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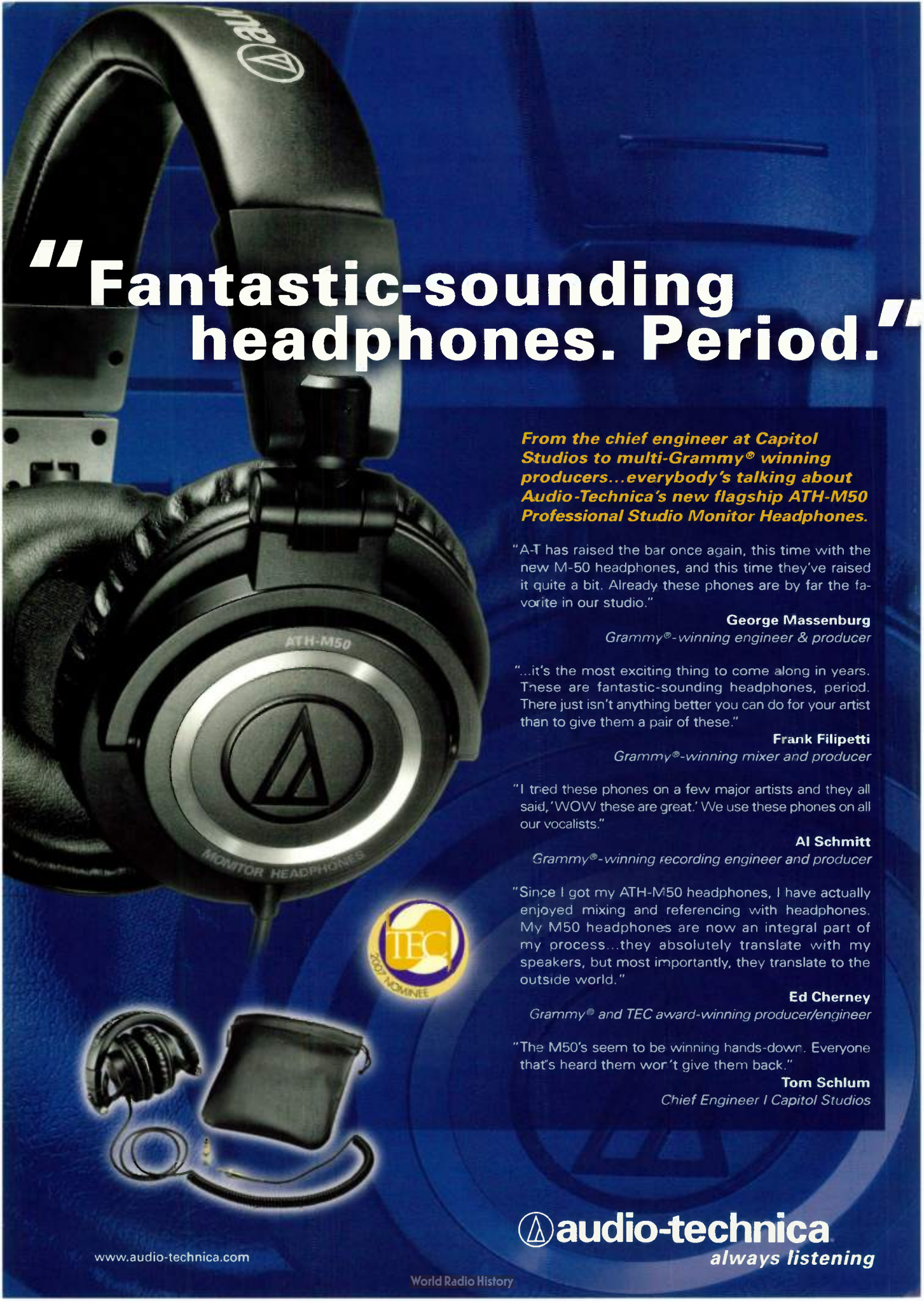

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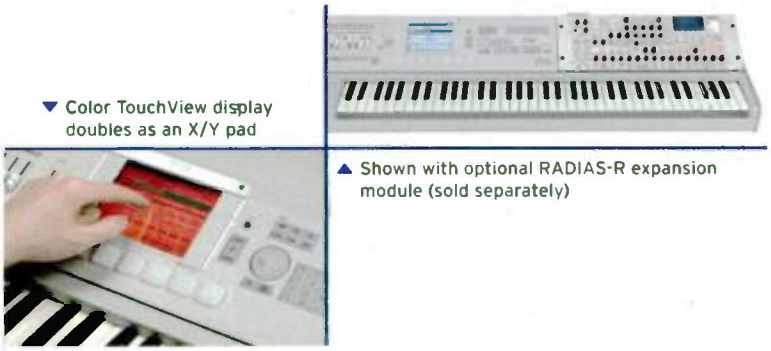

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Thomas, BEHRINGER Germany Technical Director drove the technology of the 2442FX to the limits of physics and then half a kilometer beyond.

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

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

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

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em ELECTRONIC MUSICIAN

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METALOCALYPSE NOW

Comedy writer and guitarist Brendon Small is the creative force behind the music of Dethklok, the fictional death-metal band in the animated series *Metalocalypse*. In this interview, he talks about songwriting, scoring the series in his tiny apartment, tracking guitar leads without being evicted, and working under intense deadlines.

By Gino Robair

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MASTER CLASS:
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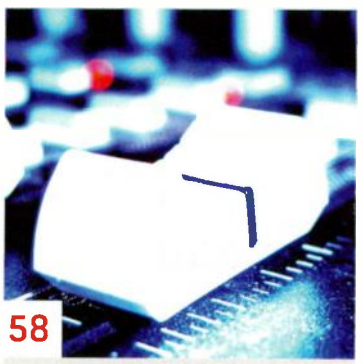
With the powerful scripting language in Native Instruments Kontakt 3, you can create custom instrument control panels and advanced MIDI processors like step sequencers and arpeggiators. Learn how.

By Len Sasso



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CROSSING THE FINISH LINE

Stuck in a rut during mixdown? Here are ten tips for reevaluating your work so that you can stay on track.

By Michael Cooper

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- Tascam **FireOne** FireWire interface/controller
- Ueberschall *Liquid Drums* **1.5.1 (Mac/Win)** sample library
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EM Spotlight

Mark Isham: In the Beginning

It's a long way from Ringling Bros. and Barnum & Bailey Circus to Group 87, but composer-instrumentalist Mark Isham is as eclectic as the topics he covers. In this interview from the archives, Isham talks about looping, using electronic instruments, and the dawn of digital recording.

By Robert Carlberg

Show Report

The 2008 Winter NAMM show is the biggest annual musical-instrument expo in the United States. Visit emusician.com for video and Podcasts from the show floor, as well as a report on the exciting new recording gear, music software, and electronic musical instruments unveiled this year.

Online Videos

Check out EM's video page, where *Metalocalypse* creators Brendon Small and Tommy Blacha offer a behind-the-scenes look at their hit show.

Editors' Picks

Interested in learning about specific topics? EM's editors have assembled the best tutorials and master classes under categories such as drum tracking, electric guitar recording, and basic microphone technique.

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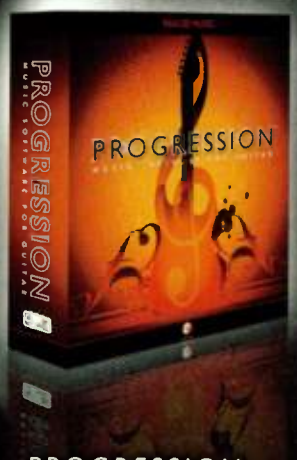

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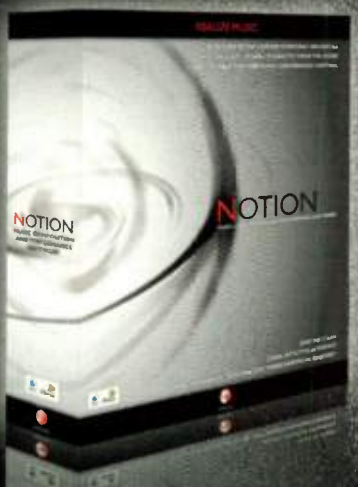

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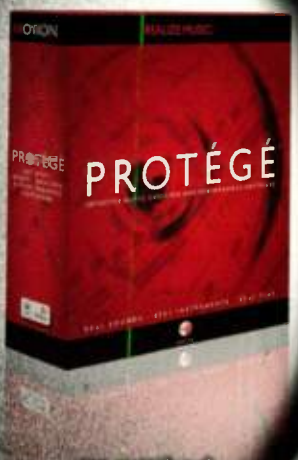

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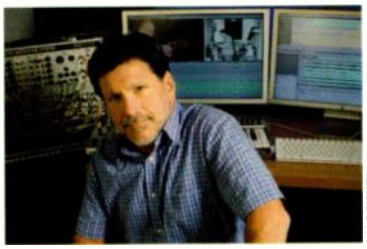
Surprise—It's EM!

You've probably noticed a few subtle tweaks to the look and feel of our magazine over the past few months (not to mention the increased presence of musicians on the cover). This month, however, we're unveiling a completely new look, which includes a name and logo change: *Electronic Musician* magazine has officially been renamed "EM." The name change is a no-brainer, because many of us refer to the magazine by its initials already.

But our new logo is only part of the redesign, and by no means the most important. We've updated and expanded our content to provide you with a greater variety of the tech-savvy information that you've come to rely on from us, while increasing our focus on the creative aspects of music making. In addition, we've spiced up our look with enhanced graphics and contemporary design elements, thanks to the combined efforts of EM's new art director, Earl Otsuka, and our division's group art director, Dmitry Panich.



JAMIE RICHEY

In terms of content, there are three big additions to check out: "In Session" (p. 146) is an opinion column by Grammy and Emmy Award–winning engineer Nathaniel Kunkel who, with his production company, Studio Without Walls, exemplifies the EM spirit of getting the most out of a personal studio. Furthermore, our "Front Panel" column (p. 24) will combine music-news items and tech tips from longtime EM contributor David Battino with the ever-popular "Download of the Month" from Associate Editor Len Sasso. Finally, to increase our coverage of independent music making, we have added an extra page of "Pro/File" (p. 36) for good measure.

And speaking of musicians taking care of business, this month we offer a rare peek behind the scenes at the hit television show *Metalocalypse* (p. 48). This animated black comedy for teen and adult viewers astutely pokes fun at the death-metal subgenre while simultaneously paying tribute to its legends. The musical and comedic talents of composer Brendon Small, in conjunction with cocreator Tommy Blacha, have made this one of the most compelling series ever regarding the extremes of the rock 'n' roll lifestyle, and I was floored to discover the degree to which Small uses his spartan recording rig to create the show's intense atmosphere. When you're done reading the feature, visit our Web site, emusician.com, to see the video footage I shot of Blacha and Small describing how they developed the characters and sound of the band Dethklok.

Although this issue's cover and its related story might give the impression that the magazine is going in a particular musical direction, EM remains genre neutral in its coverage. The tastes of its editors and contributing writers range from rock, pop, and the various subcategories of rap and electronica to folk, country, jazz, classical, and avant garde. So even if you aren't a fan of heavy metal, the creative impetus in and concerns of this month's cover story are the same as with articles about other types of music, so I invite you to read it with an open mind.

And rest assured that we will maintain the strong focus on music technology that EM is known for, in order to help you grow as a recordist as well as a musician.

Best regards from all of us at EM for a prosperous 2008!

Gino Robair
Editor

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LETTERS

Real Indie Request

You guys should really do an interview with the band Beat Assassins. They are a great band and have sold over 20,000 albums without any radio or tour support. I truly believe it is a shame that the indie artists who are out there making an impact and receiving a response never get mentioned because they don't fit the personal taste of the writers within the magazine. I find this very insulting as a fan of indie music. Consider this band as well as other indie bands that are making a name for themselves without major-label support.

—AMBER NEWMAN, VIA EMAIL

Thank you for the passionate letter, Amber, and especially for the heads-up about Beat Assassins (I just checked them out online). We fully agree that independents should get the media coverage they deserve. Beginning with this issue, we have added an extra page to our "Pro/File" column, which regularly covers how unsigned and indie artists create their music. EM's musical stance is genre neutral, and at any given time the editors are likely to be listening to rock, rap, folk, jazz, classical, or nearly any subgenre thereof. (Check out "Front Panel: This Month's Soundtrack" on p. 25 to see what we've been listening to lately.) And because we share an office with our sister publication Remix *magazine, we get our fair share of electronically created dance music, too. Rest assured that we are keeping our ear to the ground as we keep our nose to the grindstone.*

—Gino Robair

SMOOTH TRANSITION

I have subscribed to EM for several years. Because of your thorough product reviews, I was able to invest with confidence in the best electronic-music equipment my budget could afford. As a result, I have finally been able to produce my first CD of original music, entitled *The Transition*, in the smooth-jazz genre. It was composed completely of electronic sources, based on information I learned from your publication.

I want to take this opportunity to thank you for your great reviews, keeping up with the latest in electronic equipment, and offering fantastic advice on how to get things done.

MARK DAVENPORT
WWW.MARKELLIOTTJAZZ.COM
VIA EMAIL

FROM 5.1 TO DVD

Thanks for presenting such a wonderful magazine every month. I'm always using some tip that I learned in EM in my own studio. I've been a loyal reader for decades.

In the December 2007 issue of EM, Brian Smithers offered a really great step-by-step presentation of 5.1 mixing in the Cakewalk Sonar Producer environment (see "Making Tracks: The 5.1 Mix"). I've had no problems with recent experiments at 5.1 mixing but have failed to find a way to get my mix from Sonar to a DVD. Everything sounds amazing as it's played in Sonar off the "board," but I can't get it from there to a DVD.

Smithers suggested, toward the end of his article, that this could be accomplished through the use of a program like QuickTime Pro. I searched my QuickTime Pro manual and could not find any instruction.

Can Brian suggest a step-by-step, *affordable* way to get a 5.1 mix from Sonar Producer Edition to a DVD?

Thanks very much.

JOHN J. MURRAY
PRIVATE EYE MUSIC
VIA EMAIL

Author Brian Smithers replies: Mr. Murray—thanks for your kind words. I'm glad you found my article useful. I'm afraid, however, that you caught me in a minor fog regarding QuickTime Pro—although it does support surround sound, it does not do the Dolby Digital encoding necessary to create a surround DVD. I have been bouncing back and forth between Apple's Compressor (which does do AC-3) and QuickTime Pro recently and transposed them. I'm sorry to have sent you manual diving needlessly.

As to your request for an affordable

WE WELCOME YOUR FEEDBACK

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Electronic Musician
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Emeryville, CA 94608

or email us at emeditorial@emusician.com. Published letters may be edited for space and clarity.

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www.XFactorVST.com

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Download of the Month

Puremagnetik Big07 (Mac/Win)

By Len Sasso

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Karlheinz Stockhausen (1928–2007)

HYOU VELZ

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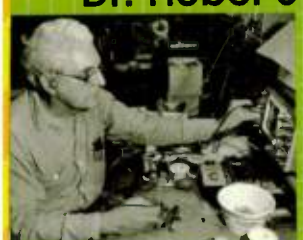
The composer passed away on December 5, 2007, and will be remembered for his vast contributions to contemporary music. Learn more about him at www.stockhausen.org. em

Dr. Robert Moog's Innovative Instruments



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World Radio History

NEXT MONTH IN EM

MARCH 2008

COVER STORY
They Might Be Giants

John Flansburgh and John Linnell discuss their 25-year career, their recent work with the Dust Brothers and Disney, and their favorite gear.

FEATURES
Mastering for Vinyl

Learn about the peculiarities of releasing music on vinyl, the dos and don'ts of mixing for the medium, and what mastering engineers typically have to fix.

Playing Concerts in Second Life

Why leave home to play live music? We'll show you how to do gigs online and even earn a little scratch in the process.

COLUMNS
Square One: Stereo Creativity

Rethink the traditional methods of 2-channel mixing with these practical and inventive ideas.

Making Tracks: Intelligent Harmonization with Melodyne Plug-in

Find out how easy it is to create interesting backing-vocal tracks.

Sound Design Workshop: Bus Stop

Learn how to use and apply multiband compression and delay with premaster mix groups.

Industry Insider: Q&A: Amanda Cagan

Publicist Amanda Cagan, who has worked for both major-label and indie clients, explains what publicists do for bands and artists.

. . . and much more!

LETTERS

solution—well, that depends on your definition of affordable. When you consider that Dolby's hardware encoder (as found in authoring houses and rerecording stages) costs several thousand dollars, almost anything I could suggest would be cheaper. Given that Compressor comes bundled with Apple Logic Studio for $500, that's certainly in the running. However, Sony Sound Forge 9, at around $300, may be the most affordable solution out there. Minnetonka's SurCode Dolby Digital runs just under a grand, as does Steinberg's encoder for Nuendo.

The step-by-step process will vary for each of these products. But if you feed any of them one of your beautiful Sonar mixes exported to 24-bit, 48 kHz multimono WAV files, you're on the right track. Dolby Digital includes more options than I can get into here, but you'll want to encode at 384 or 448 kbps. You'll end up with an AC-3 file that can be imported as a soundtrack in Apple DVD Studio Pro 4. Note that some video must accompany the audio, although Apple DVD Studio Pro can take a still picture or slide show and turn it into a video for you. I hope this helps. Have fun!

WHAT WERE YOU THINKING?

As a longtime EM reader, I found your December 2007 cover just disgusting. I am a musician that works with children and find that their environment is being increasingly soaked with violence, fear, and the glorification of this kind of nonsense. Although "guns, guts, and glory" are a part of some kinds of gaming, I feel that it is nothing to exhibit proudly on the cover of a magazine as if it were as hip as a new synth or a creative musician.

When working with kids, I show them how music can be a creative, positive outlet for what they have inside. In fact, the school [where] I played this morning had a "No Guns" poster in the entrance. In our city of Philadelphia, over 380 gun murders have been reported this year. The reality of a life filled with the type of guns you display on the cover is so far from the idea of fun and games and play that it boggles my mind.

Covering gaming is very cool, but covers like [yours] are definitely not! Geez, what were you thinking?
DARIA A. MARMALUK-HAJIOANNOU
VIA EMAIL

Daria, thank you for taking the time to write us about your reaction to

the December cover. As a father, I am keenly aware of guns and violence in our society and media. For example, at home we are careful about what the kids watch and what games they play on the PS2 and Internet. And I fully agree with you that music should be a creative, positive outlet for what children have inside.

However, EM is not created for children. So when you ask "What were you thinking?" I was, to be perfectly honest, looking for a compelling graphic for our cover that included an image from an upcoming, hot game. Star Wars, as a brand, is widely known, and we were happy to get a couple of images from the latest game (some of the interviewees in our article worked on it). We chose this one because it's got action and is more compelling than a static shot would've been (considering the options we had).

I take your comments very seriously, but the reality of the situation is that the game industry puts out products that include violence, and they are rated as such. Adult men and women make good livings in that industry, in every facet of production. The article was intended to tell the reader how to get into the industry, and I think we did a good job.

I don't think it serves the interests of our readers to sanitize the subject. But we are careful to keep things clean in our editorial and our ads, because young people (including my own tweens) do see the magazine. However, an animated image of a man firing a rifle on the cover of an issue about video gaming is not something that, as a parent, I feel crosses the line in terms of decency. That's what I was thinking.

My hope is that you'll continue reading EM despite what you thought of the December cover. We are focusing more on the creative process than ever before, while keeping our tech info solid. In fact, next month's cover subject, the band They Might Be Giants, has released records for children over the years, and they give us a special peek into their studio and working methods. So there are good things brewing.

In the meantime, thanks for your feedback, because it does shape how we do things in the future, and it is helpful to learn that images like the one on our December cover do offend some of our readers.
—Gino Robair em

I'm always using some tip that I learned in EM in my own studio.

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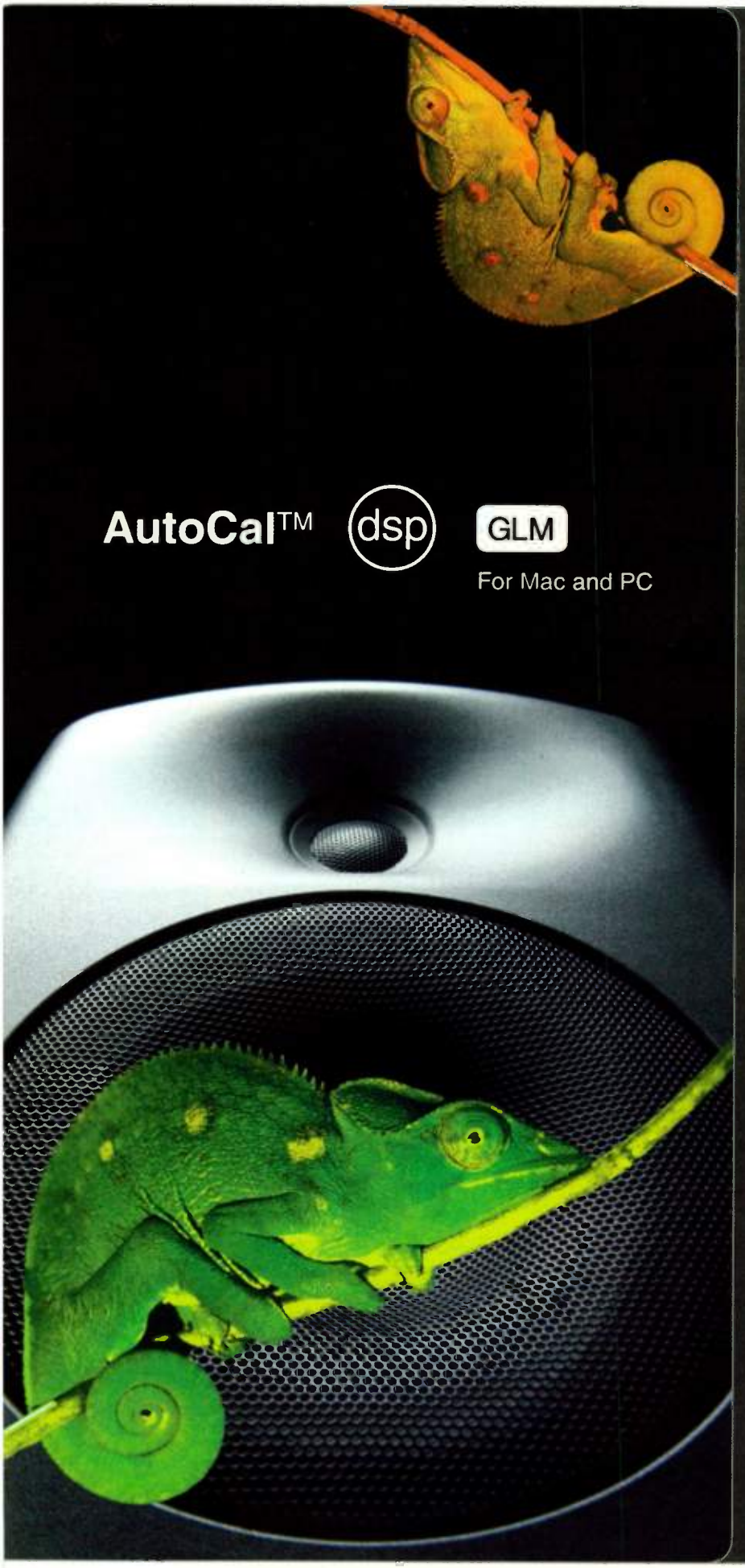
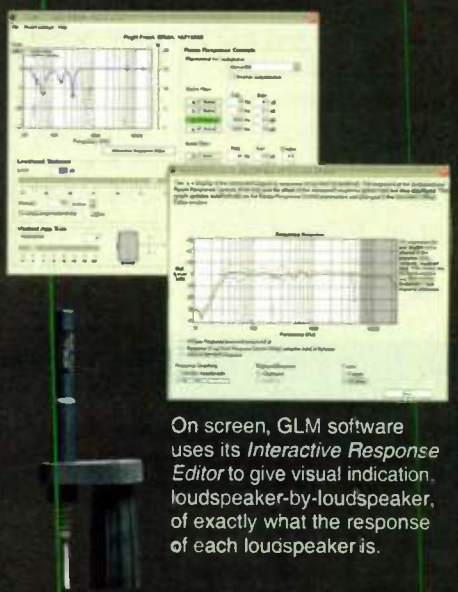


Designed to Adapt

Nature has come up with clever ways to let some animals adapt quickly to their environments.

At Genelec our new 8200/7200 DSP Series also have the ability to adapt to their environment, by design.

AutoCal™, Genelec's optimisation software takes into account level, distance and 8-band equalization to adapt each monitor loudspeaker to its immediate environment. What's more it does it as a system, with network control of up to 30 adaptable loudspeakers, including subwoofers.



On screen, GLM software uses its *Interactive Response Editor* to give visual indication, loudspeaker-by-loudspeaker, of exactly what the response of each loudspeaker is.

In 1978 Genelec brought active monitoring to the professional audio world. An essential part of our active design is the room response controls. They are included in every Genelec analogue model to help integrate them to the listening environment. To further this, Genelec Product Specialists travel the world providing system calibration services to ensure optimum monitoring performance for our large system customers.

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World Radio History

FRONTPANEL

By Tracy Katz

Trade or Toss

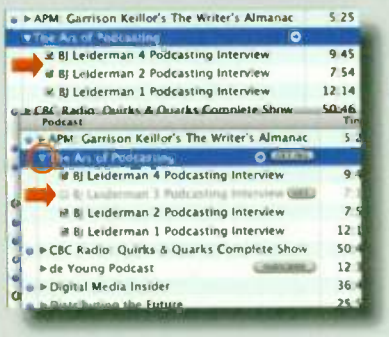
The holiday season has come and gone, and if you're like most people, you're wondering what to do with that old piece of gear that you just replaced with something newer, better, and smaller. For an easy (and free) way to dispose of your electronics, check out the Costco.com Trade-In & Recycle Program (www.greensight.com/CostcoTrades). Available to all Costco members, the program allows you to recycle qualified items—computer monitors, MP3 players, and digital cameras, for example—or trade them in for their estimated cash value. After you complete a simple form online and your equipment is approved, you'll receive a prepaid UPS shipping label with which to send in your items, as well as a Costco Cash Card equal to the electronics' trade-in value.

Don't have a Costco membership? With some Web detective work, you can find local recycling programs and facilities that are convenient for you. Good places to begin your search are the Electronic Industries Alliance: E-Cycling Central (www.eiae.org), the National Center for Electronics Recycling (www.electronicsrecycling.com), and Earth 911 (http://earth911.org).

Want to get rid of this?

OPTION-CLICK

By David Battino



Top window: Podcast episode 3 is missing, and selecting Update Podcast won't get it back. **Bottom window:** Option-clicking on the disclosure triangle reveals the missing episode.

Podcast Resurrection

Discover cool features lurking inside popular programs and gear.

Sometimes a Podcast doesn't download completely to iTunes. It seems to be intact, but when you try to play it—and this usually happens at the most dramatic moment—it ends prematurely. The obvious solution is to delete the partial episode and then select Update Podcast (from the right-click menu) to download it again, but that doesn't work. iTunes stubbornly ignores the fresh copy on the server.

The secret is to collapse the list of episodes by clicking on the downward-pointing triangle next to the Podcast title, and then Option-click (Alt-click in Windows) on the triangle. That will expand the list of episodes and fill in the names of missing ones in a ghostly gray with a tiny Get button beside them. Click on that button to get the missing episode. You may also see episodes you didn't realize you'd missed. (For more about David Battino's work, visit www.batmosphere.com.)

Dr. Robert Moog's Innovative Instruments

1953 At age 19, Moog founds the R.A. Moog Company and manufactures theremin kits

1964 At AES, Moog demonstrates the first subtractive synth to utilize a keyboard as a controller: the Moog Modular Synthesizer

1968 Moog Modulars become popular with the release of Wendy Carlos's synth-heavy album *Switched-On Bach*

1970 Production begins for the Minimoog, a 3-VCO monophonic synthesizer

World Radio History

THIS MONTH'S SOUNDTRACK

These inspiring albums remind us that music is just as much about the process as the end result.

1. Eccotonic: *Flow Motion*
2. Joseph Livingstone: *The Futility Room*
3. Norman Fairbanks: *7 Days Microsleep*
4. They Might Be Giants: *The Else*
5. Underworld: *Oblivion with Bells*

ECCOTONIC: *FLOW MOTION*
Working under the name Eccotonic, film composer and recording artist Cato is a true do-it-yourselfer who created most of this electronica/lounge album inside the computer.

JOSEPH LIVINGSTONE: *THE FUTILITY ROOM*
These orchestral works were performed with just one keyboard and a few modules.

NORMAN FAIRBANKS: *7 DAYS MICROSLEEP*
The entire album was written for and played on a Yamaha Tenori-on.

THEY MIGHT BE GIANTS: *THE ELSE*
TMBG is quirky and fun, as always. Look for our exclusive interview with them in next month's issue.

UNDERWORLD: *OBLIVION WITH BELLS*
A tribute to live electronics, dance, and the thrill of improvising under pressure.

TRIVIA In the 2007 film *Transformers*, what audio-editing software was used to analyze the alien sound?
a) Adobe Audition, b) BIAS Peak Pro, c) Steinberg WaveLab, d) none of the above. **Submit your answer at www.emusician.com.**

1975 With the help of Dave Luce, the Micromoog (Apollo) single-oscillator monophonic synth is released

1978 A 2-VCO monophonic synth, the Multimoog, hits the market

Polymoog (preset-based polyphonic synth) production begins, under the care of Norlin

1979 Production begins for the Minimoog's little brother, the Prodigy

1981 The Source, which was used by the likes of Tangerine Dream and Depeche Mode, becomes available

World Radio History

Download of the Month

Puremagnetik Big07 (Mac/Win) By Len Sasso

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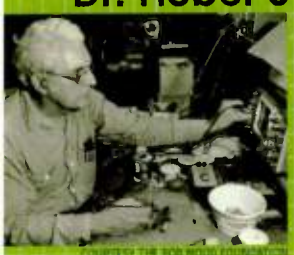
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Introducing the Fast Track Ultra DSP-enabled USB 2.0 interface

M-Audio®—the world's best-selling manufacturer of audio interfaces—now brings you high-speed USB 2.0 and DSP with the new Fast Track® Ultra 8 x 8 interface. M-Audio's MX Core™ DSP technology provides flexible on-board mixing and routing—plus ultra-low-latency direct monitoring complete with reverb. Four preamps with our award-winning Octane™ technology ensure a transparent front end for your recordings. High-speed USB 2.0 delivers up to 24-bit/96kHz on all eight inputs and outputs simultaneously. The Fast Track just got faster.

On-board MX Core DSP lets you:

- monitor with reverb while tracking vocals and instruments—with no CPU load
- record up to eight tracks simultaneously while monitoring other tracks in a 16 x 8 software/hardware environment
- create two separate headphone mixes
- set up and mix external effects loops

8 x 8 audio interface with S/PDIF and MIDI I/O

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Quite simply, it does everything.... superbly. With a new 88-note hammer weighted action, the PC3x offers best sounding pianos, electric pianos and vintage instruments, a ground-breaking virtual analog synth engine, the truest orchestral emulations and everything else you can imagine - it's all in there, and it's the best you'll find anywhere. The PC3x is just the best sounding keyboard that money can buy.

The SP2 Series

Kurzweil has also raised the bar for stage pianos with the new SP2 Series. Nowhere else will you find so many high-end, professional sounds in a stage piano, in any price range. Available in an 88-note hammer weighted and 76-note semi-weighted actions, the SP2 features the best pianos from Kurzweil's PC and K series, along with some of our most realistic EPs, strings, percussion, Take 6 vocals and more. The SP2 will deliver the one thing for which Kurzweil is most famous - EXCELLENCE.

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World Radio History

PC3x

SP2

KURZWEIL... IT'S THE SOUND

World Radio History

By Len Sasso

MXL MICMATE

MXL Microphones (www.mxlmics.com), the professional-audio division of Marshall Electronics, has released MicMate (Mac/Win, $79.95), a plug-and-play USB device for Windows and Macintosh computers. This easy-to-use interface supports both condenser and dynamic mics. Its compact size makes it ideal for capturing audio for Podcasts. Attach your microphone to the phantom-powered XLR connector and select an attenuation level, and you're ready to go. MXL specifications claim transparent (no coloration) performance with a 20 Hz to 20 kHz frequency response for the analog input. The digital output employs a 16-bit delta-sigma A/D converter with 44.1 and 48 kHz sampling rates.

XLR TO USB CONNECTIVITY

TASCAM DP-02 PORTASTUDIOS

Tascam (www.tascam.com) has updated its Portastudio line with the release of the DP-02 ($499) and DP-02CF ($299). The DP-02 records to a built-in 40 GB hard disk, whereas the DP-02CF records to a CompactFlash card. Both 8-track units have two phantom-powered XLR mic/line inputs, and each channel has EQ, pan, volume, record, mute, and effects-send controls. The DP-02 additionally includes a multi-effects processor, stereo reverb, a chromatic tuner, and a CD-RW burner. Both units record uncompressed 16-bit, 44.1 kHz audio and have a USB 2.0 interface for transferring data to your Mac or PC.

PORTABLE AND HANDY

World Radio History

PHONIC FIREFLY 808

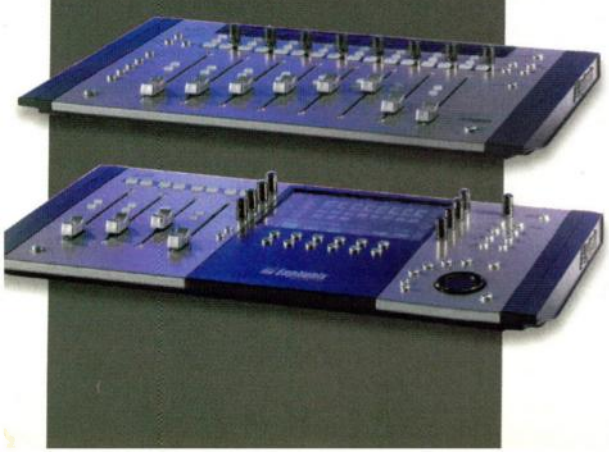
Phonic (www.phonic.com) has announced the FireFly 808 FireWire audio interface (Mac/Win, $399), which offers 24-bit resolution and sampling rates up to 192 kHz. You get six analog mic/line inputs served by XLR and 1/4-inch jacks and eight balanced 1/4-inch TRS outputs (+4 dBu) on the rear panel. Two more analog mic/instrument-input XLR combo jacks grace the front panel. Additional headphone and main outputs have their own volume controls. S/PDIF, AES/EBU, MIDI, and word-clock I/O round out the interface. The FireFly 808 can function as a standalone mixer and features extensive LED metering.

8 × 8 FIREWIRE AUDIO INTERFACE

Euphonix MC Artist Series

Euphonix (www.euphonix.com) has announced the first two products in its new MC Artist Series for the personal studio. The MC Mix ($999.99) and MC Control ($1,499.99) fit snugly between computer keyboard and screen. They integrate neatly with your DAW using Euphonix's proprietary EuCon Ethernet protocol, which delivers 250 times the resolution and 8 times the speed of MIDI. Both units feature motorized faders and a variety of buttons and rotaries. The MC Mix offers eight OLED displays, whereas the MC Control has a touch-screen interface. Euphonix has worked closely with software developers such as Apple, Steinberg, and MOTU to provide native support, and both units additionally support the HUI and Mackie Control protocols.

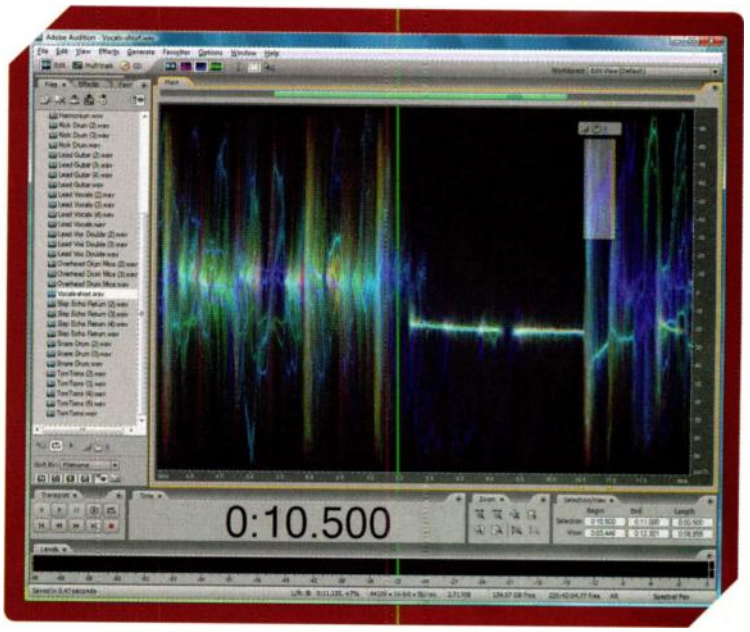
PRICED FOR THE PERSONAL STUDIO



ADOBE AUDITION 3

Adobe Audition 3 (Win, $349) is out and bristling with new features. It supports VSTi virtual instrument plug-ins and now offers effects such as convolution reverb, a mastering tool, tube-modeled compression, and analog-modeled delay and guitar processing. Time-stretching is accomplished courtesy of iZotope Radius. Precise loop trimming with end matching is a snap in Top/Tail view. Spectral editing is enhanced, and new Adaptive Noise Reduction and Automatic Phase Correction tools will clean up your act. Overall performance, multitrack editing, and waveform editing are all improved. Check it out at www.adobe.com.

