
THREE-DIMENSIONAL CONCEPTS FOR IMPROVING YOUR MIXES
DECEMBER 2008
em
ELECTRONIC MU
SONGWRITER ORGANIZATIONS CAN HELP YOUR CAREER
UNDERSTANDING LINEAR-PHASE EQ
RE-CREATE A TALKBOX USING ANTARES THROAT
JOHN McENTIRE
CRAFTING THE SOUND OF TORTOISE, THE SEA AND CAKE, AND STEREOLAB
10 ESSENTIAL SOFTWARE APPS FOR EVERY STUDIO
#BXNKXLW ******AUTO**5-DIGIT 50036
#EM4252360# CONT REG
RON CARLSON
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A PENTON MEDIA PUBLICATION
REVIEWS
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McDSP EMERALD PACK 3.0 | AND MORE
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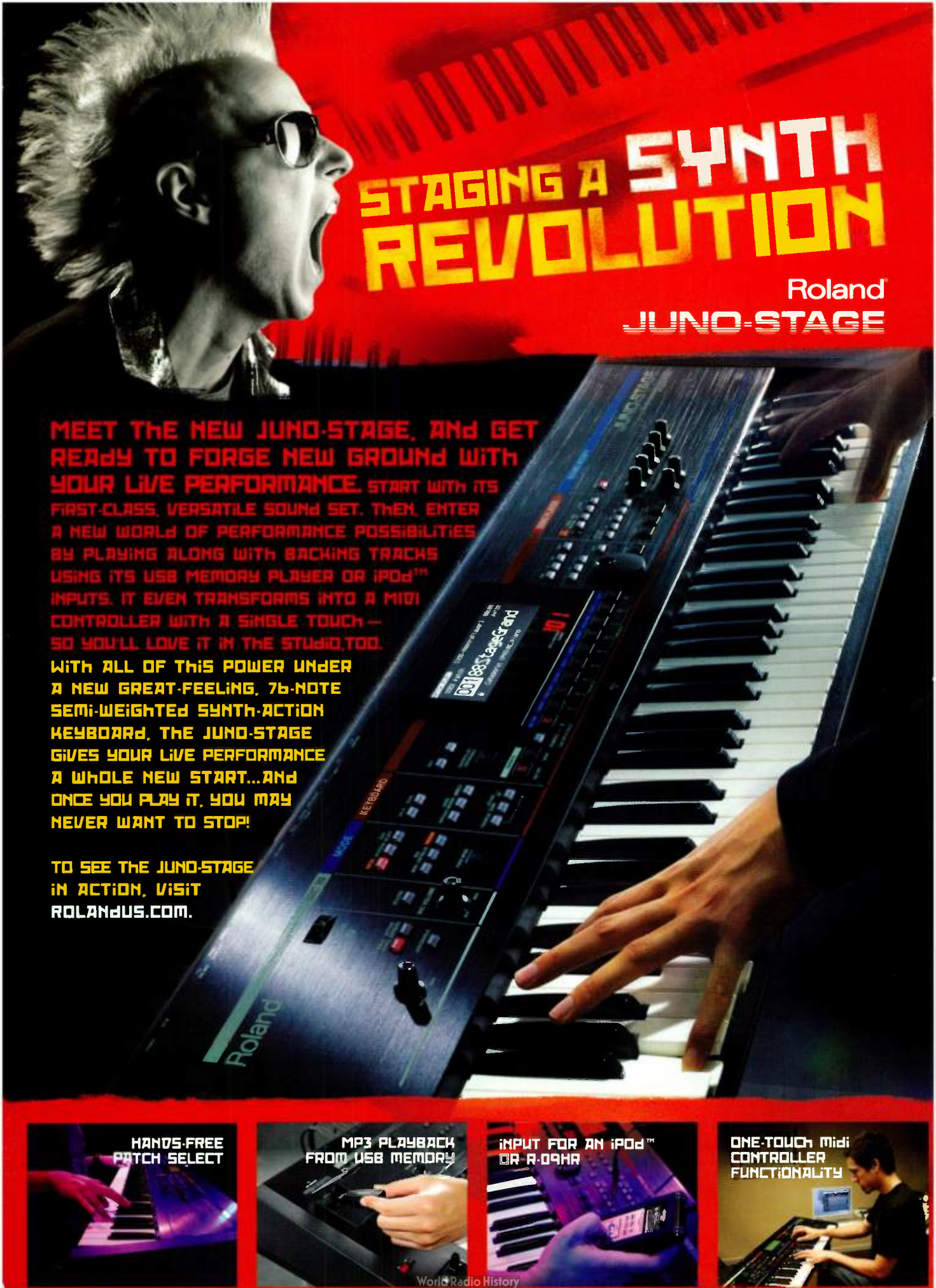
World Radio History



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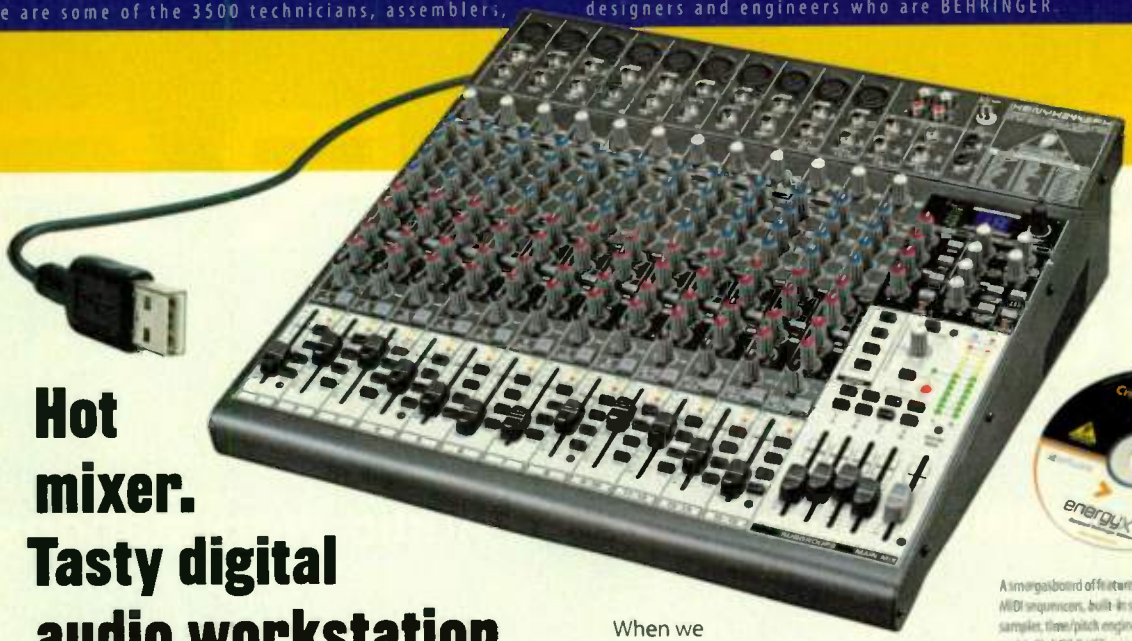
Axel, BEHRINGER Germany Systems Engineer, designed the five-star XENYX mic preamp from wholesome ingredients.

Every XENYX 2442FX is tested over forty times during the production process by technicians like Zhi Yong to guarantee that it's really well done and free of defects.

Thomas, BEHRINGER Germany Software Engineer, brewed up the USB interface and ASIO drivers for the 2442FX. Bon appetite!

IRON CHEF **COOKS 'EM UP** **RECIPE WRITER** **CIRCUIT TASTER** **BIT SLICER**

These are some of the 3500 technicians, assemblers, designers and engineers who are BEHRINGER.



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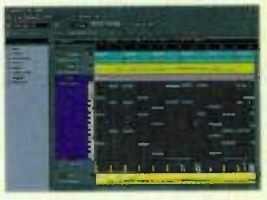

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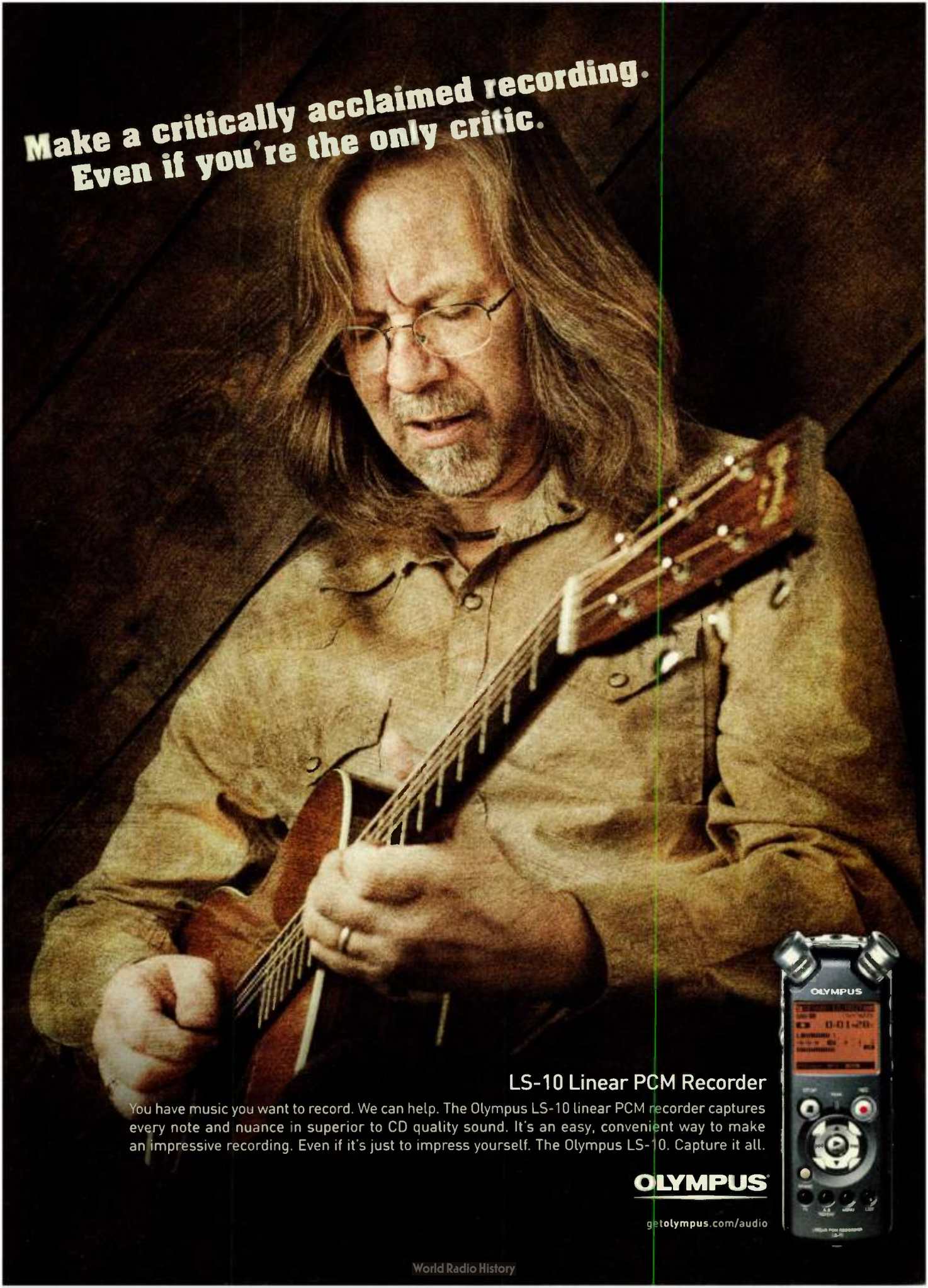

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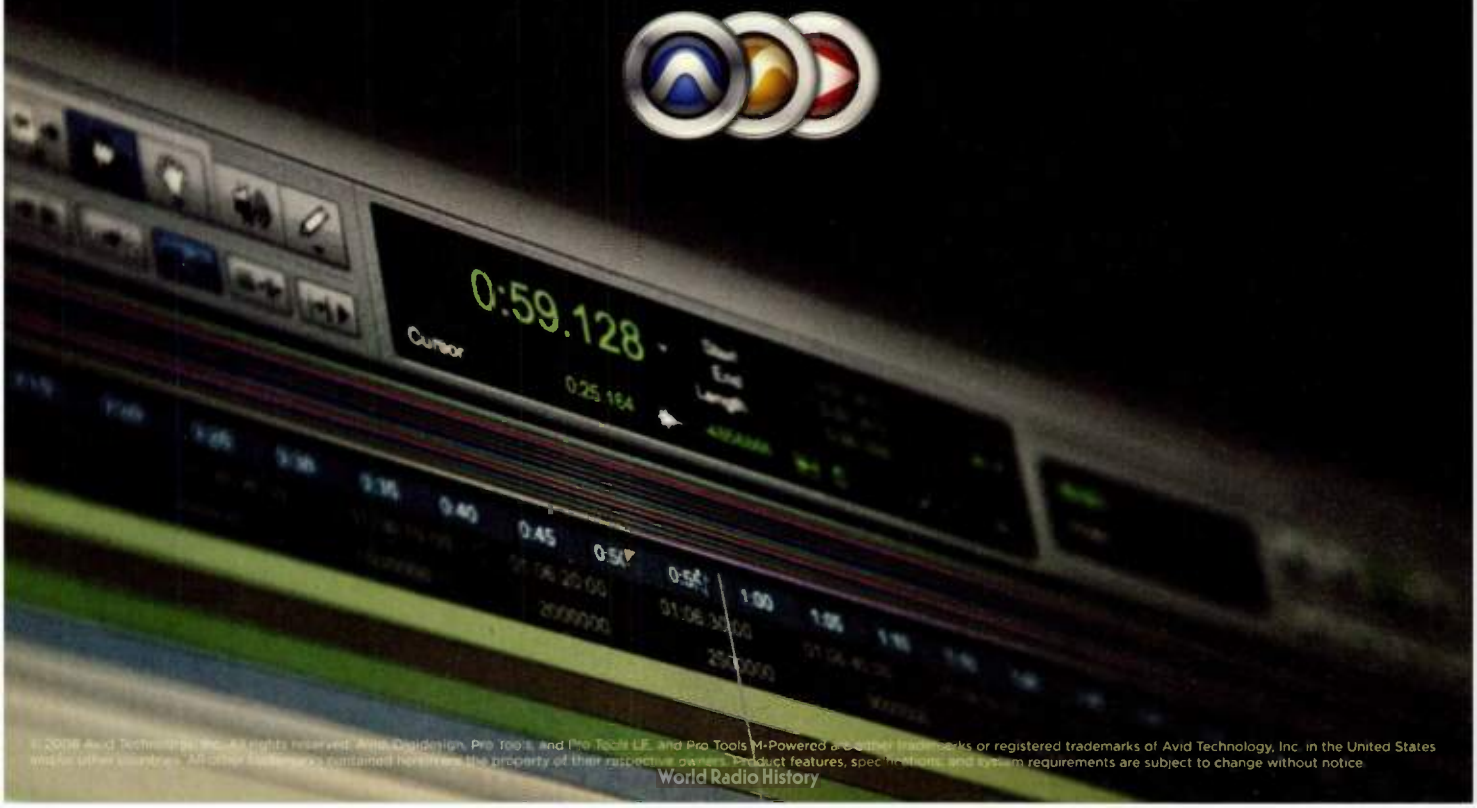

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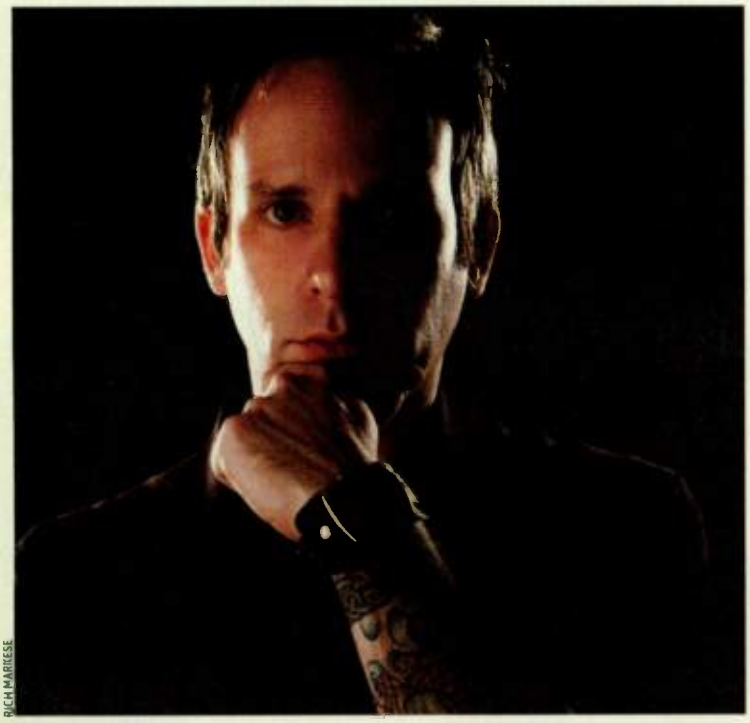
FEATURES



RICH MARIESE

38 RHYTHM AND NOISE

When innovative recording artists are looking for creative synth processing, inventive drumming, and punchy mixes, they call engineer John McEntire. In this interview, McEntire shares production tips he has used with cutting-edge bands such as Tortoise, the Sea and Cake, Stereolab, and the Fiery Furnaces.

By Rich Wells

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ESSENTIAL UTILITIES

Software utilities may not offer the excitement of a new synth, sequencer, or DSP effect, but they're often the key to getting great results fast. We cover four of these workhorses in detail and briefly describe six more essential downloads.

By Len Sasso

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CHUCK DAMMER

SPACE IS THE PLACE, PART I

If your mixes feel cluttered and lifeless, the solution may be to adopt a three-dimensional mixing approach. We'll show you how to conceptualize a mix as having width, depth, and height, for an open and full sound.

By Myles Boisen

DEPARTMENTS

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- **KRK Systems Rokit 5 G2** studio monitors
- **Solid State Logic Duende Mini (Mac/Win)** plug-in accelerator
- **Heavyocity Evolve (Mac/Win)** sample player
- **Cascade Microphones Gomez Michael Joly Edition** ribbon mic

REVIEWS

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HAS YAMAHA GONE SOFT?

Yamaha makes more acoustic pianos and digital pianos than any other company on the planet. Now for the first time, Yamaha has taken one of their best acoustic piano samples—a meticulously recorded $250,000 handcrafted S4 grand—from one of their top-selling hardware synths (the S90ES) and made it available as a VSTi instrument.

So has Yamaha gone soft? Not really—to get the S90ES grand VSTi you just need to purchase a KX controller or other Yamaha music production product and register your serial number on www.MPSN.com. Of course, the KX8 not only has great hands-on control of Cubase AI and other DAWs, it also features the same graded hammer action found on some of our most popular digital pianos. So if you live in a virtual world and want a great sounding Yamaha digital piano sound, it's really not that hard!

KX8 USB Music Production Studio

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For more information about the KX8 visit www.xfactorvst.com

USB MUSIC PRODUCTION STUDIO

YAMAHA

Pack Rat

In the July 2004 feature "Keeping It Simple," author Nick Peck offered his one-year rule: if you haven't used a piece of gear in the last 12 months, you should sell it and put the proceeds toward something you'll use now. In difficult financial times, it's tempting to follow that advice. Because of it, gear geeks (myself included) have scored some great deals (especially in the days before eBay and craigslist helped inflate the prices of vintage gear). And no doubt we've mistakenly let a few treasures go as well.

But as a lifelong pack rat, I have issues with the idea that you have to jettison things in the closet simply because you haven't used them in a while. It's one thing to finally toss out those Mac OS 6 discs and manuals because you don't have a compatible computer, but it's another to sell those cheapo stompboxes or dynamic mics for next to nothing just because they live in the bottom of a drawer and haven't been used in a decade.

John McEntire's comment (p. 44) about how he sometimes sets up a "mono mic somewhere weird" when tracking drums, to give himself the option of having an extra color, as well as Myles Boisen's suggestion (p. 58) about using "unusual mics . . . and unconventional placement" to add sonic spice to a mix made me wonder:

JANE RICHEY

which mic would I use, and where would I place it? I've been recording percussion overdubs for friends recently in my own studio, and I've started to dig a little deeper into my own mic drawer, which includes low-budget mics that went with old reel-to-reel and cassette players from the '70s. Some of them still work (or at least pass signal). Which brings up one of my personal tenets: it ain't broken if you know how and where to use it.

Often there's that precious last gasp right before a synth or pedal dies, when you'll hear a sound that you've never heard before or will never hear again. If you were lucky enough to record it, it could serve as loop fodder or a song starter. Circuit benders regularly embrace this aspect of an instrument's life span, but it's not limited to electronics. I've had this kind of experience with broken cymbals, where a crack causes a nice buzz but it lasts only as long as a few hits, as well as with an electric guitar in dire need of repair, which has a kora-like sound when played in just the right way.

McEntire's and Boisen's comments also reminded me of one of my favorite studio moments. While I was playing drums on an otherwise conventional rock session, engineer Scott Solter asked me to swap out my snare drum for a cardboard box. Although I've played time on detritus before (scrap metal, phone books, trash cans, and so on), I had never used cardboard as the "snare drum" within a traditional kit. And only by being struck on two and four did it actually seem to work in that capacity at the time. This kind of substitution is common when working with samples, so it should've been obvious in the studio with acoustic drums, right? Yet in this context it knocked me out!

Of course, Solter was looking ahead toward the final mix, where a dull thud with a high-frequency attack transient would suit the overall sound of the song while giving the drums some extra attitude. Because he travels with a number of vintage, tube-based filters originally built for audiologists in the '50s and '60s, he was able to sculpt the right kind of vibe from a paper-playing drummer.

We spend a lot of time in EM covering the latest technologies and how to get the most from them. However, it's often rewarding to revisit forgotten tools and explore directions in recording that seem just plain wrong for the situation—especially when you already have some keeper tracks but are looking for a sound that "adds the eyebrows," as Zappa used to say.

If you're still disappointed by that pawnshop prize you picked up in the '80s, perhaps you just haven't run it through the right fuzz box yet.

Gino Robair
Editor

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FRONTPANEL

By Gino Robair

Download of the Month

Koblo Centaurus (Mac/Win) By Len Sasso

Centaurus ($7.49) is the first in a planned series of low-cost synths and effects from Koblo (koblo.com), developer of the free, open-source sequencing environment Koblo Studio. This analog-style synth comes in VST, AU, and standalone formats and requires online authorization. (You can try it out in demo mode, which emits occasional noise bursts.) Centaurus presents a compact graphical user interface that has clearly labeled knobs and buttons but no digital readouts. Its built-in preset browser gives you easy access to more than 100 factory presets that are organized as basses, leads, pads, and effects. And, of course, you can add your own.

You get two oscillators with standard waveforms: saw, square, triangle, and sine. Osc 2 has variable pulse width, and, in the only deviation from the analog paradigm, you can route it to frequency-modulate Osc 1. You can turn off keyboard tracking for either oscillator, which is useful for clangorous FM effects, as illustrated by the factory preset Nice Bell Lead. The oscillators are mixed and sent to a multimode (lowpass and highpass) resonant filter that has handy buttons to toggle Velocity and Mod Wheel tracking. The output level is controlled by a dedicated ADSR envelope, and you can route an additional, looping AR envelope to FM amount, filter cutoff, pitch, LFO rate, and pan. The tempo-syncable, delayed-onset LFO has a variety of waveforms, including random, and you can route it to amplitude, filter cutoff, pulse width, and pitch. One-click MIDI Learn rounds out Centaurus's feature set.

ONLINE BONUS MATERIAL

Although Centaurus is capable of producing the full spectrum of analog-synth sounds, it excels at ambient washes and special effects (see **Web Clip 1**). It's simple to program, and the ease of setting up MIDI control makes it a hands-on synth. And the price is hard to beat.

OPTION-CLICK By David Battino

AirPort Express: Wireless Surround for $99

Discover cool features lurking inside popular products

The palm-size AirPort Express ($99) by Apple (apple.com) has some surprising abilities. Connect an Ethernet cable, and you can create a 10-user Wi-Fi network. Connect a USB printer, and you can print wirelessly. Or connect a stereo miniphone cable, and you can play audio from any Wi-Fi-enabled Mac or Windows computer running iTunes. You can even stream audio to multiple AirPort Expresses.

At the bottom of the audio jack, though, lurks the coolest musical feature of all: an LED that beams out a lossless, optical S/PDIF version of the audio. Drag a DTS or Dolby Digital file into iTunes, and the AirPort Express can transmit the multichannel signal to a surround-sound decoder. The secret is to crank iTunes' volume to its maximum and turn off all audio processing (EQ, Sound Enhancer, Sound Check, and so on). With Airfoil ($25) by Rogue Amoeba (rogueamoeba.com), you can stream audio from other programs, too. (For more about David Battino's work, visit batmosphere.com.)

The AirPort Express wireless router can stream multichannel audio out of its hidden S/PDIF jack. Just add an ⅛-inch-to-Toslink adapter.

