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JANUARY 2006

Electronic Musician

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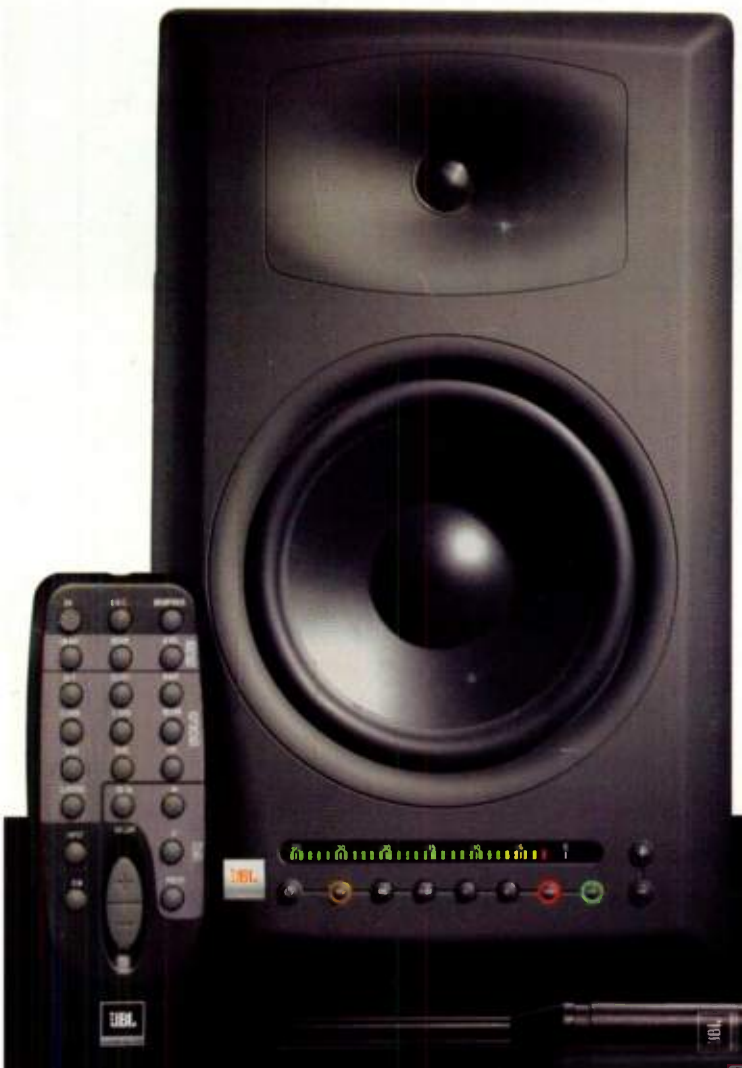

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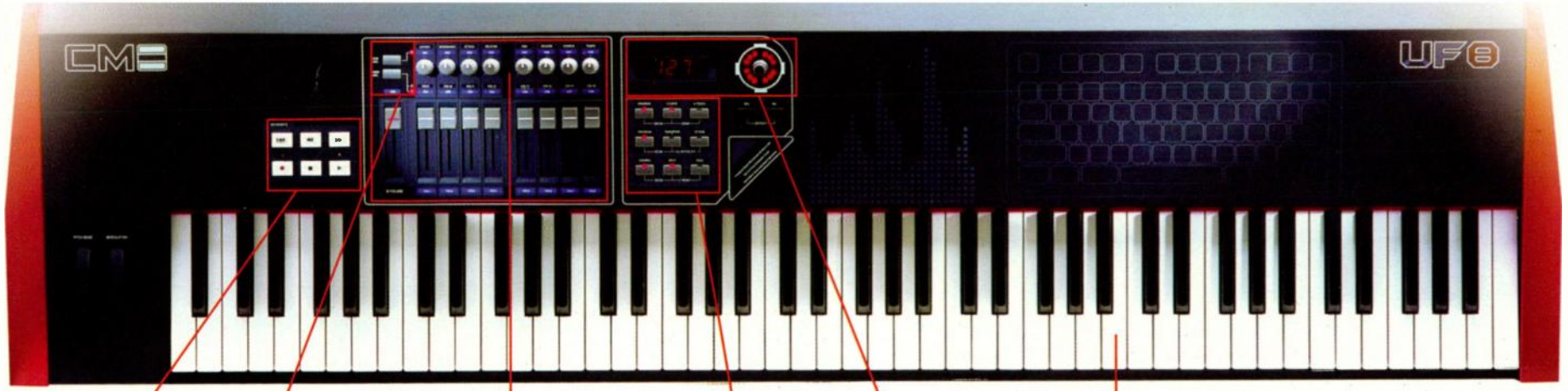

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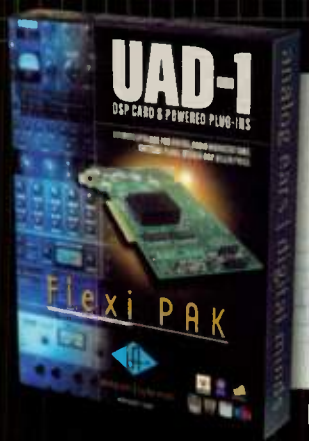

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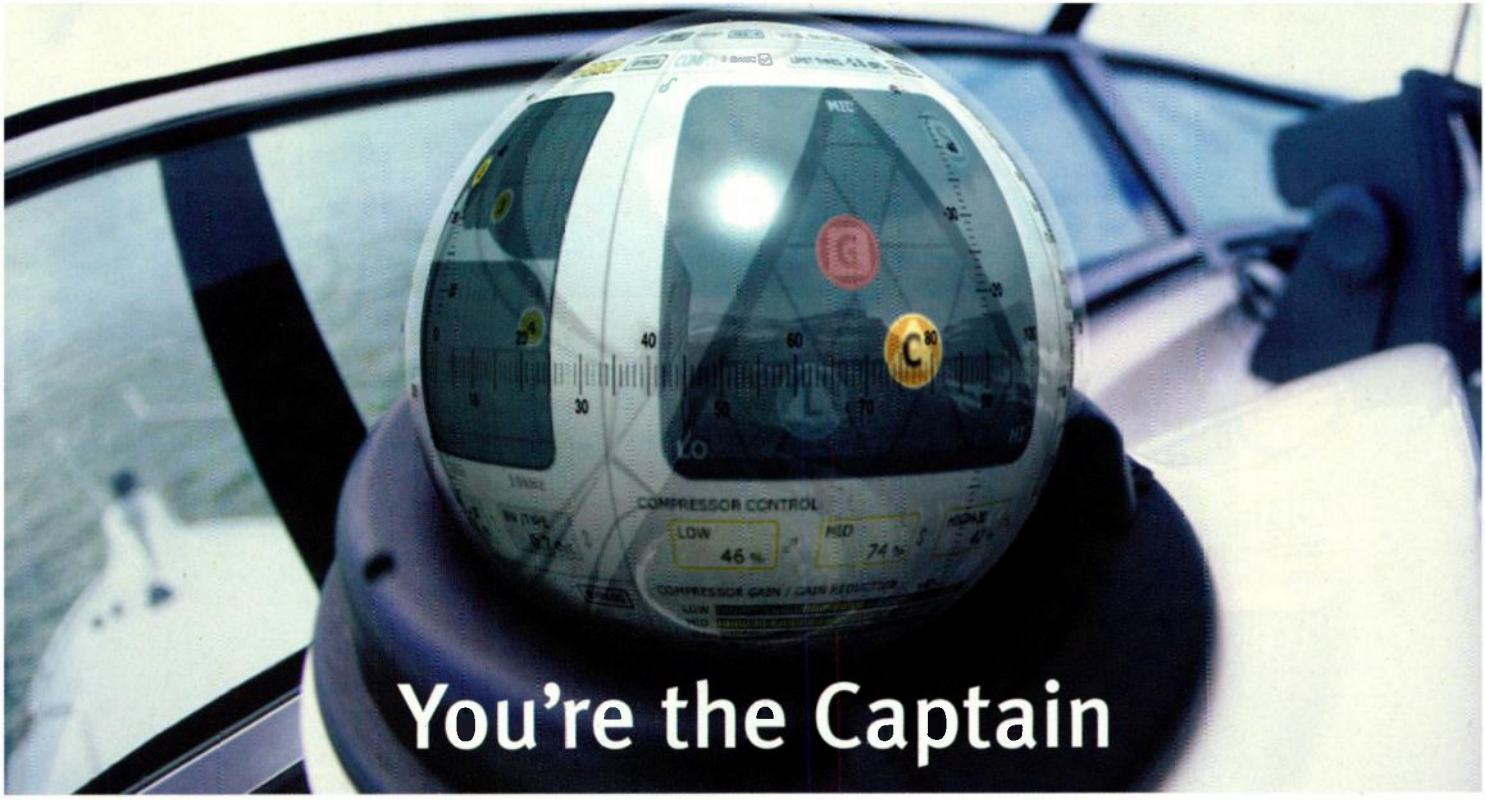

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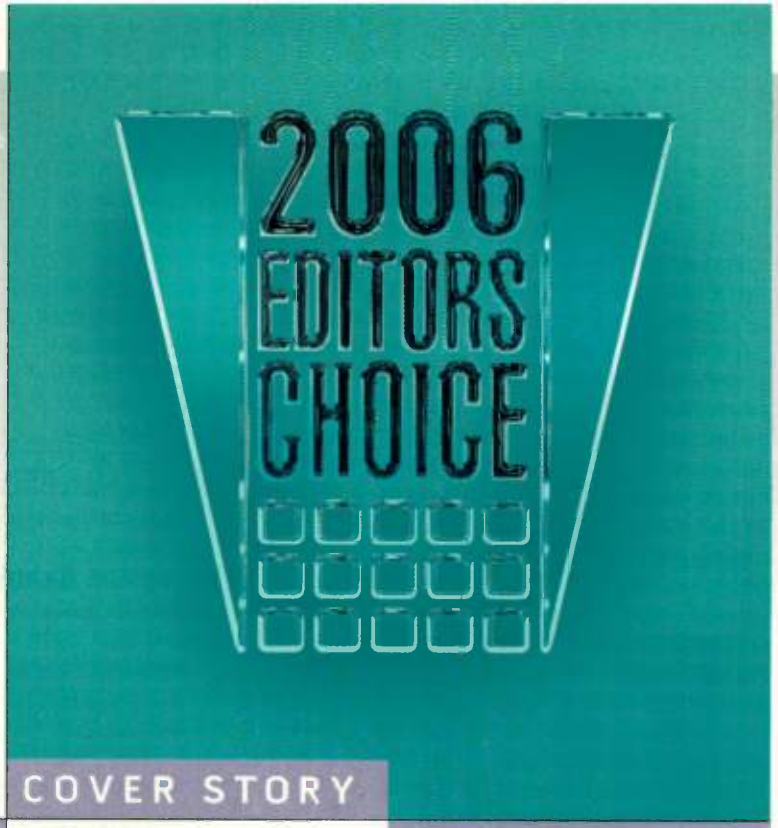
Electronic Musician
January 2006

INSIDE



DMITRY PANICH

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Welcome to the 14th annual celebration of the best new products we tested in the past year. By the EM Staff

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Record real tube-amp tones in your personal studio without blasting out your walls. We show you how, examining options such as isolation boxes, baffles, and hardware and software speaker simulators. By Orren Merton

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PERFORMANCE

It Was 20 Years Ago Today

This issue marks the start of EM's 21st year as a monthly publication. But this is the first issue in volume 22, not volume 21. Why is that?

To begin with, EM's exact age depends on how you figure it. In 1975, a small group of electronic musicians led by editor Marvin Jones, his friends John and Linda Simonton, and several authors (most notably Craig Anderton), founded a tabloid-format magazine called *Polyphony*. The magazine's original tagline read "Electronic Music & Home Recording," and it featured interviews and how-to articles about synthesis, recording, computers, and electronics.

Although a few musicians experimented with computers in the late 1970s, that wasn't practical for most of us. Recording was about tape recorders, mixing consoles, and outboard gear, and pro-quality audio gear cost a fortune. Therefore, we used whatever we could get our hands on, and many of us built our own gear. John and Linda Simonton owned PAiA Electronics, a supplier of electronics kits for do-it-yourselfers (including the seminal Gnome synthesizer), and they initially published *Polyphony* to encourage people to experiment. *Polyphony* was not really a periodical, though; it was published, whenever its creators had enough material and time. (At press time, we learned that John Simonton has passed away after a bout with cancer. Please see his obituary at www.emusician.com.)

JULIE BIRUM

Eventually Jones moved on, and Anderton took over *Polyphony*'s editorial reins. The magazine grew, but the home-recording/electronic-music world grew faster, and the "unperiodical" tabloid couldn't keep up. So *Polyphony* was redesigned and upgraded, and in 1985, it reemerged as *Electronic Musician*, a modern-looking (for its day) and better organized magazine. Anderton and the Simontons published one issue of EM in June and another in September 1985, and that was volume 1. The magazine was in transition, however, and its future was uncertain.

That all changed when Mix Publications, which published *Mix* magazine and distributed recording-oriented books, purchased EM and provided it with a professional staff and publishing expertise. Craig Anderton stayed on as our editor, and in January 1986, EM began monthly publication, marking the beginning of EM's "modern era." Because of the June and September 1985 issues, the January 1986 issue was volume 2, number 1. Hence, our 21st year begins with volume 22, number 1.

Since then, EM has gone through many changes. I started working on EM in late 1987 while copy editing for *Mix*. I went full time with EM early in 1988, and I'm the only EM staff member from that era who is still with the magazine. Anderton left in 1989, and Bob O'Donnell served as the editor until late 1993, when Mike Molenda took the hot seat. With Mike's late-1997 departure to take over *Guitar Player* magazine, I became EM's editor.

Many aspects of music technology have changed in 20 years, and we have striven to keep up and, when possible, to offer you a glimpse into the future. But with all those changes, EM's fundamental focus is the same as when it evolved from *Polyphony* 20 years ago—and the same as *Polyphony*'s original focus 30 years ago. EM is the home of creative electronic musicians who record in personal studios, and it always will be.

Steve Oppenheimer
Editor In Chief

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LAURA WILLIAMS

Letters

Prodigal Subscriber

In the midst of a major move, I let my EM subscription lapse. When the October 2005 issue arrived I thought, "Maybe I no longer need to receive this magazine." Well, after I devoured virtually every article in the issue, I remembered why EM is still indispensable, and I resubscribed.

Thanks for the excellent articles and technology information.

Craig Allen
Whittier, California

Full Compensation

Rusty Cutchin's review of Mackie's Tracktion 2.0 digital audio sequencer in the November 2005 issue was great. However, I think there was a significant omission.

One thing that has become very important to me in a lower priced DAW is full Plug-In Delay Compensation (PDC). Few if any entry-level DAWs offer that feature. Fortunately, Tracktion has offered full PDC support from the outset, and it's a heck of a nice feature that, in my mind, makes it a first choice in this line of products.

As an example, download the free SIR convolution reverb (from www.knufinke.de/sir/index_en.html) and try using it in any other DAW that costs less than $300. Then try using it in Tracktion. Using those two products together attests to the genius of their creators, not to mention Tracktion's low price compared with its competition.

I feel it's a journalistic obligation to treat this feature as topmost in your review. It wasn't even mentioned!

Dan Maher
via email

Dan—Unfortunately, there just wasn't enough space to detail every one of Tracktion 2's features, many of which (such as PDC) are enhanced by the program's convenient graphical interface (or perhaps anti-interface is a better description). Timing compensation, which is termed Advance in Tracktion, is handled in two ways. For any track, you can leave the Auto-Advance radio button engaged at the bottom of the Edit window. That provides smooth synchronization to other tracks in most cases. If you disengage the button, you can type your own value (up to 500 ms) into the Advance field directly below. It's another way that Tracktion incorporates professional features in a convenient and cost-effective manner.—Rusty Cutchin

A Magazine for the Rest of Us

I've been a subscriber to your fine magazine on and off for about ten years. I swear, my wife actually parades the magazine around in front of me each month, teasing me with the new issue that arrives in the mail.

The allure of *Electronic Musician*, versus that of *Mix* magazine, was its coverage of budget-conscious products. I remembered EM as a magazine for the regular guy without deep pockets. It used to be fun to read reviews about gear that I could actually afford. I understand that there are other fine products out there, but let *Mix* handle them. Tell us about the best microphone for less than $100, or the best set of reference monitors for around $300.

Yes, EM publishes reviews on this stuff sometimes. But I've been waiting for a review of Samson's C01U USB condenser microphone, and you still haven't reviewed it. I'd love to have a studio full of products from Neumann and Genelec, but I have to settle for products from Samson and Behringer. The July 2005 cover story was "Build a Desktop Studio on Any Budget." Starting at $5,000? Try starting at $600 and then you'll be stretching your pennies.

I'd like to see an article or two each month on the basics (explaining what 2:1 compression actually means, for example), or a pullout chart for delays or compression settings, and so on. I know you're likely thinking, "Everyone knows these things." No, we don't; this is why we buy your magazine.

After I devoured virtually every article in the issue, I remembered why EM is still indispensable.

AMAZING SOUNDS. ENDLESS POSSIBILITIES.

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Dimension Pro is a powerful, new breed of software synthesizer that combines real instruments with advanced synthesis, giving you endless sound possibilities.

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*RTAS support incuded in free update available from www.cakewalk.com in January, 2006.

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INSTRUMENTS

Next Month in EM

COVER

Keyboard-Controller Roundup

EM rounds up and evaluates the new breed of USB and FireWire keyboard controllers with build-in audio interfaces, including units from CME, Edirol, E-mu, Korg, and Novation.

FEATURES

Six Creative Uses of Plug-In Automation

This article offers tips for using DAW plug-in automation in ways that go beyond standard volume and panning techniques.

Does Analog Summing Improve DAW Mixes?

Using analog hardware to mix digital tracks is a hot topic, but is the process worthwhile? This feature explains the methods and hardware involved.

COLUMNS

Production Values: Kwamé

Kwamé has produced artists such as 50 Cent and Christina Aguilera. In this interview, he talks about his move from artist to producer, his personal studio, and the impact of Pro Tools on hip-hop production.

Making Tracks: Not Quite Random

You can do more with Ableton Live's Follow Actions feature than generate random or simple linear clip sequences.

Working Musician: Be a Demo Producer

Learn the responsibilities of a demo producer, how to find clients, what to charge, and how the Web has changed the demo producer's role.

... and much more!

Letters

I do still enjoy EM's writers, and the occasional bone is thrown our way.

Rob S.
Largo, Florida

Conflict Resolution

Larry the O's October 2005 "Final Mix" column, "Eggshells Are for the Birds," identifies an important element in the recording process: people. Where there are people there is conflict. Where there is conflict there is a big black hole of lost productivity, especially where money is concerned.

One solution you might have mentioned is to bring a mediator into the studio. A mediator is professionally trained to help people resolve disputes. A mediator may help everyone to get through a couple of tough spots. Or, the mediator might coach or train those involved to speak to each other in a way that helps get the job done, even after the mediator leaves. Often it takes more than remembering to be "sensitive."

You were astute enough to recognize that you could bring in the help of a "good friend." However, you might as well do yourself a favor and bring in someone who is professionally trained to help you get back to your project more quickly.

Conflict was evident in the documentary movie *Metallica: Some Kind of Monster*. The psychologist in the film used coaching, mediating, and other techniques to keep the warring band members on project. Such help is extremely valuable.

Good luck and keep up the good work with your great magazine!

Ted Goddard
Ontario, Canada

Error Log

September 2005, "Studio in the Round," p. 42. In the "Entry-Level Surround" sidebar, in the fourth paragraph beginning with the paragraph head "Applications," it states, "All of the major digital audio sequencers now have some kind of surround compatibility. MOTU Digital Performer, Apple Logic, and Steinberg Cubase SX 2 have enhanced panning features and plug-ins." Cakewalk's Sonar 4 Producer Edition should have been mentioned alongside those other programs, because it includes support for a maximum of 8.1 surround mixing and editing. Also, according to Cakewalk, Sonar 4's SurroundBridge plug-in "[allows] you to use your favorite stereo plug-in within multichannel environments."

September 2005, "Sequencing on a Shoestring," p. 50. In the first sentence of the second paragraph, "Sonar Professional Edition" should be "Sonar 5 Producer Edition."

September 2005, "Sequencing on a Shoestring," p. 78. The write-up of PG Music's PowerTracks Pro Audio 10 PowerPAK states that the program's audio-editing features lack a normalize option. In fact, PowerTracks Pro offers normalization capabilities in its Constant Gain option.

November 2005, "Get in the Game," p. 80. Chance Thomas was misidentified as the lead composer for Electronic Arts' *Lord of the Rings* series. The music for that series was actually composed by Soundelux Hollywood's in-house composers, Jamie Christopherson and Bill Brown.

We Welcome Your Feedback

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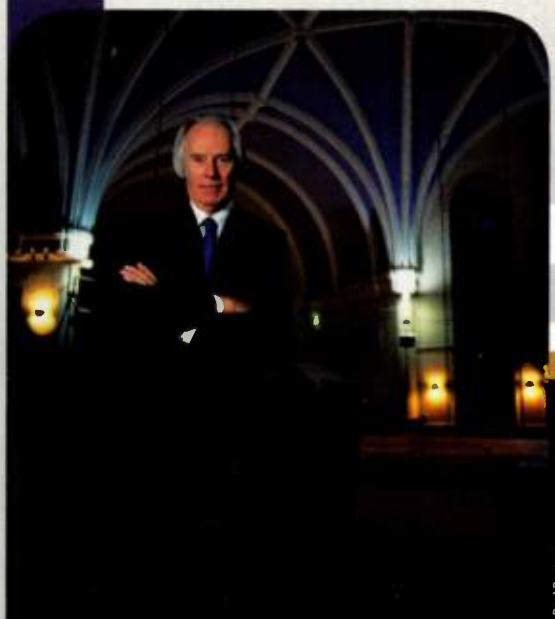

Paul Burgess

@emusician.com

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EMspotlight

The Wisdom of Sir George Martin

After nearly 50 years in the music business, legendary producer Sir George Martin retired in 1997. In this interview from the EM archives, Sir George—and a select group of musicians he's produced, including Paul Winter, Narada Michael Walden, and Jean Luc Ponty—share production tricks and anecdotes from his long and illustrious career. And yes, we also discuss the Beatles. By Larry the O. emusician.com/em_spotlight

On the Home Page

EM Web Clips

A collection of supplemental audio, video, text, graphics, and MIDI files that provides examples of techniques and products discussed in the pages of *Electronic Musician*.

EM Guides Online

Get detailed specs on thousands of music production products with our free online Computer Music Product Guide and Personal Studio Buyer's Guide.

Show Report

The 2005 Audio Engineering Society (AES) show is one of the largest annual pro-audio expos in the United States. Visit emusician.com for Senior Editor Mike Levine's report on the exciting new recording gear and music software unveiled at this year's show.

EM seminars on demand

The EM Seminars on Demand are an exciting way to see new products and learn new applications and techniques online and at your leisure. Korg USA's top sound designer, Jack Hotop, shows you how to customize a variety of synth sounds to suit your performing and compositional styles.

emusician.com/editorspicks

EM news

A weekly update on new hardware and software releases, manufacturer contests, and pertinent industry news.

emusician.com/news

EM newsletter

Sign up for our free online newsletter, eMusician Xtra, for up-to-the-minute information about new products, software upgrades, and more.

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Fu·sion (fyo͞o'zhən) *n.* 1. The merging of different elements into a union 2. A union resulting from fusing: "A fusion of sound and technology emerged." 3. A complete music workstation

An 8-track hard disk recorder within a keyboard. Understated sex appeal included.

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8 Tracks of direct-to-disk recording with a Built-in 40gig hard drive. Complete Song Production (MIDI and Audio).

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Sample your own sounds into the Fusion or take advantage of the high quality, built-in instrument samples.

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Create the sounds of classic analog synthesis for huge pads and searing leads to go beyond the average keyboard workstation.

fig 1: Alesis Fusion 8HD

FM Synthesis
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A whole new synthesis technology to add unique timbres and textures to your musical ideas.

fig 2: Alesis Fusion 6HD

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ALESIS

ENHANCED MIDI PROGRAMMING

Tracktion 2 features a fully revamped MIDI editor with faster note entry, quicker editing, more intuitive keyboard control, and improved viewing of notes and controllers simultaneously.

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Wanna add a VST plug-in, pull up a VSTi instrument, route to an Aux send or add some EQ? Just drag a filter to the track you want to effect. It's really that simple.

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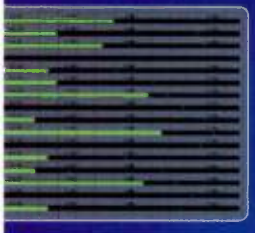
Tracktion follows your every move with its Properties Panel. Click on an audio clip and see its fade-out curve; click on a MIDI clip and quantise away; click on a reverb plug-in filter and fine-tune the pre-delay. The relevant info is a ways at your fingertips.



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Much has been made about the "summing bus" in DAW software. Tracktion 2 features a new high-definition 64-bit mixing engine for uncompromising sound.

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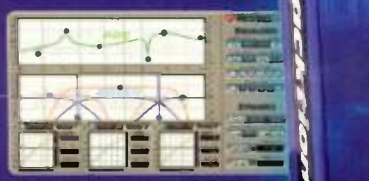

*Amplitube LE, SampleTank SE, Linplug RMIV and Final Mix: just four of over **30 plug-ins** included with Tracktion 2.*

There's nothing like the creative freedom that comes with having a complete suite of music production tools at your fingertips. Unfortunately, most comprehensive music software packages come with steep learning curves and price tags upwards of $500. Until now.

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SIMPLE. POWERFUL. REVOLUTIONARY. TRACKTION 2.

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By Geary Yelton

IK Multimedia AmpliTube 2

In 2002, IK Multimedia (www.ikmultimedia.com) was one of the first companies to ship software that realistically simulates guitar amps, speakers, and effects. AmpliTube raised the bar for its competitors and eventually set the stage for AmpliTube 2 (Mac/Win, $399), its long-awaited and redesigned successor. The new version presents five independent modules: an amp head, a miked cabinet, rack effects, stompboxes, and a tuner. It supplies more than 80 hardware emulations based on pedals from Boss and MXR; mics from Sennheiser and Neumann; and amps from Fender, Marshall, and Vox, among others.

AmpliTube 2 lets you load as many as 12 stomp and 8 rack effects at once and flexibly arrange their routing. Simultaneously load two complete setups and switch between them or play through both at the same time. Save an unlimited number of user presets and search for them by keyword. AmpliTube 2 will also support the soon-to-be-released StompIO USB hardware controller, a floor unit with ten footswitches, seven knobs, two displays, and an assortment of digital and analog inputs and outputs.

M-Audio ProjectMix I/O

The ProjectMix I/O ($1,249) from M-Audio (www.m-audio.com) fuses a tactile control surface with motorized faders and an 18-input, 14-output FireWire audio interface with 8 phantom-powered mic preamps. Each of the eight channel strips has a touch-sensitive fader with 10-bit resolution, a rotary control, and buttons for mic/line, record enable, mute, solo, and select functions. An LCD at the top of each strip shows that channel's rotary control assignment, and you can remap any strip to additional DAW channels at the touch of a button. Alongside the ProjectMix I/O's illuminated transport controls are a jog/scrub wheel and various navigation and function buttons. The master strip's fader is identical to the channel faders.

Each of the eight analog input channels has balanced ¼-inch TRS and XLR jacks and a mic/line switch, and one channel provides a high-impedance instrument input on the front panel. The stereo coaxial S/PDIF and 8-channel ADAT Lightpipe I/O handle sampling rates as high as 96 kHz. The ProjectMix I/O also has two independent stereo headphone jacks, word-clock in and out, and MIDI In and Out ports. The audio interface supports Core Audio, ASIO 2, WDM, and GSIF 2, and the control surface supports MIDI, HUI, Mackie Control, and Logic Control protocols.

Studio Projects SP-828

Studio hardware manufacturer Studio Projects (www.studioprojects.com) has debuted the SP-828 ($799), a 1U rackmount 8-channel mic preamp that incorporates Burr Brown circuitry. Designed for remote recording and DAW-based studios, the SP-828 contains an onboard 8 × 2 mixer. Each channel has a ¼-inch line in, an XLR line in, and a ¼-inch out—all of them balanced.

In addition to knobs for gain, mix level, and pan, each channel has switches for phase reverse, 48V phantom power, solo, and mic/line selection—each with its own indicator LED—as well as peak and signal-present LEDs. When nothing is connected to the line input, the mic/line switch doubles as a –10 dB pad.

The SP-828's output section has ¼-inch inserts to the L/R bus, 9-segment LED meters, and separate stereo level controls for the master and headphone outputs. Expansion in and out ports let you cascade as many as four SP-828s for a maximum of 32 inputs and 32 direct outputs, or they can all sum to a stereo bus.

the perfect pair... just ask these guys

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Electronic Musician 2006 EDITORS CHOICE

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MAGIX

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Samplitude Studio only available at Guitar Center

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S. Husky Huskolds - Engineer for Sheryl Crow, Norah Jones, The Wallflowers...

Magix

"The audio engine sounds better than anything out there.. Simply the only program worth looking into."

RME

"The superb sound of these pieces and the most comprehensive feature set out there, combined with unparalleled support, makes them the only choice for anyone serious about their work."

David Kahne - Producer for Paul McCartney, The Bangles, Sugar Ray...

Magix

"My first reaction was to feel like I had mixed off tape. I heard no phasing whatsoever."

RME

"I switched to native audio for all my computers to try to avoid some of the phasing issues inherent in certain proprietary systems. I was able to switch because of the solidity and ease of use of the RME optical audio cards. I was up and running so quickly, and within a day was free of the tyranny."

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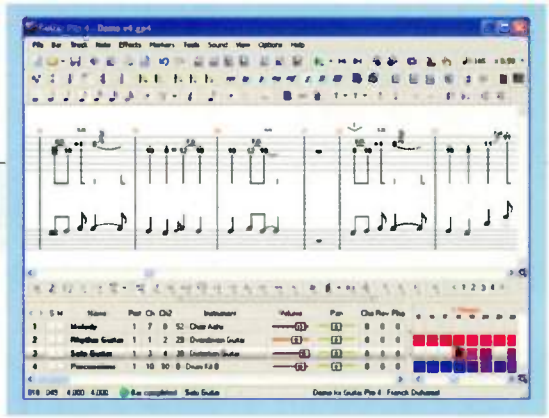
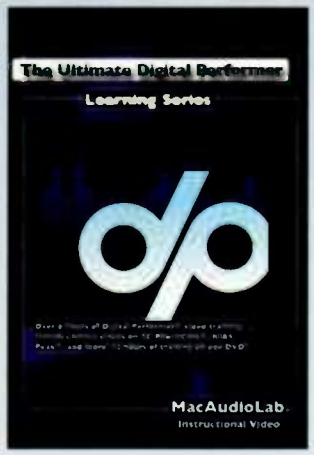
Arobas Music Guitar Pro 4



Guitarists often rely on a specialized form of notation called tablature, in which notes are indicated by their locations on the fingerboard. To meet their unique needs, eMedia (www.emediamusic.com) distributes Arobas Music Guitar Pro 4 (Win, $59.95), a 256-track sequencer and tablature editor for guitar, banjo, and bass. You can enter notes into Guitar Pro using MIDI, a mouse, or a computer keyboard. Playback will respond to articulation symbols such as grace notes, mutes, and tremolo. Dozens of additional symbols include chord diagrams, hammer-ons and pull-offs, harmonics, and slaps. Thousands of Guitar Pro–compatible files are available for download on the Web.

Guitar Pro 4 offers an assortment of additional tools for anyone who plays fretted stringed instruments. You can display more than 90 different types of scales, and a Scale Finder function identifies scales from your transcription. Other tools include an onscreen tuner, a metronome, and a speed trainer. The program can also transcribe standard and drum notation as well as lyrics and fingering.

Get Smart

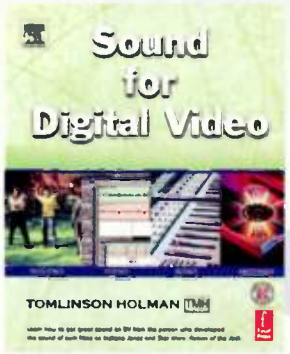


The Ultimate Digital Performer (Mac/Win, $79.95), a tutorial DVD-ROM with 12 hours of QuickTime video content, is shipping from **MacAudioLab** (www.macaudiolab.com). Over half the onscreen instruction concentrates on topics such as finding your way around in DP4, project management, POLAR, virtual instruments, editing windows, audio processing, and pitch automation. Additional sections cover MOTU products MachFive, MX4, and CueMix. Nearly six hours of supplementary videos address using third-party products such as Peak, Spark XL, and PowerCore.

