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December 2002

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*MOTU 896, Digidesign
Mbox, and 9 More
Holiday Reviews*

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Do You Hear What I Hear?

It is a tenet of free societies that everyone is entitled to their opinion. At least, that's the theory. And, understandably, most people have especially strong opinions about product reviews. In general, manufacturers love positive reviews and resent critical ones. After all, nobody likes to be told that their baby is ugly. In contrast, some readers are suspicious of positive reviews, especially if they have heard stories about alleged problems that were not reported in a review. For EM's editors, producing reviews is just part of a day's work. We look for a balance of thoroughness, technical accuracy, clear writing, and well-considered opinions about things that have practical meaning to the end user. We have our own views, of course, but we try not to let our emotions sway us.

Our reviews are field tests by an array of veteran producers, all of whom work in personal studios. We turn to bench tests only to resolve factual disputes. Thorough field tests take time, and we review a lot of products; so although we aren't always the first to print a review, we try to publish quality articles that are worth waiting for.

Of course, a magazine isn't the only place you can read a product review; you can get opinions in an online tech forum, for instance. But you don't necessarily know whether those opinions are valid, because nobody is qualifying the reviewers.

We at EM have assembled an editorial team that understands the products and knows how to evaluate the evaluators. We check out reviewers carefully, making sure they understand the relevant technologies, test products on the appropriate sorts of projects, make practical and fair-minded decisions about how products should be tested and judged, and are unafraid to reevaluate initial impressions. We challenge our reviewers' assumptions and ask them to retest when we think their results are unclear or unreliable. In short, we are involved at every stage of the review.

We select products that we know will be useful to our readers. Once we start to review a product, however, we finish the job and publish it, positive or not, unless the product is discontinued or we discover that we picked an unqualified reviewer, in which case, we start over with another author.

We insist that our reviewers test thoroughly and that problems be reported honestly. We tell you how we test, under what circumstances problems appear, whether the problems are significant, and, if so, why and for what type of user. If we like the product, we tell you why we like it and for what applications it especially shines.

When all's said and done, though, the reviews still come down to the opinions of the authors, which reflect how they work in the studio, their experience, their particular production philosophies, their individual research methodologies, and their various writing styles. Two reviewers, given the same product, won't necessarily agree about its merits and faults. We use a consistent stable of authors, so after a while you get to know their predilections.

Hopefully you find EM's reviews helpful when deciding which products to check out for yourself. We work hard to get you off to a good start, but it's your money that's at stake, and ultimately it's up to you to decide whether you hear what we hear.



ANTHONY PIDGION

Editor in Chief

– Steve Oppenheimer, soppenheimer@primediabusiness.com

Managing Editor

– Patricia Hammond, phammond@primediabusiness.com

Associate Editors

– Brian Knave, bknave@primediabusiness.com
 – Dennis Miller, emeditorial@primediabusiness.com
 – Gino Robair, grobair@primediabusiness.com
 – David Rubin, emeditorial@primediabusiness.com
 – Geary Yelton, emeditorial@primediabusiness.com

Assistant Editors

– Marty Cutler, mcutler@primediabusiness.com
 – Matt Gallagher, mgallagher@primediabusiness.com

Senior Copy Editor

– Anne Smith, asmith@primediabusiness.com

Contributing Editors – Michael Cooper, Mary Cosola,
 Larry the O, George Petersen, Scott Wilkinson