Classic Ribbon Mics, Part 1

Early '30s

RCA Photophone PB-31
One of the earliest ribbon mics, the PB-31 was designed for film use and was not widely available.

1931

RCA Type 44-A
The 44-A was the first commercially successful RCA ribbon mic and was popular among vocalists. Bing Crosby bought one for himself.

1939

Western Electric 639A Bird Cage
This mic included both a ribbon and a dynamic element and offered three pickup patterns. The 639B offered six patterns.

THIS MONTH'S SOUNDTRACK

These albums encompass a diverse range of styles and composition methods, from ambient and avant-garde electronics to funk and pop.

JAMAR NICHOLAS

PC MUÑOZ: *GRAB BAG* (TALKINGHOUSE)
Compelling beats, clever lyrics, and special guests, such as cellist Jean Jeanrenaud, make this album an enjoyable listen.

RICHARD BARBIERI: *STRANGER INSIDE* (KSCOPE)
A lovely collection of dark and mysterious pieces combining synths and beats with acoustic bass and drums.

DIXIE CHAU

ROBERT RICH AND FARYUS: *ZIRKALO* (FARIA)
Time stops as the deep, brooding drones from this powerful American-Russian collaboration slowly unfold.

CONNIE ROBB

THE ELECTRONIC HAMMER: *HOW TO PHILOSOPHIZE WITH A HAMMER* (EMF MEDIA)
Solo percussion processed live with two laptops forms the basis of this collection of exceptional electroacoustic pieces.

BARRY SCHRADER: *MONKEY KING* (INNOVA)
Two large-scale electronic works that sparkle with clangorous timbres and bubble with rich washes of sound.

TALKBACK

EM Readers!

Next month we again focus on the importance of creating space in your mix. Ever had trouble getting clarity in a mix? Email us at emeditorial@emusician.com, and your responses will be posted online with the article.

1950
American Microphone Company DR330
The DR330's compact design combined a dynamic element with a ribbon and offered switchable polar patterns.

1952
STC (Coles) 4038
This BBC-designed horseshoe-shaped classic is still in production today.

1957
beyer M160 Double Ribbon Mic
The M160's hypercardioid pattern allowed Eddie Kramer to use it on Jimi Hendrix's voice and his amp in live playing situations because of how it rejected the bleed from other instruments.

By Len Sasso

DAVE SMITH INSTRUMENTS MOPHO

PROPHET ON A BUDGET

If you're looking to get the rich analog sound of the Prophet '08 but without emptying your bank account, Dave Smith Instruments (davesmithinstruments.com) delivers. Mopho ($399) is a compact desktop module featuring one Prophet '08 voice and a few special treats: suboctave generators for the oscillators, external audio input, and pre-filter feedback. A few essential parameters have dedicated knobs, and everything else is accessed with four assignable rotaries. A cross-platform software editor is also included. The company says the Mopho really excels at basses and big, fat lead sounds.

M-AUDIO PROFIRE 610

MORE FIREWIRE POWER

M-Audio (m-audio.com) expands its line of compact FireWire audio interfaces with the ProFire 610 (Mac/Win, $399). The half-rackspace, bus-powered, 24-bit, 192 kHz unit offers onboard DSP mixing, eight balanced ¼-inch TRS outputs to facilitate 7.1 surround mixing, two balanced ¼-inch TRS inputs for line-level signals, and two XLR/TS combo jacks with Octane mic preamps and phantom power for mic- and instrument-level input. Stereo S/PDIF I/O, two headphone outputs with independent volume, and a 1-in/1-out MIDI interface round out the configuration.

LINE 6 M13 STOMPBOX MODELER

Line 6 (line6.com) has released the latest in its Stompbox Modeler series. The M13 ($499) is a virtual pedalboard that houses more than 85 of the best-selling Line 6 pedals and stompboxes. You can have up to four active effects and arrange them in any order. You also get a 28-second looper with dedicated switches for each of its functions. A 12-scene memory lets you instantly recall complete setups onstage. The rugged metal-chassis unit has ¼-inch mono/stereo input and output jacks, effects send and return jacks, two ¼-inch expression pedal jacks, and MIDI I/O.

FOUR ON THE FLOOR

ANTARES AUDIO TECHNOLOGIES AUTO-TUNE EVO

A NEW PITCH

With the release of Auto-Tune Evo (Mac/Win; native $319, TDM $519), Antares Audio Technologies (antarestech.com) has increased the power and ease of use of its flagship pitch-correction software, Auto-Tune. You still get Automatic and Graphical modes, and Graphical mode is enhanced to let you expand the editing window, manipulate the new note objects for pitch correction and shifting, and assign individual Retune speeds. Antares has updated Auto-Tune's voice-processing technology to take full advantage of more-powerful computers and to incorporate advanced formant correction and throat modeling. Auto-Tune Evo is available in TDM, RTAS, VST, and AU formats, and upgrade pricing is available.

Metric Halo Mobile I/O 2882 2d Expanded

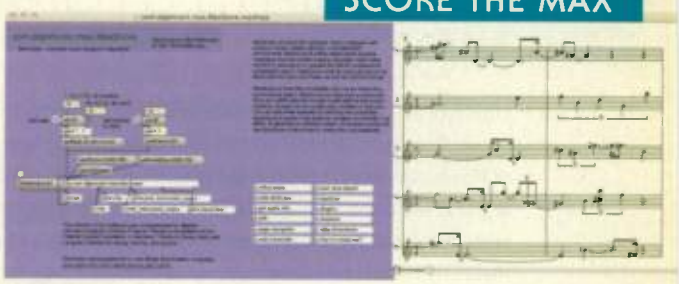
RING OF FIRE

Metric Halo (mhlabs.com) takes its Mobile I/O line of multichannel-processor FireWire audio interfaces to the next level with the Mobile I/O 2882 2d Expanded ($1,895 [MSRP]). The 24-bit, 96 kHz unit incorporates the new 2d Card, offering a roughly sixfold increase in DSP power. You get eight mic/line/instrument analog inputs with mic preamps and switchable phantom power, eight balanced outputs, eight channels of ADAT I/O switchable to Toslink, and AES and S/PDIF digital I/O with selectable SRC. Included MIO Console software gives you direct access to the 2882's processing architecture.

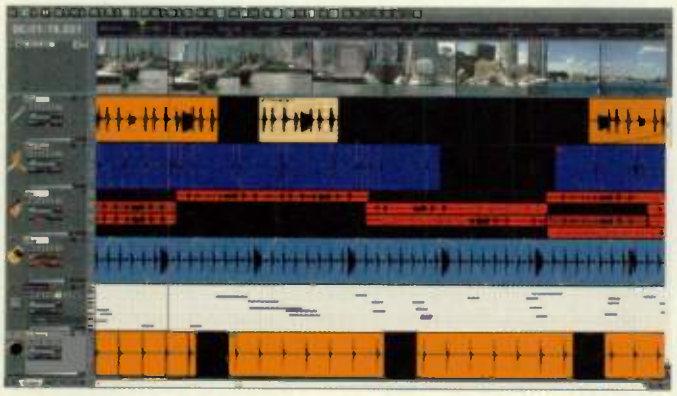
ALGOMUSIC MAXSCORE

Want to create a score from your favorite Cycling '74 Max/MSP note-generator patch? Algomusic (algomusic.com) has you covered with its MaxScore music-notation object (Mac/Win, free). More than a notation tool, MaxScore is an interactive performance object that's able to drive your Max/MSP sound generators from a score and create a score in real time. You can load and save scores as well as export them in MusicXML for use in MakeMusic Finale, Avid Sibelius, and other notation software. MaxScore requires Java Music Specification Language (Mac/Win; $120 standard, $55 student); a free 30-day trial of JMSL is available from the Algomusic site.

SCORE THE MAX



CAKEWALK SONAR 8 PRODUCER



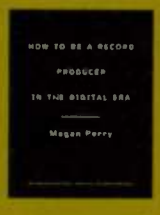
PING

Cakewalk (cakewalk.com) offers work-flow enhancements, new features, and performance optimization with Sonar 8 Producer (Win, $499), the most recent upgrade to its flagship DAW. The updated Loop Explorer 2.0 lets you quickly browse, preview, and drag-and-drop audio and MIDI loops. The Dedicated Instrument Track makes it easier to work with virtual instrument plug-ins. You get a bevy of new instruments and effects, such as the Beatscape loop-performance instrument, Hollywood Edge effects library, Native Instruments Guitar Rig 3 LE, TS-64 Transient Shaper, and TL-64 Tube Leveler. Other improvements include audio-engine optimization, enhanced transport and control-surface handling, and QuickTime 7 import and export.

GET SMART

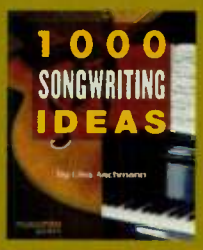
Billboard Books How to Be a Record Producer in the Digital Era

How to Be a Record Producer in the Digital Era ($18.95), by Megan Perry (meganperry.com) and from Billboard Books, covers both the technical and business sides of record producing. It has interviews with producers, studio managers, and A&R experts, along with a spirited introduction by Ron Fair, chairman of Geffen Records, about the past and future of the record industry. Coverage includes dealing with legal issues, working with labels and artists, building a clientele, managing the business, and developing a long-term career plan. You'll also find details on creating an independent recording studio.



Hal Leonard 1000 Songwriting Ideas

Lisa Aschmann's *1000 Songwriting Ideas* ($18.95), from Hal Leonard (halleonard.com), is all about getting you beyond lyrical retreads, tired chord progressions, and flat melodies. The Nashville songwriter, who has more than 2,000 songs to her credit, added 500 new ideas to the 500 in the book's original edition. Each entry's a one- or two-paragraph kicker meant to jolt you out of your writer's block with something new to try—such as throwing in an oddball chord, stripping out unnecessary complexity, changing the lyrical perspective, and so on.



Focal Press Audio Wiring Guide

Recordist and technical writer John Hechtman shares his 40 years of experience building and rewiring pro and semipro installations in *Audio Wiring Guide* ($39.95), from Focal Press (focalpress.com). Whether your problem is trying to fix a broken cable or wire your whole studio, Hechtman and coauthor Ken Benshish show you how with step-by-step instructions and 500 illustrations that cover all common audio and multimedia connectors. For bigger projects, the book takes you through job layout, choosing the right tools, and avoiding common errors.

Simply Record

From the company that invented home recording comes the **DP-02 Digital Portastudio.** It's based on TASCAM's easy-to-use Portastudios of the past, only updated with CD-quality digital recording to a 60GB hard disk. Controls for panning, EQ and effects are knobs instead of menus. You can mix and master in the unit or transfer recordings to your computer through USB. Nothing to install or learn, just start making music with the DP-02.

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Sound Advice

Lapjockey's Flatpack 3

Flatpack 3 (Mac/Win; $69 download, $85 CD) brings Lapjockey's (lapjockey.com) *Flatpack* series up-to-date with Propellerhead Reason 4 by taking full advantage of the new Thor synth and RPG8 arpeggiator. The ReFill contains four collections of Combinators: Boxmoor II (drum machines), Element (hybrid sampler and synth), Darwin (evolving layered sounds), and Rex Dex II (groove boxes). You also get individual patches for Thor (175), Redrum (30), and NN-19 (100) that you can swap out in any of the Combinators. Beyond that, a collection of Thor starter patches is a great place to begin getting a handle on Thor programming.

Native Instruments' Kore Electronic Experience

Kore Electronic Experience (Mac/Win, $229 [MSRP]) from Native Instruments (native-instruments.com) combines seven Kore Soundpacks at an attractive price. The bundle consists of Best of Absynth; Best of Reaktor, vol. 1; Deep Transformations; FM8 Transient Attacks; Massive Expansion, vol. 1; Synthetic Drums Reloaded; and an additional Soundpack of your choice. These run on the provided cross-platform Kore Player and with the premium Kore 2 software and hardware-and-software editions. All versions come as standalone applications and as AU, VST, and RTAS plug-ins. Altogether, the bundle offers 800 instrument sounds with variations, 150 multi-effects processors, and 10 drum kits.

PowerFX's Tribal Tech House

PowerFX (powerfx.com) takes tech and house beyond four-on-the-floor with *Tribal Tech House* (Mac/Win, $79). This collection of 32 construction kits adds tribal rhythms to the more common synthy leads, basses, and effects, then throws in hundreds of bonus loops and one-shots that include a variety of interesting ethnic vocals. All files are provided in WAV format, with REX versions of the loops also included.

TANAGER AUDIOWORKS SONGFRAME

FRAME-UP

SongFrame (Win, $179.99 [MSRP]) from Tanager AudioWorks (tanageraudioworks.com) is positioned as a pre-DAW songwriting environment. It's designed for quickly working up a song using drag-and-drop icons for song-structure elements such as chords, audio clips, melodies, and lyrics. You can record song elements and play back songs using SongFrame's audio engine, which supports VST plug-ins and includes EZ-Drummer Lite and 4Force Piano. Once you've worked up your song ideas in SongFrame, export audio and MIDI data to your DAW for developing the final project.

LINPLUG RMV

GENERATION V

RMV (Win, $179), the latest version of LinPlug Virtual Instruments' (linplug.com) VSTi drum and groove plug-in, sports plenty of new features. It's a drum synth, sampler, and librarian coupled with six loop players offering built-in slicing. You can configure each slice and each of the 48 drum pads independently and play them with 32-voice polyphony. Each slice and pad has three insert effects, 4-band EQ, and two effects sends. RMV comes with 2.5 GB of content, including 1,500 loops, 2,600 MIDI grooves, and 10,000 drum sounds. Delivery is by download or DVD, and a Mac version is expected soon.

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Web site: tape.se

COURTESY TAPE

In a Silent Way

Experimental trio Tape smolders quietly from within on *Luminarium*.

There's a lot more to Sweden than midnight sun, smorgasbords, and ABBA. Just ask Andreas Berthling, who, with his brother Johan and fellow musician Tomas Hallonsten, started making music under the name Tape back in 2000. Since then, the group has crafted a solid string of purely minimalist albums laced with a mix of experimental jazz, folk, electronic, and prog-psychedelic flavors. *Luminarium* (Häpna, 2008), Tape's fourth and latest release, is the first that the band has made from start to finish in its new Summa studio, designed and built by Berthling.

By Bill Murphy

"We recorded our first two albums in our parents' summer house," he recalls. "We had a very limited laptop setup, with an interface and a couple of mics. I didn't really know much about recording back then, so everything was done in a pretty simple way. Over the years, we started buying gear on eBay or when we were on tour, so the recording process is now a lot more professional—but it's not our aim to make things sound that way. We tend to like older gear that sounds a bit rough and analog, even though we use some digital elements."

With brother Johan on guitars and Hallonsten on piano, organ, and various synths, Berthling manipulates the results using SuperCollider, an open-source programming language and real-time sound-synthesis server, which allows him to sample and then radically alter the sounds of a live jam in real time. The studio is outfitted with Coles 4038 ribbon mics, vintage Telefunken V676b mic pres, a UA 1176 compressor, and various old-school echo effects—all tools for Berthling to capture a full-bodied and gritty sound, sometimes even by reamping his SuperCollider session through a tube guitar amp.

"Usually we start by tweaking our gear and playing around with sounds we like," Berthling explains. "I run the recording on [Apple] Logic while playing SuperCollider on my laptop—maybe a drum sample or the guitar, or I might record Johan and Tomas while they're trying to find a sound, and then work with that. Anything they do in the studio, I just place some mics and record it. Sometimes we'll add echo and delay effects later, but sometimes we record them during the take, just to commit to that sound. After, we edit everything in Logic."

More pastoral mind trip than jazz-rock freak-out, *Luminarium* isn't quite the kind of album you'd crank up at a party (at least not without a few couches in the room), but there is a palpable and insistent energy to it. "Moth Wings" shimmers with multiple layers of synthesized atmospherics over a mournful acoustic guitar (see **Web Clip 1**), while the churchy organ-and-guitar figure of "Illuminations" gradually builds and recedes over Berthling's inventive signal processing (see **Web Clip 2**). Whatever they choose to grapple with sonically, the members of Tape manage to bend it in strange and interesting ways.

ONLINE BONUS MATERIAL

"It's very tricky to describe our music," Berthling says. "My brother's main instrument is actually the upright bass, and Tomas is really a trumpet player. We tried to record like that, but it didn't work for us, so I think the mood first changed when they changed instruments. But the general thing is that we take it pretty slow, so we're a bit more relaxed when we record. Sometimes we think we're making something more aggressive and loud. But since we improvise everything, I find that we always get back to this quiet atmosphere that we've built up during the eight years we've been playing together." em

SONY

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COURTESY JOSH FIX

The Fix Is In

Josh Fix combines home- and studio-recorded parts on his debut CD

With its lush recordings and prominent use of piano and stacked vocals, Josh Fix's *Free at Last* (1650 Entertainment, 2008) harkens back to the studio production style of 1970s bands like Supertramp and Queen—but with a decidedly modern twist.

By Emile Menasché

A South African native who now calls San Francisco home, Fix says he loves working with today's technology but that his approach to composition is rooted in more-traditional methods. "When I write, I tend to hear most of the finished production already," he explains. "The studio is not a place for me to experiment with arranging. I studied classical composition in college; when I mess around—with even the littlest, shortest phrase in music—I tend to hear all the parts up and down."

To capture his initial ideas, Fix put together a relatively modest rig (based on the Korg D-1600 hard-disk recorder) in what he describes as a bedroom closet. "I had no experience as an engineer, but it had a good preamp on it and the built-in effects were really good," he says. "I think the early demos I made were sounding pretty good to begin with. The first batch of demos actually became an EP [*Steinway the Hard Way;* Flop of the Century, 2004]."

In fact, one of Fix's early recordings won a local Grammy-sponsored songwriting contest. "Different people were passing the demos around," he recalls. "I got a call from Lenny Kravitz one day and he liked it. Steve Lukather heard it and started passing it along to his friends, so I started getting calls from Van Halen and Steve Vai—it was really cool! At that point, I thought maybe I should do this seriously."

When it came time to make his full-length CD, Fix decided to go into a commercial facility, working with engineer Jaime Durr at Hyde Street Studios in San Francisco. "I was running around the Bay Area trying to find a place that had a good vibe," Fix says. "Sitting in the corner of Jaime's studio was an antique Emerson upright piano. I played it and thought, 'This is going to be the sound of the record!' I wanted something with an authentic, live sound to it—which might have been a reaction to having to sit in my closet and make electronic demos for four years."

But Fix's closet days were far from over. Before heading into the studio, he spent a month producing elaborate demos, this time using Pro Tools LE and a Digidesign Mbox (he's now using LE 7.4 and an Mbox 2 Pro). "Basically, every song that was going to be on the album had its own template and tempo," he explains. "Because I place most of the instruments myself, that turned out to be a good way to work: a lot of what I thought would be scratch parts ended up being the final parts on the record. It's such a weird hybrid of vintage acoustic instruments and amps mixed into this computer world I've become so used to recording in. About 80 to 90 percent of the guitar parts were done in the bedroom using [Native Instruments] Guitar Rig 2."

Fix built tracks with so many vocal layers that he sometimes pushed the limits of the gear. "We had to open an entirely new Pro Tools session for each song just to be able to fit in all the vocal parts," he admits. "Some sections have 100 voices doing one little part on top. This technology that lets you record digitally for track after track after track—for me, that's the greatest thing." EM

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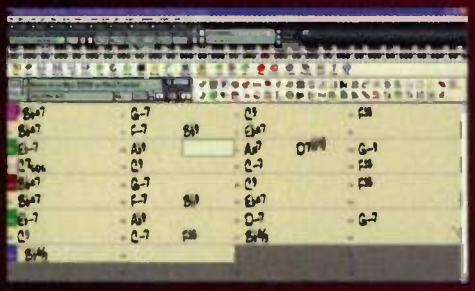

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FIG. 1: In Musinaut's MXP4Creator, you assign weighting factors to each version of each section of the song, which determines how often each version will be played.

Spontaneous Playback

With MXP4, recordings sound different each time they're played.

By Scott Wilkinson

Live music is quite different from the visual arts. For example, every time a given song is played, it is unique, with inevitable variations from one performance to the next. As Joni Mitchell once noted, no one ever asked Van Gogh to paint *The Starry Night* again. But many musicians are expected to play certain songs at each of their concerts, and these songs sound different every time. On the other hand, recorded music is more like a painting—once it's in the can, it sounds exactly the same each time it's played.

Now, a new audio format could bring recorded music closer to the live-performance experience. This new format, called MXP4, is being developed by the French company Musinaut (mxp4.com), which rhymes with *astronaut*. Like those intrepid pioneers of outer space, Musinaut is exploring the uncharted frontiers of recorded music with heretofore unheard-of capabilities.

The basic idea is this: song files saved in the MXP4 format will sound different each time they are played. For instance, you might hear a different guitar solo or verse arrangement. In addition, the changes need not be entirely predictable, lending a dynamic freshness to the song each time it's heard.

As the composer/performer, you start by recording a song in the normal manner, using any recording program you like, such as Digidesign Pro Tools, Apple Logic, or Steinberg Cubase. During this process, you record multiple takes of the song or song sections, such as the intro, verses, choruses, bridges, solos, and endings. For example, some versions might use acoustic instruments whereas others use electric, and some might have different musical styles.

Once all the versions of the song and its sections are recorded, you export the tracks separately to WAV or AIFF files and then open them in MXP4Creator, an application developed by Musinaut for Windows and Macintosh computers. Next, you mark the boundaries of each song section, which are called *patterns* in MXP4-speak. In addition, you group all related sections together; for instance, all the variations of each verse are grouped into a single entity. These entities are called *tracks*, and the different audio versions within a track are called *subtracks*.

You then assign weighting factors to each subtrack, which determines how often it will be played with the song (see **Fig. 1**). For example, say you have three guitar solos, and you want one of them to be heard more often than the others. You might specify a weighting factor of 50 percent for that subtrack and 25 percent for each of the other two. You can also assign weighting factors to the order in which patterns are played and even link the end back to the beginning, creating a song of indefinite length and constant variation.

Finally, you save the entire project as an MXP4 file that can be played on a computer with the appropriate software player or streamed from a Web site using Musinaut's streaming software (check out the examples on the company's site). Each time the file is played, you hear a different version of the song. Within MXP4Creator, you can also define what Musinaut calls a *skin*, which narrows the choices of subtracks to those that fit a particular style or mood—say, electric or acoustic—that listeners can choose according to their preference.

MXP4Creator and the streaming software are available now, but Musinaut has big plans for the future, including integrating MXP4Creator into programs such as Pro Tools, applying the MXP4 idea to MIDI files, and developing a portable player similar to the iPod. This is a very exciting idea that brings spontaneity to recorded music, and I intend to keep a close eye on it. em

The Sound of Neve on Pro Tools LE

UAD Software v5.2 Now RTAS Compatible

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UNIVERSAL AUDIO

Essential Utilities

Streamline your work flow with these must-have applications.

By Len Sasso

It's hard to get excited about utility software; it usually does a job you'd rather not have to bother with. But when the job needs to be done, having the right tools can make it less of a chore and even fun.

In this article, I'll cover four software applications that will come in handy no matter what kind of music you make, and I'll offer some tips on how to make the best use of them. All are reasonably priced, and all but one are cross-platform (see the chart "Essential Utilities Compared"). In the sidebar "Little Gems," you'll find six free or donationware downloads that you might rarely use but will be happy to have when you need them.

It's a Slice

With most popular DAWs and samplers able to import and manipulate slice-formatted audio files and to perform beat slicing and time-warping on their own, a plug-in devoted to sliced audio might seem superfluous. But iZotope pHATmatik Pro 1.52 has enough tricks up its sleeve to make it an indispensable tool for working with REX or Acid audio files as well as for slicing your own.

You gain control of a variety of playback parameters for individual slices, and you can route any slice to any of three auxiliary outputs for separate DAW mixing and processing. Master effects, which apply to all slices routed to the main output, include delay, distortion, multimode and comb filtering, and a modulation matrix for routing two built-in LFOs, MIDI Mod Wheel, and MIDI Velocity to various settings (see **Fig. 1** and **Web Clip 1**). A single instance of the plug-in holds up to 16 audio files, each with its own master effects and MIDI channel (see **Web Clip 2**). MIDI Learn lets you control master-effects settings on the fly.

ONLINE BONUS MATERIAL

Although the pHATmatik Pro control panel has small icons with sometimes-obscure functions, the plug-in is easy to use and takes only a short time to learn. To start, open the browser (Folder icon at top left), audition files until you find one you like, and load it into the sample-slicing window. If you load a REX or Acid file, you'll see its slice markers. For unsliced audio, click on the Do Slice button to the left of the Sensitivity slider, and the plug-in will place slice markers at attack transients it detects. If you get too few slices, increase the Sensitivity slider and click again. No matter what format you start with, you can add, delete, and move slice markers at will.

