22 commands available from a single profile.

Out of the box, the Pok is configured for Digidesign Pro Tools, but profiles for additional applications are included, and more are available for download on the X-Tempo Web site. To load one of these profiles or program your own from scratch, you'll have to use the included Pok Editor software (Mac/Win). When my Pok arrived, I was in the midst of preparing for a gig where I'd be using Ableton Live to record guitar loops on the fly, so I immediately set out to turn the Pok into a customized controller for Live.

GET TO WORK!

Working with the editor was easy. The main screen displays a graphical representation of the unit, with each switch indicating the functions it's been programmed to perform. Double-clicking on a switch opens the Key Editor, which allows you to capture the keystrokes you want transmitted. Once you've programmed the switches, the profile is sent to the Pok by clicking on the Write button. My only gripe with the editor was that the Save function always prompts you to enter a name for the profile, so overwriting the current profile takes extra typing or mouse-clicks.

On the gig, the Pok worked flawlessly. Because any key can be mapped to just about any function in Live, the Pok was a natural match for it. I used the bottom four switches to trigger loop recording in four different tracks, and configured the double press for each of my loop switches to send the Backspace key to delete the loop I was currently recording.

In the studio, the small footprint and wireless communication made the Pok very convenient to use. The manufacturer specifies that the unit has a range of 30 feet, and in practice I found the connectivity to be excellent. There wasn't a single place in my one-bedroom apartment where the Pok couldn't communicate with the computer.

X-Tempo also offers the Pok Switcher application as a free download. It lets you use a switch to transmit a new profile to the Pok and simultaneously switch to a different application on the computer. This can then be used to turn your Pok into a multiapplication controller or to configure up to four banks of controls for a single application.

The only thing that may scare potential users away from the Pok is its list price of $549, which to some people is going to sound like an awful lot for a footswitch. As always, however, the value of a thing is very much relative to your need for it. If you're regularly recording yourself and need your hands free to play your instrument, the Pok could quickly become an invaluable tool, especially given that you can configure it to control the functions that you use most frequently.

Value (1 through 5): 4
X-Tempo Designs
x-tempozone.com

SONICCOUTURE

Scriptorium (Mac/Win)

By Len Sasso

Soniccouture Scriptorium ($99) is a download collection of 35 scripts for the Kontakt Script Processor (KSP) in Native Instruments' Kontakt 2 and Kontakt 3

Each of the 60 Kontakt instruments in Scriptorium has custom scripts and control panels.

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samplers. It also includes 60 Kontakt instruments illustrating the scripts. Many of those instruments use samples from Soniccouture's outstanding selection of Kontakt sound libraries. Four video tutorials on using the scripts round out the package.

The tutorials are well worth your time; they elucidate the process and offer many creative tips. Beyond that, the PDF manual is very helpful, giving a short but complete account of each script. The 60 instruments cover most of the scripts and show several applications for the more complex ones (see **Web Clip 1**). But the real magic comes from using the scripts in your own instruments.

FOLLOW THE SCRIPT

KSP scripting is time-consuming and an acquired art, but you don't need to know anything about it to use Scriptorium. In fact, all the scripts are locked, so you can't examine or edit them. If you do want to delve further into scripting, see "Master Class: Scripting in Kontakt 3" in the February 2008 issue, available at emusician.com.

Installing the scripts in your own Kontakt instruments couldn't be easier—open the Script editor, click on the Preset tab, and select a script. Almost any of the provided scripts will work in any instrument, although some work better with certain kinds of sounds.

The scripts divide roughly into two categories: note and controller processing. Controller Delay and Controller Wobbler II are two of my favorite controller scripts. The former is a 4-tap delay for incoming MIDI Control Change messages that lets you set a tempo-synced delay time (the tap times are cumulative) and a different CC number for each tap. The latter generates five random controller streams as long as a note is held. What makes these scripts useful is that Kontakt lets you freely map any controller to any combination of parameters.