WITH VSTi SUPPORT



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CME M-KEY

CME (www.cme-pro.com) is shipping the little brother to its U-Key Mobiletone. The M-Key (Mac/Win, $99) is an ultrathin 49-key MIDI controller with Velocity-sensitive semiweighted keys. This class-compliant USB device sports a joystick and an assignable slider. The rear panel houses the USB port, a MIDI Out jack, and two 1/8-inch TRS universal pedal jacks, which are fully footswitch and footpedal compatible. The M-Key ships with the CME MusicPack containing free versions of popular audio software such as Magix Samplitude SE and Arturia Analog Factory SE.

A THIN 4-OCTAVE CONTROLLER

RAYZOON JAMSTIX 2

PLAY LIKE A REAL DRUMMER

Version 2 of virtual drum machine Jamstix (Win, $99) from Rayzoon (www.rayzoon.com) is a complete rewrite with an evolved user interface and improved style and drummer modeling. Unlike virtual drum machines that combine prerecorded patterns, Jamstix takes into account what's humanly possible—no more 10-armed drummers. You select style and drummer models, input a song structure, and optionally provide MIDI or audio for Velocity tracking, and Jamstix does the rest. Integrated VSTi subhosting lets you combine built-in kits with other popular drum machines, such as BFD, EZDrummer, and Addictive Drums.

Get Smart

The second edition of *Surround Sound: Up and Running* ($44.95), published by Focal Press (www.focalpress.com), is a comprehensive guide to the technology of multichannel audio systems. Author Tomlinson Holman, best known for developing THX Sound while at Lucasfilm, tackles topics ranging from psychoacoustic phenomena to how monitoring affects the mix. Most of the book's 240 pages emphasize concrete applications such as room setup, proper mic technique, and equalization. Holman discusses recent developments such as 10.2 surround, inexpensive hardware, and the increasing variety of delivery formats. He also explains concepts such as panning law and phantom imaging. An addendum details the challenges of mixing the film *Saving Private Ryan*, and appendices introduce the fundamentals of digital audio.

Updating the previous editions, *Sonar 7 Power! The Comprehensive Guide* ($39.99) explores virtually every aspect of Cakewalk's flagship sequencer with 668 pages of detailed explanations, step-by-step examples, and hands-on exercises. Author Scott Garrigus investigates Sonar's Step Sequencer, takes a look at the tools in Piano Roll view, and covers V-Vocal's pitch-to-MIDI capabilities. He also tells you how to use Sonar's new mastering tools—Boost 11, Linear Phase EQ, and Linear Phase Multiband Compressor. Additional topics include sidechaining, ripping and burning CDs, and using external hardware effects. Bonus chapters are available as downloads from the publisher, Thomson Course Technology PTR (www.courseptr.com).

In his book *Noise/Music: A History* (Continuum [www.continuumbooks.com], $22.95), Irish philosopher and educator Paul Hegarty examines the phenomenon of noise as music. Aimed at anyone interested in the avant-garde (and especially modern music that's dissonant and challenging), the book provides a historical overview that begins with the Italian Futurist movement, touches on composers from Edgard Varèse to Pauline Oliveros, and progresses to bands like Throbbing Gristle and Severed Heads. Although Hegarty's approach is musically (and geographically) all over the map, it's a fascinating read and offers a wealth of information and perspective on the subject.

—Geary Yelton

World Radio History

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World Radio History

SAMPLEBASE SATELLITE PRO

ONLINE, DIRECT, AFFORDABLE

Samplebase (www.samplebase.com) Satellite Pro (Mac/Win, $149) is a feature-enhanced upgrade of the free sample player Satellite. Satellite Pro lets you load AIFF, WAV, and loop-based files (ReCycle, Acid, and Apple Loops), access all synthesis-engine and effects parameters, manage multisample maps, and edit waveforms singly or in batches. Both Satellite and Satellite Pro are cross-platform and come in standalone, VST, and AU versions. Samplebase is a new Web site in exclusive partnership with Ilio that offers a variety of premium downloadable sample libraries called SoundBlocks, which range in price from $19 to $49.

Sound Advice

If you're in the market for drum beats, you'll have no trouble finding tracks for rock, jazz, or any other mainstream style. If you have a taste for the bizarre, however, you may need to dig a bit deeper. One of the latest in a series of expansion libraries for **Toontrack**'s (www.toontrack.com) EZdrummer is *Twisted Kit* ($99), a collection of audio samples and MIDI tracks created by drummer and percussionist Michael Blair (Tom Waits, Elvis Costello, Lou Reed). His drum set features odd elements such as trash cans, bicycle frames, and hubcaps, which he plays, processes, and presents in preset grooves such as Dirty Dirges, Engine Room, and Bend Beat Rock. You also get mixer presets by the likes of Richard Devine and Count Bass D. The result is a unique rhythmic vocabulary that crosses the boundaries of industrial, ethnic, and orchestral percussion.

Guitarists have a monopoly on a certain type of riff that relies on muted chords, choppy rhythms, and staccato lines to put forth the funk. One of the fastest ways to inject that sound into your tracks is with a sample library like *Funky Rex Guitars* ($79.99) from **Nine Volt Audio** (www.ninevoltaudio.com). This 813 MB DVD-ROM supplies a Reason ReFill and 400 REX2 loops assembled into 43 Interlocked Groove Suites with titles such as Slow Rub, Chicken Head, and Pinch of Pepper. Each suite contains variations organized in pairs meant to play simultaneously, with rhythmic parts in one part and single-note riffs in the other. You also get a folder full of REX files you can easily import into Spectrasonics Stylus RMX. Careful beat slicing ensures that every loop plays over a wide range of tempos without audible artifacts.

—Geary Yelton

STEINBERG NUENDO 4

Steinberg's (www.steinberg.net) audio-post and studio-production system Nuendo 4 (Mac/Win, $1,799) brings a variety of new features to the table. Its completely redesigned automation system includes per-channel punch-out, fill commands, and the Unique Touch Collect Assistant. MediaBay file management keeps sample and effects libraries at your fingertips. Twenty new editing commands and tool modifiers facilitate postproduction editing. You get 38 new sidechaining VST 3 effects plug-ins, and you can drag-and-drop plug-ins between channels as well as save track presets. A redesigned sample editor and new Logic Project editor round out Nuendo's power-user enhancements. em

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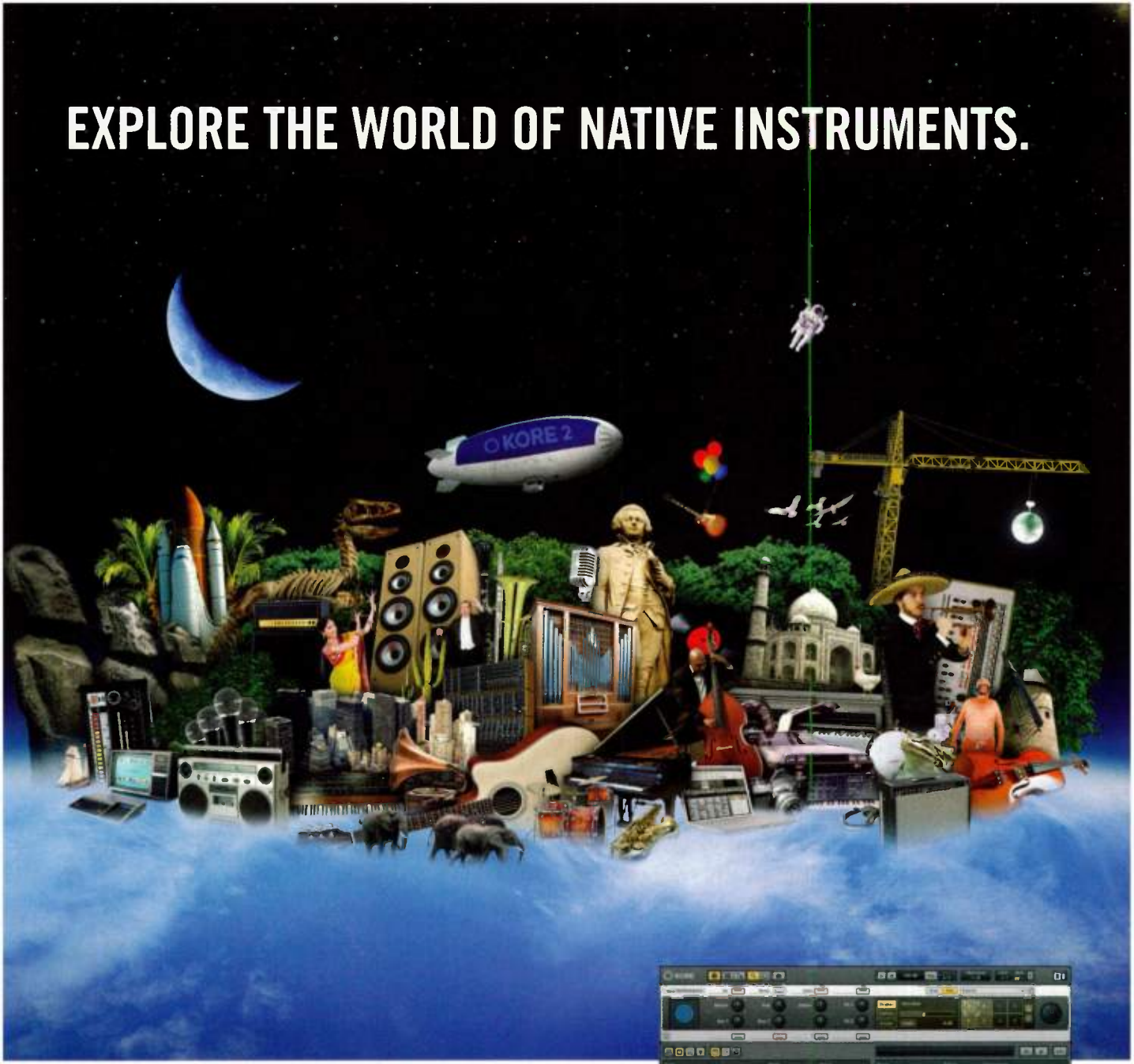
EXPLORE THE WORLD OF NATIVE INSTRUMENTS.



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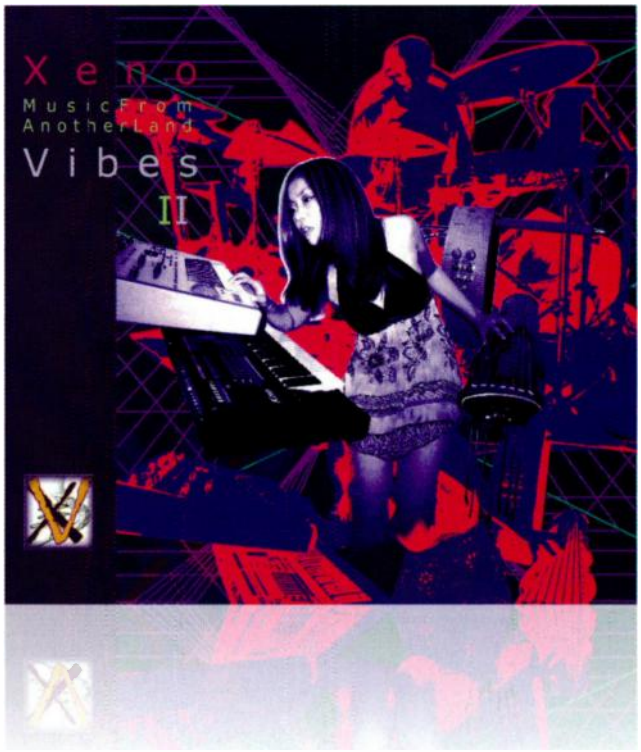
THE FUTURE OF SOUND

World Radio History

SHUEH-LI ONG

XENOVIBES

Home base: Dallas, Texas
Sequencer of choice: Steinberg Cubase SX
Primary monitors: Alesis M1 Active
Web site: www.xenovibes.com



>> *Xenovibes II*

No Barriers

The international synth pop of Xenovibes.

What do you get when you mix synthesizers, theremins, traditional folk instruments, and electronic drums with a multitalented, multicultural, classically trained keyboardist (with a degree in electronic music) and a New York jazz drummer? The answer is Xenovibes, an eclectic duo based in Dallas whose music can loosely be classified as synth pop.

By Mike Levine

Xenovibes is the brainchild of Shueh-li Ong, the Australian-born keyboardist and vocalist who also plays theremin, Chinese 7-string Guqin, and tin whistle. Ong, who spent part of her childhood in Singapore, is also the band's producer and engineer. Xenovibes' second CD—the self-recorded, self-released *Xenovibes II: Music from Another Land*—debuted in the United States in early 2007. The band followed it up last fall with a single that's a cover of the Beach Boys classic "Good Vibrations."

Xenovibes' impressive and heavily improvised live show helped them to win a contest (which was put on by Moog Music) to be the opening band at the 2007 Moogfest (check out EM's video coverage at www.emusician.com/videos).

Ong's studio, where both the CD and the subsequent single were recorded, is based around her old Apple PowerBook. "I got it in 2003, and it's still alive and kicking," she says. For *Xenovibes II*, Ong did most of the recording using Steinberg Cubase SX. She sang and she played all the instruments except for the drums, which were the province of Xenovibes' other full-time member, John Anthony Martinez. He played acoustic drums on one song, "Robolution," but used a Yamaha DT-XTreme IIS electronic kit for the album's other eight tracks.

Ong took audio and MIDI feeds from Martinez's kit when he recorded his parts. The MIDI data allowed her to layer additional sounds. "Shueh-li will stack my MIDI information with her own creations," Martinez says. He describes Xenovibes' overall sound as "electronic music with no barriers."

Although mixing can be a frustrating process for many home recordists, Ong remembers the mix for *Xenovibes II* (for which she used Alesis M1 Active monitors) with supreme confidence. "I did it from the comfort of my living room," she says. Ong learned much of her mixing skills while studying for her postgraduate degree in sound engineering. "I had a really good . . . I guess you could call him a tutor or a lecturer," she recalls, "and he made me aware of stereo, mono, small speakers, big speakers. So I got in the habit of looking out for transparency. Can everything be heard? Because you have various frequency bands you can fit things in—parts can be soft but still audible."

Ong's studio also includes a Yamaha 01X digital mixer. "I mLAN it to the PowerBook to do digital transfer. It works like a digital mixer through mLAN and as a standalone," she says. She recorded her vocals on an AKG C3000 mic.

Live, Ong and Martinez often play with local guest artists and improvise much of the time. "In the show situations, that's where I relinquish control," says Ong. "That's where the Xenovibes show takes a different route from the Xenovibes album." In the studio, Ong and Martinez stick more closely to parts they've worked out during performances. But occasionally, a mistake can turn into a whole new part. "You do something, like your finger slips or you press the wrong button," observes Ong, "and you have to go with the flow. Sometimes when you do that, you go, 'Wow!'"

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Euphonix
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the perfect mix ...

MC Control $1499*

The new Artist Series MC Control and MC Mix bring the unparalleled speed, resolution and DAW integration of Euphonix' high-end professional consoles to your studio in a revolutionary ergonomic, slim-line design. Effortlessly switch between multiple applications and even workstations at the touch of a button–the touch-sensitive knobs, motorized faders, and high-resolution touchscreen and OLED displays automatically set themselves to whatever application is in the foreground. Most importantly, Euphonix has worked closely with the world's leading software developers like Apple, Steinberg, MOTU, Apogee and others to deeply integrate native support for Euphonix' EuCon control protocol into their DAWs to deliver an unmatched editing and mixing experience.

World Radio History

ANDREW STRASSER

WHITE WILLIAMS

Home base: New York City
Sequencer of choice: Ableton Live
Go-to synth: Dave Smith Instruments Evolver
Web site: www.myspace.com/whitewilliams

>> *Smoke*

Truly Hybrid

White Williams's music and gear blend vintage and new.

White Williams is the alter ego of graphic designer Joe Williams, who recorded the CD *Smoke* (Tigerbeat6, 2007) over the past two years while living in a variety of sublets in and around Cleveland, Cincinnati, New York, and San Francisco. *Smoke* is a musical mélange of original, retro-infused compositions, along with an inventive reworking of Bow Wow Wow's 1982 hit "I Want Candy." Williams recorded the songs mainly into his Apple MacBook laptop running Ableton Live, but used a variety of mostly analog outboard gear for sound creation.

By Diane Gershuny

The music on *Smoke*, which is strongly influenced by '70s and '80s new wave, is much more pop oriented than his previous material, which is instrumental, electronic, and experimental. During that phase of his career, Williams toured under the name So Red, along with several other like-minded artists, including Gregg Gillis (aka Girl Talk). Still, there's plenty of cool synth work all over *Smoke*, including the electronic collage, "Lice in the Rainbow."

"I started the WW project out of several other computer-based studio projects," Williams says, "namely working on replicating my high school band with computers, which I failed miserably at. Struggling with the thought of trying to translate a band into a computer-music project slyly trained my ears for other things. I learned a great deal about effects and software in the process. Eventually, I outgrew my software and started educating myself on hardware instruments, microphones, and recording techniques. Once I became familiar with my instruments and studio equipment, songs began to form. My older music was made completely within software, so the biggest difference between my most recent music is that most of the sounds are generated from outside of the computer."

The instrumental sounds on *Smoke* came primarily from hardware-based analog synths (including a Dave Smith Instruments Evolver) and a collection of drum machines (including two vintage units: a Sequential Circuits DrumTraks and a Linn Electronics LinnDrum). Williams also adds his electric-guitar and bass parts and a few textures generated from software instruments. All of the songs except for "I Want Candy" were recorded in the computer. "Candy" was a hybrid; it started on a Tascam DP-01 Portastudio and finished in Live. Vocals and stringed instruments were tracked using a variety of microphones, including a Pearlman TM 1 tube mic and a Shure SM57.

Many of the tracks on *Smoke* were heavily edited and processed. "I used a lot of AI [artificial intelligence] and MIDI effects—on "I Want Candy," [on] the pianos on "In the Club," and on the drums in "Going Down"—to generate the drum and synth sequences," says Williams. "You can do this in [Cycling '74] Max/MSP and Live fairly easily. I like software for pitch-shifting; it's interesting to see how you can treat your voice with certain software effects." The creation of *Smoke* was a spontaneous process—one that Williams can't even imagine doing without the luxury of a home studio. "It frightens me to think of studio scheduling, as if an artist could plan and predict when their most interesting work would be created. I am also apprehensive to work in certain studios for fear that they will put their aesthetic stamp on my songs, as they did with their other clients. Most of my sounds are contained at home, although I am collecting a lot of found sounds and field recordings for future records." em

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MC Mix $999*

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- PRO TOOLS • REASON • LIVE
- ANY APPLICATION

Mac Universal

EuCon high-speed control protocol

- simultaneous control over multiple applications an workstations via Ethernet
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Estimated street price

World Radio History

COURTESY NBOR

FIG. 1: In this example, the Universal Interface Panel has ten faders and one knob. The panel can also show any other graphics, such as the video you're scoring.

UI: TNG

User interface: the next generation. | By Scott Wilkinson

When I was studying music at California State University, Northridge, I served as the technical director of the school's computer-music lab, which had as its centerpiece an early prototype of what would become the Synclavier. During that time nearly 30 years ago, I remember hearing about Denny Jaeger, who directed the development of the Synclavier II.

Since then, Jaeger has kept busy with all sorts of projects, including scoring films, programming synths for sessions, and creating sample libraries. Most recently, he has been deeply involved in developing a new concept for user interfaces, which could revolutionize how people interact with computers in all sorts of activities, including music.

Jaeger started a company called NBOR (No Boundaries or Rules) to foster a variety of technologies, including what Jaeger calls the Universal Interface Panel (UIP). Protected by 27 patents, the UIP solves a fundamental problem that arose when computers became part of the music industry—that is, the cognitive disconnect between physical controls and their virtual counterparts.

For one thing, physical controls on a mixer or other such device are in one location, while the computer screen is usually somewhere else. Perhaps even more important, physical control surfaces have a fixed layout to which users must adapt, and in many cases, the controls have fixed functions. Even if you can reassign specific controls to do different things—say, a fader that can adjust volume or reverb time—you must remember what those assignments are. Wouldn't it be great if the physical controls could be laid out in any way that best suited each user, and their labels and graphics reflected what they controlled at any given moment?

That's the idea behind the UIP. The system starts with a conventional flat-panel video display and adds a thin glass layer over the screen. You can take various small physical controls out of your pocket or a drawer and place them almost anywhere on the screen. The panel can be programmed to display any sort of label and other markings at that location to indicate what the control does as well as its current setting (see Fig. 1).

So far, NBOR has developed two types of controls: knobs and faders. Knobs can be placed anywhere, and they are designed to stick to the glass layer, though not so tightly that they can't be removed and placed elsewhere as needed. Each knob sends its position and movement in the form of RF (radio-frequency) signals to a small receiver that connects to the computer via USB. The receiver can accommodate up to six knobs, all operating independently with less than 1 ms of latency, and multiple receivers can be used simultaneously.

A fader consists of a thin strip of plastic, which is mounted at the bottom of the glass layer, and a separate fader cap. When you place a fader cap over one end of a strip, they magnetically couple, causing the strip to move with the cap as it rolls back and forth on little wheels. As the strip moves, it turns a high-precision encoder within the armrest of the fader chassis. The encoder measures the strip's exact position with an accuracy of 6,000 ppi (points per inch). In addition, the encoder is attached to a motor that can move the strip, providing fader automation.

According to Jaeger, NBOR has worked for years to perfect the magnetic coupling between the fader cap and strip as well as the tactile "feel" of the controls, which must exhibit just enough resistance to provide the right amount of feedback to the user. The UIP should be commercially available sometime this year, and I, for one, can't wait to try it out. EM

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World Radio History

Scripting in Kontakt 3

Get the most out of Native Instruments' powerful sampler.

By Len Sasso

A brief spin through the factory instrument library reveals the power of the Kontakt Script Processor (KSP). All the factory instruments have performance control panels that are visible when the rack is in Multi Instrument mode, and these panels are courtesy of scripting. Scripts provide access to essential controls as well as many forms of advanced event processing. Examples of this processing include automatic chord generation, step sequencing, arpeggiation, and much more.

This month's "Square One" column, "Read the Script," gives an introduction on how to script using basic examples drawn from three software programs, one of which is Kontakt 3. In this "Master Class," I'll pick up where "Square One" leaves off and reveal some of the power of KSP scripting. If you're new to scripting, I recommend reading "Square One" first. You'll find an archive of all the scripts from this article in **Web Clip 1**.

Before You Type

A lot of effort has been put into KSP scripting by Native Instruments as well as third-party developers, and they have created many useful scripts that are there for the taking. Kontakt 3 comes with a library of scripts of various kinds, and you'll find some useful scripts in the Kontakt User Library on the NI Web site (www.nativeinstruments.com/kontaktuserlib). Although scripts for third-party Kontakt instruments are often locked, you'll occasionally come across ones that are not. If you don't find exactly what you want, you may still get some useful hints.

It's a good idea to start your own library of script fragments. An example of how to add a fragment would be to take the several lines needed to declare a user interface element, position that element on the panel, name it, and set a default value for it. Filling in a few placeholders with the relevant data is much faster than retyping those three or four lines five or ten times.

ONLINE BONUS MATERIAL

World Radio History

Kontakt's Script editor is adequate for creating and testing short scripts, but using it for more-complex scripting can be tedious. Using an external text editor will save you lots of time, and there's no better choice than Nils Liberg's free KScript Editor (www.nilsliberg.se/ksp). While at his site, check out his collection of scripts and his excellent Kontakt scripting tutorial. You'll also find an active Kontakt forum with lots of scripting information at Virtual Instruments Composers Forum (http://vi-control.net/forum/viewforum.php?f=65).

Keep in mind that the script language is case sensitive and spaces are ignored. If you break up a long statement with "...", it will still be processed as a single line. Comments, which are enclosed in curly brackets, do not slow down script execution, but they can make scripts cluttered. On the other hand, comments are very helpful when you revisit a script—so use them, but only sparingly.

Getting Gooey

As mentioned, creating control panels for use in Multi Instrument mode is an important application of scripting, and the process consists of several parts. First, you need to design the panel layout, which entails defining its individual controls, positioning them as desired, specifying how they operate (by setting value ranges, display units, text messages, and so on), and ensuring that they're visible in Multi Instrument mode. (You can always access script controls in Instrument Edit mode by clicking on the Script Editor tab.) Next, you need to link script controls to Kontakt instrument parameters, and that linking may or may not be bidirectional. You may want to set up MIDI remote control for panel elements. Finally, you might want to hide or show some elements depending on certain conditions or the settings of other elements. For instance, panels frequently have a button for toggling between easy and expert modes.

Graphical user interface elements are defined using declare statements in the init callback, as are other script elements such as variables, constants, and tables. Six types of GUI controls are available: buttons, knobs, numericals, menus, labels, and tables. See the sidebar "Script Examples," example A, for an init callback that defines one of each.

If you try this script, you'll see that it leaves a lot to be desired (see Fig. 1). The graphical

FIG. 1: GUI element declarations result in an ad hoc control panel that has enigmatic labels.

arrangement of the controls is ad hoc, the display names are the same as the declared names, and the panel disappears when you switch to Multi Instrument mode.

Script control panels are six rows wide by six columns high. You position elements with a move_control statement: move_control ($knob,1,2) would place the knob in column 1 of row 2. Setting either position to 0 hides the control. You can reposition controls in any callback, but it's a good idea to set their position in the init callback even if you plan to move them later in the script (for instance, when switching display modes).

You change the names of knobs, buttons, and numericals with the set_text statement: set_text ($knob,"Volume"). Although names can be any length, depending on the font, knobs typically display 7 characters, whereas buttons and numericals display 14. Use the set_text statement along with the add_text_line statement to fill in labels. The add_menu_item statement adds items to a menu and sets the values returned when items are selected. The order of the statements determines the order of the items in the menu. For an init callback that illustrates these points, see example B in "Script Examples."

The first statement, make_perfview, causes the script's GUI to appear in Multi Instrument mode (see Fig. 2). The wood-panel background is not the result of scripting; rather, it is set in the Instrument options. But once you've selected a graphic in the Skin Bitmap box, the _set_skin_offset statement sets the vertical offset in pixels for the top of the panel. Skins should be Targa files that are 633 pixels wide; vertical offsets should be multiples of 225. So you need a 633 × 1,125–pixel graphic to have separate panels for each of the five scripts an instrument can hold.

Notice that button, knob, and numerical values are set with the := statement, as are variable values. Several unit options are available for knobs (I've used milliseconds in example B), and you can set a default value that applies when the init callback is executed or when you right-click on the knob.

So What?

There's not much point to a pretty control panel unless it controls something. That's where the other callbacks come in. Incoming MIDI note events trigger on note and on release callbacks. Incoming MIDI controller messages trigger on controller, on rpn, and on nrpn callbacks. Interacting with a script's GUI triggers on ui_control callbacks (there is a separate one for each declared control). Interacting with other Kontakt GUI controls triggers the on ui_update callback. That's how you establish 2-way communication between script and Kontakt parameters.

Only the init callback is required (unless the script is empty, of course). Other callbacks are used as needed for the task at hand. You can have more than one instance of the same callback, but it's better practice to use conditional

An external text editor will save you lots of time.

FIG. 2: A little bit of formatting and renaming, as well as adding a custom skin, makes the script GUI easier to use.

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branching within a callback to differentiate tasks triggered by the same type of action. See "Script Examples," example C, for the callback that's associated with the button in Fig. 2.

The ui_control callback is triggered whenever the button is clicked. Clicking on the button named Press Me makes the knob disappear and renames the button to Show Knob. Clicking on the button again makes the knob reappear and renames the button to Hide Knob. Use variations on this theme to toggle between easy and expert panels or to manage more GUI elements than fit on a single panel.

Blind Update

Script GUI elements are often used to access settings inside a Kontakt instrument. The simplest case is a script knob that sets an instrument knob. See "Script Examples," example D, for the init and ui_control callbacks that control the instrument's Group 1 Source volume. The script knob displays volume in decibels, just as the instrument knob does.

An example of a built-in variable is $ENGINE_PAR_VOLUME. Built-in variables are automatically updated to reflect Kontakt engine settings, and you'll find variables for most parameters. Built-in variables are always uppercase, so your own variables will be easier to spot if you combine uppercase and lowercase letters.

Scripting can apply on the instrument or the group level. The last three numbers in the _set_engine_par and _get_engine_par commands (0,–1,–1 in example D) determine the group, slot, and module type affected. Group and slot numbering starts at 0; use a group value of –1 to access instrument-level parameters. (In the case of volume, setting the group to –1 addresses the main instrument volume.) Slot is used to select among multiple send and insert effects and modulators. Use a slot value of –1 when that doesn't apply. The last setting distinguishes instrument insert (1) versus send (0) effects or modulator routing. Use a value of –1 in all other cases.

When you have an instrument with several groups and you want to control a parameter (group volume, for instance) that appears in all groups, it's easy to set up a menu to select the group, and then use the same knob to control each group's volume. You'll find an example on p. 66 of *The Kontakt Script Language* manual

FIG. 3: Use a menu to have the same GUI elements control different groups.

that uses a group menu with volume, pan, and tuning controls (see Fig. 3). For convenience, I've included the script in Web Clip 1.

For 2-way communication, in which changes to the instrument knob are reflected in the script GUI, add a ui_update callback. That should be done with care, however, because ui_update is triggered whenever any instrument control is moved, and frequent callbacks may degrade performance (see "Script Examples," example E).

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Script Examples

Script Example A:

```
on init
    declare ui_button $button
    declare ui_knob $knob (0,127,1) {(lo,hi,display divisor)}
    declare ui_value_edit $numerical (0,127,1){(lo,hi,display divisor)}
    declare ui_menu $menu
    declare ui_label $label (1,2){(width,height)}
    declare ui_table %table[16] (3,2,-24) {(size),(width,height,range)}
end on
```

Script Example B:

```
on init
    make_perfview (view in Multi Instrument)

    declare ui_button $button
    move_control ($button,1,4) {(col,row)}
    set_text ($button,"Press Me")

    declare ui_knob $knob (0,1000000,1000) {(lo,hi,display divisor)}
    move_control ($knob,1,2)
    set_text ($knob,"Big Knob")
    set_knob_unit ($knob,$KNOB_UNIT_MS)
    set_knob_defval ($knob,5000)

    declare ui_value_edit $numerical (-63,64,1){(lo,hi,display divisor)}
    move_control ($numerical,1,1)
    set_text ($numerical,"Double Click")
    $numerical := 0

    declare ui_menu $menu
    move_control ($menu,2,1)
    add_menu_item ($menu,"First",4)
    add_menu_item ($menu,"Second",7)
    add_menu_item ($menu,"Third",11)
    add_menu_item ($menu,"Fourth",13)

    declare ui_label $label (2,2){(width,height)}
    move_control ($label,3,1)
    set_text ($label,"Label line one.")
    add_text_line ($label,"Label line two.")

    declare ui_table %table[12] (4,2,-1) {(size),(width,height,range)}
    move_control (%table,3,3)
end on
```

Script Example C:

```
on ui_control ($button)
    if ($button=1)
        move_control ($knob,0,2)
        set_text ($button, "Show Knob")
    else
        move_control ($knob,1,2)
        set_text ($button, "Hide Knob")
    end if
end on
```

Script Example D:

```
on init
    declare ui_knob $Volume (0,1000000,1)
    set_knob_unit ($Volume,$KNOB_UNIT_DB)
    set_knob_defval ($Volume,630859)
    $Volume := _get_engine_par ($ENGINE_PAR_VOLUME,0,-1,-1)
    set_knob_label ($Volume,_get_engine_par_disp($ENGINE_PAR_VOLUME,0,-1,-1))
end on

on ui_control ($Volume)
    _set_engine_par($ENGINE_PAR_VOLUME,$Volume,0,-1,-1)
    set_knob_label ($Volume,_get_engine_par_disp($ENGINE_PAR_VOLUME,0,-1,-1))
end on
```

Script Example E:

```
on ui_update
    $Volume := _get_engine_par ($ENGINE_PAR_VOLUME,0,-1,-1)
    set_knob_label($Volume,_get_engine_par_disp($ENGINE_PAR_VOLUME,0,-1,-1))
end on
```

Script Example F:

```
on controller
    if ($CC_NUM = 11)
        ignore_controller
        $Volume := (%CC[11]*1000000)/127
        _set_engine_par($ENGINE_PAR_VOLUME,$Volume,0,-1,-1)
        set_knob_label ($Volume,_get_engine_par_disp($ENGINE_PAR_VOLUME,0,-1,-1))
    end if
end on
```

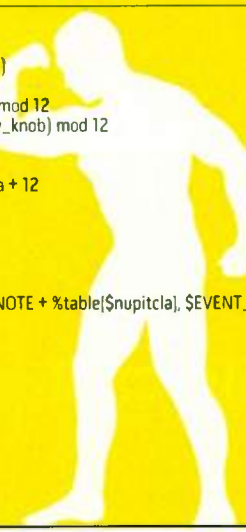
Script Example G:

```
on note
    ignore_event ($EVENT_ID)

    $pitcla := $EVENT_NOTE mod 12
    $nupitcla := ($pitcla-$key_knob) mod 12

    if ($nupitcla < 0)
        $nupitcla := $nupitcla + 12
    end if

    if (%gates[$nupitcla]=0)
        exit
    else
        play_note ($EVENT_NOTE + %table[$nupitcla], $EVENT_VELOCITY,0,-1)
    end if
end on
```



If you want to use MIDI continuous controllers for script GUI elements, you need to use the controller callback. That's because you can't assign MIDI modulators directly to script GUI elements in the way that you can with instrument controls. As with the ui_update, the controller callback should be used with care; lots of incoming MIDI CC data can degrade performance, and it's almost always preferable to use Kontakt's robust MIDI-remote scheme. For how to map the 1-way volume knob to MIDI CC 11, see "Script Examples," example F.

The ignore_controller command blocks the MIDI CC message from affecting all other instrument parameters. The $Volume value calculation ($Volume := ...) converts the MIDI CC range of 0 to 127 to the volume knob's range of 0 to 1,000,000. Keep in mind that the KSP uses integer arithmetic; therefore, large value ranges are used to get high resolution. Time parameters, for instance, are scaled to microseconds, so a declared range of 0 to 1,000,000 in a script corresponds to a time range of 0 to 1 second.

Take Note

Note processing adds a new, and arguably more interesting, dimension to scripting. The factory library is full of note-processing scripts, and in the spirit of not reinventing the wheel, I've used one and scavenged another for the instrument shown in **Fig. 4.** It combines the Easy Chord Generator script (top of Fig. 4) from the Kontakt 2 library with a custom script that can either correct incoming notes or constrain them to a user-defined scale (bottom of Fig. 4). You may prefer to think of scale correcting as mode shifting (see **Web Clip 2**).

Notice that the chord generator script comes first. That illustrates an important point about scripting: each instrument holds up to five scripts, and they are executed in the left-to-right order of the tabs that select them. In particular, MIDI

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data entering the instrument passes through the scripts in that order. The chord generator needs to come before the scale fixer in the processing chain so that all chord notes, rather than just the incoming MIDI notes, are scale corrected.

The scale fixer uses two 12-column tables. The upper table is one row high and serves to pass or reject notes matching the pitches in the legend above it. The cells in the lower table can have a value of either 0, 1, or –1, which indicates that the corresponding note will be either unchanged or shifted up or down a semitone. The settings in Fig. 4 allow all notes through but shift notes with accidentals down a semitone—in other words, the scale shifter corrects incoming notes to the key of C major.

The Root knob shifts the legend and, along with it, the scale to which the notes are corrected. The script for that was scavenged from the Fiddle instrument in the Kontakt 3 factory World library. To view the script for the scale correction, see "Script Examples," example G.

Every incoming MIDI message is assigned an ID, and the ignore_event command prevents the incoming note from being played automatically. The variable $pitcla holds the pitch class (0 for C, 1 for Db, 2 for D, and so on) of the incoming note, and the variable $nupitcla is the pitch class of the note after the script adjusts for the root key. Because that calculation involves subtracting the pitch class indicated by the value of the Root knob, negative values can result. The first if...end if condition corrects for that. The second if...end if condition throws away rejected notes and plays passed notes with corrected pitches.

The declarations and clever handling of the note-names display and Root knob are lengthy but self-explanatory. They set the value of the variable $key_knob to the pitch class of the root key. That number is used to both rotate the note-names display and adjust the value of $nupitcla before the tables are applied. To see how this works, look at the script in Web Clip 1.

For clarity I've chosen short script examples to illustrate key points. Scripts are often huge and include a lot of repetition. Careful formatting and commenting makes them more readable. Keeping an archive of oft-repeated routines speeds up script writing. Above all, unless you're a glutton for syntax, keep the excellent manual handy. EM

FIG. 4: In this 2-script instrument, the first script (top panel) turns notes into chords, and the second script (bottom panel) keeps those chords within a user-defined scale or mode.

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

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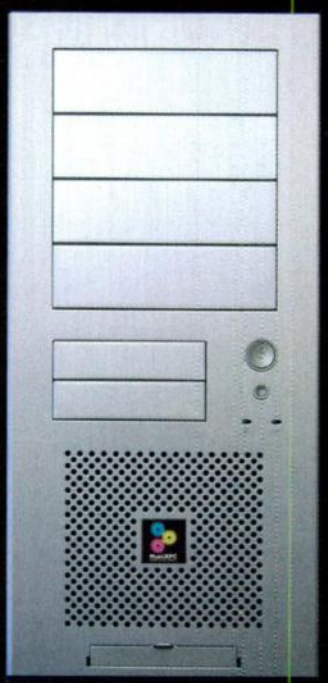

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METALOCALYPSE NOW

Brendon Small and the brutal sound of Dethklok.