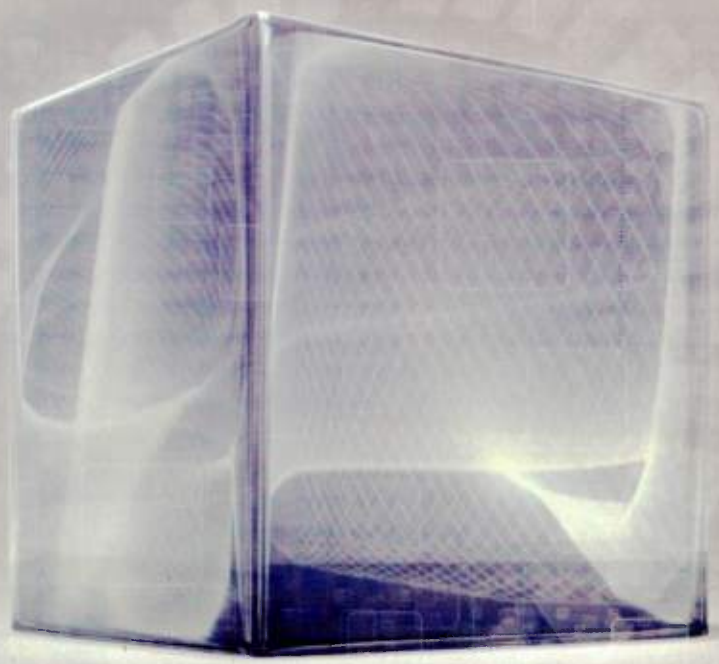
Although a variety of MIDI gear has been replaced by software, in-depth information about MIDI is as useful as ever. The second edition of *MIDI Power!* ($34.99), written by Robert Guérin and published by **Thomson Course Technology PTR** (www.courseptr.com), is a comprehensive guide to the ins and outs of this invaluable protocol. The first few chapters address MIDI hardware, General MIDI, and Standard MIDI Files, followed by almost 60 pages devoted to MIDI messages. Two chapters on MIDI computer basics lead to discussions of sequencing, virtual instruments, and advanced topics. The book's appendices are gold mines of information, incorporating technical explanations, practical tips, and the official MIDI 1.0 Specification. Profusely illustrated, *MIDI Power!* belongs in every electronic musician's reference library.

Also from **Thomson Course Technology PTR**, *Sound Forge 8 Power!* ($34.99) is the official guide to Sony's audio editor for Windows. Written by Scott Garrigus (www.garrigus.com), the 448-page book supplies step-by-step examples and exercises that take you from grasping the fundamentals of working with Sound Forge to advanced functions such as scripting and batch processing. *Sound Forge 8 Power!* is an update of the author's two previous books on Sound Forge and covers new features of versions 7 and 8, such as the Explorer window, enhanced spectrum analysis, and support for VST effects.

Tomlinson Holman, whose sound engineering credits include the films *Indiana Jones and the Temple of Doom* and *Star Wars: Return of the Jedi*, wrote *Sound for Digital Video* ($39.95) for all levels of sound designers and video recordists. Although his focus is bringing professional techniques to budget productions, Holmon imparts plenty of useful information to anyone involved in sound for picture. After introducing video formats and technology for audio professionals, he discusses mics, booms, and other hardware tools of the trade. He then delves into practical considerations such as getting the best signal levels, dealing with wind, and recording Foley, as well as editing, dynamics processing, mixing, and mastering for video. An audio CD illustrating the author's concepts is included. The book is published by **Focal Press** (www.focalpress.com).



It's not a Dream ...



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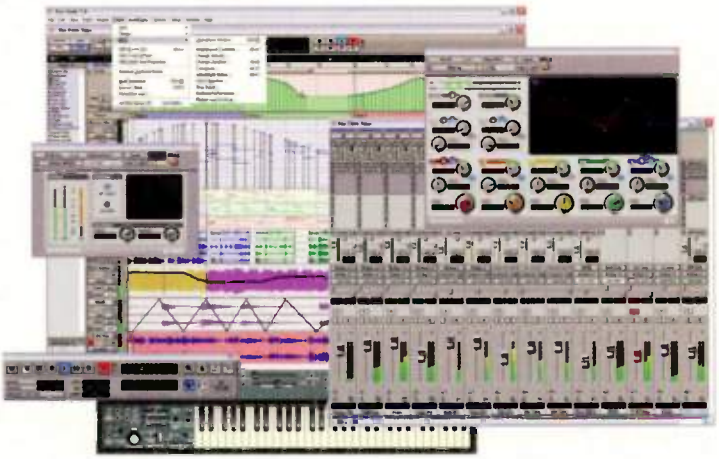
Digidesign Pro Tools 7



Digidesign (www.digidesign.com) has upgraded all editions of Pro Tools software to version 7, introducing new features and improvements that expand its recording, editing, and mixing capabilities while making it easier to use. Previous owners of Pro Tools HD (Mac/Win, $175 upgrade) and Pro Tools LE (Mac/Win, $75 upgrade) qualify for a free upgrade if they bought a system or software upgrade since the beginning of September 2005. All Pro Tools M-Powered owners qualify for a free upgrade.

Pro Tools 7 software's enhanced multiple-processor support increases plug-in count and overall system responsiveness. Menus have been streamlined, and Tool Tips have been implemented. New features include Instrument Tracks, Region Groups, mirrored MIDI editing, and the ability to import session markers and memory locations. Pro Tools 7 can import REX and Acid files, and you can quantize and loop audio regions to assemble grooves. Pro Tools HD now supports 160 simultaneous I/O channels and 10 sends per track. Pro Tools M-Powered adds five peripherals to its list of supported I/O devices.

Digidesign has also announced Upgrade Plus, which offers customers two additional plug-ins bundled with the upgrade. Pro Tools HD 7 Upgrade Plus ($245) lets you choose two of six plug-ins that normally retail for $395 to $995 each. Pro Tools LE 7 Upgrade Plus ($99) lets you choose two of five plug-ins that retail for $395 to $495 each.

Download of the Month

BIZUNE AND MANTRAGORA (WIN)

It's always nice when music drives product development rather than the other way around. Musician and software developer Zeus Issariotis designed synthesizers Bizune (free) and Mantragora ($49.99) for his electronic-music duo, also named Bizune. You can download both synths from the Time Control Productions Web site (www.bizune.com), and you can hear the band's music at www.bizune.net.

The synths' engine-block graphical user interfaces reveal manifold possibilities under the hood. Control labels (when they exist) are intentionally cryptic; the idea is to start tweaking without worrying too much about what you're doing. Both synths have 2-D Head Trip controls and Mantragora (shown here) has an additional 2-D Eye Chorus control. The effect of the 2-D controls is as dramatic as their function is secret, and they are begging to be assigned to a MIDI *x-y* controller such as a joystick.

Bizune and Mantragora are 4-oscillator synths. Two of the oscillators are analog-style with standard waveforms including two flavors of noise. They can be frequency modulated, and though it's not clear who's modulating whom, there is no doubt about the effect. The other two oscillators, labeled Dirty, use phase-distortion techniques and add grit to the sound. The oscillators are followed by a pair of multimode filters in series, and Mantragora has an additional resonant lowpass filter hardwired to the Mod Wheel. Both synths have chorus-phase-flange and reverb effects at the end of the signal path.

Mantragora has a few more modules (LFOs, for example) and is easier to program than Bizune, but they share the same design philosophy and basic sound. Both synths come as VST plug-ins, and purchasing Mantragora gets you a standalone version of each. Mantragora also has a built-in audio recorder to instantly turn your ramblings into WAV files.

Bizune and Mantragora are excellent synths for generating ambiences and pads with a lot of grit, but as their banks of factory presets show, plenty of leads and basses are also lurking behind all the ironwork. They'll add to your sound palette on the road and plugged in to your favorite DAW.

—Len Sasso

Vienna Instruments

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Three years ago the Vienna Symphonic Library redefined the sample library by introducing the Performance Tool, bridging the gap between static samples and dynamic performances. Now the next revolution is at hand. **VIENNA INSTRUMENTS**, the most powerful Virtual Instruments on the market, embody intelligent Performance Algorithms into an easy-to-use VST/AU plug-in to orchestrate an inconceivably vast array of samples. For the first time hundreds of inspiring articulations can be combined in one Preset and on a single MIDI track. Vienna's proprietary **Performance Detection** analyzes intervals, repeated notes, patterns, and even speed in real-time and automatically summons the appropriate articulation or nuance. If you never imagined a Virtual Instrument could read your mind, think again. Never before has composing been so natural, fast, and so much fun.

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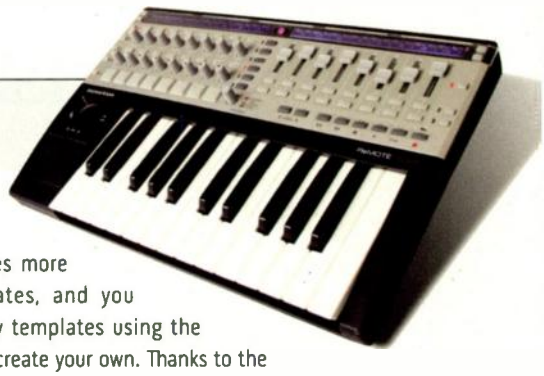
Novation ReMote SL25



Combining a MIDI keyboard with a software control surface, Novation Music has introduced the ReMote SL25 ($499), a compact controller powered by USB, batteries, or an external power supply. In addition to 25 Aftertouch- and Velocity-sensitive keys and 8 Velocity-sensitive trigger pads, the SL25 has 56 assignable controls: 32 buttons, 8 knobs, 8 sliders, and 8 rotary encoders. Row-selection buttons effectively triple the functionality of continuous controls. Two bright displays show 16 assigned parameter names and values simultaneously. The keyboard has an assignable *x-y* touch pad and a joystick for pitch bend and modulation, and the control surface provides sequencer transport buttons.

Onboard memory stores more than 40 software templates, and you can supplement the factory templates using the included template editor to create your own. Thanks to the SL25's Automap mode, a template for Steinberg Cubase SX3 or Propellerhead Reason 3.0 loads whenever you run one of those programs (with more programs forthcoming). Then you press a button or click the mouse to switch from controlling one section of the software to another.

Cakewalk Dimension Pro

Cakewalk (www.cakewalk.com), the developer of Sonar and Project5, has announced its first cross-platform soft synth plug-in, Dimension Pro (Mac/Win, $359). It supports Audio Units and VST in Mac OS X and DirectX and VST in Windows XP. Dimension Pro is an expanded version of Dimension, the rgc:audio-engineered sample-playback synth included in Project5 Version 2 (Win). Owners of that program can upgrade to Dimension Pro for $99.

At the heart of Dimension Pro is a two-DVD sound library containing a collection of multisamples and grooves and more than 1,500 programs. You can drag-and-drop grooves into your host sequencer to edit their MIDI content. Dimension Pro's synthesis architecture lets you blend multisampled instruments with physically modeled components such as simulated piano body and damper, and it also lets you use vector mixing to morph between four elements produced by waveguide generators and wavetable oscillators. You also get 20 tempo-synced LFOs, 20 envelope generators, 3 bands of parametric EQ, and an extensive selection of multistage effects.

PSPaudioware PSP MasterComp

Plug-in developer PSPaudioware (www.pspaudioware.com) has launched PSP MasterComp (Win, $249), a stereo dynamics processor designed for mastering and tracking applications. It features 64-bit floating-point precision and Frequency Authentication Technique (FAT) algorithms for transparent operation, according to the manufacturer, even at extreme compression settings and high sampling rates. A precise level detector ensures low distortion and offers the optional ability to automatically adjust the attack and release times. The plug-in's front panel affords comprehensive metering and parameter control. Features include a brick-wall output limiter with automatic release time, sidechain filtering, channel linking, and a compression tilt control. PSP MasterComp runs in Windows XP or 2000 and requires a DirectX, an RTAS, or a VST host (a Mac version is forthcoming). It is also available bundled with PSP MasterQ and Vintage Warmer for $389, a savings of $159. EM

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Blast from the Past

By Scott Wilkinson

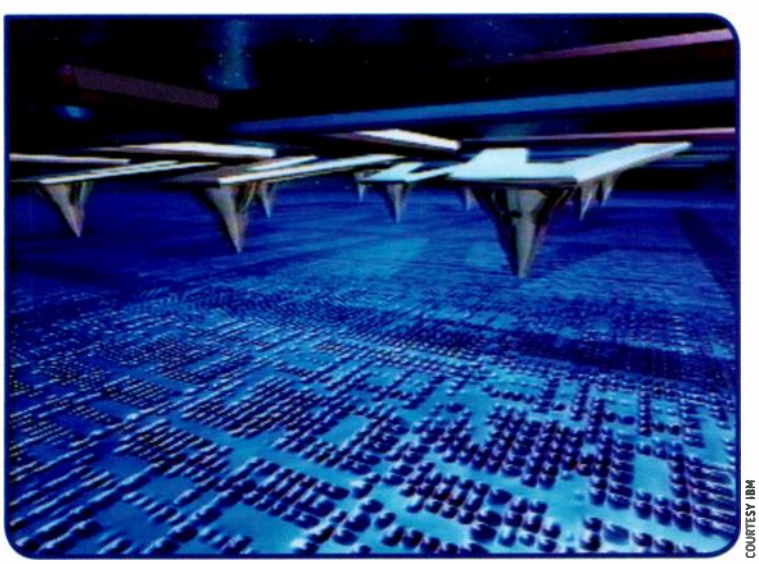
The return of punch cards—sort of.

As the saying goes, anyone who can remember the '60s probably wasn't there. I don't remember much from that era (which means I must have been there!), but I do recall one thing: computer punch cards.

Thankfully, those days are gone forever, but the concept lives on in a project from IBM's Zurich Research Laboratory (www.zurich.ibm.com), code-named "Millipede." Rather than using traditional magnetic or electronic means to store data, Millipede takes advantage of nanotechnology to represent data mechanically. Tiny pointed tips are mounted at the ends of cantilevers, and individual bits of data are written by poking dimples in a thin sheet of plastic (see **Fig. 1**). The cantilevers are 70 microns (micrometers) long and 0.5 micron thick, while the tips are 1 micron long, and they punch dimples that are 15 nanometers (nm) in diameter.

This resembles the punch cards of yesteryear, but with two important differences: the Millipede technology is rewritable, and it offers the potential to store a maximum of 3 gigabits (Gb) of data in the same space occupied by a single hole in a standard punch card. Recent experiments used a small part of an array of 4,096 tips (64 × 64) to achieve a data density of 500 Gb per square inch, which translates to a capacity of about 3 GB in an area 6.4 mm square using the entire array. Another demonstration, using a single tip, attained a data density of 1.2 terabits per square inch, which is the equivalent of 25 DVDs on a surface the size of a postage stamp.

FIG. 1: IBM's Millipede project uses tiny pointed tips to poke dimples in a plastic film, representing bits of data that can be read by the same tips.



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Interestingly, the storage medium—a polymer film about 100 nm thick that coats a silicon substrate—is moved in two dimensions beneath the fixed array of tips. Electromagnetic actuation provides extreme precision, enabling each tip to read and write within an area 100 microns square.

Bits are written by heating a resistor in the cantilever to about 400 degrees Celsius. The hot tip softens the polymer and briefly sinks into it, creating an indentation. To read a bit, the resistor is heated to a lower temperature, typically 300 degrees Celsius, which does not soften the polymer. When the tip drops into an indentation, the resistor is cooled by the resulting change in heat-transport characteristics, causing a measurable change in resistance.

To overwrite a bit, the tip makes a series of offset pits whose edges overlap so closely that the old pit "relaxes," effectively erasing the unwanted data. The IBM researchers have demonstrated more than 100,000 write/overwrite cycles.

Currently, the data rate of individual tips is limited to tens of kilobits per second, though a large number of cantilevers working in parallel can achieve data rates of tens of megabits per second. Recent experiments performed at IBM's Almaden Research Center have shown that individual tips can support data rates as high as 1 to 2 megabits per second.

A Millipede device's power consumption depends on the data rate at which it is operated. At a few megabits per second, a device is expected to consume about 100 milliwatts, which is comparable to flash-memory technology and is considerably below magnetic recording. And while SD-format flash memory isn't expected to exceed 4 to 8 GB in the near term, Millipede could pack 15 to 20 GB into the same form factor without requiring more power.

As I've said many times, any advance in computer technology, be it greater storage capacity, higher data rates, or faster processor speeds, is a potential boon for electronic musicians, who depend on computers to realize their musical dreams. Fortunately, we no longer have to rely on paper punch cards, but the concept of storing data mechanically may see the light of day once again as nanotechnology offers new ways to circumvent the limitations of magnetic and electronic storage. EM

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Beauty in Chaos

By Lori J. Kennedy

Foetus blends organic and synthetic music for *Love*.

J. G. Thirlwell has been the alternative to alternative music for 25 years. He is most commonly known as Foetus but has also worked under the names Manorexia, Steroid Maximus, DJ OTEFSU, Clint Ruin, and Wiseblood. Thirlwell's music crosses genres and defies categorization. You might think he's a jazz artist, a soundtrack composer, or a psychotic noisemaker.

Love (Self Immolation, 2005) is Thirlwell's 15th release as Foetus, offering a strangely melodic combination of frayed vocals, dramatic and haunting orchestral interludes, and grinding, hard-rock soundscapes. The album takes the listener on a journey with some jarring left turns. "For *Love*, I wanted to nurture something that developed my passion for the cinematic side of my music and its collisions with other elements," Thirlwell says. He recorded *Love* in his Brooklyn, New York loft. "The studio is below the wooden duplex area that separates my loft into open rooms," Thirlwell says.

Thirlwell refined and reedited *Love* over the course of a couple of years while working on a number of side projects. "I wanted the album to be more spacious with softer songs," says Thirlwell. "Some songs emerged fully formed, like the first song on the album ['(not adam)'], while others, like 'Don't Want Me Anymore,' took months of revisiting and refining arrangements."

HEUNG-HEUNG CHIN

Love/Foetus

As production progressed, Thirlwell's arrangements grew. He recorded *Love*'s bombastic orchestral parts by manipulating a mix of live instruments and samples. "I like to mix the organic and the electronic," says Thirlwell. "I've been doing faux-symphonic works since my album Nail [Self Immolation, 1985], which used a lot of Fairlight [the first digital sampling synthesizer, created in the late 1970s]. On *Love* I used a Mac G4 running [Apple] Logic 4.73. I tend to work on one technological plateau for a while and then make a big step up all at once.

"I have two Akai S5000 samplers, and I also have [Apple Computer's] EXS24 and [Native Instruments'] Kontakt," Thirlwell says. "But I prefer the Akais and usually use soft samplers only when I'm on the road. On *Love*, the harpsichord sounds are a blend of sounds from a Kawai K1 and an old [E-mu] Proteus/1. I run everything through a Yamaha 02R digital mixer, and I mix either into a Panasonic SV-3800 DAT or into BIAS Peak.

"I also used a Novation BassStation and [E-mu] Proteus 2000, and some outboard [processors] like the Yamaha SPX900 and the Lexicon MPX 100," Thirlwell says. "I got one of my favorite sounds on *Love* using the [AudioNerdz] Delay Lama plug-in. In the song 'How to Vibrate' the Delay Lama makes a vowelization sound like [Peter] Frampton's guitar voice-box."

While Thirlwell plays almost every instrument on the album, one song, "Pareidolia," features a Theremin solo by world-renowned Theremin player Pamelia Kurstin. "Pamelia is the most astonishing Theremin player I have ever seen," says Thirlwell. "That song has a break in the middle, and I thought a yearning, aching Theremin solo would sound great."

Thirlwell spent a good deal of time sequencing, arranging, and mixing his work, and occasionally experimented with vocal tracks. "I used an Audio-Technica AT4033 [condenser mic] running through an ART Tube MP Studio [tube-mic preamp], and sometimes I used a Shure SM58," Thirlwell says. "Some vocals were improvised and then edited, which I had never done before. On a couple of songs, I ran my voice through a [Pro Co Sound] Rat [distortion] pedal. I also used a Logic ring modulator plug-in. I experimented with vocal deliveries a fair bit this time, leaving in croaks and vulnerabilities, which are probably offensive to today's pitch-corrected ears." **EM**

For more information, visit www.foetus.org.

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Making Connections with ReWire

By Matt Donner

How to get your audio and MIDI programs to play well with others.

In today's desktop environment, musicians often need to integrate sound emanating from a wide variety of sources. Although working entirely on a computer frees us from the hassles of patching cables, music applications bring their own connectivity issues to the table. Luckily there is ReWire—a communications protocol developed in 1998 by Propellerhead Software that removes many of the challenges of interconnecting music software.

In this article, I'll discuss how ReWire works and how to use it. I'll also provide some tips on how ReWire is best used in several major music applications. (There are currently more than two dozen ReWire applications on the market, and many have their own unique implementations.) ReWire is free to the user, but manufacturers pay a license for its use. There's nothing to download or install. If you own two applications that support it, you have everything you need to get started.

ReWire Basics

ReWire is a protocol that is used to move data between two applications in real time. It was originally designed for use with Steinberg Cubase and Propellerhead ReBirth, but it has since been adopted by a large number of companies for use with their software. ReWire lets users extend their available sound palette beyond simply adding plug-ins to a host application. Two separate programs running on the same computer can communicate in ways that a simple

plug-in architecture would not allow. For example, you can send the audio output of Sony Acid 5—which can't be implemented as a VST, DXi, or other plug-in—into Steinberg Cubase.

You can think of ReWire as a set of invisible cables that stream audio and MIDI between two music applications. One application will always be the host (or the mixer), and the other will always be the slave (also known as the client or the device). For this article, I'll use Propellerhead Reason as the example slave. The host feeds MIDI and tempo to the slave, and the slave responds by feeding audio to the host. Either application can be the transport master, which means that you can press Play in one program, and both will play in sync.

ReWire is currently at version 2 (often called ReWire 2). In theory, ReWire 2 supports as many as 256 audio channels and 4,080 MIDI tracks. Most applications, including Reason, can play only 64 audio channels at once. The 256-channel limit comes into play when a host is receiving ReWire audio from several slaves simultaneously—it's the total channel count of all applications.

When setting up ReWire, the first rule is simple: always open the host first and the slave second. The slave will boot, usually indicate that it recognizes the host, and then immediately establish the ReWire link. In Reason, the Hardware Interface (under the Audio Out section) will show that Reason is the ReWire slave if it is launched with a host already open.

Ableton Live is another popular ReWire application (see the sidebar "Extending Live's ReWire Capability"). Although it too can be used as a slave, when it is used with Reason, it needs to be the host, because Reason can act only as the slave. Therefore, when using the two, make sure you open Live first.

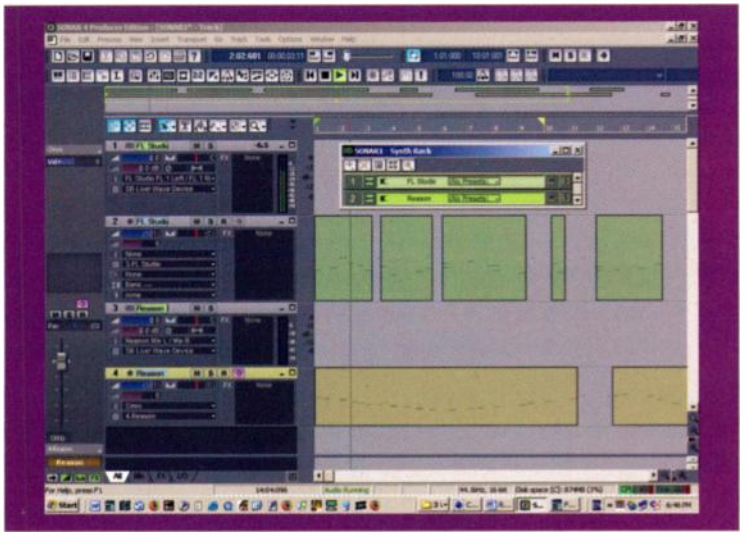

FIG. 1: Sonar's Synth Rack (shown here in track 1's data area) is used to create audio and MIDI connections to the ReWire slave.

FIG. 2: Propellerhead Reason can supply as many as 64 channels of audio data to a ReWire host. The figure above shows the rear panel of the Reason rack where the 64 ReWire audio ports are accessed.

Up and Running

Every ReWire host must recognize the ReWire slave as a destination for its MIDI tracks. In addition, the host needs to recognize ReWire audio channels as inputs to its own audio and auxiliary tracks. Establishing that configuration requires a lot of setup in some hosts and no setup whatsoever in others.

Apple Logic Pro 7, for example, ships with template sessions that implement ReWire devices. But because Logic allows users to customize everything in their Logic Environment, most Logic users create their own ReWire Environments (see the sidebar "Creating ReWire Devices in Logic Pro 7"). Unlike Logic Pro, MOTU Digital Performer (DP) requires no work—simply open DP and a ReWire slave. Once that is done, DP's MIDI tracks instantly recognize the ReWire slave, and DP's audio and aux tracks show the ReWire ports as inputs.

Digidesign Pro Tools establishes a ReWire link by instantiating the slave as a plug-in on either an audio or an aux track. To do that, choose Multi-Channel RTAS/Instrument under the Plug-in hierarchy. Then choose which ReWire audio channels the track should listen to. If you want to access audio beyond audio ports L, R (3 through 64), use the Multi-Mono version rather than the Multi-Channel version. Because Pro Tools TDM (unlike Pro Tools LE) offers a choice of plug-in architectures, it's important to note that ReWire slaves will be found only under the RTAS option.

Cakewalk Sonar creates the ReWire link through its Synth Rack, found under the View menu. That window provides access to the software instruments installed on your system and is also where you create MIDI tracks for those synths (see **Fig. 1**). Once the Synth Rack window is open, click on the "+" button to add a synth. If a slave has already been launched on your system, it will appear in the list, at which point you select it and click on OK.

Steinberg Cubase configures its ReWire links through the Device Manager. Once Cubase and a slave have been launched, choose Devices/Reason (or any other slave), and a list of ReWire audio ports will appear. Activate the channels you want (1 through 64, with 1 and 2 being mix Left and mix Right in Reason) by clicking on the button to the left of each channel, and those output channels will now be available as inputs on all of Cubase's audio and aux tracks.

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Note that in Pro Tools, Sonar, and Cubase, setup is required only for audio. Once the ReWire link is established, MIDI slave devices will automatically be available to all of the host's MIDI tracks.

Routing the Audio

Depending on the slave application, there can be as many as 64 mono audio streams available as inputs to the host. **Fig. 2** shows the back of the Reason rack with all 64 ReWire audio ports available. Most situations call for nothing more than a stereo mix in the slave to be routed to the host, but others call for individual track-to-track routing. When deciding how to bring in your audio, use these helpful guidelines:

• Decide whether you want to monitor the audio from the slave or if you need to record it. I recommend that you record the incoming audio (usually individual tracks, not a stereo mix), because you never know when or where you might need the music from this session. Each host has a different method of recording incoming ReWire audio tracks, and some are easier than others. For example, Logic Pro 7 and Digital Performer allow you to create an audio track and set its input to the correct ReWire channel, record-enable the track, and then record the audio. Pro Tools, however, requires that the audio be

CREATING REWIRE DEVICES IN LOGIC PRO 7

When working with Logic Pro 7, follow these important steps to get your ReWire devices in the Environment.

1. In the Environment window, go to the Layers menu and choose Insert. That will create a new Layer in your Environment, and you will be presented with an empty screen. Double-click in the Layers area of your new Layer and call it *ReWire*. That way, when you choose that Layer from the Arrange window, you'll get nothing but ReWire-related devices.

2. Next, tell Logic how many tracks of MIDI it should make available to send to ReWire. For that, there is a special MIDI object called *ReWire*. To create that object, go to the New submenu within the Environment window and choose Internal/ReWire. A yellow MIDI object will appear in the window. You can create as many objects as you want up front or create them as needed, but for now, create 16. Select all 16 and double-click on Multiple Selected in the Parameter window, then type "ReWire MIDI 1" (Logic automatically names all of the objects 1 through 16).

3. Click on and hold the desired track in the Arrange window's Track list, then select ReWire MIDI 1 from the Internal submenu of the context menu that pops up. In the ReWire MIDI 1 parameter box, use the Device menu to choose a ReWire slave application, then use the Channel menu to choose an instrument in the slave—for example, one of Reason's soft synths. As you play your MIDI keyboard, MIDI will be routed through that Logic track to the ReWire instrument you've chosen. (If you followed the tip about setting up the return first, you'll know that works because you can hear the sound coming through the return channel.)

4. In Logic, all audio passes through Audio Objects. That is an important point, because there are many kinds of MIDI objects but only one kind of audio object. The audio object can be assigned to pass audio in many different ways (for example, using a bus, a track, or an audio instrument). Choose New/Audio Object and make 16 of those objects to start (remember that ReWire supports as many as 64 channels of audio, so if you're going to use them all, make them all). Double-clicking on those Audio Objects will turn them into faders.

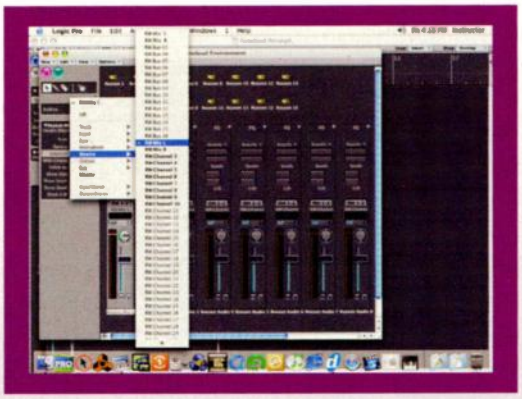

FIG. A: This figure shows the list of ReWire ports available to Logic. Note that some are named *bus* and some are named *channel*. Logic uses whatever term is given to it by the slave to identify each port.

5. To determine which ReWire channels the Audio Object will receive, choose ReWire/RW: Mix L from the Channel drop-down menu in the Audio Object's parameter box, as seen in **Fig. A**. Once you've chosen the first object and set it to Rewire Channel RW: Mix L, select the second object and set it to Rewire Channel RW: Mix R in the same fashion. Continue that process until all appropriate ReWire channels are set to the correct inputs from the slaves you have running. Be sure to pan the Mix Left and Right to reflect stereo input from the slaves.

Note that the first set of audio inputs in Fig. A uses the term *bus* (3 through 16) and the next set uses the term *channel* (3 through 29). That is because Logic itself does not identify the slave by name, but merely uses whatever term (bus or channel) the slave provides. (On my system the first set is Live, and the second set is Reason.) If you're running more than one slave simultaneously, you'll have to use trial and error to determine which set of ReWire inputs refers to which slave.

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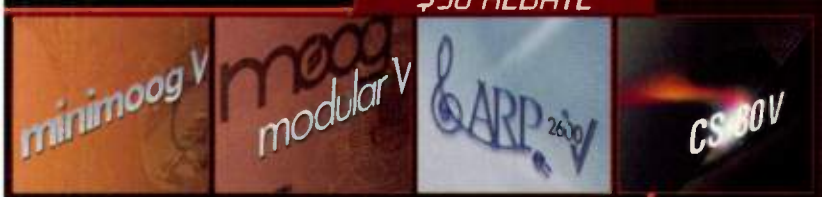

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brought into an aux track and then bused out to an audio track for recording. That is because Pro Tools' faders are postrecord, so inserting Reason and pressing the record button will not print the audio. Cubase requires that you create an audio file from the incoming ReWire audio using its Audio Mixdown function.

• If you simply want to monitor the left/right mix of incoming audio and have no intention of recording it, create a stereo aux track in your host. Aux tracks do not record audio, but they do allow you to hear any incoming audio. Reason users should wire all their devices into a mixer to sum the audio, and then connect the Mixer to ReWire 1, 2 (L, R) so that all the audio runs to those ports. Set the input of that aux to ReWire L, R (the stereo mix coming from the slave), and the audio mix from the slave will appear on that stereo channel.

• Rewiring the mix into the host often isn't enough. For example, you may wish to send separate audio channels into the host for processing, such as EQ or compression. Even though you will not record the individual channels, you can still process the signals individually, so you'd still create aux (and not audio) channels in the host. When choosing to route individual channels to the host (mono bass to a track, stereo pad 1 to another track, mono kick to a third track, and so on), first determine the number and type of audio channels being sent to the host. Create the appropriate aux tracks to accommodate the incoming channels.

For example, if you wish to ReWire 16 mono channels from Reason into the host, create 16 mono auxes whose inputs are ReWire 1 through 16, respectively. Reason users should not use a Mixer in this case but should instead connect each device to its own audio port. The audio connected to each port in Reason shows up individually on the aux track in the host whose input matches the ReWire port. For example, a mono bass connected to ReWire audio 3 in the slave requires a mono aux in the host whose input is ReWire 3.

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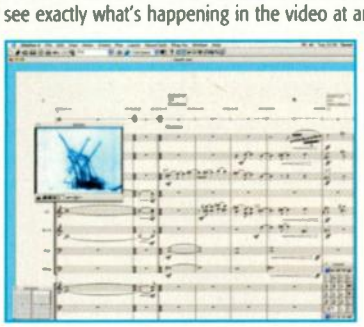

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EXTENDING LIVE'S REWIRE CAPABILITY

Though Reason offers 64 ReWire output ports, versions of Live before version 5 default to only 16 ReWire ports (version 5 defaults to 64). You can increase that number to a maximum of 64 by hacking Live's Options.txt file. Create a text file called Options.txt and type "-ReWireChannels=64." (Note that you can specify only an even number of channels, and that you must use the dash symbol at the beginning of this line.) That file must be placed into the same folder as Live's preferences.cfg file. In OS X, that is the Preferences/Ableton/Live (version) folder. In Windows XP, it should be the Program Files/Ableton/Live (version)/Preferences folder. See the Live Support FAQ at the Ableton Web site (www.ableton.com) for some other ReWire features that you can tweak in that file.

• Be sure to send the slave stereo channels to ReWire port pairs that start with an odd number, such as 3 and 4 or 5 and 6. The host will invariably want to see input pairs in the same configuration. If you miss this step, you could end up with audio spread across two tracks for the same sound. For example, if a stereo pad is rewired to pairs 4 and 5, then the host would see only ReWire 4 as the right side of one stereo track and ReWire 5 as the left side of the next track. In that case, you'd still hear both sides of the stereo pad, but they will appear in opposite speakers, and you'll need to automate two faders to control the sound.