Two tuning scripts, Just Intonation and Distemper, take you beyond equal-tempered tuning. Distemper lets you set a semitone and cents offset for each pitch class (C, C#, D, and so on) and offers a number of preset scales. Both scripts work by manipulating Kontakt's tuning controls. Glissandos takes tuning out of your hands by constantly gliding the pitch within a

You don't need to know anything about KSP scripting to use Scriptorium.

range and at a rate you specify. With LFO Design, you draw in your own repeating pattern and then assign it to any controller.

TAKE NOTE

Note processing is by far the larger category. You'll find utility scripts to generate chords, keep pitches within a scale, and let you use your mod wheel or other MIDI controller to strum notes.

Three scripts provide variations on random note generation. Cellular Automata repeatedly applies two or three simple rules to generate new notes. Because it is rule based, the same input notes produce the same results for a given choice of rules. Gauss Generator emits a random set of notes in a normal probability distribution (bell-shaped curve) around the incoming note. Jammer is like an arpeggiator, but it can randomize offsets for pitch and octave as well as Velocity and timing.

A number of the scripts manipulate voice groups in a Kontakt instrument. Group Delay lets you layer five groups, each with its own delay time, level, and transposition. Group Sequencer cycles through a sequence of groups. Group Random selects groups at random but lets you weight their probability. Mobile randomly moves groups back and forth across a grid (two bars of eighth notes, for instance).

A NOVEL APPROACH

Finally, there are novelty scripts such as Bounce, which repeats notes with increasing speed like a bouncing ball; Kotekan, which follows each Note Off with a new note of the same duration but shifted in pitch; and Shredder, which repeats notes while randomizing the sample-start position. My favorite novelty script is Ring Harmonizer. When you hold two or more notes, it generates new notes at pitches corresponding to the sums and differences of the last two notes played. The results may be highly dissonant or richly harmonic depending on the intervals played (see **Web Clips 2 and 3**).

As the example instruments show, you can often combine scripts to good effect. For instance, if you follow Jammer with Group Random in an instrument with several groups, the arpeggiated notes will be spread across the groups rather than all groups playing each note. You might then precede Jammer with one of the chord generators.

Scriptorium is invaluable for taking advantage of the KSP without getting entangled in scripting. For a modest price, it is an indispensable addition to your Kontakt library.

Value (1 through 5): 4
Soniccouture
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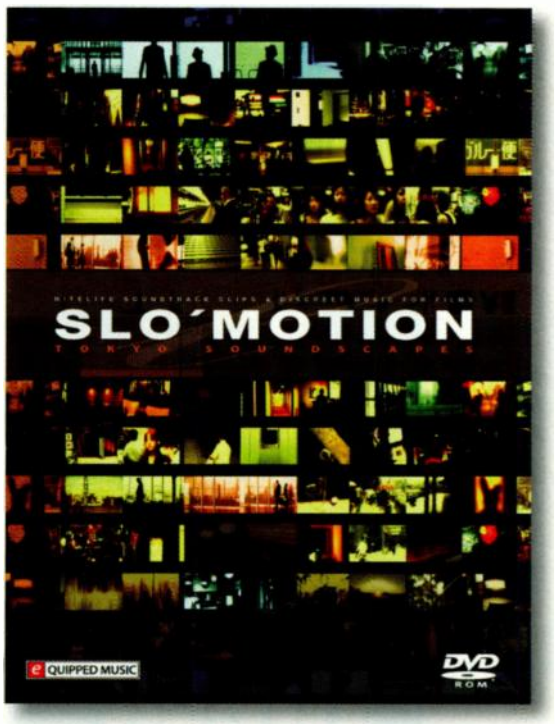
EQUIPPED MUSIC