Web Editor

– Paul Lehrman, plehrman@primediabusiness.com

Group Art Director

– Dmitry Panich, dpanich@primediabusiness.com

Art Director

– Laura Williams, llwilliams@primediabusiness.com

Graphic Artist

– Mike Cruz, mcruz@primediabusiness.com

Informational Graphics – Chuck Dahmer

Vice President – Entertainment Division

– Pete May, pmay@primediabusiness.com

Publisher

– John Pledger, jpledger@primediabusiness.com

Advertising Director

– Joe Perry, jperry@primediabusiness.com

East Coast Advertising Manager

– Jeff Donnenwerth, jdonnenwerth@primediabusiness.com

Northwest/Midwest Advertising Associate

– Stacey Moran, smoran@primediabusiness.com

Southwest Advertising Associate

– Mari Deetz, mdeetz@primediabusiness.com

Marketing Director

– Christen Pocock, cpocock@primediabusiness.com

Marketing Manager

– Angela Muller Rehm, arehm@primediabusiness.com

Marketing Events Coordinator

– Alison Eigel, aeeigal@primediabusiness.com

Classifieds/Marketplace Advertising Director

– Robin Boyce-Trubitt, rboyce@primediabusiness.com

West Coast Classified Sales Associate

– Kevin Blackford, kblackford@primediabusiness.com

East Coast Classified Sales Associate

– Jason Smith, jasmith@primediabusiness.com

Classifieds Managing Coordinator

– Monica Cromarty, mcromarty@primediabusiness.com

Classifieds Assistant

– Heather Choy, hchoy@primediabusiness.com

Vice President – Production

– Thomas Fogarty, tfogarty@primediabusiness.com

Senior Production Manager

– Curtis M. Pordes, cpordes@primediabusiness.com

Group Production Manager

– Melissa Langstaff, mlangstaff@primediabusiness.com

Senior Advertising Production Coordinator

– Julie Gilpin, jgilpin@primediabusiness.com

Vice President – Audience Marketing

– Christine Oldenbrook, coldenbrook@primediabusiness.com

Group Audience Marketing Director

– Philip Semler, psemler@primediabusiness.com

Audience Marketing Manager

– Austin Malcomb, amalcomb@primediabusiness.com

Audience Fulfillment Coordinator

– Jef Linson, jlinson@primediabusiness.com

Human Resources/Office Manager

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Business Magazines & Media

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President

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— Jack Condon, jcondon@primediabusiness.com

Sr. Vice President/Chief Information Officer

— Kris Paper, kpaper@primediabusiness.com

Sr. Vice President – Business Development

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Vice President – Content Licensing & Development

— Andrew Elston, aelston@primediabusiness.com

Vice President – Corporate Communications/Marketing

— Karen Garrison, kgarrison@primediabusiness.com

Sr. Vice President – Finance

— Tom Flynn, tflynn@primediabusiness.com

Interim Vice President – Human Resources

— Kurt Nelson, knelson@primediabusiness.com

Vice President – New Media

— Andy Feldman, afeldman@primediabusiness.com

Vice President – Technology

— Cindi Reding, creding@primediabusiness.com

PRIMEDIA Business-to-Business Group

— 745 Fifth Ave., New York, NY 10151

Interim President & Chief Executive Officer

— Charles McCurdy, cmccurdy@primedia.com

Chief Creative Officer

— Craig Reiss, creiss@primedia.com

Creative Director

— Alan Alpanian, aalpanian@primediabusiness.com

PRIMEDIA Inc.

Chairman & Chief Executive Officer

— Tom Rogers, trogers@primedia.com

Vice Chairman & General Counsel

— Beverly C. Chell, bchell@primedia.com

President

— Charles McCurdy, cmccurdy@primedia.com

Editorial, Advertising, and Business Offices: 6400 Hollis St., Suite 12, Emeryville, CA 94608, USA. (510) 653-3307.

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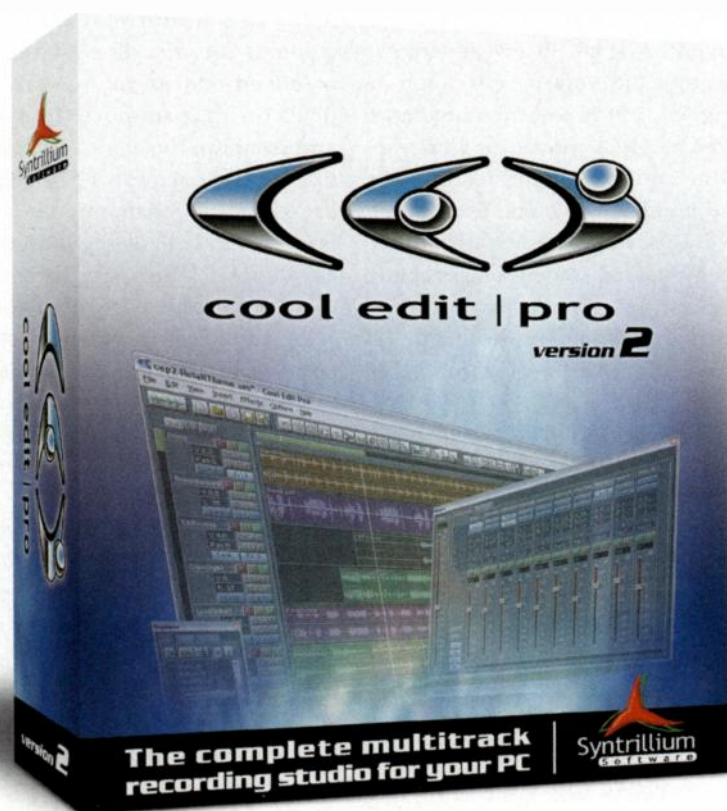


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BURNING CORRECTION

The "Download of the Month" column in the "Front Panel" section of the October 2002 issue refers to BeatBurner as a VST plug-in. I downloaded it and found that it's actually a standalone program. I e-mailed the manufacturer, Code Audio, about this, and they responded that they have a VST version planned for release in January 2003.

Ben Munat
via e-mail

Author Len Sasso replies: Ben—Sorry for the confusion. BeatBurner started out as a Windows-only, standalone product. A Windows VSTi version was scheduled for release when I wrote my column, but after I turned it in, GMedia (www.gmediamusic.com) entered into an agreement to distribute a cross-platform VSTi version of BeatBurner. In addition, the release was postponed until the 2003 Winter NAMM show in January.