What About My Effects?

Creating music with many ReWire channels can get complex, but using effects in your slave can make things even more complicated. For example, let's say that you used a mono chorus effect on a mono bass part in the slave and sent its output to a ReWire port. Should you also send the dry bass part to a port to have more control? That would require an additional ReWire channel.

As a general rule, when deciding whether to use effects in the slave, consider the host itself. Does your host have a similar effect? Does it sound better? Is the character of the sound better for the song with the host effect or with the slave effect? Those are important considerations when deciding where the effect should be applied.

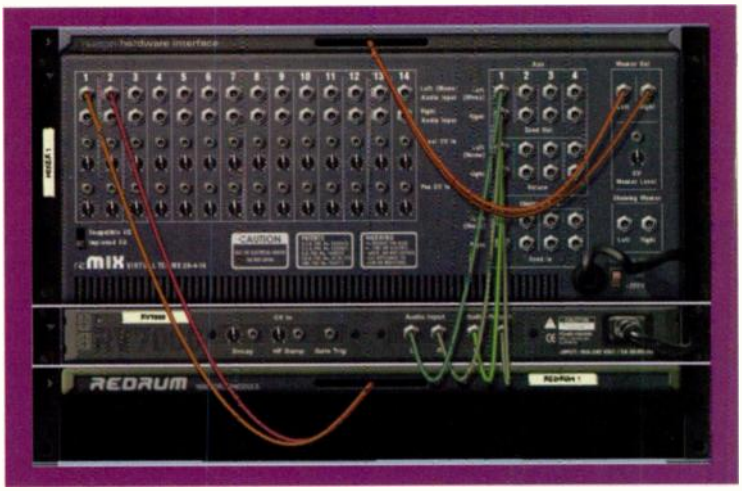

FIG. 3: A send-return configuration is the best option when using a time-based effect in Reason.

When dealing with time-based effects such as reverb and delay, use a send-return configuration within Reason (or any other slave). Reason will automatically route the sends from the mixer to the inputs of the effect, and it will route the outs of the effect back into the mixer's aux returns if you click on the mixer before you cre-

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ate the effect (see Fig. 3). By using that configuration, you'll have more control over the sound than you would if you inserted the effect on the ReWire chain, as in the earlier case of the mono bass and the chorus.

Try This Experiment

Create a simple drum pattern in a ReDrum module in Reason. Apply a reverb to the pattern by connecting the outs of the ReDrum directly to the ins of the reverb, and then connecting the outs of the reverb to the line input of a mixer. Slowly twist the knob for the wet/dry mix on the reverb until you feel that there is an equal amount of wet and dry sound. You might think that will be at 50 percent, but in most cases it's closer to 20 percent wet. Now bypass the reverb and see if the dry drums sound louder than the wet/dry mix (I'll bet they do). Next, configure the reverb effect using the send-return approach mentioned earlier and slowly increase the amount of send on the mixer until you achieve a similar blend of wet and dry. Now mute the return of the reverb and compare volume: the drums should sound just as loud with the reverb as they do without it.

Note that nontime-based effects such as distortion, EQ, and compression should not be set up as a send-return. That's because it would be difficult to hear the EQ when you mix the equalized and the unequalized sounds together. For those types of effects, it's better to insert them into the signal chain directly. That applies regardless of whether you apply your effects in the slave or in the host—experimentation is highly encouraged here.

Using the send-return configuration in a ReWire channel is no more difficult than using a standard audio channel. Simply connect the outputs of the effect from the mixer returns to the ReWire ports and create a channel in the host to receive them. Set the input level accordingly, and be sure to name the track in the host so that you know what the sound is.

If you create an insert effect in the slave, then the dry sound no longer exists, as the dry sound runs through the effect 100 percent to the mixer. When you connect the end of that signal chain to the Hardware Interface, you'll

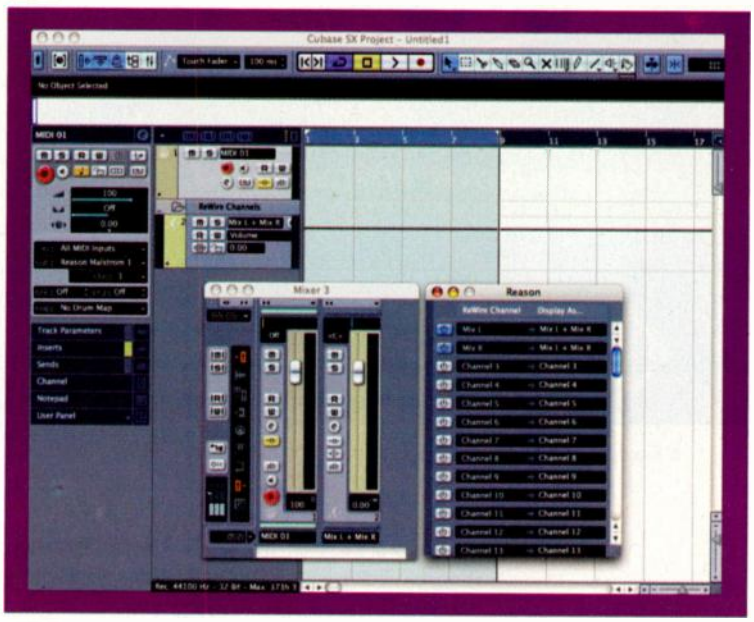


FIG 4: In this figure, the output of a Cubase MIDI track is directed to a Reason Malstrom device, and Reason's audio output is directed to a ReWire channel that is activated in the Device Manager.

bring in only the effected signal, so be sure you're committed to using the effect.

Sending MIDI to the Slave

If you're using DP, Pro Tools, Cubase, or Sonar, any sound modules that you created in Reason should appear as potential destinations in the host's MIDI tracks (see **Fig. 4**). Create however many MIDI tracks you need and select the device(s) of choice in the track's output section, and ReWire will handle the rest. With Logic Pro, there's a bit more work to do, so you should refer to the sidebar "Setting up ReWire with Logic Pro" for details. Note that most hosts allow as many as 64 MIDI channels to be sent to the slave.

It's a good idea to create the audio return from your ReWire application before attempting to send MIDI. By doing so, you'll get an immediate sonic confirmation of a successful connection when you send MIDI data to the slave. For example, when rewiring with Reason, first create the aux return in the host, and then set its input to ReWire L, R (in this case, I'll assume only a stereo mix). Next, create a sound module in Reason, and route a MIDI track in the host to it. Then test the MIDI with your keyboard—if everything is working, you should hear audio from the slave as it appears at the newly created aux return.

Reason lets you create a default document containing preset drum or synth sounds that you use often. That can be a real time-saver if you use the same sounds repeatedly. To set that up in Reason, open the Preferences page and choose the document that has all your favorite presets in it from the General section. Now, when you first open Reason as the ReWire slave, it automatically creates your favorite drum machines, string samplers, or bass synths, and all you need to do is create a MIDI track in the host and choose your favorite sound. Alternatively, some producers don't like to reuse the same sounds too often, so they create every device from scratch each time they use Reason. That approach has the advantage of keeping your rig clean and simple, because your host's MIDI output options will reflect a new Reason device only when it is created.

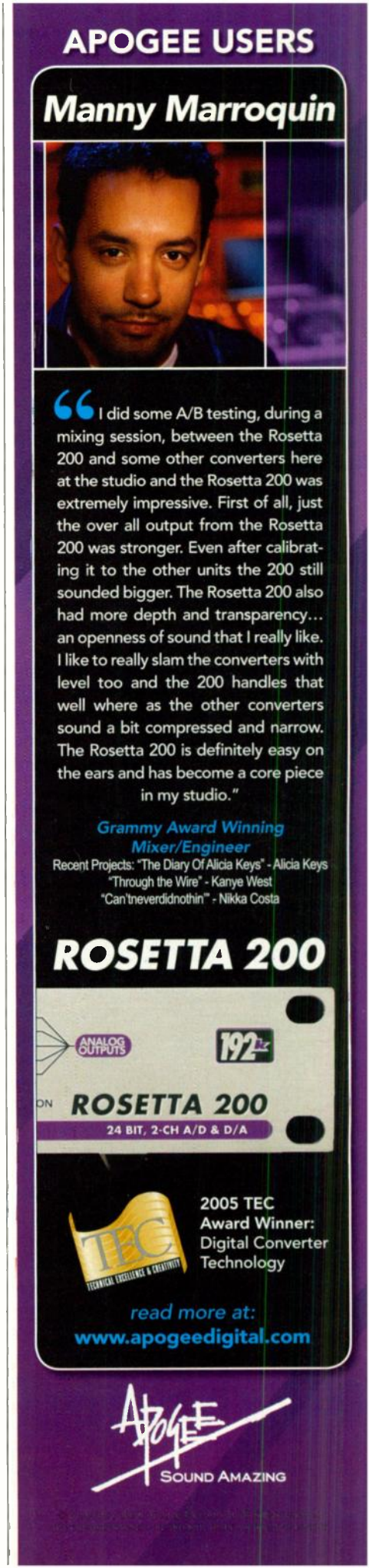
It can be helpful to give your devices intuitive names that you will remember. Get in the habit of naming devices according to their sound ("mono driving bass") or the part they play ("backbeat hi-hat"). In addition, name all tracks in the host. Don't be creative here—try to be fastidious.

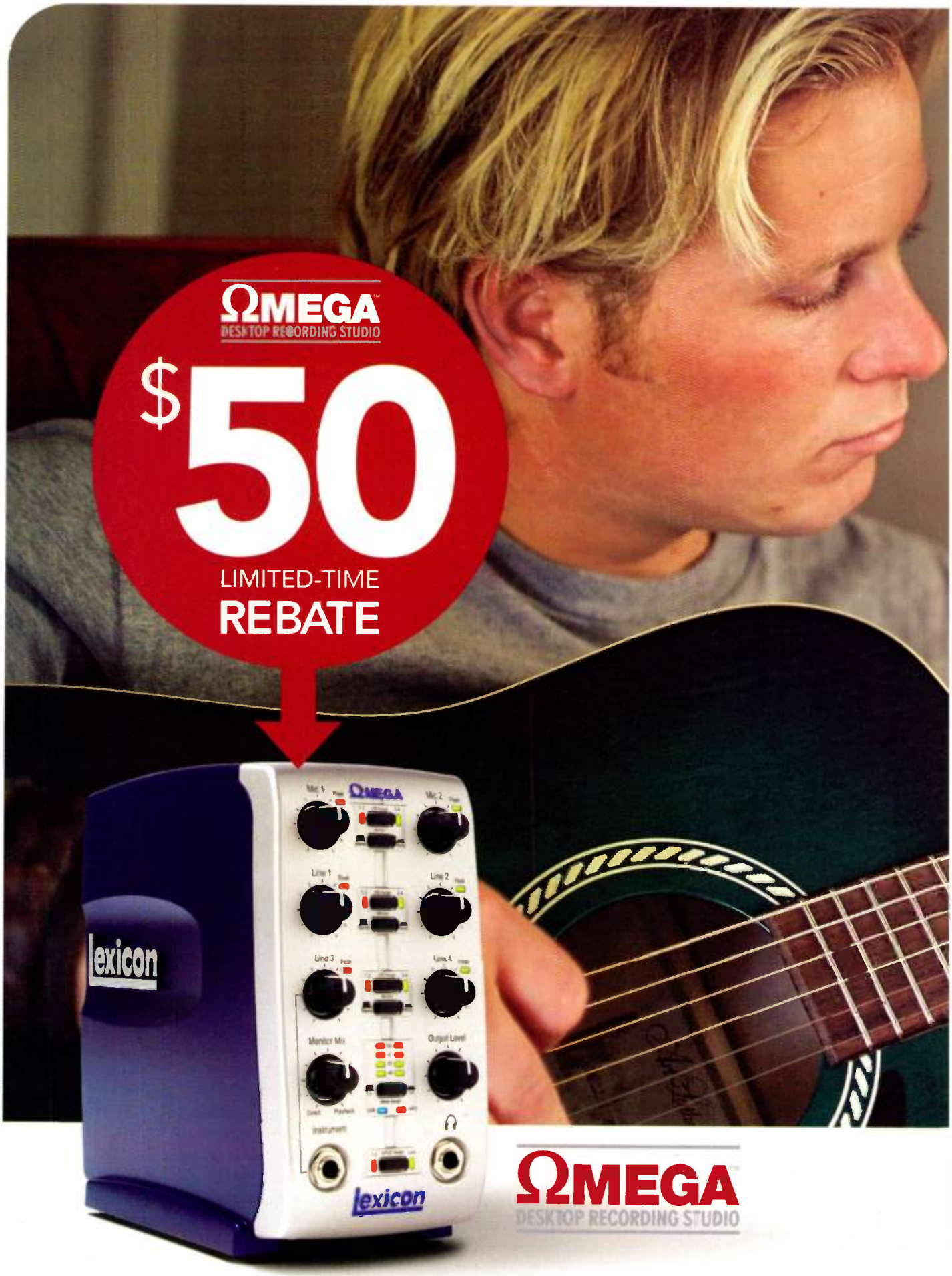
Get Wired

ReWire makes it easy to expand the capabilities of any DAW host by allowing it to receive audio from any one of more than 25 different applications. With as many as 256 simultaneous audio channels and 4,080 MIDI channels, there's plenty of opportunity to expand your sound-production capacity. There are many potential problems involved with connecting ReWire applications, but those problems are typically much easier to overcome than ones involving hardware synths. If you own a DAW and you need to expand your synth sound library, you are no longer restricted to software-synths that operate within your host exclusively. Though this tutorial was written with Reason as the slave, remember that other slave applications work the same way.

For a list of companies and software that support ReWire and ReWire 2, see the Propellerheads Web site at www.propellerheads.se. You'll find some basic tutorials that may be helpful. And while you're at it, go ahead and register so you can download some free sounds. **EM**

Matt Donner has a master's degree in music/music technology from New York University He's worked on projects ranging from demos to Cannes Film Festival–winning films.

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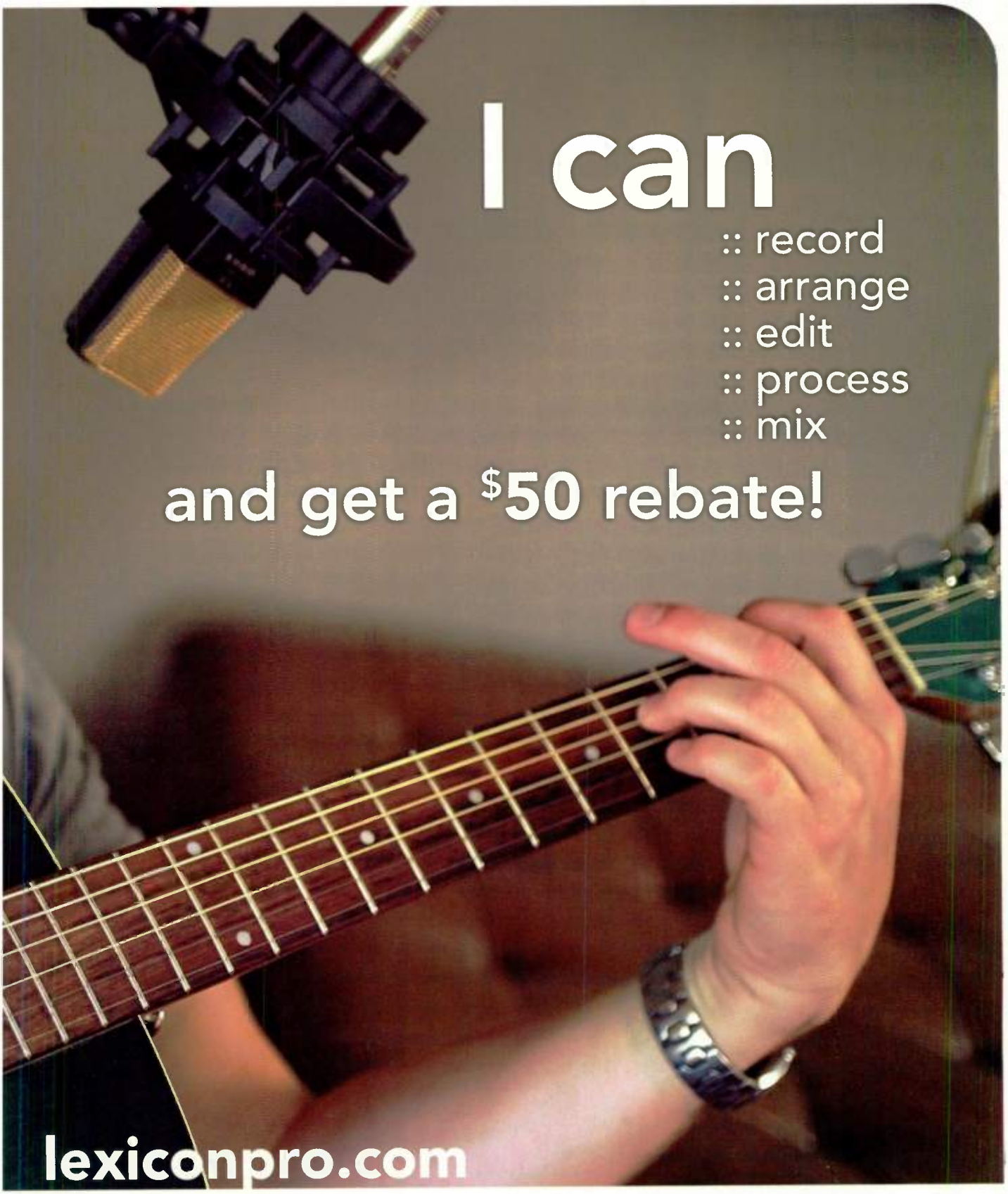

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Lexicon

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Ladies and gentlemen, let's hear it for our favorite new products of the past year!

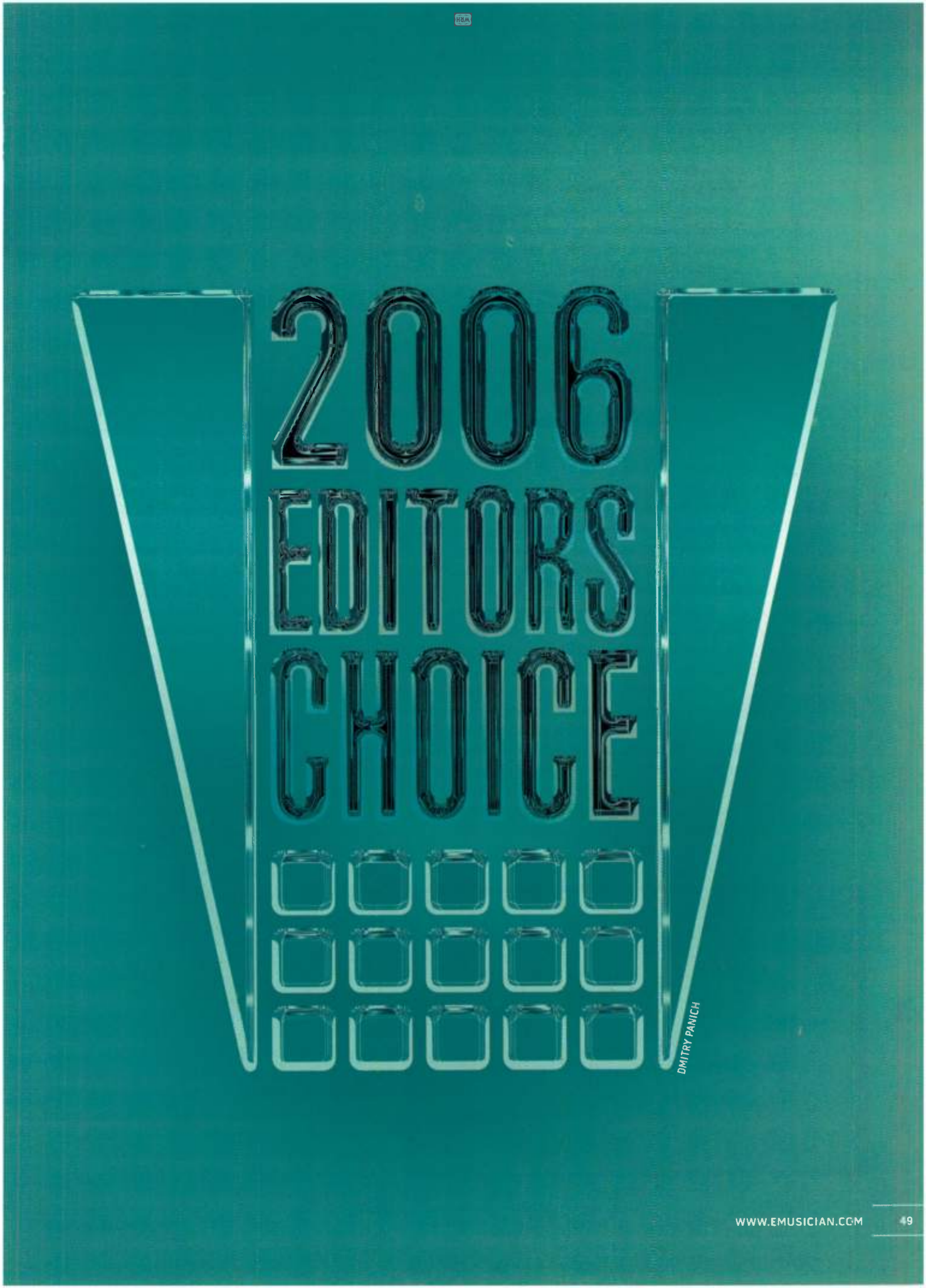
By the EM Staff

It was the best of times, it was the worst of times. No, we're not talking about the French Revolution, we're referring to the seemingly endless hours we spent choosing Editors' Choice award winners. It was the best of times because it's always a blast getting the editorial team and key authors together for lengthy discussions about our favorite new music-production products. And it was the worst of times because we always have to struggle to make our final choices, and sometimes the debate gets pretty heated. But in the end, we are confident we achieved excellent results and are giving our "best of" awards to the best new products that were released in the past year. We gave 28 awards in 27 categories this year, and thankfully we had only one tie, which was predictably for digital audio sequencers.

We give our Editors' Choice Awards to the finest products and upgrades that we've tested in the past 12 months—neither less, nor more. We can't test every possible new product, we work hard to check out the most promising candidates, and we thoroughly field-test everything we get our hands on, so we feel confident in our choices.

Our award categories change each year to reflect what's hot and what's not in personal-studio products. For instance, two years ago we had two microphone categories, divided by price; last year, we gave one award for mics because it was a mediocre year for new mics; and this year we have one award for ribbon mics and one for condensers because of the stunning number of new and affordable ribbon mics. We didn't give an award for mixers last year, but our award-winner this year was impressive enough to revive the category. And whereas last year was a banner year for reverb software, justifying a dedicated category, this year we ended up combining all of the individual (as opposed to bundles) effects software into one category.

All of the winning products have been field-tested by EM's editors and a select group of top authors. We also solicited opinions from the editors of sister publications *Mix* and *Remix*. The final selections were made by EM technical editors Steve O, Rusty Cutchin, Mike Levine, Dennis Miller, Gino Robair, Len Sasso, and Geary Yelton. All award-winning products have been covered in EM reviews or feature roundups, or the review is in progress and our tests are far enough along that we feel confident about our conclusions (see the sidebar "The Award Winners in Review" on p. 68).


2006
EDITORS
CHOICE
DMITRY PANICH

To be eligible for an Editors' Choice award, products must have shipped between October 1, 2004, and October 1, 2005, when we began editing our January issue. We allow slack for products that shipped so close to the 2004 deadline that it was not possible for us to test them in time for last year's awards, but not if we believe a manufacturer could have supplied a review unit in time but intentionally delayed sending it. We give an award to a software upgrade only if we think it offers significant improvements over the previous version.

And now, without further ado, please join us in congratulating the winners of the 14th annual EM Editors' Choice awards!

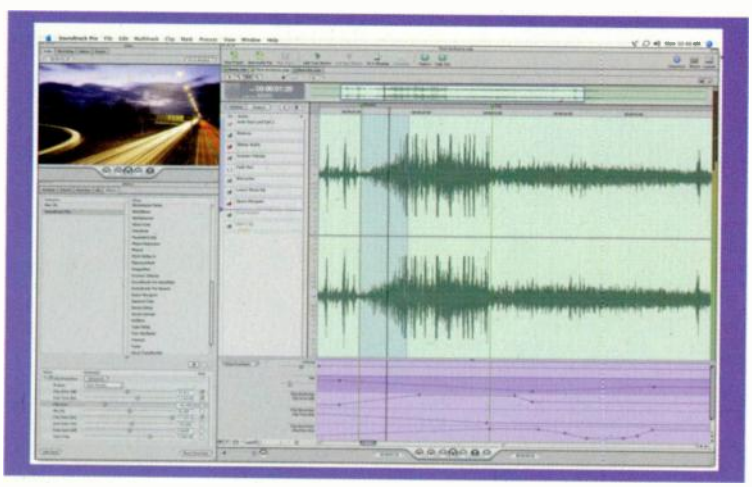
Audio Editing Software

APPLE COMPUTER
Soundtrack Pro 1.0 *(Mac, $299)*

Apple's Soundtrack Pro 1.0 is a huge improvement over the original Soundtrack application. Like its predecessor, Soundtrack Pro gives you a multitrack environment for assembling, editing, and mixing Apple Loops, as well as for recording audio. But that's where the similarity ends.

In Soundtrack Pro, Apple added a waveform editor with an amazing feature called the Actions List that sits on the left of the display and shows all of your edit and effects-processing actions. Using checkboxes, you can turn the individual actions on and off, reorder them at will, and hear—in real time—how each action affects your sound. Sound designers will love this program, because you can use the Actions List to nondestructively experiment until you get the result you want.

The program comes with almost all the effects plug-ins from Logic Pro 7, as well as an 8 GB Apple Loop collection that includes 1,000 sound effects. You also get markers, a dedicated video window, and much more.



Although Soundtrack Pro was primarily designed to assemble soundtracks for Apple's Final Cut Pro video-editing software, it provides a new and exciting approach to audio editing.

Channel Strip

MINDPRINT
En-Voice MK II *($799)*

MindPrint made an impression with its Trio desktop unit in 2005, but it is the redesigned En-Voice that garnered enthusiasm among more traditional studio types. The En-Voice MK II is a step up from its predecessor in sound quality and functionality. With true tube saturation and a choice of digital interfaces, the MK II became a top contender in a field of mid-priced input devices that offers expanding features and shrinking footprints.

MindPrint packed all of the essential features into the En-Voice MK II's sleek, slim package, which features a well-designed control panel. The unit's sound is extremely quiet and pristine. Its EQ section offers ample overlap between frequency bands, and the compression circuit includes tube saturation and a low-cut filter. The optional DI-Mod USB interface ($249), which plugs into the rear panel, is an essential add-on, turning the unit into an excellent computer interface or, with a second En-Voice patched in, a high-quality stereo ADC.

Reviewer Rusty Cutchin appreciates the En-Voice MK II's high-end sound when used on instruments, especially bass, and in mic-pre applications. When you want extra warmth, dialing in a little of the unit's tube circuit mellows its ultraclean sound, and the DI-Mod expands the En-Voice MK II into an excellent digital converter. For most project-studio jobs, one or two EnVoice MK IIs will add a lot of pro-studio quality.

Digital Audio Sequencer

ABLETON
Live 5 *(Mac/Win, $499)*
APPLE COMPUTER
Logic Pro 7 *(Mac, $999)*

We are reluctant to allow ties for Editors' Choice awards, but more often than not, ties seem inevitable when we choose the Digital Audio Sequencer winner. Each year, there are so many great programs that get major upgrades, and we choose just one. Last year, we had an unbreakable tie between Ableton Live 4 and Apple Logic Pro 6, two high-quality, well-featured programs

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Saffire combines state-of-the-art hardware with advanced integrated software control and hardware-powered plug-ins, taking you one giant step closer to the professional studio experience.

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Besides Saffire's impressive features, it is compatible with some of the industries leading software applications like Reason, Logic Audio, Nuendo, Digital Performer and Ableton Live.

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that take such a different approach to sequencing that it was impossible to declare one superior to the other. This year, we found ourselves in the same situation with the latest versions of the same programs, so our 2006 award goes to Live 5 and Logic Pro 7.

Live 5 is a significant upgrade because of its major improvements in performance and ease of use. At the top of the list are library management and the file browser. The Library now resides in a single location, and the browser supports full alias and shortcut tracking. Those features, taken together, make clips, sets, and presets easy to find and organize.

The new Live Clip format and the introduction of Device Groups are other major user enhancements. Clips, along with their automation envelopes and instrument and effects plug-in settings, can be dragged directly to and from the browser, and the same applies to multiclip selections. Editing enhancements such as arrangement locators, quantized scrubbing, multiclip editing, track freezing, and clip deactivation round out the interface enhancements.

Two of Live's five new plug-ins stand out. Beat Repeat grabs chunks of an audio stream on the fly and repeats them with a variety of useful modifications. The often-requested MIDI arpeggiator has ten arpeggiator patterns, automatic transposition and scale correction, and Velocity decay. And as always, Live's tight integration of performance and tracking tools remains unparalleled.

There have been many new versions of Logic released over its long history, but the jump to version 7 is particularly impressive. The upgrade includes such key improvements as support for Apple Loops; the addition of Global Tracks for master editing of tempo, volume, and more; a shift to Apple's "pro application" look and feel; and the introduction of Distributed Audio Processing, which allows users to tap into the CPUs of multiple Macs to power a single Logic session.

But the most impressive part of the upgrade is the addition of a bevy of new plug-in instruments and effects to augment Logic's already stellar collection. Newcomers on the effects side include Guitar Amp Pro, a full-featured amp modeler; Pitch Correction, for fixing intonation; Vocal Transformer, which shifts vocals and formants for gender-bending and other pitch effects; Match EQ, which can match disparate-sounding audio; a linear phase EQ; and a variety of meters and analyzers.

Equally exciting are the synth additions: Sculpture, an exquisite-sounding physical-modeling instrument; Ultrabeat, a versatile drum machine; and EFM1, an FM synth module. The breadth and depth of Logic's included plug-ins are unprecedented in the DAW arena and more than justify the cost of the application.

Given the excellence of the Ableton Live 5 and Apple Logic Pro 7 upgrades, it's easy to understand how, try as we might, we had to give our highest accolades to both programs. And to be honest, we're downright pleased about it!

Digital Audio Workstation/Audio Interface

RME
FireFace 800 *($1,799)*

With the FireFace 800, RME has once again proven itself to be a leader in its field. (The RME Hammerfall DSP was an Editors Choice winner in 2003.) This 1U device offers a wealth of inputs and outputs and is tailor-made for the personal studio. The front-panel holds four mic and line inputs, as well as an instrument input with overdrive and speaker emulation. Around back are eight balanced ¼-inch line inputs and outputs and a variety of digital options: 16-channels of Lightpipe I/O, S/PDIF I/O, word-clock ports, a FireWire 400 port, two FireWire 800 ports, and MIDI I/O.

To manage all this connectivity, the Fireface 800 is bundled with TotalMix (Mac/Win), a virtual mixer and patch bay that can route the hardware inputs to any destination, as well as handle a variety of submixes. The system also offers zero-latency monitoring and supports 24-bit, 192 kHz audio.

In the final analysis, an interface is only as good as it sounds, and this is where the Fireface 800 truly delivers. Reviewer Nick Peck was impressed with the RME interface's resolution, noting that it stood up well against preamps and converters that cost many times as

The best just got better.

Electronic Musician 2005 EDITORS CHOICE

Best Digital Audio Workstation/Audio Interface of 2005

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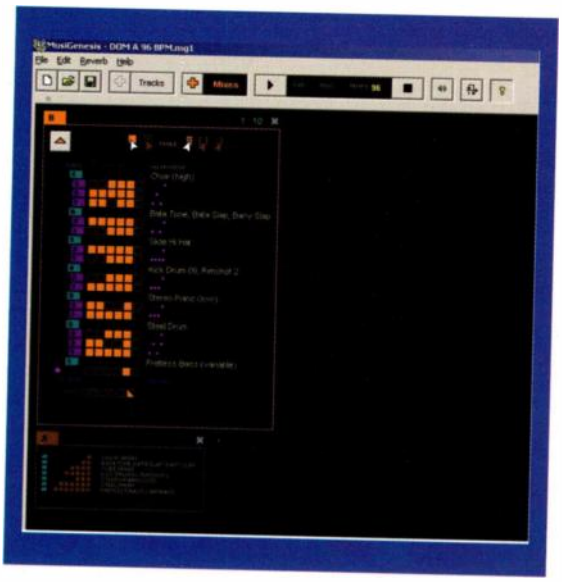
much. The excellent sound quality of the Fireface 800, combined with its routing flexibility, squarely places this DAW audio interface in the winner's circle.

Download of the Year

MUSIGENESIS
MusiGenesis 2.5 *(Win, $19.95)*

The winner of the Download of the Year category is chosen from the software featured in our Download of the Month column. This year's column emphasized tools that are a bit quirky and fun to use. Gunter Hager X-Wheel of Fortune music generator, Plasq Musolomo loop mangler, Sonic Charge μTonic drum machine, and Tobybear MonsterBag off-the-wall effects bundle were all high on the list, but MusiGenesis wound up with top billing for originality, amusement, and price.