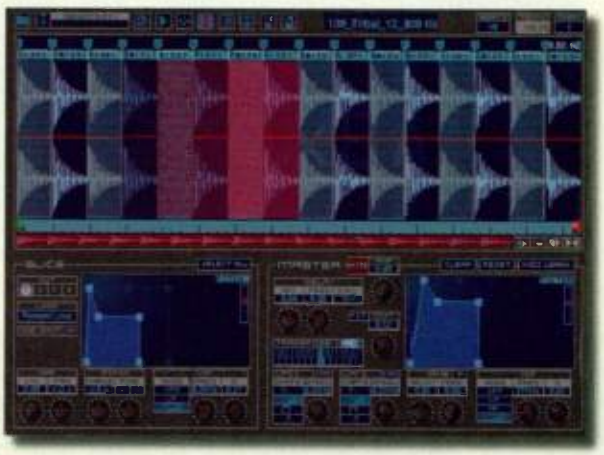
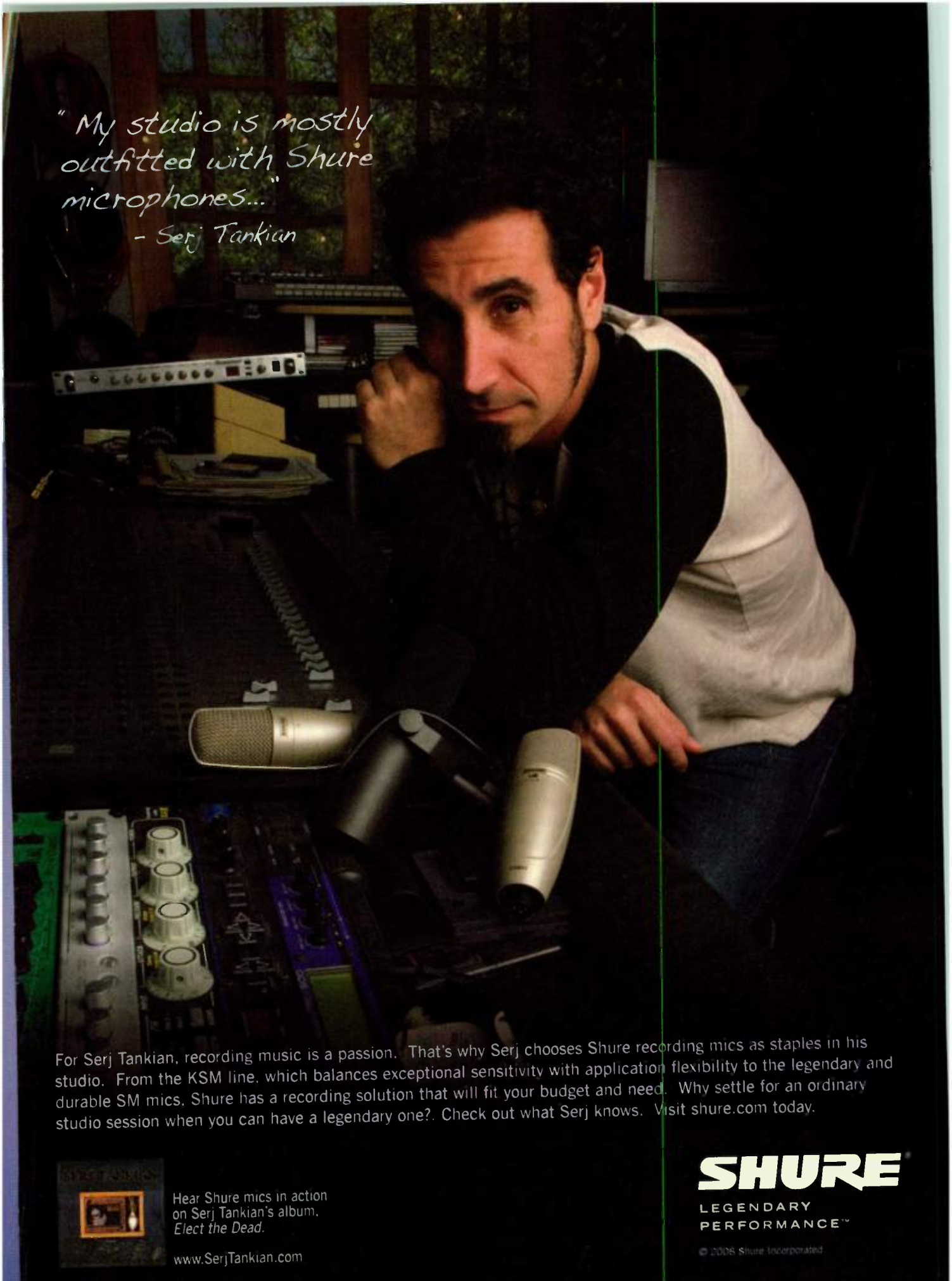


FIG. 1: The pHATmatik Pro GUI lets you select and process individual slices as well as add master effects to each of the plug-in's 16 channels.

Audition individual slices by Shift-clicking on them or by playing their trigger notes from your MIDI keyboard (starting with C0—MIDI Note Number 24). When you're satisfied with the slicing, use the MIDI Export button (to the right of the Sensitivity slider) to save a MIDI file that will trigger the slices with the correct timing. Alternatively, Option-drag (Alt-drag on the PC) the button to place the MIDI file on a DAW track, and pHATmatik Pro will automatically save it next to the audio file. You can also drag audio slices to DAW audio tracks.

The two areas at the bottom of the GUI, labeled Slice and Master, contain the slice processes and master effects. Slices can play forward, backward, or alternating, and with or without looping. Looping and alternating become interesting when the slice is shorter than the time allotted to play it, which can result from lowering the tempo, triggering slices manually, increasing the length of recorded trigger notes, or shortening a slice's loop. (The envelope graphic doubles as a loop-tuning display that lets you adjust a slice's loop end points.) Each slice has its own pitch offset, lowpass or



For Serj Tankian, recording music is a passion. That's why Serj chooses Shure recording mics as staples in his studio. From the KSM line, which balances exceptional sensitivity with application flexibility to the legendary and durable SM mics, Shure has a recording solution that will fit your budget and need. Why settle for an ordinary studio session when you can have a legendary one?. Check out what Serj knows. Visit shure.com today.

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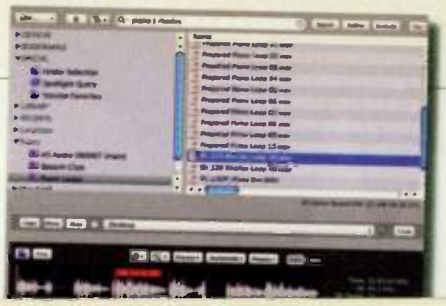

highpass resonant filter, amplitude, and pan position, along with ADSR envelopes for pitch, filter cutoff, and amplitude.

PHATmatik Pro requires only slightly robust. At the basic level, you enter a search term and hit Return to find all files in the current list with that term in their name. Type in another term, and have AudioFinder refine th-

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the utility presents you with a spectrogram of the frequency breakdown of the selected audio, conveniently aligned with a keyboard graphic.

Transcribe will also guess what notes and chords fit the spectrum. Notes are shown on the keyboard graphic as green (for in tune) or pink (for out of tune) dots whose size indicates their prominence in the spectrum. Chord spellings are shown as text. To see the overtones of any note on the keyboard, Shift-click above it in the spectrogram. That will help you deduce whether Transcribe's guesses are played notes or overtones.

The trick to using this application effectively is to home in on what you want to analyze, and it's a big help to learn, and perhaps augment, its extensive set of keyboard shortcuts. It's also helpful to have a keyboard synth or sampler at hand with a sound similar to the material you're trying to analyze. The manual, which is in the form of searchable help, gives lots of tips and tricks for organizing, marking up, and transcribing large files such as complete songs. For shorter clips, the process is quite straightforward.

FIG. 3: VintageWarmer 2's controls are designed to emulate warm, analog-tape-style compression.

Little Gems

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When your MIDI keyboard or control surface is not talking to your DAW or your DAW is not controlling your hardware synth, Snoize MIDI Monitor should be your first stop. It will eavesdrop on any combination of MIDI inputs and outputs, and you can set it up as a MIDI output destination for other applications. You don't have to sort out messages of different types or from different sources; instead, open multiple specifically targeted windows.

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When you want to know what's going on under the DSP hood, these two plug-ins are a big help. Fre(a)koscope is an FFT-based, real-time spectrum analyzer, and s(M)exoscope emulates an oscilloscope that lets you capture very short events, such as single cycles of an audio waveform, as well as longer events, such as several beats from an audio track. You might, for instance, use Fre(a)koscope to analyze the effect of EQ and s(M)exoscope, the effect compression.

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S(M)exoscope offers free threshold (rising and falling), and internal retriggering, and you can set the resolution of its 630-pixel display from 32 pixels per sample to 1,000 samples per pixel. High sample-per-pixel settings display larger chunks of audio, which is often useful for analyzing DSP effects.

Lost Memories Music Math 4

How much is enough? Lost Memories Music Math will tell you in virtually any units you desire. You enter values in one of the calculator's seven tabs—Tempo, Transpose, Delay, Tap, Samples, Notes, and SMPTE—and it displays the relevant conversions. For example, if you want to use tape-speed-style pitch-shifting, the Transpose tab will tell you the speed adjustment for the desired semitone shift. To find the LFO frequency in hertz corresponding to a note division, use the Delay tab. To convert times between SMPTE formats, use the SMPTE tab. For MIDI Note Number, frequency, and note-name matchups, the Notes tab has the scoop.

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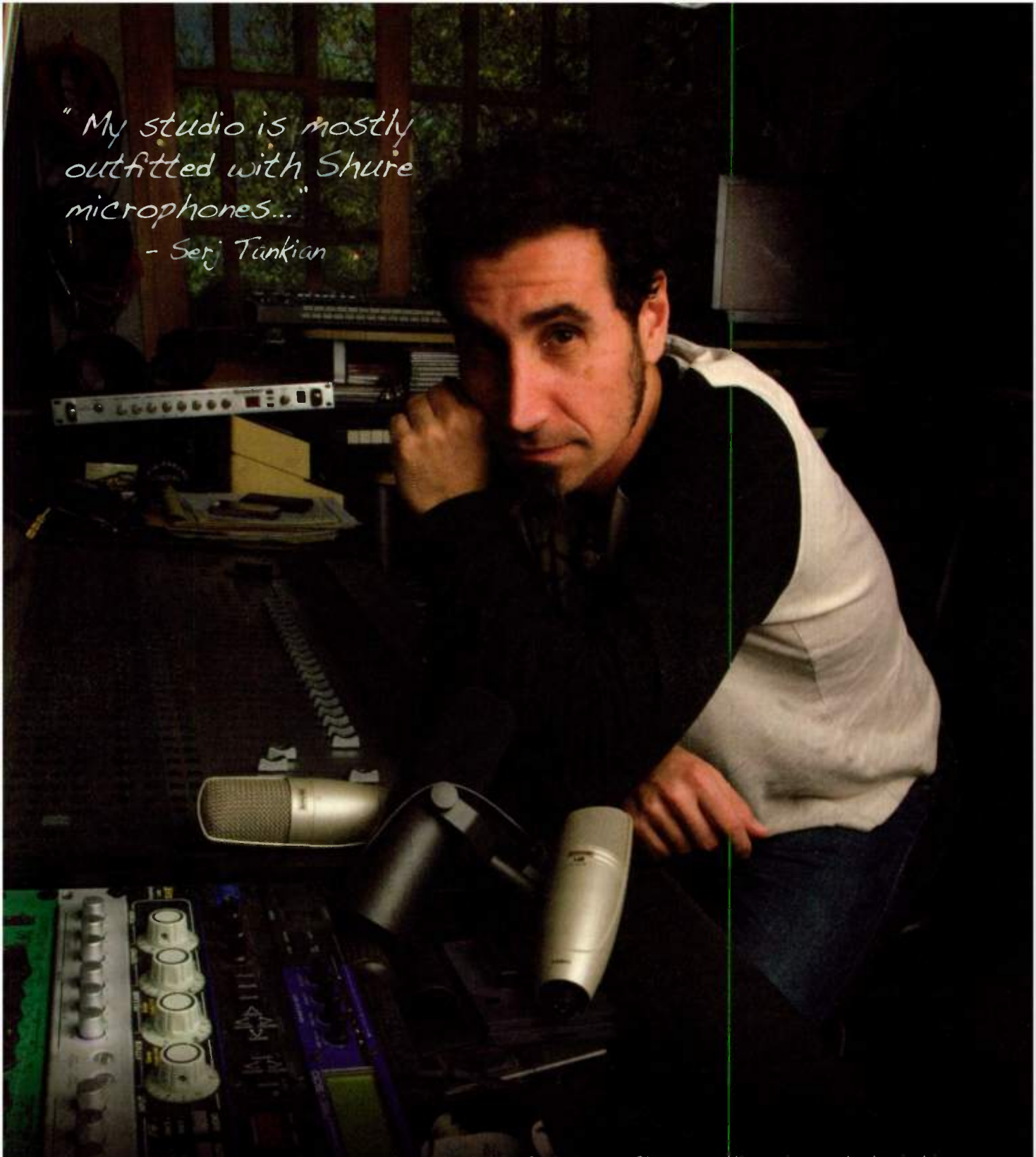

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PHATmatik Pro requires only slightly more CPU power than playing audio files directly, and it offers the many advantages of MIDI slice triggering.

I Know It's Here Somewhere

Even with the flexible browsers in modern DAWs and samplers, finding what you're looking for in a large audio library is often a tedious, hit-and-miss operation. Iced Audio AudioFinder 4.8 is a fast and easy way to locate; audition; and move, copy, or alias audio files on a Mac (see Fig. 2). Beyond that, it offers a basic sample editor for trimming, crossfading, and slicing audio files; a Sample Extractor that's handy for separating clips in multiclip audio files; and processing and rendering with AU plug-ins. It will even follow your browsing in the Finder and automatically pop up to play audio files as you select them. But search is what this tool is all about.

At the simplest level, you can manually navigate the folders on your hard drives while AudioFinder displays the audio files they contain. Selecting an audio file plays it, and you can step sequentially or randomly through all found files or have AudioFinder automate that for you. When you find an audio file you want to use, drag-and-drop it (or a segment of it) to any location, including tracks of your DAW, or use various keystrokes to move, copy, or alias it to locations you've bookmarked. Alternatively, a single keystroke saves it in a Session Favorites list, allowing you to review your favorites later. Another handy temporary location, Playback History, shows everything played since launch.

One of AudioFinder's most powerful features is scanning. You point it to a folder, a single volume, or all volumes and have the program scan for all audio files nested within that structure. You can specify what kinds of file extensions to include in scans (.aif, .wav, .mp3, .rx2, and so on). Furthermore, you can create your own Scan Sets to make AudioFinder search areas that are not nested within each other. For example, if you've grouped your libraries according to genre but want to scan only some of the folders in a genre or selected folders across several genres, you would create a Scan Set.

AudioFinder's tool set for searching is also robust. At the basic level, you enter a search term and hit Return to find all files in the current list with that term in their name. Type in another term, and have AudioFinder refine the search to file names containing or not containing that term. For more-flexible searching, use the formal syntax of Regular Expressions. For instance, "piano|bass|guitar" finds all files with either *piano*, *bass*, or *guitar* in their name.

AudioFinder offers a variety of handy instant processes, ranging from normalizing, cropping, splicing, and channel management to sampling-rate, bit-rate, and format conversion. It will even encode files in FLAC or MP3 format (using the free LAME encoder), and it supports ID3 tags.

The Warm-up

There's no such thing as a one-size-fits-all compressor, but for analog-tape-style warmth, PSPaudioware VintageWarmer 2 is hard to beat. Offering both single- and multiband compression with optional brickwall limiting, it is suitable for tracking, mixing, and mastering (see Web Clip 3). You get vintage VU metering and digital Pseudo Peak Metering (PPM), both with adjustable ballistics, and the meter bridge is available as a separate, free download. Surrounding VintageWarmer with a couple of these lets you simultaneously meter input, output, and gain reduction.

VintageWarmer comes with 29 factory presets: 17 mixing and mastering setups followed by 12 tracking presets for various instruments. A surefire strategy is to audition presets that evoke the task at hand, and then tweak one that's close to the sound you want. Notice that all the factory presets have Frequency Authentication Technique (FAT) turned off, which cuts CPU usage roughly in half; they all have brickwall limiting turned on; and they all have the Mix knob fully clockwise. Turning FAT on always improves sound quality; you may want compression without limiting; and backing down the Mix knob gives you parallel compression without the need for an additional bus for the dry signal.

The most prominent knob, Drive, adjusts the input level within a range of ±24 dB (see Fig. 3). The presets assume an input normalized to 0 dB, so when you're feeding the plug-in signals below that level, start by adjusting the Drive knob accordingly. To preserve the signal level for A/B comparison and to keep a track or submix at the same level in the mix, make an opposite adjustment to the Output knob.

FIG. 2: AudioFinder 4.8 helps you find, audition, reorganize, and make basic edits to your audio files.

Adjust the filter settings next. In single-band mode, low- and high-shelving filters come first, followed by the compressor. The Low and High Adjust and Freq knobs set the filters' cutoff frequencies and amounts. In multiband mode, the Freq knobs set the crossover frequencies between low, mid, and high bands, and the Adjust knobs set low- and high-band prelimiter gains. Each band has its own compressor.

Finally, work with the Ceiling, Drive, Knee, Speed, and Release knobs and associated buttons. In both single- and multiband mode, Ceiling sets the limiter ceiling. The Knee knob controls where, below the ceiling, compression kicks in, and Drive and Knee together have the greatest impact on compression. Speed (suggesting the effects that tape speed has on tape saturation characteristics) simultaneously sets attack and release times, and Release adjusts the release time relative to the Speed setting. In multiband mode, Ceiling works in conjunction with separate back-panel controls for saturation and release time for each band.

When dialing in compression settings, it sometimes helps to examine before and after waveforms, and the donationware oscilloscope plug-in s(M)exoscope from Smartelectronix is perfect for that (see the sidebar "Little Gems").

What Was That?

Whether you routinely transcribe recorded songs or only occasionally need to decipher a few chord voicings or a quick lick, Seventh String Software Transcribe 7.5 makes the job a lot easier. You start by opening an audio file or simply dragging it into Transcribe (most audio, including compressed formats, is supported). You then select individual chords or notes, and

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Fre{a)koscope and s(M)exoscope	Smartelectronix	smartelectronix.com	donationware	Mac/Win	VST, AU
FreeG	Sonalksis	sonalksis.com	free	Mac/Win	VST, AU, RTAS
MIDI Monitor	Snoize	snoize.com	free	Mac	standalone
Music Math 4	Lost Memories	lost-memories.com/softs	free	Mac	standalone
pHATmatik Pro 1.52	iZotope	izotope.com	$149.99	Mac/Win	VST, AU
Soundflower	Cycling '74	cycling74.com	free	Mac	background app
Transcribe 7.5	Seventh String Software	seventhstring.com	$50	Mac/Win/Linux	standalone
VintageWarmer 2	PSPaudioware	pspaudioware.com	$149	Mac/Win	VST, AU, RTAS

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The user interface is divided by a green bar, with the audio waveform display and navigation aids on top and the spectral analysis below (see Fig. 4). You create markers above the waveform and navigate using the scrollbar and overview below it. A vertical line through the waveform indicates the current playback position, but Transcribe uses a special red marker called the Current Point Marker (CPM) for most actions. You position the CPM by clicking in the waveform or below the scrollbar, and you make selections by click-dragging in those areas. Typing E moves the CPM to the playback position, Period moves the playback position to the CPM, and D selects everything between the CPM and the playback position.

Transcribe distinguishes Section, Measure, and Beat markers, and, for longer clips, it's useful to first drop those in on the fly using the S, M, and B keys. Then drag the markers as needed to refine their positions. Optional automatic subdivision markers may come in handy. Although they cannot be moved, marker-based navigation commands do locate to them. For example, if you place a Section marker every 8 bars in 4/4 and call for 32 subdivisions, you'll have fairly accurate beat markers. For short clips, you may want to just drop markers at the events you want to analyze.

Among the most convenient keyboard shortcuts, the bracket keys [and] with modifier keys such as Command or Option move the CPM along with the current selection, if any. The Left and Right Arrow keys move the left end of the selection, and with Shift they move the right end. U and I cancel the selection, moving the CPM to its left or right end, respectively. 1, 2, and 3 move the CPM to the left, center, and right end of the visible area.

Transcribe offers a variety of effects to facilitate transcription. You can choose mono, single-channel, or Karaoke (canceled center) playback; invoke a 40-band EQ; fine-tune and transpose; store up to ten preset selections; and slow down without changing pitch. Even at very slow speeds, notes and chords are easily recognizable. EM

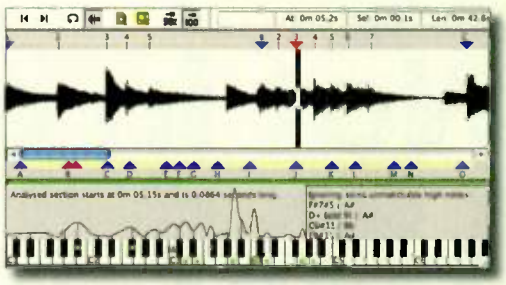


FIG. 4: Transcribe 7.5 takes the tedium out of deciphering chords and melodies.

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

PHOTOGRAPHY BY RICH MARRESE

Rhythm and Noise

From pop to experimental, it's all in a day's work for engineer-drummer John McEntire.

By Rich Wells

John McEntire is a ubiquitous fixture in Chicago's thriving independent-music scene. For close to 20 years he's been a drummer, percussionist, writer, engineer, and producer for groups both influential and musically diverse. Two groups for which he's most widely known are Tortoise, an instrumental quintet that features three percussionists, an experimental nature, and a fiercely open-ended musical direction, and the Sea and Cake, led by guitarist-vocalist Sam Prekop, which makes sparkly and sublime pop/rock and has just released *Car Alarm* (Thrill Jockey, 2008).

McEntire is equally famed for his work with other groups, such as Stereolab on *Emperor Tomato Ketchup* (Elektra, 1996) and *Dots and Loops* (Elektra, 1997). He has also appeared on record with Bright Eyes, toured with Tropicália legend Tom Zé, produced Afrobeat-leaning Antibalas, and mixed *Widow City* (Thrill Jockey, 2007) by the Brooklyn-based Fiery Furnaces, a popular and critically acclaimed group comprising the Friedberger brother-sister songwriting team.

McEntire works almost entirely out of his well-appointed Soma Electronic Music Studios (somastudios.com) in Chicago's Wicker Park neighborhood. While relatively compact, Soma is equipped to handle nearly every type of recording need. A moderate-size live room and a deadened iso booth are the main areas for tracking, although McEntire frequently records drums and bass in the control room. Even Soma's hallways are regularly put into service.

The control room features one of the 13 Trident A-Range consoles still in service and a fine complement of new and vintage outboard gear. A 2-inch MCI JH-16, with 24- and 16-track head stacks, stands ready, as does a Digidesign Pro Tools HD2 Accel system. The room also boasts an entire wall filled with analog synths from Buchla, Moog, CMS, EMS, Korg, Synton, and Serge, among others. (See the **online bonus material** at emusician.com for more info on his analog synthesizers and other goodies.)

I had the opportunity to speak to McEntire in August and to find out his thoughts on recording, production, and arrangement.

Tell me about the process of recording the Sea and Cake.