A massive box drops from the sky, missing its target and landing on hundreds of people. A stomping heavy-metal dirge forces the box open as a voice menacingly intones the opening line of the Duncan Hills Coffee jingle: "Do you folks like coffee?" By Gino Robair

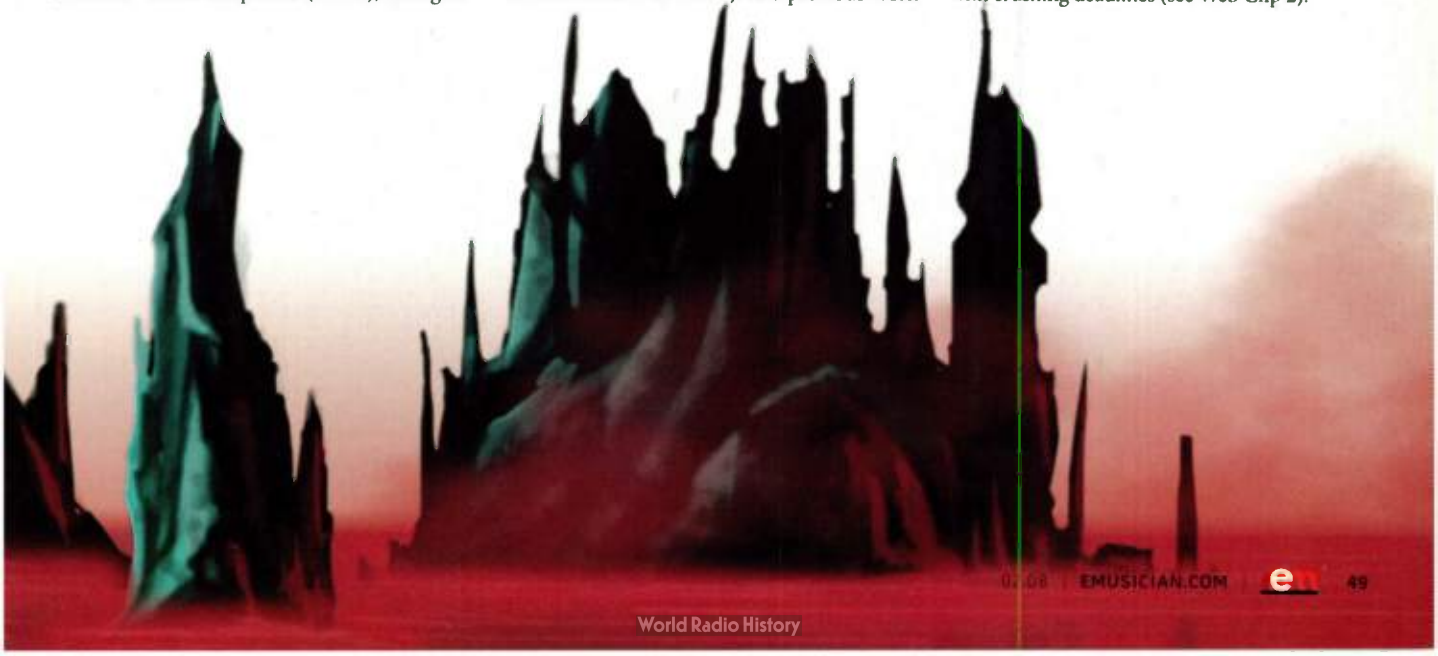
As the band kicks into overdrive and the guitarists do hair windmills, hot coffee and cream spill out over the audience, injuring even more fans. It's a typical show for Dethklok, a band so powerful that a secret governmental tribunal is trying to destroy it in order to prevent the coming apocalypse.

Welcome to the world of *Metalocalypse*, an animated series in the Cartoon Network's late-night programming block *Adult Swim*. Created by Brendon Small and Tommy Blacha, *Metalocalypse* is a lovingly satirical tribute to metal and possibly the most astute look at the genre since *This Is Spinal Tap*. The members of Dethklok—Nathan Explosion (vocals), Skwisgaar Skwigelf (lead guitar), Toki Wartooth (rhythm guitar), William Murderface (bass), and Pickles (drums/vocals)—are suitably self-absorbed rock archetypes that have grown to hate their fans so much, they've written a hit song about it.

But unlike other animated shows that feature music, *Metalocalypse* was conceived by musicians who wanted every detail to be as realistic as possible, from the fingering of the guitar solos down to the instruments and amps themselves. Small, an accomplished guitarist and composer who attended Berklee College of Music, scores the music in each 11-and-a-half-minute episode in his modest personal studio (see the sidebar "Rock Around the 'klok"). His previous work includes the show *Home Movies* (UPN, 2000), in which music also featured heavily. (See Web Clip 1 for a video interview with *Metalocalypse* cocreator Tommy Blacha.)

ONLINE BONUS MATERIAL

Although Small scores the episodes at home, the acting is tracked at Titmouse Inc., an independent animation studio in Hollywood, where the show is produced. The company's 2-room recording studio includes a vocal booth big enough for two actors (see Fig. 1). The booth is set up with a Mac-based Digidesign Pro Tools LE system, allowing the actors to track and edit themselves with greater flexibility and creativity when faced with crushing deadlines (see Web Clip 2).



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When I interviewed Small in October 2007, he was knee-deep in the second season of *Metalocalypse* while busily preparing for a live Dethklok tour. As we drove from the animation studio to his apartment, he played me a recent remix of "Go into the Water" from *The Dethalbum* (Williams Street, 2007), featuring soaring Brian May–like guitar harmonies and furious double-time bass drumming.

Is this a new version we're listening to?

Yes. Hear those double kicks? The kids complained that they weren't on the album version of the song, which is more marchlike than the TV version. This one keeps the pace happening a little faster. I asked Ulrich Wild, the coproducer, mixer, and engineer on *The Dethalbum*, to put the 16th notes back in. We had to change the hi-hats a little bit, too, but he found some really good samples and it sounds great.

It's funny. I just put out this record, and there are purists that like the TV show versions of the songs better than the superproduced studio stuff. But we did the record differently and had Gene Hoglan play on all the songs. I program all the drums for the show, because we don't have enough time or money to get into a real studio. I do everything straight into Pro Tools LE. I'll create a demo and then later I'll clean it up at home.

What drum program do you use?

I use [Propellerhead] Reason all the time. I'm a lazy drum programmer. I normally don't program fills, because I don't have time and I'm not good at it.

For the short songs, you don't really need fills, right?

I don't. You'll hear a lot of reverse church bells and reverse cymbals, where a fill would advance the song to the next section. I try to use more of the music side to advance it, like a cool guitar-lead fill or reverse sound effects. I use reverse timpani a lot. I made the decision in the first episode that that'll be part of the Dethklok sound. I use it to start a song off, too, if I don't have a really cool drum fill to get into it.

That's a great guitar tone.

That's the Krank amp. I'm tuned down to C, so I get all this extra play and vibrato. They use really wide vibrato in metal.

On the melody, that's cocked wah and the Line 6 POD. My version of the Queen/Brian May tone is usually a cocked wah, and then I try playing like him, ripping off that slightly pinched harmonic kind of thing that he gets.

How many rhythm guitar tracks did you do?

I doubled everything. It was interesting to work with Ulrich. My guitar playing is okay for a guy that does comedy for a living. But he really put me through the wringer. He was not going to Pro Tools it up. He made me play it right, which was good.

When it's locked in, it makes things sound a thousand times heavier, especially when you have the left and right [channels] as closely matched as possible. Ulrich has worked with Dimebag Darrell and a bunch of great guitar players. I would ask him after sessions, when my arm was sore, "How would these other guys do it?" He said, "A lot of times you have to do it over and over again to make it work."

And every time I recorded a solo for the record, I'd get just good enough to get through the whole thing, and then my arms would turn into Jell-O.

How many takes do you do of a solo for the show?

I'll loop it and work on it forever. Then I'll record a bunch of stuff and maybe find a part that's the beginning of the solo. Then I'll try to do it in its long, complete form, if I can.

You don't comp your solos?

I will sometimes. I'll try to play it, though. But if it's getting late . . .

Do you change guitars when you do your overdubs for the different players, or do you keep the same guitar and the same setting?

I'll change pickups sometimes, but for the most part I'll try to change the way I play more than I change the guitar. In my mind, if I'm doing a Skwisgaar lead, it's very technical and it's got a lot of overacting in it: a lot of vibrato, a lot of drama to it. If I'm doing what I think is a Toki lead, it's a little bit more straightforward, more pentatonic. He's more of an Iron Maiden kind of guitar player to an Yngwie Malmsteen, who is the Skwisgaar character.

FIG. 1: Brendon Small in the voice-over room at Titmouse studios, where he can track and edit dialog directly to picture using Pro Tools LE.

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For authenticity in the animation, you've greenscreened some of the guitar playing, right?

I've done some stuff where I've gone into the greenscreen room because the lighting's really good. I'll say, "Here's what I'm doing," and I'll play with the song. "And the rhythm guitar player is doing this other thing." It ends up looking cool when you see them side by side lining up rhythmically.

But we also decided that everything in this world is a little bit extreme. This is the kind of band where, when they watch TV, they change the channels with a stompbox on the ground. Everything is music driven.

It's interesting that you have endorsement deals for the show. Is that something you asked for, or did they come after you?

It's something Tommy and I asked for from the beginning. I'm a guitar geek: I grew up knowing who played what instrument, like Slash played Gibson. I've played Gibsons for years, too [see **Fig. 2**]. My first guitar was an Epiphone. [Small describes how he uses the Gibson HD.6X-Pro Digital Les Paul in **Web Clip 3.**]

We had a connection at Gibson who knew about *Adult Swim* and knew about my other show, *Home Movies*, so he kind of knew who I was. I told him I wanted to animate guitars and have them played accurately. That this would be a show for guitar geeks and metalheads, and people who like music.

He got it, and they sent us the CAD files, the 3-D blueprints. We traced a bunch of the guitars themselves, because guitars are hard to draw, especially the asymmetrical ones like the Explorers. For example, we made sure the Thunderbird bass looked right and was played the way a bass player would play it. We would stand there with the bass and say to the artists, "This is Murderface. He has the lowest strap in the world. He can hardly reach his strings, but this is how he does it and it looks cool."

We emailed other companies and said, "We have an *Adult Swim* TV show. Call me back." Some people did and some people didn't. But Line 6 got it. Krank Amps got it. Digidesign got it. I wanted to show actual Pro Tools sessions on the screen. It makes everything a little bit more authentic. And I actually use this stuff when creating the music for the show. It's stuff we like, and the manufacturers we work with are really cool.

It legitimizes the musical aspect of the show.

Yeah, it does. I haven't seen a show do it before. I don't think the creators of Josie and the Pussycats or Jem! and the Holograms paid a great deal of attention to the musical instruments on those shows. And they'd just put in a loop, so the hands don't match the action.

How do you process your voice to get Nathan's tone?

After years of doing a Louis Armstrong impression, it's not that difficult.

You don't have to pitch-shift your voice?

No. My voice sounds like it's a lot lower, but I'm only giving the illusion of a lower voice. The tone of my voice is actually the same as my speaking voice. I just put gravelly, grumbly sound underneath it.

I use that awesome Universal Audio 6176: I just brighten my voice like crazy and it brings out the raspy lower qualities. For the TV show, I may put a little bit of chorus on it. On the record, Ulrich layered fuzzier sounds than I would normally use.

We also did some stuff where we made it sound like Nathan's underwater for the album. Basically, I recorded all the vocals in my apartment with an Audio-Technica 4040 and the 6176. Then I'd go through the [IK Multimedia] AmpliTube plug-in: I'd take all the effects off, bring in a slow chorus, slow down the rate, and raise the density of the chorus. And I would give that as a temp track to Ulrich and tell him that this is what I usually like—see what you can do with it.

So whatever you create in your personal studio goes into the episodes, and then you rerecorded the longer versions for the album separately?

I took each song and added new bridges and new parts. There's a song called "Murmaider" on the record. The only thing that existed on the song in the show was the loop of Nathan singing, "Murmaider. Murmaider. Murmaider." It was something like a 7-second clip. Online, that was the most requested song of the entire first season *[laughs]*. So I built a whole song around it about mermaid murder and vengeance, with

Rock Around the 'Klok

Brendon Small describes the studio in the corner of his cramped apartment as "incredibly minimal," but it's totally responsible for the brutal sound of Dethklok. "It's the ultimate in simplicity. Like something a college kid would have. It's just about instrument choice and consistency for the show." His gear list includes:

- Audio-Technica 4040 mic
- Digidesign Digi 003
- Eden Electronics WTX260
- Gibson Explorer
- Gibson HD.6X-Pro Digital Les Paul
- Gibson SG
- Krank Amps (various)
- Line 6 POD
- M-Audio Axiom 49 and 02
- Universal Audio 6176
- Yorkville YSM1P monitors

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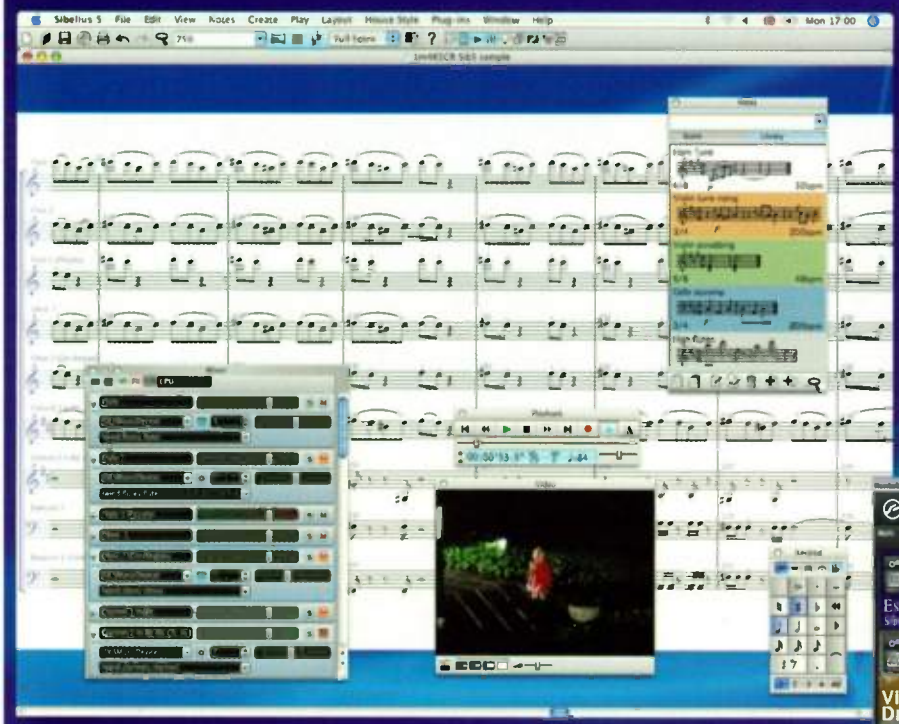

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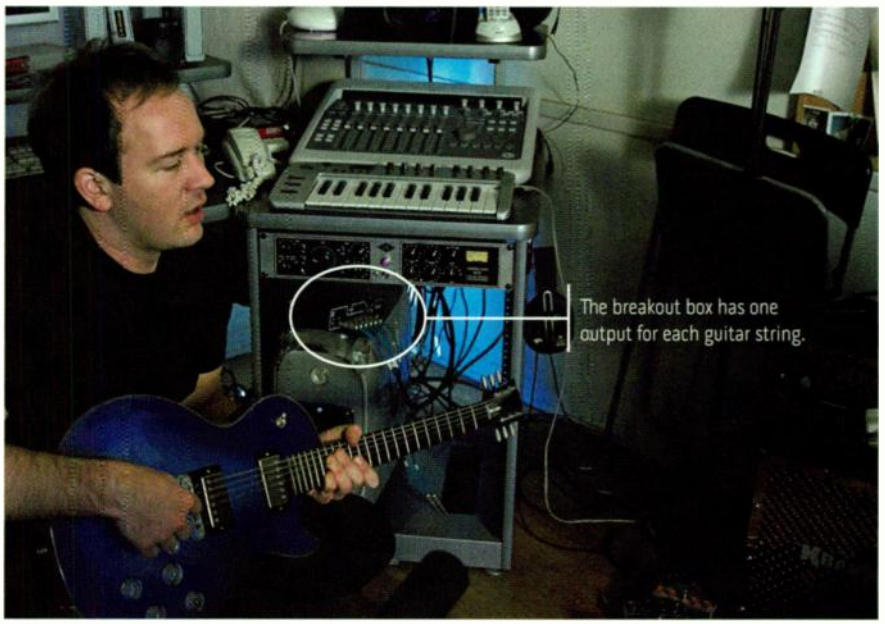

FIG. 2: Small in his personal studio demonstrating how the Gibson HD.6X-Pro Digital Les Paul utilizes the breakout box with the six outputs. Also visible is the Universal Audio 6176, the M-Audio 02, and the Digidesign Digi 003.

this stupid checklist of killing instruments and stuff like that. I had to figure out what that song was about.

How difficult was it to extend the songs?

I was cram writing the entire thing. But I had the blueprints for each song from the original versions for the show. I had tons of songs to consider, because I wrote one for every episode. Some episodes had two songs. It was hard to decide which songs would end up on the record.

So we spent 21 days in the studio tracking drums, bass, and rhythm guitar parts. Then Ulrich gave me all the sessions with beat and bar maps of everything on a hard drive. That gave me an easy way to record all the leads and do all the vocals at home. I hadn't written any of the lyrics at that point, either. And I didn't know what half the songs were about.

What did you study at Berklee—guitar, composition, arrangement?

I was a professional-music major with a concentration in composition, which meant that I studied performance and compositional things. In some cases, I studied stuff I simply wasn't ready for, like arranging for horns. Now it makes a lot more sense to me than it did at the time, because you learn at such a fast rate. I learned beyond what I could apply at that school. I wish somebody had grabbed me and shook me and told me, "Don't forget what you liked when you came in here. Don't forget the stuff that you really care about, because that's why you're here."

Did you have to relearn what you liked?

I kind of did. That's why I was in comedy: I said "See you later" to music for a couple of years. "I'm going to try to get good at doing stand-up and performing and acting and writing. I'll leave the music where it is for now. When I need it, I'll come back to it and hopefully I'll find something good to do with it."

Did you incorporate music into your comedy?

Actually, I tried not to do that. There were tons of people that would bring an acoustic guitar onstage and do parody songs. I wrote a couple of experimental rock operas that were very short and condensed and would tell a big story and would be more arranged. But they needed work *[laughs]*.

It started to make a little more sense on the show *Home Movies*, where I went from being a perfectionist—the kind of a Berklee point of view which I used to have—to a sloppy musician who would give myself an hour and a half to write and record something, and whenever it was done,

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that's it. And that would air on TV, and I'd be stuck with it. So I'd just try to boil it down to instincts, which seemed to be the best thing for me.

When I'm thinking of chords, it's instinctual. I try not to think too often of theory. If I paint myself into a corner, then I'll think that way: "I can go here, here, here, or here." Whether it's comedy or music, writing is about making decisions: you have tons of options and you just go with one of them. The best thing, for me, is to know what the options are.

What was your first personal studio like?

I had an iMac with Pro Tools Free. I plugged my guitar into the Line 6 POD and, using a ¼-inch-to-⅛-inch adapter, into the microphone input of the computer. I recorded stuff that was broadcast on TV. It was just really solid guitar tone.

I used that setup for the guitar contest episode of *Home Movies*. But it was super-lo-fi. That's where I come from: home Fostex recording.

Did you have a multitrack cassette player at some point?

I did, but I kept trying to graduate. In music school they were teaching us [Opcode Systems] Studio Vision at the time, and I was just getting my feet wet. At the same time, around '96 or so, I was interning at jingle houses and everyone was switching over from analog to digital. The main thing I wanted to learn was how to record-enable a track. Everything else was shortcuts.

What did you take away from working in a jingle house?

That I wasn't very interested in working on jingles. The main life lesson I learned is that I'm too much of a control freak to be very far back in postproduction. And if I'm going to be in postproduction, then I at least want to be the guy who's giving myself the orders in preproduction. Luckily I've gotten a job where I get to decide what the musician does, and I happen to be the musician on the show.

It's interesting that an early *Metalocalypse* episode included a coffee jingle.

I think jingles are hilarious. The other important thing I learned was to have a bag of tricks. When somebody needs something, you can think stylistically for a while, but you need to have a batch of chords that you can go to in a lot of different styles. I have a limited bag of tricks, but I do have one if somebody needs something on the spot.

Those jingle guys were amazing musicians: they would have to write a demo in under an hour and a half. You don't really have time to do anything other than find out what style the client wants, listen to a CD reference, and figure out the instrumentation. The chords can be anything, as long as it's in that style. They would do it immediately, even if they weren't familiar with hip-hop or whatever. That was the part that was exciting to me. And sometimes it ends up being better when you're not constantly overthinking stuff.

The spontaneity and the immediacy translate.

This whole record, except for the guitar solos and the vocals, was incredibly spontaneous. I had to actually get my fingers in shape for the guitar solos. And I'd spend a day on the vocals for each piece. I'd spend the first half of the day writing ridiculously stupid lyrics, and then record them in a Louis Armstrong voice *[laughs]*.

When you record the vocals at home, are they temporary or the final vocals?

I did all the final vocals for the record right here with the Audio-Technica mic plugged right into the 6176.

Do you get song ideas while you're writing an episode, or do you just write the songs and get the ideas later on?

In the first season, we had a little bit more time to get things together. So we'd come up with song titles like "Briefcase Full of Guts," about a guy who's going door-to-door and murdering his clients. But it's all sales metaphors about how work sucks. We used "ABK" for "always be killing" instead of "always be closing," like in *Glengarry Glen Ross*. We're making David Mamet references in metal.

Tommy came up with the intro to "Birthday Dethday": "Many years ago, something grew inside of your mother. That thing was you." That was the lyric, and it's just a ridiculous song. Then I'll take it from there. But most of the time, we don't have time and I'll just write everything myself. Ninety-nine percent of the time, I just do it here at home.

After the show has been scripted?

The animators need something to animate to, so I'll at least have a click track and a guitar riff. And I'll commit to a tempo: I'm not committing to anything else. Then at some point they

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say, "We need lyrics now, because we have to start animating." "How much time do I have?" "An hour." "Okay, I'll be back." I just do everything fast and try to make it funny. And nine times out of ten, it'll just be a speed thing. It's the same with writing riffs.

If I have more time, I'll use that time doing nothing. My whole theory about writing is that 90 percent of writing anything is not writing, is doing anything but writing. Like watching TV or walking around the block. When I'm about to get in trouble, that's when I start writing *[laughs]*.

When you give the animators a click track, is it an exact length of time?

I'll sometimes give them a bed of music to work with. Except for a couple of situations, like the main theme and the coffee jingle, most of the songs allude to being longer, and we do a hard cut or a fade as we pull out of a sequence. I do as much as I can in that amount of time. I'll arrange it and try to make that part sound good.

What do you deliver to them? A Pro Tools file?

I usually do most of the mixing of the songs myself. I'll commit to all that stuff here. I'll bounce down to either AIFF or WAV files. If I'm going to check it against picture, it's usually AIFFs, which work best in [Apple] Final Cut. If I'm going to a Pro Tools session, I'll usually use WAV files, and try to make it the highest resolution.

Does the mix include the voices?

I have to separate the vocals, because they have to have them on the dialog track. Sometimes there will be bad words in the vocals and I have to bleep them.

I was surprised to find that the profanity was still bleeped out on the season 1 DVD.

That was a budget issue. We would have to reexport all of the audio from the original masters at the production house, and they would have charged us more money. And we wanted to use the money on more animation and stuff like that.

Whose idea was it to put the guitar squeals over the profanity?

The Zak Wylde things? That was me and Tommy. It makes it more violent than it originally was. If it's the *f* word, we can use a little bit of the *f*, because it's shown late at night, and a little of the *k* sound, and it always has to happen right in the middle. We try to keep in what the word was. It becomes less funny when you don't know what the word is.

You can see the mouths moving, too.

You can definitely see the animated *f* sound.

Who were the characters of the band based on?

Nobody is based on one particular person. Tommy and I discussed a lot of archetypes. Like the really good guitar player, and the other guitar player who's not as good and is a second-class citizen. So in Dethklok we have the fastest guitarist alive and the second fastest, and that creates a little bit of friction. In metal the bass is completely mixed out almost all the time. So we have a self-hating bass player who's always trying to act like he's more important than he is. The singer is kind of a quarterback, and the drummer helps write a lot of songs. I thought the drummer should be able to do a bunch of stuff, like Roger Taylor in Queen. Even though it's not based on his personality, it's what he *can* do in the band and what parts of the songs he does contribute to.

Nathan has a sort of Danzig vibe.

Yeah, people thought Danzig. Honestly, we thought Conan the Barbarian would be an awesome front man. But the way that he moves we actually did base on a person: George "Corpsegrinder" Fisher from the band Cannibal Corpse. If you see Cannibal Corpse live, you'll know exactly what we're talking about.

For Skwisgaar, we created a blond Swede—a handsome guy who thinks he's the greatest thing in the world, with a little bit of Yngwie Malmsteen in his attitude. Toki is Norwegian to Skwisgaar's Swedish, pompous attitude. And, again, a second-class citizen in the same band.

You have rock-star voice cameos in the show, but they don't play on the soundtrack.

We hired the musicians to do voice-over acting only. I don't have the time to work back and forth with musicians when there's only a half hour to create something for the show.

And I don't want my name on the record too much. I'd rather have people think that the music was created by a cartoon band, not by people you recognize. EM

Gino Robair is the editor of EM.

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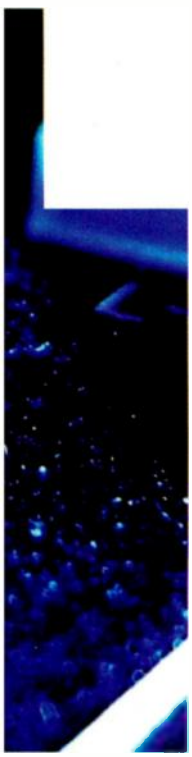
CROSSING THE FINISH LINE

Ten tips to avoid getting mired in endless mixdown.

By Michael Cooper

Of all the processes involved in music production, mixing is arguably the most complex. Changing only one aspect of a mix can throw the entire balance out of whack. For example, raising the level of the lead vocal throughout a song might cause the instrument tracks to sound relatively weak. Similarly, making the electric guitars louder can create excitement but can also blanket the drums to the point where the groove goes out the window. And EQ'ing one track to make it sound huge might make all the other tracks sound tiny in comparison. You fix one thing, only to create a different problem. You fix the problem you just created, only to cause another. And so on.

Considering how all the elements of a mix interact so heavily with one another and how subjective the end goal of a great mix is to begin with, it's easy to chase one's tail when mixing. But while there's no miracle cure to prevent you from endlessly obsessing over a mix, there are several helpful techniques you can use to finish a mix faster and be confident that you nailed it. In this article, I'll discuss some of the techniques I routinely use to keep a mix on track and make it arrive at the station on time.



A Method to My Madness

It pays to develop and stick to productive methodologies—including those borrowed from someone else—when mixing. Having a routine way of doing things keeps you from wandering aimlessly from one task to another and losing focus. While every mix is different and you need flexibility for dealing with unique circumstances that may arise, following a more or less set routine while mixing will move the process along faster and make it less likely that you'll overlook important details.

For instance, I always begin a mix by setting initial levels, EQ, and effects for the drums and bass. Doing so helps me establish my headroom for the mix early on. That's because percussive and low-frequency elements inherently use up the most headroom (that is, they register the highest levels on peak-reading meters) when compared with other elements of the mix having the same perceived volume (see Web Clip 1).

ONLINE BONUS MATERIAL

I don't slave over every detail of the drums and bass at this early stage of the game. I only get their sounds in the ballpark, knowing that I'll need to tweak them further once the other tracks are brought into the mix.

After I've got the drums and bass sounding pretty good, I bring up the faders for the other instruments and vocals in turn to set the Scene (or Snapshot settings) for the start of the song. Then I deliberately move through the song in sections from start to finish to automate any needed mix moves.

One engineer I know feels that working on bass and drums in isolation is a waste of time because everything will change once they are placed in context with the other tracks. He throws all the faders up at once and immediately gets to work on the whole enchilada. I've tried that approach, but it's never worked for me—I've ended up with mixes that weren't punchy enough for my taste. To my surprise, however, my all-faders-up friend produces mixes that sound plenty punchy.

My point is that there are many different ways to mix a record, and no one way is the right way. What's important is that you figure out which game plan works best for you and stick to it. Your mixdown sessions will proceed quicker, your decisions will be more deliberate, and you'll get better results.

Always Something There to Remind Me

On projects for which I also serve as tracking engineer, mixdown begins for me very early on. While I'm tracking, I set markers at key points in the song as mixdown ideas come to me. I give the markers descriptive titles or—in MOTU

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of monitors, I can hear at once all of the high frequencies in the cymbals' range and all of the lows the kick and toms might produce. I'll switch to my midrangy Yamaha NS-10M studio monitors (also discontinued) when applying EQ to vocals, guitars, and fiddle. The Avant Electronics Avantone MixCubes (see Fig. 2) are my preferred reference for confirming that the relative levels of lead and background vocals and electric guitars are in good balance with one another. Furthermore, I'll alternately listen to the entire mix on all three systems (as well as the Monitor-8s without the sub) before "printing" it to confirm that it sounds great on a wide variety of speakers.

> It's important to apply EQ to a track while listening to it in context.

All Together Now

I never work on EQ settings for soloed tracks for very long. Generally speaking, it's important to apply EQ to a track while listening to it in context; that is, along with all the other tracks that should be playing during that part of the song. A guitar part, for instance, might have plenty of presence when soloed but sound murky once it's competing with the bass and piano. Nobody who buys the record will ever hear the guitar soloed throughout the song, so why EQ it to sound right in isolation?

To be sure, it's sometimes helpful to use the solo button to assess those aspects of the untreated track that you're having trouble hearing in context. You can even make coarse EQ adjustments to the track while soloed, to get its sound in the ballpark. But quickly bring in other tracks to hear what the combined effect will sound like, before you take things too far. Otherwise, you'll probably end up redoing all of those EQ settings.

While a given track needs to sound right in the context of the entire mix, sometimes it helps to break down a few instruments into a subgroup to shape a composite sound. For example, where the guitar, piano, and fiddle all play the same melodic hook (perhaps in different octaves), you might want to solo all three instruments in order to work on the EQ for each in turn. Listening thus will also help you set relative levels within the subgroup. Once you've attained a dynamite submix, pop the channel group back into the full mix and make any additional tweaks that are needed in that context. You'll probably find this technique to be a lot less confusing and more efficient than immediately trying to EQ a single track with all the other tracks also playing.

Till Death Do Us Part

Once you've got the EQ for a track sounding great in one part of the song, don't feel like you're married to it for the rest of the song. A great mix often requires that EQ settings be changed—sometimes drastically—on one or more tracks in different sections of the song.

For instance, an acoustic guitar that starts out a song alone might require that no bass frequencies be rolled off, in order for the mix to sound warm and full right from the get-go. But once the bass and drums come in, that bottom end on the acoustic guitar track may no longer be needed. In fact, it could be stepping on the bass and making it sound less tight and clear. In this case, roll off the bottom end as needed on the acoustic guitar to give the bass guitar its own frequency range to project itself in (see Fig. 3a). Then, if the acoustic guitar takes the spotlight again in a breakdown later in the song, restore its bottom end as needed so that it doesn't sound too thin in isolation (see Fig. 3b).

Some tracks might need level changes instead of EQ adjustments in certain sections of a mix. For example, the cymbals or hi-hat may need boosting or attenuation in some spots, even while the traps' faders stay static.

Do whatever it takes to make the mix sound great from moment to moment, even if that means making dozens of EQ and fader moves by the time the song ends. While this will take time to execute, you're more likely to be satisfied with the end result. And you won't waste time tweaking and retweaking elusive static settings that you're never quite happy with—another recipe for endless mixdown sessions.

FIG. 3a: The Waves Q10 EQ plug-in is used to apply a shelving cut to low frequencies on an acoustic guitar track in order to make room for bass and kick in the mix.

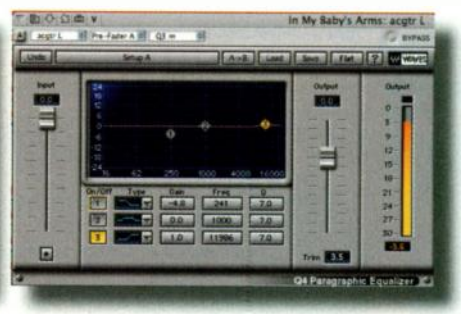

FIG. 3b: The low-shelving band is bypassed on the acoustic guitar track, restoring its bass frequencies, when drums and bass temporarily drop out of the mix.

Listen. Don't Listen!

How many times have you declared a mix was finished, only to discover a few days later that a key part was buried? Especially in productions having large track counts, it's easy to overlook an important detail here and there. To help prevent such oversights from occurring, I use a technique I call "selective listening."

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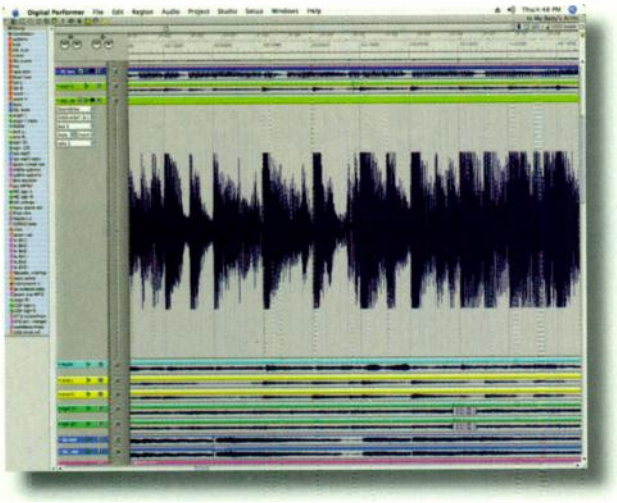

FIG. 4: A brickwall limiter adds distortion to a track when it squares off the top of its waveform on peaks.

First, I'll selectively listen to only the lead and background vocals while the mix plays back. Yes, I'm hearing the other tracks play, too, but I'm concentrating on how every lyric of the lead vocal sits in the mix and how the lead and background vocals work together. Are any lyrics unclear? Does the vocal dip in level or pop out too much at any time? Does the lead vocal get too edgy or muddy at any point in the song? Do the background vocals overwhelm the lead vocal at any point or fail to cut through the mix? I'll concentrate on these aspects of the mix while listening to each set of my reference monitors in turn, making sure no monitors reveal any problems.

Once I've vetted the lead and background vocals' treatments throughout the mix, I'll do another set of selective-listening passes while concentrating on only the instrument tracks (again, using alternate sets of monitors on each listening pass). Are the bass and drums punchy enough? Did I goose all the key parts I wanted to? Do the cymbals get too loud and shrill during the choruses, or does the hi-hat and side stick get too soft on the verses? Did I succeed in attaining a nice composite blend of tracks on shared melodic phrases? How are the overall spectral balance and dynamics? Allowing myself to ignore the previously vetted vocal tracks lets me hear everything else all the more clearly and catch any problems or oversights that might otherwise have gotten past me. The result is that I need to remix a lot less often.

Silence Is Golden

Sometimes, no matter how much you tweak the mix, it just sounds bad in one or two sections. The mix is probably not the problem here. The culprit is the arrangement, and no amount of EQ, effects, or riding faders will help until you start ditching or replacing the problematic parts.

When you suspect the arrangement might be killing your mojo during a particular section of the song, mute individual tracks one at a time to see if ditching any parts improves the mix. Often, muting one or two tracks for just a few bars will clear out clutter and bring back the air in a mix, allowing more musically important parts their time in the sun.

You may find upon muting some tracks that the mix has improved but the song is left with a big hole in the arrangement. If time permits, don't be afraid to create and record an entirely new part to replace what's been ditched. Just make sure it's substantially different from what you got rid of, or you'll be back where you started. You just might come up with another hook that transforms the song.

Pull the Plug

If you've done everything you can to polish the mix and it still sounds bad, maybe you've done too much. With hundreds of DAW plug-ins available for processing, sometimes the temptation is to pile on the sauce to the point where the main dish loses its original flavor and appeal.

Used wisely, the right plug-in can wonderfully enhance the sound of a track. But many plug-ins also degrade sound quality in subtle ways that might not be immediately obvious (most often by reducing depth and nuance). Make sure the improvements and trade-offs sum up to a net gain.

If you've been tweaking a track's plug-in settings for a while and are still not satisfied with the results you're getting, try bypassing one or more plug-ins to see if the track sounds better with less (or no) processing applied. Maybe an overly dynamic vocal track will sound rounder and sweeter if you ride its fader up and down where needed, rather than beating it into submission with a high-ratio compressor. And a hazy guitar track that's having trouble cutting through the mix may not need an EQ boost in the upper midrange after all; there just might be too much reverb—or the wrong *type* of reverb—on the track. Sometimes less is more.

Hit Your Peak

Considering that it might take an entire day or longer to pull off a truly great mix having many tracks, it's no surprise that ear fatigue can often derail the process. Monitoring at low levels and switching monitors often to change your perspective can help keep you fresh. Equally important is to carefully watch your meters, especially those for your main stereo bus. Keeping tabs on your mix's *crest factor* on your stereo-bus meters will often point out problems with the big picture that tired ears have missed.

Crest factor is essentially the difference between a mix's average and peak levels. A mix that has a large crest factor exhibits big swings in level when percussive elements such as kick and snare drums strike (see Web Clip 2). Speaking generally about popular genres of music (and not classical music), a mix with a large crest factor will sound more rhythmic and, if the bottom end is in proper perspective, punchier. A mix with too large of a crest factor, however, will sound less full and not as loud compared with others.