MusiGenesis is an interactive, algorithmic pattern generator and editor. At the click of a button, the program adds notes to the generated pattern, which you then have the option to accept, reject, or modify. After you've assembled patterns for a variety of instruments, you switch to Mix mode and follow a similar process to create mixes of your patterns. You can create as many patterns and mixes as you like, and when you're done, you can export them as audio or MIDI files for further work in your DAW. MusiGenesis may not write your next hit, but it will give you some great ideas and a few laughs.



Drum Machine/Module (software)

SPECTRASONICS
Stylus RMX 1.2.1 *(Mac/Win, $299)*

Is it a drum machine? A virtual groove box? A software synth workstation? Although Spectrasonics calls Stylus RMX a real-time groove module, its focus is clearly on creating drum and percussion tracks, and for that, it absolutely shines. Stylus RMX is a multiformat plug-in that gives you the tools to organize, edit, and rearrange loops while they're playing. Five screens let you browse, shape, and mix grooves as you control an assortment of effects and use the exclusive Chaos Designer to randomize and improvise new parts. The program is 8-part multitimbral, too; loops can play in tandem or at different tempos on different MIDI channels. Polyrhythms, anyone?

Stylus RMX comes with hundreds of drum kits and thousands of loops that encompass rock, jazz, electronica, Latin, pop, and quite a few musical styles that are tough to pin a label on, arranged as complete drum parts or as individual instruments. You can supplement its 7.5 GB core library with Spectrasonics SAGE Xpanders, converted Groove Control CD-ROMs, third-party RMX-format content, and (thanks to the included SAGE Converter) any audio loops in REX format. The documentation is excellent, featuring tons of help files and almost eight hours of video tutorials. For whipping up rhythm tracks that can inspire your creativity and sound great, Stylus RMX will get you want to go with speed and style.

Effects Processor (hardware)

LINE 6
Pod XT Live *($559)*

We are excited about the Pod XT Live not only because of its excellent modeling capabilities and its sleek, practical design, but also for the way it works in tandem with the company's Variax guitars to create an integrated guitar-tone system.

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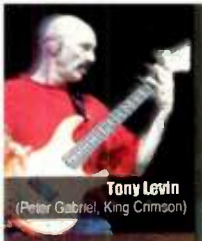
Tony Levin
(Peter Gabriel, King Crimson)

Billy Sheehan
(Mr. Big, Steve Vai)

Rob 'Cubby' Colby
(Phil Collins, Ricky Martin)

Manny Haslip
(John Scofield, Robben Ford)

Mark Howard
(Bob Dylan, REM, U2)

Steve Stevens
(Billy Idol)

Chuck Rainey
(Steely Dan, Barbra Streisand)

Robert Scovill
(Tom Petty, Rush, Matchbox 21)

Radial JD7 Injector - suggested list $849 US
Guitar freaks rejoice! Drive up to 7 amplifiers at the same time without changing the original tone of the guitar and do it without buzz or hum caused by ground loops. Record a dry track with the built-in DI and send the signal back to the JD7 and re-amplify it to 7 amps and effect pedals. Addictive.

Radial J48 Active DI - suggested list $199 US
For great sound without choking, look no further than the Radial J48. Features a 48V phantom supplied active drive circuit with a unique DC-to-DC transformer isolated switching power supply to provide amazing headroom while eliminating hum and buzz caused ground loops. Radical.

Radial JDI Passive DI - suggested list $199 US
Jensen Transformer equipped, the Radial JDI has become the standard passive DI in the business. Exceptional noise rejection eliminates troublesome ground loops and virtually zero phase distortion at any level makes the JDI a must have for studio and stage. Available in single, stereo or 6-pack. Magic.

Radial X-Amp Re-Amplifier - suggested list $199 US
Ever wish you could go back and change the sound of a pre-recorded guitar track? Now you can with X-Amp. When tracking, record a spare dry track and play it back through the X-amp after the guitarist has gone home. Two outputs lets you drive amps and pedals to create thick new textures. X-plosive.

Radial JPC Stereo DI - suggested list $199 US
Designed specifically for PC sound cards, DVD players and all those cool consumer devices that cause nothing but havoc, the JPC is 100% transformer isolated to eliminate nasty ground loops and equipped with a 48V active drive circuit for long cables. Easy to use. Great sounding. Indispensable.

Radial JDV Super DI - suggested list $449 US
There is no finer DI than the Radial JDV. 100% discreet Class-A topology with a feed forward design that sounds so true, it'll make the hair on your arms twitch. Drag™ Control pick-up load correction, A or B inputs, 4 instrument amp outputs, hi-lo filters and amazing headroom combine for the most powerful DI ever made. Unbeatable.

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WRH

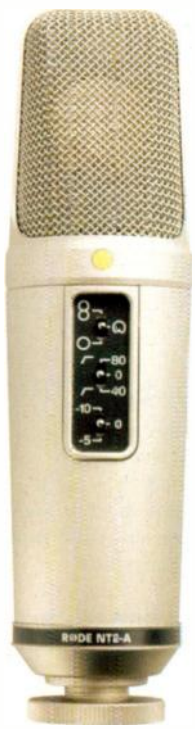
With a Variax connected through its Cat-5 port, the Pod XT Live recognizes the guitar's active model and tone-knob settings, which you can save as part of a patch, along with the amp, cabinet, and effects-model data. Later, when you recall the patch on the Pod XT Live, it sends the information back to your Variax, which automatically switches the guitar to the model and tone-knob setting that you saved. It's very slick. You can also use the Pod XT Live to interface with a Mac or PC running Line 6's Variax Workbench software, which lets you construct your own guitar models and custom tunings for your Variax.

Even if you don't own a Variax, the Pod XT Live is the most self-contained Pod to date. It is the first in the Pod series to have built-in footswitches and an expression pedal. Add to that its stellar sounds and its ability to act as a USB audio interface, and you've clearly got a winning product.

Microphones (condenser)

RØDE
NT2-A *($699)*

In an international microphone horse race, it was the Australians by a nose over the Latvians, as the Røde NT2-A won this year's award over the Red Microphones Type B. The NT2-A is a solid-state condenser mic that features omni, cardioid, and figure-8 patterns; a 3-way pad switch; and a 3-position highpass filter. It's based on Røde's HF1, a one-inch, edge-terminated capsule with a gold-sputtered dual diaphragm.



Reviewer Rob Sharock noted the NT2-A's excellent sound, which he described as "a quieter version of a Neumann U 67." It's especially good for recording background vocals. The NT2-A's slight boost between 8 kHz and 12 kHz in Omni mode added air and openness to the sound, without being harsh, strident, or unnatural. If you're looking for a reasonably priced, high-quality mic, the NT2-A is an outstanding choice.

Microphones (ribbon)

AUDIO ENGINEERING ASSOCIATES
R92 *($900)*

The world of ribbon microphones took off like a rocket in 2005, including several new mics that cost less than $1,000. Despite the crowded field, the clear winner in terms of sound quality was the AEA R92. Designed by Wes Dooley, one of the world's foremost ribbon-mic experts, the R92 combines the superb transient response of a vintage velocity mic with a reduced proximity effect and a contemporary sound.

In his recent ribbon-mic roundup ("Ribbon Revival," in the November 2005 issue of EM), author Myles Boisen noted that the R92 has a brighter high end than his favorite premium ribbon mics, such as the AEA R84. Although the upper-frequency response of the R92 approximates the typical presence boost of a condenser mic, the result is a sweet, yet aggressive tone with plenty of definition.

Boisen deemed the R92 a good choice for instruments that have always been problematic for ribbon mics, such as percussion, modern pop vocals, and acoustic guitar. And on clean electric guitar, he noted that the mic's broad midrange boost helped capture plenty of "snarl and sparkle." As a result, the R92 is an all-around ribbon mic that sounds like it costs much more. That's a winning combination in our book.

MIDI Instrument Controller

M-AUDIO
Ozonic *($599)*

As virtual instruments replace keyboard synths for many musicians, the demand for USB MIDI keyboards has increased dramatically, and we now have many good models from which to choose. But we often want more than just a keyboard; we want lots of knobs, sliders, pitch bend and mod wheels, and other means to control soft synths and other software. Add an onboard MIDI interface and a 24-bit, 96 kHz audio interface, and you have a key component for a small personal studio. Combine it with a laptop or notebook computer and software, and you have a nifty portable recording rig.

M-Audio's Ozonic's feature set puts it squarely at the top of this fast-growing heap. It contains a 4 × 4 audio interface with a phantom-powered mic input, a high-impedance instrument input, and two unbalanced line inputs, as well as two balanced and two unbalanced line outputs with independent volume controls. The Ozonic supports Digidesign's Pro Tools M-Powered and is one of the few keyboard/audio interfaces that draws its power from the FireWire bus. With an assignable joystick, 37 keys that generate Velocity and Aftertouch data, footswitch and pedal inputs, 9 assignable sliders, 8 assignable knobs, 14 assignable buttons and 20 locations for storing presets, the Ozonic packs a lot of portable power into a controller that weighs less than seven pounds.

The Fantom-X8 Workstation Keyboard.

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POWER

M-Audio won our 2003 award for its Oxygen 8 MIDI keyboard controller, and we suspected the Ozonic would be a contender the first time we saw it. As it turns out, the Ozonic is more than a contender; it's a hands-down winner.

MIDI/DAW Control Surface

FRONTIER DESIGN GROUP
TranzPort *($249)*

Want to get away? Now you can—with a wireless remote control surface. Frontier Design Group's TranzPort lets you operate your DAW remotely from a maximum of 33 feet. It works with an ever-expanding number of DAWs and is equally suited for desktop use or for attaching to a mic stand.

With the TranzPort and a set of headphones (perhaps wireless as well), you can put a guitar amp or a singer in the bathroom and check the ambience on the spot, or check the mics on a drum set or other instrument without walking back and forth between your computer and the sound area. Or maybe you want to move your mixing station and monitor speakers away from a noisy computer; TranzPort makes it a breeze. You'll undoubtedly find plenty of custom applications for this wireless wonder.

The TranzPort's bright 2 × 20-character LCD screen gives you ample feedback on various parameters of your tracks, and you can easily step or scroll through your tracks in turn. You can use its data wheel and 18 dual-function buttons to perform many common operations remotely, including start, stop, rewind, fast-forward, and more. Visual indicators report on the record, mute, and solo status of each track. And it's all presented in an attractive, handheld device.

We love products that provide a distinctive and elegant solution to a common problem, and TranzPort certainly fits that description. That's why it was one of our favorite new studio tools in 2005.

Mixer

MACKIE
Onyx 1620 with Onyx FireWire card *($1,519.98)*

Mackie's low-cost, high-quality, small-format analog mixers played a big role in the project-studio revolution, but the move to all-inclusive digital audio applications made analog mixing seem almost quaint to some studio owners. Mackie's new Onyx series mixers reawakened many to the joys of affordable, quality, analog sound. And with the optional FireWire card, the Onyx 1620 becomes a flexible digital interface as well. This is a great way to bring the benefits of analog circuitry to a modern personal studio.

Musicians with lots of keyboards and guitars and engineers who record live bands found, in the Onyx mixers, a rock-solid way to connect several inputs while sending as many as 18 channels of 24-bit converted audio to a recorder. The Onyx series also added a talkback circuit, new preamps, new EQs by designer Cal Perkins (co-designer of Mackie's well-regarded XDR preamps), a monitor section that handles the ste-

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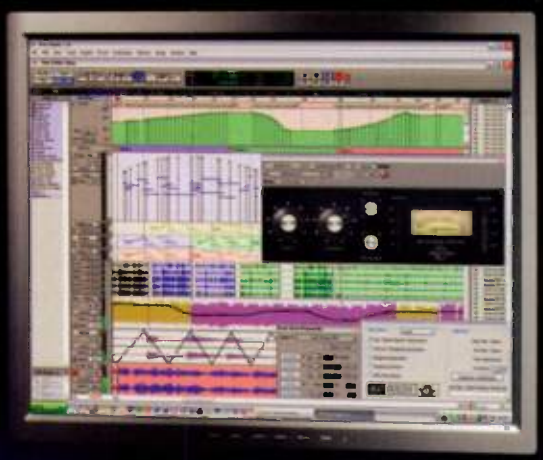

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reo return from the computer and FireWire card, and the ability to connect another Onyx for 32 channels of digital audio from one FireWire card.

By itself, the Onyx is an excellent upgrade of Mackie's groundbreaking designs. With the FireWire card, it's a great front end for simultaneous recording of several inputs and a great back end for monitoring a mix created in a connected DAW. With the card, the Onyx provides the flexibility and sound of a pro mixing board with an easy, reliable, and speedy digital interface that takes a lot of the guesswork out of making analog input work with digital output.

Monitor Speaker

DYNAUDIO ACOUSTICS
BM5A *($1,250/pair)*

In a year of limited but interesting monitor introductions, a last-minute entry took first prize. Dynaudio Acoustics' BM5A won our accolades over several competitors because of its clean power-handling, transparent highs, and above-average bass response.

The BM5A is a two-way, biamplified, close-field monitor with a 6.9-inch woofer and a 1.1-inch soft dome tweeter, each of which is driven by a 50W amp. Both amplifiers have thermal-overload protection, and the woofer amp also has a built-in limiter. Three equalization switches can be set flat or can provide bass shelving, midrange cut, and treble filtering. The highpass filter can be set to 60 or 80 Hz cutoff points when pairing the BM5A with a subwoofer. A rear two-inch-diameter port aids the monitor's ample bass response.

The BM5A's handling of bass frequencies impressed reviewer Myles Boisen, although if you aren't accustomed to that sort of bass response, you'll need some time to adjust to it. That said, the combination of ample but controlled bass and accurate response from compact drivers is clearly an award-winning accomplishment.

Most Innovative Product

SYNFUL
Synful Orchestra 2.2 *(Mac/Win, $479)*

If you're interested in working with orchestral sounds on a computer, you probably think that a high-quality sample library is the way to go. That is a viable option and the one most people have chosen in recent years, but depending on how you want to work, Synful Orchestra might be a better choice. Although already in version 2.2 as of this writing, the program was introduced in 2005.

The program doesn't use samples; rather, it recreates the sound of orchestral instruments through analysis and additive resynthesis, a versatile technique that works by combining varying amounts of many dozens of sine waves. But synthesizing convincing orchestral timbres is not Synful's only trick.

Realistic acoustic simulations depend on the transitions between notes as much as they do on the

individual timbres, and this is where Synful Orchestra shines. The software uses a databased library of common musical phrases and a set of advanced algorithms to model the proper transitions between notes in each phrase. When you play a MIDI part or open a MIDI file in Synful Orchestra, the software analyzes the part and calculates which phrases and transitions will most accurately produce the desired passage. It then uses its synthesis engine to create the musical passage, complete with realistic transitions.

Because the parts have to be rendered, which takes several milliseconds, the process is less successful when used in real time. But give Synful Orchestra a few seconds to calculate the best approach for any given phrase, and you'll get good results. In addition, because it doesn't use samples, Synful's approach will keep your storage needs to a minimum. That's another reason why we chose it as the winner of this year's Most Innovative Product award.

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- ★ **New Legato Technology :** using GigaStudio3.0 we were able to create legato instruments with intervals that are not limited by range or tempo, additionally the increase in system resources is nominal.
- ★ **Portamento Reshaping Filter (PRF) :** provides a phase corrected, 7th order, morphing filter for shaping formants dynamically as the pitch changes. This filter is utilized to simulate slides from one note to another.
- ★ **Custom GigaPulse Halls :** Larry Seyer has been on the cutting edge of development of rooms for GigaPulse. He has graciously provided several custom halls designed especially for SISC allowing Sonic Implants Complete Symphonic users to put their orchestra in many different environments.

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balanced analog I/O (on DB25 connectors). You also get eight channels of ADAT Lightpipe output, a word-clock input, and support for high-resolution sampling

rates as high as 192 kHz. (If you select the 179.4 kHz or 192 kHz rates, the channel count on the ADAT output drops to four.)

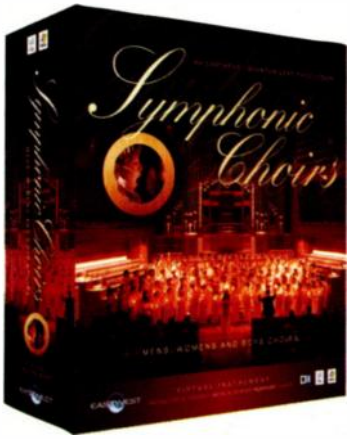
Most important, the 800R preamps provide excellent sound quality. Our reviewer referred to its sound as "full bodied, transparent, and noise free, even at the highest levels of gain." That's extremely impressive for a unit that averages out to a little under $160 per channel.

Sample Player (software)

EASTWEST/QUANTUM LEAP
Symphonic Choirs *(Mac/Win, $895)*

EastWest and Quantum Leap have been working hard to create a complete set of scoring tools for the desktop composer. This year's Editors Choice winner, Symphonic Choirs, follows in the footsteps of the massive Symphonic Orchestra collection by offering superb sound quality and three phase-aligned stereo mic perspectives for each patch: close, stage, and hall. Having different miking choices lets you add just the right amount of ambience to your track by combining patches, and you can create a surround mix with close mics for the center channel, stage mics for the left and right channels, and ambient mics for the rear speakers.

Symphonic Choirs includes the four classic voice parts—soprano, alto, tenor, and bass—with several articulations, as well as a separate set of boys-choir samples. Like its predecessor, Symphonic Choirs uses Native Instruments Kompakt as its front-end, so it can be used standalone or as a VST 2, DXi 2, Audio Units, or RTAS plug-in.



The feature that puts Symphonic Choirs in a class all its own is the powerful WordBuilder application, which lets you put words and syllables into the mouths of your virtual vocalists. Using a text editor to access a 100,000-word pronunciation dictionary, WordBuilder lets you edit phonetic components in a variety of ways to make each word sound exactly as you want it.

Reviewer David Rubin praised the flexibility, sound quality, and expressiveness of the Symphonic Choirs collection, noting its presence and the smooth transitions between Velocity layers. When you add in the innovative editing capabilities of WordBuilder, Symphonic Choirs is a no-brainer for an Editors Choice award.

Sampler (software)

TASCAM
GigaStudio 3 *(Win, $599)*

Tascam's GigaStudio (formerly GigaSampler) revolutionized the world of sampling, but after a series of upgrades leading to version 2.54, users had a long wait before a new version appeared. GigaStudio 3.1 includes enhancements across most areas of the program, from installation to output. Among our favorites are its greatly expanded polyphony, the ease with which you can now create patches from raw samples, and the much-improved MIDI implementation, which includes a huge expansion in the number of Dimensions you can have. Furthermore, the updated DSP mixer now supports up to 128 channels, and for the first time, you can use GigaStudio as a ReWire client.

Perhaps the biggest news in GigaStudio 3.1, though,

is GigaPulse Pro, a powerful convolution reverb and surround-mixing tool. GigaPulse Pro allows you to "position" your instruments at numerous mic locations on a virtual stage. It also offers a powerful mic-modeling tool, and it lets you freely mix the resonant qualities of one instrument with another. Although we gave a long and hard look to Native Instruments Kontakt 2—another major upgrade of an already powerful program—we felt that GigaStudio 3.1 was unbeatable in 2005.

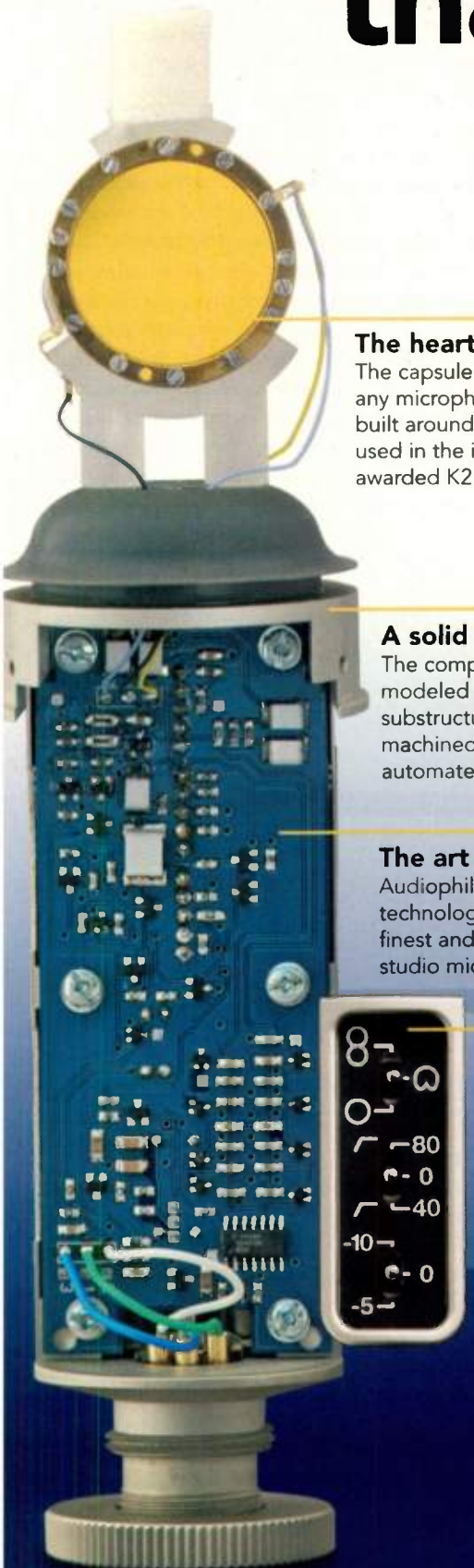
Signal Processing Software (bundle)

U-HE.COM
Filterscape 1.1 *(Mac/Win, $129)*

The editors' debate over signal-processing bundles eventually came down to two first-rate packages by small software developers: PSPaudioware.com's excellent EffectsPack

Beauty is more than skin deep.

First impressions can be misleading. On the surface, many microphones appear to be the same, it's only when you look deeper you see the truth!



The heart and soul:
The capsule is the heart of any microphone. The NT2-A is built around the same capsule used in the internationally awarded K2 tube microphone.

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The New NT2-A, represents a major technological advancement over the legend that started a revolution, the NT2: a studio microphone that sold in the hundreds of thousands, and is the tone behind countless recording hits.

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NT2-A

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RØDE MICROPHONES

and U-he.com's Filterscape. Ultimately the nod went to Filterscape for originality and outstanding value.

The Filterscape bundle contains three plug-ins, each centered around a cleverly designed, morphing multiband equalizer. Morphing produces a smooth transition through as many as eight EQ settings. The primary plug-in, Filterscape, combines two state-variable multiband filters with a 4-band version of the morphing EQ. Filterscape VA is a 2-oscillator subtractive synth containing the same EQ, and Filterscape Q6 is a 6-band version of the morphing EQ.

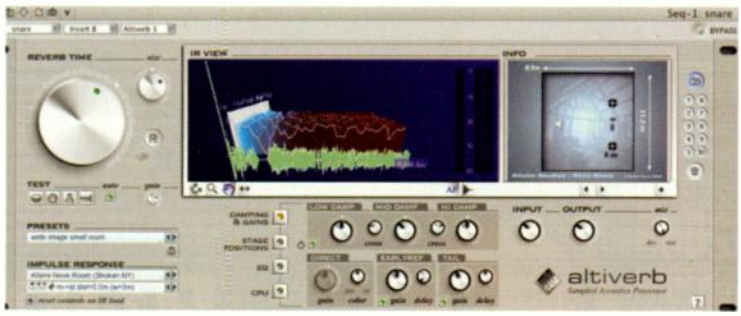
These plug-ins are all about motion. EQ morphing, as well as state-morphing for the state-variable filters, can be driven by built-in LFOs, envelope generators, envelope followers, and step sequencers, as well as by MIDI and DAW automation. You may get seasick, but you won't get bored. Beyond being unusual, these plug-ins sound great, and the price is right.

Signal-Processing Software (individual)

AUDIO EASE

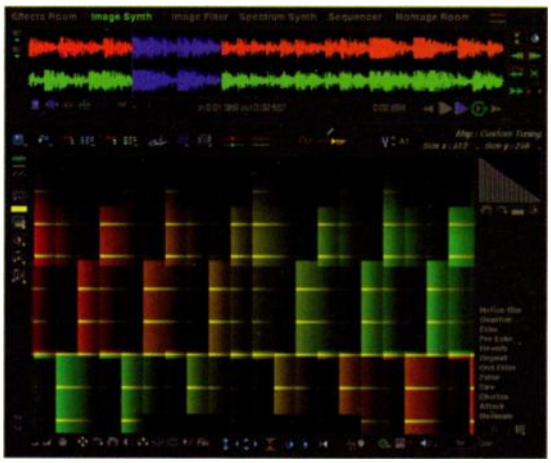
Altiverb 5 *(Mac: native, $595; TDM, $895)*

In 2001, Audio Ease turned the recording world on its ear when it launched the first commercial convolution reverb, Altiverb 1.0, which won a 2002 Editors' Choice award. Since then, Audio Ease has steadily improved its flagship plug-in, making it more CPU efficient, creating versions for every popular plug-in format for Mac OS X, and producing dozens of new impulse responses (IRs) at no additional charge.



With Altiverb 5, Audio Ease has delivered more new and useful features than with any previous upgrade. Version 5 sports an all-new graphical user interface with plenty of real-time controls, colorful interactive displays, and loads of interactive parameters at your fingertips. Now you can change the location of your sound source in 3-D space using the new Stage Positions parameter, change the size of that space, run the reverb in reverse, and view a 3-D waterfall diagram of the reverb spectra plotted over time as you change parameters. You also can read details and play VR movies of sampled spaces, and you can choose an IR from a popup menu and test it by triggering onboard sounds with your Mac keyboard.

Altiverb 5 lets you separately adjust input and output gain for front, rear, center bleed, and subwoofer channels. Other features include the ability to separately adjust the gains and delays for the direct signal, early reflections, and the reverb tail; control three bands of damping and four bands of reverb EQ; and save your own presets and switch between them with automation. You can even create your own IRs using the included Altiverb IR Preprocessor application. In a year that has seen an explosion in convolution reverbs, our hat's off to Audio Ease for staying ahead of the pack.



Sound Design Software

U&I SOFTWARE

MetaSynth *(Mac, $499)*

In the world of sound-design software, MetaSynth is in a class by itself, and granting the long-awaited OS X version this year's Editors' Choice award was almost mandatory. MetaSynth's way of doing things takes a little while to get used to and a long time to master (if that's even possible), but the journey is enlightening and fun.

MetaSynth's palette of sound-design tools has been greatly expanded, with new effects, more flexible image filtering, image layering, spectrum and note sequencers, and a 16-track audio sequencer to put

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The Spike Powered Recording System from Mackie puts so many professional tools in the hands of musicians, it's nothing less than inspirational. Based upon our popular Tracktion 2 Music Production Software and the sleek, portable XD-2 interface, the Spike system gives you killer Mackie mic and instrument preamps, unlimited tracks (as many as your computer can handle), a high-resolution 64-bit mix engine, VST plug-ins, and bundled Final Mix mastering tools for creating polished, professional-sounding CDs. Better still, it's all controlled with a simple, single-screen interface that keeps the music flowin'. Visit mackie.com/spike to get inspired.

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engine by providing new Core modules, which are written in low-level code you can use to build your own custom oscillators, filters, and so on. Though some programming experience is helpful, that new feature makes Reaktor one of the most powerful software-based toolsets around. The number of user-contributed patches at the Native Instructions Web site has now exceeded 2,000, so whether you like to tweak or just play the presets, Reaktor 5 offers something for everyone.

Synthesizer (hardware)

DAVE SMITH INSTRUMENTS
Poly Evolver Keyboard *($2,699)*

The original Evolver, Dave Smith's tabletop synth module, won an Editors Choice award in 2004. Next came the Poly Evolver, a powerful 4-voice version in a 1U box. Although both instruments offer superb sound quality and a deep feature set, the main drawback was the user interface: hands-on, real-time control was limited. Smith has changed all that with the Poly Evolver Keyboard, a polyphonic performance synth that is destined to become a classic.

The main features of the rack and keyboard versions of the Poly Evolver are the same: 8 analog oscillators, 8 digital oscillators, 16 filters, and 4 independent 4-track sequencers. But the Poly Evolver Keyboard comes alive when you use its 78 knobs and 58 switches to access its powerful feature set. Creating feedback paths, modifying sequences, and shaping modulators can now be eas-

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ily done on the fly. The front-panel design shows the instrument's signal path clearly, allowing you to grok the synth's full potential immediately.

The 5-octave keyboard gives you plenty of room to stretch out, and the octave-transposition buttons—conveniently located above the illuminated pitch and mod wheels—give you an extra two octaves in either direction. In case your feet want to join in the fun, there are three pedal inputs. A dedicated MIDI output lets you connect additional Poly Evolver Racks to get more voices.

In this era of soft synths and generic controllers, it's a treat to play a hardware instrument that sounds huge and has the features we took for granted in the glory days of the hardware synthesizer. Dave Smith has stepped up to the plate and hit a grand slam with the Poly Evolver Keyboard.

Synthesizer (software)

APPLIED ACOUSTICS SYSTEMS
String Studio VS-1 1.0 *(Mac/Win, $249)*

Virtual-instrument developer Applied Acoustics Systems has made tremendous contributions to the field of physical-modeling software, beginning with Tassman, its flagship modular synth. In 2005, the Canadian company introduced String Studio VS-1, a multiformat plug-in and standalone synth that simulates practically any instrument with strings: violins, guitars, basses, pianos, clavs, harps, sitars, shamisens, and even a few that don't exist in the real world. Among hundreds of included presets are unique pads, unusual sound effects, and amazing digital-synth arpeggios that other software can't touch. The sound is so organic that you might never know you were listening to a software instrument.

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Reason has always come with a generous library of sounds and plenty of instrument and effects patches. In version 3, the library has been expanded and reorganized to fit the new browser. The sequencer has also been improved with the addition of track mute and solo buttons, simultaneous automation recording on multiple tracks, and automation copy and paste. Reason excels as a standalone workstation and a ReWire-integrated instrument rack for use with other DAWs. With all these improvements to an already outstanding program, Reason 3.0 was the clear choice for this year's award. EM

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cakewalk

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LAURA WILLIAMS

Big Guitars in Small Spaces

By Orren Merton

How to record your guitar at full blast without being evicted.

Guitarists with home studios constantly face the problem of recording the sound of their amplifiers while maintaining the peace. Keeping the neighbors from calling the police while capturing the bone-crushing volume required for many guitar amplifiers to sound their best can be a daunting task.

In this article, I'll discuss several effective ways to record guitar amps within the confines of a one-room apartment or a home studio. Your preferences, work habits, budget, and the size of your room will determine which method works best for you. And remember, you're not limited to one option—you may find different methods work better for different amps or setups.

A Room Inside a Room

Nothing allows more options for mic and speaker cabinet placement than building a completely soundproof project studio. In other words, no sound from the outside comes into your project studio, and no sound from the inside escapes.

Although soundproofing can be part of the process of acoustically treating your space, sound isolation and acoustic treatment are not the same. Acoustic treatment refers to the process of tuning the acoustics of a room to eliminate standing waves, dead spots, and so on. That doesn't necessarily produce the isolation you need to record excruciatingly loud guitar amps.

(See "Special Treatment" in the May 2005 issue of EM for a detailed discussion of acoustic treatment.)

To completely isolate a guitar amp from the rest of the outside world, you need a floating room. A floating room is a room within a room—the outer room has acoustically absorptive material on the walls, floor, and ceiling and encloses the smaller, inner room. While ideal, that is expensive and is not always compatible with your living situation.

Amp in the Booth

Fortunately for the home recordist, several manufacturers make portable isolation and vocal booths. (The sidebar "Manufacturers and Developers" lists contact information for all companies discussed in this article.) Isolation and vocal booths typically measure 4 feet by 4 feet with a 7-foot ceiling. They are constructed with sound-absorption materials on all sides and corners (including the booth's top and bottom), cable passage tubes, and ventilation systems. They are not 100 percent soundproof, but they generally do a good job, and are large enough to allow considerable flexibility in the number and placement of microphones.

Sound Pressure Level (SPL) reduction will vary with frequency and the type of sound absorption material used. As a general guide, at the lowest frequencies a guitar can reproduce (around 125 Hz), you can expect an SPL reduction of 26 to 30 dB. SPL reduction increases with frequency, and at the highest frequency ranges that a guitar can reproduce (around 5 kHz), you can expect an SPL reduction of 40 to 45 dB.

Although isolation booths are more affordable than a completely soundproofed room or garage, they are still very costly. Prices range from $1,800 to more than $10,000 for the largest and most noise-suppressing models. For guitarists who can settle for a smaller isolation box to hold just their amplifiers, there are less expensive options.

FIG. 1: The VocalBooth Amplifier Enclosure is an example of an isolation booth especially designed for guitar amplifiers and speaker cabinets.

FIG. 2: The Demeter Silent Speaker Chamber is an example of a soundproof box with a built-in guitar speaker and microphone gooseneck.

For example, Vocal Booth makes four sizes of amplifier enclosure, from 30 to 48-inches square, with prices ranging from $695 to $895 (see Fig. 1). These boxes still have ventilation and cable tubes, but are only large enough for guitar speaker cabinets or combo amplifiers. For those adept at home construction projects, there are plans online at www.amptone.com for building your own guitar speaker isolation booth.

Speaker in a Box

If you don't need to mic a specific speaker cabinet or amp-speaker combo, and all you need is to record the amplifier through a genuine guitar speaker, you have a few additional options. A number of manufacturers package a single 10- or 12-inch guitar speaker in a sound-absorbent box with a microphone gooseneck inside and an XLR connector for a mic cable outside.