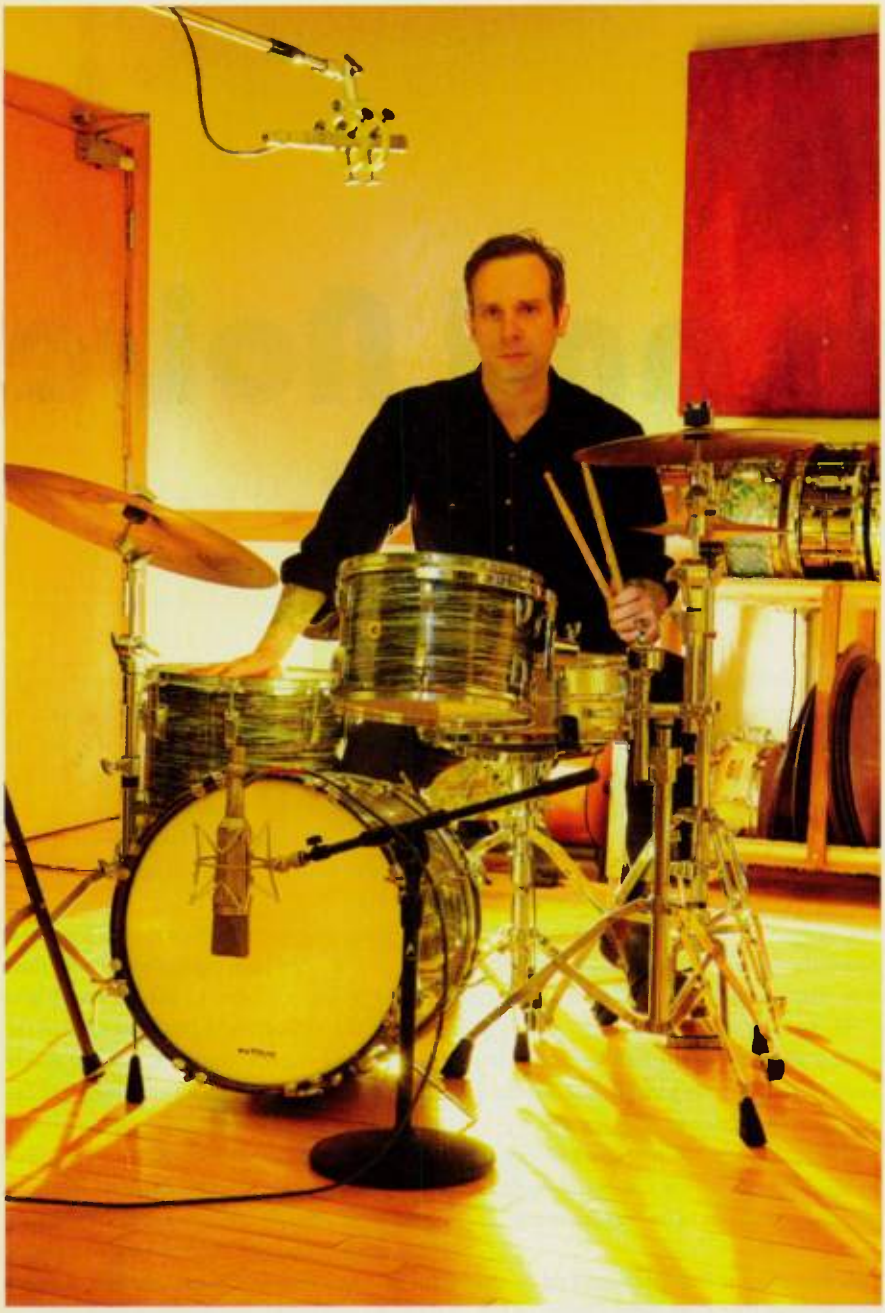
With the Sea and Cake, the focus of recording basic tracks is always to get a great band sound so that we can then concentrate on the other elements that will most likely be the focus of the tune, like the vocals (obviously), and guitar and keyboard overdubs. Sam is the principal songwriter, and he'll usually come to us with things about 90 percent written. We may add or subtract four bars here and there, but that's about it.

With this group, we usually try to do full band takes, or at least as much as we can, together. With *Car Alarm*, I was out in the live room, and Eric [Claridge, the bass player] was in the control room running Pro Tools. This was before I bought the Frontier TranzPort, so it was helpful to have someone running the machine.

Sam and Archer [Prewitt, the guitarist] will often be in the live room, with their amps separated in the iso booth and the hallway. And this time we had the bass amp set up in the control room. Every possible combination of where you can put things to get the isolation you want, we've tried over the years. There are enough possibilities that you can pretty much do whatever you need to here. But just barely! If you had, say, three guitar players that wanted to track at the same time, that might be a little difficult, but it's extremely rare that that kind of thing happens.

Starting with your album *The Fawn* and continuing through *Oui* and *One Bedroom*, programmed drums and electronics became an integral part of your sound.

The Fawn [Thrill Jockey, 1997] is 70 to 80 percent sampled drums and percussion. For getting basic tracks down, we'd set up a loop that



To get more of a jazzy drum sound, John McEntire will sometimes go with a simplified setup: stereo overheads and a mic on the bass drum.

everybody thought had the right kind of feel. Then I would go back and do more in-depth programming and editing. There were actually some very practical reasons for using programming when we were working on *The Fawn*: we'd recorded *The Biz* [Thrill Jockey, 1995] at my home studio, which was what eventually grew into Soma. But when we started working on *The Fawn*, it became apparent that I could do more with samplers and sequencing and programming. Sam and the other guys were interested in trying to shake things up a little, because we'd already done three relatively straightforward records.

Most of it was done with an Akai sampler, sequencing it using [Opcode] Studio Vision Pro. And I'd just gotten [Propellerhead] ReCycle, which is why there's a lot of chopped-up beats on that record. At that time, it was really exciting to be able to do that. *The Fawn* was an experiment in getting things done with these new tools, in a way that fit with our aesthetic.

By the time we did *Oui* [Thrill Jockey, 2000], which is the first record we did in the current Soma, there was a quantum leap forward in terms of what was available to us studiowise; for instance, using the 2-inch machine and the computer in tandem. We wanted a really broad palette to work with, including string and horn arrangements.

With *One Bedroom* [Thrill Jockey, 2003], the focus was on seeing how far we could push that, delving into many keyboard overdubs and as many different synth textures as possible. I had two ARP 2600s at the time, and they play a fairly large role on that record.

We felt like it worked out well, and for those songs it seemed like a logical thing to continue to do. But when we started work on *Everybody* [Thrill Jockey, 2007], we decided to switch it up again and go for the live-band thing. And that's a more accurate representation of what we do when we're on tour; we don't have a sequencer playing the parts with everyone playing along to it. We play the songs as a 4-piece rock band.

It seems like it's always a process of going toward something, then coming back again. The last two records have been fairly concise in terms of the arrangements and overall presentation. We wanted to step back from that baroque, big-arrangement thing and write very direct 3-minute pop songs—two guitars, bass, drums, and just the occasional keyboard overdub.

And what kind of differences are there with a band like Tortoise?

For Tortoise, we try to leave it a little more open ended. Sometimes we may want to use one of the instruments, or just a small idea, as a springboard for further experimentation. It's also rare for all five of us to do a basic track together; usually either three or four of us play at the same time. Lately we've been tending more toward working on songwriting and arranging, whereas in the past we just had ideas

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we'd record, and then arrange it in post. That's worked well for us in certain circumstances, but we're a little bit wary of relying on that too much because, for us at least, if you have a record with a lot of pieces like that, the fear is that it will sound too constructed. Sometimes those pieces don't have the vibrancy of people playing together in a room, so it's always good to have some contrast between the way the tracks on the record are created.

Apart from that, we do things by consensus. Two or three people will put down the foundation of something, and usually there'll be an overdubbing process, which can last anywhere from a couple of days to years, depending. And then it's just a matter of tightening up what's there and finding a direction for the sounds and for the mix in general.

Even though I'm dealing with the nuts and bolts of that, we're all making decisions collectively about the right general approach for a piece or how it should evolve. Everything is fair game as long as we like it and it sounds good or interesting. I guess it doesn't even have to sound "good"!

Recording unusual instruments is one of McEntire's specialties. Here, he's miking a hammer dulcimer with a pair of small-diaphragm condensers.

As I mentioned, one of the trends that's been happening with us in recent years is that we've been moving more toward approaching things from a writing perspective as opposed to a postproduction perspective. We're spending more time in the rehearsal space working on the arrangements beforehand, making sure that everybody has parts that they're happy with. If there's extra work that happens after that, fine, no problem, but it's more about having things that are compositionally sound rather than the old days of just looping one idea for 8 minutes and making a mix out of it.

With three percussionists in the group, is it necessary to leave space?

We all tend to hang back instinctively. It's very rare that there's a case where we're like "Oh, we're all playing too much." Typically it's the opposite. It's funny, with Dan [Bitney] and Johnny [Herndon] and I, a lot of times we'll rotate through something one of us might be working on. One of us will start out playing a part and then say to another, "You know, why don't you try this? I think your feel would work better for this." Then the next person will try it and say to the third person, "I don't know, why don't you try it?" *[Laughs.]* And eventually we get to a place where we've found the right person and the right feel for the tune. It just takes a little trial and error.

Dan, Johnny, and I [under the name Bumps] recently made a breakbeat record [*Bumps;* Stones Throw, 2007]. It's just the three of us doing drumbeats, and they run the spectrum from kind of trad funk/disco sounding to really, really freaked. But in both Bumps and Tortoise, the things we're working on now tend to be more about interplay, letting the parts breathe, and creating interesting counterpoint.

Let's talk briefly about how you set up to record at Soma, starting with drums.

The first consideration is whether we want it to be superdry or to have the possibility of utilizing room ambience, and that will dictate the physical location of the kit. In either case, I tend to prefer—and rely on—close-mic setups. In addition, I'll usually print more tracks than I need. Obviously there's a little bit of trial and error involved in every setup—swapping mics out and moving things around. And on rare occasions, I'll do a minimalist setup, with just two to four mics for the whole kit. It all depends on the song and how the artist and I foresee approaching the mix.

The choice of what mics I'll use depends on how the drums are tuned and the player's style. In general I tend to like condensers on snare and toms, unless we're talking about a really loud player or toms that are tuned very low. In either of those cases, I'd probably reach for dynamics from the get-go. For snare, I tend to like the Schoeps CMC6 with a hypercardioid capsule. That or an AKG C451 with a Blue Red C-12-style capsule. A dynamic mic that I really like on snare is the Sennheiser MD441, which is also hypercardioid. I find that pattern to be a big help. I think most people will agree that it's a constant battle to fight hi-hat spill in snare tracks. Shure SM57s will work in a pinch, and occasionally you'll get a particular drum that will sound really good with a 57. On the resonant side, I'm not too picky. I might use a microcondenser like an SM98, or a 441, or a 57.

In terms of overheads, I'll usually do some sort of stereo setup, either a single stereo mic such as a Neumann SM2 or an AKG C422, or a pair or whatever happens to seem most suitable given the situation. For a long time I just did a simple XY, crossed-cardioid setup, but lately I've been really fond of using an M-S pair for this application, as I like having the imaging

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McEntire's keyboard analog-synth collection includes the Oxford Synthesiser Company OSCar, the Synton Syrinx, the Elka Synthex, and other classics, as well as digital instruments.

options be more flexible during mixdown. In addition, I'll usually set up a spot mic on the ride and another on the hi-hat side, because sometimes it's helpful to have a little more definition on those elements.

Kick drum mics vary a lot. For a long time, on the batter side I would use a dynamic mic outside the drum, next to the pedal, pointed right at where the beater hits the head, and then I'd use a large-diaphragm condenser on the resonant side. Even if there was a hole in it, I'd put the mic on the head, not inside the drum. Recently, though, I picked up an AKG D12e, and I've been using that inside the shell, pointed where the beater hits the head, usually at a bit of an angle. I've been liking that a lot as a single source, or again sometimes with a condenser, placed a little further out. Occasionally I'll use a Yamaha Subkick instead of the condenser. It doesn't sound like much on its own, but it can add something really great in the mix. I've also used the Subkick on bass amps as well, blended with a mic or DI signal.

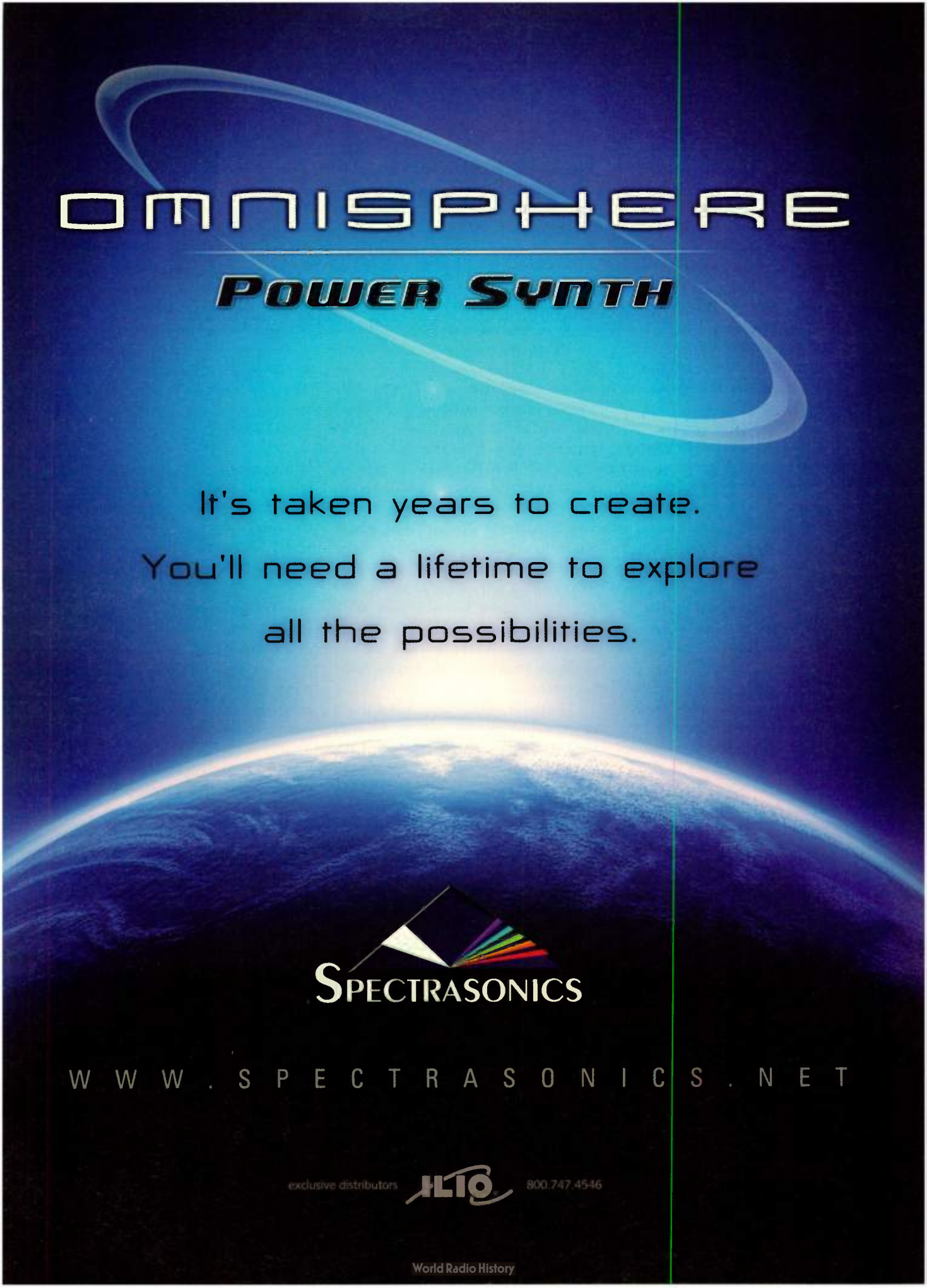
Over the years, I've used all the rooms here for recording drums, including the control room. In fact, all of the Sea and Cake records that we've done here (with the exception of the newest) had the drums tracked in the control room.

And sometimes I like to do little experiments. For instance, I might set up a mono mic somewhere weird, either somewhere out on the floor, or just over the player's shoulder, or way off in the corner somewhere. The idea being to capture something slightly unusual that might be useful later, either heavily processed or just to provide a strange representation of the kit that could be sent to a reverb, for example. Sometimes that's useful, but other than that, I usually stick to the tried-and-true 10- or 12-mic setup.

How do you go about recording electric guitar?

Usually I start with a standard combination of dynamic and ribbon mics, though of course it depends on the player, the amp volume, and overall sound. Most of the time, I'll have the two mics right next to each other, pointed at the middle of the cone, 4 or 5 inches away. Sometimes I'll use a distant mic, though not very often; for one reason or another I tend to use outboard gear for spatial processing. And sometimes I'll use a splitter and run two or three amps in parallel. Again, it depends on the song and the types of options we need to have available during mixdown.

One thing I got recently that's really interesting is the Radial JDX. It's a DI that you put between the amp and the speaker, so you get a totally dry sound with all of the characteristics of the amp. The amplifier sees a reactive load on its output, so it behaves as if it's



driving a speaker or network of speakers. The output of the box has a set of filters that mimics the frequency curve of a closed-back 4 × 12 enclosure. So it sounds exactly like a miked amp, except with zero ambience. It's extremely useful and also works well blended with a mic signal. They make another box that does phase adjustment, which lets you really tailor the way the DI and mic signals interact, but I actually don't own anything like that. I'm more inclined to just nudge tracks around in Pro Tools if needed, or try different combinations of reserving polarity.

I see you have the 2-inch machine. With almost everyone jumping ship on tape, I'm wondering if it still sees much use.

Not so much these days, and for a variety of reasons which we all know. I still enjoy using it, though. We used it for a Tortoise session recently and it sounds fantastic. In terms of my day-to-day work, apart from my own projects, the majority of what's been happening here is mixing sessions that were recorded elsewhere, and from an amazing variety of places: Japan, Europe, Australia, South America, and, of course, plenty of projects from all over the U.S. So almost everything comes in as files, and I do the work in Pro Tools. It certainly is easier now that Pro Tools has become the de facto DAW platform.

Once in a blue moon, somebody will want to mix a project that was tracked in [Apple] Logic or [Steinberg] Cubase, but that's pretty rare. If that's the case, I encourage them to print contiguous files so that I can work in Pro Tools. Occasionally we'll get sessions that need a lot of cleaning up and time-consuming maintenance work, but what's been coming in lately has gotten a lot better in terms of preparedness and overall quality.

Tell us how you approach the mixing process.

When I'm mixing, I'll send tracks out individually to the console, and I tend to use hardware processors as much as I can. But obviously, nowadays, sessions can get pretty dense, and when you have 60 or 80 tracks, you have to submix some things, which is fine for, say, backing vocals or percussion overdubs. Since I'm doing so much with the console levels and EQs, it can become a little tedious with recalls. But realistically, that aspect of it is no different than the world was before DAWs. The only difference is that nowadays *everybody* wants recalls, and they expect them to be instantaneous. So I spend a lot of time charting everything, and the recalls don't happen instantly!

When I use inserts for hardware processing, it's mainly for compression and EQ. We have a fair number of color compressors here that get used a lot, like the Gates SA-39, the "Federal" compressor, and the Spectra Sonics 610. Another box I really like—though it's not a compressor—is the Thermionic Culture Culture Vulture. It's very useful for applying a little—or a lot—of harmonic distortion. It has three different tube modes: triode and two different pentode modes. The great thing, though, is that you can adjust the amount of current (bias) that's hitting the tubes, so you can really choke them off, and you can get these kind of almost gated, dead, decayed sounds. Really useful. And I would be remiss if I didn't mention the Empirical Labs Distressor and how multifaceted that unit is, including the distortion functions.

In terms of effects, I went through a kind of renaissance recently with the Eventide Ultra-Harmonizer H3000. I decided I was going to try to make gated reverb work for me! There were a couple of projects I worked on—for instance, the Fiery Furnaces and Small Sins—where it made sense to incorporate those sounds, tucked in under everything else. I actually found it to be really effective. Though if two years ago you'd told me I'd be doing that, I probably wouldn't have believed you.

So you'll still go to a unit like the H3000, even though it's now possible to do similar things in software?

Well, I really like the sound of the H3000; it's got a unique timbre. I think the Eventide Factory plug-in is great also, but again they're pretty different beasts from a sonic perspective. One of the other things I really like on the H3000 is the Stutter algorithm. It takes small chunks of audio and either loops them or it flips them backward and loops them. It also randomly changes the pitch and length of the chunk. And what's really interesting is that it behaves as if it's applying this processing based on the content of the input signal. For instance, it does things that seem like they're in tempo, or based on a trigger threshold. So even though it's random, it tends to make sense musically. There's a good example of this effect on the Fiery Furnaces' song "Wicker Whatnots." The GRM Tools Shuffling plug-in is basically the same concept, though it's more geared toward granular processing, whereas the Eventide tends to capture longer segments, in the 100 to 700 millisecond range, I would imagine.

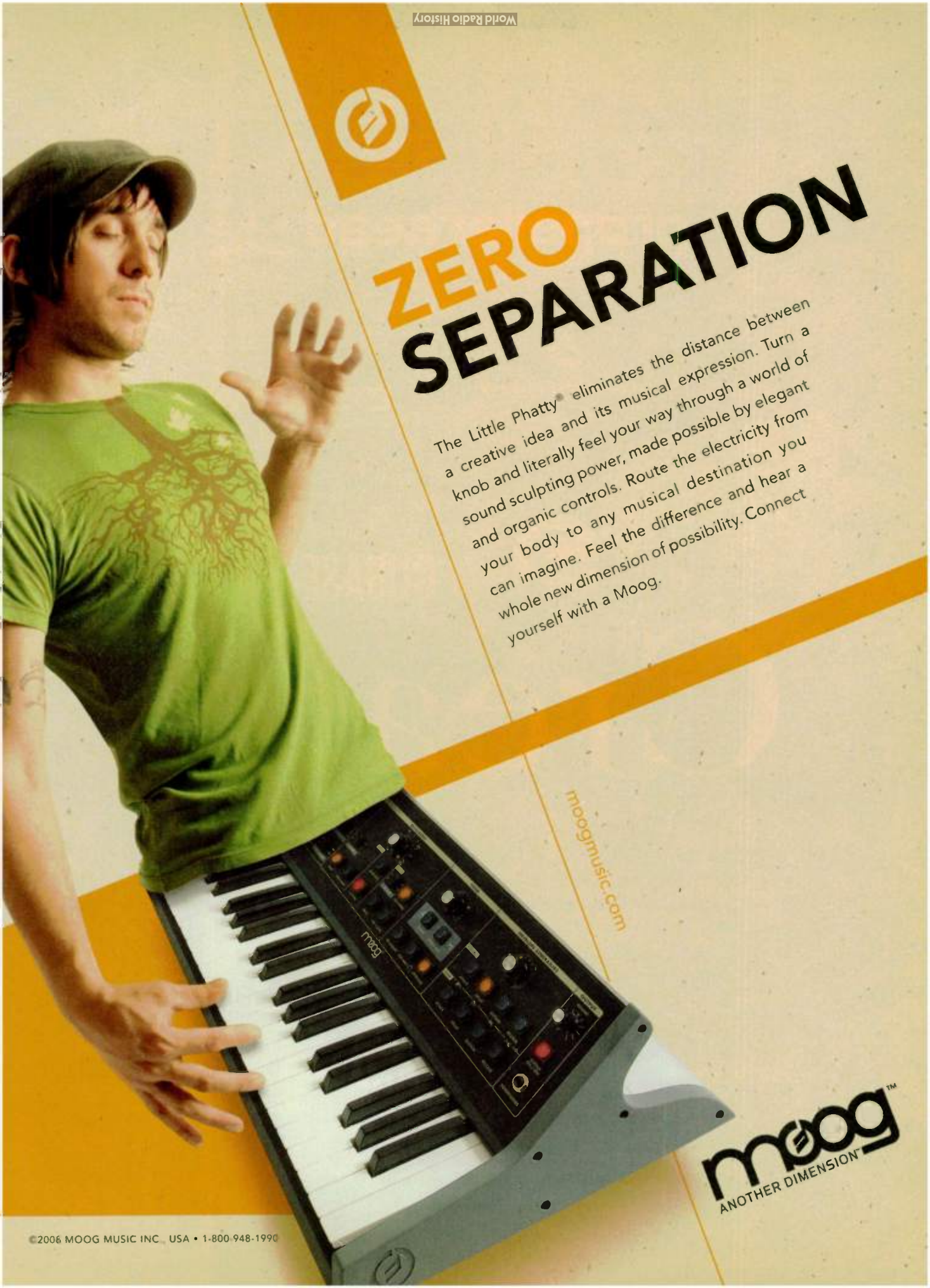
Is there a lot of planning involved with your bands to make sure that you maintain sonic space in the mix?

With a band like the Sea and Cake, it's a pretty collaborative experience. If the guitar players know there's going to be some kind of brass or string arrangement going on, they're probably going to lay back a little bit. In terms of mixing, it's not really that difficult, assuming that the other players have left a space for it. Other than that, by simply applying whatever automation or EQ that you need to make it work, it's usually pretty straightforward.

If you're mixing someone else's project, do people mainly leave it to your discretion about how the synths and effects are used, or about whether you might run prerecorded tracks through various filters, etc.?

Some people leave it up to me, sure. And then there are others who are really knowledgeable about the gear and fairly specific about what they want. For instance, they might say, "Let's use the Fenix bandpass filter on the guitar in the bridge, CV'd from the ARP sequencer running at dotted eighths." They'll just have a laundry list of things that they want, which is great. And other times, the direction can be really vague, like "Let's try to mangle this somehow." It really runs the gamut. em

Rich Wells oversees the Supreme Reality, a recording studio in Portland, Oregon. Visit his Web site at thesupremereality.org.