Slo' Motion: Tokyo Soundscapes

By Marty Cutler

More than a quarter century after the film's release, the score for Ridley Scott's 1982 classic *Blade Runner* remains a defining moment in modern electronic film scoring and ambient music. *Slo' Motion: Tokyo Soundscapes* ($199.95), created by Equipped Music, captures the floating, electronic washes, old-school sequencer ostinatos, and other characteristic elements of the genre in a 2-DVD collection of 24-bit, 44.1 kHz construction kits. One DVD holds WAV audio, and the other offers REX2 files and a ReFill for Propellerhead Reason. I auditioned WAV and REX files in MOTU Digital Performer 5.12 and Ableton Live 7.02, and listened to the ReFill in Reason 4.01.



Slo' Motion: Tokyo Soundscapes offers flexible construction kits of atmospheric electronic music in the tradition of the *Blade Runner* soundtrack.

SHIVER ME TIMBRES

Slo' Motion provides a total of 1,995 24-bit samples, which are organized in folders by type and tempo. Folder names give a good indication of the content and include Bass Loops, Gamelan & Tmbpiano, Nature Fx Loops, Discrete Perc, Rhythm Fragments, Synth & Guitar Tones and Chords, and Tokyo Soundscape Loops.

Tokyo Soundscape Loops consists mostly of minimal chord progressions played on synthesizer pads. Many sounds exhibit some DSP enhancement: a bit of rhythmic, LFO-induced tremolo in one, or a touch of saturation in another. In some instances, there is no chord progression, with suspended chords producing interest through timbral shifts rather than any change of notes. Faint bits of occasional melody emerge from the pads, but it's not clear whether these originate from some inner timbral motion such as self-oscillating resonant filters or simply from subtly ghosted melody notes.

Loops in the Tones and Chords folders use acoustic and electric pianos, guitars, and synths to provide melodic and harmonic motion. Many of the piano parts are simple, ambience-drenched motifs reminiscent of the work of Brian Eno or Vangelis. There is no hard-and-fast rule regarding processing; in some cases, reverb, and in others, rhythmic delays or filter-shaped noise, contributes to the sounds. All for the better, as this adds more variety to the content. Tokyo Noise Loops contains rhythmic fragments of conversation masked by noise, delays, and ambience and contributes to the urban overtones of the collection.

ONLINE BONUS MATERIAL

The material sticks to a narrow range of tempos: 60, 65, and 70 bpm. However, you can reasonably adapt the WAV files' tempos to fit a song 10 to 20 bpm above or below the original, and the REX files are even more adaptable. Bear in mind that music of this type wasn't meant to play at fast tempos. Harmonically, the tonal components and pads are all listed as being in minor keys, although the deliberately ambiguous chord voicings allow them to work in other tonal contexts (major and modal, for example). The folders of bass samples derive from electric bass sounds and are simple enough to withstand pitch change and tempo adjustments.

DOMO OBLIGATO

Slo' Motion is an especially apt title for the collection: pads and bass rarely get busier than half and occasional quarter notes. Various folders contain arpeggio voicings. The folders are identified by the instrument playing the arpeggio (gamelan, anklung, and thumb piano, for instance), but many of the instruments sound synthetic to my ear. The origin is less important than the quality of the loops, though, which are imbued with trailing, mysterious tonalities. Additional folders hold sparse percussive loops and special sonic effects, including processed speech and sounds of unknown origin. Still others contain rhythmic loops from wildlife: birds, frogs, and general swamp ambiences. Some of these are processed with pitch-shifting and filters (see **Web Clip 1**).

The ReFill comprises a lot more than a simple collection of Dr.REX loops; you also get patches arranged for the NN19 sampler, a few Redrum kits, and a generous supply of Combinator patches. Redrum kits all derive from synthetic sources reminiscent of the Elektron Machinedrum. Many of the pads lay out full chords or intervals on a single key, requiring only one MIDI note to supply an entire harmonic backdrop. Yet some pads are sparsely voiced enough to work well in complex combinations with others. I found the Combinator patches to be the most interesting of the bunch. The included controls—knobs for resonance, the frequency parameter of the various filter types, and transposition settings—offer considerable sonic variety.