Randall Amplification and Demeter Amplification both have such products (see Fig. 2). Randall has two models in its Isolation series: the Isolation 10 for $399 has a 10-inch Eminence speaker, and the Isolation 12 for $499 has a 12-inch Celestion speaker. Demeter's Silent Speaker Chamber comes in three configurations: a box with no speaker for $550, a box with a 12-inch Eminence speaker for $650, and a box with a 12-inch Celestion speaker for $750. Demeter also offers the option of two microphone goosenecks, and the company will be introducing newer cabinets with extra porting and soundproofing in the near future.

You can expect an SPL reduction with those speaker boxes comparable to that achieved with vocal booths and amplifier enclosures. Demeter Amplification, for example, reports an average SPL reduction of 36 dB for the Silent Speaker Cabinet. But, if you use a speaker-in-a-box solution, be sure that you don't turn your amp up so loud that you blow the speaker inside! Depending on the wattage of your amp and the wattage of the speaker,

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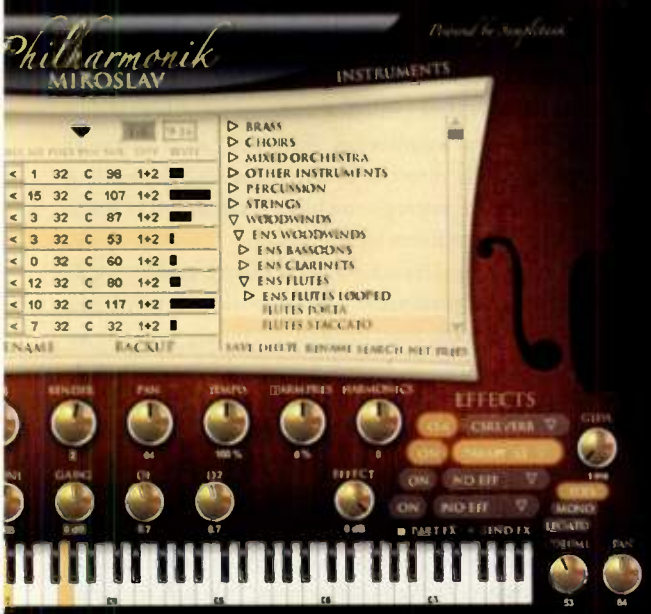

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you may need to use an attenuator between the amp and the speaker.

The Hard Way

Hardware devices emulating guitar speaker cabinets have been around since the arena-rock heyday of the '80s, when guitarists with monster racks used direct boxes to send the signal from their amplifier to various processors and PA systems. Some of those devices are very simple. The only control on the Hughes & Kettner Redbox Pro or the Behringer GI100 is a button to activate the simulation (see **Fig. 3**). Other simulators such as the Voodoo Labs CabTone offer a variety of speaker simulations. Still more expensive speaker simulators, such as the Sequis Motherload or the Palmer PGA04, offer complete EQ to adjust the sound of the cabinet.

FIG. 4: Native Instruments Guitar Rig gives a large variety of speaker-cabinet models, microphone types and placements, and other options for dialing in your virtual cabinet.

To record through a hardware speaker simulator, first connect a cable from your amplifier to the simulator. If your amplifier has a line output (sometimes called a slave output), you can connect the cabinet simulator to this output with an instrument cable. If your amplifier doesn't have a line out, you will need to connect a cabinet simulator to the speaker output of your amp using a speaker cable. If your amplifier has a line out, you may still want to connect the speaker simulator to the speaker output, especially if the line output comes before the power amp stage, which can have an important effect on the tone. After you connect the amplifier to the speaker simulator, connect the simulator directly to your mixer or DAW interface using the appropriate cable.

Keep in mind that the output transformer of your amplifier expects the reactive load of a speaker cabinet. If you connect a speaker simulator to your amplifier, you will still have to connect the amplifier to either a real speaker cabinet or a speaker load to avoid the risk of blowing the output transformer of your amp. The Palmer PGA04 and Sequis Motherload incorporate a speaker load. With cabinet simulators that don't, such as the Behringer GI100 or the Hughes & Kettner Redbox Pro, you can use an attenuator such as the THD Electronics Hot Plate or Gibson Power Stealth to deliver the proper speaker load to your amplifier.

FIG. 3: You can use a hardware direct box with a speaker simulator circuit, such as the Behringer GI100 (shown below), to eliminate the need for miking a speaker.

Take a Load Off

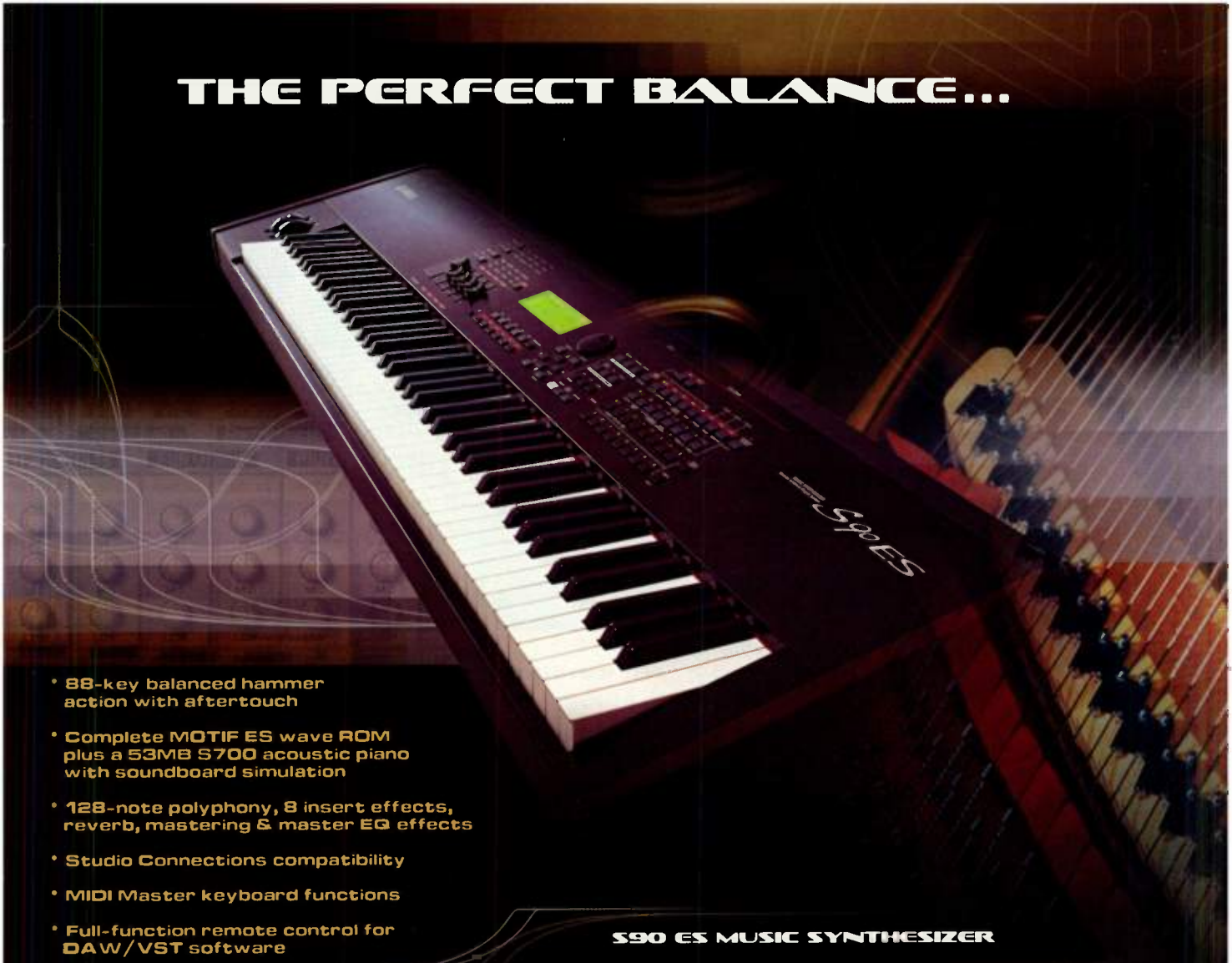
If you are using a speaker load instead of a speaker, you will need to monitor your guitar sound through your mixer or DAW. That allows you to turn your guitar amplifier up for maximum power-amp saturation while monitoring your guitar through your mixer or DAW at normal listening levels. If you don't need maximum power-amp saturation, you can plug your amplifier into a speaker simulator for direct recording and into a speaker cabinet for low-volume monitoring. Then, you can record your guitar amplifier direct at lower volumes while avoiding the problem of microphone bleed from ambient noise due to the low-volume level.

Randall Amplification's MTS and XL speaker cabinets with mic eliminator circuits work well when you can turn down the amp. Randall specifically matched its Celestion Vintage 30 loaded 4 × 12 cabinets to recordings made with a Shure SM57 as well as various condenser microphones. The circuit has voicing options for each microphone's response. The speaker cabinet does not include any attenuation, so the volume of the direct signal is controlled by the amplifier volume.

How close to the real thing do hardware speaker simulators get? As **Web Clip 1** shows, although the amp-speaker-microphone sound doesn't exactly match the sound of the same amp through the GI100, they both sound like an amplifier through a speaker.

JLH Products' AxeTrak is the most hybrid solution. This small box combines the speaker-in-a-box concept with a hardware speaker simulator. It consists of a small,

THE PERFECT BALANCE...



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soundproofed box with the driver of a 6-inch speaker and the mic element of a microphone. As with the speaker isolation boxes, if your amp puts out more watts than the speaker driver can handle, you'll need an attenuator between your amp and the AxeTrak.

A Soft Option

Hardware devices are not the only option for emulating guitar speaker cabinets; there are software speaker simulations as well. Many guitar amp simulator plug-ins—Native Instruments Guitar Rig (see **Fig. 4** and **Web Clip 2**), MDA Combo, and Logic Pro 7 Guitar Amp Pro, to name a few—allow independent access to the plug-in's speaker cabinet simulations.

Software speaker simulations are designed to replicate hardware simulator circuits, measuring the responses of the interaction of speaker cabinets with microphones. Most software speaker simulators use some form of convolution to place the audio signal in a digital environment that re-creates the speaker-microphone interplay.

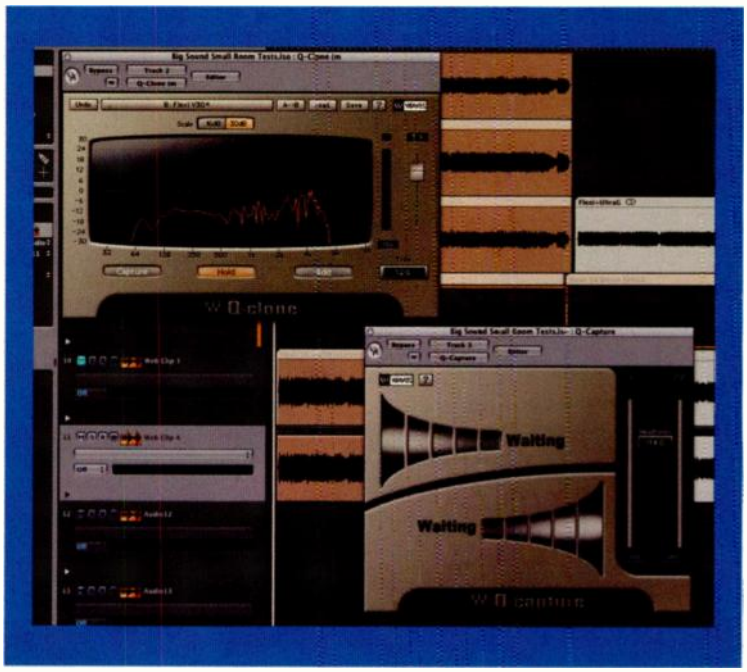

FIG. 5: Wave's Q-Clone is a new type of convolution processor that uses two real-time plug-ins, Q-Capture and Q-Player, to create impulse responses from hardware on the fly.

One advantage software plug-ins have is that you can switch between simulations to choose the best match for a specific amplifier, instead of being committed to a single hardware cabinet simulation. Also, plug-ins typically give you many more simulations to choose from than hardware devices, and they often allow you to configure not only the variety of speaker cabinet, but other options such as microphone type, placement, and distance; the physical dimensions of the cabinet; and so on.

Plugging In

You will need to plug a line-level signal from your guitar amp into your mixer or DAW to run your guitar amplifier's output through a software speaker simulator. If your amplifier has a line out, you can use that. Most attenuators also have line outputs. Even if your amplifier has a line output, if it is not after the amplifier's power stage, you may prefer to use an attenuator. As with hardware cabinet simulators, if your amplifier is not plugged into a real speaker cabinet for monitoring purposes, be sure to use a speaker load such as an attenuator, or you'll risk damaging your amp's output transformer.

Once you have the amplifier signal routed through a line output into your computer, you will need to turn on software monitoring in your host application in order to hear your guitar amplifier through your speaker simulator as you play live. Unfortunately, whenever you use software monitoring, you have to deal with software-monitoring latency.

Software-monitoring latency is the delay between the time the guitarist plays a note on the guitar and when it comes out of the computer monitors. Software-monitoring latency occurs because the audio signal needs to enter your computer and be processed before you hear it. By contrast, when a guitarist strums a note, it is transferred almost instantaneously through the amplifier to the speaker.

Software-monitoring latency cannot be completely avoided; however, if your computer is fast enough and your audio interface has low-latency drivers, you may be able to reduce the audio buffer size to 128 samples or lower. That results in a latency of less than 10 ms, which is almost undetectable. If you get clicks and pops or CPU overload errors, however, you'll have to increase the buffer size until you can monitor without problems.

If you don't mind hearing a different sound in the room, set your amplifier to a comfortable volume

Making your own impulse response is a compelling way to capture the sound of a specific speaker-cabinet and power-amp combo.

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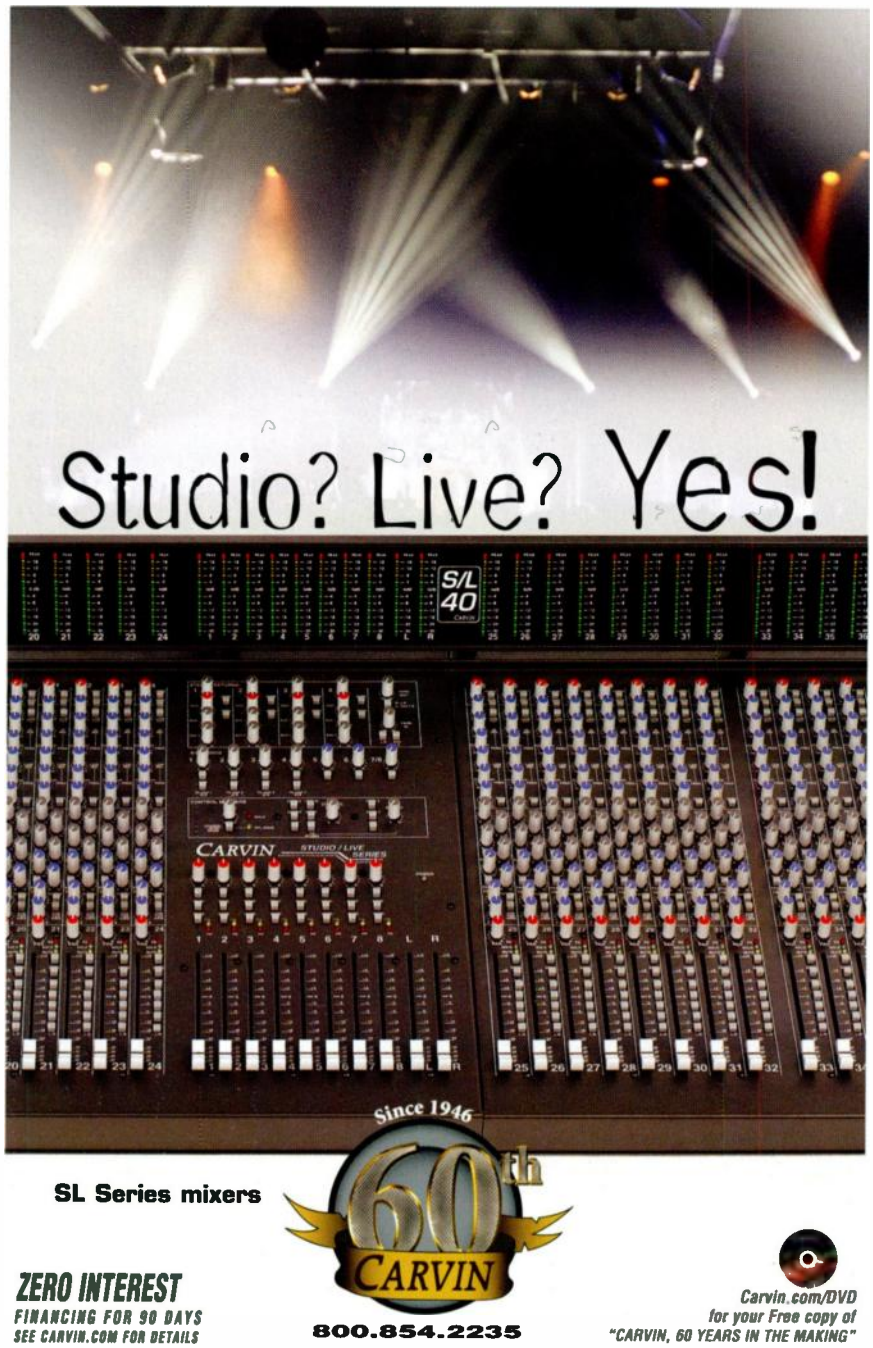
and connect it to a real guitar speaker. That way you won't have to deal with software-monitoring latency, nor will you have to use a speaker load to keep your amplifier's output transformers happy. The downside is that you won't hear the same sound that you are recording.

Do the Convolution

You can make your own convolution model of your speaker. The first step is to record an impulse response of the space—in this case, a guitar speaker cabinet. The software then uses its convolution engine to convolve—literally, to roll together—your impulse response with the audio signal being processed.

Many convolution reverbs allow you to make your own impulse responses. Audio Ease's AltiVerb, Waves' IR series, and Apple's Space Designer plug-in for Logic Pro are examples. You can use any of those applications to make an impulse response of your specific speaker cabinet.

The process of creating an impulse response varies from program to program, but the basic idea is that you send an amplified sine-wave sweep through your speaker, then record the result. (Because the line-level output of your audio interface will not produce a sufficiently loud sign sweep, you will need to amplify its output with a power amp.) The convolution software then deconvolves the recording to produce the impulse-response curve used by the reverb. **Web Clip 3** is



MANUFACTURERS AND DEVELOPERS

Here is the contact information for the hardware manufacturers and software developers listed in the main text.

Apple Computer
www.apple.com

Audio Ease
www.audioease.com

Behringer USA, Inc.
www.behringer.com

Demeter Amplification
www.demeteramps.com

Hughes & Kettner, Inc.
www.hughes-and-kettner.com

JAMS Audio (Palmer)
www.palmergear.com

JLH Products
www.axetrak.com

MDA
www.mda-vst.com

Native Instruments USA
www.native-instruments.com

Randall Amplifiers
www.randallamplifiers.com

Sequis
www.motherloadusa.com

THD Electronics, Ltd.
www.thdelectronics.com

VocalBooth
www.vocalbooth.com

Waves, Inc.
www.waves.com

an example of Apple's Space Designer being used to simulate my speaker cabinet.

The Same Only Different

The accuracy of your homegrown impulse response will depend on a number of factors. Those include how clean the power amplifier sending the sine-wave sweep is, how well you record the response, and the quality of your convolution plug-in's impulse response generating algorithm.

For example, if you are trying to get an accurate simulation of a Mesa Boogie 4 × 12 cabinet, sending a sine-wave sweep through the power section of a Mesa Boogie Dual Rectifier and recording it with a Sennheiser ribbon mic will create an accurate impulse response of the Dual Rectifier 4 × 12 cabinet and Sennheiser mic chain. But if you then use that impulse response on a Marshall DSL head, it will not sound very much like a Marshall DSL through a Mesa Boogie 4 × 12 cabinet. Moreover, impulse-response generation can be a time-consuming, offline process.

Waves' innovative new convolution based application, Q-Clone, tries to take some of the tedium and guesswork out of impulse-response creation by using two plug-ins: the Q-Clone plug-in and the Q-Clone Capture plug-in (see **Fig. 5**). Q-Clone Capture creates the sine-wave sweep and captures the result, creating an impulse response on the fly. With that system, a guitarist can be playing through the amplifier live while the recordist tests microphones and mic placement to get the best impulse response. As **Web Clip 4** shows, Q-Clone's results are on a par with other convolution processors.

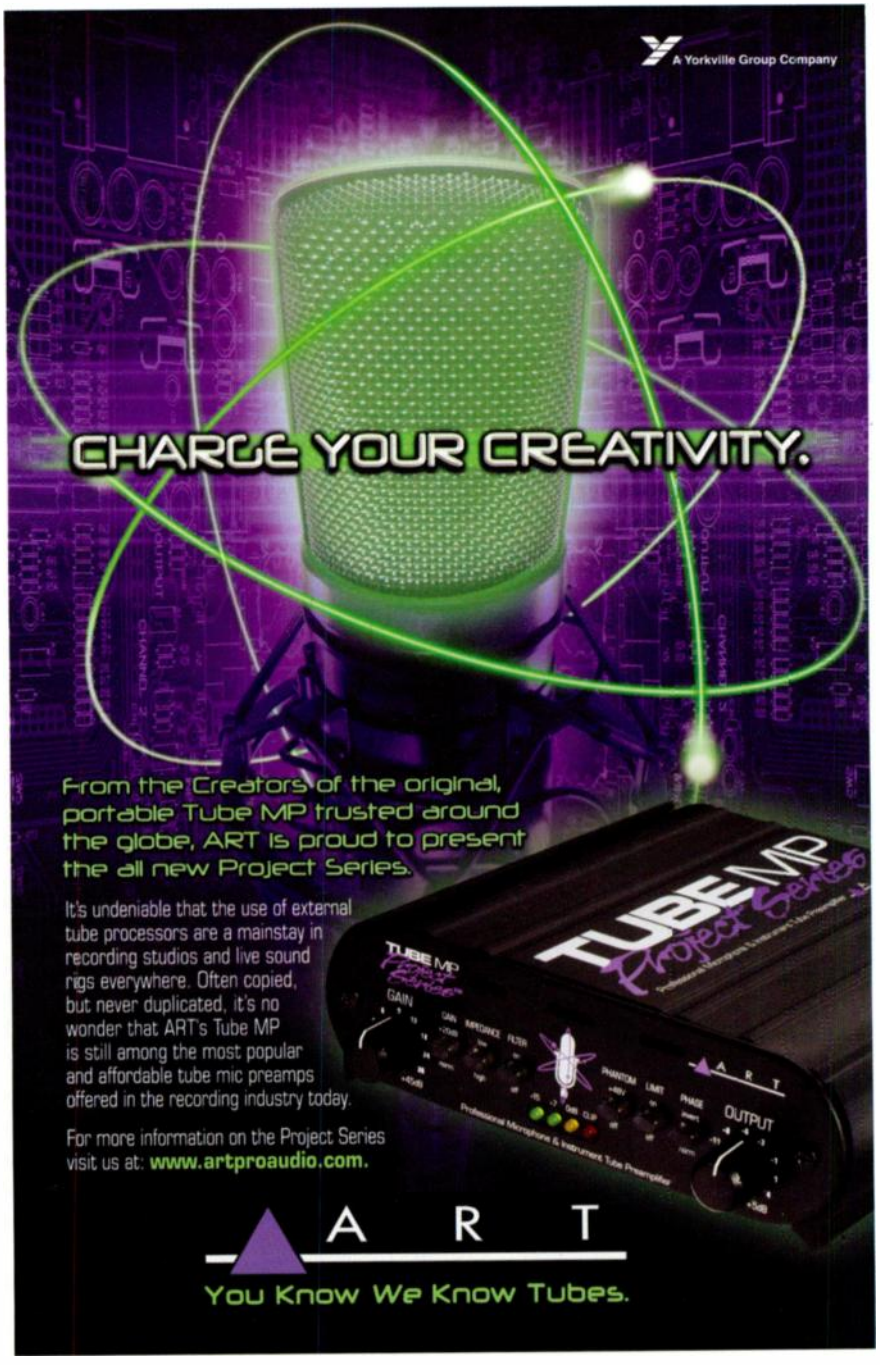
Who's Better, Who's Best

Is it better to create your own speaker simulation for a convolution reverb or to use an amplifier simulator? Making your own impulse response is a compelling way to capture the sound of a specific speaker-cabinet and power-amp combo. But if you don't have the right microphone or if you want to use simulations of a number of different amps, you're probably better off with a professionally designed guitar-amp simulator.

Having a project studio in a small noise-sensitive space doesn't prevent you from recording that Marshall stack or Fender Twin combo. Soundproof booths, enclosures, or speakers; hardware cabinet simulators; software speaker emulators; and convolution processors can all be used to record even the loudest amplifiers without getting arrested. EM

EM WEB CLIPS

Orren Merton, author of Logic Pro 7 Power *(Muska & Lipman, 2004) and* Logic 7 Ignite *(Muska & Lipman, 2005), believes that too loud is never loud enough. The author wishes to thank Derrick Davis, Jan Duwe, Adam Fifield, and Doug Reynolds for their contributions to this article.*



Apple Loops for All

By Len Sasso

They're not just for the Mac anymore.

Apple Loops are Apple's answer to Acidized WAV files. As you might expect, only Apple products can take advantage of Apple Loops' special features, such as meta-tags, transient markers, and embedded MIDI data. Even so, with a small investment in Apple's GarageBand 2 ($79 as part of the iLife suite), you can put those features to good use in other audio software. I'll cover several ways to do that using GarageBand or any of Apple's other audio applications.

When Apple Loops were first introduced with Soundtrack in 2003, the supply was limited, and you weren't likely to encounter them outside of Soundtrack. But things have changed considerably; Apple released GarageBand and the highly regarded Jam Pack series of Apple Loops. Independent loop-library developers such as Big Fish Audio (www.bigfishaudio.com), PowerFX (www.powerfx.com), and Zero-G (www.zero-g.co.uk) now include Apple Loops in many of their libraries. In short, you may have Apple Loops lying around that you don't even know about.

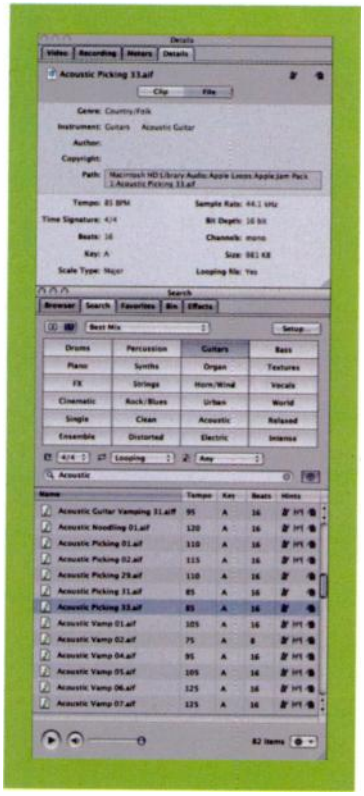


FIG. 1: Soundtrack Pro's Apple Loops browser is the fastest and most flexible tool for finding Apple Loops that fit a specified criteria.

Apple Loops can be loaded as standard AIFF files into non-Apple products, and you can, of course, use them as you would any other audio files. For example, you can use Ableton Live's time warping and pitch shifting capabilities to adapt the loops to a Live project, and you can use Propellerhead ReCycle to convert them to sliced REX2 files for use in Reason and other applications that support that format. But you can also utilize the built-in features of an Apple Loop by loading it into a compatible Apple application, and then either syncing that program to your preferred audio application or resaving the modified loop for loading into that application.

The Real Deal

There are two kinds of Apple Loops: Real Instrument and Software Instrument. Real Instrument Loops are akin to Acid files; they contain meta-tags with information about the file such as key, tempo, time signature, number of beats, musical genre, and so on. Additionally, they usually contain transient markers for time stretching a loop to fit a song's tempo. Software Instrument Loops contain all the information in Real Instrument Loops (including the audio content) along with MIDI data and information about the software instruments and effects used to create them. That information can be used to re-create and edit the loops in Logic and GarageBand.

Software Instrument Loops have an obvious advantage: you can time-stretch and pitch-shift them as MIDI processes, and the result will exhibit none of the artifacts associated with those processes when they're applied to audio. A majority of the Apple Loops produced by Apple and all of those produced by third-party developers, however, are Real Instrument Loops. You can create your own Apple Loops of either variety in either Logic or GarageBand.

Needle and Haystack

One of the advantages of Apple Loops is that you can search a group of them for files that match specific criteria. Generally manufacturers categorize sounds in audio libraries by grouping similar files into folders and using arcane naming schemes. Apple Loops' meta-tags encode a wider range of information and allow files to be matched to multiple criteria.

GarageBand, Logic, and Soundtrack Pro all have built-in Apple Loops browsers, but Soundtrack Pro's is by far the fastest and most full-featured (see Fig. 1). If you're interested primarily in Real Instrument Loops and could use a first-rate audio editor that includes an 8 GB Apple Loops library, Soundtrack Pro might be a worthwhile investment. (A full review of Soundtrack Pro 1.0 is available online at emusician.com.)

The browsers in Logic and GarageBand are a bit slower, and if you have a large library of Apple Loops, you'll spend a lot of your browsing time staring at spinning rainbows. Also, those browsers are not as flexible and don't display as much detail as Soundtrack Pro's, but they both do the job.

Hearing Is Believing

When working on a song in a non-Apple application, you can browse for Apple Loops in several ways. The simplest

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and least flexible way is to mix down the relevant section of the target song to an audio file and import that into the browser host. A better alternative is to use ReWire or MIDI synchronization to link the browser host with the other application. Logic and GarageBand will function as ReWire masters, Logic will send MIDI Clock and MIDI Time Code to other applications, and Soundtrack Pro will send and receive MIDI Clock and send MIDI Time Code. That gives you a variety of connectivity options, depending on the software that you're using.

I most often use MIDI Clock to slave Live or Reason to Soundtrack Pro for browsing Real Instrument Loops. I then cycle the section of the song I'm working on, select the Search tab in Soundtrack Pro's browser, set up the search criteria, and step through the displayed Apple Loops. The selected Apple Loop automatically plays in sync with the song. If I like what I hear, I right-click on the Apple Loop to add it to the Soundtrack Pro project bin. In GarageBand or Logic, you need to drag the chosen Apple Loops directly to an audio track. Whichever browser host you use, you'll need to set its key to the song key in order to have the Apple Loops transposed correctly.

Another alternative is to export the transposed and time-stretched Apple Loops from the browser host as standard audio files. Soundtrack Pro and Logic have export options for exactly that. In GarageBand, use the Export to iTunes option, which exports either the entire GarageBand song or the section within the cycle markers (if cycling is turned on). GarageBand and Logic also allow you to export the modified files as new Apple Loops.

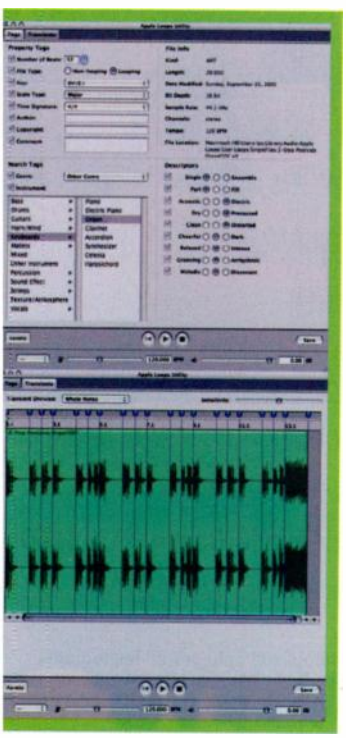

FIG. 3: The free Apple Loops utility allows you to alter an Apple Loop's meta-tags and transient markers.

Yet another approach is to record the audio output of Soundtrack Pro or Logic directly in the other audio application. Neither Soundtrack Pro nor Logic function as ReWire slave applications, but the free Sunflower utility from Cycling '74 (www.cycling74.com) provides an alternative audio pathway.

The Soft Side

You have several more options with Software Instrument Loops, but for those you need to use either GarageBand or Logic. In their browsers, Software Instrument Loops are distinguished by their icon, which is a green note instead of the blue waveform icon used for Real Instrument Loops (see **Fig. 2**).

The setup for synchronization is the same as previously described for Real Instrument Loops. The only difference in procedure is that Software Instrument Loops must be dragged from the browser to a MIDI track in Logic or GarageBand; otherwise, they will be inserted as Real Instrument Loops. The target MIDI track must be empty; otherwise the software instrument and effects already assigned to that track will be used instead of the intended ones.

With Software Instrument Loops, you get artifact-free time stretching and pitch shifting and you can alter the MIDI data and the software instrument and effects plug-in settings. The ability to alter the MIDI data expands the usability of Software Instrument Loops considerably. For example, you can modify individual note pitches, timing, accents, and durations as well as change software instruments and effects (see **Web Clip 1**). And, because the Software Instrument Loops included with Logic and GarageBand (they are the same collection) only make use of software instruments and effects available in GarageBand, the ability to rework them to use other Logic and Audio Units plug-ins adds another dimension.

FIG. 2: In the Logic and GarageBand browsers, Software Instrument Loops are distinguished from Real Instrument Loops by their green note icons.