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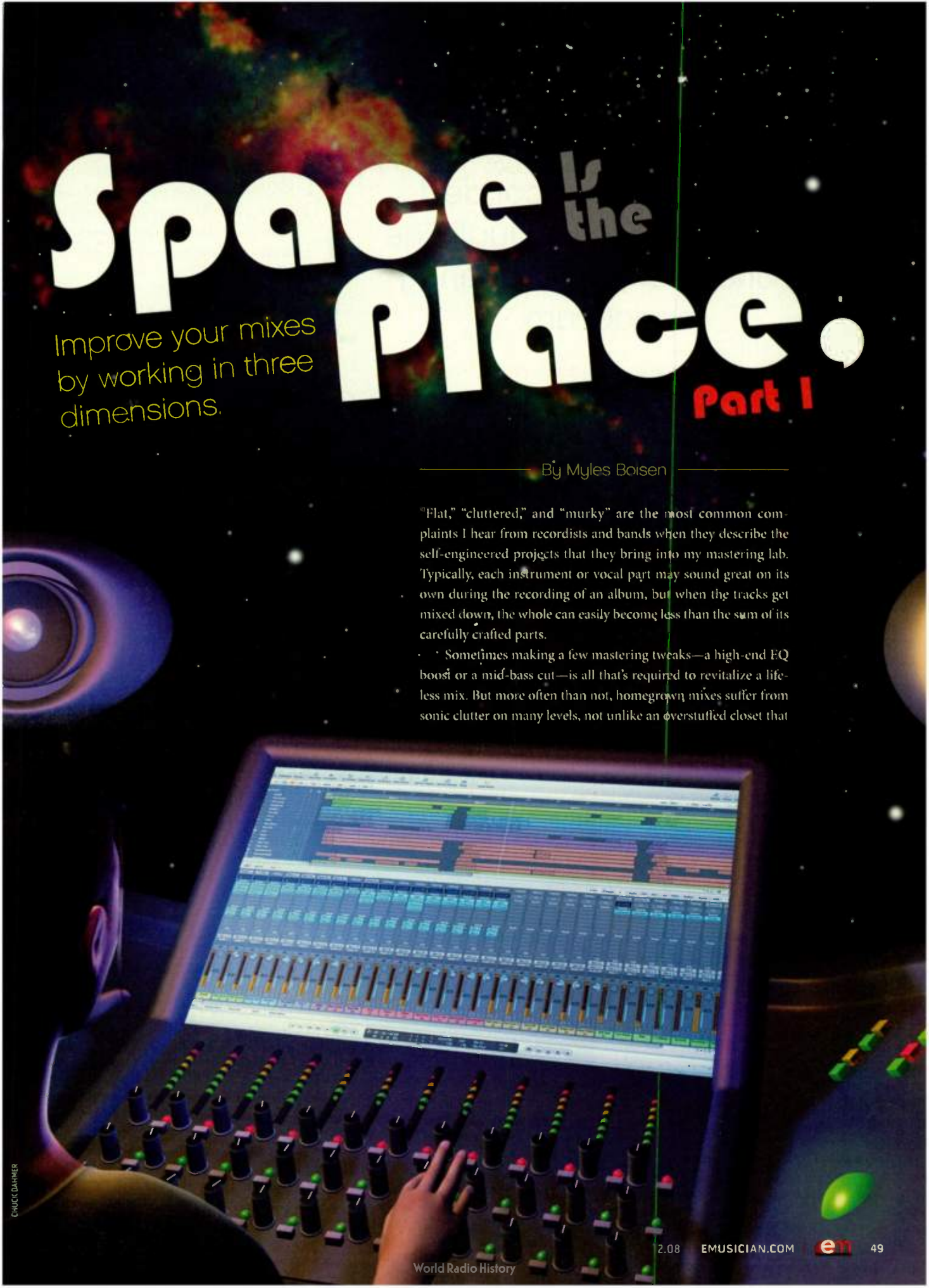
Space Is the Place: Part 1

Improve your mixes by working in three dimensions.

By Myles Boisen

"Flat," "cluttered," and "murky" are the most common complaints I hear from recordists and bands when they describe the self-engineered projects that they bring into my mastering lab. Typically, each instrument or vocal part may sound great on its own during the recording of an album, but when the tracks get mixed down, the whole can easily become less than the sum of its carefully crafted parts.

Sometimes making a few mastering tweaks—a high-end EQ boost or a mid-bass cut—is all that's required to revitalize a lifeless mix. But more often than not, homegrown mixes suffer from sonic clutter on many levels, not unlike an overstuffed closet that



CHUCK DAHMER

> Many home-recorded projects have inequalities in the overall frequency spectrum.

needs to be emptied and reorganized. So when time and budget permit, I recommend that clients with a serious "space problem" take a step back to their final mixes to do some much-needed cleanup.

Making Space

To that end, one technique that works well for me is to expand the conventional concept of a "flat" space between the speakers into a living, three-dimensional space. Often I'll begin with clients by working together to identify and address the multiple factors and practices that suck the life out of their well-engineered tracks, bog down their mixes, and hasten listening fatigue.

Next, these problem mixes can be stripped down and rearranged from the perspective of creating clarity, or space, in the mix to draw the listener in. The end result is a revitalized sound world in which tracks no longer jostle each other for space or intelligibility, and the whole has a feeling of ease, openness, and balance in all dimensions.

I constantly encounter a number of common space-sucking issues while working this kind of sonic alchemy. Those recurring problem issues—and solutions drawn from my experience—are what this two-part article is all about. This first installment lays the groundwork for thinking, listening, and mixing in three dimensions, and addresses the issues of reverb and room sound. The second part will address compression use, arrangement, EQ, advanced panning concepts, and how these elements can affect space in the mix.

Bear in mind that these tips, tricks, and suggestions are offered as a way to think conceptually about mixing; they are not meant as hard-and-fast rules. And don't forget that rules are made to be broken—especially in recording. But it's more fun to break the rules once you know them well.

3-D Listening

Creating and confronting the issue of space in a music mix begins with thinking and listening three-dimensionally. We are all familiar with the simple side-to-side stereo dimension (or *imaging*) that exists between the left and right speakers, which is controlled by panning. Consider this to be the horizontal axis or width of your mix.

On its most basic level, the dimension of depth is derived from volume differences between the mix elements: the louder a track is turned up, the closer to the front of the mix it seems to be (ambience also plays a role in the perception of depth). The dimension of height can be understood much as it is heard (and felt) on a large P.A. speaker stack, with treble at the "top" of the sound, bass at the "bottom," and midrange filling in the middle (see Fig. 1).

Being aware of balance in all of these three dimensions is a useful way to build an artful, advanced mix and start thinking and listening in 3-D. I think that most engineers would agree with me on the following points regarding how to address and structure each dimension for maximum spaciousness in the final mix.

Getting Horizontal

Panning should be roughly symmetrical in terms of placement and frequency content. The more instruments in your mix, the more you can fill out the horizontal spectrum. For a solo performance, keep things centered; for duos and trios, avoid the extremes of hard-panning unless you're going for a dramatic effect. In denser mixes, use the entire left-to-right continuum, without bunching up a lot of center-panned mono information or panning so many tracks that a center-image hole is created.

In full-sounding arrangements, the elements in the center of the mix tend to dominate, glue the mix together, and blend with other instruments (see Fig. 2). Conversely, tracks that are panned toward the outside of the mix are heard more discretely and do not blend well.

A special note about bass and kick drum relationships: in the days of vinyl LPs and singles, there were compelling reasons (related to vinyl mastering) to keep the bass and kick panned in the center. In the digital age, panning the kick and bass together still gives a satisfying

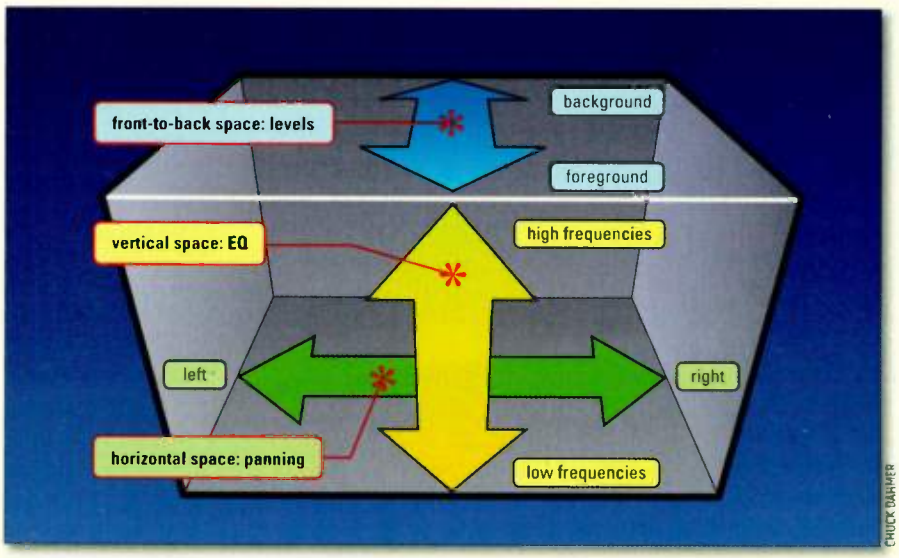


FIG. 1: The three dimensions of mixing: horizontal space is represented by panning, depth by volume, and vertical space by EQ.

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Tips For a More Spacious Mix

- Conceptualize your mix in three dimensions: horizontal (left to right panning), depth (front-to-back or relative level), and vertical (EQ—with highs being up, lows being down, and midrange in the middle).
- Pan the elements in your mix in a roughly symmetrical fashion, both in terms of stereo placement and frequency content.
- Try moving the kick drum and bass a bit off center to remove clutter from the center.
- Keep primary elements loud enough to be in the foreground. You might want to bring them up first when starting your mix, and then work the other parts around them.
- Consider mixing background elements—such as hand percussion, pads, and some rhythm instruments—low enough so that they're more textural than up-front.
- Reduce reverb decay times to 1 second or less where possible to limit excess ambient wash. Try using delay or chorus instead of reverb. Use room miking to create natural reverb when tracking (or after the fact in a reamping scenario).

low-end punch for many styles of music. But in 3-D thinking, panning the kick and bass apart slightly in a mix will make it easier to hear each of these instruments distinctly, and therefore increase clarity in the low end.

Exploring the Depths

The first rule of mixing is to make sure that every instrument in the mix is audible and presented at a relative volume level that is appropriate for the particular musical style. Certain elements have to be in the foreground and louder than other instruments, such as the vocal on a radio-oriented pop or jazz song, the guitar solo on a rock or blues record, or even the echo return on a classic reggae-dub piece.

As a mixer, I never hesitate to let the primary foreground element(s) be the loudest part of the mix so they make a strong and musically focused statement that will guide the listener's ear. One tried-and-true way to do this is to bring up the most important track(s) first and get that lead instrument or vocal sounding exactly the way you want. Then you can arrange the backing tracks to support the foreground element and enhance your sense of spaciousness.

Don't make all the mix elements equally loud all the time unless the musical style (loud rock, classical ensembles) dictates doing so. And try treating background parts (especially hand percussion, keyboard pads, and simple chordal instruments) as a pinch of spice in a mix rather than as an identifiable flavor, and position them accordingly. Depth is a wonderful quality to preserve in a mix. And depth can be accomplished only by establishing a decisive hierarchy of foreground, midground, and background relationships—determined primarily by relative level.

Another way to call attention to a certain instrument is to undermix it or intentionally place it in the background. As the old saying goes, if you want to get someone's attention, whisper instead of shout. For example, literally reducing a vocal performance to a whisper—either in performance or with radical EQ or distortion—is an effective technique to draw the listener into the interior space of a mix.

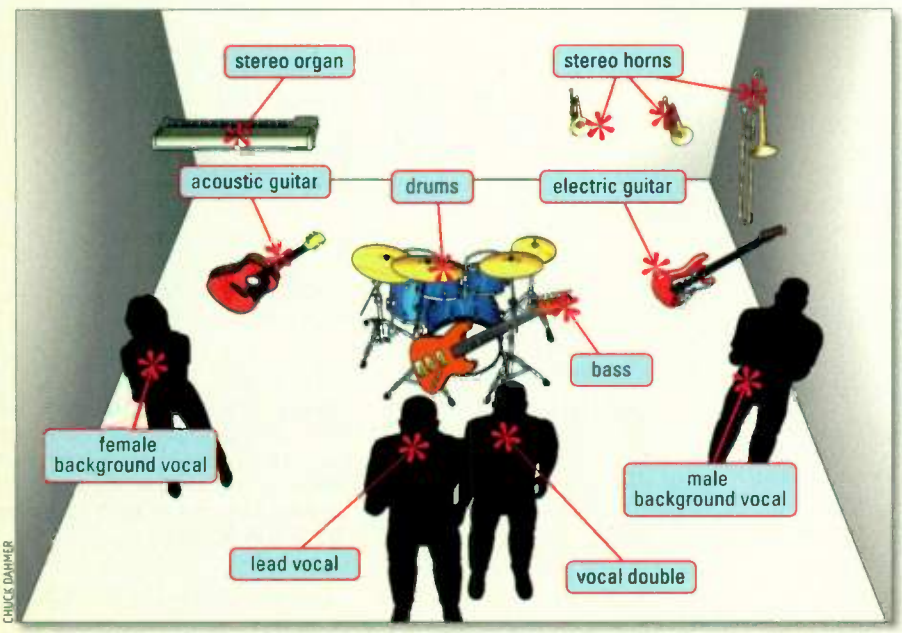

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FIG. 2: This shows the panning and perceived depth of the instruments and vocals in a hypothetical rock mix.

Vertically Integrated

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One of the biggest challenges of mixing is to provide a consistent and pleasing balance of frequencies that will translate well to the variety of listening systems out there. While high frequencies are very exciting and lots of low end is physically stimulating, listening to a speaker with a blown woofer or tweeter quickly reminds us that there has to be a balance of frequencies for any music to work.

Many home-recorded projects have inequalities in the overall frequency spectrum. This is most often attributable to inexperience, substandard mixing environments, or both. Mixes with too much low end or not enough highs usually don't convey a sense of air or space, and therefore fail to keep a listener's interest. Overly trebly or bass-lean recordings are initially stimulating to the ear, but too much treble can quickly induce listening fatigue and mask the subtleties of tone, depth, and space.

Fortunately, lo-fi recordings with too much midrange seem to have died out with the 4-track cassette and are now relatively uncommon. Much more common is the opposite case—the use of the "smile curve," named after the segmented visage of a graphic equalizer in which the bass and treble extremes have been boosted and the midrange turned down.

Due to the ear's nonlinear response at quiet volumes (which is demonstrated in the Fletcher-Munson curve), the smile curve approach enables mixes to sound full on small speakers and at low listening levels. However, on a good pair of monitors, a mix that relies too heavily on smile curve aesthetics risks both the low- and high-frequency-based flaws just mentioned.

Filling the Spaces

By now it should be clear that the balance of instruments, imaging, and frequencies lays the foundation for a spacious mix in three conceptual dimensions. It's also important to realize how a change within one of these dimensions can affect and interact with the other dimensional axes in the mix.

For example, shifting the frequency range of a track with EQ not only moves it vertically but also moves it between background and midground positions. Changing the panning can have a similar effect. The simple act of turning a track up or down to change its depth position transforms the frequency balance and affects imaging as well.

Thinking and listening in 3-D like this makes the space between the speakers more of a complex challenge to structure and fill. Not only are there more interactive elements to consider, but with greater listening experience, the gradations of imaging, foreground-to-background relationships, and frequency become finer (see **Web Clips 1a and 1b**). Ideally, however, these concepts also increase the fun factor.

So far, I've discussed mixing only raw tracks and haven't brought in any of the other tools that define the art of mixing. To conclude the first part of this article, I'll look at reverb and room sound and how these elements can be used to either create space or increase clutter in a mix.

FIG. 3: Using a reverb with a decay t me of less than 1 second—such as this setting on Lexicon's Pantheon plug-in—helps keep reverb wash from cluttering up a mix.

Reverberant Thinking

Perhaps you remember this science experiment from your school days: a container is filled with marbles, and when the teacher asks if the vessel if full, chances are that some members of the class will answer yes. Then sand is poured in, and the sand fills up all the spaces between the marbles. Is the container full now? Don't raise your hand just yet. Water is then added to fill the remaining spaces between the grains of sand.

Like the water in this demonstration, digital reverb is a powerful tool that, if overused, can fill up all the available space in a mix. In 3-D thinking, it's easy to visualize that stereo reverb inhabits not only the horizontal and depth dimensions, but also the vertical frequency spectrum (most audibly in the treble and midrange). By sustaining any or all sounds that already exist in a mix, and doing so in all three dimensions, reverb has the potential to be what I call a primary space sucker.

Of course when used tastefully, reverb can glue a mix together, add a lush professional sheen, and contribute a unique feeling of palpable space. To achieve this ideal of artful reverb use, two things have to be learned: basic reverb parameters and restraint. For those who need a refresher course on reverb settings and usage, see the **online bonus material** "Reverb 101" at emusician.com.

ONLINE BONUS MATERIAL

The Long and Short of It

While reconstructing a mix with clients, I commonly find long hall or plate reverb settings used across the board, and on many more tracks than is necessary. On snare, tambourine, rock guitar, bass, and keyboards, among others, these long-decay reverbs create a murky, sibilant wash that eats up definition and overwhelms background subtleties. When questioned on this practice, the engineer often has no real explanation for why a long reverb was chosen; it just "sounded good" or was a default plug-in setting. For instance, Digidesign's D-Verb plug-in defaults to a large hall setting when opened.

Employing short reverbs keeps the background clear, which also improves imaging and foreground definition. My personal default setting for producing spacious, uncluttered mixes

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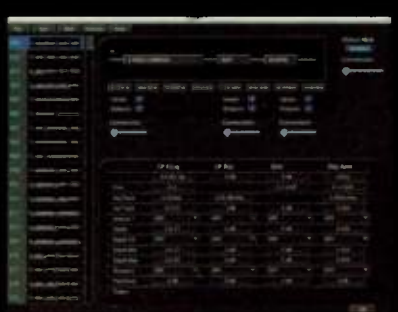

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is almost always an ambient or small-room reverb, with a decay of a second or less for most instrumental tracks (see Fig. 3).

Up-tempo vocals also get the ambient or room treatment a lot, often in combination with lively sounding gated reverb or chamber algorithms. In these cases, the decay time can be longer than 1 second, depending on stylistic considerations and mix density.

I tend to use longer concert hall or plate settings only for certain types of ballad or operatic vocals, bowed violin or cello, sustained organ sounds, or any dramatic foreground element that would benefit from a lush, lonely, or haunting reverb tail. Of course, the presence of one richly reverberant track makes it tempting to start sneaking up the reverb level on everything. The end result of this is often a soupy mix that mimics the uncontrollable wash of a school gymnasium.

To keep this from happening, I often try to balance out a lushly reverberant foreground or midground track with other very dry mix elements while keeping an ear open for the symmetry of wet and dry tracks in imaging. This helps remind me to retain some space in a mix. And the distinctive contrast often heightens the dramatic impact of the wet elements.

When employing long reverbs, a judicious use of predelay helps to preserve the detail and transients of a track. Think of predelay or delay-time settings as a "dry window" that can let the crucial first 10 to 50 ms attack of a word, note, or drum hit slip through without reverb. A predelay of longer than 70 ms is perceived by the ear as a slapback echo, and, though useful in some cases, can also be heard as a distinct, often fluttery, effect.

Restrain Yourself

Once you have the reverb in your mix just the way you want it, print the mix for safety's sake (or save the DAW file and then save it with another file name), and then try a little reverb restraint to create more space and contrast between wet and dry elements. Try turning the reverb down on an instrument in the rhythm section or background, shorten its decay time, or even turn it off. That move might either suggest another similar reduction or inspire a change to the vocal or other foreground reverb. Once you get over the habit of thinking

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that more reverb is better, you might just like the clarity and spaciousness of your new, drier mix. If not, you can always go back to your first mix or try adding a little more reverb in mastering.

And remember, there's no rule that says you have to use reverb on every track, or even at all. I rarely use digital reverb on kick drum, bass, or any predominantly low-end material.

> There's no rule that says you have to use reverb on every track.

In addition, I religiously avoid the use of long hall or plate reverbs in any percussive track unless it's for a particular effect.

Using a mild chorus on chordal instruments or a slapback delay on vocals makes it possible to mix without artificial reverb in some circumstances—particularly with dense mixes in which reverb tends to swallow up subtle details.

Roomy from the Start

You can greatly reduce your need for digital reverb by using room mics and creative miking to create a sense of space when tracking. Because this is a topic I have covered in previous EM articles (see "Underground Drum Sounds" in the July 2001 issue and "Tracking in the Unplugged World" in the November 2003 issue, both available at emusician.com), I'll just throw out a few ideas here.

A room mic placed 5 to 10 feet away from an overdubbed source (or 50 feet away, if you have a room that big) will yield a unique timbre and ambience that standard reverb plugins and outboard processors can't duplicate. Depending on your taste and how adventurous your spirit is, that room mic can be mixed in to be barely audible, equal in level to the close-miked source, or used instead of a close mic. In a DAW, any room mic track can always be nudged to be farther in time from the original track, creating the illusion of a larger room. Keep in mind that a nudge of 1 ms amounts to a virtual distance increase of roughly 11 feet between the room mic and the source (based on the speed of sound as 1,125 feet per second), giving the illusion of a larger room.

Adding reverb to the room mic or using it only as a reverb send yields an interesting variety of predelay and coloration. Unusual mics (such as figure-8 ribbons, cheap lo-fi models, and omnidirectional models) and unconventional placement (on the floor, inside a metal tin, facing a windowpane) can add additional colors to your sonic palette.

As exciting as these ambience-miking ideas can be, they can also be big space suckers in a mix due to overwhelming bass or midrange coloration. I use low-cut filtering liberally on room mics (and reverb returns) to avoid adding muddy frequencies to my mixes.

In my experience, most free reverb plugins and inexpensive outboard reverb processors have high coloration and can be overwhelming as soon as they are audible in a mix. If you feel the same way and find yourself with a mix that has no room mics and no decent digital reverb options, try reamping for the room. This entails running selected tracks (or the whole mix if you want) through a clean guitar amp or monitor speaker, placing a mic in front of the speaker, and recording the result for use in your mix. (For more on reamping, see "Better Tone Through Reamping" in the October 2008 issue.)

Next month in the second part of this article, I'll discuss, among other issues, how compression, EQ, and a song's arrangement can impact the perception of space in a mix. EM

Myles Boisen (mylesboisen.com) consumes significant quantities of space and time at Guerrilla Recording and the Headless Buddha Mastering Lab in Oakland, California.

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A Stamp in Time

Keep imported audio synced between collaborators. | By Michael Cooper

One of the great benefits of recording with a DAW is the ease with which files can be shared to facilitate collaboration on a project by two or more parties. Where different DAWs are used by the collaborators, one party typically exports raw audio files and sends them to the receiving party, who then imports them into his DAW. Both DAWs should be set to the same sampling rate and bit depth when working on a shared project.

By exchanging only the audio files and not project documents (containing mixer setups, plug-ins, virtual instruments, and fades), collaborators avoid potential incompatibilities between their two DAWs. However, there is still one big pitfall to watch out for: simply sending a bunch of audio files to a collaborator doesn't guarantee they will all play together in his DAW properly synced (that is, having their original placements along the project's timeline). Unless certain precautions are taken, the kick drum track might lag behind the snare drum track, for example, and the bass guitar track might play ahead of all the drum tracks. Luckily, there is a way to ensure that all the tracks lock properly.

In this article, I'll show you how to import audio files into MOTU Digital Performer (DP) so that they all lock together as they did in the DAW in which they were originally recorded. Most of what I'll show you is applicable to other DAWs; the principles are the same, and you need only find your DAW's corresponding menus and commands to execute the techniques shown here. But before I dive into importing, a few tips about exporting audio files are in order. How your collaborator records and exports shared audio files will largely determine your success in importing them.

Only the Beginning

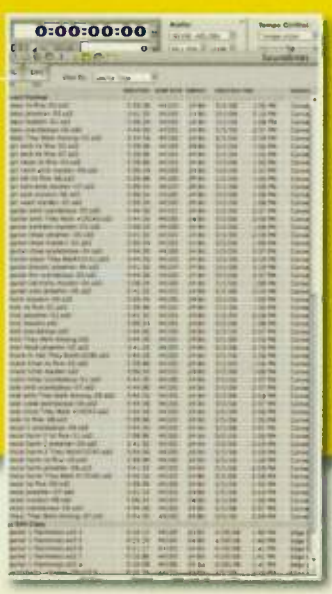
The simplest way to ensure that all tracks will lock properly after you import them is to have your collaborator record them beginning at exactly 0:00:00.00. You'll then only need to drag your imported audio files to the known 0:00:00.00 starting point. However, there are drawbacks to relying solely on this method.

The tracks won't all lock if your collaborator hit the record button on some of the takes even a hair after 0:00:00.00. Any

STEP-BY-STEP INSTRUCTIONS

1

Step 1: Import files by dragging them into DP's Soundbites window.



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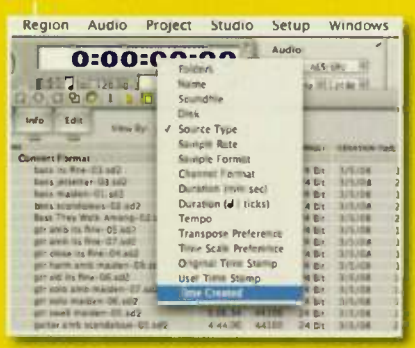
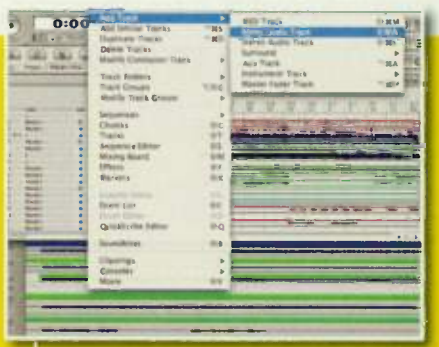
Step 2: Sort the list of soundbites in the Soundbites window by Time Created.