For all its simplicity, *Slo' Motion* is one of the most intriguing collections to have crossed my desk in a long time. The sounds are tremendously useful for film scoring as atmospheric backdrops or front-and-center mood pieces. The loops can easily serve as song-starter inspirations for slower-tempo electronic pieces. If you're looking for a feast of loops drenched in atmosphere and drama, you owe yourself a good look at *Slo' Motion*. em

> *Slo' Motion* is an especially apt title for the collection.

Value (1 through 5): 5
Equipped Music/Big Fish Audio (distributor)
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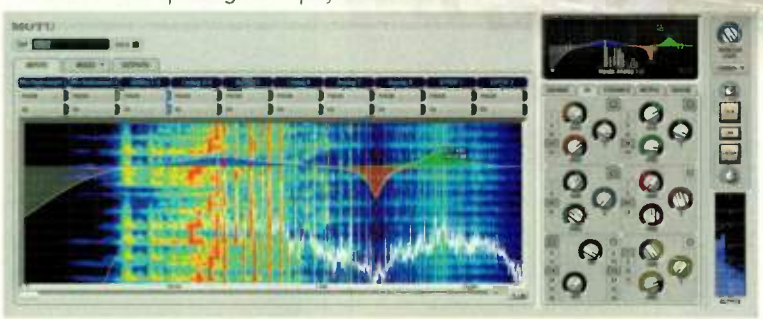

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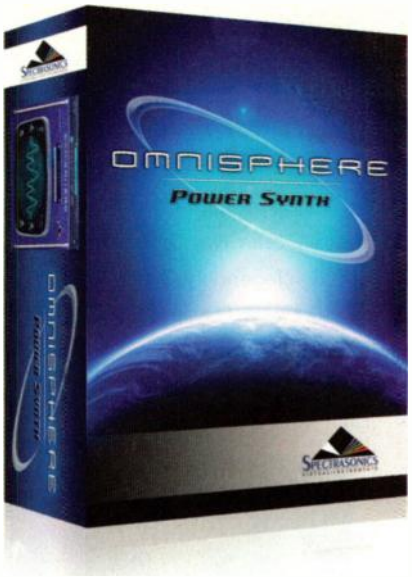

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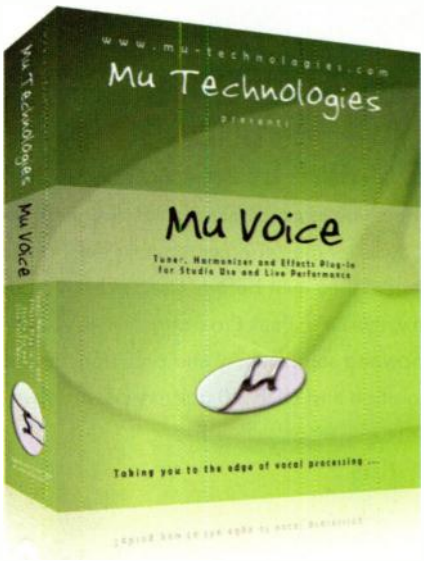

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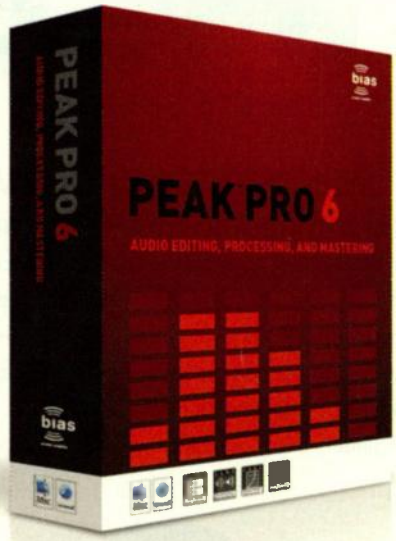

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Why I Don't Want to Record Alison Krauss. But Don't Quote Me on It.