A mix with a small crest factor typically causes stereo-bus meters to barely fluctuate at the top of their range (see Web Clip 3). Kick and snare hits may not even move the meters because those instruments are, in fact, somewhat buried in the mix. Such a mix is usually very loud, fatiguing, and deficient in rhythm and punch.

Natural sounds that have both an attack and sustain portion, such as a plucked acoustic guitar string, might produce a peak that is 10 dB or more above its average sustain level. A brickwall limiter can reduce the guitar's peaks so that they swing perhaps only 3 or 4 dB above the sustain level. But the trade-off

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is that a square wave is created on the peaks (see Fig. 4). That generates distortion.

The same principles apply to a mix's crest factor. A maximizer can be used to reduce peaks and raise average levels to make a mix sound louder, but that also generates distortion. The distortion may be subtle enough that it's not easily identified as such, yet it most certainly will fatigue your ears if it occurs repeatedly throughout the song. On the other hand, even a rock mix with a large crest factor will—all other things being equal—sound smoother, sweeter, and warmer.

Even without using a maximizer or brick-wall limiter, a mix can end up with too small of a crest factor. All it takes is having tracks with sustained sounds cranked and drums and percussion buried in the mix. Such a mix will also sound fatiguing.

If you find yourself chasing endlessly after the proverbial warm mix and all the modeled vintage-EQ and tube-emulation plug-ins in your arsenal can't quell the edge, check out your mix's crest factor. If your stereo-bus meters' levels are swinging only 3 or 4 dB throughout the song, the guitars and keyboards might need to be lowered and the drums (and possibly the bass, whose optimal relationship to the kick drum—once it's dialed in—should be maintained) might need to come up in the mix.

Spend time analyzing the crest factor for mixes you admire and love listening to. Then aim to achieve a similar crest factor while mixing your own similar tunes. With practice and the guidance of your stereo-bus meters, you'll be able to move quickly beyond an edgy mix and arrive in warmer waters.

In the Can

The techniques I've detailed in this article should not only help you create a better mix, but also help you do it faster. Just as important, using these tools should increase your ability to recognize when you've made the mix as good as it can be. When it comes to an open-ended mixdown session, knowing when you've crossed the finish line is half the challenge. EM

EM contributing editor Michael Cooper is the owner of Michael Cooper Recording in Sisters, Oregon. Hear his mixes at www.myspace.com/michaelcooperrecording.

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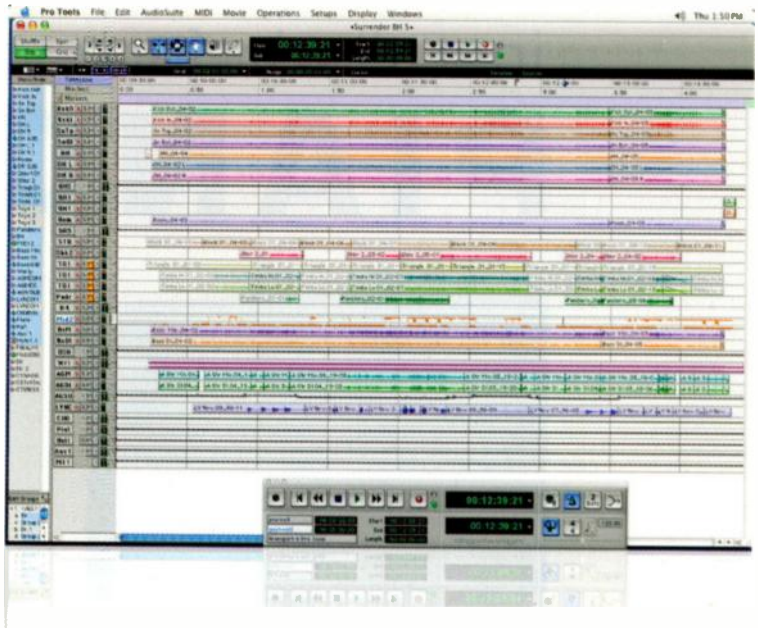

FIG. 1: Moving a complex file with multiple tracks and regions can present a challenge, even if the OMF file exchange works perfectly.

Good Migrations

Move your files seamlessly between software platforms. | By David Darlington

In today's world of digital file sharing, musicians and engineers are often called upon to collaborate on files created in software other than their preferred DAW. I am often hired to mix sessions created in Apple Logic Pro or MOTU Digital Performer, and in order to work efficiently, I prefer these files to be imported into Digidesign Pro Tools. Likewise, when I send out my Pro Tools production to a keyboard wizard for spicing up, he may feel more comfortable in Logic Pro or Steinberg Cubase.

The simplest way to migrate between software platforms is to export and import OMF or AAF files. (See "Making Tracks: Going DAW to DAW" in the October 2007 issue of EM.) Here I'll offer six tricks of the trade (that I have learned the hard way) to make that process as painless and sonically smooth as possible (see "Step-by-Step Instructions" on p. 70).

Remove the Clutter

Nothing slows down file transfers like searching for missing audio, and nothing inflates OMF files more than audio files that are not relevant to the session. To get rid of them, first delete unused tracks and playlists left over from earlier in the project. That eliminates visual clutter by lowering your track count and removes audio files that are no longer necessary (see Fig. 1).

Next, open your audio bin, select all the unused audio files, and remove them from the session. Be careful to remove them from the session only; do not delete them from your hard drive. When the OMF codec creates an OMF with embedded audio, it will encode only the remaining audio files, which results in a much smaller OMF file.

Use third-party plug-ins that are common to both platforms to ensure that your effects will translate. For example, if you are using Performer's or Logic's channel EQ, try replacing it with something like Waves Renaissance EQ. Remember to save the Renaissance EQ settings in the project folder so that when the file is pulled up in a different DAW, you can instantiate the EQ and restore its settings. If you are accompanying the session to your collaborator's studio and you use plug-ins that are dongle protected, it's easy to bring your installations and dongle along and temporarily install them on the new system.

Worth a Thousand Words

Most OMF transfers include only audio-region and track-layout information—levels and panning are often ignored. You could spend an afternoon jotting all this info down in your session notes, or you could take a screen shot and save it with the session folder.

Open the mix window in your sequencer and position it to fill as much of the screen as possible, showing fader levels, panning, sends, and inserts. If you can't capture everything in one screen shot, reposition the mix window to show the next bank of faders. Repeat until you have a sequence of screen shots that shows the entire mixer.

Now you are ready to export your file in OMF format. Be sure to check the include-audio option; that will embed all the audio into a single OMF file. If you are going from a native system to a PCI-card-based TDM system, all the audio files must have the same bit depth. Otherwise, the files will be visible but won't play, so make sure you select the option to convert all audio files to a common bit depth. You can also save a step by converting interleaved-stereo files to split-stereo files, which are required by the TDM engine.

It's About Time

In order to transfer tempo information, you must export a Standard MIDI File (SMF). Consider saving your original MIDI programming in the SMF as well. Often a plug-in or soft synth reacts differently in different hosts, so some of your MIDI controller automation may need tweaking. An SMF takes up very little storage and is handy to have when the need arises.

When you open the OMF in a new DAW, you will see the various audio-region edits as before, but the track layout may be changed and the stereo/mono configurations may be different. Use your screen shots to restore panning and levels, instantiate your plug-ins, recall the settings, and tweak to taste.

If moving from native Logic to TDM-based Logic, you can easily maintain all the plug-ins and settings. Before changing an audio track from Core Audio to Direct TDM, click-and-hold the Settings button on the channel strip. Copy channel strip settings into the buffer and then paste them back after reconfiguring that channel to Direct TDM. Unfortunately, in Logic 8 there is no quick way to do all the tracks at once; you must repeat this process for each track. With a little preparation (and a few hidden tricks), you can make the trek from one platform to another seem like a small step instead of a giant leap.

David Darlington won a Grammy in 2007 for engineering the Brian Lynch/Eddie Palmieri Project album Simpatico *(ArtistShare, 2006).*

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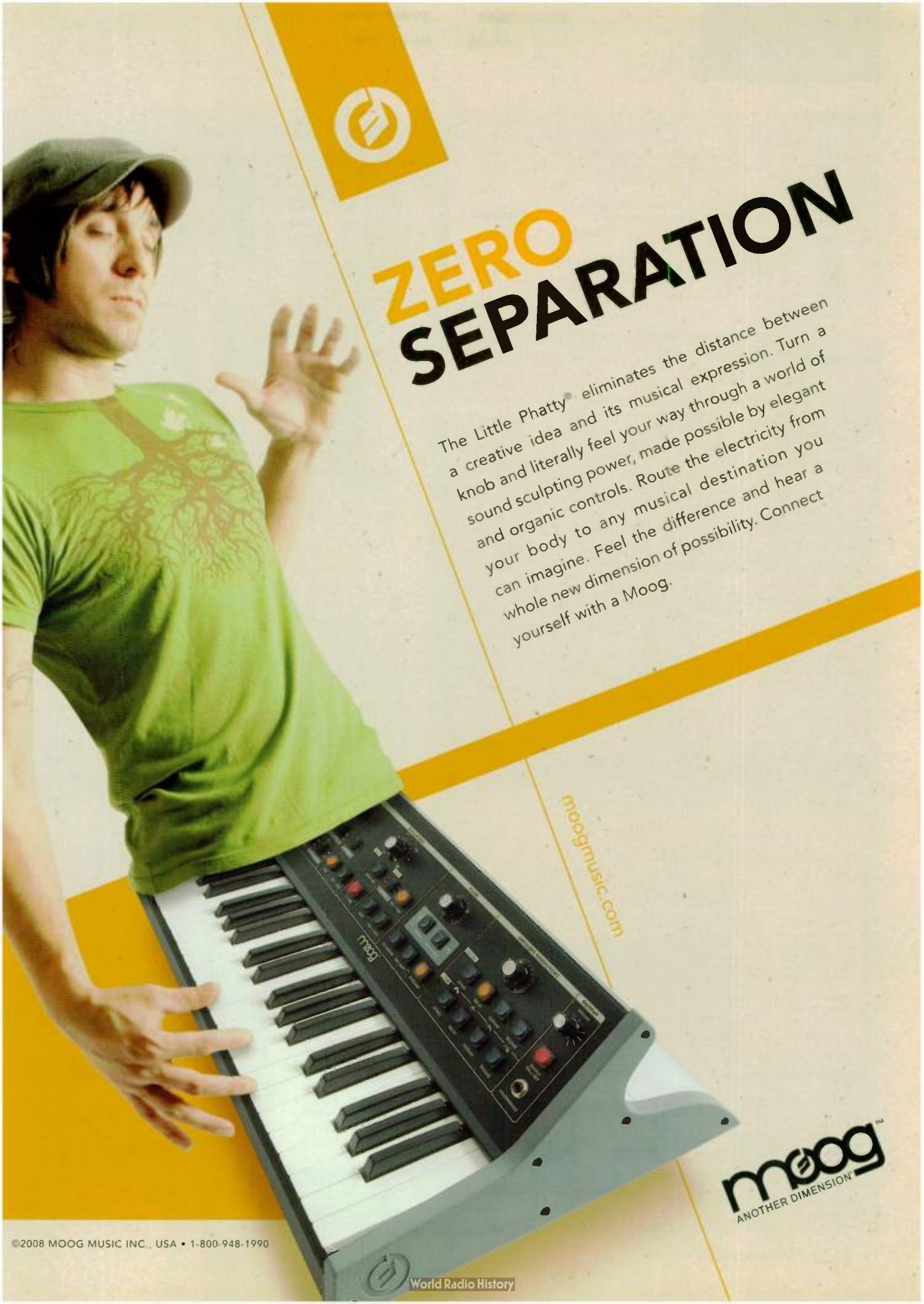
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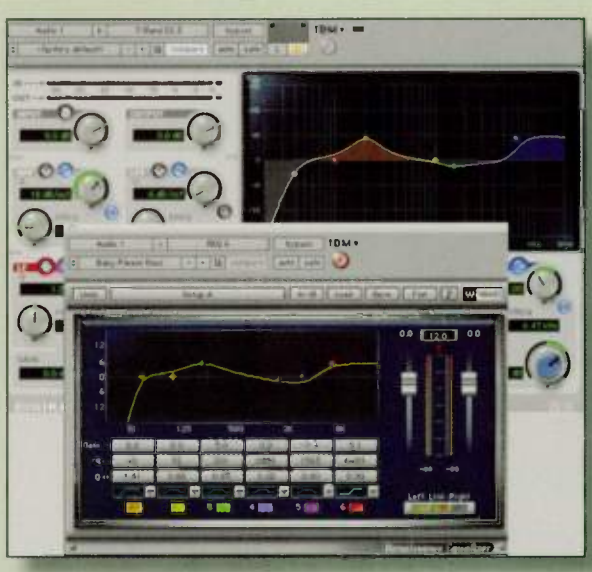
STEP-BY-STEP Instructions

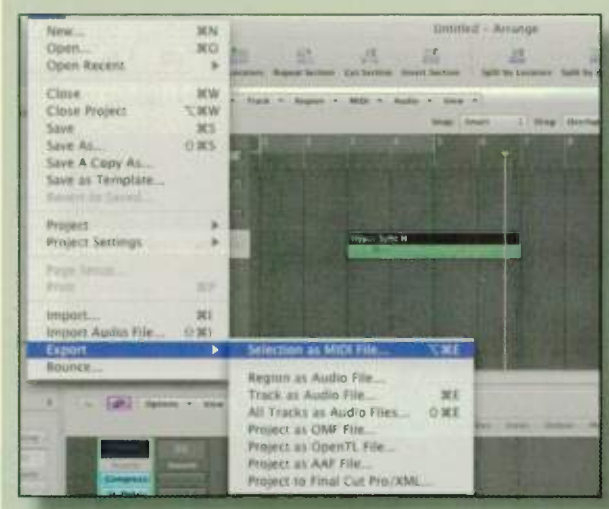
Step 1: Remove the unused audio from a file before exporting.



Step 2: Use third-party plug-ins to ensure that you can use the same plug-ins on another platform.

Step 3: Take a screen shot of your mixer to remember panning, levels, and sends.

Step 4: When exporting an OMF, convert all files to a common bit depth to ensure compatibility.



Step 5: Export a MIDI file to capture tempo information as well as all the MIDI data.

Step 6: Copy the channel strip setting before changing the audio driver of a Logic Pro audio track.

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>> FIG. 1: This composite screen shot shows two approaches to aligning syllables to the beat: slicing in iZotope Phatmatik Pro and using Warp markers in Ableton Live.

Um's the Word

Transform vocal embarrassments into outrageous grooves. | By David Battino

Sometimes the soul of a song emerges by accident. I'd plugged a cheap sampling keyboard into a TV and started recording random shows 6 seconds at a time (the limit of the sampler's memory). When I captured interviewer Charlie Rose interrupting a stammering Henry Kissinger, something caught my ear—the dialog had a pronounced rhythm.

I split the keyboard, layered the sound bite with a drum loop, and got a groove that I use to this day (see Web Clips 1 and 2). In this column, I'll share some techniques I've developed for finding and shaping garbage speech into outrageous grooves.

ONLINE BONUS MATERIAL

Badda-Bing, Badda . . . Um . . .

When people punctuate their speech with *ums* and other placeholder sounds, it often produces an interesting rhythm. That makes sense; these involuntary grunts and stutters function as drum fills, buying time for the performer to work up to a more powerful downbeat.

Of course, drum fills are the highlight of a groove, whereas *ums* are an annoyance or an embarrassment, depending on if you're listening or speaking. I spend a lot of time slicing the *ums* and false starts out of my Podcast interviews to keep the show moving and make both parties sound more articulate. But ever since I realized that vocal glitches were such great groove fodder, that cleanup task has become more of a treasure hunt than a chore. Now instead of pressing the Delete key in my audio editor, I press Cut. If the sound was cool, I paste it into a new file.

Not recording interviews? You can find plenty of stuttering speech online. Try the Library of Congress site (www.loc.gov) and the Internet Archive: Open Source Audio (www.archive.org/details/opensource_audio) for public-domain recordings. The pronouncements of public figures are fair game, too. You'll find 15,000 meticulously labeled speech excerpts at the George W. Bush Public Domain Audio Archive (www.thebots.net/GWBushSampleArchive.htm).

Rhythmic *ums* frequently sneak in through other channels as well. I once used an answering service that sent me my voice mail as email attachments. One day a message arrived from former EM staffer Matt Gallagher, starting with the riff, "Hi *(ahem)*—'scuse me, David . . ." Not coincidentally, Matt is a drummer, and his throat-clearing salutation plugged perfectly into the beat of a song I was working on (see Web Clip 3).

The Slice Is Right

Sometimes the found rhythms will be spot-on, as with the Kissinger and Gallagher loops. (You may notice in Web Clip 3 that I extended the latter with a synchronized delay to fill out the bar.) A bit of deviation from the beat can sound fine, too, emphasizing the humanness of the rhythm.

But more often, you'll want to tighten the groove by nudging a syllable or two either forward or back in time. To do that, I typically use Ableton Live. Many other beat-slicing programs work just as well, including Sony Creative Software Acid, Propellerhead ReCycle, and iZotope Phatmatik Pro (see Fig. 1).

Before time-aligning the syllables, I usually beef up the vocals by applying BIAS Peak's Normalize RMS effect (see Web Clip 4), which works like an industrial-strength limiter to maximize the average level of the file. (You can also use a standard limiter or loudness maximizer.) Boosting the level gives the vocal groove more power, which helps it support the tune. Of course you won't always want such a bombastic effect; thinning the vocal groove with a highpass filter can produce a lighter percussive part.

If the voice file is noisy, as is often the case with my telephone and Skype recordings, I'll remove the noise with a fast fade-out, a noise reduction, or Peak's Silence command before boosting the level.

You should be able to time-align syllables by eye in any audio editor that displays a rhythm grid. I find, however, that it's faster and more musical to play a drum loop on a separate track and adjust the vocal's warp markers to match (see Web Clip 5).

You can make almost any audio file rhythmic by chopping it up, but the natural rhythms of involuntary *ums* have a special personality (see Web Clip 6). Once you start to listen for spoken rhythms, you'll find a wealth of material. So don't just sit on your *ums!* One musician's garbage is another's groove. EM

David Battino (www.batmosphere.com) is the coauthor of The Art of Digital Music *(Backbeat Books, 2004) and audio editor for the O'Reilly Digital Media site (http://digitalmedia.oreilly.com).*

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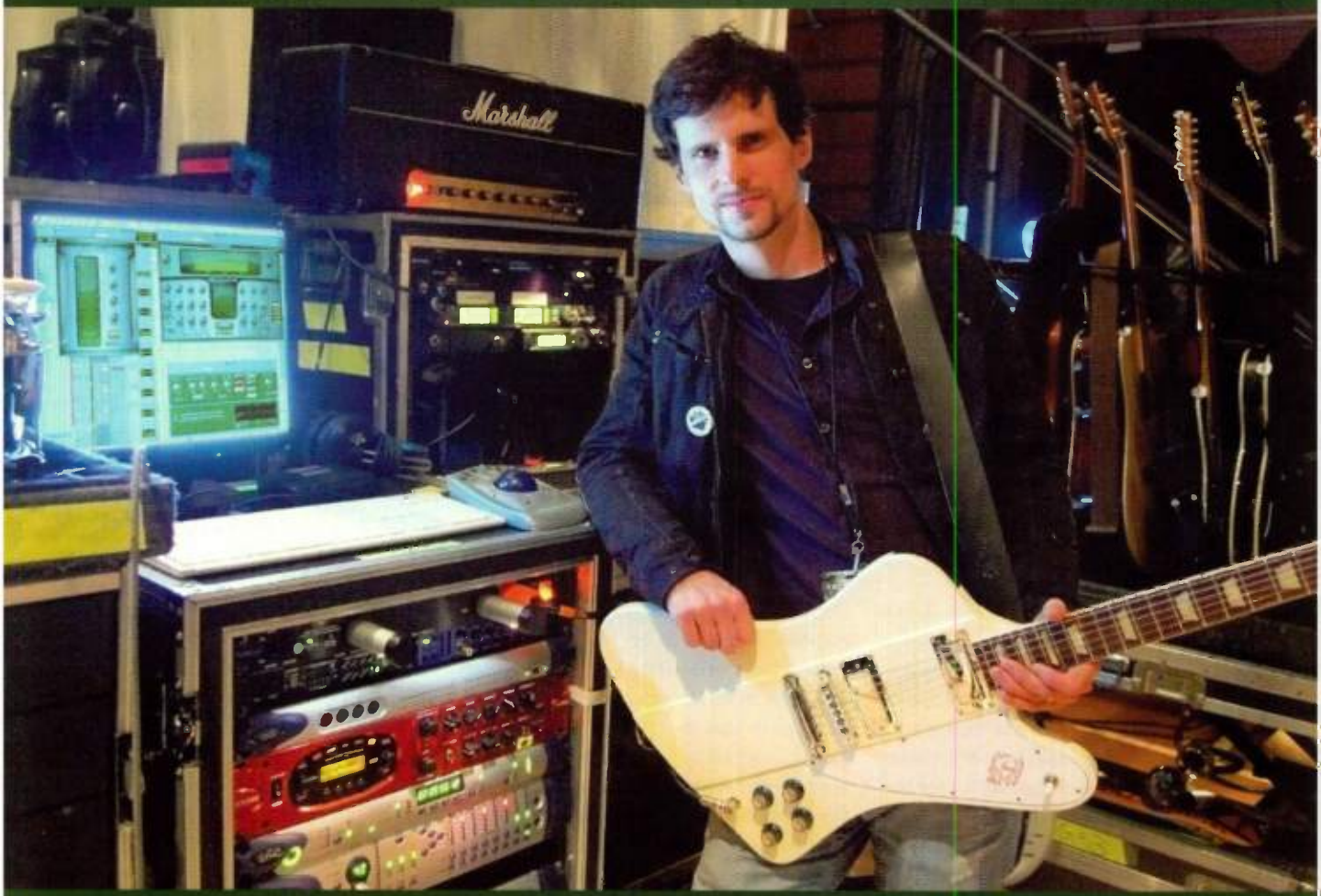

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Read the Script

How to save time when performing repetitive tasks. | By Peter Hamlin

Wouldn't it be nice to have an assistant in your studio? Someone who could take care of repetitive tasks for you? Someone who would know enough computer programming to write handy utilities, new commands, customized effects, and other features to add to your favorite sequencer, software sampler, or music-notation program?

Well, lurking beneath the surface of many computer applications is just such an assistant, and it's called *scripting*. A script is a specialized computer language that lets you take control of a program in new ways. In this article, I'll give some examples of how you can use scripting with a software sampler, a music-notation program, and a sequencer. But first, a few general words about this useful application.

Opening Act

Scripts, like other computer languages, typically have commands that perform certain functions, variables that users can define, and built-in (predetermined) variables that report information from the application and its data. A built-in variable might give the current tempo of your sequencer, or the MIDI channel, pitch, and Velocity values of a note that has just been pressed on a keyboard controller.

MakeMusic Finale notation software, for example, contains a scripting language called FinaleScript, which was introduced in Finale 2004 and is supported by all subsequent versions. FinaleScript includes a powerful batch-processing tool that lets you create a series of commands that run automatically one after another. These commands could be used to modify all the files in a folder or subfolder.

To illustrate, imagine that you have ten files of short pieces for clarinet and piano. You'd like to change the size of the staves, make a final check of the ties to be sure they play back properly, be sure that the clarinet is transposed rather than in concert pitch, and fix any notes that are improperly spaced. While you could do all these tasks manually for each separate file, creating a script makes the task less tedious and ensures that you don't accidentally skip one step of the process on one of the files or make some other small mistake.

For the FinaleScript code that will accomplish the above tasks on all files in a selected folder, see the sidebar "Script Examples," example A. (The scripts in this article are also available at www.emusician.com. See **Web Clip 1** for example A.) **Fig. 1** shows the score before and after the script is run.

To run the above script, click on the New Script icon from the FinaleScript plug-in dialog box (Ctrl + Alt + Q) to launch an editor window and paste or type the script into that window. Then click on the Save And Close button. Next, click on the Choose Batch Folder icon and select the folder containing all the files you want to process, run the script by clicking on the Play icon, and relax while your automated assistant does the work! Because you've saved your script, it will now appear alongside the included scripts whenever you launch the FinaleScript Palette.

FinaleScript is fairly easy to learn–it's really just an automated, text-based approach to running program commands that are already familiar to Finale users. Running it can be a real time-saver, especially for batch processing multiple files.

Make Kontakt

Native Instruments' Kontakt sampler first included script-reading and -creation features with version 2, and its Kontakt Player 2 and later can also read (but not create) scripts. In addition to computer language features, the Kontakt Script Processor (KSP) lets you easily create user interface elements such as knobs, selectors, and sliders.

To get a feel for how KSP works, see **Fig. 2** or **Web Clip 2.** Both show the script that produces the following result: whenever you release a note on the keyboard, the script will trigger a second note that's a fifth or an octave above the original note. The script includes a selector interface element to allow the user to choose the preferred interval. To use this script, run Kontakt and then load up a sound to work with (I used an Electric Piano in this example, as shown in Fig. 2). Click on the Wrench icon to get into Edit mode, then click on the Script Editor tab. Next, type in the script shown in Fig. 2 (or copy and paste it from Web Clip 2) and name it EM KSP Note Release. Notice in Fig. 2 that there are four additional empty slots you can use to add up to four more scripts. A detailed explanation of the script, shown in example B in "Script Examples," is as follows:

The `declare ui_menu` command creates the menu-selector object and gives it a variable name of "interval." A dollar sign precedes all variables in KSP and indicates their function. (Note that user-defined variables can be upper- or lowercase, while built-in variables, such as those shown in the next-to-last line of example B, are always uppercase.) The two `add_menu_item` commands create the text that will appear onscreen. The `add_menu_item` has three parameters: the first identifies the ui_menu you're referring to, the second provides the text (shown in quotes) that you want to appear, and the third is the number that the menu item returns when that item is selected. The numbers chosen here (7 and 12) are those of semitones in a fifth and in an octave.

The three middle lines at the top of example B are

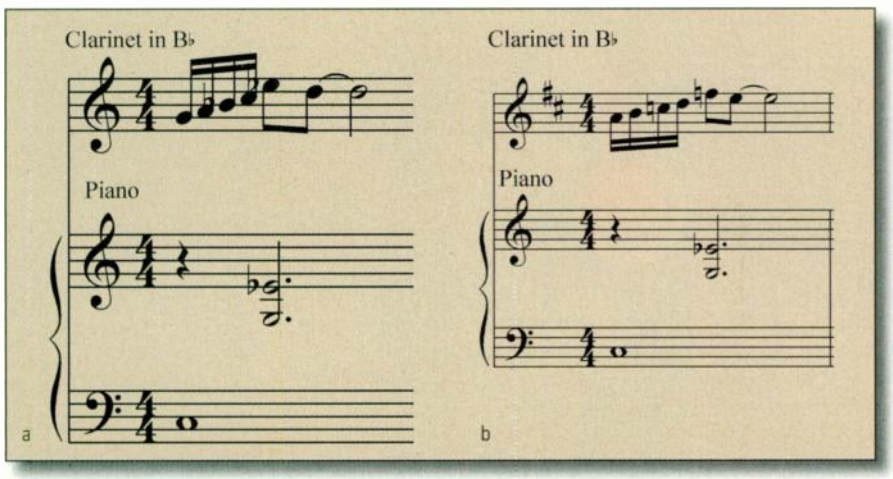

FIG. 1: Figure 1a shows a short piece of notation before applying FinaleScript to change its size, check playback of ties, be sure the clarinet part is transposed, and correct the spacing. Figure 1b shows the score after the script has been applied.

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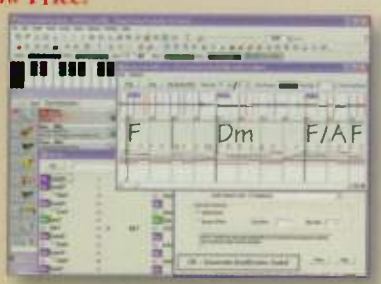

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Script Examples

Script Example A (in FinaleScript):

```
batch process folder
resize pages to 75%
check ties
execute menu item uncheck "Document/Display in Concert Pitch"
execute menu item "Utilities/Note Spacing/Apply Note Spacing to Current Part/Score"
```

Script Example B (in KSP script):

```
on init
  declare ui_menu $interval
  add_menu_item ($interval, "fifth", 7)
  add_menu_item ($interval, "octave", 12)
end on

on release
  play_note($EVENT_NOTE+$interval, $EVENT_VELOCITY, 0, 100000)
end on
```

enclosed in the on init/end on block of code. The on init code is known as a *callback*, and it runs once when the script is first loaded and initialized.

Next, create a block of code that will run every time a note is released. Here, I used a callback block called on release. For the code, see the last three lines of example B in "Script Examples," or see Web Clip 2.

When a note is released, the on release/end on block is run. The variables $EVENT_NOTE and $EVENT_VELOCITY are two of many built-in variables that you can use in a KSP script. They represent the MIDI Note Number and the MIDI Velocity (0–127) of the note that is released. The value of the selected interval is determined by the selector user-interface object. So if "fifth" is selected, the variable $interval returns the value of 7, and then adds that value to the original note from $EVENT_NOTE. In other words, if middle C (MIDI 60) were played, play_note will play 60 + 7, or 67, which is the G above middle C.

The play_note function takes four parameters: note number, Velocity, sample offset, and duration (in microseconds). So the script is playing the note that is a fifth above the note released, at the same Velocity as the original note (assuming "fifth" has been selected), with no sample offset, and lasting for one-tenth of a second (100,000 microseconds).

CAL on Call

Cakewalk Sonar also has excellent scripting support. Its language is called CAL (Cakewalk Application Language), and its scripts can work on a recorded sequence or in live performance. CAL is the most complex of the three scripting languages covered here, and there isn't much information about it within the Sonar documentation. Fortunately, there are several third-party books and Web sites that provide a fair amount of information.

CAL allows you to scan the MIDI data in your sequence and manipulate it in various ways. For example, one of the included CAL scripts will harmonize each note in a sequence with a major triad (there are scripts for other chord types as well). You'll also find an unquantize script that offsets the start time of each note by a random amount, a script that splits a track into as many as 15 other tracks according to the channel of each MIDI event, and a script that thins various kinds of controller data. The best way to learn CAL is to find a sample script that is close to what you want, and then edit it.

Note that the Run CAL menu item is hidden in the default menu layout of Sonar 6 and 7. To access Run CAL, open the Process menu and mouse over the gray bar at the bottom. You'll find a few dozen CAL scripts under the Process→Run CAL menu once it is enabled.

Scripts can save you huge amounts of time and can provide you with new features that didn't come with your software. Check out your music software and see if it has a scripting language available. If so, give it a try; you might find a new assistant to improve your work flow or discover new sounds that you didn't think your favorite program could produce. em

FIG. 2: This figure shows a Kontakt script that will add a second note—either a fifth or an octave—above the note that is played. Up to four additional scripts can be added to the slots that are marked "<empty>."

Composer Peter Hamlin teaches music at Middlebury College and performs in the electronic-music improv band Data Stream.

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Q&A: Ingrid Michaelson

Inside a MySpace success story.

Indie artist Ingrid Michaelson is doing pretty well these days. Her music has aired several times on the TV drama *Grey's Anatomy*, with her song "Keep Breathing" featured in the final emotional moments of the hit series' season finale. Her compositions also appeared on *Grey's Anatomy, vol. 3, Original Soundtrack* (Hollywood Records, 2007), an Old Navy commercial, and other film and TV projects. It seems unbelievable that a short while ago she was just another one of the millions of artists on MySpace vying for recognition, plugging away in her native New York music scene and hoping for a big break. Michaelson (www.myspace.com/ingridmichaelson) divulges how it all happened for her, and what fellow MySpacers should be doing to help build their own success.

By Fran Vincent

DEBORAH LOPEZ

>> Ingrid Michaelson's networking on MySpace.com helped lead to her music being featured on *Grey's Anatomy*, commercials, and more.

Your music has been featured on *Grey's Anatomy*. How did that happen?

I came across the artist profile of a [now] friend of mine named William Fitzsimmons. He's had a pretty good MySpace following. From the beginning, he's held steady. He put me in his "Top 8" [friends], and he wrote a whole thing about me, like "Check this girl out—she's great." And a music supervisor found me through him. That's how I got *Grey's Anatomy* and *One Tree Hill*. Now it's snowballing. So I find that aligning yourself with great artists helps, because that [music supervisor] would never have found me if I wasn't on William's page.

What is the secret to artist success on MySpace?

I think, obviously, your music needs to be good and people have to like it. That's the number one thing. There's no advice for that. Write good music. It has to be something people want to listen to. I can't really say, "This is how you do it," because there is no [one] way. It's kind of luck, really, and just being in a place where you can be seen and heard. A&R and music-licensing people are trolling MySpace for artists; that's people's jobs, and they do look and listen. So it's the luck of the draw if people come across you. I would say, put up your best songs and make your profile look really snappy. Try to have your stuff together. For me, it was a combination of luck and that they liked my music.

> Hopefully, at some point the "right person" will be there and see you.

Before your music appeared on *Grey's Anatomy*, what kind of response or interest were you receiving through MySpace?

I was just getting a few friend requests. It wasn't anything crazy. I was kind of doing the whole "If you like this person's music, you'll like my music" [email]. One out of ten people would respond and add me, and then everybody else would not really care. And now it's getting to the point where you're invading

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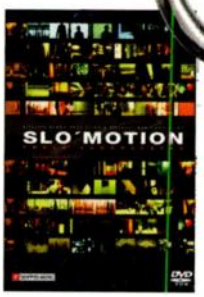

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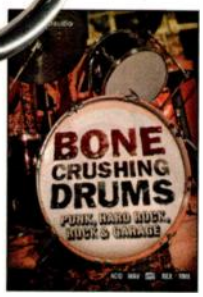

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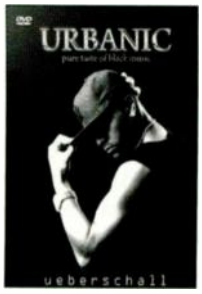

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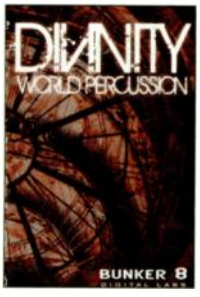

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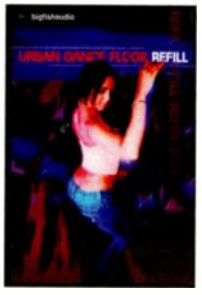

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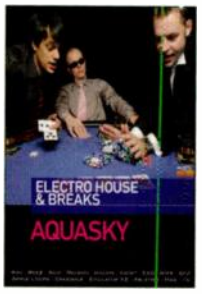

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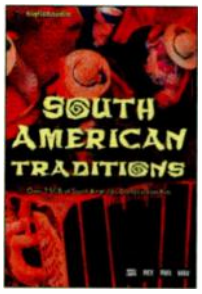

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Mackie

Tracktion 3.03 (Mac/Win)

A major upgrade for an upstart sequencer.

By Mike Levine

>> PRODUCT SUMMARY

digital audio sequencer	
Ultimate Bundle	$249.99
Ultimate Upgrade Bundle	$199.99
Project Bundle	$99.99

PROS: Good value. Excellent pitch-shifting and time-stretching. Imports Acid, Apple, and REX loops. Filter Racks offer customized routing. Thorough manual and video tutorials.

CONS: No MIDI event lists. MIDI editing a bit cumbersome. Occasional crashes while scanning loops. Audio hesitates during manual punching.

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

Mackie
www.mackie.com

ONLINE BONUS MATERIAL

Due to a slew of significant improvements and upgrades in version 3, Mackie Tracktion has become one of the better bargains in the digital audio sequencer market. Although it doesn't have the overall depth of features of its more expensive competitors—for instance, there is no notation support, no surround mixing, and limited video support—it is more than capable for bread-and-butter recording, editing, and mixing tasks, and it's very reasonably priced.

This review will focus mainly on the new features in Tracktion 3 (T3), but for those unfamiliar with the program, I'll begin with a brief overview. (For more on Tracktion's legacy features, see the review of version 2 in the November 2005 issue, available at www.emusician.com.) I tested Tracktion 3 on several computers, including a Dell laptop running Windows XP, a Mac dual 2 GHz G5 running Tiger, and a 3 GHz Mac Pro running Leopard.

T3 101

From its inception, Tracktion was designed with the idea of putting all its functions (save preference setting and file management) in a single integrated screen, with pop-up subwindows that open as necessary. A couple of brief forays into previous versions left me with the impression that its interface was a bit claustrophobic, with too many functions crammed into a small space. However, after spending a couple of months working with Tracktion 3, I've changed my mind. I've realized that its interface is actually quite logical and easy to navigate—that is, once you get used to its unique way of doing things.

One of the smartest features of T3's interface is that its main window lets you visualize the signal flow of your project in a linear fashion. You enable inputs and arm tracks on the left; record and edit audio and MIDI files in track lanes in the center; adjust volume and pan to the right (T3 has no dedicated mixer window); and add effects and routing and solo and mute tracks a bit farther to the right.

This left-to-right scheme, along with Tracktion's ample help and detailed manual, makes it easy to grasp the program's work flow, which is a good thing because Mackie has targeted this program at musicians who are recording novices.