The standalone BeatBurner for Windows will continue to be available as a download (www.beatburner.com); the boxed VSTi (Mac/Win) version will be distributed by GMedia. According to the manufacturer, an upgrade path to the VSTi version will be provided for anyone who purchased the standalone version of BeatBurner.

SCHOOLS OF THOUGHT

Kudos on the article on audio schools ("Making the Grade," October 2002). I'm the owner of a two-room studio and indie label here in Austin, and we've hired a number of grads from recording schools. One of them is entering her fifth year with us, and another has moved on to a job in Los Angeles. But in several other cases we weren't so lucky and ended up with kids who understood the technology but had no idea how much they didn't know. One actually cost us an album project by making snide remarks about the talent to a guy out in the lounge—who turned out to be her husband!

As your writer very wisely observed, it's the stuff they don't teach you that can be the most important. Your magazine always has something useful each month, but this was one of the best—we clipped the piece and hung it on the wall in the workshop, where all new interns can see it.

Sam Wilton
Jus Moi Studios
Austin, TX

I'd like to compliment Mr. Daniel Keller on a somewhat straightforward article about audio education. Compared with other magazines' editorial tips of the hat to trade-school advertisers, Keller's piece offered a realistic look at what trade schools are doing and what employers expect.

I graduated from both a four-year university and a trade school, receiving a bachelor's degree in music-industry studies with a business minor from the former and a certificate in recording engineering from the latter. I attended the trade school because I felt that I needed hands-on training be-

fore entering the industry. After attending both types of schools and subsequently working in my field of choice, I have some observations.

First, there is absolutely no comparison between going to a university and attending a trade school. None. Attending a four-year school offers students the best deal on a real, well-balanced education. (Check out the deals on state-supported universities and compare those with the price tags of most trade schools.) Also, Keller addresses an often-lamented lack of professionalism in fledgling music-industry employees. University students give themselves time to grow up and to develop the most important part of succeeding in any industry: social skills. Students who graduate from high school and immediately enter a trade school have less time to grow emotionally and intellectually.

Second, you can never predict what you'll do for a living. You might live off of a studio runner's paltry salary long enough to work your way up the ladder, but that might not be in the cards for everyone. Therefore, spending your educational dollars on attending a trade school is truly putting all your eggs in one basket.

A bachelor's degree means something outside of this relatively small industry. Having a piece of paper that proves you dropped \$25,000 (or more) at a trade school means nothing to many people, except that you may not make very good economic decisions. At many universities across the country, students can pursue an education in recording or music while earning a degree that most everyone recognizes as something of real value.

Let's all be honest: recording education is a business. Why else do trade schools feel the need to advertise so



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often? Why don't universities advertise as much in comparison? If you are a potential recording-industry student, ask yourself these questions and look for answers before jumping into a major financial and educational commitment. While I feel that both types of institutions offer good educational intentions, potential students weighing their options need to decide who will ultimately benefit the most from their tuition dollars: themselves or the chosen school.

S. Jason Lynch
Los Angeles, CA

WE'VE GOT RHYTHM

I just finished reading your article on recording Latin percussion instruments ("Recording Musician: The Whole Enchilada," October 2002), and I must say that it was a great read! Latin percussion is very popular down here in South Texas, and everything you mentioned in the article was right on. Your technique for miking a shekere is especially appreciated as I've been struggling to get a good, natural sound from shekeres for a while now. Keep up the great work!

Ray
Skunkative Records
via e-mail

TRUTH IN ADVERTISING

I like your magazine, but I feel a little duped by the September 2002 cover lines that say "create slammin' drum parts (even if you're not a drummer)." This suggests that the cover story will be somewhat *instructional* in nature, but in reality, the story is merely about new products. Talk about a wolf in sheep's clothing. You're doing nothing more than shilling the products of your advertisers rather than providing information on how to "create slammin' drum parts" as promised. I'm well aware that ads help pay your bills and salaries, but next time, please make your cover lines a little more truthful. Your readers are smarter than you think.

Pete Brown
via e-mail

DARE TO DREAM

Regarding Tim Mulac's letter ("Letters: If You Build It . . .," August 2002), I too would like to see a MIDI pitch-bend pedal. It would operate exactly like the pitch-bend wheel on a synthesizer and perhaps include memory for storing different bend amounts. Because I play bass lines with my left hand while comping

with my right hand, it would be great to be able to pitch-bend the bass with a foot pedal.

However, the proposed two-pedal system would not have the playability of a pedal with a single center detent, bending notes like a rubber band in both directions yet always returning to normal pitch. Perhaps you could use a second pedal for modulation, and so on. I have yet to see such a device. It's surprising that no one has developed a pitch-bend pedal, because the potential buyers are out here.

Scott Demaray
via e-mail

Scott—Having used it for almost 20 years, I assure you that the twin-pedal system is eminently playable. With practice, it becomes second nature. I thought about making a pedal with a center detent, but even if I could have built such a device, using it to bend pitch accurately in both directions might have proven more difficult than mastering the twin pedal.