New Loops from Old

Once you've modified a Software Instrument Loop, you can export it from either Logic or GarageBand as a new Software Instrument Loop or as a standard audio file. You can also export its MIDI content from Logic as a separate MIDI file, which allows you to use it in other applications with software instruments and effects that may not be available in Logic.

If you export it as an Apple Loop, you can then use the Apple Loops Utility to update its meta-tags and transient markers. Soundtrack Pro ships with the Apple Loops Utility, but you can also download it directly as part of the Apple Developer's Apple Loops SDK (developer.apple.com/sdk/#AppleLoops). The utility's control panel has two pages: one for creating meta-tags and one for placing transient markers (see **Fig. 3**). Exported Apple Loops will automatically have their key and tempo information updated, but you may want to modify their meta-tags to reflect changes in instrument or style. If you've modified the MIDI content of a Software Instrument Loop, you will also need to update the transient markers to reflect that.

Working in other software applications doesn't have to mean abandoning your Apple Loops library. Integration can be as simple as using GarageBand's browser to identify appropriate loops or as complex as interconnecting several applications for synchronization and audio exchange. Either way, there's no reason to be left out of the Apple Loop. EM

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Len Sasso is an associate editor of EM. He can be contacted through his Web site at www.swiftkick.com.

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Pushing the Envelope

By Len Sasso

Unleash the creative potential of breakpoint envelopes.

Envelope" is not a four-letter word. If you've been limiting yourself to simple ADSR envelopes in your synth programming, you're missing out. A variety of synths and samplers now offer breakpoint envelopes with flexible routing and shaping options. In this article, I'll discuss how to creatively use breakpoint envelopes as a sound-design tool. For my examples, I used Native Instruments Absynth 3 soft synth, which has one of the most powerful breakpoint envelope implementations available. But you can use most of these techniques in other synths, including earlier versions of Absynth.

Breakpoint envelopes differ in two ways from the fixed-stage envelopes found in vintage synths: they have more stages, and they give you more control over the parameters for each stage. In the case of Absynth 3, the envelopes can have as many as 68 stages, and you have control of each breakpoint's time and level, as well as the shape of the curve (called the *slope*) between it and the previous breakpoint. Furthermore, the envelopes have two forms of MIDI control, five modes of operation, and integrated LFOs.

A Pitch in Time

I'll start with a basic 2-oscillator patch and use breakpoint envelopes to evolve it into a 5-voice song that is played by holding a single note. Instead of triggering individual notes as you would with a step sequencer, breakpoint envelopes are used to create volume pulses. Other breakpoint envelopes, applied this time to each oscillator's tuning, control pitch. Finally, I'll use Absynth's looping, retriggering, and LFO envelope modes to add interest to the sequence. You'll find audio examples and an Absynth 3 patch bank containing all the patches in **Web Clips 1** and **2** on www.emusician.com.

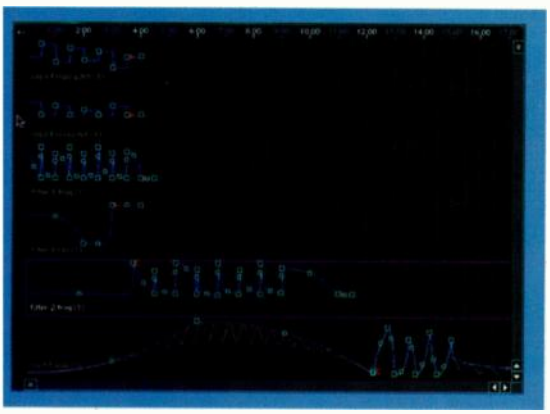

FIG. 1: Breakpoint envelopes (from top to bottom) control channel one Main and Mod oscillator pitches, lowpass filter cutoff and resonance, channel two filter cutoff, and channel three volume.

Start with the Absynth default patch and activate the oscillator in channel one (Oscil 1), set its mode to Double, and tune the second oscillator (labeled Mod) an octave higher. You can use any waveforms and Balance setting for the oscillators; I've chosen sawtooth and triangle waveforms for the Main and Mod oscillators, respectively, and set the Balance to 0.60.

Next, go to Absynth's Envelope window, select the Oscil 1 Amp envelope, and select Generate A/R Pulse from the Transform menu. Keep the default settings, which will generate eight eighth-note pulses. Each time you play a note, you'll now hear eight pulses. Set the envelope to Loop mode, and adjust the level and the slope of some of the 0 dB breakpoints, which are located at the top, to create a repeating, accented pattern.

Ensure that Absynth's Envelope Grid is turned on and set to eighth notes, and then create new envelopes for Oscil 1 Main Pitch and Oscil 1 Mod Pitch. Temporarily link the Mod Pitch envelope to the Main Pitch envelope. By default, the Main Pitch envelope will be set to Retrigger mode; set the Retrigger counter to 3.500. The pitch envelopes will retrigger every seven eighth notes, which puts them out of sync with the looping amp envelope and creates a shifting pattern of accented pitches. Finally, adjust the nodes of the Main Pitch envelope to produce a pitch sequence you like.

The oscillators will now repeat the pitch sequence an octave apart. To add some counterpoint, copy the Main Pitch envelope to the Mod Pitch envelope (which will unlink it) and adjust its nodes as desired.

Good Filtrations

You can add a lowpass filter with a high cutoff-frequency setting and use its cutoff envelope instead of the amplifier envelope to create the volume pulses. That makes for a more interesting sequence and leaves the amplifier envelope available for additional volume contour. Adding an asynchronous filter-resonance envelope can also add life to the sequence.

To add two more voices to the mix, go to Absynth's Patch window and copy channel 1 to channel 2. Choose different transpositions for the channel 2 Main and Mod oscillators—intervals of a fifth (7 semitones) work well without cluttering up the harmonic landscape. Make the filter envelopes asynchronous by moving the loop-start breakpoint for channel 2's filter significantly (see **Fig. 1**). You now have channel 3 left for additional counterpoint or a melody. EM

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ABLETON Live 5 (Mac/Win)

If you have a Live wish list, this upgrade will thrill you.

By Len Sasso

ive users have come to expect fingertip access to essential performance and tracking tools, but a few areas have long needed streamlining. Although Live 5 has no shortage of useful new features, it's the software's working environment improvements that stand out. Among other things, browsing and library management have been completely reworked, MIDI and audio clip editing have been significantly improved, and plug-in operation has taken a giant leap forward.

EM reviewed previous versions of Live in the June 2002, June 2003, April 2004, and December 2004 issues, so I'll devote this review to the enhancements in Live 5. But Live is significantly different from other digital audio sequencers that you may have encountered. For those unfamiliar with Live basics, I suggest reading the earlier reviews, all of which are available on www.emusician.com.

FIG. 1: Live 5 allows you to import the contents of Live Sets and the contents of standard file-tree directories on your hard drive.

Browse Awhile

Live 5's browser is organized into five pages: Live Devices (Live's built-in instruments and effects), Plug-in Devices (VST and AU plug-ins), and three Files pages. The three Files pages are for importing audio and MIDI files into Live, and because a Live set may combine files from many disparate areas of your hard drive, you'll frequently navigate through its file tree. Having more than three Files pages would be useful, but a new search function, enhancements to Live's library structure, and convenient drag-and-drop exporting have improved things significantly.

Live's factory library is located in a single folder on your hard drive, and the browser has a button to take you there immediately. The library is split into three sections: Sets,

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FIG. 3: You can scrub audio and MIDI clips by clicking either in the clip's waveform display or in the Arrangement. Scrubbing is looped at the current quantize setting which, in the above example, is one bar.

Clips, and Waveforms. The Sets section contains a variety of Live demo songs, but you can store your own Live Sets there as well. It's also a handy location for templates and other songs that you use frequently.

The Clips and Waveforms sections contain Live's MIDI and audio factory content and, as with Sets, storing your own clips and waveforms there will allow for speedier access to them. Live 5's browser now also displays and lets you navigate through shortcuts (called Aliases on the Mac). Placing shortcuts to other directories in the factory library is another way to expedite the navigation process.

The factory library is delivered in categorized archives called Live Packages, which can be installed and uninstalled individually. As in Live 4, most of the factory content is from Big Fish Audio. All Packages are included on the Live CDs and can also be downloaded from the Ableton Web site. Additionally, packages are starting to appear from third-party developers such as TrackTeam Audio (www.trackteamaudio.com).

Cliptomania

The new Live Clip format includes all clip settings, any clip envelopes that have been defined, and all effects and instrument settings for the track that's holding the clip. Saving an audio or a MIDI clip in Live Clip format is as simple as dragging it from a track in Session view to the browser. Live still uses analysis files for basic audio-clip settings, but the Live Clip format is much more comprehensive, and you can save the same audio or MIDI material with different settings in multiple Live Clip files.

FIG. 2: The Browse Presets button reveals all presets for a device or a device group. Use the computer keyboard's arrow keys to step through presets.

Clips are automatically saved in Live Clip format as part of Live Sets. Sets can now be expanded to reveal their tracks in the browser the way standard file-tree directories are, and tracks can be further expanded to reveal the individual clips on those tracks (see Fig. 1). Any clip, track, or even a whole Live Set can be dragged into the current set. Clicking-and-dragging to an existing track that already contains devices will leave those devices unaltered, whereas clicking-and-dragging to an empty track or to an empty region in the Session view will import any devices saved with the clip.

You can import whole tracks or sets and export them (just as you can with clips) by dragging them to the browser. The beauty of that system is that you can easily create archives of matched material (for example, a collection of bass, drum, and guitar loops in a particular style, key, and tempo). In short, you can now use Live Sets as archives and song construction kits rather than having to save and reload individual clips.

Clever Devices

Live's device management has been improved in two ways: presets are now accessed from the browser, and devices can be saved in groups. At the moment, only Live's built-in devices can belong to groups, and browser preset management works only for built-in devices and most AU plug-ins (not for VST plug-ins).

Each eligible device and device group has a Browse Presets button. When you click on the button, it brings up the relevant presets in the browser (see Fig. 2). You can use the arrow keys on the computer keyboard to step through presets and use the Return key to load the selected preset. Conveniently, loading a preset does not exit browsing mode, so you can continue auditioning presets until you find one that you like.

Ableton has added a much requested MIDI arpeggiator and five new audio devices (Beat Repeat, Phaser, Flanger, Auto Pan, and Saturator). In addition to Converge, Diverge, and three random modes, the arpeggiator offers ten variations on up and down. My favorites, the Pinky and Thumb modes, repeat the top or the bottom note, respectively, while arpeggiating the rest. In addition to controlling rate and note duration, you can make the pattern automatically transpose as many as eight times in steps ranging from a

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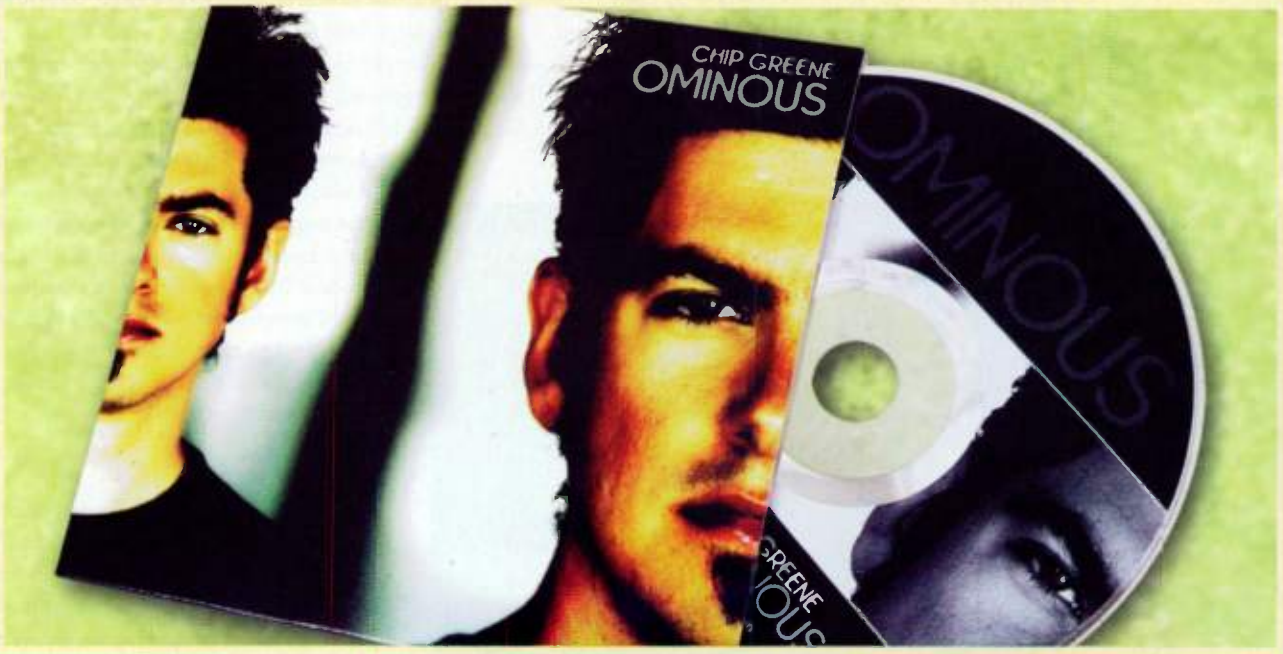

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semitone to an octave, and transposition can be scale corrected to any major or minor key. Velocity decay and automatic retriggering round out the arpeggiator's controls.

Hold That Beat

Beat Repeat is the most interesting of the new audio effects; it grabs chunks of audio and repeats them. You can control the interval between chunks, the location within that interval from which Beat Repeat grabs the chunk, how large a chunk it grabs (which can be randomized), and for how long the chunk is repeated. The chunks can be pitch-shifted as they repeat and can be automatically pitch bent over time. The output can be a mix of the input and the processed audio, the processed audio only, or the input with processed audio inserted as it occurs.

Beat Repeat can be used with a variety of material, not just percussion as the name might suggest. **Web Clip 1**, for example, uses Beat Repeat to process an arpeggiator's output.

Live's Simpler and Operator software instruments have also been upgraded, fulfilling a number of user requests. Simpler now has separate filter, amplifier, and pitch envelopes. The LFO has an attack control for fading it in, and it can be applied to pan for tremolo effects. Glide, portamento, and stereo spread controls have also been added. Operator has gained a couple of retro waveforms, and the LFO can now be routed to filter cutoff. Best of all, you can copy and paste Operator envelope and oscillator settings.

In Session

Live's Arrangement and Session editors have not been left out in this upgrade. You can now select multiple clips and edit their common parameters, such as trigger mode, Follow Action, transpose, level, and Warp

PRODUCT SUMMARY

ABLETON Live 5

digital audio sequencer
$499 (new CD)
$149 (upgrade CD)
$119 (upgrade download)

OVERALL RATING (1 THROUGH 5): 4

PROS: Completely redesigned browser. Intelligent scrubbing with quantized looping. Plug-in preset management in the browser. Launchable locators in the Arrangement view. New arpeggiator and Beat Repeat effects. Improved clip editing.

CONS: GUI setup remembered on a global rather than a per-song basis. Browser could benefit from more Files pages.

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mode settings. You'll appreciate that addition after you've tediously made the same change to 20 clips individually.

Clips can be temporarily deactivated, letting you toggle them out of Arrangements or Scenes without removing them. Notes can be individually muted in MIDI clips.

A new Warp mode for audio clips, called Complex, can warp mixed media clips when none of the other modes produce satisfactory results. Complex mode is useful, for example, for warping whole song sections when importing them into a new song at a different tempo. Additionally, there is a preference setting for automatically warping long audio files when they're imported. The results of automatic warping usually required some tweaking; nonetheless, it's a useful addition.

Complex mode significantly increases the CPU load, but a handy new Track Freeze function in the Arrangement view can be used to retrieve those CPU cycles. Track Freeze is also useful for reducing the load when using CPU-intensive instrument and effects groups.

By Special Arrangement

Locators and intelligent scrubbing have been added to the Arrangement view. Locators can be placed on the fly, and MIDI and computer keyboard triggers can be assigned to them.

Scrubbing is looped at the current quantize setting, but when quantizing is turned off, scrubbing works in the standard way. Quantized scrubbing, which is also available in the Clip editor, is great for ferreting out problems in a single beat or measure. In a nice touch, Clip editor scrubbing of a clip selected in the Arrangement view also scrubs the arrangement from that point forward in the clip (see Fig. 3).

Stepping Up

Live 5 is a must-have upgrade. Live is about speed, and the few things that could slow you down have now been vastly improved. Live's already excellent documentation has been expanded with a 40 percent larger printed manual and more interactive lessons. Ableton has clearly been listening to its users.

If you are not a Live user and have a favorite digital audio sequencer, you may want to try Live's different approach to performance and arrangement. It may be just the thing to spark your creative juices. Live is easy to learn and integrates nicely into your current environment as a ReWire slave or master. A full-featured demo can be downloaded from the Ableton Web site.

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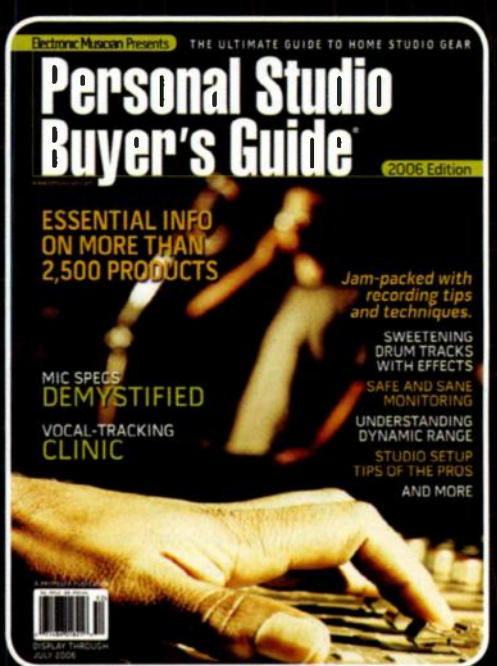

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FIG. 1: Dynaudio Acoustics' BM5A houses a 6.9-inch woofer and a 1.1-inch soft-dome tweeter, each powered by a 50W amplifier.

DYNAUDIO ACOUSTICS BM5A

An active close-field monitor that an audiophile could love.

By Myles Boisen

Denmark's Dynaudio Acoustics started out as an audiophile speaker and driver manufacturer. In recent years, the company successfully branched out into producing studio monitors, especially higher-end systems for professional film and broadcast applications. At a street price of less than $1,000 a pair, Dynaudio's powered BM5A is one of the company's most affordable monitors.

Two-Way Street

The BM5A (see Fig. 1) is a 2-way biamplified monitor featuring a 6.9-inch woofer and a 1.1-inch soft-dome tweeter. Each speaker in the well-built black enclosure receives power from its own 50W amplifier. Both amplifiers have thermal overload protection, and the woofer amp has an additional built-in limiter circuit.

An overload LED on the speaker's front glows orange when bass limiting is activated, and lights red when thermal shutdown is activated. A front-mounted green diode is the power indicator. There is no grille cloth or mounting hardware on the speaker's front panel. A protective three-legged metal piece is mounted over the tweeter.

The BM5A's rear panel (see Fig. 2) includes a fused IEC AC power-cord connector and power switch, a +4 dBu balanced XLR input jack, and several small switches. A grouped array of three equalization switches can be set to flat or can be set to provide bass shelving (± 2 dB at 150 Hz), midrange cut (–2 or –4 dB at 450 Hz), and treble filtering (± 2 dB at 2 kHz and above) to compensate for room acoustics.

A highpass filter switch can be set to flat when using the monitors alone. When pairing the BM5As with a subwoofer, the switch can be set to 60 or 80 Hz cutoff points. A sensitivity switch offers three positions for input sensitivity: +4 (for high-output sources), 0, and –10 (for low-output sources).

A large heat sink protrudes from the rear panel, which also contains a bass port. The port measures 2 inches in diameter and is tuned to a resonant frequency of 55 Hz. The BM5A is designed for use as a close- or mid-field monitor and can be positioned three to nine feet from the ideal listening point. Dynaudio recommends its BM10S or BM9S subwoofer for use with the BM5A.

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WRH

REVIEW

Test-Drive

I set up the BM5As in the control room at my Guerrilla Recording studio, and compared them with two sets of passive monitors that I have relied on for many years: the Tannoy PBM8s and the Event 20/20s. The active surface of the woofers in both of those monitors measures about seven inches across, compared with the 5-inch surface of the BM5As. The Event 20/20s have 2-inch ports in the front, and the Tannoy models have rear ports, which I blocked with foam.

I use an Adcom GFA-555 to amplify the passive speakers. I normally use a subwoofer and a stereographic equalizer with my studio monitors. For these tests, the subwoofer and the EQ were disabled. Midrange and bass EQ settings were set to flat on the BM5A for evaluation purposes. High-frequency EQ was set at –1. A level setting of +4 most closely matched the BM5As to the other studio speakers.

During setup, the switches and labels on the rear panel struck me as unusually small and hard to read. But for most installations, those selectors will be set only once or twice and then forgotten. The BM5As produced a barely audible high-end hiss when powered up. I never detected a midrange bump or crossover distortion near the 1.5 kHz crossover center frequency.

Magnetic interference wasn't an issue when the unit was placed next to a standard VGA computer monitor. The BM5A manual is straightforward and helpful. It guided me smoothly as I set up the monitors and learned their controls.

Orchestra Audition

On some sparse electronic music mixes by composer Joel Pickard, the Dynaudio close-field monitors offered superior performance on synth bass notes and on some complex low rumbles. Compared with my monitors, it was much easier to hear system noise, compressor pumping, and other artifacts in Pickard's mixes through the BM5A speakers.

I used the BM5As during various mix sessions, mainly as a playback reference for checking a final mix. On several occasions I picked out flaws, distortion in a mix, or other balance problems during one pass on the BM5As that I hadn't while mixing the source material. A single BM5A also worked well as a flat reference monitor during controlled laboratory-style testing of microphones for another EM article.

To dig into the BM5A's character more deeply, I compared it with my other monitors while listening to a CD of Nino Rota film music called Club Foot *Orchestra Plays the Music of Nino Rota* (Rastascan, 1997). That disc was recorded at my studio and mixed on the Tannoy PBM8 monitors. The group includes a standard jazz rhythm section with acoustic or fretless electric bass, violin, various keyboards, and horn-rich melodic arrangements featuring trombone, trumpet, sax, and clarinet.

FIG. 2: The BM5A's rear panel includes an array of three equalization switches that can be set flat or provide bass shelving, midrange cut, or treble filtering.

The BM5A speakers were plainly brighter than the Tannoy monitors when reproducing the top end of horns, cymbals, and reverb in the mix. That contributed to the feeling of a larger and airier soundstage, which is almost always a good thing for acoustic music. The alto sax, however, sounded a bit hollow, and it lacked midrange warmth between 400 and 800 Hz.

Among the trio of speakers, the tone of midrange instruments such as bowed bass, trombone, alto sax, and snare was more accurate on the Tannoy and Event monitors. The bass drum (a double-headed jazz kick that is generally light in the mix) sounded great through the BM5As. Electric and acoustic bass fundamentals were also well represented through the BM5As. In fact, some of the low notes on acoustic bass were a bit overpowering when bass filtering was turned off.

For the multivoice ensemble arrangements of the Nino Rota CD, I preferred the warmer mids of my regular monitors. But there is no doubt that the BM5A pair revealed important details in the highs and lows and delivered a richer timbre at the extremes of the audio spectrum.

The BM5As occasionally highlighted minor distortion and other artifacts that had previously escaped my attention. The speaker exhibited a wide and even sweet spot, and the stereo image remained constant while I moved my head from side to side or when I moved closer or farther from the speaker array.

Fascinating Mixing

I made some trial mixes to gain additional perspective on the suitability of the BM5As for studio mixing. I selected

PRODUCT SUMMARY

DYNAUDIO ACOUSTICS BM5A

active close-field monitor
$1,250/pair
OVERALL RATING (1 THROUGH 5): **4**

PROS: Superb resolution and detail. Above-average bass response for enclosure size. Clean amplification with ample headroom. Wide and even sweet spot. EQ and level-adjustment switches.

CONS: Small rear-panel switches and labeling.

MANUFACTURER
Dynaudio Acoustics/TC Electronic (distributor)
www.dynaudioacoustics.com

"A Dozen Labels and Publishers Came To Our Showcase Because We Joined TAXI"

Crossfade – www.crossfadeonline.com

We stopped by TAXI's office to pose for this photo because we wanted to thank them for all the great things they've done for us.

If you've ever dreamed of landing a major label deal and having a hit record, then you'll understand why we're so grateful.

We're from Columbia, South Carolina. It's not the kind of town where you meet A&R people, or have them come to your gigs. We knew we needed to do something to get our music heard by the right people. After carefully researching our options, we decided that TAXI was the best choice.

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TAXI sent our CD to several top A&R people, and the response was very positive. Piggy-backing on that, they sent our CD to more than 40 other high-level A&R people at companies like A&M, RCA, Warner Bros, Columbia, Interscope, Dreamworks, MCA, Arista, Virgin, Capitol, Atlantic, Elektra, Epic. Hollywood, Maverick, and many more.

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He signed on to represent us, and with our attorney and TAXI spearheading the effort, we began to build a buzz. That lead to an industry showcase in Los Angeles with A&R people from more than a dozen labels in attendance.

Now, we're on our way to New York to do a round of showcases there.

Can TAXI do that for *every* member? That's up to you and your music. If you're really, really good, TAXI can deliver.

Will we get a record deal? That's totally up to us and *our* music. But, because we joined TAXI, we're getting serious attention from people in the music business we had little chance of meeting on our own.

And TAXI has given us much more than just great opportunities and helpful feedback from their A&R staff. We've also learned a lot about the music business from their monthly newsletter, and had an incredible time at the Road Rally – TAXI's FREE convention for members and their guests.

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a dense rock track ("Sick Fascination" by the band Whore) that has drums, industrial percussion, bass, distorted guitar, keyboards, and aggressive female vocals. I first constructed a mix on the BM5A pair, determining panning, reverb, compression, EQ, and basic mix levels.

It was easy to get the rock kick to sound sharp and powerful on the BM5As. As an engineer who believes that great studio monitors can lull one into false confidence, I was concerned that the BM5As weren't making me work hard enough on this crucial mix element and that the monitors' abundant low end could result in mixes that were lean on bass (especially in smaller control rooms).

The BM5As revealed a wealth of room details in the drum and percussion tracks. The ability to hear ambient nuances is important to me when mixing in any musical style. On the Whore mix, the improved resolution of the busy metal percussion, drums, and bass was especially helpful when balancing the rhythm section. The BM5As effortlessly highlighted popped plosives in the vocal track and some gritty breakup in the electric guitar and vocal.

BM5A SPECIFICATIONS

Analog Inputs	(1) balanced XLR
Woofer	6.9" one-piece molded polypropylene cone
Tweeter	1.1" soft dome
Crossover	6 dB/oct @ 1.5 kHz
Frequency Response	50 Hz–21 kHz, ±3 dB
Amplifier Power	woofer: 50W; tweeter: 50W
Maximum SPL @ 1m	115 dB peak
Input Level (85 dB SPL @ 1m)	–16 dBu RMS (0 dB setting)
Power Consumption	idle: 10W; maximum: 90 W
Resonance Frequency	55 Hz
Weight	19.2 lbs.
Dimensions	7.3" (W) × 12.5" (H) × 12.5" (D)

When comparing the two mixes of "Sick Fascination" in my mastering lab, the Event monitors produced a bigger-sounding mix with more cohesion and support for the vocals. As I suspected, there was not enough kick drum and bass on the BM5A mix. And although I liked the higher vocal setting of the mix created on the BM5As, it seemed that the monitor created a gulf between the more prominent vocals and the instruments, which were bass lean and drier in the mix.

The second test mix focused on acoustic layering, using basic tracks from the Two Foot Yard song "Patchen." Once again the BM5As made mixing a breeze on this subtle arrangement of percussion, cello, viola, violin, accordion, and layered female vocals. Within that spacious soundscape, the BM5A's fine resolution made tweaking reverb easy, and levels seemed to fall into place effortlessly.

After comparing those mixes, I felt that the bigger sound of the Dynaudio monitors produced a mix that came together quickly, yet sounded flat and less defined. In particular, the vocal level on the BM5A mix was too low, muddy, and dry, and low-end elements (such as cello and bass drum) were mixed too low. Although the kick sounded fine in the control room, it was almost inaudible over mastering speakers. The Tannoy monitors produced a better string balance and noticeably improved vocal prominence.

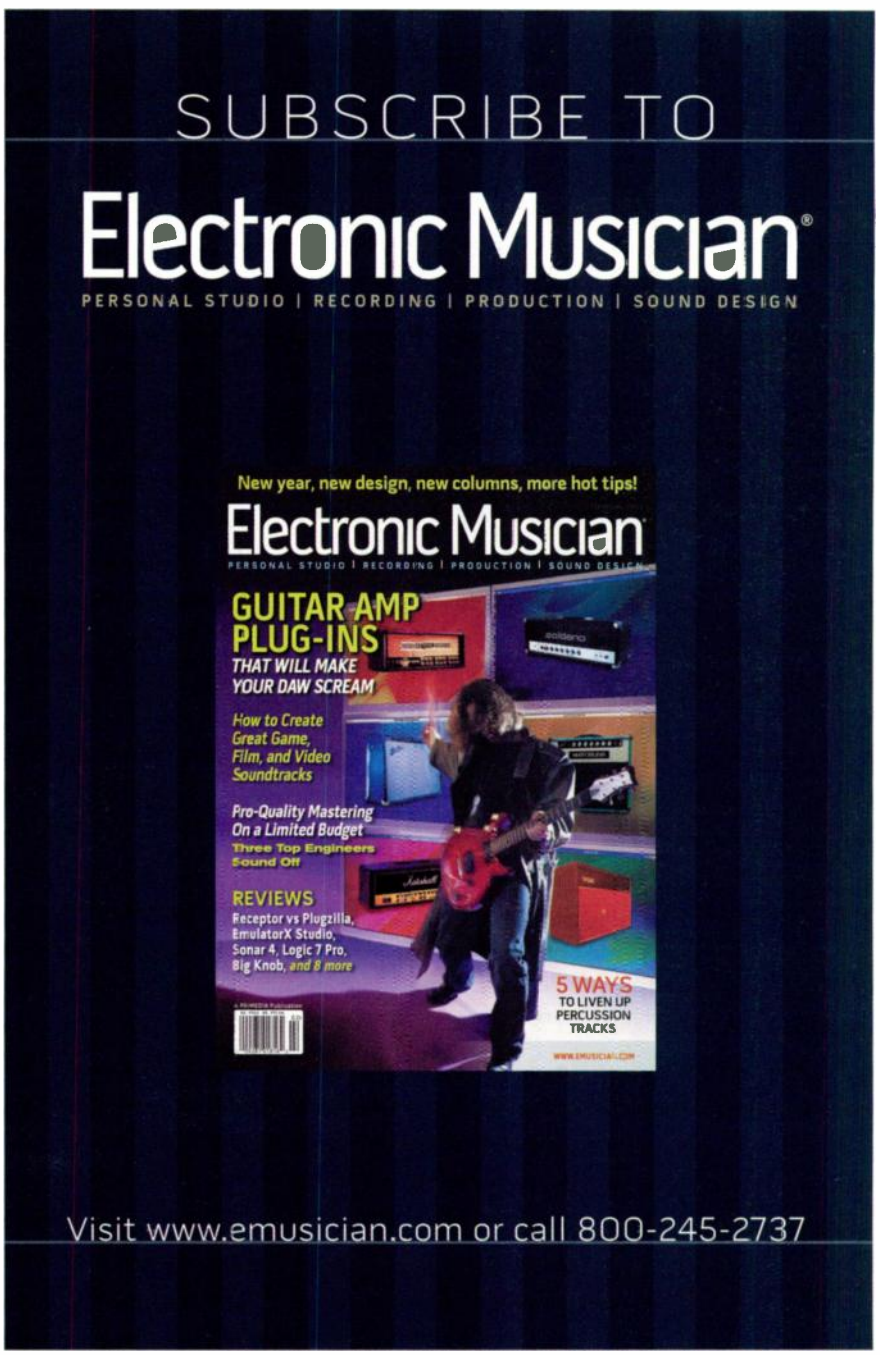
At loud levels, the BM5As performed well without obvious bass compression or overloading. The sound was certainly impressive on mastered mixes, much more so than on the more midrange-enhanced Events. The BM5As sounded more detailed at high SPLs than the Tannoy monitors.

Master Class

Dynaudio Acoustics' BM5A powered monitors bring audiophile frequency response, exemplary spaciousness, and a clearly enhanced level of detail to the mixing and monitoring experience. As with the passive Dynaudio BM15s that I use daily in my mastering lab, desirable nuances (ambient and artificial reverb) and undesirable elements (tape or tube saturation and overload distortion) are often more apparent on the BM5A monitors. Their superior definition is accomplished with smooth and natural high-end response, thanks to a tweeter design that is very listenable and accurate.

The BM5A monitors sound bigger than they look and provide clean power handling, transparent highs, and above-average bass response. For premastering, post-production, soundtrack work, or location recording, I give the small and mighty BM5A my highest recommendation. The BM5A would also make a revealing reference monitor for checking mixes or impressing anyone in your control room. And if you want to hear anything or everything you've recorded in full audiophile detail, give the BM5As a serious listen.

Myles Boisen is head engineer at Guerrilla Recording and The Headless Buddha Mastering Lab in Oakland, California.