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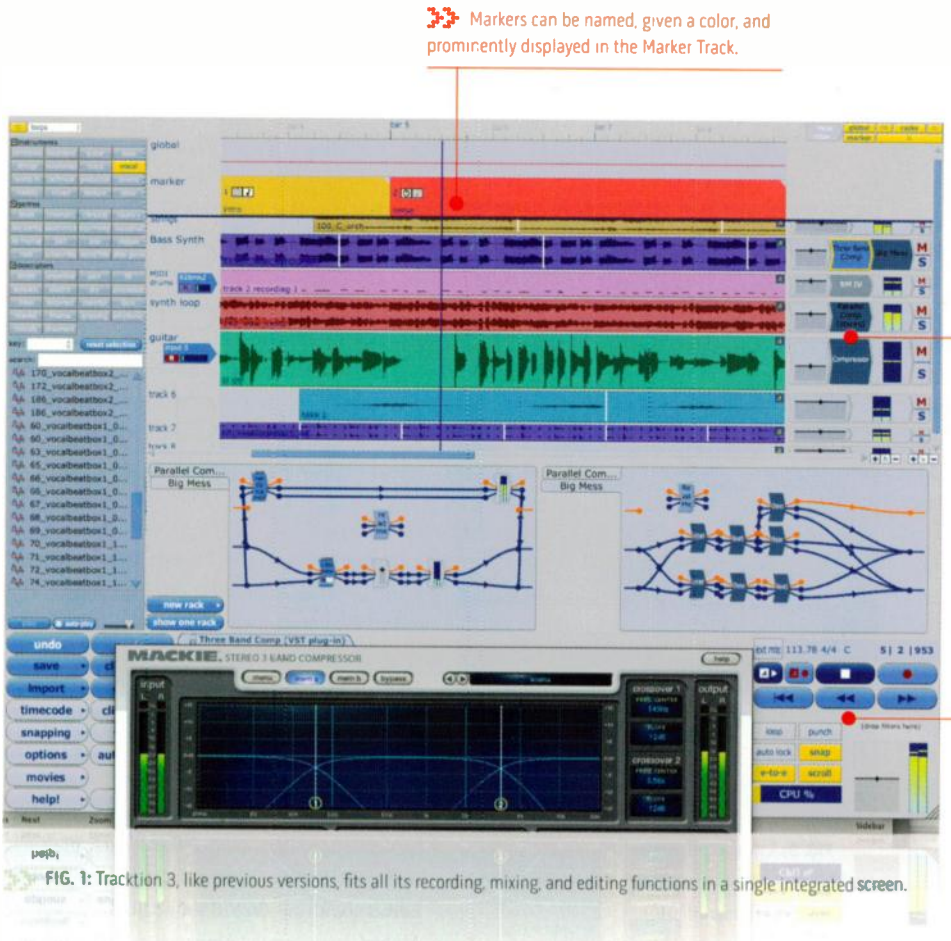

FIG. 1: Tracktion 3, like previous versions, fits all its recording, mixing, and editing functions in a single integrated screen.

That said, you could definitely do a serious project in T3 without having to resort to another program until it was time to burn your CD.

The Edit Story

The Edit Screen (see Fig. 1 and Web Clip 1), which is the T3 name for the main screen where all the recording, editing, and mixing is accomplished, is laid out as follows: On the left is the Quick Find Panel, new in T3, in which you can display loops; a browser for importing loops; markers; or the contents of the clipboard. The center section is where the tracks and their Clips—both MIDI and audio—are displayed and edited. ("Clips" is Tracktion parlance for regions.) The Timeline, Global Track (which shows tempo and time-signature changes), and Marker Track are at the top. Below the tracks is the Properties Panel, which displays information about, and allows you to change parameters for, whatever you've selected above, whether it's an audio or MIDI Clip or an effect (referred to in Tracktion as a Filter).

Each Clip can be individually edited. Tracktion has a somewhat unusual scheme for this, which uses controls on the Clip's container, rather than external tools, for editing tasks. Like so much with Tracktion, the paradigm is a bit different, but the capabilities are strong.

I did find T3 to be a bit lacking in the MIDI-editing department. Only piano-roll-style editing is available, and it's a little clunky to use. There are no event lists (you can edit parameters for individual notes in the Properties Panel), and selecting groups of notes can be tedious. That said, once you get used to its interface, you can accomplish most MIDI tasks, including deleting and moving notes, quantizing, step entry, and editing controller information.

Back to the tour of T3's Edit Screen: The far right contains the Filter Section, Tracktion's equivalent of a mixer. From here you can add Filters, change volume and pan, mute and solo tracks, and more. The order in which you place the Filters (left to right) reflects their order in the signal chain. Filters encompass everything from effects to soft instruments to aux sends and aux returns, and more.

One of Tracktion's most powerful features is the ability to set up Filter Racks (see Fig. 2), which contain a chain of Filters. You can save custom Racks—for instance, your favorite effects for your vocals or your often used instrument-effect combinations—and edit the routing

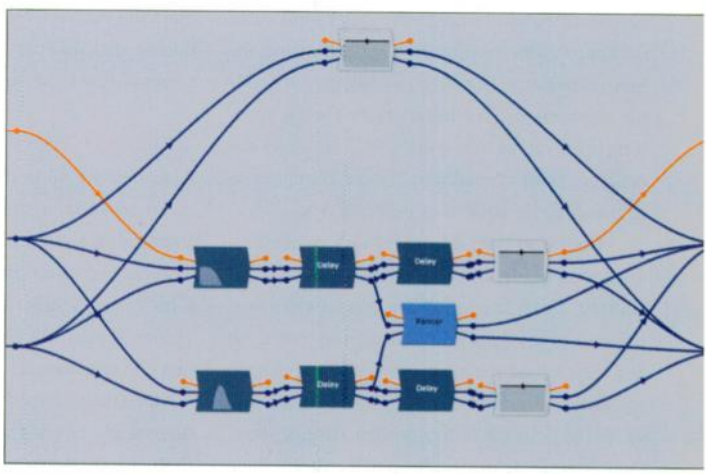

FIG. 2: The Filter Racks feature allows you to create custom-routed effects chains that you can save and recall at will.

World Radio History

through them of both audio and MIDI.

Racks have been souped up considerably in T3. You can now turn a chain of Filters on a track into a Rack with a single command. You can also do the opposite and "Unwrap" a Rack onto a track with each Filter showing up separately. And you can export and import Racks so you can share them between projects and between different users. Overall, the Filter section is different in approach from the standard software mixer, but it gives you plenty of functionality.

At the bottom right of the Edit Screen is a master section. There you can drop in master-bus Filters and access the transport controls.

Concerning the latter, I did notice that when doing a manual punch-in—as opposed to using the autopunch feature—there was a slight and potentially distracting hesitation in the playback of the audio just after I hit the record button. The autopunch feature works fine, but you must be sure to turn off the count-in in the Click Track pop-up, or playback before the punch-in point will be muted.

Looper-Duper

Perhaps the most significant change from previous versions is that Tracktion now supports multiple loop formats; it can import Acid, Apple, and REX loops. Most sequencers can import one or two formats but not all three.

Importing loops is easy: you go to the Loop Settings page, browse to your loop directory, and tell Tracktion to scan the loops. Once it's finished scanning, the loops are categorized according to their metadata and are available through the various category buttons in the Quick Find Panel (in Loops mode; see Fig. 3). Most of the time, the loop scan feature worked flawlessly, but on a couple of occasions, Tracktion crashed while scanning (both on the Mac and the PC). However, the program remembered my unsaved changes and restored my file back to its precrash state.

Tracktion 3 also features impressive new algorithms for time-stretching and pitch-shifting. By clicking-and-dragging the arrow at the end of a Clip while holding down the Alt key (Option on the Mac), you can time-stretch an audio Clip. You can also enter numerical values or adjust a slider to pitch-shift or time-stretch audio from the Properties Panel. Even fairly substantial time-stretches and pitch-shifts sounded natural and unprocessed.

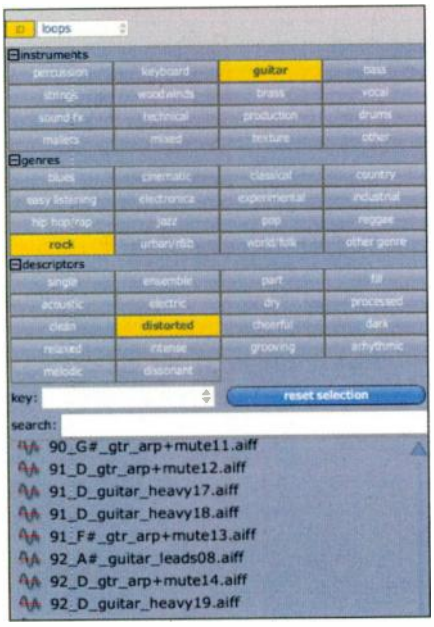

FIG. 3: A new addition in version 3 is the Quick Find Panel, which provides a loop browser (shown here), a file browser, or a marker list.

On Your Mark

Tracktion's handling of markers has been significantly upgraded. Previous versions allowed for only a handful of markers, but T3 can handle up to 999.

Markers, which can be relative or absolute from a time standpoint, are displayed near the top of the Edit Screen and, like most of the features in T3's interface, can be shown or hidden with the click of a button. You can also open the Marker List in the Quick Find Panel, which displays the markers vertically in order. When you double-click on a particular marker, the playhead jumps to that location, which is very handy.

More and More

Also new in T3 is the Folder Tracks feature. As in other sequencers, Folder Tracks let you consolidate any number of individual tracks in a single container, making track organization a lot easier. Unlike in some sequencers, T3's Folder Tracks can be cut, copied, and pasted, just like regular tracks. That means you can use Folder Tracks to rearrange song sections. Here's how: select all the tracks, put them in a folder, then cut, copy, paste, or drag verses, choruses, bridges, or other song sections to move them around. Somewhat of a guerrilla method, for sure, but it works. Tracktion's Folder Tracks also have a master volume filter, so you can adjust the cumulative volume of the tracks inside.

Space doesn't allow me to list all of T3's other enhancements, but here are a few more: improved automation curves, increased control surface support—including the Novation Remote SL—support for Intel Macs, and the ability to mute individual Clips.

All Bundled Up

Although the Tracktion 3 application is identical in the Ultimate and Project Bundles, you get a lot more loop content with the former, and a better set of plug-in instruments. The Ultimate Bundle (and the Ultimate Upgrade Bundle for Tracktion 2 owners) comes with four times as many Apple Loops, REX loops, and multitrack loops (from Sonic Reality) as the Project Bundle.

The Ultimate Bundle also comes with better versions of the included third-party plug-ins, such as Garritan Personal Orchestra T3 Lite Edition (with an 820 MB sound library), LinPlug Alpha Classic Synth (Alpha 3 version), a full version of LinPlug CronoX Sample Synth, a version of LinPlug's RM IV drum machine with 250 kits, IK Multimedia's SampleTank 2 SE (with 100 sounds) and AmpliTube LE, and Submersible Music's DrumCore TK (with 2 GB of samples)—a pretty impressive collection. Although you get video tutorials with both bundles, the Ultimate Bundle offers a whopping 4-plus hours of such content, enough to really get you going.

Getting Tracktion

Tracktion 3 really surprised me. It did almost anything I asked of it, and I found it to be quite capable as a recording, sequencing, and mixing environment for music-production situations. I'd like to see a beefed-up MIDI-editing section, a smoother manual punch-in feature, and the ability to save video and audio to movie files added to the next version. Using Tracktion requires some adjustment if you're accustomed to the typical multiwindow sequencer, but under its somewhat unconventional hood purrs a powerful program that offers a great deal of functionality at a very reasonable price.

EM executive editor and senior media producer Mike Levine hosts the twice-monthly Podcast "EM Cast" (www.emusician.com/podcasts).

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FIG. 1: The top panel of the Roland VG-99 is intuitively and ergonomically laid out. Note that the signal flow of the A and B instruments follows the flow of a typical hardware rig.

Roland VG-99

A dream machine for electronic guitarists.

PRODUCT SUMMARY

guitar synth/processor, MIDI converter, and audio/MIDI interface **$1,195**

PROS: Terrific-sounding models. Abundant guitar models and other tones. Vastly programmable. Independent control over two instrument models. Internal MIDI converter. Intuitive control panel. Plenty of I/O and controller options.

CONS: Requires divided pickup for access to models. Overdone effects on some presets.

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

Roland Corporation U.S.
www.rolandus.com

ONLINE BONUS MATERIAL

By Marty Cutler

The VG-99 leaps past its predecessors in Roland's Virtual Guitar series, the VG-8, VG-8EX, and VG-88. It adds the ability to combine two instrument models, much like a traditional multitimbral synthesizer. The VG-99's built-in MIDI converter immensely increases its sonic potential and functionality. Rather than laying out a list of features and connectors, I will focus on some of the unit's more interesting and unusual aspects, as well as changes that I have observed since the original V-Guitar was introduced (for more information, see the online bonus material at www.emusician.com).

I tested the VG-99 with my Brian Moore iGuitar, which is equipped with RMC piezoelectric pickups. The VG-99 offers settings for Roland GK-model pickups—which you mount on your guitar—and guitars equipped with built-in piezoelectric divided pickups. Setting up the VG-99 for the first time is a breeze: you simply patch your guitar into the 13-pin jack, make a few adjustments, and tune your guitar using the unit's onboard tuner, and you're ready to play.

Topographical Motions

The VG-99's top panel sports a D Beam on the left and a ribbon controller on the right (see Fig. 1). If you mount the device on a stand or set it on a desktop, you can easily engage the controllers with your hands and also engage the D Beam with your guitar neck. Moving them through the D Beam lets you manually initiate functions such as manipulating a filter, performing whammy-bar effects, or freezing the instrument's output. You can program the D Beam to respond to horizontal or vertical motion, but either way, it takes time to gain a measure of control: on occasion, my hands inadvertently traveled in and out of the field, which turned the effect on and off rather than modulating it.

The narrow ribbon-controller strip has the same set of control options as the D Beam but affords greater precision. Unless you're an accomplished thereminist, it will be easier to find discrete pitches and get precise rhythmic filter effects by tapping on the strip. Don't overlook using the two controllers together—you can perform interesting tricks such as freezing

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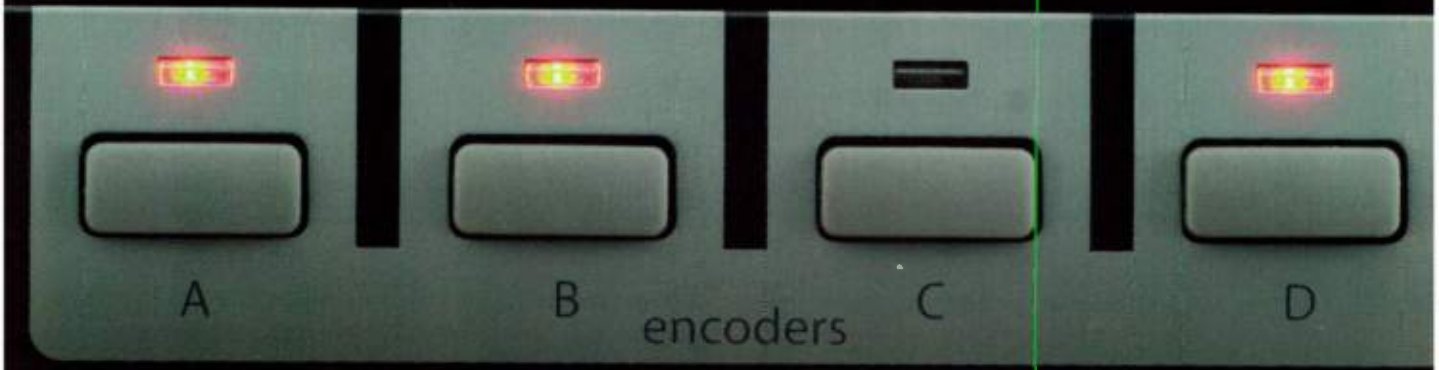

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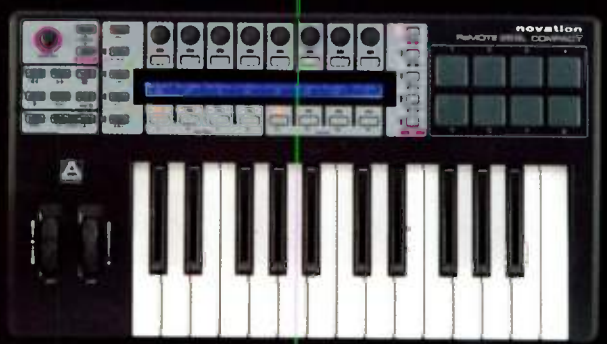

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FIG. 2: The VG-99's rear panel packs a variety of balanced and unbalanced analog audio I/O, in addition to MIDI, USB, coaxial S/PDIF, and assorted foot-controller jacks.

a chord with the beam while playing with filter cutoff or pitch with the ribbon. I am reluctant to use any effects that require me to take my hands off my instrument's playing surface, but I'll admit that the built-in beam and ribbon controllers are seductive.

> The VG-99's layout is extremely intuitive.

Buttons labeled Pitch, Filter, and Assignable appear below the D Beam and beside the ribbon. They activate the same respective functions, but they're conveniently positioned near each controller so that you can easily access them while performing. The Balance knob sits between the A and B instrument-programming buttons and the easy-to-reach Patch Level knob; all of them provide handy access to those adjustments without descending into menus.

To the D Beam's right is a large blue backlit display, and just below it, a set of knobs and function buttons; hit a button, and knob icons appear in the display. Depending on the function you've selected, another tap on the button can turn the function on or off or scroll through selections. You can adjust each function with the knobs or with an Alpha dial located to the right of the display, and the virtual knobs turn and provide a context-sensitive readout.

In addition to an array of analog audio I/O, the rear panel furnishes a coaxial S/PDIF output and a USB 1.1 jack (see Fig. 2). USB sends and receives bidirectional audio and MIDI System Exclusive. The VG-99's USB port offers more than an audio interface for the guitar; you can also use it as an insert effects processor for audio tracks from your computer. In addition, Roland provides connectors for an expression pedal, a dual footswitch, and a proprietary jack accommodating an optional FC-300 foot controller ($349). All of these controls can be programmed to send Control Change messages.

Topographical Notions

The VG-99's layout is extremely intuitive. Buttons for the A and B models run from left to right, with the signal flowing from guitar to effects to amp to mixer. Polyphonic effects are first and offer various types of overdrive and distortion that you can apply to individual strings. The results are fat overdriven or distorted guitar tones with no intermodulation between strings, with an unusual clarity absent from monophonic distortion. Next come more-conventional effects such as flanger and chorus, followed by a button that lets you set up a virtual amp. Naturally, each selected area shows up in the display, with tabs illustrating subsequent editing pages.

Above the A and B instrument buttons, the Alternate Tuning button lets you choose from 11 preset tunings and a user-programmable tuning. You are not limited to virtual 6-string instruments. One page offers 12-string, detuning (for a beating effect), and harmony settings, again including a user-programmable set. More remarkably, the alternate tunings can apply to one

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virtual instrument or both, either in tandem or independently. Better still, tunings are not restricted to guitars; any of the COSM instruments can benefit from alternate tunings, and MIDI notes will follow suit. If you want a 12-string guitar or synth tuned D–A–D–G–A–D, they're yours (see Web Clips 1 and 2).

This Year's Model

The VG-99's electric guitar models sound amazingly like their hardware inspirations. Every acoustic guitar model sounds more like a well-set-up electric-acoustic guitar with a piezoelectric pickup than a knockoff of a purely acoustic Martin or Gibson flat-top (see Web Clips 3 and 4). I have yet to be convinced by acoustic guitar models, whether they come from Roland or any of its competitors.

I found old favorites carried over from the VG-8, including Stratocasters, Telecasters, and Gibson ES 335s, as well as Variable-instrument models, which let you freely swap out instrument components such as pickups and bodies. Synthesizer models, including brass, organ, crystal, and pipe, were also on hand. Overall, sound quality is a great improvement since the days of the VG-8, no doubt because of the VG-99's 24-bit resolution (versus the VG-8's 12-bit resolution). Twelve-string guitars, for instance, take on added sparkle, brilliance, and depth.

New to my ears is an instrument model in the Guitar section called I.4, which rather accurately captures the well-defined but warm sound of a hollowbody jazz guitar. The Bass section offers two excellent instruments, Jazz and Precision. Bass sounds are a great improvement over the VG-8's, whose bass models suggested pitch-shifted electric guitars.

Among the less literal translations, the VG's sitar is rich and resonant. Though it won't fool anyone who has even a passing acquaintance with the real thing, its sparkly, animated buzz invites plenty of interesting jumping-off points for sound design. Some of the effects settings—particularly distorted tones—are applied too heavily. That's a common factory-patch syndrome, but my recollection of the VG-8 is that the effects were applied more judiciously.

New School, Old School

Old-school guitar-synth fans will probably appreciate the new GR-300 model, which offers a choice of sawtooth or rectangular wave that emulates the original instrument's hex-fuzz clipping. Most of the presets sound just as raunchy as on the original GR-300, and you'll even find a replication of the braying synth-lead sound favored by Pat Metheny and John Abercrombie. The GR-300's envelopes were not deluxe in the hardware unit, and Roland had no reason to change that in the VG-99. One cool thing about the VG-99 is that except for the attack parameter, your picking determines the envelope.

In addition to alternate string tuning and

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detuning, you can detune each of the two oscillators. Overall, the GR-300 presets favor the original's cheesy aspects, but in most cases, toning down the distortion settings and lowering the filter's cutoff frequency produced more-genteel-sounding patches (see Web Clips 5 and 6).

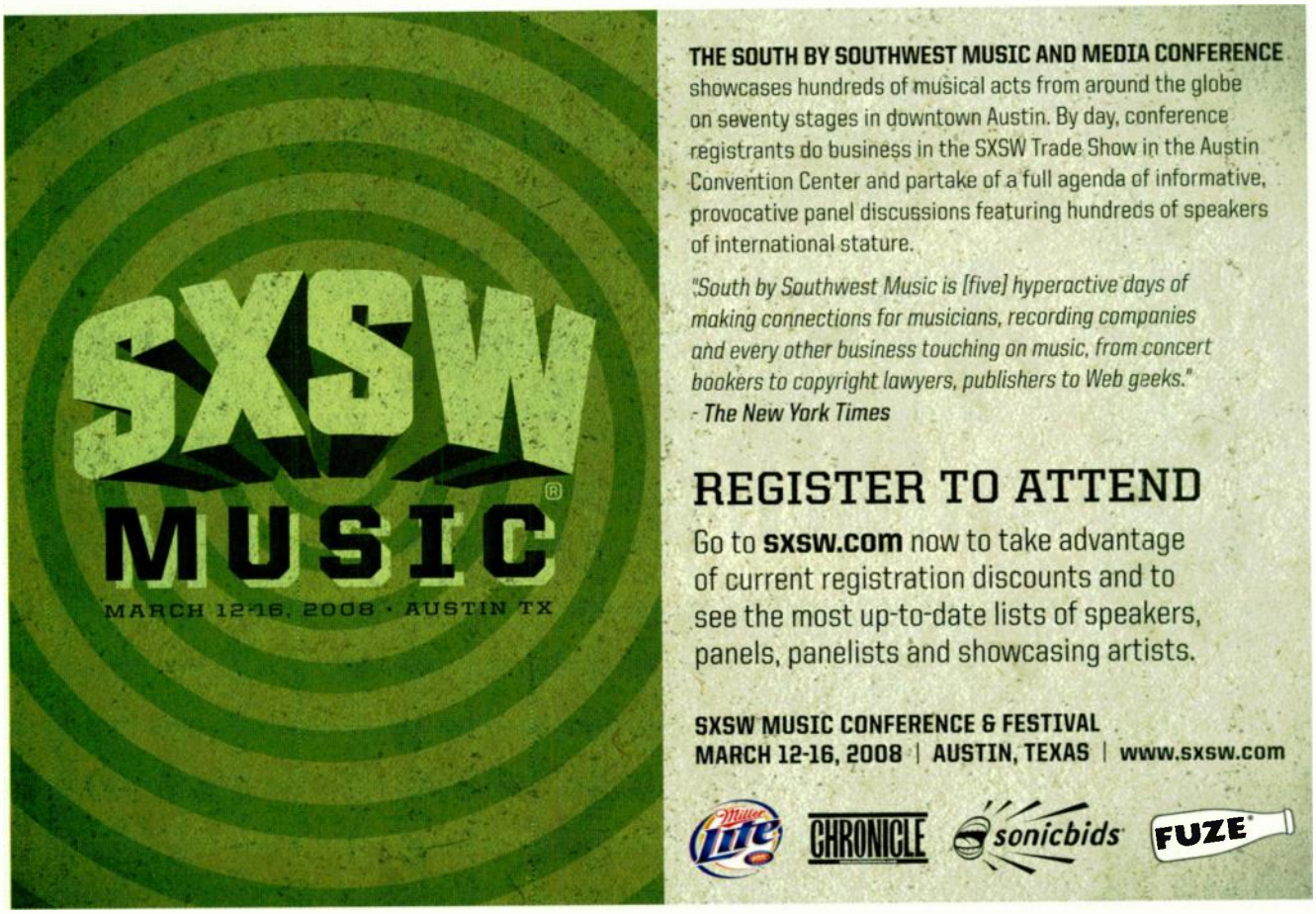
> Any of the COSM instruments can benefit from alternate tunings.

Guitar Synth or Processor?

Ever since Roland introduced the VG-8, I've argued that the device was not a guitar processor, but a guitar *synthesizer* in the best sense of the word. All VG instruments rely on the guitar's signal as an impulse for reshaping. The same is true whether you are emulating a Les Paul, Martin, Dobro, D'Aquisto, Hammond organ, or synth bass. The VG-99 blurs the distinction further—not only by modeling a vintage synth, but also by offering two simultaneous instrument models you can layer, detune, or crossfade between with your playing dynamics. The ability to layer two independent tones effectively functions just like a synthesizer's combination mode. And the equivalent of a built-in GI-20 MIDI guitar converter completely obliterates the guitar processor categorization.

The VG-99 will be a very tough act to follow—even for Roland, whose primacy in the world of guitar synths and processors is indisputable. The instrument has many levels of functionality I haven't touched on, including its built-in MIDI- and video-controller capabilities. The VG-99 is so flexible, in fact, that I half expected an addendum to fall from the well-written manual explaining how to use it to program my cable TV or call up hidden GPS features for directions. Whether you regard the VG-99 as a synth or a processor, it is a major addition to the guitarist's sonic palette and gets my highest possible recommendation.

Contributing Editor Marty Cutler no longer divides his time between multiple gigs: he subdivides it.



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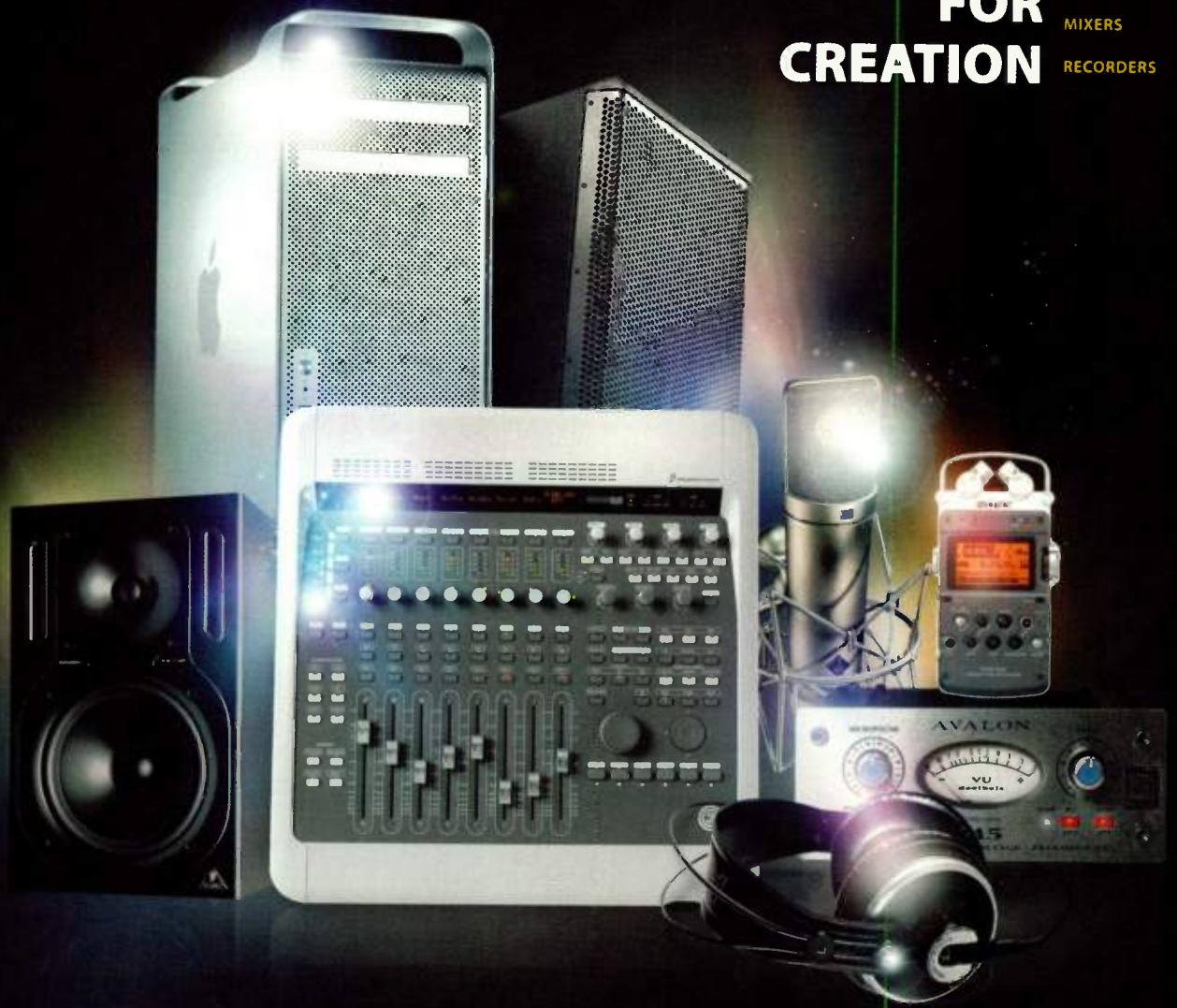

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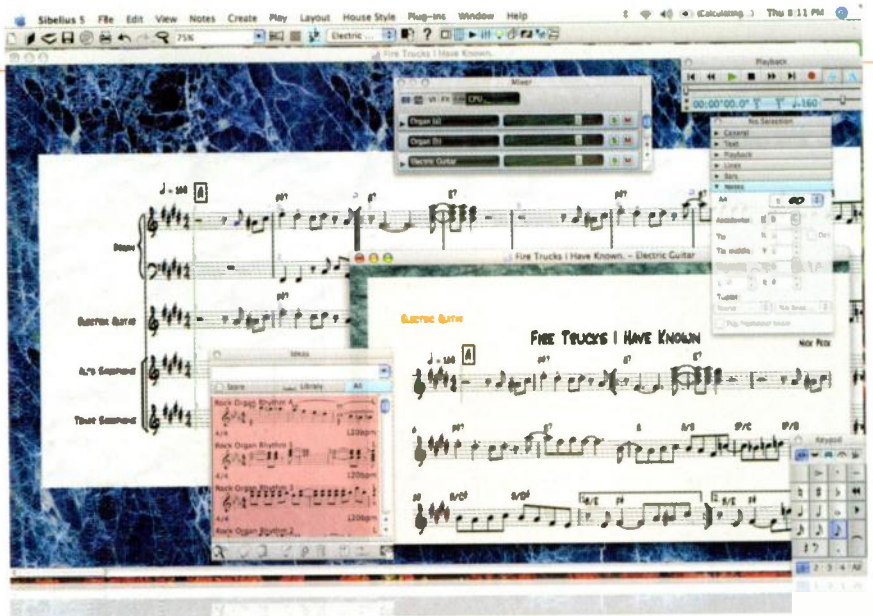

FIG. 1: Sibelius 5's modular windows can be arranged to suit your work flow. The new version includes a scrolling music view, a database of musical ideas, improved music-playback capabilities, and many other improvements.

Sibelius Software

Sibelius 5 (Mac/Win)

More features, more flexibility in this high-end notation program.

PRODUCT SUMMARY

notation software	$599 (MSRP)
educational edition	$329

PROS: Panorama mode simplifies note-entry process. Ideas window adds searchable database of musical elements. Many small improvements and additional features.

CONS: Occasional minor work-flow glitches and graphical anomalies.

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

Sibelius Software
www.sibelius.com

By Nick Peck

Sibelius Software recently released version 5 of Sibelius, one of the leading professional notation programs. A number of new features, small enhancements, and bug fixes make this a worthwhile upgrade for many existing users and also make it an even more compelling option for those looking for a new notation program (see Fig. 1). Sibelius has been a solid, well-designed, and feature-rich program for quite some time, so this version is more evolutionary than revolutionary. Note that Sibelius 5 is the first major release since Digidesign, a division of Avid, acquired Sibelius in 2006.

The Big Picture

Prior to version 5, Sibelius's work flow was oriented around the Page view, which allowed for an integrated, free-form approach to note entry and layout. However, the constant vertical scrolling that Page view required made for a disorienting process, especially when working with a large number of staves. Page view is still available, but the new Panorama mode shows notation as a continuously scrolling line of music. This approach makes for faster and more streamlined note entry (see Fig. 2). Having a scroll wheel in your mouse is particularly useful in Panorama mode, as it rapidly scrolls the material left and right.

Panorama integrates well with other Sibelius features. For example, during note entry you can use the Focus On Staves command to selectively hide the instruments you are not working on, and then switch to Show All Staves to add global expressions and markings. And once you've completed entering notes, you can return to Page view to tweak the global layout of the master score, then go into Parts view to make the inevitable layout adjustments to individual parts before printing. Panorama's contribution to this improved work-flow paradigm is the most valuable part of this upgrade.

What's the Idea?

The Ideas Hub, a searchable database of musical snippets for use when the creative well runs dry, is another significant new feature (see Fig. 3). An Idea can consist of anything from a single note to many bars of music, and

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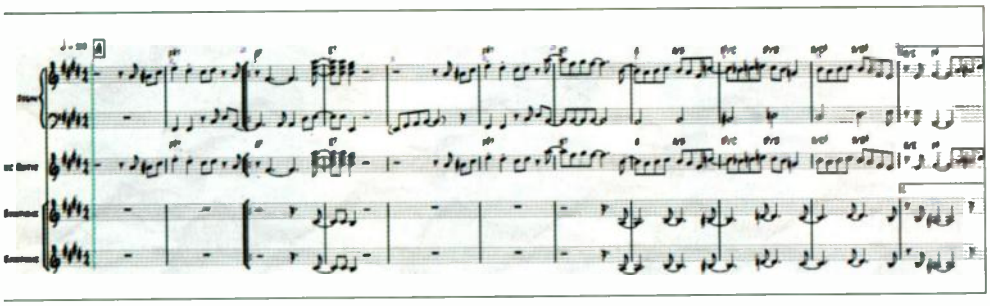

FIG. 2: The new Panorama mode allows for a scrolling, linear approach to note entry that can speed up the scoring process.

it's simple to add new Ideas to the database or to place elements from the Ideas window into your score. You can tag Ideas with a wide variety of keywords, which allows you to search for snippets based on tempo, mood, instrumentation, and so forth. Each Idea is assigned a color-coded genre: country is yellow, jazz is pink, Motown is beige, and so on.

Sibelius comes with 2,000 Ideas to get you started. You audition Ideas through the playback engine as if they were a separate score. You can also trade Ideas with other users via the Idea Import feature.

The Ideas Hub is a terrific resource for beginning composers who want to learn their craft by rearranging prewritten elements. I could see this as being very useful in teaching composition—the teacher could generate a series of Ideas, then give them to students to mold and shape into new compositions. If you're the type of composer who comes up with riffs or melodic fragments that you like to assemble into larger works, the Ideas Hub will really appeal to you.

Potent Playback

Sibelius's playback capabilities have improved in a number of ways. The program now ships with Native Instruments Kontakt Player 2 and Sibelius Sounds Essentials, a large "best of" sample library with elements taken from Sibelius's Rock and Pop Collection; Garritan Personal Orchestra, Marching Band, and Jazz and Big Band; and Tapspace's Virtual Drumline. If you have other sample libraries or external instruments that you'd prefer to trigger, Sibelius can route playback to VST and AU instruments as well as to external MIDI devices.

Sibelius 5 also has greatly improved internal mixing features, allowing for individual channels for each staff in the score. It also supports group faders, four effects buses, and a master volume fader. Each of the effects buses has spaces for two VST or AU effects in series, and the master fader has spaces for four. Unfortunately, you can't select the effects directly from within the Mixer window—you must go to the Playback Devices window and then select the Effects tab, which is cumbersome. Once you've routed the plug-in, though, you can bring up its editing window by clicking on its parameter button within the Mixer window.

Sibelius 5 also supports offline rendering, so if you've loaded it up with more samples and plug-ins than your computer can handle, you can still render a clear, pop-free audio file outside of real time.

> Panorama mode really enhances and completes the primary work-flow paradigm.

Looking Good

Sibelius has added a very cool alternative to its existing Inkpen family of fonts. Reprise is a set of nine fonts that you can use to create lead sheets with a handwritten look; the font's appearance is a bit thinner and curvier than Inkpen's bold style. There's also a new Opus font that includes note names within the note heads—great for teaching beginners. Composers and teachers of early or avant-garde music will appreciate 2 new Opus fonts that add 200 more music symbols oriented to those particular genres.

For percussionists, wind players, and other musicians who have to switch instruments during the performance of a piece, Sibelius 5 has added the Instrument Change window. It's as easy to change instruments as it is to assign the initial instrument to the staff—simply select a point in time on the staff, then choose Instrument Change from the Create menu, and the Instrument Selection window appears. Select the new instrument, and Sibelius places a text instruction to the musician to change instruments at the previous instrument's last note. It also automatically handles any transpositions needed.