I generally use the two spring-loaded pedals to bend pitch, and I vary the bend range depending on what I want to play. But when they're used with a flexible synthesizer, MIDI processor, or sequencer, the pedals can send any continuous-controller message to any device on any MIDI channel. For instance, when I play left-hand bass, I can use one pedal for bending the bass sound (in either direction) and the other pedal for bending a lead part, each with a different bend range. But either pedal could just as easily have swept a filter or even sent several different controller messages at once.

Of course, the biggest practical advantage of the two-pedal approach is that you can build it yourself with little more than a pair of stock CV pedals, a couple of springs (which you can select for the proper feel), and epoxy.—Steve O

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By Len Sasso

Downloads of the Month



AudioNerdz Delay Lama

This one is pure fun. Delay Lama (Mac/Win; free) is the first creation of AudioNerdz, a group of four Dutch students—three studying audio design and one studying animation. To quote the authors, “We started the Delay Lama project about a year ago as a special project during our course in audio design. It eventually grew into a VST instrument, and we thought it would be nice to release this virtual singing monk worldwide for the good of Tibet.” Although Delay Lama is freeware, AudioNerdz suggests you consider a donation to the International Campaign for Tibet (www.savetibet.org).

Delay Lama started out as a Csound experiment in formant wave-function synthesis (aka FOF). That method is particularly good for simulating sounds produced by the vocal cords and resonances in the vocal tract. Delay Lama’s designers converted

their Csound instrument to a VST Instrument for the Mac as well as Windows. The VST control panel includes a very clever three-dimensional graphic of the aforementioned singing monk, complete with facial animation that reflects the vowel being sung.

Delay Lama features front-panel and MIDI control over seven essential parameters: voice register (baritone to soprano), vowel formants, pitch, portamento, vibrato, volume, and wet/dry mix for a built-in stereo delay (yes, the lama comes with his own monastery). The essential MIDI controls are just as you might expect—MIDI Note for pitch, Pitch Bend for vowel formant, and Modulation Wheel for vibrato—making Delay Lama very easy to play and automate in real time. MIDI Controllers 5, 7, 12, and 13 control portamento, volume, delay mix, and voice register, respectively. Delay Lama isn’t Velocity sensitive, so you’ll need to either ride the volume or construct a MIDI patch in an application such as Cycling ’74 Max or Sound Quest Infinity.

You won’t use Delay Lama in every

TIPS

Cool Tip of the Month



FIG. 1: The key to successful conversion can be found in Digital Performer’s OMF Export Options dialog.

Convert DP3 Projects to Pro Tools Sessions

The EM Cool Tip of the Month is presented courtesy of Cool Breeze Systems.

MOTU Digital Performer (DP) users sometimes need to hand off work to other musicians, engineers, or producers who use different DAWs, such as Digidesign Pro Tools or Emagic Logic Audio. Using DP3’s built-in Open Media Framework (OMF) import and export features can make that process easier than you might think.

OMF is a file format that was developed as a means of exchanging data between nonlinear editing systems. This month, I’ll explain an option for exporting a project from Digital Performer 3.1

to Pro Tools 5.3.1. Pro Tools doesn’t support OMF directly, so you must either purchase the DigiTranslator 2.0 upgrade or use the standalone OMF Tool application to convert your OMF file to a Pro Tools session.

1. Open the Digital Performer 3 project that you want to export. In this example, the project includes a MIDI track and 24-bit audio tracks recorded at 48 kHz.

2. To Export the MIDI information, select Save a Copy As . . . from the File menu and select Standard MIDI File as

song (and you might not use it in any), but you'll sure have a lot of fun trying. You can find MP3 examples at www.emusician.com and at the AudioNerdz Web site (www.audionerdz.com), where you can also download the plug-in.

Onyxmoon iONYXo

If you've been searching for a budget modular multi-effects processor, check out the VST plug-in iONYXo (Mac; \$49) from Onyxmoon (www.onyxmoon.com). You can combine iONYXo's DSP effects in a variety of signal-path configurations called Topologies. The plug-in comes in three versions—Mono, Send (mono in, stereo out), and Stereo—and each version includes 12 Topologies. You can't create your own Topologies, but you can fill a Topology's slots with modules in any way you like, and multiple instances are allowed.

iONYXo's modules fall into two categories: effects and routers. The effects include a feedback delay line (mono and stereo-panning versions), a 16-tap echo, a ring modulator, a multimode filter, and the Polynomial Shaper (for nonlinear distortion effects). Routers include a panner,

crossfader, adder, splitter, and 8x1 mixer. Topologies are provided for almost any combination of parallel and serial processing you can imagine. The modules you choose to place at various points in the signal path determine the overall effect. The MP3 file Strum-Drum will give you an idea of what a couple of instances of iONYXo can do to a very simple kick-drum-and-strummed guitar loop.