3

Step 3: Create any new audio tracks that are needed to play back your imported audio files.

punch-ins will be separate files that don't start at 0:00:00.00. And it's tedious to record from the beginning of a song just to overdub, say, a 4-bar solo in the middle.

The fix for all these situations is to use Audio→Merge Soundbites to merge (or, in Pro Tools parlance, consolidate) all previously recorded files from the beginning to the end of a track so that they become one long file starting at 0:00:00.00 (see Fig. 1). To be clear, the track should be merged all the way back along the timeline to 0:00:00.00 even if no audio was recorded in the track that early. In some DAWs, you may need to record a short snippet of audio starting from 0:00:00.00 in order to have the merged file start there. A big benefit of merging is that it greatly reduces the number of audio files the collaborator will need to import.

Even using the foregoing methods, mistakes occasionally happen, and sooner or later you will receive some files that don't begin at 0:00:00.00. Fortunately, you can make even these tracks lock, as long as your collaborator recorded and exported them in a format that supports time-stamping. SDII and Broadcast Wave formats automatically time-stamp each audio file with its original start and end times.

After importing time-stamped files into DP, you can command them to snap to their original positions along the project's timeline so that they lock in perfect sync with one another (see "Step-by-Step Instructions").

Copycat

First, copy to your hard drive all the time-stamped audio files you want to import. Then import them into your project by dragging them into DP's Soundbites window.

Even if you have a zillion other previously recorded soundbites (audio files) listed in the Soundbites window, you can easily find the freshly imported audio files by using DP's powerful soundbites-sorting function. Simply click on the View By menu at the top of the Soundbites window and select Time Created from the drop-down menu. The newest files, those you just imported, will be moved to the bottom of the list in the window.

Next, create any new (blank) tracks you need to play back your newly imported audio files, and drag-and-drop each file into the appropriate track in DP's Sequence Editor. It doesn't matter where along the timeline you drop the files.

Select all the newly imported soundbites. Then under the Audio menu, select Time Stamps→Move To Original Time Stamp. All of the selected soundbites will snap to their original positions along the timeline and will play back in perfect sync. EM

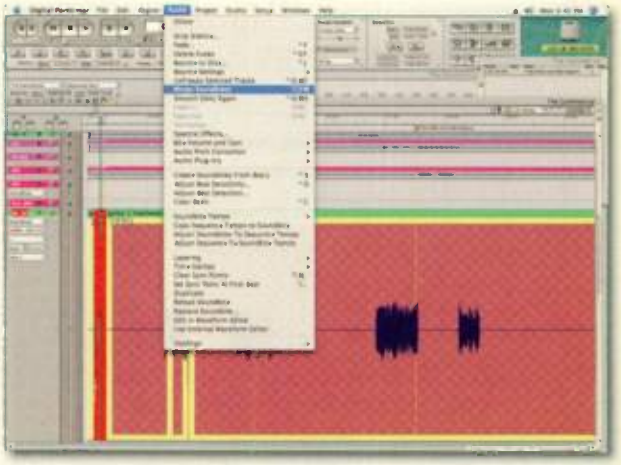
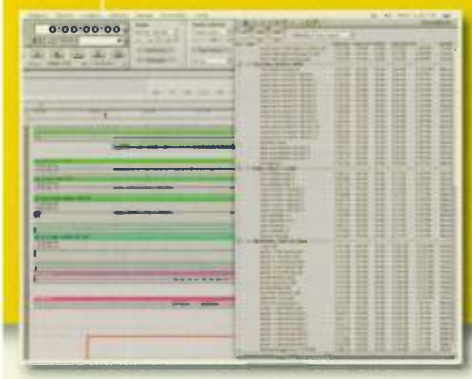
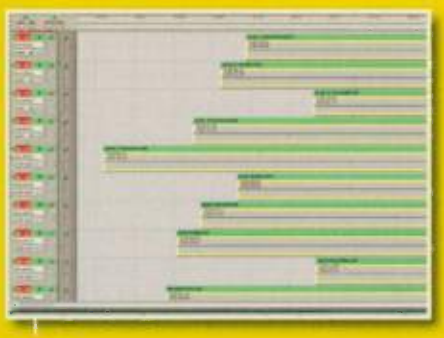


FIG. 1: Merging multiple audio files in a track creates one contiguous file for easy import into another DAW.

EM contributing editor Michael Cooper has written more than 300 articles about pro audio over the past 20 years. Visit him at myspace.com/michaelcooperrecording.

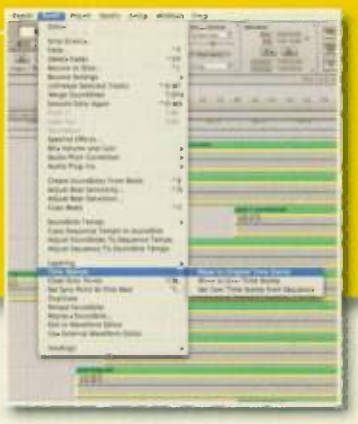
Step 4: Drag each imported file into the appropriate track in DP's Sequence Editor.





Step 5: Select all the imported soundbites.

Step 6: Select the Time Stamps→Move To Original Time Stamp command in the Audio menu to snap the soundbites to their original timeline locations.



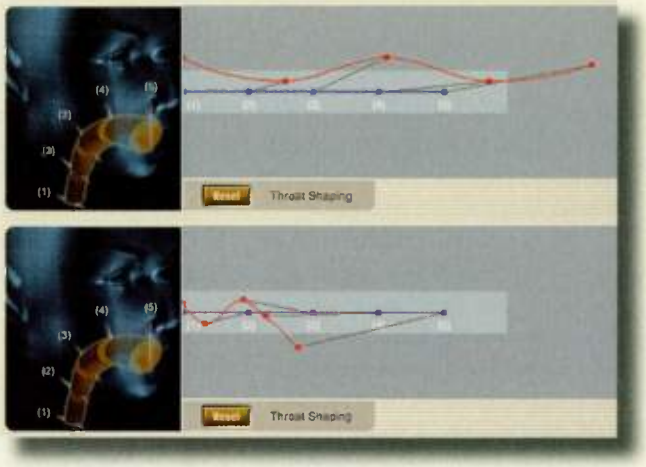


FIG. 1: Antares Throat lets you adjust the shape of the vocal tract in five sections from larynx to lips.

Talkbox Redux

Play outside the box with Antares Throat. | By Len Sasso

The popular talkbox effect from the 1960s imparts a vocal character to audio. It is most often used with guitar and keyboards, but you can use it to process any instrument or vocal. You'll find lots of video examples on YouTube, including one by Stevie Wonder that highlights a talkbox's similarity to a vocoder, and you'll find more examples, a detailed history, and links to hardware models at blamepro.com/talkbox.htm.

The talkbox performs its magic by using your mouth and vocal tract to filter the sound. Antares Throat (Mac/Win; $199 [MSRP]; antarestech.com) is an effects plug-in that applies physical modeling of the throat to an audio source. That makes it a natural for producing talkboxlike effects. Throat is not a talkbox emulation, but used in the wrong way—meaning not necessarily as intended by Antares—it yields similar results.

By the Throat

Throat divides the vocal tract into five sections between the larynx and the lips. You can adjust the width of each section, and you can adjust the length of each section except the first (see Fig. 1). You can also set global offsets to throat length and width as well as modify the waveform produced by the vocal cords. Making occasional adjustments to the nine individual length and width settings and actively modulating the globals and waveform are the keys to turning Throat from a throat modeler to a dynamic talkbox effect (see **Web Clip 1**).

ONLINE BONUS MATERIAL

Antares makes no provision for remote control of its parameters, so you need to use your plug-in host's tools for automation and MIDI continuous controller mapping. Most DAWs offer both, but you may need to dig under the hood to set up controller mapping.

I like to map the Model Throat section's Length and Width sliders (the global length and width offsets) to the same MIDI footpedal and give them ranges of roughly 0.75 to 1.30 with opposite polarity. Pressing the pedal then increases the width while reducing the length. I map the Model Glottal section's Pulse Width slider to a mod wheel with range 60 to 10 so that pushing the wheel up lowers the pulse width, producing a more nasal sound.

I also map the five section widths to sliders and the four section lengths to knobs on my control surface because graphically the widths are represented vertically and the lengths horizontally. I use these knobs and sliders to create a shape that works well with my source material when I move the footpedal and mod wheel. You can adjust the section length and width settings in real time, although that tends to be less dramatic than changing the global offsets and waveform.

Try using track automation instead of working the footpedal and mod wheel manually. For throaty emulations of phasing and flanging, create a short automation clip and loop it. As an alternative, you might use an application such as Five12 Numerology (five12.com), Cycling '74 Max (cycling74.com), or Plogue Bidule (plogue.com) to create MIDI controller sequences and LFOs to manipulate any or all of the aforementioned parameters.

Mouthing Off

Because Throat analyzes incoming audio for pitch and formant information, which works best on unprocessed, solo material, you'll get the cleanest results from that sort of audio. On the other hand, the talkbox effect is anything but clean, and you can use Throat in this context to process just about anything. Try it with leads, bass lines, rhythm tracks, pads, ambient sounds, and even percussion (see **Web Clips 2 through 4**).

You may need to make one-time adjustments to the other Throat settings to accommodate your source material. If you get high-pitched artifacts, try changing the Precision setting in the Source Throat box. For solo source material such as clean instrumental or vocal leads, match the Vocal Range and Source Glottal Waveform settings to the material. For other source material, adjust these settings by ear—they may or may not have a significant effect. The Add Breathiness sliders introduce highpass-filtered noise, and a little of that goes a long way.

Although I've emphasized motion, don't overlook Throat's value as a stationary effect. Experiment with the individual length and width, the global offsets, and the glottal pulse-width settings. It's tempting to think of the graphic display as an EQ curve, which it is not, but the results have a vocal, resonant-EQ flavor (see **Web Clip 5**). EM

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

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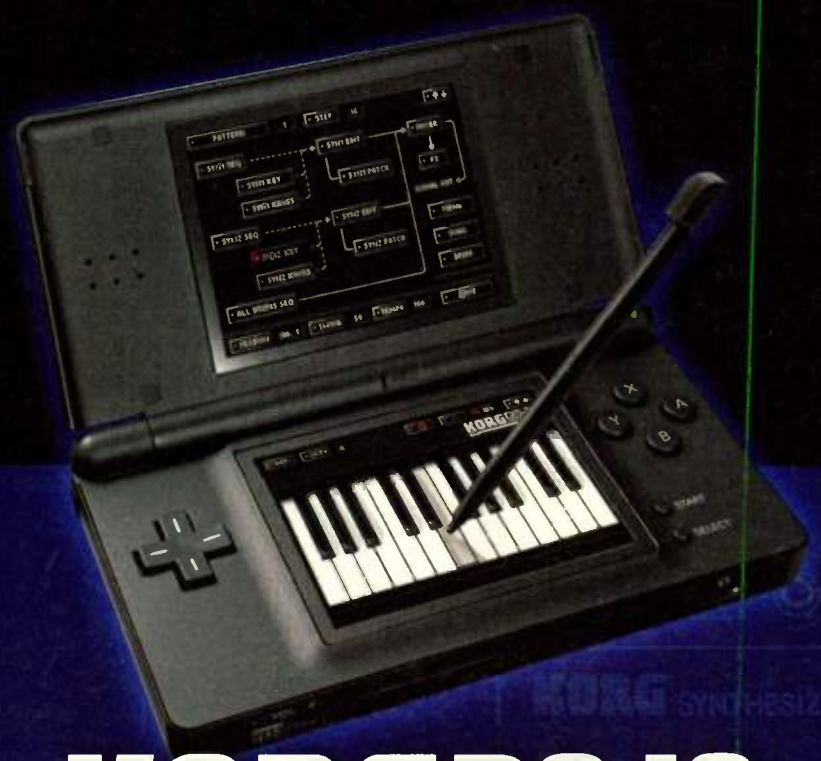

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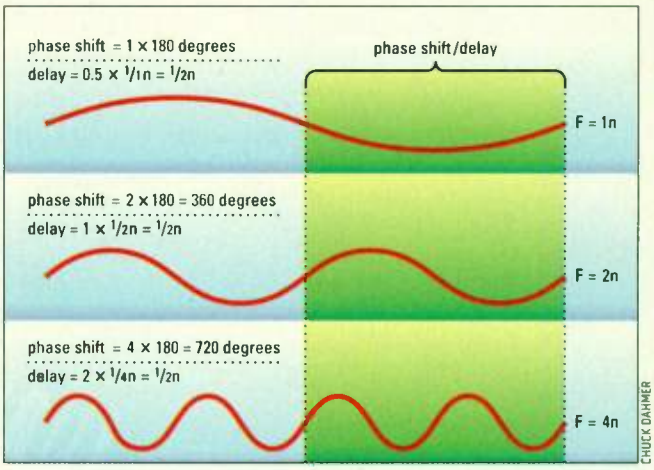

FIG. 1: Phase delay in a linear-phase filter is proportional to the frequency, so as the frequency gets higher, the phase delay (in degrees) gets longer. Because the period gets shorter, more degrees of phase shift end up taking the same amount of time.

In Phase

Why linear-phase EQ sounds more transparent. | By Brian Smithers

If you've been shopping for an equalizer (EQ) recently, you may have noticed that many products, especially those designed for mastering use, describe themselves as *linear-phase* EQs. But what does phase have to do with EQ, and what exactly is linear about linear-phase designs? In this article, I'll answer those questions and explain why such designs are touted for their transparency.

A Pretty Phase

Equalizers are composed of filters, and filters are components that alter the frequency content of a signal. (For more on EQs, see "Square One: The Sculptor's Tool" in the December 2007 issue, available at emusician.com.) It's a basic function of analog filter design that frequencies within the range passing through a filter are delayed by differing amounts. Time delay in a signal means *phase shift*, and changes in phase can be audible.

Exactly when phase changes are audible is a bit thornier to pin down. Our ears are very sensitive to modulated changes in phase, such as in chorus, flange, and other effects. We can clearly hear two copies of identical frequencies canceling each other, as when one speaker is wired backward. We can also hear the in-and-out-of-phaseness of two closely related frequencies, such as the beat frequency heard when tuning an instrument (or failing to do so). However, it's much more difficult to hear the difference between two complex signals that have the same spectral content but different phase relationships between their components.

Nevertheless, there are times when this phase shifting becomes audible, perhaps most notably on *transients*, the short, attack portions of a sound. For these situations, it is desirable to build filters that change the complex phase relationships of a sound's components as little as possible.

Analog filters are generally designed to be *minimum-phase* devices, meaning that they introduce as little total phase shift as possible. The amount of phase shift varies according to the filter design, and typically more aggressive filters (those with steeper slope) introduce more phase shift. This is why linear-phase EQs were born.

Phasing Facts

Linear-phase filters still introduce phase shift in a signal, but the phase shift is proportional to the frequency. In other words, the phase changes more as the frequency increases. Because a waveform's *period* (the length of time for one iteration, or *cycle*) decreases as frequency increases, the increase in phase shift balances the decrease in period, resulting in a constant delay across all frequencies (see **Fig. 1**). Because all frequencies are delayed by the same amount, the essential waveform of the signal is kept intact. This preserves transients, which, as mentioned, are more vulnerable to the effects of phase shift. Whatever phase issues our ears might pick up are mitigated by linear-phase filters.

Linear-phase response is especially valuable where multiple filters are used to split a signal, as in multiband compressors and de-essers. With minimum-phase designs, each band subjects the signal to phase shift at each point where bands overlap (twice, actually—once by the upper band and once by the lower). Even when no gain is applied to a band, the signal is nevertheless changed. With linear-phase filters, the device can be truly transparent when no gain is applied. When gain is applied to a band, the effect is limited to the desired increase or decrease of that band.

There are, of course, times when transparency is not desirable, and for that there are plenty of EQ designs with ample character, not all of which comes from phase shift. The DSP required for linear-phase EQs also subjects the signal to a significant delay, which makes them poor choices for track inserts or live sound-reinforcement applications. On the mix bus, this additional latency is usually inconsequential.

Nailing It

As with carpentry, audio engineering is about choosing the right tool for the job. No self-respecting carpenter would go out on a job with only a ball-peen hammer, and no engineer would declare a single type of EQ to be universally superior to other types. Linear-phase EQs preserve the characteristic shape of a waveform by shifting all frequencies by the same amount, making them ideal for applications such as mastering, where subtlety and transparency are paramount and latency is acceptable.

Brian Smithers is author of Mixing in Pro Tools: Skill Pack *(Cengage Learning, 2006). He teaches audio workstations at Full Sail University.*

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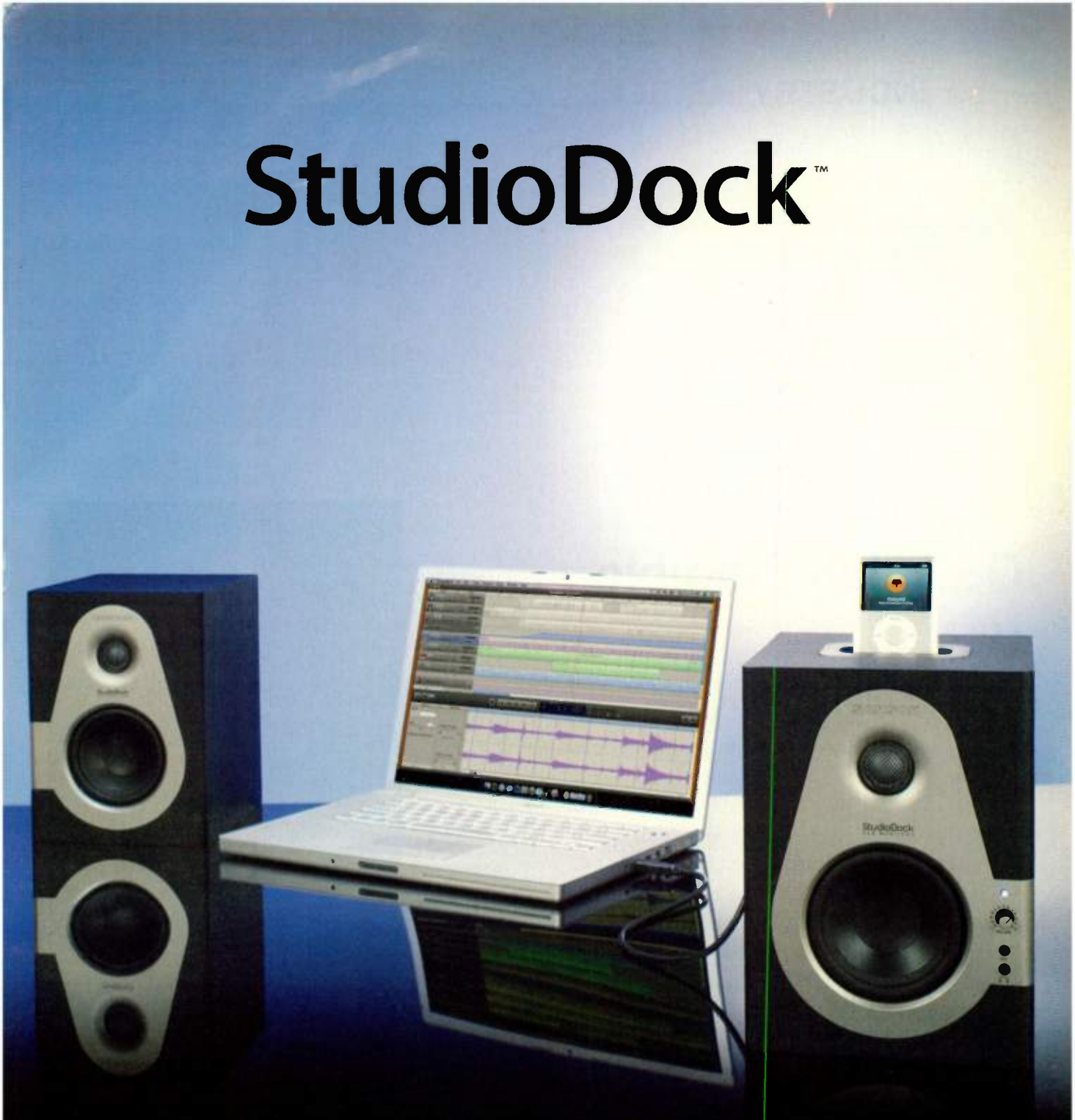

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SAMSON

Q&A: Ian Crombie

Helping songwriters navigate the music industry and their careers

"It starts with a song" is a phrase that is often heard in the music business. But writing those songs and surviving as a songwriter is not always an easy task. You face intense competition and a changing market, not to mention the creative challenges that come along with writing music. Luckily for songwriters, support organizations are out there that offer help in a variety of ways. I had the opportunity to speak with Ian Crombie (see Fig. 1), executive director of West Coast Songwriters (westcoastsongwriters.org), a not-for-profit songwriter organization based in California. Crombie talked to me about what WCS and similar groups around the country are doing to help songwriters.

By Michael A. Aczon

COURTESY IAN CROMBIE

FIG. 1: Ian Crombie is the executive director of West Coast Songwriters, a group that offers its members song critiques and networking and performance opportunities.

How does WCS support songwriters?

By offering education and connections—those are the two main things. Networking is a pretty cool part of songwriting. Not just the business side of it, but the equally important creative side. You're also networking to find collaborators, because most songs are cowritten.

WCS offers song critiques, or "screenings." How do those work?

The song screenings are for members only. Members can attend the event and get direct feedback from the industry guest. I have seen members of our group grow significantly by opening themselves up to industry critique. You don't have to agree with everything the guest says, but if you can walk away with one thing that makes your song stronger, it's worthwhile. We've had a number of placements directly from screening.

What other support services does WCS offer for songwriters?

We have Works in Progress, a peer-to-peer song-critique night. We have songwriting classes taught by hit songwriters. In the office, there's reference material including books that members can borrow. We also have a monthly newsletter and a Web site. We send out requests for songs if the industry is looking for them. I am available to answer questions. There are nine performance events a month, from Sacramento to Hollywood. We also have one-off events like the Palo Alto Promenade of Film and Music, where WCS was responsible for the music stages and the Redwood City Plaza performances. Our annual conference, always the second weekend in September, is our largest event. More than 1,200 songs are reviewed, and it's a three-day networking event with many performance opportunities.

How many songwriters attend?

Between 200 and 300 people. On top of that, there are the industry guests, which number around 50.

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Are there other organizations like WCS around the country?

There are similar groups across the country, such as the NSAI in Nashville. Ours is one of the most active organizations in the country. If you go on the Web, you could find some other support and networking organizations like ours by region or through sites such as lyricists.com and songwriteruniverse.com.

Has WCS had any success stories that you're willing to share?

Over time, we've had a number of them. TV and film placements have been the strongest successes for us over the years. Members have gotten record deals with independent labels and majors; writers get single and album cuts on recordings; an NCSA [Northern California Songwriters Association] writer just moved to Nashville six months ago and now has a single coming out—all of these writers made their connections through WCS.

Does WCS collect any broker's or finder's fees for generating these connections?

We have no financial ties. We just set up the opportunity, and then it's up to the songwriters themselves to do the rest. Setting up the opportunities is the key thing. We leave the responsibility of follow-up to the writers.

Do you have any tips on how songwriters can use WCS and similar organizations? What's realistic, and what isn't?

You know, sometimes we'll get somebody who calls and says, "I've written a hit song—that's what my mom told me. How much money can I make from this?" Those are the wrong kinds of questions. I think that you have to be in it because you love it, and then pay attention to the craft enough to where you'll get feedback on it. [Then] you can see whether you are writing at the level that you think you are writing at. Writers can pitch the industry through the organization, so the people are right there in front of you to listen to your song and give you feedback immediately. So having that gives the writer an opportunity to build up their network right away.

How have songwriting and the songwriting industry changed in the 20 years you've been working with WCS?

I think that the pop market is now pretty much sewn up; it's difficult to get into. Unless you're the artist or the producer-writer, it's almost impossible.

So becoming one of those is key.

Exactly. So I think that the self-contained artist is the wave of the future. But if you're not an artist, don't try to make yourself an artist—be true to yourself. If you aren't an artist, latch on to an artist who is good but doesn't have good songs. There are a lot of people who are really talented performers but aren't very good songwriters.

How do you recommend finding such people?

I'd go out and look. Go to smaller venues and see artists who are developing. Connect with them and see if you can write a song for that artist—or at least see if they are interested in collaborating.

What's the role of the music publisher now? How has that changed?