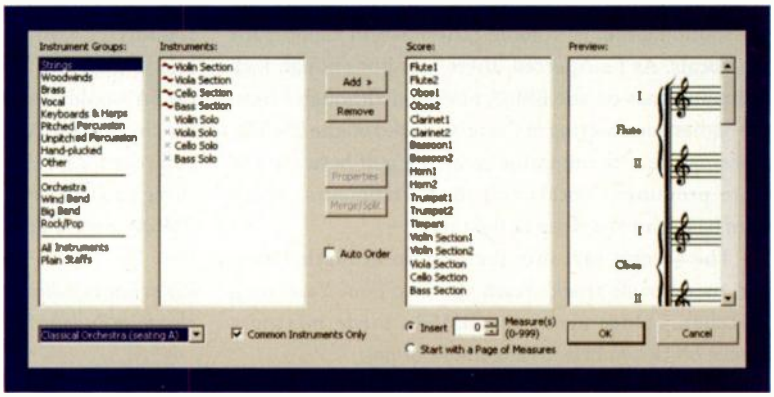


FIG. 1: Notion's Score Setup screen allows you to easily and quickly create your score. You can choose a standard template or create a unique orchestration by selecting instruments individually.

VIRTUOSOWORKS Notion 1.0.6 (Win)

Bring the London Symphony Orchestra into your studio.

By Peter Hamlin

VirtuosoWorks Notion, a new notation and orchestral-performance program for Windows, is the brainchild of renowned composer and programmer Dr. Jack M. Jarrett. Jarrett, a former head of the Composition Department at Berklee College of Music and a longtime conductor of orchestral music, is the creator of Music Printer Plus, one of the first notation programs for the PC. This time around, his goal was to develop software that would give musicians a "user-friendly, notation-based music writing interface combined with the auditory aid of full-fidelity orchestral playback." Given his many years of experience, Jarrett has clear ideas about what a notation and performance program should do.

Ready, Set, Install

Notion arrives on three CDs (needed to accommodate the sample library) with a compact manual, a handy cardboard Quick Reference guide, information about registration that gives you access to Notion's technical support, and a small iLok USB Smart Key for copy protection. Installation is smooth, and after about five minutes, you're asked to plug in the small iLok USB Smart Key for a brief hardware install, and then reboot your computer. (You can install Notion on as many computers as you like, but you need your iLok to run the program.)

After launching the program, it's easy to create a score. **Fig. 1** shows Notion's Score Setup screen. You can select from a number of templates (band, orchestra, brass quintet, and so on) or create a score from scratch using the available instruments, which are organized into handy categories. If you have a favorite configuration, you can create a customized template.

After you complete the score setup, you'll see a large Score area to the right and a Sidebar area to the left. The Sidebar provides access to four menus labeled Tools, Entries, Expressions, and Properties (see **Fig. 2**).

The Sidebar can be placed to either the left or the right of your score depending on your preference. The size of the Sidebar font can be adjusted, and you can even select an auto-hide feature (much like the auto-hide tool on the Windows task bar), which makes the Sidebar visible only when you move the cursor to that side of the screen. A timeline showing measures (as shown in Fig. 2) or time is located above the score, and you can click on any measure number (or time) to navigate to that position in the music. Overall, the user interface is clear, logical, and easy to learn for new users and those familiar with other notation programs.

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- Daisy-chain up to 4 units for 16 inputs
- Powered via FireWire bus or externally
- Windows and Macintosh compatible
- Cubase LE audio production software
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Nothing to Curse At

Notion's cursor has two modes. The first, called the Pointer, is represented by a small arrow and is used for editing. The second is called the Music Cursor, and it takes different shapes depending on what kind of music information you are working with.

After the score layout is created, you are prompted to create a time signature—now you're ready to enter music. To enter notes, open the Sidebar's Entries section, click on Notes/Rests, and select a note or a rest value. **Fig. 3** shows the palette of notes and rests. The Music Cursor changes to that type of note, and you click on the staff where you want the note or the rest to appear. Instead of selecting a quarter note from the Sidebar, you can press the Q key, one of many shortcut keys available. For example, an eighth note is the letter E, a dot is D, a diamond note shape is Shift + D, and so on. (Pressing F2 brings up a Keyboard Shortcuts screen for handy reference.) I like the efficient way that shortcut keys are handled. For example, there is one key (F) that cycles through forte dynamics when you press it repeatedly—*mf, f, ff, fff, ffff, fffff,* then back to *mf*—which seems easier to use than assigning a separate key to each of those values.

You can enter notes using a MIDI controller. Step Time Input allows you to enter a note or a chord individually. Real Time Input gives you the ability to enter a passage in tempo. Stretch Time Input lets you tap the rhythm while playing so that you can enter notes at any convenient tempo. MIDI entry works well, although the means of selecting MIDI modes could be streamlined. According to VirtuosoWorks, that will be a feature in a forthcoming release, available in early spring 2006. It would also be nice if the program remembered the users' last preference the next time Notion is launched. A feature called Advance On Entry lets you automatically move to the next note without using the mouse, which is a helpful time-saver. When you come to the bar line, however, you have to manually use the mouse to jump to the next bar.

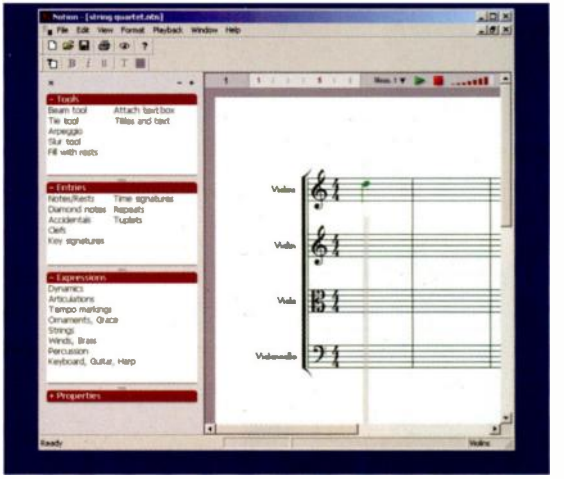

FIG. 2: This figure shows Notion's Workspace, with the Score Area to the right and the Sidebar to the left. The current measure indicator, measure timeline, and playback controls are just above the score. At the bottom right is a reminder that the cursor is on the Violins staff.

According to the manufacturer, that is a bug that will be fixed in the next patch.

There are two shortcut-key methods for tuplets. The first uses the keypad. The Num Lock key defaults to the on position when Notion is opened, and each number on the keypad is the corresponding tuplet (3 is a triplet, 4 a quadruplet, and so on). To enter an eighth-note triplet, press E for eighth note and then 3 for tuplet. The tuplet sign will remain activated until you press Esc or use another feature. The second method uses the Alt key, which is especially handy for laptop users (those without a keypad). Pressing the Alt key and then a number between 2 and 9 on the standard keyboard works in the same way that the keypad method does: press E for an eighth note, then press Alt and then 3 for a triplet.

Notion has a number of note-entry options that make it particularly elegant and distinctive. For example, you can apply microtonal accidentals (quarter tones above and below a normal accidental) that play back in quarter tones, and you can create nontraditional key signatures that include microtonal accidentals. If you place one of those symbols in your custom key signature, that note will always be adjusted by that particular microtonal interval. Rehearsal numbers are handled well: you enter them using the mouse, and their sequence is automatically managed. If you insert or delete a rehearsal number, all subsequent rehearsal numbers or letters in the series are automatically updated.

I also like little touches such as crescendo and diminuendo markings (hairpins) that automatically adjust their placement to the best position. Notion will leave the correct amount of distance from other nearby symbols, so you don't have to make those fine and tedious adjustments. Also, when you enter a grace note, the program creates a correctly placed slur, another small but welcome feature.

PRODUCT SUMMARY

VIRTUOSOWORKS Notion 1.0.6

music notation software
$599.99
$399.99 (academic price)
$299.99 (competitive upgrade)

OVERALL RATING (1 THROUGH 5): **4**

PROS: Elegant and clean user interface. Exceptional sound. High degree of expressive control over tempo and instrumental sound. Very little or no tweaking needed for high-quality sound and score appearance.

CONS: No support for advanced features, including lyrics, reading and writing MIDI files, importing and exporting graphics, and Web posting of scores. Some instruments not yet supported by the sample library. Not all notation symbols supported in sample library.

MANUFACTURER
VirtuosoWorks, Inc.
www.notionmusic.com

What's on the Menu?

In addition to notes, there's a large selection of symbols available in the Sidebar menus. The Tools menu lets you create and edit beams, ties, arpeggios, and slurs. You can automatically fill all empty measures with rests, attach a text box to any note or symbol, and enter and edit titles and text.

The Entries menu is used to enter notes and rests, diamond notes, accidentals, clefs, key signatures, time signatures, repeats, and tuplets. The Expressions menu contains symbols for dynamics, articulations, tempo markings, ornaments and grace notes, and special expression marks for strings, winds and brass, percussion, keyboard, guitar, and harp. You can click on any dynamic marking on the submenu to change the Music Cursor to that symbol, then click on any note to attach the marking to the note. (Remember that you also have shortcut keys available to select symbols such as dynamic markings without having to find them on the submenus.)

Notion allows you to customize the behavior of various symbols using the Properties menu, which automatically expands when one of those symbols is selected. For example, if you're working with tuplets, you can change how many tuplets fit into what rhythmic value, where the tup let indication is placed (for example, at the note head or at the side of the bar), whether to include a bracket, whether to show the tuplet as a ratio, and whether to hide it. The customization menus are only two layers deep, so you have ready access to a rich supply of features.

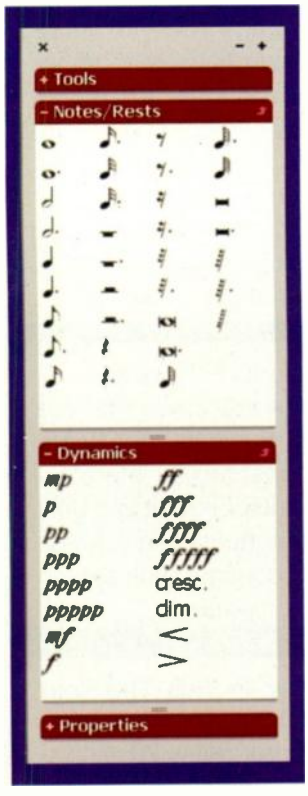

FIG. 3: In this figure, two of the Sidebar menus have been expanded to show their submenus. To select rhythmic values for notes and rests, choose the Notes/Rests submenu of the Entries menu. You can set dynamic markings in the Dynamics submenu of the Expressions menu.

There are other nice touches that help move your work along quickly. For example, using the Add Special command, you can add a series of articulations to many notes with one command or erase articulations for a large marked area. I wish more items were supported by that feature. In the current version of Notion, ornaments and instrument-specific markings, such as string harmonics, are not supported by those group-edit commands.

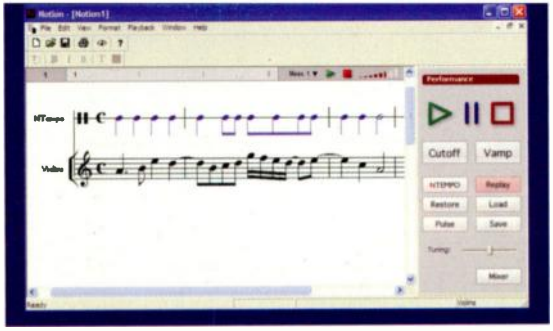

FIG. 4: Notion's NTempo is used to create custom rhythmic patterns that you "perform" to indicate tempo. The rhythmic pattern shown above the staff will be used as the pulse.

Payback Is in the Playback

One of the biggest and most noticeable strengths of Notion is that playing scores, often without any tweaking, sounds wonderful. That is due in large part to the inclusion of an extensive orchestral sample library of recordings by the London Symphony Orchestra (see the sidebar "Play That Tune" for a list of what is and isn't included in the sample library). The samples faithfully reproduce nuances of musicianship, such as articulation and dynamics. In addition, Notion supports many techniques that are unique to a particular instrument family. For example, applying a trill to a flute calls up a sample of a recorded flute trill rather than a synthetic trill created by alternating rapidly between two different samples. The difference is significant.

Not all of the notation indications, however, can be realized during playback. You can enter symbols for string harmonics, tremolo, and *sul ponticello* (playing at the bridge), but samples are not yet available to play back those sounds. According to VirtuosoWorks, the company has recorded 26 London Symphony Orchestra expansion kits, which are already available for sale at a rate of one or two per month. Another reason for Notion's good sound quality is that dynamics are controlled within the program, and the dynamic resolution is far greater than what MIDI can provide. That means you don't have to worry about "staircase" effects during crescendos and decrescendos. And if you like thick chords, Notion claims to support a maximum of 1,000-note polyphony.

Notion has an elegant feature called NTempo that lets you "conduct" a performance to get just the right changes of tempo. NTempo lets you control the playback tempo by tapping any of the middle keys on your computer keyboard. You can save different performances as NTempo files and reload them as needed. NTempo allows you to use any rhythmic value as the pulse. Or, for even more rhythmic control, you can create an NTempo staff in your score (see **Fig. 4**), then enter a rhythmic pattern on that staff corresponding to whatever tapping pattern you want to use to control

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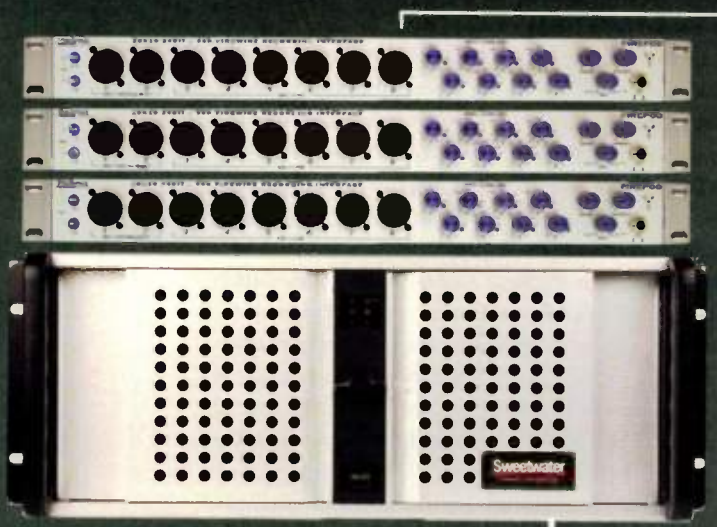

PreSonus FIREPOD The FIREPOD is the most affordable professional FireWire recording interface on the planet with eight pedigree Class A PreSonus microphone preamplifiers, eight balanced outputs, MIDI/SPDIF I/O, and free Cubase LE 48-track audio production software. Up to three FIREPOD's can be daisy-chained together for 24 simultaneous microphone/line inputs for professional multi-track recording in the studio or at a live show. The FIREPOD has been tested and approved by Sweetwater for use with the Creation Station so that you can be confident your recording system will work flawlessly and efficiently from day one!

Creation Station Rack When Sweetwater set out to build the perfect audio PC, we put our 26 years of experience with computer audio to work, and developed a series of machines that are unmatched in audio performance, reliability and value. Whether you're composing music in your home studio, recording your next live album on the road, or scoring to picture at a major post facility, there's a Creation Station for you. Starting at under $1000, the Creation Station machines are whisper quiet and built to withstand the demands of professional audio production, through the use of components like Auralex acoustic treatment and Glyph hard drives. Available in both tower and the rackmount configuration shown here, the Creation Station is sure to be the centerpiece of your PC studio for years to come.

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featured band: Woven - www.wovenmusic.com

Cubase SX3

Cubase SX3 takes music production to an entirely new level. SX3 adds more than 70 new features including Audio Warp - a high-quality real-time, Time Stretching and Pitch Shifting algorithm that automatically adopts a project's tempo. Also new in SX3 is External FX Plugins. This function allows for direct integration of external hardware effects processors into the VST audio mixer just like software! The first step in the Steinberg/Yamaha collaboration is called Studio Connections "Total Recall". This modular editing system builds a powerful bridge between the virtual and physical studio. Opening a project can not only recall an entire studio setup within seconds but allow full graphic editing right inside Cubase SX3.

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FIG. 1: The PodXT Live is the first Pod to have footswitches and an expression pedal built-in. It can be connected digitally (using an RJ-45 cable) to a Variax, and it can also save Variax patch data with its presets.

LINE 6 PodXT Live, Variax 300 and Variax Workbench (Mac/Win)

Take control of your guitar tone.

By Mike Levine

On their own, the Line 6 PodXT Live processor and Variax 300 guitar are state-of-the-art modeling devices. Put them together, and you have a guitar, an amp, a cabinet, and effects modeling, as well as the ability to save and recall presets containing all of those model types. Add in Line 6's Variax Workbench software, and you can construct custom guitar models.

Those three products (sold separately), along with Line 6 Edit (Mac/Win)—the company's free editor/librarian software for the PodXT Live—give you unprecedented tonal control. Unless you're an analog purist who is opposed to modeling on principle, you'll appreciate the versatility of this combination of hardware devices and software.

Hot Rod Pod

Like the other Pods, the PodXT Live offers amp, effects, and speaker-cabinet modeling. EM covered the PodXT in its October 2003 issue, so I'll concentrate here on what's new in the PodXT Live.

One major change is that the PodXT Live has a built-in expression pedal and footswitches, making it more self-contained than previous Pods (see Fig. 1). As such, it's more convenient for live performance, without sacrificing any of its studio abilities.

The sleek-looking unit features a heavy-duty black-metal body with silver knobs and trim. The knobs control the usual Pod preamp parameters: Drive, Bass, Mid, Treble, Presence, and Channel Volume. The sturdy metal expression pedal sits on

VARIAX 300 SPECIFICATIONS

Audio Output	¼" TRS guitar
Digital Output	proprietary Cat-5
Pickups	piezo, in bridge
Body	agathis
Neck	maple with rosewood fingerboard
Frets	22 medium profile
Scale Length	25.5"
Power	(6) AA batteries, AC with XPS Mini footswitch, or from PodXT Live or Vetta II
Weight	7.5 lbs.

the right side of the unit, and it defaults to controlling volume. A toe switch lets you access a programmable wah effect at any time.

The pedal can also be set to control any one of the Effect Tweak parameters, which include Delay Time, Reverb Mix, Compression Threshold, and so forth. Additionally, you can control those parameters with a second expression pedal (not included), which plugs into the pedal 2 input.

There are two rows of footswitches: the bottom row has six switches, and the top row has five. The top row features a Bank Up switch and on-off switches for the Amp, Stomp (stompbox), Mod (modulation), and Delay effects within each preset. The switch on the far right side of the bottom row lets you access the built-in tuner as well as tap in a tempo for the delay-based effects. (You can't sync those effects to an external host, which is a disadvantage in the studio.)

The rest of the bottom-row switches are dedicated to selecting presets (Line 6 refers to a preset as a Channel Memory). As many as 128 presets can be stored in the unit at one time. An infinite number can be stored in your computer using the free Line 6 Edit software.

A Channel Memory contains amp, speaker, and cabinet models of your choice, and any effects you've dialed in. Most impressively, each Channel Memory can also have a Variax guitar model and tone-knob setting saved with it. If you turn on the Variax option on the PodXT Live and connect it to a Variax using the optional RJ-45 cable ($20), each time you switch to a different Channel Memory, your Variax switches to the model you saved with it.

That feature is a huge advantage in a live-performance setting, because you can preset various guitar models with the amps, effects, and cabinets of your choice, and recall the combination with the footswitches. You can have your whole setlist programmed with all of those variables.

FIG. 2: The Variax 300 is the most affordable Variax to date. Despite its lower price, it contains all the same models as the other Variax electric guitars.

You can save tuning information in Variax custom models (constructed using the Variax Workbench software), so you can go from a song in standard tuning to a song in open-E, open-G, drop-D, or any tuning that you choose. Although the need for quick switches is not as acute in the studio as it is live, it's still handy to have your favorite guitar-amp-tuning combinations organized and ready to go.

FIG. 3: Variax Workbench software allows you to construct your own custom guitar models and transfer them to your Variax's internal memory.

From a sound-quality standpoint, the PodXT Live is the equal of the PodXT or PodXT Pro. All three have the same processing engine and a similar set of amp, effects, and cabinet models. If you want to invest a bit more money, you can expand the PodXT Live's model set with Line 6's Model Packs. The PodXT Live comes preinstalled with one of those packs, called FX Junkie (which adds 30 effects models). The other two packs, Metal Shop and Collector Classics, give you additional amp models and cost $49 each.

Heading into Ports

Rear panel I/O on the PodXT Live is extensive. You get a ¼-inch line input, a stereo pair of ¼-inch line outputs, and an ⅛-inch aux input (which is routed to the headphone output and the line outputs). A USB port lets you plug directly into your computer (Mac or PC) to output audio and send and receive patch and control information. You can also send and receive patch and control data using the unit's MIDI In and Out ports. The rear panel has the Cat-5 (Ethernet) port for connecting a Variax using the RJ-45 cable.

Editing sounds on the PodXT Live is straightforward, but it does require a lot of scrolling through menus. It's much easier to use the Line 6 Edit software, which makes all the parameters and models easy to tweak and save.

PodXT Live doesn't have an effects loop, which might disappoint

some users (especially live performers) who want to augment the Variax's effects with their own. According to Line 6, adding an effects loop would have driven up the price too much. The company recommends patching in any additional effects either before the unit's input or after its output.

Very Variable

You can use any Variax with the PodXT Live, but the most affordable one is the Variax 300 (see Fig. 2). Despite its lower cost, it offers the same selection of guitar models as the other Variax electric guitars.

Like other Variax instruments, the 300 has no magnetic pickups, only a 6-element piezo pickup inside its bridge. The piezos convert the string vibrations into an electrical signal, which is then digitized and passed through the Variax's internal processing. You get a Cat-5 output for connecting the guitar digitally to a PodXT Live or a Vetta II amp and a ¼-inch analog output.

The 300 needs power to run, and Line 6 gives you several options. One is to power it using the included XPS Mini, a small plastic unit into which you plug a ¼-inch TRS cable from the Variax, and out of which comes a standard ¼-inch TS guitar output. (Unlike the XPS footswitch that comes with other Variax models, the XPS Mini has no XLR output.) You can also power the guitar with 6 AA batteries (in which case you can plug a standard guitar cable directly into the guitar) or from a PodXT Live or a Vetta II amp, connected through the guitar's digital connector.

The 300 is made of a tropical wood called agathis and has a maple neck with a rosewood fingerboard. It comes in black with a black pickguard or red with a white pickguard. It has a headstock that's reminiscent of, but not identical to, a Fender guitar. Generic, six-in-a-line sealed tuners do a good job of holding the guitar in tune.

The Variax 300 that was sent to me for this review had a small but noticeable setup glitch. Although its intonation was excellent, the B-string was set a bit too low to the frets, so it didn't sustain fully when played up high. It could easily be adjusted by a guitar tech, and it might have been an anomaly, but it did make me wonder how much attention is paid to the setups on these instruments.

That aside, Line 6's guitar designers have done a good job of maintaining consistency with the other Variax models. (I'm excluding the Variax 700 from that statement, because I've never played one.) The 300 feels similar to other Variax guitars, and it doesn't seem like a stripped-down or noticeably inferior model.

As with the other Variax guitars, the 300 features single volume and tone controls and a Strat-like, 5-way selector switch. Unlike on a conventional guitar, the switch doesn't change pickups; instead, it changes models. The models are grouped into 12 banks (10 factory and 2 user) and are accessed with the Model Select knob, which is located next to the tone control.

Electric models include a Firebird, a Gibson ES-335 semi-hollowbody, a 6- and a 12-string Rickenbacker, a Strat, several types of Gretch guitars, several Les Pauls, and several Telecasters. Acoustics include a Gibson J-200; a Martin D-28, a 0-18, and a D12-28; and a National Tricone resonator. Also included are a Coral electric sitar and a Gibson banjo, among others.

Space doesn't allow for a detailed description of each guitar model, but many of them, especially the electric ones, sound convincing. Although in a blind A/B comparison they would probably be distinguished from the originals, they capture the essence of the tone of many of the guitars emulated. I particularly liked the Tele, Strat, and Les Paul

PODXT LIVE SPECIFICATIONS

Analog Inputs	(1) ¼" TRS guitar, ⅛" stereo aux
Analog Outputs	(2) ¼" TS unbalanced, (1) ¼" TRS headphone
Control Inputs	(1) ¼" TS expression pedal
Digital I/O	(1) USB, (1) proprietary Cat-5 input
MIDI	In, Out/Thru
Bit Depth/Sampling Rate	24-bit, 44.1/48 kHz (exposed via USB)
Maximum Output Level	+20 dBu
Dynamic Range	>90 dB
Presets	128
Amp/Cabinet/Mic/Effect Models	36/24/4/80
Presets	128
Dimensions	18" (W) × 2" (H) × 8"(D)
Weight	10.75 lbs.

PRODUCT SUMMARY

LINE 6 PodXT Live

modeling processor
$559.99

OVERALL RATING (1 THROUGH 5): 4

PROS: Built-in footswitches and expression pedal. PodXT Live presets contain Variax guitar models in addition to amp, cabinet, and effects models.

CONS: You can't sync the PodXT Live's delay-based effects to external tempos.

MANUFACTURER
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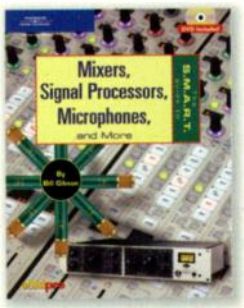

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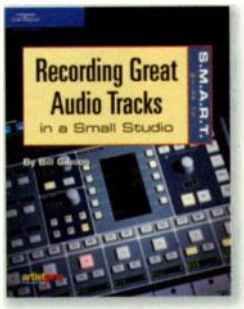

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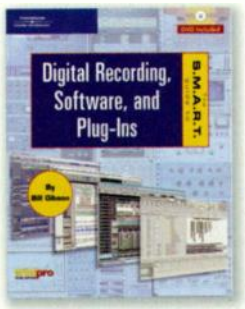

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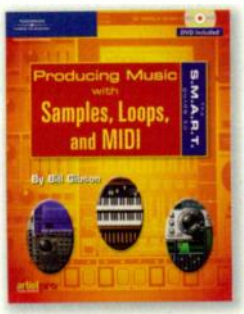

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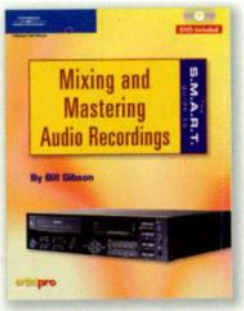

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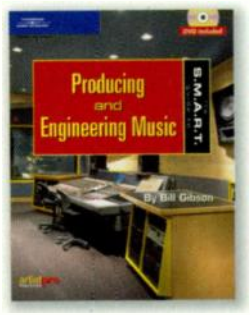

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models. I was less impressed with the hollowbody electric models: the Gibson ES-175 and the Gibson Super 400.

There's no discernible difference in feel between a Variax and a conventional electric guitar. The acoustic and resonator-guitar models, however, don't feel completely realistic, especially when played with a flatpick. The attack and sustain seem unnatural (that is true for all the Variax guitars I've played). According to Line 6, that is the result of playing acoustic-instrument models on a solidbody electric instrument. The Variax, however, emulates the tonal essence of those acoustic and resonator guitars nicely.

Put It on the Bench

The third product in this combination is Variax Workbench software. In addition to a CD, you get a small plastic Ethernet-to-USB interface, which allows you to plug your Variax directly into your computer with the RJ-45 cable. If you have a PodXT Live that's connected to your computer using USB, you can plug into that instead and still access the Workbench application.

The software, which runs on Mac OS 10.3 and higher and Windows XP and 2000, has a similar interface to that of Line 6 Edit, but its model-transfer functions are initially confusing. The onboard help feature was not

PRODUCT SUMMARY

LINE 6 Variax 300

modeling guitar
$699.99

OVERALL RATING (1 THROUGH 5): 3.5

PROS: Variax 300 offers virtually the same functionality as its higher-priced siblings.

CONS: Review instrument had incorrectly set up B-string. Acoustic sound of strings at original pitches distracting when using alternate tunings. XPS Mini has no XLR output.

MANUFACTURER
Line 6
www.line6.com

PRODUCT SUMMARY

LINE 6 Variax Workbench

editor/librarian software and Variax USB interface
$139.99

OVERALL RATING (1 THROUGH 5): 4

PROS: Allows you to design custom guitar models and save them with alternate tunings.

CONS: Model-transfer procedure is not intuitive.

MANUFACTURER
Line 6
www.line6.com

particularly helpful, so it took some experimenting until I got the hang of how to transfer models back and forth between the computer and the Variax.

Model editing is straightforward and a heck of a lot of fun (see **Fig. 3**). You get to set up custom guitar models by mixing and matching the various body types, instrum ent types, pickups, pickup positioning, and controls that are used in the Variax guitar models. It's fun to be able to put, say, Tele pickups on a Rickenbacker or Les Paul pickups on a Strat. If you have time to experiment, you can come up with some unusual combinations.

The most useful aspect of the software is its custom-tuning feature (see **Web Clip 1**). It lets you set up guitar models with any alternate tuning imaginable. You can choose tunings from a menu of presets that includes standards such as drop-D and open-E, and more obscure variations like C6/A7 Hawaiian and F#9. If you can't find the tuning that you want on the list, you can design your own by dragging note icons on a virtual fretboard.

The Variax's virtual tuning capabilities save you time and allow you to avoid breaking strings, which can happen when physically retuning a guitar. There is one drawback: the tuning happens digitally inside the Variax's processor, so you can still hear the unamplified acoustic sound of the guitar's strings—at their original pitches—at the same time you're hearing the alternately tuned notes. The result can be distracting unless you're wearing headphones or you have your monitors (or guitar amp) turned up loud enough so that you hear only the processed sound.

Once you have your custom models put together, you can dump them into one of the Variax's custom banks (or override one of the factory banks), and then recall the sounds from the Model Selector knob on the Variax. You can also recall the sounds by saving the model as part of a PodXT Live patch and then switching to it.

All in One

The combination of the PodXT Live, a Variax, and Variax Workbench software is a potent one. If you opt for the Variax 300, the price of the three products combined is just under $1,400 (list). It's no small sum, but it's certainly a reasonable price considering the power and unprecedented level of tonal control provided.

EM WEB CLIPS

Mike Levine is a senior editor of EM.

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It all started in ninth grade as a sort of teenage rivalry . . .

I'd practice and slave at the piano for five hours daily. Linda practiced far less. Yet somehow she always shined as the star performer of our school. It was frustrating.

What does she have that I don't? I'd wonder.

Linda's best friend, Sheryl, bragged on and on to me, adding more fuel to my fire.

"*You* could never be as good as *Linda*," she would taunt. "*Linda's* got *Perfect Pitch*."

"What's Perfect Pitch?" I asked.

Sheryl gloated about Linda's uncanny abilities: how she could name *exact tones and chords*—all BY EAR; how she could sing any tone—*from memory alone*; how she could play songs—after just *hearing* them; the list went on and on . . .

My heart sank when the realization came to me. *Her EAR is the key to her success.* How could I ever hope to compete with her?

But it bothered me. Did she *really* have Perfect Pitch? How could she know tones and chords just by *hearing* them? It seemed impossible.

Finally I couldn't stand it anymore. So one day, I marched right up to Linda and asked her point-blank if she had Perfect Pitch.

"Yes," she nodded aloofly.

But Perfect Pitch was too good to believe. I rudely pressed, "*Can I test you sometime?*"

"OK," she replied.

Now she would eat her words . . .

My plot was ingeniously simple . . .

When Linda least suspected, I walked right up and challenged her to name tones for me—*by ear.*

I made her stand so she could not see the piano keyboard. I made sure other classmates could not help her. I set up everything perfectly so I could expose her Perfect Pitch claims as a ridiculous joke.

With silent apprehension, I selected a tone to play. (She'll *never* guess F♯, I thought.)

I had barely touched the key.

"F♯," she said. I was astonished.

I played another tone.

"C," she announced, not stopping to think.

Frantically, I played more tones, skipping here and there all over the keyboard. But somehow she knew the pitch each time. She was AMAZING.

"Sing an E♭," I demanded, determined to mess her up. She sang a tone. I checked her on the keyboard—and she was right on!

Now I started to boil. I called out more tones, trying hard to make them increasingly difficult. But she sang each note perfectly on pitch.

I was totally boggled. "*How in the world do you do it?*" I blurted.

"I don't know," she sighed. And that was all I could get out of her!

"How in the world do you do it?" I blurted. I was totally boggled. (age 14, 9th grade)

The dazzle of Perfect Pitch hit me like a ton of bricks. My head was dizzy with disbelief. Yet from then on, I knew that Perfect Pitch was real.

I couldn't figure it out . . .

"How does she DO it?" I kept asking myself. On the other hand, why can't *everyone* recognize and sing tones by ear?

Then it dawned on me. People call themselves *musicians* and yet they can't tell a C from a C♯?? Or A major from F major?! That's as strange as a portrait painter who can't name the colors of paint on his palette! It all seemed odd and contradictory.

Humiliated and puzzled, I went home to work on this problem. At age 14, this was a hard nut to crack.

You can be sure I tried it out for myself. With a little sweet-talking, I'd get my three brothers and two sisters to play piano tones for me—so I could try to name them by ear. But it always turned into a messy guessing game I just couldn't win.

Day after day I tried to learn those freaking tones. I would play a note *over* and *over* to make it stick in my head. But hours later I would remember it a half step flat. No matter how hard I tried, I couldn't recognize or remember any of the tones by ear. They all started to sound the same after awhile; how were you supposed to know which was which—just by *listening?*

I would have done anything to have an ear like Linda. But now I realized it was way beyond my reach. So after weeks of work, I finally gave up.