Lay It Out

There are other improvements in the flexibility and layout of page numbers, bar numbers, and rehearsal marks. Bar numbers can now be moved and adjusted like any other text object, and you can either add a letter to a numeral (1A, 1B, 1C) or replace a numeral with a letter. Rehearsal marks now have similar capabilities. Page numbers can have formats such as i, ii, iii or A, B, C and can be hidden or shown on each page separately.

Sibelius 5 has a series of new functions aimed at simplifying the creation of cues within parts. To create a cue for a part, simply copy

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FIG. 3: The Ideas window is a searchable database of musical snippets useful for kick-starting your compositional process.

the cue passage to the clipboard, select the target part, and choose Paste As Cue from the Edit menu. Sibelius handles the transpositions and makes a cue-size part in the appropriate location with the cued instrument's name. Additional commands allow Sibelius to suggest cue locations and to check cues to make sure they correspond with the original parts. This series of routines simplifies a rather tedious task for those who orchestrate and prepare parts.

Sibelius's look and feel is mostly unchanged from previous versions—a user who is upgrading will feel immediately comfortable, though a few commands have moved to different menus. There have also been well over 100 other small improvements, such as additional plug-ins, additional layout options buried in the enormously detailed setup windows, and additional text styles and note head types. Mac owners will be glad to know that Sibelius 5 is Universal Binary compliant, so it will blaze along on current-generation Intel Macs.

Room for Improvement?

If there is room for much improvement in Sibelius 5, I'm not sure where it would be. There are a few small, niggling things you might run into. For example, if you accidentally delete a rest, it will make the rest invisible within your score, except when you arrow through it in Note-entry mode, at which point it will appear again. Certain staff expressions get duplicated visually on the master score while others don't, though all of them print out correctly. (The Sibelius team points out that this is standard notation practice.) The positioning of these system objects can be defined from the System Object Positions item in the House Styles menu. As mentioned earlier, you should be able to select effects within the Mixer window rather than having to go to a separate setup window to do so.

Also, the display shows a green, 1-pixel bar that represents audio-playback position. At first I thought it was a graphical bug. If you find the playback line distracting, you can hide it by clicking on View/Playback Line. You can't grab the green line to select playback position but have to do it from a timeline slider in the playback window instead.

Small gripes aside, this program feels complete. It can notate virtually any style of music you throw at it, and it does so smoothly and precisely. I have yet to find a notation task I could not accomplish with Sibelius. The only limitations have been in my learning to navigate the deeper intricacies of the application. Though EM sends me a lot of products to review, I had paid for my upgrade to Sibelius 5 and was so impressed that I asked EM to let me review it.

Sibelius 5 is a complete, deep, and very fluid application that makes every aspect of what can be a mundane task a pleasure. Versions 3 and 4 were already quite superb, but version 5's Panorama mode really enhances and completes the primary work-flow paradigm. If you own version 3 or have upgraded to an Intel Mac, upgrade to version 5 immediately. If you own version 4, the answer to the upgrade question is really determined by how you like to work, but Panorama is still a pretty strong argument to do so. If you use another notation program, the decision becomes murkier still—learning curves for this class of software can be steep, but Sibelius is certainly worth a close look. And if you are using a pencil and paper, run, don't walk, to your nearest music-notation software emporium and check out this program.

Nick Peck is a composer/keyboardist/sound designer/engineer in the San Francisco Bay Area. His newest album, Fire Trucks I Have Known, *has just been released. Visit http://underthebigtree.com or email nick@underthebigtree.com.*

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FIG. 1: The Fender VG Stratocaster offers several modeled electric and acoustic guitars, and you can also play it as a normal Stratocaster.

Fender

VG Stratocaster

Multiple guitars with the turn of a knob.

By Michael Cooper

>> PRODUCT SUMMARY

modeling electric guitar	$1,699

PROS: Excellent playability. Variety of great electric guitar tones. Alternate tunings instantly available. Requires no external adapters or special cables.

CONS: All but Normal and 12-string tuning modes exhibit bleed-through of secondary pitches. Unconvincing acoustic guitar models. Fluttery reverb. Expensive.

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

Fender
www.fender.com/vgstrat

ONLINE BONUS MATERIAL

The VG Stratocaster is the result of a collaboration between Fender and Roland, incorporating the latter company's VG modeling technology and GK pickup in an American Series Stratocaster. Roland's digital processing provides the VG Stratocaster with models of Stratocaster and Telecaster electric guitars and five acoustic guitars. With the turn of a knob on the instrument's pickguard, VG processing also makes five alternate tunings available for each modeled guitar. A Normal mode bypasses all VG processing (including alternate tunings) and allows you to play the instrument as a regular, all-analog Strat.

Pickup Lines

At first glance, the VG Stratocaster looks like a normal American Series Strat (see Fig. 1). It has three Alnico single-coil pickups, a 5-position blade switch for switching pickups, rotary tone and volume controls, a maple neck with either a maple or rosewood fingerboard, a synchronized tremolo bridge, a 3-ply parchment pickguard, and chrome hardware. Closer inspection, however, reveals a Roland GK bridge pickup and Mode and Tuning rotary controls mounted on the pickguard.

The stepped Mode control selects from four categories of modeled guitars—Stratocaster, Telecaster, Humbucking Pickups, and Acoustic—or bypasses all modeling in Normal mode. Stratocaster mode is modeled after an ash-body Strat fitted with three single-coil pickups, whereas Humbucking Pickups mode is modeled after a Stratocaster with two humbucking pickups placed in the neck and bridge positions.

When the guitar is not in Normal mode, the GK pickup is the only active pickup and the blade switch selects the desired virtual pickups for the currently selected modeled guitar (see Fig. 2). Because the guitars in Telecaster and Humbucking Pickups modes don't include a middle pickup like a traditional Strat, two of their blade-switch settings activate redundant neck- and bridge-pickup selections. Switching to blade-switch positions 2 and 4 selects the normal and modeled Strats' middle pickup along with bridge and

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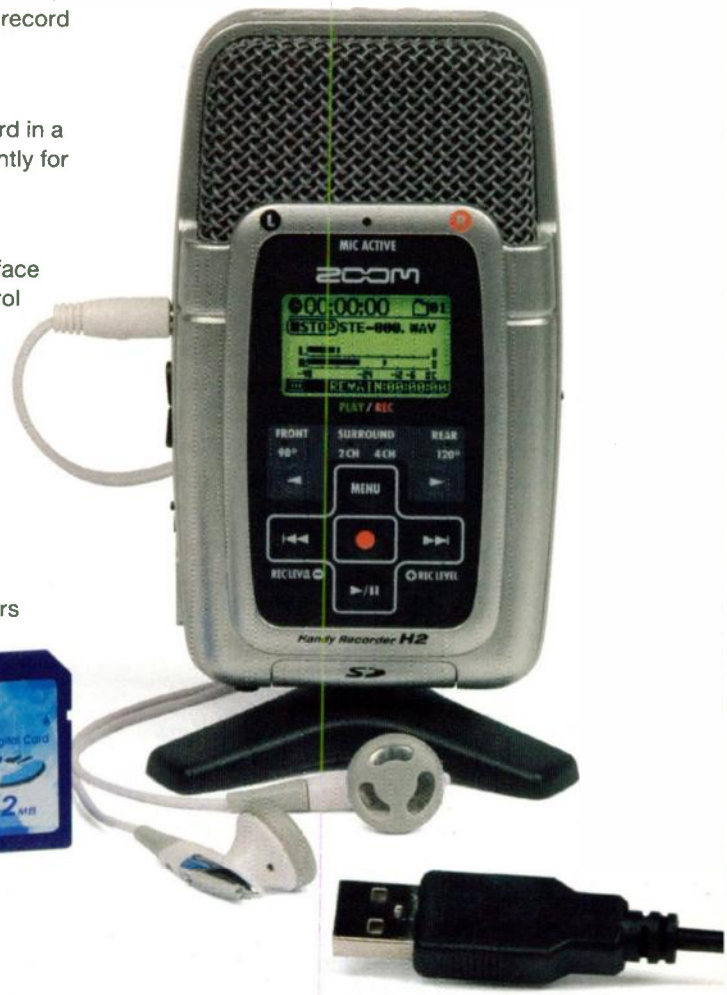

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neck pickups, respectively.

Acoustic mode presents a special twist. In this mode, the five blade-switch settings each recall a different modeled acoustic guitar, and the instrument's tone control adjusts the amount of built-in reverb (its lowest setting turns reverb completely off). None of the electric guitar modes feature reverb.

The Tuning control has six switch positions that either activate five alternate tunings in turn or render normal tuning. The alternate tunings include Drop D (low E string tuned down a whole step), Open G, D Modal (strings tuned to D, A, D, G, A, and D from bottom to top), Baritone (tuned like a baritone guitar), and 12-string. (To see how each string is tuned in each tuning mode, see the specifications table online at www.emusician.com.) If you tune your guitar differently than standard tuning, the alternate tunings will be transposed by the same amount.

> The results sounded absolutely phenomenal.

No Muss, No Fuss

All VG processing is built in, with no external interfacing required save the usual ¼-inch TS instrument cable used to plug the guitar into an amplifier, a direct box, or a preamp. Unlike a MIDI guitar, the VG Stratocaster imposes virtually no tracking latency.

The instrument requires four AA batteries to power its digital processing (guitar models and alternate tunings). Rechargeable NiMH batteries yield about 10 hours of operation, whereas disposable AAs provide a bit less. A blue power-status LED on the guitar's pickguard is constantly lit when an instrument cable is plugged in and battery reserves are high. The LED flashes when the batteries are running low on juice and goes out when the batteries are completely drained. If your batteries go dead and you're caught without fresh replacements, you can still play the VG Stratocaster in Normal mode like a regular electric guitar.

Fender deliberately chose battery power for the VG Stratocaster so that musicians wouldn't be tied to cumbersome and easily misplaced proprietary adapters or cables. This arrangement makes the instrument extremely easy to use. The battery is under load only when an instrument cable is plugged into the guitar, so removing the cable when the instrument is not in use preserves battery life.

The VG Stratocaster comes with a hardshell case. You also get a tremolo arm, a 10-foot instrument cable, an adjustable guitar strap, and an owner's manual.

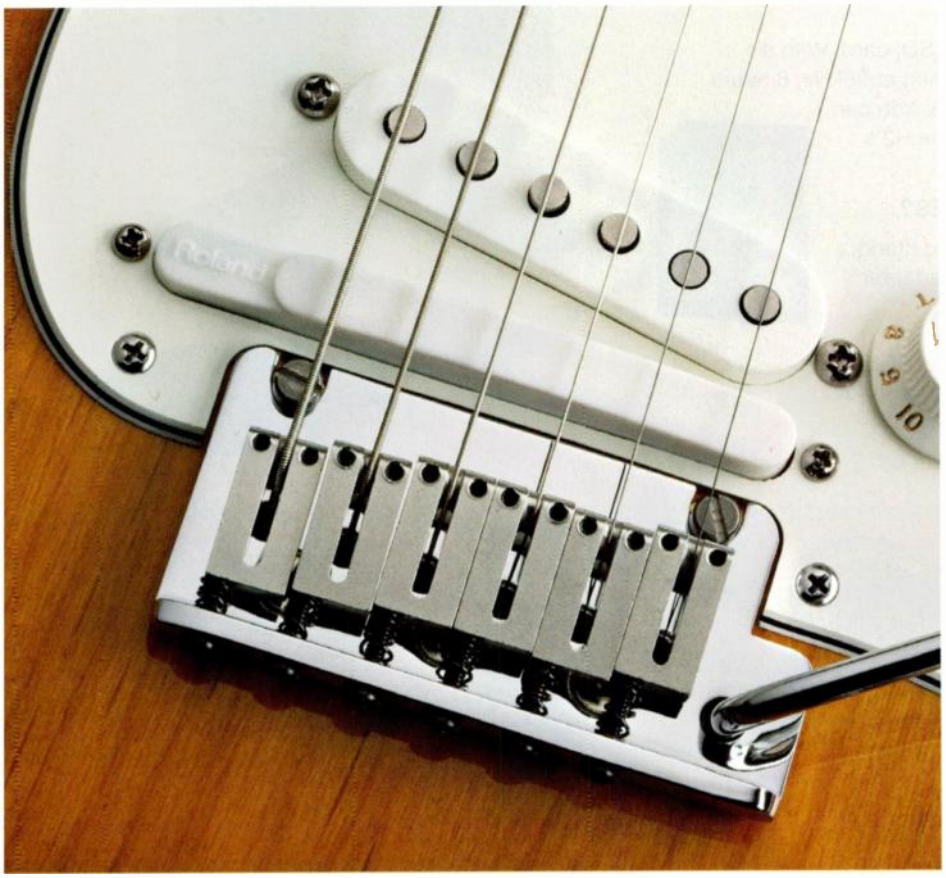

FIG. 2: Whenever you engage any of the VG Strat's modeled guitars, it bypasses the three single-coil pickups in favor of the Roland GK pickup mounted near the bridge.

Axe to Grind

First and foremost, the VG Stratocaster is a high-quality musical instrument. Guitarists will appreciate its good intonation and fast action. My review unit (which featured a rosewood fingerboard) had no problems with fret buzz anywhere along its neck, and the trem arm didn't throw off tuning with vigorous use.

Minutes after receiving it, I put the VG Stratocaster to use in a country-music recording session that was already in progress. With the instrument in Stratocaster mode, set to its virtual bridge pickup and 12-string tuning, I plugged into the DI input of an SSL XLogic Alpha Channel channel strip and let 'er rip. When I double-tracked slow-hand arpeggios, panned the two tracks hard left and right, and added stereo chorus to taste, the results sounded absolutely phenomenal. Check

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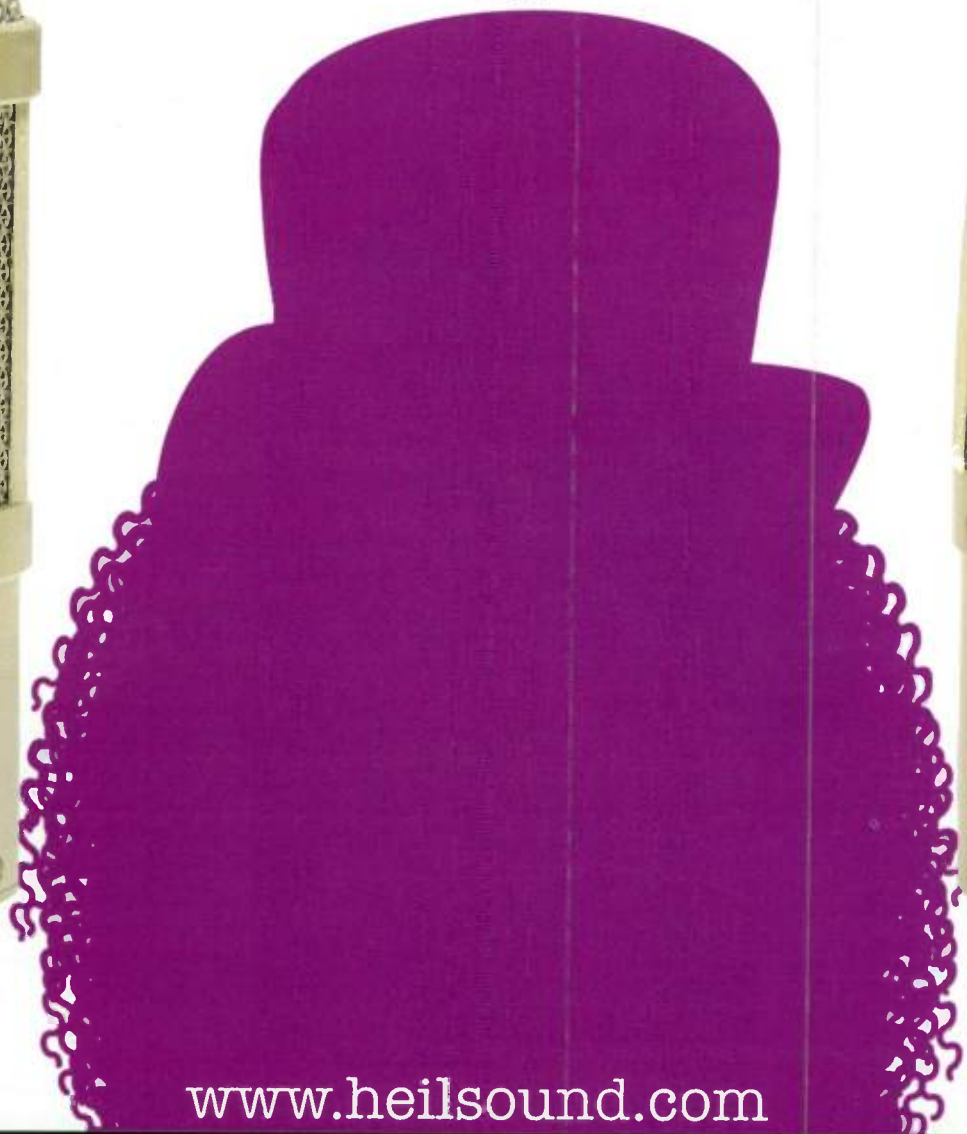

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out Web Clip 1 to hear the VG Stratocaster played in Normal, Stratocaster, and 12-string tuning modes.

I often fight induced 60-cycle hum while recording with my vintage Strat in my control room (this is a common problem with guitars that have single-coil pickups). The VG Stratocaster's Strat model not only provided a classic, clucky tone that I immediately loved, but also was immune to hum and gave me instant access to alternate tunings without changing string tension. You won't have to worry about fret buzz when using VG tunings that drop a string's pitch a whole step. That said, the VG Stratocaster's alternate-tuning modes had other problems I will discuss shortly.

Playing through a Roland MicroCube guitar amp miked up with a Royer R-121 ribbon mic, the VG Stratocaster delivered excellent rock tones in Normal, Stratocaster, Telecaster, and Humbucking Pickups modes. Relative levels for the normal and three modeled electric guitars were fairly close to equal, which should aid live performers switching between modes midsong (see Web Clip 2).

You can argue about how close Fender came to achieving realistic models of the included electric guitars, but which particular instruments do you compare them to? No two instruments sound exactly alike, especially after they age. From the outset, Fender researchers avoided modeling the VG Stratocaster after any particular instrument and aimed instead at emulating the basic tonal qualities inherent in the product lines being modeled. For the electric guitars, at least, they succeeded.

The five modeled acoustic guitars, on the other hand, sounded nothing like the real thing. Depending on the model, the acoustic guitars sounded either pinched and cutting, muddy, or merely like a DI'd electric guitar (see Web Clip 3). All exhibited an electronic quality that decried their "acoustic" label. The reverb in Acoustic mode was also disappointing, exhibiting a fluttery tail. Far less critical but nonetheless counterintuitive, the two brightest acoustic guitar models were assigned to the blade switch's neck-pickup position.

On a happier note, you can easily access the VG Strat's battery compartment on the back of the guitar's body without using any tools. Inside the compartment is a double-sided cradle that lifts out for quickly exchanging the batteries. It took me only about a minute to do so.

Let It Bleed

During songwriting sessions, I found it inspiring to have alternate tunings available at the flick of a switch. However, the Drop D, Open G, D Modal, and Baritone tuning modes all had problems with secondary pitches bleeding through. Using these digital tunings, I could often hear the real pitch of the string being voiced along with its processed pitch, albeit at a lower volume. The bleed-through pitch was generally most audible in modeled-Strat mode (see Web Clip 4).

The pitch bleed was mostly a problem when it formed a dissonant interval with the

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> I was inspired to have alternate tunings at the flick of a switch.

modified pitch, such as when playing a string whose pitch was dropped a major second interval by using a particular tuning mode. For instance, D Modal tuning dropped the B string's pitch to an A, which clashed with the original pitch of the B string bleeding through.

Strangely, if I played the guitar's B string in Open G tuning mode without muting the other strings, I could hear the D Modal tuning's pitch for that string (which is a whole step lower) bleed through. Inexplicably, muting the unpicked strings silenced the bleeding note (see **Web Clip 5**).

On rare occasions in Baritone tuning mode, doing palm mutes on the VG Stratocaster's low E string briefly and randomly produced the string's true pitch (E) instead of its processed pitch (B).

Mixed Results

I almost rated the VG Stratocaster a 2 for Value, given the instrument's high price tag vis-à-vis its unconvincing acoustic guitar models and the pitch-bleed problems that plague most tuning modes. However, the pitch-bleed problems might not be noticeable during live ensemble performances when using, for example, Humbucking Pickups mode. More important, the normal and modeled electric guitars all sound great in both Normal and 12-string tuning modes, and the instrument's playability and ease of use are excellent.

If Fender (or Roland) can fix the pitch-bleed problems in a future generation of VG Stratocasters, it will have a runaway hit on its hands. Until then, value-minded studio musicians might balk at the high price for an imperfect instrument. But for those who don't use alternate tunings and just want a versatile electric guitar that plays well, the VG Stratocaster has a lot to offer.

EM contributing editor Michael Cooper is the owner of Michael Cooper Recording in Sisters, Oregon. Visit him at www.myspace.com/michaelcooperrecording.

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The Focusrite Saffire Pro 26 offers eight line inputs on the front panel, which override the mic inputs on the back when a plug is inserted.

Focusrite

Saffire Pro 26

A sophisticated multichannel FireWire audio interface.

>> PRODUCT SUMMARY

multichannel FireWire audio interface
$699.99

PROS: Clean mic preamps; good audio quality overall. Internal mixer for low monitoring latency during tracking. Dual headphone outputs can have somewhat independent mixes. Expandable through ADAT I/O ports.

CONS: Onscreen mixer and control panel difficult to read and not very intuitive to operate. Documentation reasonably complete but scattered in too many places. Fussy about external clock synchronization.

	1	2	3	4	5
FEATURES				■	
EASE OF USE		■			
AUDIO QUALITY				■	
VALUE				■	

Focusrite
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ONLINE BONUS MATERIAL

By Mike Rivers

Windows and ASIO are strange bedfellows—for example, a program that uses the ASIO device-driver model can talk to only one unit at a time. So I was pleased to hear that Focusrite has designed its Saffire Pro series of multichannel FireWire audio interfaces so that up to three can be combined to theoretically provide as many as 78 inputs and outputs for a Windows-based DAW (depending on the computer and other bandwidth-limitation factors). The series also plays nice with Mac OS X, which natively supports multiple, simultaneous ASIO devices.

The top-of-the-line Saffire Pro 26 accommodates sampling rates from 44.1 to 192 kHz. Also available is the Saffire Pro 10, which tops out at 96 kHz and has fewer connections (more on this shortly). Power is supplied by the FireWire bus or a lump-in-the-line power supply with a sturdy, locking connector.

Software drivers and the SaffireControl Pro virtual control panel and mixing console are provided for Windows XP SP2, 64-bit XP, Media Center, and 32- and 64-bit Vista. On the Mac side, the minimum requirement is OS X 10.3.3, though the manual says "may require updates." As one who flies on the trailing edge of technology, I tested the Saffire Pro 26 using Windows XP on a laptop with a 1.2 GHz Pentium 4 CPU and 256 MB of RAM.

Gozintas and Gozoutas

Both Saffire Pro models offer eight mic preamps with gain controls and clip LEDs on the front panel and XLR connectors on the rear panel. The 48V phantom power is switchable in two banks of four channels.

Eight front-panel line-input jacks override their corresponding mic inputs when a plug is inserted. Line inputs 1 and 2 can be switched to become high-impedance instrument inputs for things like electric guitars. You also get a S/PDIF coaxial input, MIDI In and Out/Thru (switchable), and two FireWire 400 ports. Each audio input has a corresponding output, and the analog outputs are grouped in pairs.

The Pro 26 offers some extra goodies, including a switchable highpass filter on each mic/line input, a low-impedance (300Ω) switch for mic inputs 1 and 2, and polarity (phase)

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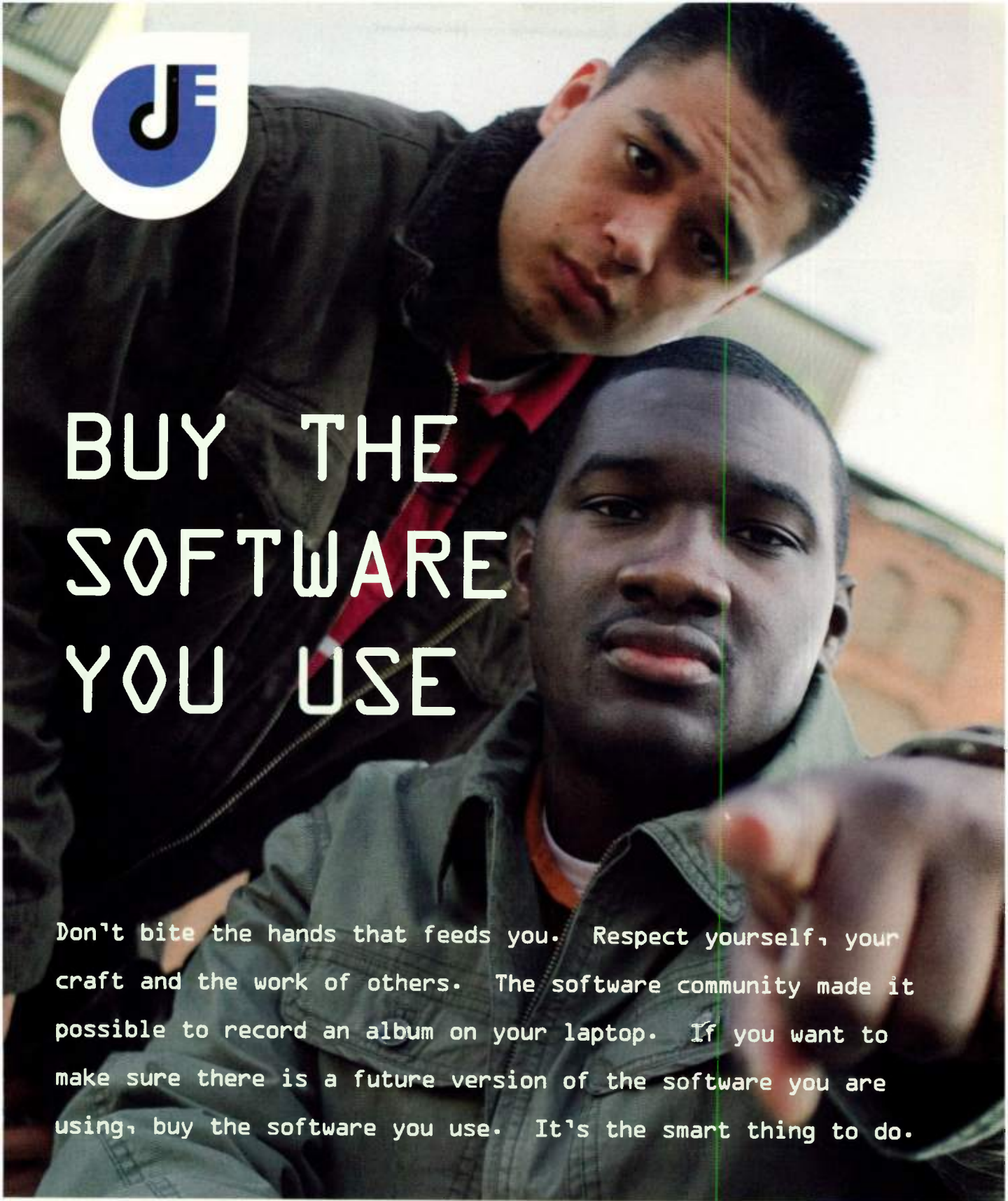

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In addition to eight XLR mic inputs, the Saffire Pro 26 provides two ADAT ins and outs, S/PDIF in and out, MIDI In/Out/Thru, two FireWire ports, and word clock in and out on BNC connectors.

reverse on input 1. A button on the software console converts line inputs 5 and 6 to insert jacks for channels 1 and 2. Two ADAT inputs provide 16 additional channels at 44.1/48 kHz or 8 channels at 88.2/96 kHz using the S-Mux protocol, which combines 2 channels for each data stream at the higher sampling rates. Finally, there's a word-clock input and output.

The Monitor volume control is digital with 1 dB increments, causing zipper noise when you spin it. Also, there's quite a bit of hash in the outputs while the Saffire is starting up, so you'll want to power up your monitors last. That's always a good policy, but not everyone does it.

The operating levels are in the professional range, with a maximum output level of +20 dBu. At maximum input gain, –45 dBu into the mic preamp corresponds to full-scale record level (0 dBfs), which is about 5 dB more sensitive than many other mic preamps in its class. Quiescent noise at full gain is –75 dBfs, which is pretty good considering that it's relative to a +20 dBu analog output level.

The Saffire Pro retains all its analog I/O at all sampling rates, but at higher rates, functionality and digital I/O is reduced. At 88.2/96 kHz, you lose an ADAT input and output to the S-Mux protocol. At 176.4/192 kHz, all ADAT I/Os and the mixer are unavailable, so you also lose direct input monitoring.

Mixmaster

An important feature of the Saffire Pro series is its digital mixer, which is controlled by the SaffireControl Pro software. When tracking, you can monitor all the inputs and a stereo mix of recorded tracks with substantially less latency than when the input source must take a detour through the computer. The mixer retains its current settings when disconnected from the computer, so it can serve, for example, as a keyboard mixer on a gig, though its controls are limited.

> The Saffire Pro's audio quality is very good.

Normally, when using the Saffire Pro for tracking, you'll want to take advantage of the mixer. In Hardware Monitor mode, however, the analog inputs are routed almost directly to the analog outputs (they do go through A/D and D/A conversion), without passing through the mixer. This is useful if you prefer to use a hardware mixer for monitoring or mixing live to a 2-track recorder with more control than you have with the SaffireControl Pro mixer.

Under Control

The main act in the SaffireControl Pro software is the virtual mixer (see **Fig. 1**), which provides eight faders and pan controls with tabs to select which group of inputs they control (analog, ADAT1, ADAT2, or S/PDIF). Each of the four stereo outputs has a slider to adjust the balance between the input mix and DAW playback; a volume control (linkable to the hardware Monitor knob); Mute, Solo, and Dim buttons; and a switchable 12 dB output pad to fix the pesky "my outputs are too hot for my speakers" problem. The S/PDIF output has only an input/DAW balance slider.

The Control Panel section lets you specify the sampling rate and sync source, save and recall setups (mixer level and pan settings, sampling rate, and sync source), and, in a multi-unit configuration, select which Saffire Pro the console is controlling.

You can also tell the software to keep the Control Panel display on top of other open windows and eliminate the input-mixer display. I think the other way around—removing the less-often-used configuration buttons and leaving the mixer—would be more useful.

The sampling rate must be set from the Control Panel; the Saffire Pro doesn't adopt the rate set in the DAW program. ASIO and FireWire buffer size are adjusted from a separate control

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FIG. 1: The SaffireControl Pro software provides onscreen control of the digital mixer and many other features.

panel that is not conveniently accessible from SaffireControl Pro; it must be opened as a separate program. ASIO buffer size can be adjusted on the fly, but the FireWire buffer size cannot be changed while SaffireControl Pro is active.

In Use

The Saffire Pro's audio quality is very good; its mic preamps are transparent and reasonably quiet. Because I most often record acoustic music that isn't very loud, I appreciated the extra 5 dB of gain over some other preamps I have. It's usable gain, too. Sure, you can hear hiss when you turn the knob all the way up, but the signal-to-noise ratio is what counts, and that's quite acceptable.

The Pro 26's highpass filters are 3 dB down at 100 Hz, 10 dB down at 60 Hz, and 23 dB down at 30 Hz, so they should do a good job of keeping rumble out of your mics. (I didn't have enough rumble in my mics to really verify this.)

There's no metering other than a clip LED, which comes on a mere 0.2 dB below the onset of both analog and digital clipping. As a result, it's important to set the gain conservatively and watch your DAW meters.

It took a while to get the hang of using the onscreen mixer. It's functional, but with more than one bank of inputs, it can get pretty confusing. Focusrite calls the mixer "low latency" rather than "no latency," and low it is. A trip from the mic in to the headphone out takes 2.3 ms at 44.1 kHz and 1.6 ms at 96 kHz, considerably faster than the typical 5 to 10 ms latency that occurs running through a well-tweaked computer (see the sidebar "The 2 ms Latency Conspiracy" for more on this).

I checked out the ADAT connections using a Mackie 800R 8-channel mic preamp. In addition to verifying the ADAT inputs' functionality, it also offered the opportunity to compare the Saffire Pro preamps with those of the Mackie, which I'm quite fond of.

It was really a toss-up. They sounded a little different, but it was hard to put a finger on the difference, and I never had a clear preference for one or the other regardless of the mic or program source. This wasn't a pure analog comparison, because each signal path went through its own A/D converters, which almost certainly contributed to the small difference in sound.

Working with the SaffireControl Pro console was downright clumsy. Tiny screen fonts made legends hard to read, and it was difficult to tell at a glance whether a button was pressed or not. The sliding pink band around the pan knob to indicate its position made little sense to me. Why not just make the practically invisible scribe line on the pan knob big enough to see easily? With no way to label the faders, I often grabbed the wrong one, or the right one in the wrong bank. Moving any mixer knob produced

THE 2 MS LATENCY CONSPIRACY

You're probably aware of the golden rule of mic placement: avoid picking up a sound source with two mics at unequal distances. When those mics are mixed, the difference in arrival time results in a degree of phase shift—and therefore cancellation—at the frequencies directly related to the time difference. This is called "comb filtering" because the frequency response of the system looks (sort of) like the teeth of a comb.

The same thing happens when listening to your own voice on headphones, because there are two paths from your vocal cords to your eardrums: the one through your throat and head and the one through the latency-delayed headphones. Your voice will sound odd to you because it's being comb filtered inside your head.

You'll sound normal to anyone else listening to the same headphone mix or the control room speakers, because they are hearing your voice via only one path, not two. So when a singer questions the sound of their voice in the phones, they might not be nuts.

Some singers are really sensitive to this effect, some don't notice, and some run the headphone volume so high that the acoustic sound is swamped out and the comb "teeth" are negligible. Sensitive folk-music divas almost always give a better performance when not worried about how their voice sounds, and a good performance trumps technology anytime.

The monitoring latency through the Saffire Pro is in the range where it can notch out frequencies that give a voice much of its character, around 430 Hz, 860 Hz, 1,290 Hz, 1,720 Hz, and so on. Try it yourself and see if you can hear the change in your vocal character as you adjust the headphone volume.

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zipper noise, which got annoying after a while.

Hardware Monitor mode disconnects the inputs from the mixer, but there is no indication on the Control Panel that you're in that mode. More than once, I forgot that I had Hardware Monitor enabled and wondered why the mixer faders didn't work. Perhaps it would make sense to switch to the "no mixer" (192 kHz) display when in this mode.

There are many ways to not get sound out of this gadget, and I think I found most of them. A more intuitive user interface would be very welcome. With a few extraneous buttons left over from a previous firmware version, the SaffireControl Pro display is due for a makeover, so I hope there will be some improvements.

My biggest gripe is with the documentation. The only manual is a PDF file on the installation CD. The Focusrite Web site contains additional information in the form of an addendum to the manual, a FAQ with useful supplemental information, and release notes for the current drivers, but you have to know it's there and then hunt for it. The Saffire Pro is a many-faceted interface that deserves a complete and well-written reference manual. Focusrite assured me that it's working on pulling the pieces together, and there should be an updated manual by the time you read this.

The Kitchen Sync

In addition to its internal clock, the Pro 26 can sync to an external word clock through its BNC input, either of the two ADAT inputs, or the S/PDIF input. However, the device can be a bit fussy about external synchronization. For example, the sync signal must be present before you select it.

Also, if you were using ADAT sync when shutting down the Saffire, it "remembers" that. The next time you fire it up, if you don't have the ADAT input connected, it won't sync up until you switch back to internal sync, at which point the Saffire Pro disconnects and goes searching for the FireWire connection again. More than once, this apparently hung up the FireWire bus and I had to restart the computer in order to get things going again.

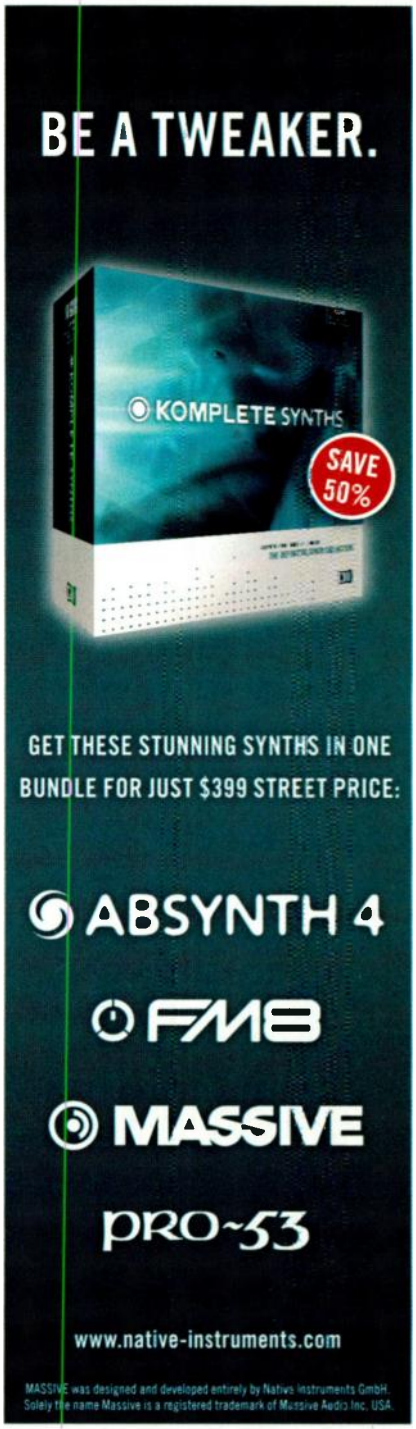
> Working with the SaffireControl Pro console was downright clumsy.