Several years ago, the publisher would pay someone as a staff writer. So when the writer's songs would become hits, [the publisher] would recoup the money they were paying out monthly to that writer. Now, there are very few staff writers. Publishers still do have people on staff, but it's just a limited amount of people. The publishers have the connections to set up writing situations with artists, so it's an easier way for writers to get in the door.

Do songwriters do a lot of networking using the Internet?

It's a great way to find new artists. You can do a search within a certain geographical area to get a chance to connect with those people. Look at Journey, which found a new singer through the Internet. It's interesting, isn't it? YouTube and similar sites are a great way to find an artist to work with—as long as it's real. Use every avenue that's open to you. Using the Internet is an incredible tool to find things a lot more easily than we were ever able to. As a DIY artist who knows how to use technology, you've got production tools and sites like YouTube and MySpace available to you. Look at selling your own stuff on CD Baby and other online distributors. For an independent artist, that's a great way to go.

Is the current economic downturn bad for songwriters?

Through adversity usually comes great material. I come from Birmingham [England], which is a pretty industrial area, and people either fight their way out as boxers or they play their way out with music. Even though times may be tough, it's where great material comes from, because adversity tends to make people have an opinion.

How would you describe the kind of songwriter or artist who is best positioned to succeed in today's music business?

I think it's easier if you're a self-contained artist—if you perform and write. It's an easier vehicle to get your songs out there. As a performer-songwriter, you can just go out and perform and you have to connect with your audience immediately. If you're a lyricist or music writer only, you have to find a collaborator to complete your songs and then someone to deliver them.

> The self-contained artist is the wave of the future.

Any final words of advice for the songwriters and performers out there?

Be true to who you are. People can really see something that's false. If you're trying to pass yourself off as something that you're not, people can really see it. So be true to yourself, perform about things you care about. That's kind of a key thing. Do it because you love it, not because you're looking for money. If you work hard enough at it, you probably will make money. em

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Michael A. Aczon is a 25-year veteran of the music industry, teaches music-industry courses at two colleges in California, and is the author of The Musician's Legal Companion, *second edition (Cengage Publishing, 2008).*

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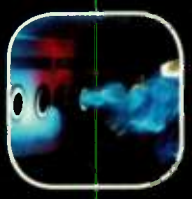

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MOTU

Electric Keys 1.0 (Mac/Win)

What's new in the world of old keyboards?

>> PRODUCT SUMMARY

software instrument	$279

PROS: First-class renditions of the classics, as well as a large selection of rare and exotic instruments. Attractive and intuitive user interface. Includes iLok.

CONS: Receives on only one MIDI channel. No mod-wheel pitch modulation. Requires iLok.

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

MOTU
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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 Babz

Early electronic-keyboard inventors employed everything from metal tines and spinning tonewheels to strips of magnetic tape. This helped define the distinctive character, quirks, and lo-fi charm so prized by vintage-keyboard enthusiasts, and it explains why repeated attempts to perfectly re-create the imperfect qualities of these electromechanical beasts in the digital age have failed. Like many, I have longed to reclaim the sounds of the electric pianos and other classic keys that I abandoned with the birth of MIDI. I have spent many years buying various ROMplers, expansion boards, sample libraries, and virtual instruments—each giving me successively better approximations of the real thing.

Today, incredibly convincing emulations exist that are essentially indistinguishable from the real thing. So what can MOTU's Electric Keys bring to a relatively mature and saturated market? Quite a lot, it turns out, including excellent versions of old favorites and rare lost classics that time forgot.

Plug On In

MOTU's Electric Keys is a sample-based virtual instrument (VI) that re-creates 50 vintage keyboards. All the classics you'd expect are here—the Fender Rhodes and Wurlitzer electric pianos, the Hammond B-3, the Mellotron and Clavinet—as well as a large variety of combo organs, string machines, keyboard basses, and other exotic electro oldies but goodies (see motu.com/products/software/electrickeys/keyboards.html for a complete listing). The library weighs in at a hefty 40 GB of 24-bit, 96 kHz multisampled data and comes on six DVDs. I wasn't thrilled that it requires an iLok for copy protection, but I was delighted that MOTU includes one in the box. (Many companies make you shell out an additional $40.) You also get a well-written, illustrated printed manual. Electric Keys is based on the UVI sound engine and can be used cross-platform, standalone, and in all major plug-in formats. It also works as a sound library for MOTU's MachFive 2 sampler. (Using it with MachFive provides additional editing options; more on editing in a moment.)

FIG. 1: Electric Keys' attractive skins re-create the look of various types of instruments.

The user interface is opulent and easy to use and offers two slots to quickly create splits and layers. It is not multitimbral, however, so you need a separate instance for each MIDI track. This limitation is common enough, but Electric Keys has a further limitation: it can receive on only one MIDI channel—channel 1. This won't be an issue if you are working on a single computer, but it could be a problem if you use multiple computers. I sequence on a Mac and host VIs on a PC running the widely used VSTi host Steinberg V-Stack. V-Stack requires that each instrument be on a separate MIDI channel. For my setup, the only work-around was to use a separate physical MIDI port and cable for each instance of Electric Keys in V-Stack, with each set to receive on channel 1. That limited me to a maximum of two instances, because my PC's MIDI interface has only two MIDI ports. (This could also be an issue for other external hardware VSTi hosts, such as the Muse Receptor.) Hopefully, this basic issue can be easily addressed in a future Electric Keys update.

Electric Ecdysiast

Patches are organized into 12 banks, each of which features a colorful skin that changes with the type of instrument you load (see Fig. 1). The skins are eye-catching and help you keep your VIs straight when sequencing multiple instruments, but it would have been nice if changing skins added instrument-specific control features as well. Instead, the skins all retain the same Volume, Tune, Drive, Tremolo, and other knobs for every instrument. The controls offer quick sound customization, but a tremolo knob, for example, is better suited to a Rhodes than to a Clavinet front panel, where I'd rather see Clav-style controls. (Of course, having such specific controls would have involved more-complicated programming.)

FIG. 2: Electric Keys includes a full virtual effects rack.

Clicking on a front-panel FX jack brings up a full virtual effects rack, complete with Filter, Phaser, Flanger, Chorus, Delay, Reverb, Amp Simulator, and even an imitation vinyl-record effect (see Fig. 2). A tiny E button (which is too small for my eyes) takes you under the hood to Expert Settings, where you'll find synth edit parameters such as envelopes, filters,

portamento, and other goodies (see Fig. 3). Missing, however, is the ability to assign LFO to pitch modulation for standard mod-wheel vibrato, which somewhat inhibits the creation of fully expressive lead synth patches (another item for the update wish list).

The synth engine, effects, and layering add up to a powerful combination that takes Electric Keys beyond simple re-creation of old instruments, allowing you to sculpt entirely new sounds (see Web Clip 1). Moreover, hundreds of grab-and-go examples of this power can be found in the factory-programmed Combi patches, which are included along with the 12 banks of basic instrument sounds.

FIG. 3: The Expert Settings page provides access to utility and basic synth edit parameters. For more-extensive options, the library can be edited in MOTU's MachFive 2 sampler (available separately).

Electric Pianos

Electric Keys has four Fender Rhodes presets (Mark I models from 1975 and 1979, a Mark II from 1981, and a Mark V from 1984) and two Wurlitzers (a model 200A and a rare Butterfly 270 model).

A Rhodes can be highly expressive up and down the keyboard and even on a single note, depending on key-strike Velocity. To accurately capture such detail requires extensive multisampling. Electric Keys devotes more than 10 GB to its Rhodes samples: between 2 and 2.5 GB per instrument with up to ten Velocity layers, plus release samples. All this detail definitely translates into expressive playability. Low notes growl, mid notes bark, upper notes are clear and bell-like, and Velocity layering feels smooth and natural. I own quite a few virtual Rhodes instruments, and Electric Keys holds its own with the best of them. The four instruments each respond differently, with the 1975 MK I being the mellowest and the 1981 MK II (my favorite) the barkiest (see Web Clip 2).

Both Wurlitzers are excellent re-creations, and either could be used to create totally convincing tracks. The Butterfly model has growlier lower notes, perfect for classic tracks like Queen's "You're My Best Friend" (see Web Clip 3).

Handsome Hammonds

A sizable chunk of data is devoted to Hammond organ sounds, such as the B-3, C-3, and M-100. There's even a sample of a modern virtual B-3, the Korg CX-3. The B-3 patches are named after their drawbar settings: for instance, "000788080." I found it difficult to remember patches with such names, which don't give you a clue about things like percussion or key click. The names of the subcategories in the preset browser do provide hints about vibrato and Leslie, which use Mod Wheel to switch between slow and fast in many patches.

Unlike Native Instruments' B4, which employs modeling to produce sounds and offers drawbars and switches as controls, Electric Keys' use of samples yields a less organic experience. However, with some 200 patches, you have a lot of sonic options. The sampled B-3s are rich and gutsy, easily on a par with B4, and I much prefer the sound of Electric Keys' sampled Leslie to that of B4. Combining preset components can take some time, but with a little effort I was able to do things like layer the key click from a CX-3 patch with an all-out B-3, apply some drive (which I also like better than B4's drive), and create an awesome dirty rock-organ patch (see Web Clip 4).

There's also a hearty helping of Hohners (Clavinets, Pianets, and rarities), a cornucopia of combo organs (Vox, Farfisa, and others), a sprinkling of Mellotrons (Violin, Cello, Flute, Choir), an extensive selection of vintage analog string machines, and much more than I can detail here (see the **online bonus material** "Electro Obscuro" at emusician.com). What really sets this collection apart is that it goes beyond just a great Rhodes or B-3; for example, this is the most extensive collection of combo organs I've seen. The String Machines bank far surpasses the obligatory Solina, covering ten different instruments, and there are some truly rare and exotic gems to be mined in these banks, many of which have never been sampled. Ever play a Weltmeister Claviset or an Elka Rhapsody? I haven't.

Electric Keys provides endless hours of vintage-keyboard joy and still leaves plenty more to explore. If you're looking for classic rock, funk, or jazz fusion sounds, they're here. And if you want to experiment with some spooky '60s detective moods or commit cheesy surfer-art crimes, you'll find a treasure trove of exotic electro weapons in this arsenal. In short, you get more classic keys than Rick Wakeman could stuff into a '70s tour van—all for less than a roadie's night's pay. When you consider the price of admission also includes the cost of the iLok, that's a winning ticket.

Babz is a composer, multi-instrumentalist, and music-technology writer in New York City.

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FIG. 1: The StompIO is a solidly built floor controller featuring ten footswitches, seven knobs, five buttons, and two displays.

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PRODUCT SUMMARY

software controller and audio interface	**$899.99**

PROS: Flawless integration with software interface. Flexible Play and Edit modes. Rugged, well-built, and well-designed construction.

CONS: No onboard expression pedal. No compare function. Expensive.

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

IK Multimedia
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ONLINE BONUS MATERIAL

By Jon Chappell

If you're a discerning guitarist who records and performs with technological savvy, you've probably found the tasks of outfitting your effects for stage and studio to be separate endeavors. For live use, you may use a sophisticated hardware multi-effects processor to get your sounds underfoot, whereas in the studio, you may opt for plug-ins for their superior flexibility and sonic variety. But now some guitar-software manufacturers are seeking to bridge the software/hardware gap by introducing software-driven controllers that look and feel like conventional outboard multi-effects processors. These units are as at home on the floor as they are on the tabletop; it's just that they're tethered to a computer somewhere.

Massive Metal

No one has thrown as much heavy metal at this product category as IK Multimedia has with the StompIO (see Fig. 1), a foot-operated outboard controller for its Powered by AmpliTube software. This unit could be described as the Cadillac of software controllers—big, powerful, and luxurious. Yes, it's expensive, but it comes with everything you need: the entire line of AmpliTube software modules, an outboard expression pedal (I would have preferred that it was attached to the unit, but this arrangement does let you choose which side to put the pedal on), and a USB cable. All you have to do is supply the computer and the amplifier.

This review will focus on the StompIO itself rather than on the bundled programs that drive it, which are the Powered by AmpliTube modules AmpliTube2, AmpliTube Jimi Hendrix, Ampeg SVX, AmpliTube Metal, and X-GEAR. A hardware-only version of the StompIO package is available as an upgrade from IK Multimedia to registered owners of the above-mentioned modules and other selected IK titles for $799.

View from Above

The StompIO's front panel sports ten footswitches, seven knobs (a dedicated master volume and six assignable rotary encoders), two displays, and five buttons—one for activating the tuner and four for navigating the interface (paging and cursoring around the screens and

parameters). All the front-panel controls are solid, large, and well constructed and will have no trouble standing up to the rigors of long-term stage use. A sturdy metal rod that spans the width of the unit acts as a convenient carrying handle, making me wonder why more multi-effects units don't include one.

The I/O on the StompIO is impressive (see Fig. 2). In addition to the power supply and guitar-input jack, there are six ¼-inch inputs for external controllers, a ¼-inch TRS input for the expression pedal, two ¼-inch stereo output pairs (balanced and unbalanced), MIDI In and Out, USB, S/PDIF out (RCA), a ¼-inch headphone out, and a ¼-inch direct out.

The CPU Connection

In addition to a controller, you can use the StompIO as the audio interface for your DAW; it handles up to 24-bit, 48 kHz audio. I used it successfully with Steinberg Cubase and WaveLab with no issues; I didn't even have to adjust the buffer for latency when multitracking in Cubase. Guitarists will be pleased to know that it has a 1 MΩ high-impedance input and a low-noise Class A preamp.

You can use the StompIO to control a plug-in within your DAW or in standalone mode (which you'd likely use in a performance situation), where you launch the shell program, X-GEAR (see Fig. 3), to organize your setups and the other Powered by AmpliTube modules. X-GEAR provides capabilities for creating your own setups, though it's limited in the stompboxes and amps it provides. Its greatest strength is as a shell to organize all the models from the other modules, providing an excellent palette for painting your sonic guitar-effects canvases (see Web Clips 1 and 2).

For studio use, you'd still invoke X-GEAR to organize your AmpliTube sounds, but you'd access it as a plug-in from within your DAW. Despite the big floor controller, you need a computer to run the StompIO; there is no internal sound-generating circuitry in this spacious box. So performing guitarists should understand that "standalone" doesn't mean you can load the StompIO with sounds and carry just the controller to the gig. You need a computer in tow.

Up and Stomping

Because the StompIO is the brawn to AmpliTube's brain, you first need to load into your computer all the software that ships with the controller. This involves installing, configuring, and registering the bundled software. I found the process to be smooth and glitch-free (including back-and-forth online communication). Once that was completed, the controller sprang to life, mirroring on its display the image appearing on my computer screen.

When using a floor controller, you will spend most of your life in either Edit mode or one of five Play modes. There are other modes, including Global and System, where you set input levels, define external controllers and set their ranges and curves, configure MIDI commands, and so on, and the StompIO's capabilities in these areas are deep and versatile. However, it's Play and Edit that will make or break your experience with any controller.

The good news is, the StompIO's Play modes are quite powerful, surpassing most hardware controllers on the market just in terms of flexibility and logic. The Edit mode served the software interface well, though not with quite the innovation that the Play modes offered.

Heavy Storage

The StompIO calls its memory locations Patches, and 4,000 are available, organized in 1,000 banks, each containing four selections (A, B, C, D). The display shows your location with three digits and a letter, as in 000A or 999D. Because the StompIO gives you so many ways to recall patches, you can effortlessly access hundreds of them, whereas on a controller with less versatile play modes, such as those that can only step sequentially through them, anything over 200 would be overkill.

The StompIO's five distinct Play modes all access the patches a bit differently. You can use the footswitches in Stompbox mode (where the switches turn the individual effects of the patch off and on) or in the other four variations that offer great flexibility in moving among, arranging, and previewing your patches. One of my favorites is Sequence, whereby you can create a predetermined sequence of patches—say, 000A, 127D, 962C, 004B, and so on—and move along the sequence by hitting the Bank Up switch.

There's even a Patch Browse function that allows you quicker access to your stored programs than you'd get through the computer. This is where the StompIO shines: it captures the best aspects of a hardware controller—using those tactile things called knobs—to create an experience superior to that involving a mouse and keyboard. Of course, the StompIO's display can't beat the computer screen for feedback or seeing all your parameters at once and in context, but for tooling around the patches, the StompIO's Play modes are very cool.

Playing Footsie

All the StompIO's knob and push-button operations have footswitch equivalents, and while

FIG. 2: The StompIO offers impressive I/O options, including balanced and unbalanced stereo output pairs and a Class A preamp.

they're not as fast as using ten fingers, it's nice to be able to replicate any knob change on the table with a foot press on the floor—and without bending over! You can use the StompIO to copy, move, modify, rename, and overwrite patches, all without even glancing at the computer. In this way, the StompIO behaves just like a traditional hardware floor controller; you're not even aware there's a computer behind it all. In practice, I would often put the StompIO on a music stand, which allowed me to work the front panel with my fingers. I did some serious editing this way, and when it was time for the StompIO to go back on the floor, I would use the footswitches to make any microtweaks. The handle was quite useful for all this shuffling between desktop and floor.

FIG. 3: X-GEAR, which ships with the StompIO, acts as a shell program to organize and control the other Powered by AmpliTube modules in your system.

Getting around the StompIO interface is easy. Navigation is intuitive, and of course you always have the computer screen close by for orientation. There's a directional logic in the interactivity between the computer and the StompIO: you can make changes on the computer screen that would be on a different page on the StompIO, but the StompIO display stays put—it doesn't change. However, when you change pages on the StompIO, the computer screen follows suit. This makes the most sense and keeps you from getting disoriented while working with the controller, whose display is naturally more limited than the computer's.

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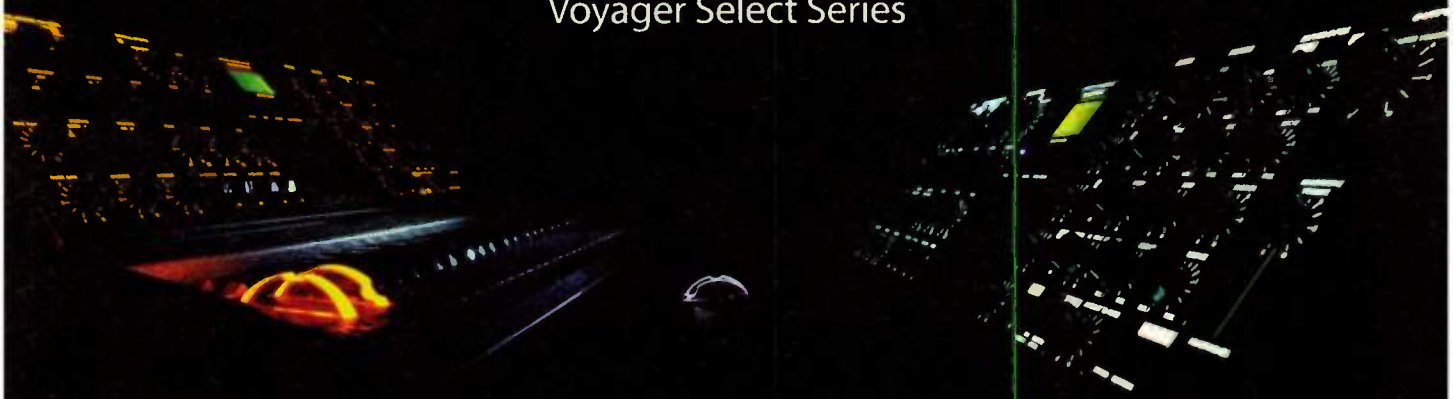

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Credible Editables

Dialing up a patch and editing it is immediate thanks to the six rotary encoders under the display. IK Multimedia calls these Patch Macros because they're assignable in each patch, and you can gang up to four parameters together on a single knob. Typically, you attach the most important parameters to these knobs. You might set up an amp panel configuration with the controls Gain, Bass, Mid, Treble, Reverb, and Volume going logically from left to right. From there, it's easy to tweak by hand to tailor your sound.

Once you start moving the knobs, though, there's nothing that tells you what the original setting was unless you reload the patch, which dumps your edits. I wish there were a visual cue when you passed through the preset value (other multi-effects processors do this), but it doesn't exist on the StompIO nor, surprisingly, on the computer screen. This wouldn't be an issue if there were a compare or A/B function, but there isn't.

One nice touch is that the knobs have velocity-sensitive ballistics: when you turn them fast, they jump far; turning them slowly advances parameters in tenths of an integer. As with any control surface, there are some operations better suited for knob twisting—such as patch browsing—which can be performed only on the StompIO and not the computer screen. So the StompIO acts as both a hardware controller for unique functions not available on the software, and as a floor controller.

Stomp Away

For its first foray into hardware controllers, the software specialist IK Multimedia has done an admirable job. The StompIO is elegant, ruggedly bulletproof, and a joy to navigate. I like having 4,000 patches. It means you never have to off-load your setups—or at least not for a very long time. This encourages editing.

My only reservations with the unit occurred when I took it out of the box: it has a large footprint compared with other multi-effects units, and a separate expression pedal. Almost everything after that met or exceeded expectations, and the StompIO has some innovative features that make working with it inspiring.

If you're thinking of immersing yourself in the world of software guitar processing for recording and want your gear to do double duty in a live setting, the StompIO provides unprecedented access and power to its software processing components. Cheap it's not, but there's no denying that this controller—and its flawless integration with all of the Powered by AmpliTube modules and X-GEAR software—is as close to one-stop shopping for your live and studio guitar-processing needs as it gets.

Jon Chappell is the author of The Recording Guitarist: A Guide for Home & Studio *(Hal Leonard, 1999),* Digital Home Recording *(Backbeat Books, 2002), and* Build Your Own PC Recording Studio *(McGraw-Hill, 2003).*

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FIG. 3: Synthesizer One is the only instrument in the bundle. It offers a wide range of sounds, including emulations of a number of vintage synths.

These are also all integrated into the Chrome Stack plug-in. Each plug-in consists of a series of subsections and provides enough controls to satisfy the most hard-core knob twiddler. The amp simulator has prefilter, Noise Gate, EQ, Compression, Distortion, Reverb, and speaker-simulation sections. The Distortion section alone offers nine EQ curves that feed the signal to the distortion emulator, which has six distortion types. The Wah plug-in gives you both auto-wah and MIDI-triggerable wah, as well as some tasty phaser sounds. Tremolo is great for classic tremolo, autopan, and Leslie simulation, and it even has some transient-shaping capabilities that sound cool on drums. Chorus offers a variety of rich chorusing and flanging effects.

Revolver. This is a highly programmable convolution reverb with two delay lines, a 3-band parametric EQ, a crossover network, and control over Diffusion, Attack Time, and signal flow. Tools are included to allow you to create your own impulse responses. Revolver sounds great (see **Web Clips 2a and 2b**) and has excellent programming depth, but it has a maximum sampling rate of 48 kHz. For those working at 96 kHz (like myself), this is a real limitation. Large portions of the included impulse responses are samples from other manufacturers' reverb units. I wish the library had a larger collection of uniquely recorded IRs.

Synthesizer One. This soft-synth plug-in (see Fig. 3) is McDSP's lone foray into sound generation. It features three oscillators, three LFOs, two VCFs, and two envelopes. Two of the oscillators are of the wavetable type. Their waveforms can be generated through line drawing, mixing together combinations of up to three existing shapes, or by extracting audio data from Pro Tools regions. You can map MIDI controls to virtually any parameter through the Matrix Modulation page, and a sophisticated event sequencer/arpeggiator is included as well. Synthesizer One has a high degree of flexibility and programmability and can mimic many vintage analog synths. Dozens of presets let you explore its many facets.

All You Need?

To put it plainly, the Emerald Pack rocks. The processors sound great and can really make your mixes sing. What makes these plug-ins so appealing is their chameleon-like breadth. Once you learn the interface for Channel G, for example, it's great fun to see how the Neve, API, and SSL G EQ simulations handle the same EQ curves differently.

After you dig into the presets, you realize just how much ground is covered. Great-sounding reverb, an enormous variety of EQ and compression, guitar-amp and effects simulations, de-essing, noise filtering, a synthesizer, and simulations of consoles and analog tape are all offered, among other effects. Aside from more delay-based effects and pitch-shifting, it's hard to imagine what's missing here.

The Emerald Pack is worth a close examination by those shopping for a high-quality, comprehensive plug-in solution for Pro Tools. McDSP offers 14-day free trial downloads of all its products from its Web site. Efficient, well-thought-out plug-ins, excellent customer service, and a free-upgrade policy are solid proof that McDSP is doing things right.

Nick Peck is a composer, keyboardist, and sound designer in San Mateo, California. His latest album, Fire Trucks I Have Known, *is available through CD Baby.*

KRK SYSTEMS

Rokit 5 G2

By Eli Crews

KRK Systems' new Rokit G2 (Generation 2) monitors sport a distinctive contoured design that is intended to decrease unwanted reflections and therefore deliver a more direct signal from the speaker elements to your ears. The G2 series comes in three sizes: the Rokit 5, 6, and 8; the number denotes the woofer size in inches. For this review, I tested a pair of Rokit 5s ($300 per pair).