Then it happened . . .

It was like a miracle . . . a twist of fate . . . like finding the lost Holy Grail . . .

Once I stopped *straining* my ear, I started to listen NATURALLY. Then the simple secret to Perfect Pitch jumped right into my lap.

Curiously, I began to notice faint "colors" within the tones. Not *visual* colors, but colors of *pitch*, colors of

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sound. They had always been there. But this was the first time I had ever really "let go"—and *listened*—to discover these subtle differences.

Soon—to my own disbelief—*I too could name the tones by ear!* It was simple. I could hear how F♯ sounds one way, while B♭ has a *totally different sound*—sort of like "hearing" red and blue!

The realization struck me: THIS IS PERFECT PITCH! This is how Bach, Beethoven, and Mozart could mentally envision their masterpieces—and know tones, chords, and keys—all by ear!

It was almost childish—I felt sure that *anyone* could unlock their own Perfect Pitch with this simple secret of "Color Hearing."

Bursting with excitement, I told my best friend, Ann (a flutist).

She *laughed* at me. "You have to be *born* with Perfect Pitch," she asserted. "You can't *develop* it."

"You don't understand Perfect Pitch," I countered. I showed her how to listen. Timidly, she confessed that she too could hear the pitch colors. With this jump start, Ann soon realized she had also gained Perfect Pitch.

We became instant celebrities. Classmates loved to call out tones which we would then magically sing from thin air. They played chords for us to name by ear. They quizzed us on what key a song was in. Everyone was fascinated with our "supernatural" powers, yet to Ann and me, it was just normal.

Way back then, I never dreamt I would later cause such a stir in the academic world. But as I entered college and started to explain my discoveries, many professors *laughed* at me.

"You must be *born* with Perfect Pitch," they'd say. "You can't *develop* it!"

I would listen politely. Then I'd reveal the simple secret—*so they could hear it for themselves*. You'd be surprised how fast they changed their tune!

In college, my so-called "perfect ear" allowed me to skip over two required music courses. Perfect Pitch made everything easier for me—my ability to perform, compose, arrange, transpose, improvise, and even sight-read (because, without looking, you're sure you're playing the correct tones). And because my ears were open, music just seemed richer.

I learned that music is definitely a HEARING art.

Oh, you must be wondering: whatever happened with Linda? Excuse me, I'll have to backtrack . . .

It was now my senior year of high school. I was nearly 18. In these three-and-a-half years with Perfect Pitch, my piano teacher insisted I had made ten years of progress. And I had. But my youthful ambition still wasn't satisfied. I needed one more thing: *to beat Linda*. Now was my *final chance*.

The University of Delaware hosts a performing music festival each spring, complete with judges and awards. To my horror, they scheduled me that year as the *grand finale* of the event.

The fated day arrived. Linda gave her usual sterling performance. She would be tough to match, let alone surpass. But my turn finally came, and I went for it.

Slinking to the stage, I sat down and played my heart out with selections from Beethoven, Chopin, and Ravel. The applause was overwhelming.

Later on, I scoured the bulletin board, searching for our grades in the most advanced performance category. Linda received an A, which came as no surprise.

I scored an A+.

Sweet victory was music to my ears—mine at last!

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QUICK PICKS

M-AUDIO

Ozonic

By Nick Peck

M-Audio has released Ozonic ($599), a FireWire-based MIDI keyboard/control surface and 24-bit/96 kHz audio interface. M-Audio's design team must have had some help from the Swiss Army, because this all-in-one unit has just about every feature one could ask for, except for maybe that little plastic toothpick.

Ozonic comes bundled with a free copy of Ableton Live Lite. Registered owners can also download Enigma, M-Audio's free editor/librarian software. Ozonic is compatible with the majority of current DAWs that work under Mac OS X or Windows XP. As M-Audio is owned by Avid, which also owns Digidesign, Ozonic is also compatible with Pro Tools M-Powered (sold separately).

M-Audio's Ozonic combines a 37-key MIDI keyboard controller and 24-bit/96 kHz audio interface. Programmable buttons and sliders provide real-time control.

Audio Interface

Ozonic offers a headphone output, four audio inputs, and four audio outputs. The inputs consist of a microphone in with phantom power, a ¼-inch DI instrument in, and two unbalanced ¼-inch line ins. The first two outputs are balanced, and the third and fourth are unbalanced. The included driver software allows you to specify input and output routing assignments.

The audio controls are optimized for Ozonic's particular input and output structure. There is a master headphone-volume knob, and a headphone-source knob. The source knob determines the relative mix of the pair of stereo outputs to the headphones. There is also a monitor-level knob, which controls the amount of input level bused directly to the outputs. That is useful for trying to deal with latency issues in host-based systems while recording. There are also mic and instrument input-level knobs, each with clip and signal indicators. Two output-volume sliders are positioned beneath the headphone-source knob; each slider controls a stereo pair of outputs. Curiously, there are no line-input knobs, although those levels can be set within the driver software.

The mic preamp is serviceable. As might be expected for a product at this price, however, it's bland and neutral in nature. Though not great, it's good enough for many applications and doesn't add appreciable noise to the signal, even with the gain turned all the way up. Kudos to M-Audio for including a dedicated phantom-power button, which illuminates an LED on the front panel when engaged.

MIDI Controller

Ozonic packs a lot of controls into a moderately small space. I'm happy that they chose to use 37 full-size Velocity- and Aftertouch-sensitive keys for their keyboard. The keys have a springy, rather tight synth-action feel. In addition to the keyboard, Ozonic has dozens of programmable MIDI controls—which can be configured in your DAW, software synth, or on the Ozonic itself—for a wide variety of parameters. There are nine programmable faders, which work well for mixing eight tracks of material, giving you a master-level control to boot. Below each fader is a programmable button, which is perfect for assigning to mute or solo functions.

In the center of the keyboard are five buttons meant to be used for transport control, though they could be programmed for other functions as well. Above them are eight continuous-controller knobs, which make good pan pots, aux sends, or synth-parameter knobs. Ozonic also features a 2-axis joystick, pitch and mod wheels, and octave up/down buttons. It's a MIDI interface as well: rounding off the MIDI complement are MIDI In and Out ports, and Sustain and Expression pedal inputs. Finally, a large blue LCD screen monitors MIDI activity, showing you the value of the last control touched.

Ozonic in Action

I used Ozonic as a portable Pro Tools post-production workstation and was pleased with the results. Setup was minimal: I had to install the software on a laptop, plug in headphones, and network into my main production system. Within a few minutes, sound designer Aren Downie was editing metal shings, dowel whooshes, and dry ice bubbles and then feeding me his elements for further design. As a quick, on-the-go, inexpensive system, that approach can't be beat.

But Ozonic really shined when I booted up Propellerhead Reason Adapted. In less than five minutes, I had mapped Ozonic's controllers to Reason's parameter set and was mixing levels, setting pans, changing filter settings, and generally abusing Reason with delicious abandon. Ozonic sports enough controllers to allow a fluid and expressive level of control over programs such as Reaktor, Live, and Reason. That type of control lets electronic musicians tweak and tweeze their tracks.

If you are looking for a small, relatively portable and affordable all-in-one front end for electronic music, Ozonic is a pretty tough act to beat. Grab a laptop, some of your favorite software, headphones, and the Ozonic, and you've got the bases covered. It's the right size and feature set for students in their dorm room, touring musicians in their hotel room, or weekend warriors on their kitchen table. The unit is lightweight, the keys feel good enough, and the feature set is amazing. Add to that the free editor/librarian and Ableton Live Lite software, and M-Audio has a killer product on its hands.

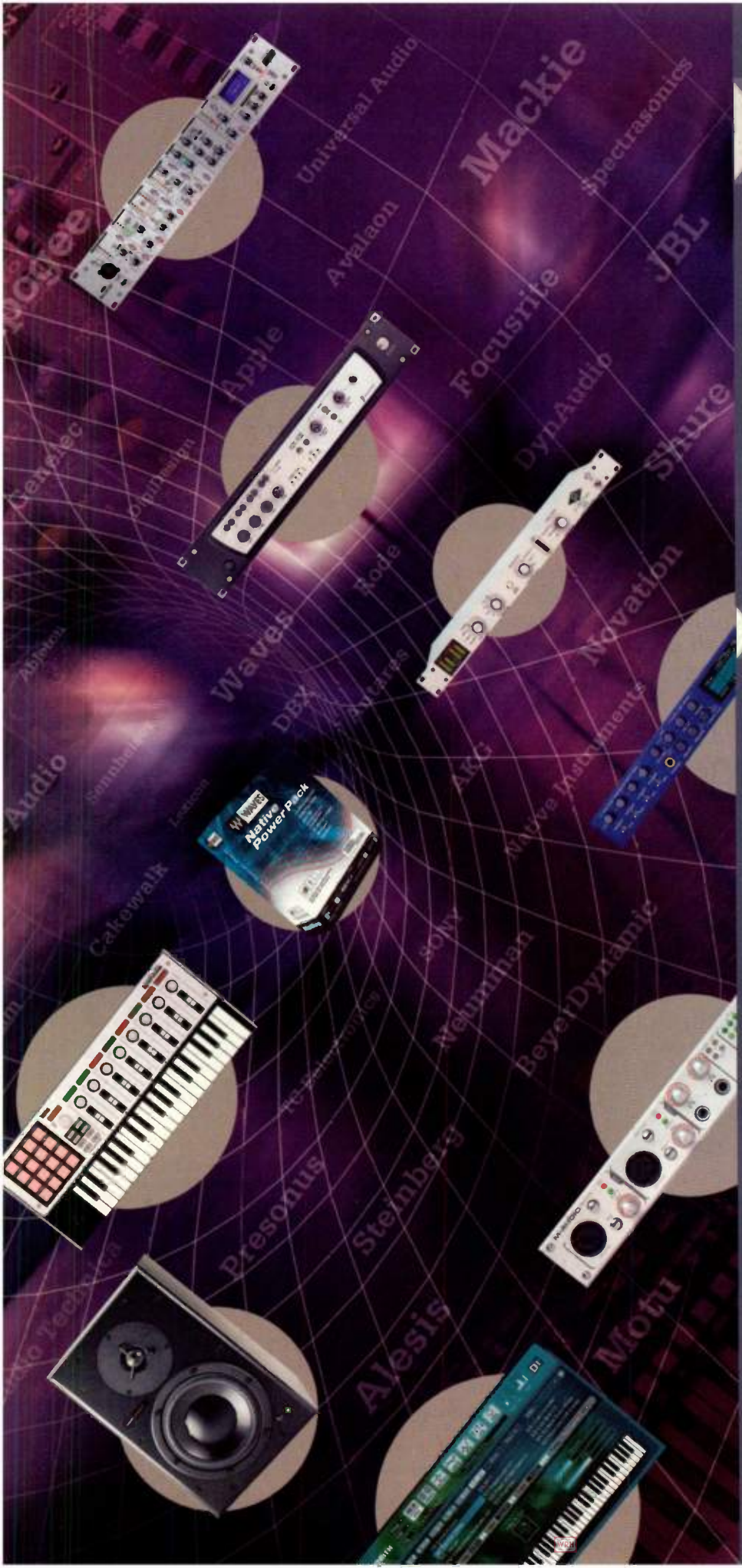
Overall Rating (1 through 5): 4.5
M-Audio
www.m-audio.com

ROB PAPEN

Blue (Mac/Win)

By Jonathan E. Segel

Virtual-synth designer Rob Papen has collaborated with programmer Jon Ayres to create Blue ($199.95),



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a 16-note polyphonic synth plug-in for VST 2.0 and Audio Units hosts. Although primarily a 6-operator FM synthesizer, Blue also includes phase distortion (PD), wave shaping, and subtractive synthesis capabilities. The graphical user interface, which resembles a hardware synthesizer, is straightforward and easy to use.

Operators Are Standing By

At the top of the screen are six oscillator modules, each with independent shape and volume controls. The first two oscillators also include PWM (pulse width modulation) and Symmetry controls. Below the oscillators are two multimode filter modules. The filter types include 6 dB lowpass and highpass; 12 dB and 24 dB lowpass, highpass, bandpass, and notch; ring modulation; comb filtering; and formant filtering.

The lower part of the interface, which resembles an LCD, shows the editing window you've selected using one of the 12 tabs: Presets, Easy, Alg, PD/WS, Env, Multi-Env, LFO, Mods, Step Seq, Sequencer, FX, and Global. At the bottom of the screen is a master volume control and parameter windows.

Six oscillators, two filters, and an editing window make up the interface for the Rob Papen Blue software synthesizer.

Blue comes with several banks of sounds and effects, exhibiting many different chapters from the FM synth canon. The Algorithm tab shows the arrangement of the operators, giving you a choice

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GARRITAN
www.garritan.com

of sixteen 2 + 4 operator arrangements, ten 1 + 5 arrangements, or six 6-operator sets, very much like a Yamaha DX7 or TX81Z. Each operator has its own envelope controls and can be set for phase distortion or wave shaping. The filter modules and overall volume also have their own envelope controls.

Blue has nine 6-stage envelopes, ten LFOs that sync to MIDI, and three step sequencers for modulation purposes. The Multi-Env tab has a 16-section envelope that connects through the modulation matrix to various synth controls. The Step Sequencer is also connected to various parameters using the modulation matrix. The Sequencer can be used to create pitch sequences to a maximum of 32 notes.

The FX tab lets you edit two sets of parallel or serial effects—delay, chorus, flanger, distortion, low-fi, stereo width, and reverb. The last tab, Global, controls tuning and portamento, as well as a per-oscillator Exprecision setting that creates slight imperfections in the tuning of the operators to more accurately mimic analog synthesizers.

Four on the Floor

So with all those controls, what does Blue sound like? It sounds like a classic noisy-FM electro/techno/dance-music synth. In fact, the overall interface—click on the logo to flip it over and see the credits on the back—resembles the aluminum housing of a Korg Electribe groove box.

Blue includes a diverse collection of patches organized into seven banks: pads, synth lead, percussion, and two each of analog and digital bass sounds. Almost every factory preset seems destined to spice up the dance floor. (Rob Papen released version 1.1 of the synth just before this review went to press; included are new banks with hip-hop and R&B presets.)

If you spend some time programming Blue, you can create purer tones, but that's not its best suit: Blue excels at making those rocking high-index FM tones that can coexist nicely with a superstrong beat. The sequencer and delays sync to the host application, and the delay times are adjusted by parts of a beat rather than actual time, making delay-based rhythms easy to set up.

The factory lead-synth patches are full of high-portamento squeal, and the pads strongly remind me of my old DX7. Several of the analog bass patches bring to mind the Roland TB-303 bass sound, as well as the Propellerhead Software Rebirth soft synth.

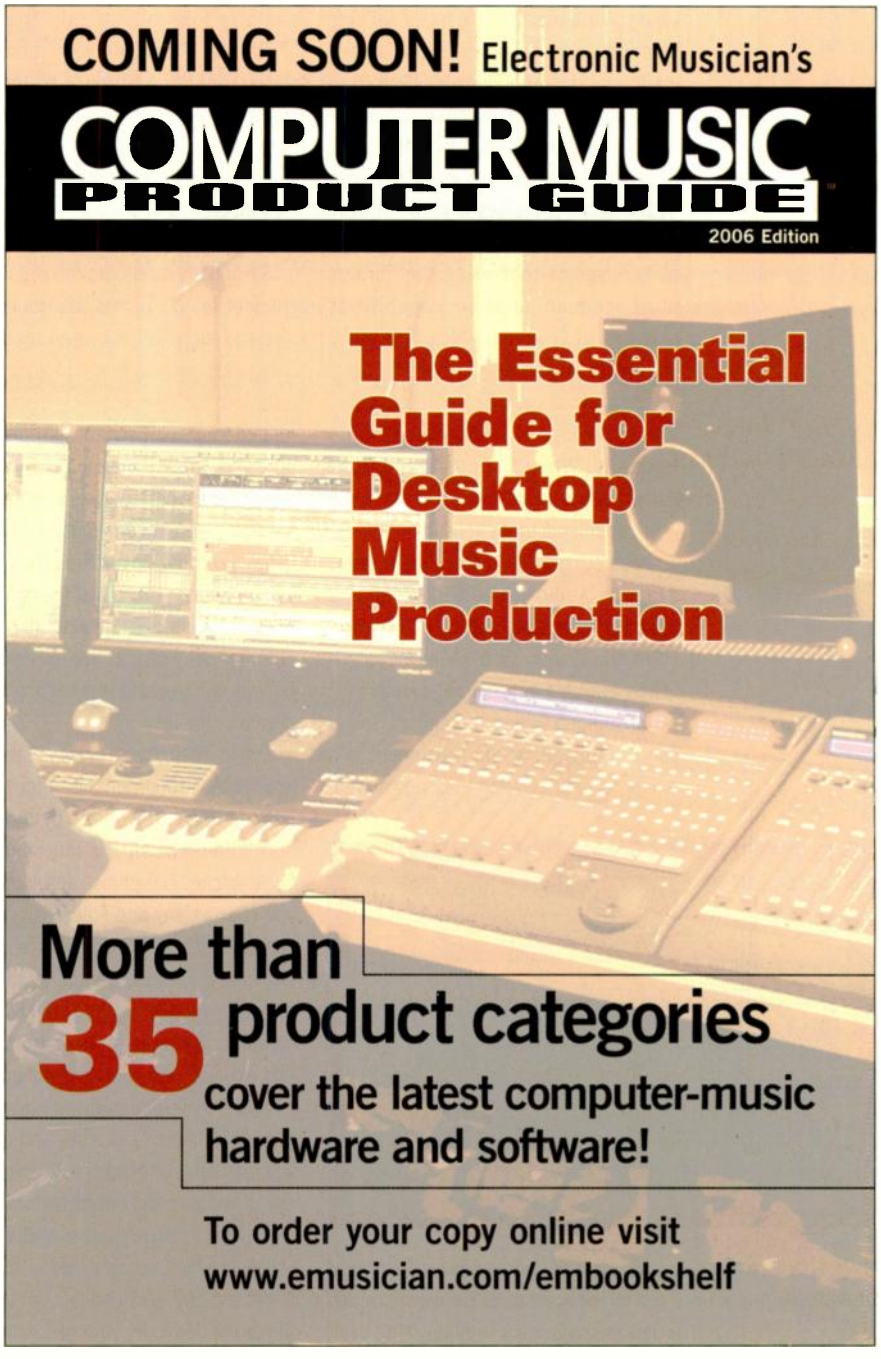
Big Blue

Overall, Blue is a well-made, multi-operator FM synthesizer that seems well suited to be a software replacement for many of those hardware synths you've been using for the past decade or two. If you're looking for a synth that can make sounds you haven't heard before, you should look elsewhere. If you're looking for a strong FM synth for use as a VSTi or an Audio Units instrument (see **Web Clip 1**), however, Blue is the perfect candidate.

EM WEB CLIPS

Overall Rating (1 through 5): 3

Rob Papen Inspiration Soundware/
EastWest (distributor)
www.robpapen.com



UEBERSCHALL

Liquid Saxophone 1.03

(Mac/Win)

By Marty Cutler

EM★★★★★ hot pick

Sampled saxophone phrases that fit any musical occasion are rare; a snippet might swing with perfect tone and have every note in the right place, yet it can be rendered useless by an unwanted flatted third or fifth sitting in the center of the line. Plenty of audio editors can fix those problems, but by the time you are done slicing files, changing durations, transposing slices, and adjusting formants, you've probably decided to hire a live musician or embark on a new career in the food-service industry.

With Liquid Saxophone ($199.95), Ueberschall promises a more flexible sample-playback experience. The company suggests that using the library's playback-manipulation capabilities (assisted by Celemony's Melodyne audio engine) is as easy as editing MIDI data. Although that is not completely accurate, the plug-in is remarkable in its flexibility. When the program doesn't quite meet expectations, it's for genuine musical and aesthetic reasons.

Ueberschall's Liquid Instrument series supports Audio Units, VST (Mac and Windows), RTAS, and DirectX. According to Celemony, Version 3.0 of Melodyne (which will be available by the time you read this) will also open Liquid Instrument sound content. Installing the instrument is a mildly convoluted affair involving a Web-based challenge-response scheme that authorizes the sound set. The system is tolerant of errors, however, and the procedure is over quickly. I installed Liquid Saxophone on my dual-processor 1.42 GHz Power Mac G4 with 2 GB of RAM under OS X 10.3.9. Hosts included MOTU Digital Performer 4.6, Apple Garage Band 2.02, Ableton Live 5.01, and Granted Software RAX 1.2.

Ueberschall's Liquid Saxophone lays out a generous array of beautifully played lines, and lets you customize the phrases with a flexible method similar to editing MIDI data.

Liquid Assets

The Liquid Instrument player hosts the sounds. Departing from many other self-contained library-playback packages, samples from all titles in the series share a single player, with subsequent titles appearing in nested submenus. Consequently, there is no need to clutter your hard drive with identical dedicated playback engines. I hope that other manufacturers of software sample players will follow Ueberschall's example.

Saxophone categories break down into the four main variants: baritone, tenor, alto, and soprano. Clicking on any of those categories opens a menu in another column with folders containing thematically related sax solos. Each solo is represented on a very small time and pitch axis. The idea here is not to give you a precise readout of the melody but to convey its general contour. To audition the phrases, you click on the triangle at the right of the phrase's graphic. By default, all samples automatically sync to the host's tempo, but you can override that setting and set tempo in the plug-in.

Liquid Instruments gives you three different ways to audition the material: Plain lets you trigger the phrase by clicking on and holding down the mouse button; Cycle latches the phrase and loops until you click again; and Folder triggers the contents of a single folder in sequence. You can audition themes in different keys and modes before converting the samples. The process is instantaneous and musical, and it doesn't disrupt playback of the file. Mapping a sample moves individual notes to fit a key and a mode, whereas selecting Transpose moves the entire line and then alters the scale.

You must map phrases to MIDI notes to trigger playback, as you would with a traditional sampler; just click on and drag the file to the vertically arranged virtual keyboard on the right side of the screen—now you've assigned the file for playback. You can drag files from multiple instruments and set sounds to play exclusively or in groups. Tabs at the left side of the plug-in let you toggle between the file browser and the Sound Editor, which uses a screen modeled after a typical sequencer Piano Roll Editor.

In the Sound Editor you can change the start time of individual notes, change note durations, delete individual notes, and change modes and keys for all or part of a phrase. Adjusting the duration or start time of individual notes affects the placement and length of adjacent notes. You cannot insert new note events as you can with a MIDI sequence. That ability might compromise the authenticity of phrasing and the realistic note relationships that the Liquid Instruments format achieves. Still, there are lots of ways to warp sounds beyond recognition, including shifting formants and adjusting pitch in cents, both of which can be automated (see **Web Clip 1**).

Gratuitous Sax

Saxophonist David Milzow coaxes fat, burnished tones from his instruments and provides a rich balance of jazz, pop, and funk phrases for the collection. His innate sense of swing informs almost everything he plays and lets you adapt, for example, funk riffs to bebop or vice-versa. Realistic elements include the percussive valve noise punctuating the baritone sax riffs on SoulSlap and the rich tenor-sax multiphonics found on the baritone Brazil and Mad Doc samples.

Remarkably, the Melodyne engine shifts the pitch of this potentially difficult material with ease. The soprano saxophone phrases are gorgeous, sometimes recalling the nuanced phrasing of Wayne Shorter. The intimate recordings capture plenty of realistic artifacts—you can hear breath and air crossing the reeds. With the help of Melodyne technology, Liquid Saxophone sets a new benchmark for sample players, and I recommend it highly. EM WEB CLIPS

Overall Rating (1 through 5): 5

Ueberschall/EastWest (distributor)

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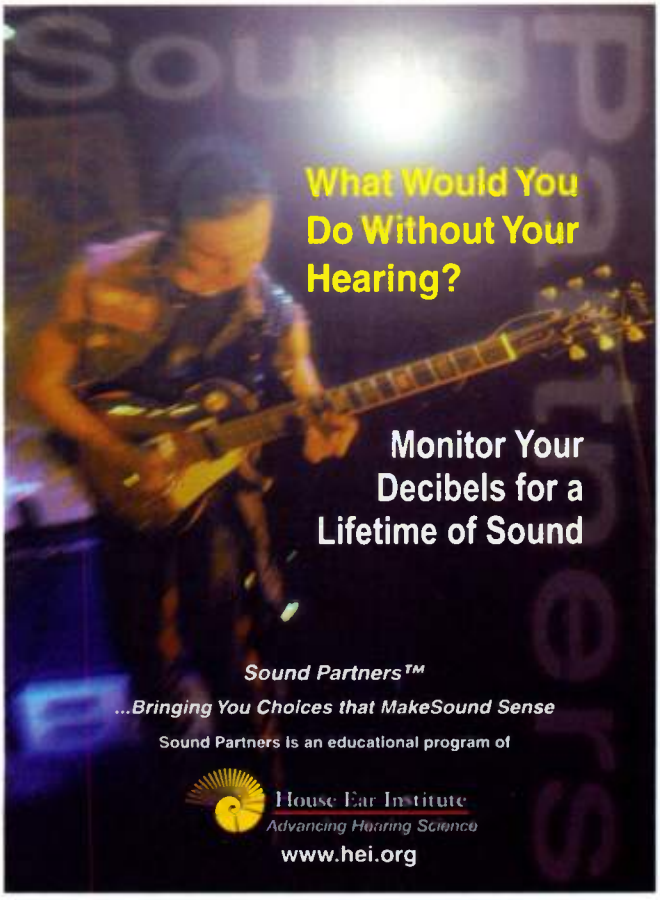

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Your DP mastering and processing lab awaits you: BIAS Peak Pro 5 delivers award winning editing and sound design tools, plus the world's very best native mastering solution for Mac OS X. With advanced playlisting. Superb final-stage processing. Disc burning. Plus PQ subcodes, DDP export (optional add on), and other 100% Redbook-compliant features. Need even more power? Check out our Peak Pro XT 5 bundle with over $1,000 worth of additional tools, including our acclaimed SoundSoap Pro, SoundSoap 2 (noise reduction and restoration), Sqweez-3 & 5 (linear phase multiband-compression/limiter/upward expander), Reveal (precision analysis suite), PitchCraft (super natural pitch correction/transformation), Repli-Q (linear phase EQ matching), SuperFreq (4,6,8, & 10 band parametric EQ) and GateEx (advanced noise gate with downward expander) — all at an amazing price. So, when you're ready to master, Peak Pro 5 has everything you need. It's the perfect complement to DP.
Or, perhaps we should say, it's the perfect finishing touch.

The control room.

The PreSonus Central Station™ is the missing link between your MOTU recording interface, studio monitors, input sources and the artist. Featuring 5 sets of stereo inputs (3 analog and 2 digital with 192kHz D/A conversion), the Central Station allows you to switch between 3 different sets of studio monitor outputs while maintaining a purely passive signal path. The main audio path uses no amplifier stages including op amps, active IC's or chips. This eliminates coloration, noise and distortion, enabling you to hear your mixes more clearly and minimize ear fatigue. In addition, the Central Station features a complete studio communication solution with built-in condenser talkback microphone, MUTE, DIM, two separate headphone outputs plus a cue output to enhance the creative process. A fast-acting 30 segment LED is also supplied for flawless visual metering of levels both in dBu and dBfs mode. Communicate with the artist via talkback. Send a headphone mix to the artist while listening to the main mix in the control room and more. The Central Station brings all of your inputs and outputs together to work in harmony to enhance the creative process and ease mixing and music production.

Purified power.

To get the most out of your MOTU studio gear, you need the cleanest power possible. The negative effects of poorly supplied wall outlet AC power on your gear can be dramatic, without your ever knowing how good your gear can really sound with properly supplied power. Furman Sound introduces the all-new Power Factor Pro with its ground-breaking Clear Tone Technology™, which actually lowers the AC line impedance supplied by your wall outlet while storing energy for peak current demands — over 45 amps of instantaneous current reserve. Additionally, Linear Filtering Technology™ (LiFT) dramatically lowers AC line noise to unprecedented levels in the critical audio frequency band. Also included are Furman's unique Series Multi-Stage Protection Plus (SMP+) surge protection and automatic Extreme Voltage Shutdown (EVS), which protect you from damaging voltage spikes or sustained voltage overload.

Equipped with the same LiFT and SMP+ features, plus EVS Extreme, the Furman Sound IT-20 II ultra-low noise balanced isolation power conditioner is designed for the most critical, ultra-low noise installations. Delivering an astonishing 80dB of common noise reduction from 20Hz-20kHz, you're assured the lowest possible noise floor for all the gear in your MOTU studio. The IT-20 II's toroid transformer design assures a contained magnetic field for complete isolation from sensitive studio components nearby. The ultimate in purified power.

Unprecedented Native Studio Power

Hands-on automated mixing.

Imagine the feeling of touch-sensitive, automated Penny & Giles faders under your hands, and the fine-tuned twist of a V-Pot™ between your fingers. You adjust plug-in settings, automate filter sweeps in real-time, and trim individual track levels. Your hands fly over responsive controls, perfecting your mix — free from the solitary confinement of your mouse. Mackie Control delivers all this in an expandable, compact, desktop-style design forged by the combined talents of Mackie manufacturing and the MOTU Digital Performer engineering team. Mackie Control Universal brings large-console, Studio A prowess to your Digital Performer desktop studio, with a wide range of customized control features that go well beyond mixing. It's like putting your hands on DP itself.

Accurate monitoring.

The Mackie HR-Series Active Studio Monitors are considered some of the most loved and trusted nearfield studio monitors of all time, and with good reason. These award-winning bi-amplified monitors offer a performance that rivals monitors costing two or three times their price. Namely, a stereo field that's wide, deep and incredibly detailed. Low frequencies that are no more or less than what you've recorded. High and mid-range frequencies that are clean and articulated. Plus the sweetest of sweet spots. Whether it's the 6-inch HR-624, 8-inch HR-824 or dual 6-inch 626, there's an HR Series monitor that will tell you the truth, the whole truth, and nothing but the truth.

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The MOTU system experts.

When it comes to putting together MOTU recording systems, nobody does it better than Sweetwater. Whether you're building a simple portable recording rig with a Traveler and an iBook or a 128-track powerhouse Digital Performer studio centered around the latest Quad Core G5, Sweetwater can help you select the perfect components for your MOTU system, from the specific MOTU audio interface model, to control surfaces and hard drives, to plug-ins and studio monitors. Even better, we can install, configure, test and ship a turnkey system straight to your door — all you'll need to do is plug in the system and start making music.

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Investing in the Invisible

By Larry the O

Before making an investment, people generally assess the expected return and then decide whether the investment is worthwhile. But if no return is visible, can the investment have value? Maybe so, though there is no guarantee that what you can't see will eventually manifest.

For instance, I am a strong believer in the effect that subtle mix elements have—some so subtle that they are almost subliminal. I like to double a hi-hat with a shaker that is mixed so low that it can hardly be heard. I think people feel more than they can consciously hear or see, and that subtleties do register, although perhaps at a subconscious level. In my example above, the return is the addition of a gentle shuffle to the hat part that gives the whole track a touch more motion. Will everyone get that feeling when they listen to it? I can never know, so I have to go with my instincts.

Networking (people, not computers) is another area in which investments can produce returns that are impossible to see at the time the investment is made. On several occasions, I attended Project BarBQ—an annual, intensive, weekend-long "think tank" retreat held in Texas. The retreat started out being centered on audio for video games, which was my job at the time. (Its scope has since broadened considerably.) The idea of the conference was to break the attendees into workgroups and bash around forward-looking ideas selected by the whole conference, with workgroups reporting their conclusions at the conference's end.

Some Project BarBQ discussion topics are philosophical, some speculate on pie-in-the-sky solutions to real-world challenges, some are as much whimsical as they are factual, and some are practical and specific. At times, something concrete emerges, such as the IXMF format, which was given shape at Project BarBQ. But often nothing immediately useful to an attendee's employer is brought back. So why should any company spend a few thousand dollars to send someone to such an event?

If no return is visible, can the investment have value?

There are numerous reasons. For starters, the quality of the attendees is high: key technology architects from major companies in computers and entertainment are attracted by the opportunity to let their fancy flow. Second, most of those people bring knowledge of new advances and approaches. Third, attendees have the opportunity to learn what people in other sectors of the same industry think and need: for example, chip designers talk to platform manufacturers and content creators. Finally, the contacts that are made can result in new ventures or business relationships.

To those attending, the value is clear, so much so that I attended this year in spite of not having done full-time audio production for a couple of years now. Still, justifying it to The Powers That Be back at the job is tough.

Other examples of investing in unseen returns are charitable work and good turns done for individuals. This doesn't have to mean pro bono work or charity benefits; it could simply mean going out of your way to help someone. Perhaps you call a friend and recommend another friend for a job opening. Or you give someone the benefit of your experience when he or she is entering a situation you've been through. Those things sometimes come back around in wholly unexpected ways. You don't do such things with a return in mind, you do them because they're the right thing to do. But it is always possible to "do well by doing good."

The invisible benefit can happen on a much smaller scale. The height of a high-pressure, tight-deadline situation can be the best time to take a day off. It seems crazy and often is not possible, but the relief of being out of the fire for a day can do more than offer an opportunity to catch up on sleep. It also can free the mind to work on an intractable problem in the background or allow you to take a step back and gain perspective. Whether one day is enough to return feeling refreshed, it can definitely be enough to bring back fresh inspiration.

It can be foolish to dive into something with no idea what it will get you. But it can also be brilliant. There are no guarantees; it's a risk. But when a return is obvious, there are also no guarantees that things will work out as planned. EM

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