I heard frequent pops when syncing the Pro 26 to the 800R ADAT output. With this configuration, I also had occasional sync drop-outs, which meant I had to restart the whole kit and caboodle. Switching the Saffire to its internal clock and syncing the 800R to the Saffire's word-clock output worked fine. If you have two ADAT input sources connected, they'll need their word clocks synchronized, so things could get complicated without a master clock generator or distribution amplifier.

Summing Up

The Saffire Pro 26 is an impressive unit with a lot of bang for not many bucks. Low price aside, it's not really an entry-level product. You need some experience in order to get the most out of it. The Pro 26's greatest potential is as a remote recording interface that can be expanded with the addition of more Saffire Pros as needed, though if I needed to mix that many mics in a room full of fussy musicians with headphones, I'd prefer to do it on a real mixer with real hardware controls. Still, the Focusrite Saffire Pro 26 is hard to beat for the price.

Mike Rivers has recorded albums for Rounder, Folkways, Folk Legacy, and other labels, as well as programs for public radio and field recordings for the Smithsonian and the Library of Congress. He is the author of The Last Mackie Hard Disk Recorder Manual *(Cafe Press, 2004).*



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However, it also requires memorizing the locations of your favorite patches. Fortunately, the unit has a quick-access bank, which allows you to recall your 16 favorite programs and setups with one button press.

Four data knobs work in conjunction with a 3-way knob mode switch to give you a matrix of 12 knob functions. These functions include acting as MIDI continuous controllers; controlling the zone's main, layer, split, and rhythm levels; adjusting the effects settings; and setting the rhythm track's tempo. Each user setup stores and recalls patch, split, and effects settings and mix levels.

A series of dedicated mode buttons is designed to let you quickly turn reverb and other effects on or off, as well as assign layers and split points. Another series of buttons is reserved for editing, transposition, and key- and Velocity-range selection. In the middle of the panel are two rows of eight buttons that are used to select patches, effects algorithms, and rhythm tracks. For patch selection, the top row selects the category (piano, strings, pads, and so on), while the bottom row selects the variation. An automatic layer/split function makes creating layers and splits a fast and easy process. These 8 × 8 groupings make it quick to audition multiple patches within the same category.

The rear panel is equipped with all the outputs that you would expect: a ¼-inch headphone jack, a pair of ¼-inch TRS line outs, ¼-inch sustain and continuous-controller inputs, a USB port for interfacing directly to PCs, and MIDI In/Out/Thru (see **Fig. 2**).

Sounds Like . . .

Sounds are, of course, what a digital piano is all about, and the SP2X delivers in this department. The flagship sound for the instrument is Kurzweil's Triple Strike Grand Piano. This sample set is used for eight patches, including a bright hard-rock sound and a slightly detuned ragtime sound. The straight-up stereo grand and concert grand patches are the standouts here. The samples are rich, subtle, and even across the keyboard, although you can hear slight timbral differences at boundaries between samples.

Overall, the voicing is moderately bright to my ears. The high treble keys, which can be troublesome in some piano sample sets, sound realistic, without any stretching of samples played beyond their believable range. My only complaint is that the loop section in the bass strings becomes noticeable when holding a single key down for longer than 4 or 5 seconds and listening carefully. However, in a real-world playing scenario, this would rarely happen.

Many of the electric piano sounds are pretty darn good (see **Web Clips 1 through 4** to hear examples of several presets). Fagen Phaser is a credible imitation of the Steely Dan Rhodes sound, and Old Sly Rhds has a bit of touch-sensitive funky mid-range bite and a nice Velocity-driven timbral shift. Big Red Wurly sounds authentic to me,

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FIG. 2: The SP2X's back panel provides a host of I/O options.

The SP2X has a USB port for communication with a Windows computer.

The ¼-inch stereo headphone jack makes the unit ideal for practicing in a quiet studio.

if you adjust the mod wheel to bring in some Wurlitzer tremolo. None of them sound good when pushed beyond the range of the original instruments, but if you play them appropriately, they get the job done well.

If classical organ is your thing, Pipe Organ is a huge, rich, all-stops-out organ sound drenched in reverb. Jazz organ doesn't fare as well: Ballad of 3 Bar is the best of the

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bunch, with a Leslie speed simulation on the mod wheel. The sound can work if organ is an occasional part of your bag of tricks, but if you are relying heavily on organ sounds, you should look for a device particularly suited to that task.

Orch Pad and Film String are both lush, deep string pads well suited to filling space in an arrangement. Williams Brass or Brass Section could be useful for a keyboardist filling in parts for a horn section, but neither is a perfect substitute for the real thing. I really liked the beautiful choir pad sound of Bright Voices, and Old Lead had me dusting off '70s-era Genesis riffs.

The SP2X also has a small but well-chosen set of percussion sounds. Studio Drums 1+2 gives you everything you need to sketch out a rock track, and Virtuoso Perc offers a nice variety of ethnic and hand percussion. Dual Marimba and Vibes both provide nice-sounding and useful impersonations of the real instruments.

> The hall and chamber reverb effects are particularly good.

In Effect

Kurzweil is especially proud of its 24-bit effects, stating that its DSP algorithms are of superb quality for products in this price range. The unit offers two simultaneous effects per program: a reverb and an additional effect. The reverbs include the usual rooms, chambers, and halls. The additional effects include chorus, flange, delay, compression, distortion, filter (an auto-wah), Lazerverb (a spacey, echoey, metallic reverb), and "misc." The misc effect is context sensitive; on the piano patches, it creates a detuned effect, and on the Hammond patches, it simulates the Leslie speaker.

In keeping with the idea of simplicity of design, you can't adjust any parameter on the effects except wet/dry mix—what you hear is what you get. Fortunately, the designers focused primarily on creating common, fairly generic effects. The hall and chamber reverb effects are particularly good, with a nice bloom and a clean, smooth tail.

I Got Rhythm

The SP2X's rhythm tracks are a useful aid for practice and composition. These 64 patterns

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are organized into 8 musical genres: ballads, Latin, country, and so forth. The tempo knob allows you to change the tempo of each groove from 40 to 280 bpm. There's also a metronome that lets you choose between four time signatures.

The rhythm patterns have been chosen to create a well-rounded collection, but like the effects settings, they are fixed. I wouldn't plan on using them in performance, but as a quick-and-dirty practice tool to help get your timing together, they can't be beat.

Get Connected

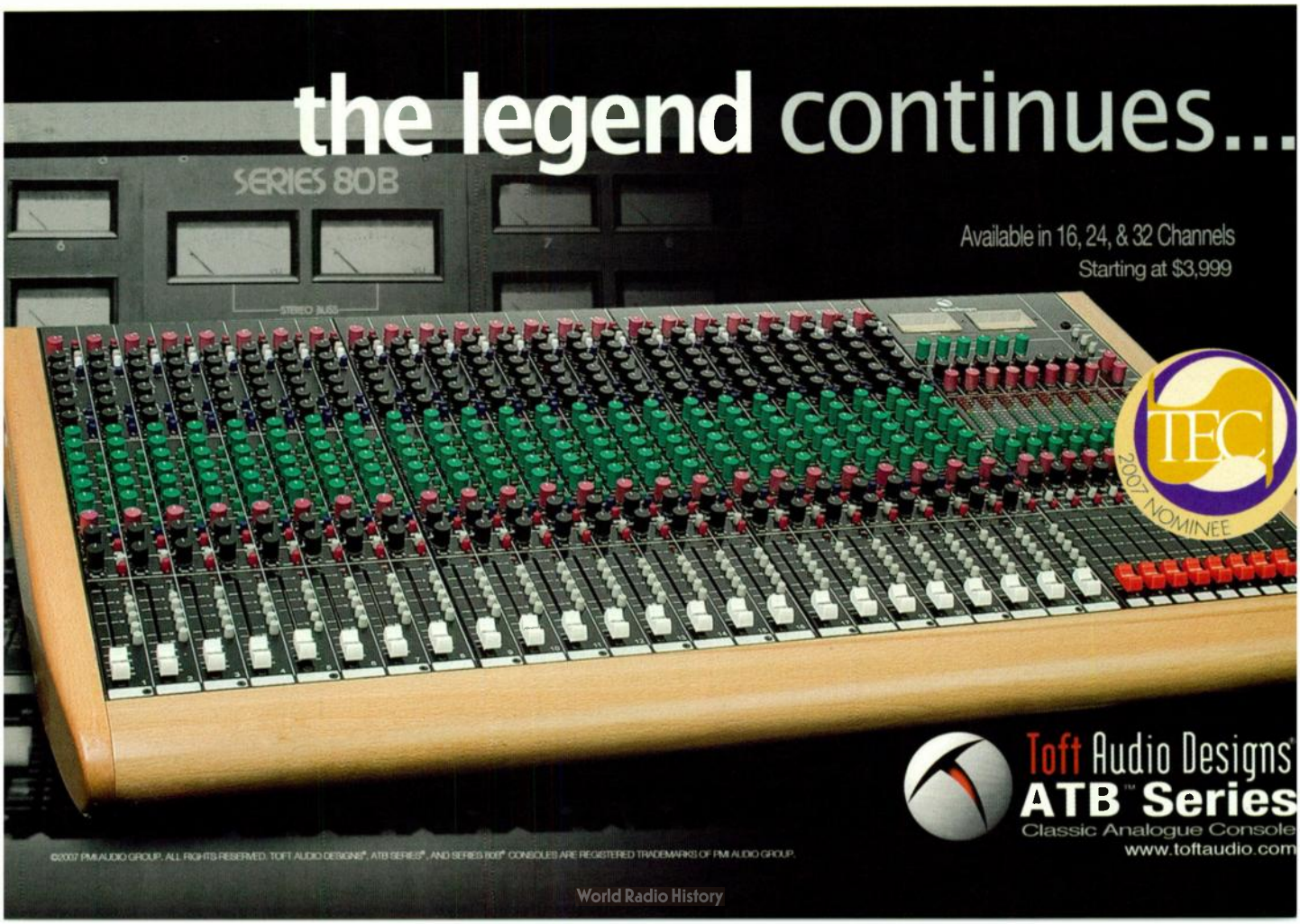
The SP2X has a USB port, making a direct connection with PCs—no MIDI interface required. Unfortunately, drivers are available only for Windows XP at this time, so if you are a Mac user, you will have to use the SP2X's MIDI ports with an external MIDI interface instead.

The SP2X can double as the primary MIDI controller for a modest live rig or studio. The unit supports 16 setups, which are individual configurations of internal sounds and/or MIDI control of external sources. Each setup has four zones, each with its own key and Velocity range, transposition, and MIDI channel. You can also assign the continuous-controller value for each of the four data knobs on a per-setup basis. Programming the setup is hampered a bit by not having an LCD. If you require more-flexible MIDI control and programmability, as well as a more detailed display, you might look to Kurzweil's PC series of keyboards instead.

> The SP2X is built for gigging.

I love reviewing products that rock. The Kurzweil SP2X is a really well-designed piece of gear that is tailor-made for the gigging keyboard player. The weight and form factor, quality action, useful sound set, simple interface, and modest price make for an appealing product. Add the rhythm tracks and metronome, and you also now have an effective practice and compositional tool. Though the absence of an LCD can be a detriment in some situations, it also keeps things focused on simplicity, which is what this keyboard is all about. If you are in the market for a new gigging piano, the SP2X is worth your consideration.

Nick Peck is a vintage-keyboard freak living and gigging in the San Francisco Bay Area. His newest CD, Fire Trucks I Have Known, *is now available. Visit http://underthebigtree.com or email nick@underthebigtree.com.*



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World Radio History

QUICK PICKS

ALESIS

TriggerIO

By Markkus Rovito

Although seasoned programmers can do amazing things with the tiny rubber squares in most drum pad arrays, traditional drummers prefer the feel of a full-size kit. To suit their desires, Alesis has introduced the TriggerIO ($149), an electronic percussion interface that routes as many as a dozen ¼-inch drum triggers to a computer or sound module through its USB 1.1 and MIDI Out connections. The TriggerIO allows drummers to take advantage of the massive sound libraries in software instruments and to edit drum parts as MIDI sequences rather than audio recordings, without a lot of finger tapping and avoiding the aggravating task of connecting an electronic drum kit's brain to your rig using old-school MIDI ports.

Check Your Brain at the Door

The TriggerIO is a bit larger than a VHS cassette case and is substantially weightier, with a sturdy metal chassis built for gigging. Four rubber feet anchor the bottom, and a Kensington lock provides a security option. Instead of a graphic LCD (which would increase the price considerably), the display comprises only a 3-character LED and ten indicator LEDs. You navigate settings with four buttons: Function Up, Function Down, Value Up, and Value Down.

The bundle includes FXpansion BFD Lite 1.5 (Mac/Win), which runs standalone or as an AU, DXi, or VSTi plug-in and supplies nearly 1 GB of sounds organized into 12 kits. Installing the TriggerIO and the software was straightforward and required no registration or drivers.

The TriggerIO's ¼-inch jacks accept TRS plugs for dual-zone drum pads or TS plugs for single-zone pads. Jacks 1 through 8 are labeled Kick, Snare, Hi-Hat, and so on, allowing you to connect your pads to correspond with the TriggerIO's presets. The unit also has a dedicated hi-hat pedal input and an input for increasing and decreasing values with a dual footswitch.

Audition

I connected the TriggerIO to a Roland HD-1 kit and a MacBook Pro and then booted BFD Lite. Because the TriggerIO defaults to BFD Lite's assignments, the drum sounds were correctly assigned to the kit's corresponding pads. The TriggerIO automatically detected the hi-hat pedal input and assigned open and close commands. Although latency wasn't a problem, I wasn't happy with the kick pedal's response, but that probably resulted from the HD-1's unorthodox spring action.

BFD Lite's presets include rock, electro/dance, and jazz/brush kits. They bear the same high-quality sounds and Velocity layers that earned BFD 1.5 so much respect, but there's just not enough content. If you're serious enough to own an electronic pad kit and a TriggerIO, you'll really want the enormous content of BFD or another large drum library.

I also tested the TriggerIO using plug-ins within Ableton Live, Apple Logic Pro 8, and Apple MainStage. The TriggerIO provides 20 presets (also called kits), but only 5 of them are preprogrammed (for BFD Lite, General MIDI drums, GM percussion, and 2 chromatic scales). To create the kits I wanted in the DAW environments, I had to edit some other presets.

The TriggerIO's onboard menus let you assign a MIDI note and channel to every trigger of each kit, specify a MIDI Program Change for each kit, and set global parameters affecting all triggers across all kits. Global parameters include Gain, Velocity Curve, Threshold, X-Talk (which attempts to correct false triggering), Retrigger, and Trigger Type; all of them determine how triggers will react when engaged. To change global settings, you scroll to the parameter type with the Function buttons and then adjust the setting with the Value buttons. Adjusting individual triggers is similar, but you engage the trigger first. To save your settings, scroll through the menus until you return to the Kit menu.

Curtain Call

The TriggerIO provides plenty of programmability, but it's ironic that a product bridging electronic drum kits to the modern world of software appears stuck in a '90s programming paradigm. Although most MIDI controllers include editor-librarian software to simplify editing and to save and load presets, the TriggerIO does not. Fortunately, you can transfer SysEx to and from a computer using third-party software. However, beyond initially plowing through a potentially tedious editing process to set up some go-to presets, the thought of frequently going back to create new kits is daunting.

Nonetheless, the TriggerIO is a unique product that delivers on its promise and performs well at an attractive price. Using electronic drum pads to play software instruments over USB definitely will excite many drummers. However, my trigger fingers are still crossed for a much-needed software update to improve the TriggerIO's programmability.

The TriggerIO connects electronic drum pads to software and MIDI instruments. With an optional third-party drum mount, you can attach it to a cymbal stand.

Value (1 through 5): 4
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TASCAM

FireOne

By Rusty Cutchin

Tascam and Frontier Design have come up with a nifty little audio/MIDI interface that also controls your DAW software. The FireOne ($399) gives you tactile interaction with your software, two mic preamps with phantom power, lots of function keys to help automate software tasks, and 24-bit resolution over FireWire, all in a sleek and compact tabletop pod.

Wheel of Functions

The device's most striking feature is a large control wheel on the right side. The top panel and sides of the FireOne are contoured to fit the wheel, which is surrounded and lit from underneath by a multifunction LED. The light can pulse to the beat of your project when your application sends MIDI Clock information to the FireOne.

Above the wheel are standard transport buttons. A Shift key to the left of the wheel adds functionality to the transport keys—for example, Shift + Rewind returns the playback position to 0—and to eight function keys (labeled F1 through F8) arranged in an arc above the wheel.

You can usually reassign whatever job the function keys perform (after you mate the unit with your software) in your recording application. The wheel itself is enormously useful for functions such as scrubbing, particularly when you're locating an edit point in a sequence.

Interface Facts

The FireOne's top panel hosts channel A and B pots that provide 53 dB of gain to two rear-panel XLR/¼-inch combo jacks. The knobs are accompanied by LEDs that indicate an active signal and overload on each channel. Below each Gain pot are buttons for 48V phantom power and –20 dB pad. Below the Pad buttons are level pots for the two front-panel headphone jacks.

The middle section of the FireOne features a Mix control for setting the balance between incoming mic or instrument signals and tracks playing back from the computer. A Line Out level pot controls the signal at the rear-panel output jacks (for feeding powered speakers or a mixer). The section also contains LEDs that indicate signals at the unit's FireWire and MIDI ports.

The rear panel provides a footswitch jack and a slider switch that determines whether channel B gets its signal from the combo jack or a high-impedance guitar-in jack on the front panel. The rear panel also has a receptacle for the included 12 VDC power adapter, but because the unit is bus powered, you may not need the adapter unless you use the smaller 4-pin FireWire cable with a laptop.

Into the Fire

The included CD contains a control panel application and drivers for Cakewalk Sonar (Win), MOTU Digital Performer (Mac), and Steinberg Cubase or Nuendo (Mac/Win). On a Mac (OS X 10.4 or later), you change most FireOne settings from within the audio application. On a PC (Windows XP SP2 or later), you control the FireOne mostly from its control panel.

After all the drivers are installed, you need to check the included PDF file FireOne Application Notes for specific instructions on configuring your audio app to access all of the FireOne's features. The documentation covers all the basics but is short on details. For example, the manual doesn't make it clear that you must do a custom install on a Mac to get the drivers for Digital Performer (DP) or Cubase/Nuendo.

After I got the installation sequence down, got my master keyboard communicating with the FireOne and the Mac, and had the correct control surface assigned in DP, I couldn't get the FireOne's transport controls to work until I eventually cycled its power. A little extra care with the manual would have helped considerably.

Wheeling Around

Once the setup issues were sorted out, the FireOne worked flawlessly for me, and I found it a very handy tool that will remain part of my permanent setup. The unit's jog wheel was great for pinpointing a video frame or audio sample in DP. I could rest my right hand on the wheel and use my fingertips for transport functions to move quickly from edit to edit.

I also found the mic pres to be clean and quiet, and would have no fear of using them for vocal sessions in the studio or in the field. The mix control worked well for live recording, and as a guitar player, I liked the convenience of the front-panel jack for getting ideas down quickly. The FireOne works great as a desktop enhancement to a computer-based recording studio, or as a laptop accessory for field recordings and songwriting.

Tascam's FireOne is a sleek, bus-powered audio/MIDI interface and control surface with a host of programmable function keys, transport controls, and a large, illuminated jog/shuttle wheel.

Value (1 through 5): 4
Tascam
www.tascam.com

The TriggerIO connects electronic drum pads to software and MIDI instruments. With an optional third-party drum mount, you can attach it to a cymbal stand.

Value (1 through 5): 4
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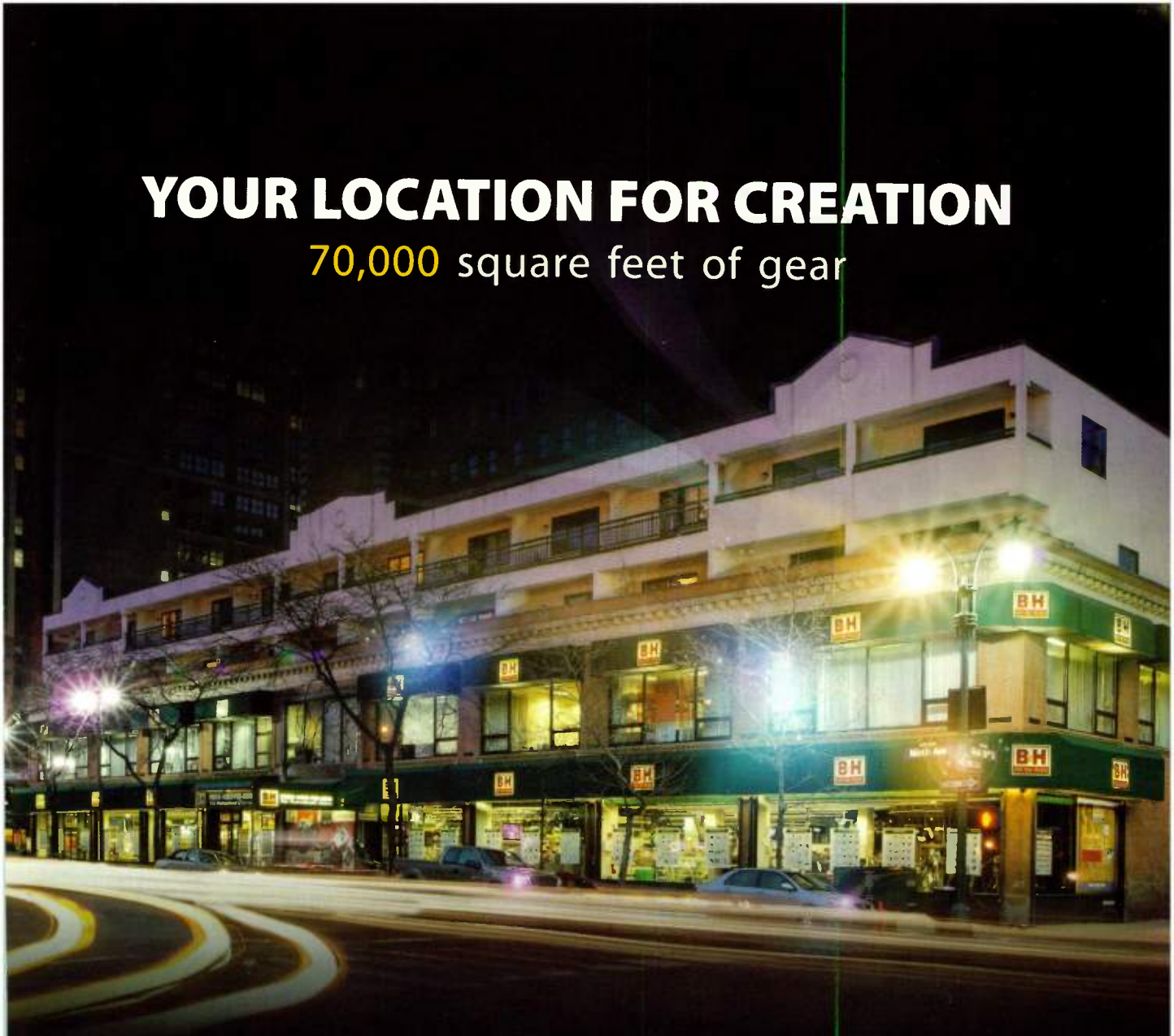

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UEBERSCHALL

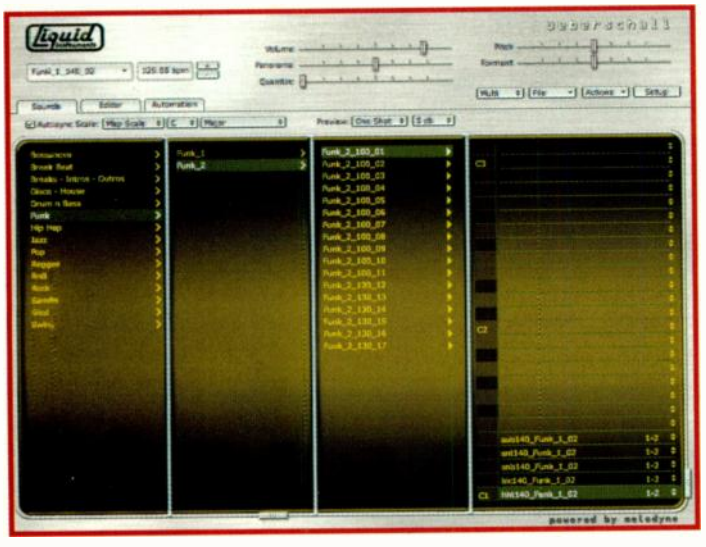
Liquid Drums 1.5.1 (Mac/Win)

By Marty Cutler

Ueberschall's *Liquid Drums* ($199.95) is the latest in the company's Liquid Instrument series of sample libraries. Liquid Instruments are prerecorded performances that you can use over a very wide range of pitches and tempos. You can easily adapt the parts to different keys and scales, drag individual pitches up and down, move or delete notes, and change durations.

I previously reviewed *Liquid Saxophone* (see the review online at www.emusician.com), which I thought was a great-sounding and tremendously flexible sound library. However, the complex interaction of drum kit pieces is more difficult to implement in the Liquid format than is a steadfastly monophonic instrument like the saxophone.

Ueberschall offers the Liquid Instrument player and plug-ins as separate AU (Mac only), RTAS, standalone, and VST installers. To install the library, you drag the sound banks to the drive of your choice, then locate and authorize them through the instrument's Setup menu. Because the Liquid Instrument interface can access multiple sound libraries, a simple challenge-and-response scheme authorizes the sound banks rather than the player.



Ueberschall *Liquid Drums* offers sampled grooves as stereo mixes, individual hits, and layered performances.

Stretch to Fit

Liquid Drums performances automatically adapt to the host sequencer's tempo. You drag-and-drop loops or phrases onto a virtual keyboard that corresponds to MIDI Note Numbers, which means you can trigger phrases in any order and with as many layers as your CPU can handle. The Liquid Instrument interface offers common features such as controls for volume and pan position for all installed libraries.

Three categories of performances are folded into two partitions, labeled Drums A and Drums B. Partition A holds layered performances divided into musical styles and further divided into substyles. The substyles are arranged by original tempos. A miniature waveform display illustrates the various kit elements and grooves at work; you drag them to the vertically arranged keyboard at the right of the window. In addition to full stereo mixes of the layered grooves, Partition B contains individual hits. You can add these along with or in place of layered elements.

All the Hits

There is little audible intrusion from other kit pieces in the layered performances with the exception of the toms, where an occasional mechanical artifact such as hi-hat pedal noise sneaks in. There is also only minimal ambience to many of the parts. These characteristics help keep the sounds from exhibiting a sterile, anechoic quality. If sounds are too dry for your taste, you can send an individual element to any of 16 outputs for processing. (You'll find a number of demos with different ambiences at the Ueberschall site.)

What constitutes a useful groove to one may not satisfy someone else; consequently, you can quantize the individual slices, move them manually, change their durations, and alter their pitch. Because the layering technique separates individual kit elements, you can mix and match elements culled from different grooves.

Sonic diversity is not this collection's long suit: snares favor a tight, dry sound, and kicks tended to sound a bit thin for my taste. Nonetheless, with a bit of tuning, EQ, and compression, you can wring more variety from the sounds. If you are satisfied with the performances as a whole, you can use Partition B's stereo loops; these may be useful for quick mock-up arrangements, albeit at the expense of tweaking individual instruments.

I was disappointed that some of the features I enjoyed in other Liquid Instrument products were not available in *Liquid Drums*. For example, although I could adjust pitch, neither the Formant slider nor the scale-mapping feature was functional. Ueberschall explained that the current technology underlying its software does not support altering drum samples in these ways, but that such a resource might be available in a future version. Mapping grooves to scales and modes might seem irrelevant when using percussion instruments, but subsequent alterations in pitch could produce interesting patterns. I hope this will be an option soon.

When making radical changes to the original tempo, I often noticed that subtle variations in timing were exaggerated. This occasionally resulted in somewhat sloppy performances. I wouldn't blame this on the drummer or the programmers—it's logical that a groove that feels right at one tempo will not necessarily sound musical at another.

Fluid Dynamics

My favorite grooves were in the funk category, a number of which are clearly inspired by the Tower of Power school of busy but syncopated playing (see **Web Clip 1**). Overall, though, I found most grooves lacking in imagination and dynamic subtlety.

ONLINE BONUS MATERIAL

Editing features notwithstanding, *Liquid Drums* is limited by the fact that it's a closed system—you are restricted to the samples provided by Ueberschall. Whether these sounds are your cup of tea is a matter of personal opinion, so give them a listen.

Value (1 through 5): 2

Ueberschall

www.ueberschall.com

World Radio History

"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.

Although I love to write songs, I felt isolated when it came to getting them heard by anybody in the music business. Then a friend told me that TAXI would bring real opportunities for my music right to my front door.

I Used a 4-Track

I signed up and sent in songs that I demoed with my digital piano in my little home studio. The A&R people at TAXI liked my songs and began sending them off to some pretty high-level people in Nashville.

All the sudden, doors started opening. With the connections I made through TAXI, I began to have meetings with some of Country Music's top executives, and signed a staff writer deal with a great publisher in Nashville.

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.

Then, my publisher hooked me up with veteran songwriter, Walt Aldridge. Together, we wrote a song called, 'I Loved Her First,' and finally, I hit pay dirt!

#1 Hit on Two Charts!

The group 'Heartland' cut our song and released it as a single. It started out slowly, then gained momentum, and eventually made it all the way to the Number One spot on the Billboard *and* R&R Country charts.

Could that have happened without TAXI? Probably not.

Although there were many people that helped me once I signed my publishing deal, it was TAXI that made that all important first connection for me. And I didn't have to leave my hometown to do it.

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EVENTIDE

TimeFactor

By Jon Chappell

It's almost ironic that the TimeFactor ($399) is part of Eventide's Stompbox series, given what the term *stompbox* conjures versus the wealth of features, I/O options, and deep sounds resident in this versatile delay unit. The TimeFactor is really more of a full-fledged, professionally built processor that happens to come in a small form factor. Still, it's true that you can operate it with your foot, making it a great hands-free performance processor.

The TimeFactor offers nine stereo and dual-mono delay effects, as well as one looper, configured as two independent delays, with up to 3,000 ms of delay time for each. The looper has a 48-second maximum and includes varispeed and overdubbing functions.

Bank on It

Unlike most stompboxes, the TimeFactor allows you to store settings and recall them either through MIDI or with onboard Bank/Preset footswitches. The unit can be externally controlled in other ways, too. You can plug in an auxiliary footswitch and an expression pedal (not included), giving you foot-controlled access to many front-panel parameters. A USB port is built in for upgrades from the Internet.

The TimeFactor is equipped with 10 banks, each with 2 presets, for a total of 20 onboard patches at a time, which should be plenty for live use. The rightmost footswitch increments through the banks, and the bottom left and middle switches toggle between the two presets in the currently active bank. This works well enough except that you can't step downward through banks, only up. This limitation is mitigated because the unit lets you turn some banks off during performance, minimizing the wraparound time. You can also assign an aux footswitch for the decrement function, giving you 2-way travel.

The only major criticism I have of the interface is the "billboard" display, which consists of large dots. The array of dots has the effect of making the characters less crisp and rather amorphous, at least when compared with a line-segment display of a similar size. It's difficult to read sometimes, and it's wearisome when you plan to spend a long session programming.

The TimeFactor delivers high-quality Eventide delay effects in a stompbox format.

Get Connected

On the rear panel, four unbalanced ¼-inch audio jacks accommodate instrument- and line-level signals. That means the TimeFactor can be used in the studio as well as in a live situation. Two ¼-inch jacks allow for insertion of the aforementioned expression pedal and an aux switch, and around the side are two MIDI jacks (In, Out/Thru). The unit is powered with a DC-output wall wart.

When operated independently, Input 1 feeds Delay A, and Input 2 feeds Delay B. The delays can also be fed by one input, in which case Delay A and Delay B receive the same input signal. You can't use two effects simultaneously, but for most of the effects algorithms, you can run the unit in one of three modes: Stereo I/O, Mono In/Stereo Out, or dual Mono In/Mono Out. The TimeFactor automatically senses your cable configuration and routes the twin delays accordingly.

As you'd expect with Eventide, the sounds of the TimeFactor are impressive. Even something as basic as a multitap delay (see **Web Clip 1**) yields a complex richness that surprises and delights. In Band Delay mode (which employs a low-, band-, or highpass filter), I stretched the limits of the parameters, finding smoothness all the way to the edges and uncovering no seams (see **Web Clip 2**). For those outer-space effects, a bit of fun can be had in Reverse Delay mode (see **Web Clip 3**), which provides unexpected (and sometimes inspiring) results and shows off the unit's power and versatility. I found myself coming back to the staple Digital-, Modulation-, and Vintage-Delay effects with renewed respect; the TimeFactor's rendition of them offered both freshness and clarity.

ONLINE BONUS MATERIAL

There are many features in the TimeFactor that you can find only on higher-end studio processors (including its versatile bypass modes and Killdry function, which turns the mix control into an "all wet" output-level knob). That Eventide has ported these down into stompbox format is commendable. I found myself regularly pulling the TimeFactor out of my gig bag and using it in my studio. (Because of its independent dual-mono flexibility, and handling of line-level signals, it works well in a channel strip when tracking.)

The ultimate icing, though, is its rich, deep, and nuanced sound. Except when it isn't, and then it's delightfully experimental and wacky. If you're into Brian May, Brian Eno, or the Edge, or otherwise treat the delay and modulated-delay effects in your signal chain as serious business, the TimeFactor clearly offers something special.

Value (1 through 5): 4

Eventide
www.eventide.com

DIGITECH

Vocalist Live 2

By Orren Merton

DigiTech Vocalist Live 2 ($349) brings a new twist to vocal harmonizing: you don't have to set the scale and key manually. Instead, it tracks guitar chords and uses that information to generate as many as two vocal harmonies. Built-in compression, reverb, and an EQ-and-filtering effect called Enhance round out the unit's bag of tricks.

The Vocalist Live 2 is aimed squarely at the performing singer-guitarist. The back of the unit houses a 48V phantom-powered XLR mic input and alternative ¼-inch line input along with an input-level trim knob. A ¼-inch Guitar In jack connects your guitar for analysis, and a Guitar Thru jack relays the signal to an amplifier or P.A. The device

World Radio History

The DigiTech Vocalist Live 2 analyzes your guitar notes and chords to generate as many as two vocal harmonies for your lead vocal.

offers stereo balanced or unbalanced ¼-inch line outputs and an XLR Mono Out. The guitar signal is present only at the Guitar Thru jack. You also have buttons for ground lift and phantom power.

Step on It

The guitar input has an input impedance of 3 MΩ. Because some passive acoustic-guitar pickups require 5 MΩ or greater, you may need a preamp. When I plugged my 12-string acoustic equipped with a passive undersaddle transducer pickup directly into the Vocalist Live 2, I couldn't get a strong-enough signal for the harmonies to track my chords accurately.

LEDs on the top of the unit indicate guitar signal, vocal signal, and phantom power. The guitar and vocal signal LEDs change from green to amber to red to indicate when a signal is present, is approaching clipping, and is clipped. The tuner display panel is located directly under the indicator LEDs. Four knobs adjust the amount of the three effects (compressor, reverb, and Enhance) as well as the Harmony Mix level. Twelve buttons, arranged in three rows under the knobs, select effect and harmony setups. Each button has an LED to indicate if it has been selected.

Two built-in footswitches toggle the effects, tuner, and harmony functions. A quick tap on the left footswitch toggles all active effects. (You can't toggle individual effects from the footswitch; you use the buttons for that.) Holding the left footswitch activates the guitar tuner. The right footswitch enables and disables both vocal harmony voices. As with the effects, you use the buttons to toggle individual harmony voices.

IQ Test

The Vocalist Live 2 uses a patent-pending technology called musIQ developed by 3dB Research Ltd. to analyze guitar notes and chords for key and scale. It then generates vocal harmonies to complement the lead vocal. You can use alternate guitar tunings as long as the tuning system is 12-tone equal temperament pitched at A 440 Hz. The tracking source need not be a guitar. I tried my Mono Evolver Keyboard and my Yamaha bass, and in each case, the device created accurate harmonies.

The unit generates one or two vocal harmony parts. The first harmony is a third higher, a third lower, or unison. The second is a fifth higher, a fifth lower, or unison. When Unison is selected for both, the harmonies are slightly detuned to create a very thick vocal background.

Living in Harmony

Thanks to its uncluttered control panel with no menus to dig through, the Vocalist Live 2 is very simple to operate. I found the tuner accurate and easy to read. Ground lift and phantom power worked as advertised.

Most important, the sound quality is good. The effects are all usable, though none are exceptional sounding. The unit tracks quickly and accurately, thickening vocals and sounding reasonably like harmonizing singers (see **Web Clip 1**). I did find that on high notes, the harmonies sounded a bit chipmunklike.

ONLINE BONUS MATERIAL

I would have liked guitar input and output level controls as well as additional footswitches to toggle individual effects and harmonies. Nevertheless, with its intelligent layout and the accuracy of musIQ chord analysis, the Vocalist Live 2 is a no-brainer to operate. Its sound quality and features make it a compelling option for singer-guitarists looking to beef up their vocal performance.

Value (1 through 5): 4
DigiTech
www.digitech.com

World Radio History

SCARBEE

Black Bass

By Babz

Scarbee's first bass product, *J-Slap'n Fingered (JSF)*, evolved over several versions to become one of the most advanced virtual basses around. Its extensive programming incorporated features such as articulation keyswitching, release triggers, mod wheel selection of individual strings, and footpedal switching between slap and fingered samples. Though it offered unprecedented realism and versatility, all the keyswitching, mod wheel, and footpedal work made for a cumbersome interface for real-time performance. With *Black Bass*, Scarbee takes an evolutionary leap to the next level with more-intensive sampling and programming and a much-easier-to-use interface.