Perhaps iONYXo's most unusual feature is the Cycloid Modulator, which provides x-y modulation that follows cyclical paths called epicycloids and hypocycloids. For example, imagine an ant crawling around the cycloid; the x and y control values would show the ant's horizontal and vertical distance from the center. You can use the Cycloid Modulator to create complex repeating patterns and apply them to virtually any pair of module param-

eters. Sine and linear (triangle, sawtooth, or pulse) modulators are also provided.

iONYXo supports parameter automation and VST timing data, but offers no MIDI support. You should try the demo before purchasing, because not all VST hosts support every iONYXo feature at this time. Nonetheless, iONYXo is a very flexible effects construction kit that's well worth investigating.



TIPS

the format type. To maintain separate tracks, select Type 1 format and click on OK. (If your project does not include MIDI tracks, you can skip this step.)

3. To export the audio, select Save a Copy As... from the File menu and select OMF Interchange as the format type. Rename the file (I add the file extension .omf) and click on Save. The OMF Export Options dialog will appear; there you can specify the type and parameters for the OMF document (see Fig. 1). To maintain the 24-bit file structure, select the Enforce DigiTranslator 2.0 Compatibility and Export 24 Bit Audio Directly options. To save storage space, select Export References to Existing

Sound Files and Export Fades as OMF Effects. Then click on OK to create the OMF document.

4. Open Pro Tools (version 5.3.1 with DigiTranslator 2.0), and use the Open Session command in the File menu to open the OMF file you exported from DP3.

5. Select Import MIDI Track from the File menu to import the MIDI data.

You can download DigiTranslator 2.0 (www.digidesign.com) for a 15-day trial period. Alternatively, if you're using 16-bit files, OMF Tool (<http://download.digidesign.com/support/digi/mac/PTs/OMFTool208.hqx>) adds an extra step to the process, but it's free, and it is possible that it can do everything you need.

—Steve Albanese

Make sure to check out the CoolSchoolOnline library streaming movie of this tip to view this procedure and additional conversion options. Visit www.emusician.com/cooltip for this online adventure. Also, if you dare, take the quiz to review what you've learned!

Rev Up

By Marty Cutler

▼ Native Instruments

Pro-53 (Mac/Win), a free update of Native Instrument's Pro-52 virtual synthesizer, brings a new oscillator design to the software instrument. The manufacturer claims that the new design offers a markedly increased brilliance and warmer sound.

Pro-53's filters offer new features that include a highpass mode and invertible envelopes. In addition, all envelopes offer a retriggering option. For quick assignment of hardware MIDI controllers, Pro-53 now offers a MIDI Learn function and the ability to save and load controller maps.

Native Instruments has optimized the graphical interface and added 64 patches that take advantage of the new feature set. Native Instruments U.S.A.; tel. (866) 556-6488; e-mail info@native-instruments.com; Web www.native-instruments.com.

Access Music

OS 4.58 for the Access Virus B is a free download and adds a dedicated pan parameter for the synth's Multi mode. You can now create your own Velocity-response curves for the Virus KB keyboard model.

Access also offers a free OS 5 download for its Virus C instruments. In addition

to the new features listed for the Virus B, the update offers a Global EQ bypass shortcut and other shortcuts designed for live performance. GSF Agency/TSI International Sales (distributor); tel. (310) 452-6216; e-mail gsf.agency@gte.net; Web www.access-music.de.

► Tascam

Tascam has released version 2.0 software for its 788 portable digital studio. The upgrade (for versions 1.07 or later) comes on a CD-ROM for \$30 if you purchased the 788 after January 17, 2001. Some earlier units may require an EPROM swap, which will require a \$30 deposit. Tascam offers a FAQ at www.tascam.com/788_files/FAQs/test/test_ac.html that walks you through the upgrade. The release brings WAV-file import and export, enhanced storage capabilities, and convenient CD-burning features.

The 788 can now read and write ISO 9669 CDs with WAV data, enabling data transfer to and from computer workstations and facilitating access to the large library of loops on WAV-format CD-ROMs. In addition, the recorder now offers a prompt for burning multiple CDs from a disk image, eliminating



TIPS

The Eyes Don't Have It

Good engineers know that subtle changes in microphone positioning can result in dramatic differences in sound capture. They spend so much time tweaking a mic's position because they're trying to find the "sweet spot"—that sometimes elusive place where the mic picks up the perfect tonal balance from the instrument.

Oddly, some engineers I've observed search for the sweet spot based on visual cues. For instance, maybe they were taught that when miking an acoustic guitar, the mic should be positioned at the 12th fret. You might see them down on their knees, carefully aligning the

capsule so that it points directly at the 12th fret.

What's odd about that? Well, except in cases of synesthesia, the act of listening does not contain a visual element. You can look all you want, but it will do little in the way of helping you find the best place to put the microphone.

That observation leads to a very helpful tip for finding the sweet spot: close your eyes. Once you've positioned the mic in the general pickup area and set your levels, loosen the mic stand so the mic can move freely. Then, as the musician performs the part (and you monitor on headphones), close your eyes and listen as you slowly move the mic around. If you've never

done that, you may be surprised by the dramatic difference in sound a slight twist of the mic can make.