The second-generation Rokit 5's spatial imaging and full-range sound belie its small size and affordable price.

Standing about 11 inches high, 7.3 inches wide, and about 9 inches deep, the Rokit 5s are compact enough to easily sit on a small desk or bookshelf, making them ideal for a tiny studio or home listening environment. The 1-inch soft-dome tweeters are recessed in a concave divot that serves as a waveguide. The 5-inch aramid-and-glass-fiber woofers sit above a long, thin, rectangular front bass port.

The KRK logo on the face doubles as the power light, which glows softly when the integrated power amps are switched on. The amps are rated 15W RMS into 10Ω for the tweeter and 30W RMS into 10Ω for the woofer. The back panel features XLR, TRS, and RCA inputs, as well as two knobs: one is a notched pot for adjusting the speaker level (from +6 dB amplification to –30 dB attenuation), and the other is a 4-position rotary switch for boosting or cutting the frequencies above 2 kHz (from +1 dB to –2 dB).

SATELLITE STUDIO

The Rokit 5s showed up at the perfect moment for me. To avoid wasting precious time and resources in my larger studio, I had just installed a small listening environment in my basement for editing and premixing on a laptop with a Digidesign Mbox. Monitors were all that was lacking, so when the KRKs arrived, I eagerly set them up. I quickly realized I didn't have any TRS cables, however, so I used the Mbox's ¼-inch headphone output with a Y-cable and an adapter to feed the Rockit 5s' RCA inputs. Unbalanced, yes, elegant, no—but it saved me a trip to the studio, thanks to the monitors' having three different input-connector types.

Like most basements, mine does not possess an ideal acoustic environment, but I was instantly pleased with what I heard on the Rokit 5s. The first thing I listened to was a mix I'd been working on for two days straight, and I'd become very familiar with all its nuances. The stereo imaging was quite precise, the low end was full but tight, and the top end was very present without sounding strident or harsh. In addition, the speakers gave me a nice, deep soundstage, allowing me to really hear the effect of the reverb and the spatialization I'd been focusing on for that mix.

REFERENTIAL TREATMENT

To find out if I was missing anything, I borrowed a pair of ADAM A7s I'd used fairly frequently. After a few days of switching between the ADAMs and the KRKs, my overall impression was that the Rokit 5s held their own pretty well against the A7s, which sell for more than three times as much. The A7s get much louder (their amps have 50W of power each) and have a more extended, silkier top end (even when I engaged the 1 dB boost on the Rokit 5s), but for the most part I was working just as confidently on the Rokit 5s.

The thing that really surprised me was the quality of the Rokit 5s' low end, given the small woofer size. For most tasks a subwoofer isn't necessary, although in one passage of a certain song, I had boosted a drum pattern that my studio's subwoofer revealed to have way too much subsonic energy, which wasn't evident on the Rokit 5s. If you do want a subwoofer, KRK recently introduced the latest addition to its G2 series, the KRK10s.

> I can't imagine them sounding much better for their size and price.

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TO THE MOON

I must admit I am mighty impressed by these little speakers. Although they won't be putting my studio mains out of commission anytime soon, I can't imagine them sounding much better for their size and price. I can only guess that the 6- and 8-inch versions sound even better in the low end, as they spec out 4 Hz and 8 Hz lower, respectively. For a small project studio, a home editing station, or anybody on a budget, I highly recommend listening to the KRK G2 series.

Value (1 through 5): 4
KRK Systems
krksys.com

SOLID STATE LOGIC

Duende Mini (Mac/Win)

By Nick Peck

Solid State Logic (SSL) has released the Duende Mini ($795), the newest member of its family of plug-in accelerators. For those not familiar with the Duende product line, it consists of hardware and software components. Four SHARC processors connect via FireWire or PCIe to the host computer to run the plug-ins. These plug-ins were written by SSL and are derived from its C-series line of digital consoles, which in turn are modeled on the sound of its famous 4000- and 9000-series analog consoles. The Duende Mini is compatible with Mac OS X 10.4.11 or later (Intel and PowerPC) and Windows XP, and comes in VST, RTAS (via an included VST wrapper), and AU formats.

The original Duende (now dubbed the Duende Classic) was the first product in this line and consists of a 1U FireWire 400–based unit that includes plug-in re-creations of the EQ and Dynamics sections of the SSL C200 channel strip, as well as the company's famous bus compressor. (A PCIe card–based version is also available.) The Duende Classic can run 32 mono instantiations of the plug-ins at 44.1 or 48 kHz and half that number at 88.2 or 96 kHz. Note that the Duende family runs only SSL plug-ins, not third-party software. In addition, the SSL plug-ins run only on the Duende—you can't run additional instantiations on your host computer. For more information, see the review of the Duende Classic in the July 2007 issue, available at emusician.com.

SHARC TANK

The Duende Mini is a smaller and even less expensive way to get the SSL sound onto your desktop. It is a 1/3U unit that comes in a sleek, sturdy aluminum case. It includes a FireWire 400 cable and a universal wall-wart power supply, suitable for use in all countries. It actually has the same signal-processing capability as the other Duende products. In its initial configuration, however, only two of the SHARC chips are active, allowing you 16 mono instantiations at 44.1 or 48 kHz and 8 instantiations at 88.2 or 96 kHz. You can double the Duende Mini's processing power by purchasing the DSP upgrade ($399), which turns on the other two SHARCs. This approach is a terrific way to dip your toes in SSL's waters before investing more money for greater capacity.

The Duende Mini includes the stellar EQ and Dynamics Channel Strip plug-in. I can't say enough good things about the sound and functionality of this plug-in within the space allotted. It has a sweet-sounding EQ that emulates both type G and type E EQ curves, and a versatile compressor/limiter and gate/expander. This plug-in unabashedly brings the sound of big-budget rock albums to the world of DAW mixing.

Unlike the Duende Classic, the Duende Mini does not come with the Stereo Bus Compressor plug-in ($399), though a trial version is included. This punchy compressor adds girth to drum submixes and overall mixes, smoothing out the peaks and bringing up average signal level in a familiar and wonderfully musical way. If you own the Mini, I think it will be more a matter of when you will be purchasing this plug-in, rather than if.

SSL has created three additional plug-ins you can buy for the Duende family: Drumstrip ($399), a drum-specific suite of processing; X-Comp ($499), a mastering-grade compressor/limiter; and X-EQ ($599), a 10-band equalizer with every bell and whistle known to man. These plug-ins are available for the Mini and will run identically as on the other Duende products. Trial versions of all three also come with the Mini.

SSL has defined its pricing structure so that a Mini upgraded to identical functionality to the Classic (by having the DSP and Stereo Bus Compressor upgrades) ends up costing virtually the same as purchasing the Classic in the first place. As a result, the one you choose really becomes a matter of convenience—if you are a portable-laptop-studio type, the Mini might be a better choice, whereas the easily rackable Classic might be better for a permanent installation.

I'm quite enthusiastic about the sound of this product. In working extensively with

>> The Duende Mini includes SSL's excellent-sounding EQ and Dynamics Channel Strip plug-in.

"My #1 Country Hit Started With a Phone Call to TAXI"

Elliott Park – TAXI Member

Photo: Elliott (left) with publisher, Michael Martin

I used to think that living in Clyde, Texas (Population 3,345) really limited my chances of ever having success in the music business. But all my friends and family members live here, so I've never wanted to move to Nashville.

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Tim McGraw, Rascal Flatts and Faith Hill Put My Songs on Hold

Over the next three years, my songs were considered by a Who's Who of Country Music, but the "big cut" eluded me. I learned to be patient and worked even harder on my songwriting.

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the Duende Mini over the last two months, I've been continually delighted by its performance. I've been using it to mimic a console, strapping a Channel Strip across every track and a Bus Compressor across the master bus. My mixes seem to have a richer, bigger sound, and using the same plug-in on each track makes the process of dialing in the sounds quicker and more intuitive than in my pre-Duende days.

The Duende Mini is an excellent introduction to mixing with the SSL sound. The DSP and plug-in upgrade path is a great way to keep the initial cost down. But don't say I didn't warn you: once you buy the Mini, you'll want to be saving your nickels for those upgrades. The Duende Mini delivers amazing sound in a small package at a reasonable price. What's not to like? Nice job, SSL.

Value (1 through 5): 4
Solid State Logic
solid-state-logic.com

HEAVYOCITY

Evolve (Mac/Win)

By Marty Cutler

Heavyocity Evolve is a sample library that sits comfortably between being a workstation and a massive production kit. Like Zero-G Morphology or Vir2 SyntAX, it eschews generic, hyperrealistic GM-style instruments in favor of surrealistic, atmospheric, distorted, and even hallucinogenic sounds that increasingly form the basis of modern game and film scores.

I installed and tested Evolve on my dual 1.42 GHz Power Mac G4 with 2 GB of RAM under Mac OS X 10.4.11. Though installation is painless, authorization uses Native Instruments (NI) Service Center, which can tax your patience as it scans your drives for installed instruments and checks for Service Center updates. Evolve loads under NI Kontakt Player 2 (KP2). The sound library is about 6 GB and is in NI's NKI format, which means you can load the patches and Multis into NI Kontakt 2 (or later) for more in-depth edits.

>> Heavyocity provides a vast and inspiring set of instruments targeted at contemporary film- and game-music composers.

THEORY OF EVOLUTION

Evolve patches and Multis differ widely in form and function. Individual patches called Instruments appear under four main categories: Rhythmic Suites, which consist of tempo-synced percussive and pitched loops and arpeggios; Percussive Kits, which are populated with all sorts of drum kit, ethnic, and found percussion; Stings and Transitions; and Tonality and FX. Many patches consist of several Instruments mapped across different note regions, and you also get a few Menu patches, which gather a collection of looped components for layering on a single keymap.

A number of patches reveal the influence of Korg's Wavestation-series synths, which are famous for their undulating, otherworldly pads, and percolating grooves consisting of unusual sound combinations. Evolve's sonic scope takes many of its predecessors' concepts into new territory, however. The majority of its timbres have a contemporary, gritty character, and the KP2 interface provides simplified and more-immediate access to sound and rhythm tools than does the Wavestation (see **Web Clip 1**).

INTELLIGENT DESIGN

Programming and scripting possibilities embedded in Evolve extend from simple filter-modulation features to tempo-synced loop slicing and pattern gating to sophisticated arpeggiation techniques. Many of the rhythmic patches are enhanced with synchronized delay as well as synced-LFO panning and filter modulation. Although the underlying scripting is not user accessible unless you own the full Kontakt 2 sampler, there's plenty of programmability to personalize sounds.

Arpeggios are easily adjusted; a series of horizontal bars lets you control the level of each step to create new accents and rhythmic figures. There are also a number of alternate rhythm-sequence presets and a knob to select different time divisions. Because it's so easy to set up Multis, you can quickly create intricate, layered polyrhythms. You can also quantize MIDI input to ensure that multiple notes start simultaneously and stay synced (see **Web Clip 2**).

I found inspiring sounds in every Instrument category. The contents of the Drum Like Kit folder, which is found in the Percussive Kits folder, are a hoot and feature kits made from bogus Donald Duck imitations, bicycle horns, and turkey gobbles. Other kits derive from seriously meter-pegged drums, Dumpsters, and body noises. The Stings and Transitions folders manage to support a wide panorama of cinematic themes and emotions with nary a cliché to be found: plenty of beautiful atonal and tonal sweeping pads from electronic sources, guitars, voices, and unidentifiable origins. These all have resonant high- and lowpass filters, reverb and delay

Three Common Mistakes in Home-Studio Setups

By Bob Hodas

When I walk into a small studio, I often see several things that rank high on the list of typical mistakes made in a room setup. Take a look at your room and see if it has any of the issues listed below. If so, make some corrections.

Symmetry. Speaker placement should be equidistant from all boundaries, and the listener should be seated halfway between the left and right walls. Otherwise, the speakers will have different frequency responses, which will vary depending on the distance to the boundaries. This will cause holes in the frequency response, affecting the mix's center image, and instruments will not sound the same when panned from left to right.

In addition, outboard equipment racks should be set up as symmetrically as possible. If not, they will affect the sound of the bass frequencies in your music. Asymmetry creates a situation that makes it difficult to acoustically treat one speaker without negatively affecting the other, and, as a result, balance will be difficult to achieve.

Speakers on work surfaces. When speakers are sitting on work surfaces or meter bridges, they interact with the surface or console top in a very nasty manner. Most close-field monitors are designed to have a flat frequency response in free space. When the woofers load on a table or console, the amount of bass energy increases, and not necessarily in a linear or helpful way. Also, the high frequencies bounce off of the table or console and reflect back into the engineer's face, mixing in with the direct signal from the speaker. This causes comb filtering and results in cancellations in the mid range and all the way up through the high frequencies.

Flat work surfaces are actually worse than consoles because the sound usually reflects off of a table. At least a console has an angled surface and knobs to break up the extreme high frequencies. This common problem can be solved by purchasing some speaker stands and moving the speakers 1 to 1.5 feet back from the work space. The actual distance will vary depending on your setup, of course.

Too much high-frequency absorption. Have you ever walked into a room and heard your voice coming out of your chest when you talked? This is due to the overabsorption of high frequencies in the room. Many people think that treating a room acoustically means putting 1 to 2 inches of foam on all of the walls. When you do that, however, you suck up all of the high-frequency energy and leave the bass to just roll around the room uncontrolled. This is because you need to affect a quarter wavelength of a frequency in order to absorb it.

For example, because 100 Hz has a wavelength of about 11 feet, you need a lot more than 2 inches of foam absorption to make an impact. Think about balanced amounts of absorption and diffusion and treat only the areas where first-order reflections are a problem. em

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Filling in for our regular contributor, Nathaniel Kunkel, who is out with an injury this month, is acoustic consultant Bob Hodas, who has tuned more than 1,000 rooms around the world. Visit his Web site at bobhodas.com.

knobs, and ADSR controls for amplitude, so wringing even more versatility out of the sounds is easy. My clear favorite is the entire Guitar subfolder; it harbors a potential Bill Nelson album in the making. The subfolder contains instruments that sound like the offspring of guitars, kotos, bells, and a hive of bees, sometimes all at once (see **Web Clip 3**).

Admittedly, I'm a sucker for sounds that go beyond the pale. Even so, Evolve has set a new standard for imaginative and useful programming. It is clearly not an instrument for emulating traditional electronic and acoustic sounds (although it includes a very nice ambient acoustic piano). Evolve delivers fresh, often indescribable sounds and comprehensive rhythmic and harmonic tools for contemporary electronic film and game music. According to Heavyocity, a free expansion to the Evolve library should be available for download by the time you read this. I can't imagine where the company is going with the next batch of sounds; as it is, playing Evolve continually stokes my creativity. There's no better recommendation than that. Go to the Heavyocity Web site and check it out.

Value (1 through 5): 5
Heavocity
heavyocity.com

CASCADE MICROPHONES

Gomez Michael Joly Edition

By Rudy Trubitt

For the better part of a year, I've been using Cascade's inexpensive Fat Head II ribbon microphones with good results. But because the Fat Head sounds pretty dark, I was intrigued when I heard that Cascade had a new ribbon purported to offer a more open sound. The Gomez Michael Joly Edition ($499) is the result of a collaboration between the manufacturer and Michael Joly, who is known for his aftermarket mic modifications. The

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Joly edition is the only version of the Gomez in production. I tested a pair of these mics, and here's what I found.

» Cascade's Gomez Michael Joly Edition is a versatile ribbon mic with a figure-8 polar pattern and a relatively open top end.

HEY, GOOD LOOKIN'

For starters, the Gomez is a rather flashy-looking microphone. The ribbon element is housed behind a shiny gold grille that's a bit larger than a golf ball. This screen, which is flatter at the front and rounder at the rear, is a single layer with a relatively coarse weave. It is visually transparent; you can clearly see the outline of the ribbon element suspended in the magnet assembly. Though the grille basket is asymmetrical, the mic's pickup pattern is a symmetrical figure-8.

The grille is mounted on a chunky, short cylinder, which houses a Lundahl LL2912 output transformer and a male XLR output connector. A large threaded nut rings the output connector and secures the mic to the included elastic-banded shockmount. Each mic comes in its own lunch-box-size, foam-lined metal case. The mics are hand-assembled and tested in Olympia, Washington.

The measured frequency response of the Gomez is relatively flat up to about 5 kHz, after which it drops at about 5 dB per octave. Although the low-end response measures flat, you can get an exaggerated bump in the low end when miking closely, as figure-8 mics exhibit even more proximity effect than a typical cardioid mic.

This mic responds well to changes in EQ, without the EQ-resistant high-bass cloudiness I've noted in the Fat Head II. You can add plenty of top without making things edgy.

ON TO THE TESTS

First up was my old tweed Fender Deluxe guitar amp during a recent tracking session for my band, the Sippy Cups, at Decibelle Studios in San Francisco. We put up a Royer ribbon slightly off to one side and the Gomez closer to the speaker cone's center; the Gomez had a clear-sounding low mid and the Royer more growl. The Gomez had more top, as expected with it positioned closer to the cone's center. Both mics sounded good, and either would have been usable on its own. But why choose? We ended up using a blend of both for the final track.

Next, I put up a Gomez and a Schoeps figure-8 on an acoustic guitar. The mics were arranged as an XY coincident pair to allow mixing the mics to mono without phase cancellation. For contrast, I pointed the brighter Schoeps at the guitar's lower body and the Gomez between the neck and body. Again, the Gomez provided a welcome color, sweetening the sometimes-clinical Schoeps. The figure-8 patterns picked up a nice sense of space in a bright-sounding hallway.

A trumpet and glockenspiel were both well recorded using the Gomez at a medium distance (4 to 8 feet). For a live acoustic guitar and vocal recording, I went with a pair of Gomez mics straight to 2-track (my Sony PCM-D1 with an XLR-1 adapter). I set the mics in a crossed figure-8 pattern again, but with a horizontal orientation rather than the traditional vertical axis—one microphone pointing up at my face and the other pointing down toward the guitar. This way, each figure-8's null was oriented for maximum rejection, yielding good isolation between vocal and guitar. A pop filter is especially important with the Gomez, as the single-layer grille offers relatively little protection for the delicate ribbon.

HOW SWEET IT IS

The microphone's sound was a sweet combination of warmth and detail. With a session recorded to 2-track fresh in my mind's ear, I felt like the ribbons and the PCM-D1 provided a really musical, analog-sounding combination. (You can hear the track, "Lady Bug Beat," at thesippycups.com. We used other mics for backgrounds, with lots of signal processing in the final mix.)

> The sound was a sweet combination of warmth and detail.

With the Gomez Michael Joly Edition, Cascade is stepping up, both in price and sound quality. The company first got my attention with interesting-looking products at impulse-buy price points. Now Cascade looks ready to move up to the next segment of the ribbon mic marketplace. em

Value (1 through 5): 4
Cascade Microphones
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The MOTU Desktop Studio

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Three Common Mistakes in Home-Studio Setups

By Bob Hodas

When I walk into a small studio, I often see several things that rank high on the list of typical mistakes made in a room setup. Take a look at your room and see if it has any of the issues listed below. If so, make some corrections.

Symmetry. Speaker placement should be equidistant from all boundaries, and the listener should be seated halfway between the left and right walls. Otherwise, the speakers will have different frequency responses, which will vary depending on the distance to the boundaries. This will cause holes in the frequency response, affecting the mix's center image, and instruments will not sound the same when panned from left to right.

In addition, outboard equipment racks should be set up as symmetrically as possible. If not, they will affect the sound of the bass frequencies in your music. Asymmetry creates a situation that makes it difficult to acoustically treat one speaker without negatively affecting the other, and, as a result, balance will be difficult to achieve.

Speakers on work surfaces. When speakers are sitting on work surfaces or meter bridges, they interact with the surface or console top in a very nasty manner. Most close-field monitors are designed to have a flat frequency response in free space. When the woofers load on a table or console, the amount of bass energy increases, and not necessarily in a linear or helpful way. Also, the high frequencies bounce off of the table or console and reflect back into the engineer's face, mixing in with the direct signal from the speaker. This causes comb filtering and results in cancellations in the mid range and all the way up through the high frequencies.

Flat work surfaces are actually worse than consoles because the sound usually reflects off of a table. At least a console has an angled surface and knobs to break up the extreme high frequencies. This common problem can be solved by purchasing some speaker stands and moving the speakers 1 to 1.5 feet back from the work space. The actual distance will vary depending on your setup, of course.

Too much high-frequency absorption. Have you ever walked into a room and heard your voice coming out of your chest when you talked? This is due to the overabsorption of high frequencies in the room. Many people think that treating a room acoustically means putting 1 to 2 inches of foam on all of the walls. When you do that, however, you suck up all of the high-frequency energy and leave the bass to just roll around the room uncontrolled. This is because you need to affect a quarter wavelength of a frequency in order to absorb it.

For example, because 100 Hz has a wavelength of about 11 feet, you need a lot more than 2 inches of foam absorption to make an impact. Think about balanced amounts of absorption and diffusion and treat only the areas where first-order reflections are a problem. em

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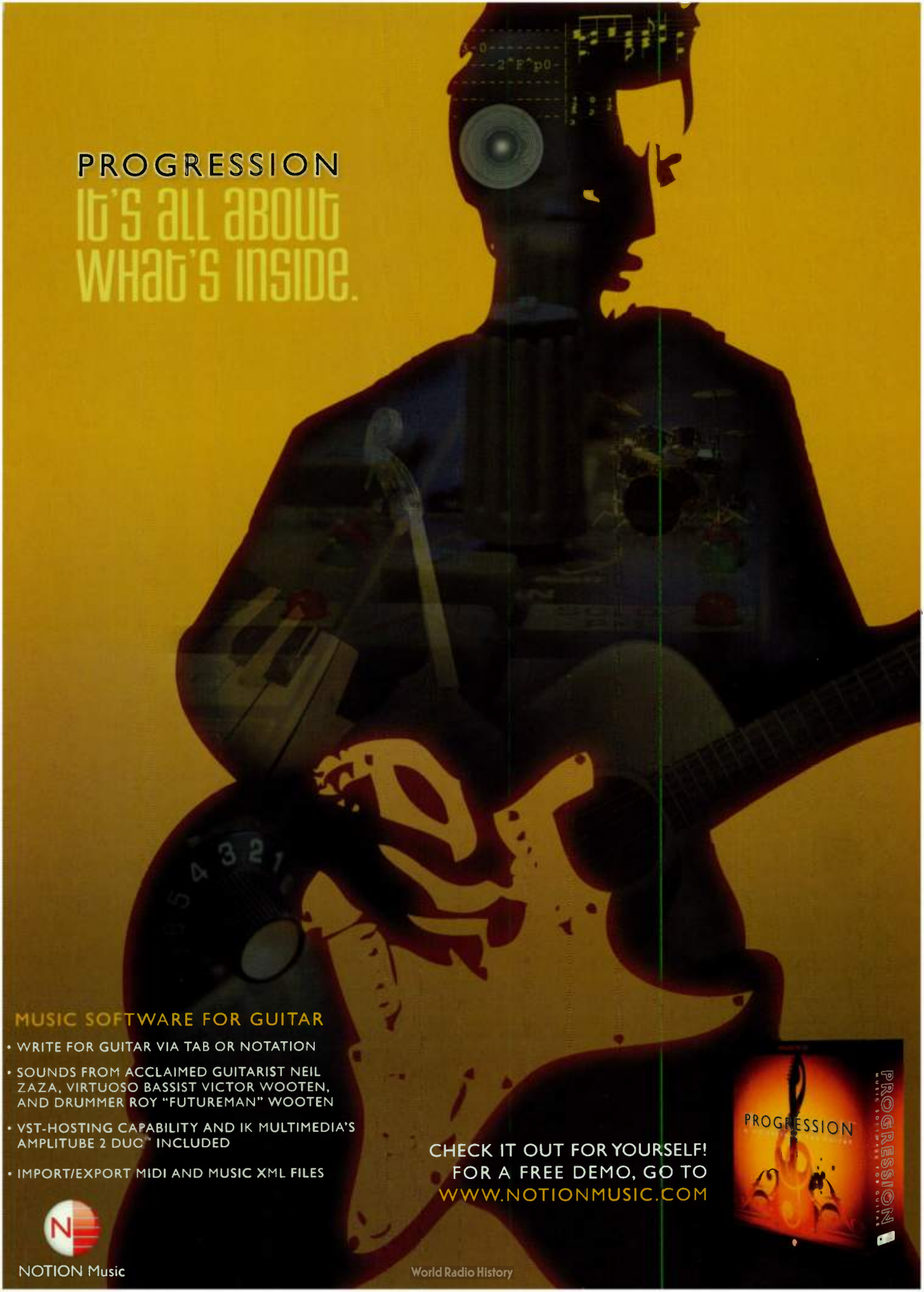
Filling in for our regular contributor, Nathaniel Kunkel, who is out with an injury this month, is acoustic consultant Bob Hodas, who has tuned more than 1,000 rooms around the world. Visit his Web site at bobhodas.com.



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