EM HOT PICK

Back in Black

Black Bass ($99) is a sample library (no bundled player) for Native Instruments Kontakt 2.2 or later and is available on DVD or by download. It consists of 2.8 GB—more than 4,000 samples all dedicated to producing the complete expressive range of a fingered electric bass. Installation is as simple as dragging the files to your hard drive.

For the *Black Bass* sound, the folks at Scarbee took their inspiration from one of their favorite bass players of the '70s, the late Bernard Edwards of the classic funk-and-disco band Chic. But it would be a mistake to assume that *Black Bass* is suitable only for funk or disco. I found it a solid fingered bass for virtually any style (see **Web Clip 1**). It was recorded direct and has a wonderful harmonic character that sits just right in a mix. Four "amped" editions are available separately; they present the original DI samples processed through various amp and cabinet emulations.

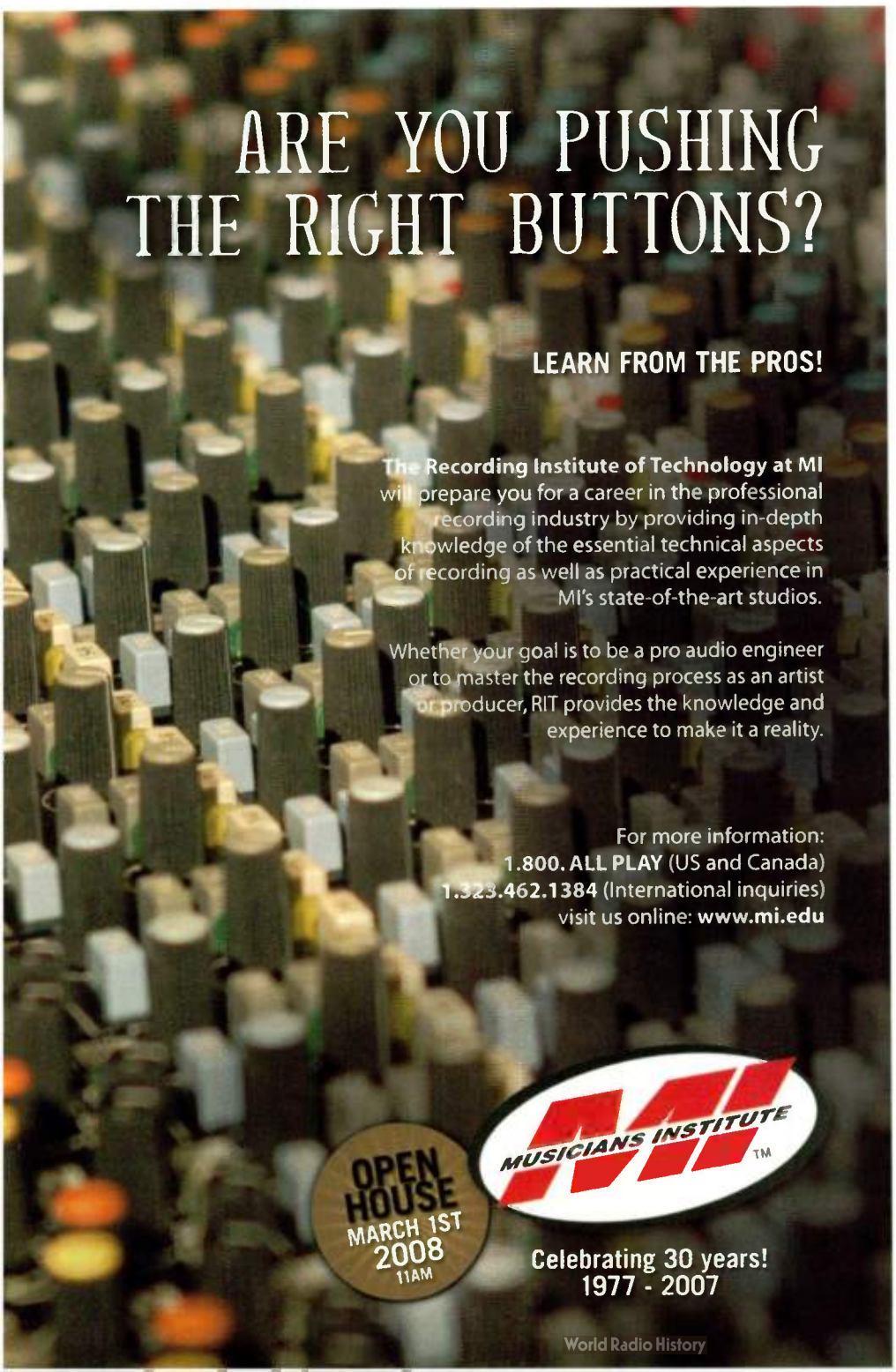
ONLINE BONUS MATERIAL

Heavily Scripted

What really makes *Black Bass* so extraordinary is its advanced Kontakt scripting. All the control features in *JSF* that made you wish for an extra set of hands and feet happen automatically in *Black Bass*, with little need for keyswitching. Essentially, the scripting just takes your keyboard playing and intelligently translates it into bass guitar articulations in real time.

Black Bass automatically selects between right-hand-index-finger and right-hand-middle-finger samples. There are samples up the neck for each of the bass's four strings, and playing position is selected automatically. Individual strings are monophonic, just like with a real bass, and hammer-ons, pull-offs, and grace notes are triggered automatically just by playing with the appropriate legato technique. There is even an animated graphic that displays which strings, positions, and articulations are being selected as you play.

To put *Black Bass*'s intelligence to the



test, I pulled out my bass guitar and ran through a few classic bass lines, analyzing finger positions, and then played the lines on keyboard for comparison. *Black Bass* did an excellent job of selecting the fret positions a real bass player would use. But if at any time you are unhappy with the results, keyswitches are available to override automatic string or right-hand-finger selection.

You also get release samples; Velocity layering of sustains, mutes, and harmonics; trills; pickup claps; chords; cross-hammering; a unique approach to slides using the sustain pedal; and more. The slide interface is innovative and powerful, and a big improvement over *JSF*, but it was the one area where I didn't find instant gratification. Bass playing often requires a fast downward slide on the E string. To do this on *Black Bass*, you must first hold a keyswitch to force a 12th-fret note on that string, then press the sustain pedal, and then quickly play two notes in succession an octave apart with the correct Velocity. With much practice I'm getting better, but I still can't seem to call one up fast enough in real time. I would like to see Scarbee add a few instantly available downward slide samples for this important articulation.

Scarbee's *Black Bass* gives you quality samples and access to an array of authentic bass-guitar techniques and articulations.

Seeing Red

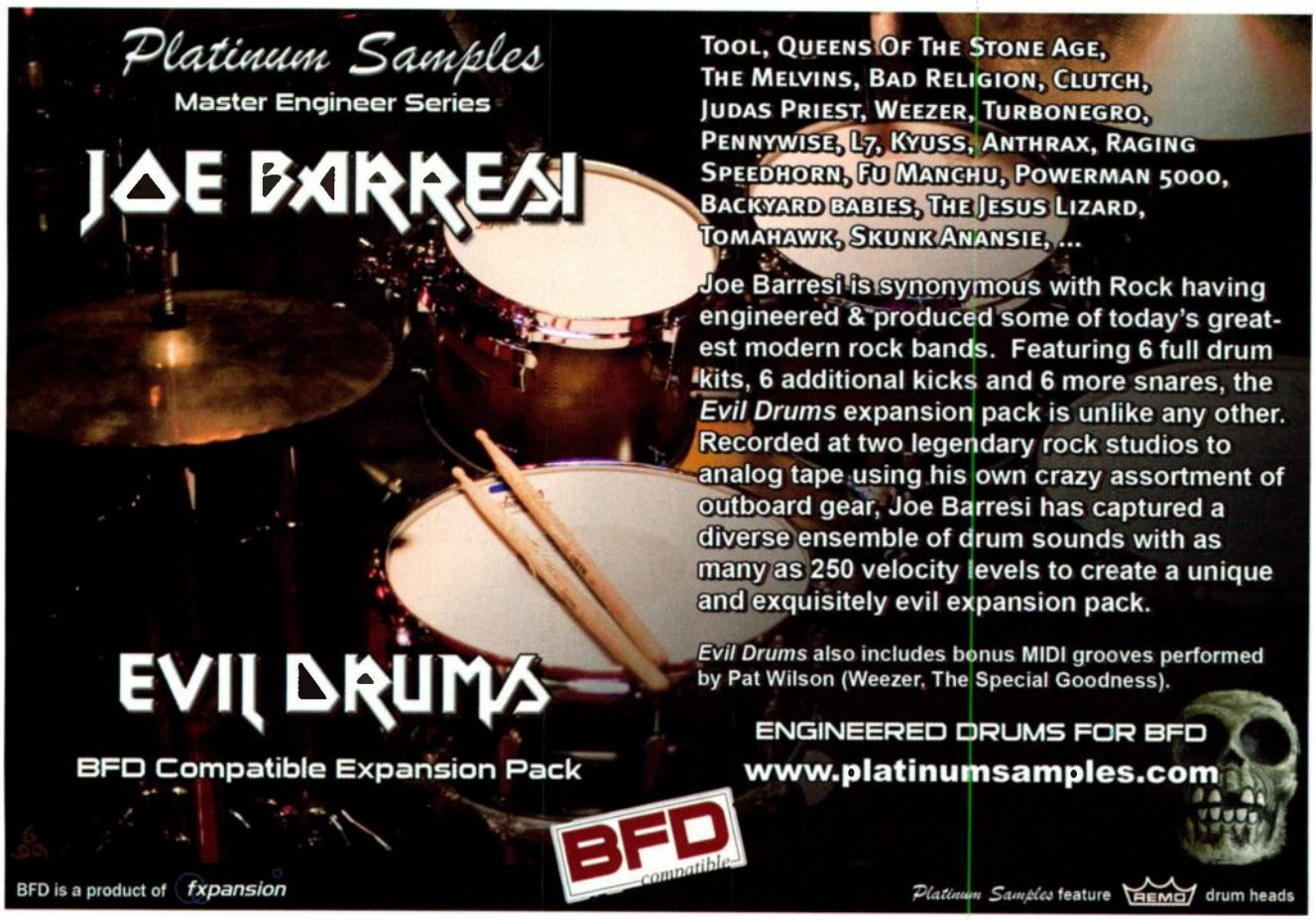
At press time, Scarbee announced it had found a way to apply the *Black Bass*–style scripting to *J-Slap'n Fingered*. The new product will be called *Red Bass*, and the new scripting will be available as a $49 upgrade for existing *JSF* users.

An easy download and installation of new .nki and .nkm program files that use your existing *JSF* samples transforms *J-Slap'n Fingered* into *Red Bass*. Instantly it becomes about a hundred times more fun to use. Automatic selection of strings and articulations, alternation scripting, even the animated graphic display—all function the same in *Red Bass* as they do in *Black Bass*. A full version of *Red Bass* ($199) is also available.

Fade to Black

Black Bass is one of the most realistic, expressive, and easy-to-use sampled instruments I have ever played. If you are a Kontakt user looking for an authentic and fun-to-use virtual bass, I highly recommend that you give it a try. EM

Value (1 through 5): 5
Scarbee
www.scarbee.com



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are organized into 8 musical genres: ballads, Latin, country, and so forth. The tempo knob allows you to change the tempo of each groove from 40 to 280 bpm. There's also a metronome that lets you choose between four time signatures.

The rhythm patterns have been chosen to create a well-rounded collection, but like the effects settings, they are fixed. I wouldn't plan on using them in performance, but as a quick-and-dirty practice tool to help get your timing together, they can't be beat.

Get Connected

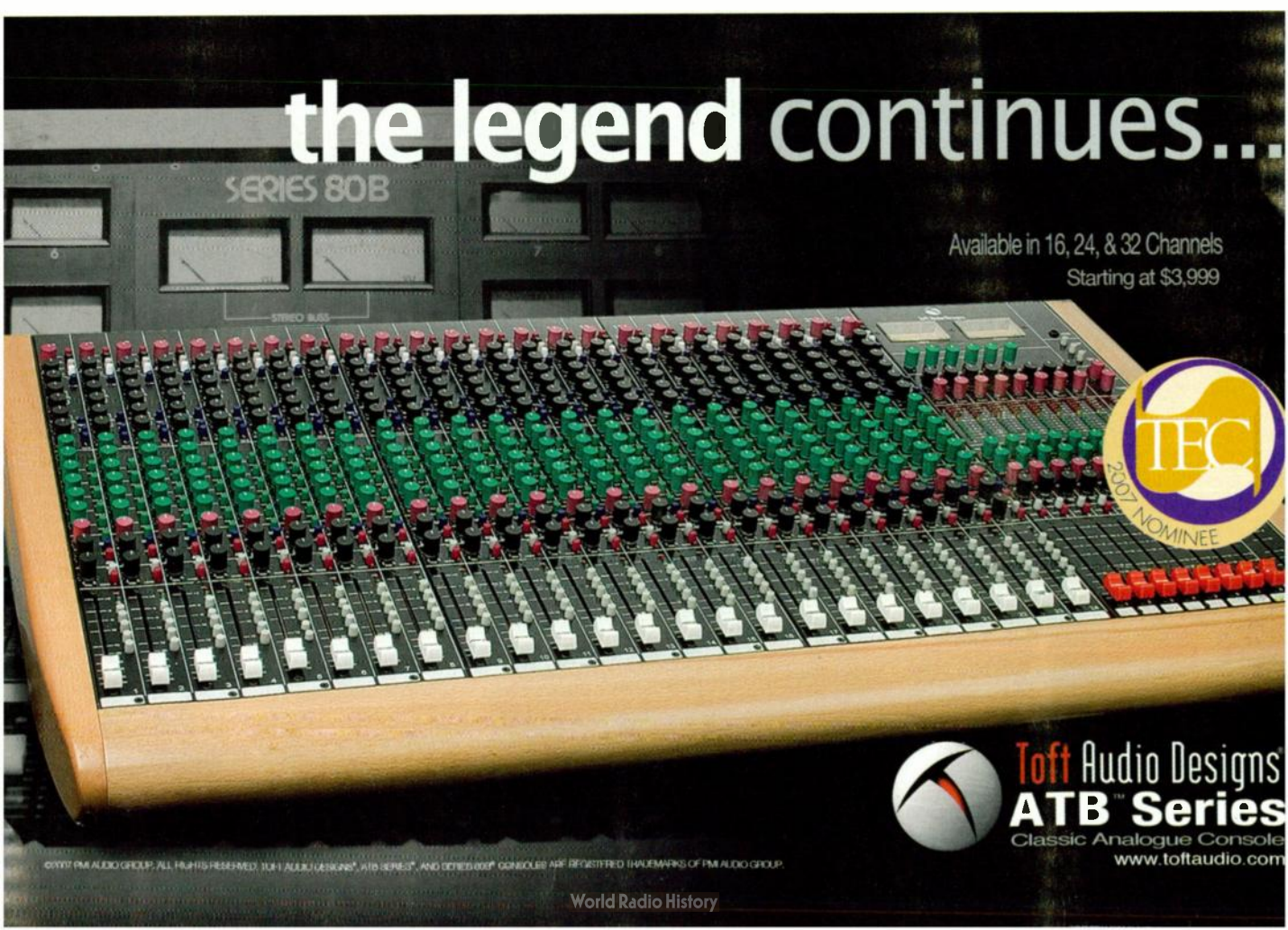
The SP2X has a USB port, making a direct connection with PCs—no MIDI interface required. Unfortunately, drivers are available only for Windows XP at this time, so if you are a Mac user, you will have to use the SP2X's MIDI ports with an external MIDI interface instead.

The SP2X can double as the primary MIDI controller for a modest live rig or studio. The unit supports 16 setups, which are individual configurations of internal sounds and/or MIDI control of external sources. Each setup has four zones, each with its own key and Velocity range, transposition, and MIDI channel. You can also assign the continuous-controller value for each of the four data knobs on a per-setup basis. Programming the setup is hampered a bit by not having an LCD. If you require more-flexible MIDI control and programmability, as well as a more detailed display, you might look to Kurzweil's PC series of keyboards instead.

> The SP2X is built for gigging.

I love reviewing products that rock. The Kurzweil SP2X is a really well-designed piece of gear that is tailor-made for the gigging keyboard player. The weight and form factor, quality action, useful sound set, simple interface, and modest price make for an appealing product. Add the rhythm tracks and metronome, and you also now have an effective practice and compositional tool. Though the absence of an LCD can be a detriment in some situations, it also keeps things focused on simplicity, which is what this keyboard is all about. If you are in the market for a new gigging piano, the SP2X is worth your consideration.

Nick Peck is a vintage-keyboard freak living and gigging in the San Francisco Bay Area. His newest CD, Fire Trucks I Have Known, *is now available. Visit http://underthebigtree.com or email nick@underthebigtree.com.*



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VITAL ARTS

Plectrum (Win)

By Marty Cutler

The secret of sampling's longevity is not just how realistically it can reproduce instruments such as drums and piano, but also that any sound you can record is fair game for musical application. Sampling technology has given us wonderful instruments created from found objects like plastic tubing and resonant pieces of metal culled from scrap heaps. We've also seen terrific sound libraries developed from traditional instruments played using unorthodox techniques. We don't often hear such collections, because some techniques are difficult to perform in real time, and most require voicing and tuning to conform to conventional tunings.

Vital Arts Plectrum ($299) focuses on beautiful-sounding instruments with origins in found sources such as glass, ceramics, and metal, as well as guitar and piano strings, played using a variety of techniques: strumming, striking with mallets, flicking with the back of the fingernail, and even making objects collide with other objects. The resulting sounds have a familiar overall acoustic timbre, albeit with unusual overtones and attacks or a touch of chaotic resonance.

Vital Arts Plectrum presents a very simple user interface. You load sounds from the categories on the left, and you adjust volume and tuning (the only user parameters) on the right.

Plectrum is powered by Tascam's GVI sample-playback engine (a pared-down spin-off of GigaStudio). At the time of my review, Plectrum was available as a standalone, VSTi, and RTAS instrument for Windows XP (SP2) only, although a Mac OS X version should be available by the time you read this. The instrument comes with a preauthorized copy-protection dongle from Syncrosoft. Installation was easy; however, I was constantly flummoxed by the copy protection (for details, see the **online bonus material** at www.emusician.com).

ONLINE BONUS MATERIAL

Simple Player, Supple Samples

Plectrum's interface could hardly be simpler. A vertical array of panels on the interface's left-hand side groups instrument categories in banks by materials and how they're played: ceramics, glass, metal, strummed or struck piano or guitar strings, and others. Clicking on any panel's triangular button opens its bank of instrument patches. Once you load a patch from a bank, you can quickly access any instrument in its category by using up and down arrows to the right of the currently loaded patch's name. On the right side of the window are sliders for volume and tuning, Plectrum's only editable parameters.

The instruments are well programmed, and Plectrum behaves remarkably like an acoustic instrument, belying its electronic source. Meticulous round-robin programming and Velocity switching can take any single note through plenty of realistic variations that are often difficult to predict—not only timbral changes, but also pitch-shifts, often with pronounced but natural-sounding differences in overtone content (see **Web Clip 1**).

One of my favorite instruments was Jar Attack Piano, in which the strings in a piano harp are struck with and vibrate against a glass jar, providing an unusual, vaguely glassy front end to a beating, barrelhouse piano sound (see **Web Clip 2**). Using a sustain pedal lets the ambience of the samples bloom beautifully (Plectrum has no built-in reverb or any other effects). There are several variant patches, including one bolstered by a synth pad, and others that appear to have the attack rate subtly inverted with higher Velocities.

Equally beautiful are the ceramic instruments, with an appealing, mildly out-of-tune sound and a decidedly nondiatonic batch of found objects, scrapes, collisions, and stretched and bowed strings. Taps, Metals, GenPad is a gorgeous percussive combination of piano strings struck by a metallic object, along with a subtly blooming pad.

Plunk in A

Some of the sounds seemed like perfect candidates for playing with the Starr Z7s guitar controller, whose fret buttons can serve as drum-trigger pads. The controller's preset was programmed to transmit over MIDI channel 10, but I could find no way to set Plectrum's receiving MIDI channel—only the port from which it would receive data. This was a problem only when Plectrum was in standalone mode, but it is one that should be remedied.

I wish the manual provided more information on the instrument sampling and voicing. There is tremendous musicality behind the sound design, but the instrument shell is completely opaque. Fortunately, you can read about some of developer Geoffrey Gee's sampling and voicing techniques at www.emusician.com (see the online bonus material).

Anyone inspired to alter or edit the samples from such compelling sources as those offered by Plectrum will be frustrated. Many sample libraries paired with players offer access to envelope generators, resonant filters, and other processing. I hope that future updates will provide more user access. Even so, Plectrum is brilliant in concept and execution, and I recommend it to anyone who needs to be reminded of the truly wonderful things you can do with samplers.

Value (1 through 5): 3
Vital Arts/Ilio (distributor)
www.ilio.com

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World Radio History

ALESIS

TriggerIiO

By Markkus Rovito

Although seasoned programmers can do amazing things with the tiny rubber squares in most drum pad arrays, traditional drummers prefer the feel of a full-size kit. To suit their desires, Alesis has introduced the TriggerIiO ($149), an electronic percussion interface that routes as many as a dozen ¼-inch drum triggers to a computer or sound module through its USB 1.1 and MIDI Out connections. The TriggerIiO allows drummers to take advantage of the massive sound libraries in software instruments and to edit drum parts as MIDI sequences rather than audio recordings, without a lot of finger tapping and avoiding the aggravating task of connecting an electronic drum kit's brain to your rig using old-school MIDI ports.

Check Your Brain at the Door

The TriggerIiO is a bit larger than a VHS cassette case and is substantially weightier, with a sturdy metal chassis built for gigging. Four rubber feet anchor the bottom, and a Kensington lock provides a security option. Instead of a graphic LCD (which would increase the price considerably), the display comprises only a 3-character LED and ten indicator LEDs. You navigate settings with four buttons: Function Up, Function Down, Value Up, and Value Down.

The bundle includes FXpansion BFD Lite 1.5 (Mac/Win), which runs standalone or as an AU, DXi, or VSTi plug-in and supplies nearly 1 GB of sounds organized into 12 kits. Installing the TriggerIiO and the software was straightforward and required no registration or drivers.

The TriggerIiO's ¼-inch jacks accept TRS plugs for dual-zone drum pads or TS plugs for single-zone pads. Jacks 1 through 8 are labeled Kick, Snare, Hi-Hat, and so on, allowing you to connect your pads to correspond with the TriggerIiO's presets. The unit also has a dedicated hi-hat pedal input and an input for increasing and decreasing values with a dual footswitch.

Audition

I connected the TriggerIiO to a Roland HD-1 kit and a MacBook Pro and then booted BFD Lite. Because the TriggerIiO defaults to BFD Lite's assignments, the drum sounds were correctly assigned to the kit's corresponding pads. The TriggerIiO automatically detected the hi-hat pedal input and assigned open and close commands. Although latency wasn't a problem, I wasn't happy with the kick pedal's response, but that probably resulted from the HD-1's unorthodox spring action.

BFD Lite's presets include rock, electro/dance, and jazz/brush kits. They bear the same high-quality sounds and Velocity layers that earned BFD 1.5 so much respect, but there's just not enough content. If you're serious enough to own an electronic pad kit and a TriggerIiO, you'll really want the enormous content of BFD or another large drum library.

I also tested the TriggerIiO using plug-ins within Ableton Live, Apple Logic Pro 8, and Apple MainStage. The TriggerIiO provides 20 presets (also called kits), but only 5 of them are preprogrammed (for BFD Lite, General MIDI drums, GM percussion, and 2 chromatic scales). To create the kits I wanted in the DAW environments, I had to edit some other presets.

The TriggerIiO's onboard menus let you assign a MIDI note and channel to every trigger of each kit, specify a MIDI Program Change for each kit, and set global parameters affecting all triggers across all kits. Global parameters include Gain, Velocity Curve, Threshold, X-Talk (which attempts to correct false triggering), Retrigger, and Trigger Type; all of them determine how triggers will react when engaged. To change global settings, you scroll to the parameter type with the Function buttons and then adjust the setting with the Value buttons. Adjusting individual triggers is similar, but you engage the trigger first. To save your settings, scroll through the menus until you return to the Kit menu.

Curtain Call

The TriggerIiO provides plenty of programmability, but it's ironic that a product bridging electronic drum kits to the modern world of software appears stuck in a '90s programming paradigm. Although most MIDI controllers include editor-librarian software to simplify editing and to save and load presets, the TriggerIiO does not. Fortunately, you can transfer SysEx to and from a computer using third-party software. However, beyond initially plowing through a potentially tedious editing process to set up some go-to presets, the thought of frequently going back to create new kits is daunting.

Nonetheless, the TriggerIiO is a unique product that delivers on its promise and performs well at an attractive price. Using electronic drum pads to play software instruments over USB definitely will excite many drummers. However, my trigger fingers are still crossed for a much-needed software update to improve the TriggerIiO's programmability.

Value (1 through 5): 4

Alesis

www.alesis.com

The TriggerIiO connects electronic drum pads to software and MIDI instruments. With an optional third-party drum mount, you can attach it to a cymbal stand.

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PreSonus

TASCAM

FireOne

By Rusty Cutchin

Tascam and Frontier Design have come up with a nifty little audio/MIDI interface that also controls your DAW software. The FireOne ($399) gives you tactile interaction with your software, two mic preamps with phantom power, lots of function keys to help automate software tasks, and 24-bit resolution over FireWire, all in a sleek and compact tabletop pod.

Wheel of Functions

The device's most striking feature is a large control wheel on the right side. The top panel and sides of the FireOne are contoured to fit the wheel, which is surrounded and lit from underneath by a multifunction LED. The light can pulse to the beat of your project when your application sends MIDI Clock information to the FireOne.

Above the wheel are standard transport buttons. A Shift key to the left of the wheel adds functionality to the transport keys—for example, Shift + Rewind returns the playback position to 0—and to eight function keys (labeled F1 through F8) arranged in an arc above the wheel.

You can usually reassign whatever job the function keys perform (after you mate the unit with your software) in your recording application. The wheel itself is enormously useful for functions such as scrubbing, particularly when you're locating an edit point in a sequence.

Interface Facts

The FireOne's top panel hosts channel A and B pots that provide 53 dB of gain to two rear-panel XLR/¼-inch combo jacks. The knobs are accompanied by LEDs that indicate an active signal and overload on each channel. Below each Gain pot are buttons for 48V phantom power and –20 dB pad. Below the Pad buttons are level pots for the two front-panel headphone jacks.

The middle section of the FireOne features a Mix control for setting the balance between incoming mic or instrument signals and tracks playing back from the computer. A Line Out level pot controls the signal at the rear-panel output jacks (for feeding powered speakers or a mixer). The section also contains LEDs that indicate signals at the unit's FireWire and MIDI ports.

The rear panel provides a footswitch jack and a slider switch that determines whether channel B gets its signal from the combo jack or a high-impedance guitar-in jack on the front panel. The rear panel also has a receptacle for the included 12 VDC power adapter, but because the unit is bus powered, you may not need the adapter unless you use the smaller 4-pin FireWire cable with a laptop.

Into the Fire

The included CD contains a control panel application and drivers for Cakewalk Sonar (Win), MOTU Digital Performer (Mac), and Steinberg Cubase or Nuendo (Mac/Win). On a Mac (OS X 10.4 or later), you change most FireOne settings from within the audio application. On a PC (Windows XP SP2 or later), you control the FireOne mostly from its control panel.

After all the drivers are installed, you need to check the included PDF file FireOne Application Notes for specific instructions on configuring your audio app to access all of the FireOne's features. The documentation covers all the basics but is short on details. For example, the manual doesn't make it clear that you must do a custom install on a Mac to get the drivers for Digital Performer (DP) or Cubase/Nuendo.

After I got the installation sequence down, got my master keyboard communicating with the FireOne and the Mac, and had the correct control surface assigned in DP, I couldn't get the FireOne's transport controls to work until I eventually cycled its power. A little extra care with the manual would have helped considerably.

Wheeling Around

Once the setup issues were sorted out, the FireOne worked flawlessly for me, and I found it a very handy tool that will remain part of my permanent setup. The unit's jog wheel was great for pinpointing a video frame or audio sample in DP. I could rest my right hand on the wheel and use my fingertips for transport functions to move quickly from edit to edit.

I also found the mic pres to be clean and quiet, and would have no fear of using them for vocal sessions in the studio or in the field. The mix control worked well for live recording, and as a guitar player, I liked the convenience of the front-panel jack for getting ideas down quickly. The FireOne works great as a desktop enhancement to a computer-based recording studio, or as a laptop accessory for field recordings and songwriting.

Tascam's FireOne is a sleek, bus-powered audio/MIDI interface and control surface with a host of programmable function keys, transport controls, and a large, illuminated jog/shuttle wheel.

Value (1 through 5): 4

Tascam

www.tascam.com

World Radio History

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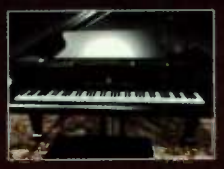

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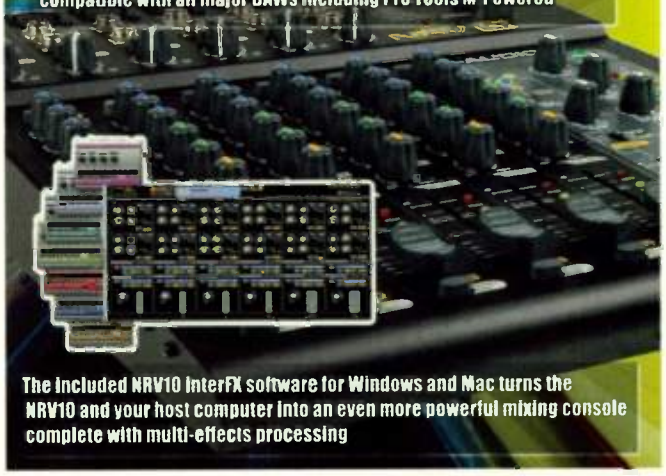

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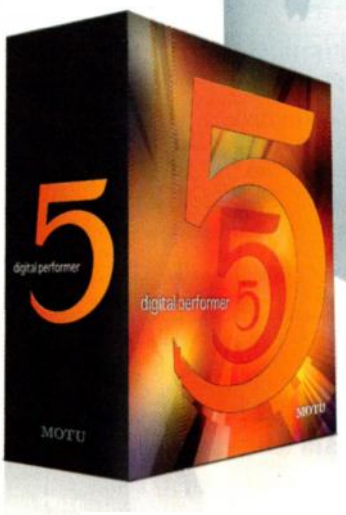

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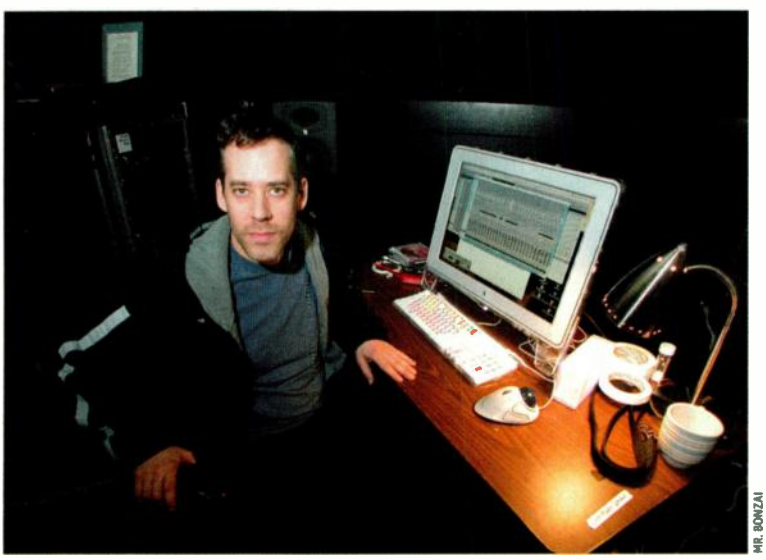
What Are We Going to Do?

Reflections on the changes in the music industry.

By Nathaniel Kunkel


MR. BONZAI

It's a new year, and with it come new music, new opportunities, and new uncertainties. Whether you make electronic music or record only acoustic instruments, the instability of our business has never been greater. I just finished spending a week sitting in on classes at Berklee College of Music, and when I spoke with the students, we talked about the same things that I talk about with my friends. "What are we going to do? The music business is changing so much." I hear it from a lot of people—students, engineers, and producers. The rub is that there isn't much we can do about the state of the business except continue to try to make the best music we can. I love to make music, I love to be in the studio, and I love to hear new songs. If I didn't work in the music business, I would still come home every night and woodshed in a small home studio. It's in my blood. So in the end, though I would like to make tons of money creating only hit records that I love, I don't need that to stay in the music business. People who make music are, in my opinion, some of the coolest people in the world, and I wouldn't want to work in any other industry no matter how dubious this one seems to be at the moment. So now what? We know we like to make music, so how do we deal with the uncertainty that we will survive while we do? In my opinion, the first thing to do is to lower our expectations of the business for a while. The music business used to be very lucrative, and with the influx of new talent and producers, there has been an expectation that it will remain that way. It will not. The way records are sold has changed forever, and it will continue to change. This fact makes some people worried and upset, but it doesn't need to.

We should focus on all the new and amazing ways there are to get our music out to people. It's also time to create and exploit some new business models.

One thing that basic engineering jobs will require is a diverse set of technical skills. As engineers and producers, we need to learn about computer networking, power distribution, electronics troubleshooting, data retention, and other related disciplines just to get our jobs done the right way. In the end, we need to remember that if music is our path, then we must pursue it with all of our effort, work as hard as we can, follow what we know to be quality, and retain our individuality. People will always listen to music, they will always need people to make it and record it, and there will always be money for it. The people who are in it for their ego or for money alone will get weeded out, and that's fine. For the people with the conviction to be here, there will always be a place. What will make the music business work for you is that your sense of success will come from within yourself, not anyone else. That is what will keep you going until you find your niche. It just takes patience and a lot of hard work. EM

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

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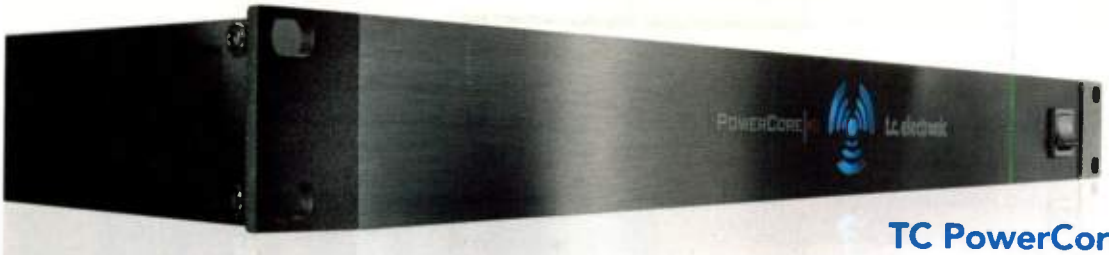

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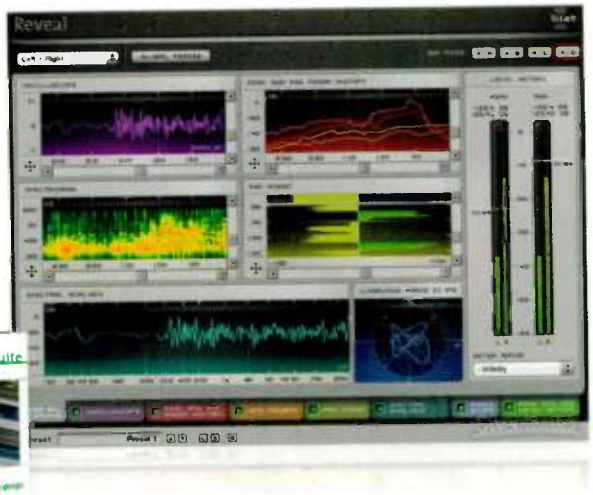

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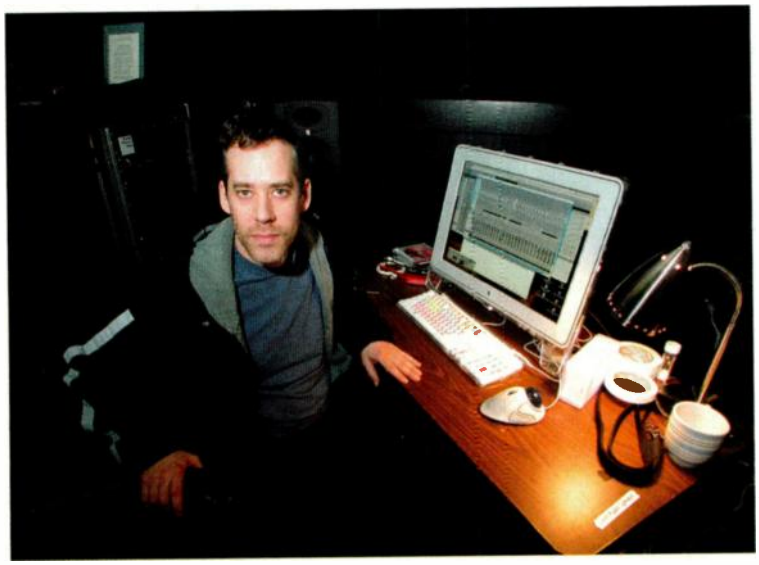

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