When you are listening only, and not distracted by visual information, it's much easier to determine the point at which the sound is best. Once you locate the sweet spot and open your eyes, you might feel that the mic position looks wrong. But whatever you do, don't move the mic in accord with some preconceived notion of where it "should" be. Trust your ears, not your eyes. The recorder, after all, can't see where the mic is; it can only record what the mic hears.

—Brian Knave



the need to reassemble tracks for each instance of a CD.

New support for hard drives as large as 64 GB includes expanded partition capacities as large as 16 GB. Additional updates include an Import Master Track feature, a null-panning shortcut, and a Gas Gauge feature that warns when drive space is running low. Tascam; tel. (323) 726-0303; Web www.tascam.com.

Radikal Technologies

Version 2.27 firmware for Radikal's SAC-2K and SAC-2.2 control surfaces is a free download accompanied by new Windows 2000 and Windows XP USB drivers for the Software Assigned Controllers. A Mac

OS X version will follow shortly. The new drivers enable the SAC-2K to simultaneously manage as many as ten separate programs. Even if an application is sending automation data, switching between applications automatically updates status for all control elements, including fader positions, display information, and button status, through the unit's USB ports.

The firmware update supports the control surface's USB hub for Mac OS 9 and Windows 2000 and XP, allowing the connection of a computer keyboard, mouse, and other devices. Radikal Technologies; tel. (201) 836-5116; e-mail info@radikaltechnologies.com; Web www.radikaltechnologies.com.

TIPS

Groove Quantizing for Dynamics

Your sequencer's groove templates contain data for timing, Velocity, and duration; most often, those parameters are used to keep rhythm sections percolating and in sync. You can also use groove quantizing to build crescendos and decrescendos that sound natural or to create minute fluctuations in dynamics that help the music breathe.

When you apply the groove template, try disabling the time and duration parameters. Then you can superimpose subtle increases or decreases in dynamics while preserving the original timing and duration.

—Marty Cutler

What a Waste!

After you purchase a new computer, you'll need to decide what to do with your old one. You might try integrating it into your current system, but that isn't practical for many people. If it's been a few years since your last CPU upgrade, it might not be worth the time and effort to try selling the old machine through the classifieds. Don't just toss that tower in the trash, though. If you do, you'll be contributing to a serious environmental problem.

According to the National Safety Council, more than 315 million computers will be obsolete by 2004. Throwing away that many

Key Changes

By Marty Cutler

Berklee College of Music (www.berklee.edu) and Line 6 (www.line6.com) have agreed that Line 6 will provide the school's guitar and bass curriculum through GuitarPort, Line 6's digital audio interface and instruction tool . . .

PG Music (www.pgmusic.com) has released Band-in-a-Box v. 11 for the Mac OS, which offers the same MIDI feature set as version 11 for Windows, including the ability to change styles at any measure . . .

Shure Incorporated (www.shure.com) has announced that authorities in China have destroyed large quantities of counterfeit Shure microphones and accessories that were slated for distribution in the pro-audio marketplace. The toll included over 730 microphones and more than 15,000 bogus capsules as well as grilles, cables, and even forged user guides . . .

Edirol (www.edirol.com) has released new beta versions of Mac OS X audio and MIDI drivers. Supported gear includes the manufacturer's UA-700 and UA-20 digital audio and MIDI interfaces as well as the SD-90 and SCD-70, which combine a sound module with a MIDI and digital audio interface . . .

Distribution of **Marantz Professional Audio** (www.marantzpro.com) products is now being assumed by Marantz Japan. Former distributor **Superscope** will continue to develop and market its own line of products, which are manufactured by **Marantz Japan** . . .

IK Multimedia (www.ikmultimedia.com) announced that RTAS versions of its Amplitube amp-modeling plug-in and SampleTank SE, a sample-player plug-in, will be bundled in **Digi-design's** Digi 002 hard-disk recording package . . .

Kenton Electronics (www.kenton.co.uk) has announced that its MIDI retrofit kits for pre-MIDI analog synthesizers will be discontinued after its current stock of components and circuit boards has been exhausted. Some models are already unavailable.

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15 Years Ago in EM

By Steve Oppenheimer

Our December 1987 issue featured one of the stranger covers in our history, a sort of electronic teddy-bear-in-a-box that symbolized our issue's focus on fun and games.

The entertainment started with Tim McGuinness's article about his journey to Guangzhou (Canton), China, where he gave a series of electronic-music technology demonstrations to an audience that considered the devices to be little short of magical. Next, Matt McCullar discussed the technological development of electronic sound for arcade-style video games, and Jack Orman gave us a crossword puzzle that used electronic-music terms. Terry Fryer got an enviable assignment: **EM** editor Craig Anderton gave Fryer a check for \$256.42 and sent him shopping for toys that used electronically generated sounds. The toys were disappointing, but we had a good time anyway.