By Nathaniel Kunkel

Okay, don't flip out. I have a good reason for being the only one in the music business who feels that way, I promise. Perhaps I should start at the beginning.

I love music. I always have, and I've spent the better part of my career seeking to work with the artists I love the most. I've been pretty lucky, too; I've gotten to work with most of them. (Truth be told, I have already worked with Alison as well, but more on that in a moment.)

Here is the problem: making music is a complicated process. Stuff happens—it's impossible to avoid that reality. Even if it's a great experience, we take memories away from every project we do. Sometimes the memories are bad—like the artist is a total jerk, or their manager is a tool and I get stiffed for my work. Other times it is all good except the A&R guy gets into a huge row with the producer. Or maybe everyone is cool, but my gear gets damaged in shipping and insurance will not cover it. My point is that there is always some experience that you will remember long after the project is finished.

You are probably saying, "Well, of course." But the thing is, it is almost impossible to listen to that artist again without thinking about your experiences—good or bad—with them. And no matter what the experiences are, they change your ability to hear their music the same way. Even stuff they did before you worked with them. When you hear that voice, you see that person, and all the feelings you had when working with them come back. That experience has the ability to make music an anchor of emotion as opposed to offering unlimited possibilities. It seems that when we fall in love with an artist's work, it's because of what their work means to us, not who they are or what they believe.

So why Alison? I have been listening to her quite a bit lately, and, well, I think she is the best singer I have ever heard—as close to an angel as can be found on this earth. She could sing the phone book to me.

I was able to work with her on a Trio album once, as well as on a Lyle Lovett project. But I was really young during the first one, and the second one was quick and I had little responsibility. I escaped unscathed.

Well, I think I want to keep it that way. In my opinion, there is no working experience that would be satisfying enough to risk tainting the enjoyment I get from listening to her voice. Not one.

So there you have it—my totally bizarre justification for never wanting to record with my favorite singer. Now of course this is kind of a moot point, as she has never expressed any interest in working with me. But for the first time in my life, that might be just fine.

(Oh, who am I kidding? If I got that call, I would be there in a hot minute. Damn it. What's a music lover to do? In the end, saying no would be like keeping myself from air.) em

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Nathaniel Kunkel (studiowithoutwalls.com) is a Grammy and Emmy Award–winning producer, engineer, and mixer who has worked with Sting, James Taylor, B.B. King, Insane Clown Posse, Lyle Lovett, I-Nine, and comedian Robin Williams.

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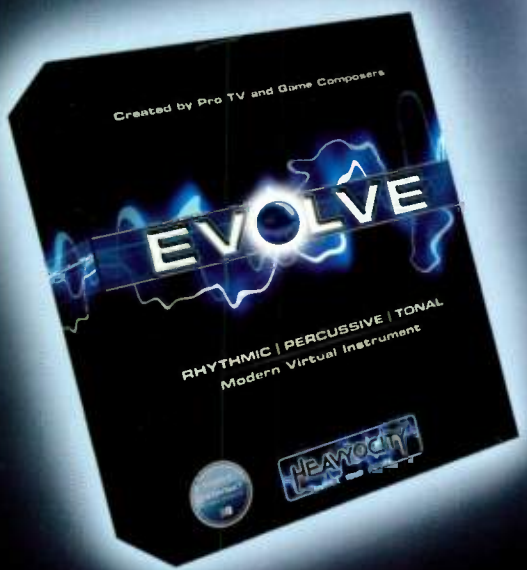

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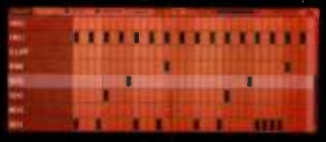

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