The biggest laugh was provided by George Petersen and Jim Jenkins. These two punsters offered a classic spoof of **EM**'s DIY stories in "Wanna Rock? Build This Hot Keyboard Stand," which explained how to build a keyboard stand out of—are you ready for this?—a brick barbecue! Admittedly it wasn't the most portable keyboard stand, but it certainly was solidly built. For the cu-

rious, the story is still available at www.jenpet.com/bbq.htm.

Of course, we offered more serious fare, as well. Patrice De Vincentis showed us how to properly bundle cable runs, Bart McCormick's circuit mod added chorusing capability to the Boss DD-2 digital delay, and Jim Kerkhoff's "Random MIDI" DIY software

turned a Commodore 64 computer into a sample-and-hold MIDI processor. Robert Damiano explained how to generate plucked-string sounds on a C-64 or Apple II computer and download them digitally into an Ensoniq Mirage sampler.

The reviews were mostly short and sweet. We covered several patch librarians for long-gone synthesizers and computer platforms and evaluated Dr. T's The Copyist 1.4 scoring software for Atari and Forat Electronics' MSM 2000 memory expander for the Yamaha DX7 synth. We took a more in-depth look at Music Magic's MuziCard for the PC, which offered 256-stage envelopes, used additive synthesis techniques, and eschewed filters in favor of the ability to crossfade among waveforms. We also reviewed Yamaha's TX802 FM synthesizer module and Garfield Elec-

tronics' Time Commander, which derived sync from a miked live drummer's rhythm, from an electronic drum kit, or from MIDI Note On messages.



TIPS

computers could add around 8.5 million tons of waste to our landfills. That's a pretty sizable mound of motherboards, monitors, and modems. Fortunately, there's a better alternative.

Many schools, charities, and other organizations are actively seeking old computers and peripherals. In addition, there are several companies that can extract valuable components or use old components to restore machines for resale or donation. If you're interested in exploring the many computer-recycling options that are available, here's a brief list of Web sites to get you started. Many of the sites have links to other sites that are also worth checking out.

Back Thru the Future Micro Computers

www.thegreenpc.com

Computer Recycling Center

www.crc.org

Computers for Schools

www.pcsforschools.org

The Environmental Protection Agency

www.epa.gov/region02/r3/compute.htm

IBM PC Recycling Service

www.ibm.com/ibm/environment

Intel Corporation

www.intel.com/education/managing/recycling/strut.htm

The Lazarus Foundation

www.lazarus.org

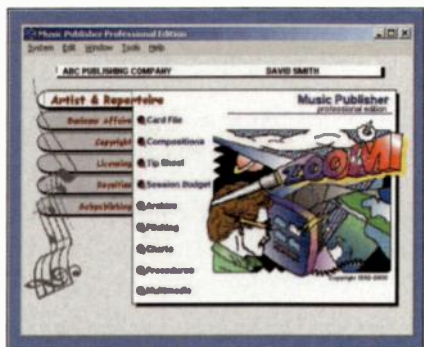
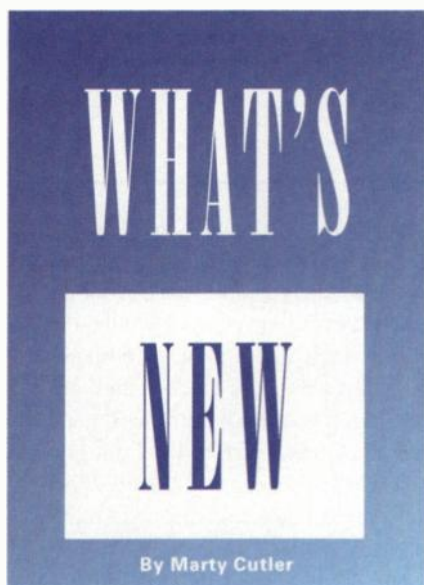
The National Cristina Foundation

www.cristina.org

The Used Computer Mall

www.usedcomputer.com/nonprof.html ☺

—David Rubin



▲ YEAH SOLUTIONS MUSIC PUBLISHER +

Originally designed as a software database package to manage publishing interests for ZZ Top, Music Publisher Plus (Win; \$1,750) manages assorted business affairs, copyrights, licensing, royalties, and publishing data. The program also includes an A&R section for use in pitching songs, demo archiving, and catalog administration.

When you draft a publishing agreement, Music Publisher Plus analyzes the data and compiles the personalized information into the document. Navigating and controlling the program is an intuitive process, and Music Publisher Plus allows you to go from one folder to another using pull-down menus. The program requires a Pentium II/200 MHz; Windows 95, 2000, or NT; and 128 MB of RAM. Yeah Solutions, Ltd.; tel. (818) 832-3169; e-mail info@yeahsolutions.com; Web www.yeahsolutions.com.

▶ GENERALMUSIC PROMEGA3

Generalmusic's Promega3 stage pianic (\$2,995) creates vintage keyboard sounds using physical modeling, sample playback, and a combination of the two technologies. The Promega3 holds 128 MB of sampled instruments and offers 320-note polyphony. Ten acoustic pianos are included, featuring stereo sample sets of a Fazioli F308 and a Steinway B. The sampled acoustic pianos benefit from algorithms that physically model string resonance and damper-pedal effects.

Rather than rely on Velocity-switched samples and filter control by a conventional envelope generator, the Promega3 uses Generalmusic's Filter Algorithm Dynamic Emulator (FADE) to reproduce a piano's natural changes in harmonic content. The Promega3 also includes physical models of Rhodes, Wurlitzer, and Clavinet instruments, bolstered with amp emulation and FADE.

Promega3 is 4-part multitimbral and offers 64 preset and 64 user performances divided into Singles, Splits, and Layers. The user interface includes five faders, six virtual pots, eight EQ bars, and seven LCDs for keeping track of your tweaks.



The knobs and faders send MIDI Control Change messages and the faders are motorized.

I/O on the Promega3 includes a pair of unbalanced 1/4-inch analog inputs (with gain control for mixing Promega3's output with other instruments); a balanced 1/4-inch analog stereo output; two unbalanced 1/4-inch analog aux outs; two stereo headphone jacks; three 1/4-inch TRS jacks for assignable pedals; MIDI In, Out, and Thru; and a To Host connector that works with Mac and PC. Generalmusic; tel. (800) 323-0280 or (630) 766-8230; e-mail gmil@generalmusicus.com; Web www.generalmusic.com.

▼ GRACE DESIGN LUNATEC V3

Grace Design offers the Lunatec V3 (\$1,695), a 2-channel portable mic pre-amp and digital-audio converter. The unit supports 24-bit conversion at sampling rates up to 192 kHz. The Lunatec V3 is suitable for remote recording and is housed in a rugged chassis with recessed controls. It can be powered from a 6V or 12V battery pack or an AC adapter.

The Lunatec V3 has balanced XLR analog I/O as well as AES/EBU and S/PDIF outputs. The analog outputs operate simultaneously with the unit's digital out-

puts. To support 192 kHz sampling rates, the unit offers double-wire and single-wire AES modes. The Lunatec V3 uses Grace's newly developed ANSR noise-shaping dither circuit to accommodate recording to systems with 16- and 20-bit word lengths.

Each channel has 48V phantom power, an 11-position gain-control switch, a 10 dB continuously variable trim pot, and a 4-frequency highpass filter with a selectable slope. You can disengage the converters to use the preamps for analog throughput only, which saves power when running the unit from a battery pack. Dual 8-segment LEDs offer metering for each channel, and an additional LED is provided for monitoring battery level. Grace Design; tel. (303) 443-7454; e-mail info@gracedesign.com; Web www.gracedesign.com.



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Locate the Pro Tools|HD dealer near you at
www.digidesign.com/HDdealer and listen for yourself.

SOUND ADVICE ▲▲▲▲



▲ ZERO-G

It's probably one of the most ubiquitous instruments around, yet this is the first sample collection devoted to the instrument. Zero-G's *Harmonica* (\$99.95) comes with an audio CD and a CD-ROM with WAV and EXS-24/HALion-format files.

The audio CD includes more than 300 idiomatic riffs and techniques for country, blues, pop, and rock, featuring performances by Ben Hewlett. The CD-ROM duplicates the performances in Acidized WAV-file format and adds 12 chromatically sampled harmonicas. EastWest (distributor); tel. (800) 969-9449 or (310) 271-6969; e-mail sales@eastwestsounds.com; Web www.soundsonline.com.

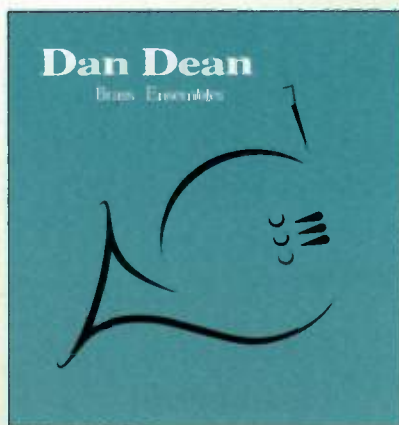
► DAN DEAN PRODUCTIONS

Dan Dean Productions' *Brass Ensembles* (Giga; \$699) includes four French Horns, three trumpets, and three trombones in sections. All of the instruments are chromatically sampled in up to eight layers of dynamics. Performances include basic legato (without vibrato), portamento, and staccato. Samples with mutes as well as stopped French horns are also included.

Unique to this collection is what Dean describes as a multiperspective format; the library provides close-miked and ambient samples allowing the user a choice of wet or dry instruments. The

wet instrument samples were recorded in a cathedral to provide natural reverb.

Brass Ensembles comes with presets that let you use the mod wheel to adjust the reverb amount of the release samples or to omit the reverb for realistic—and consistent—reverb. Other programming features place selectable staccato samples at the start of each note for playing rapid passages. Dean's Ensemble Mod Wheel presets allow numerous velocity layers to play simultaneously, which is useful in creating dense, realistic sections and ensembles. Dan Dean Productions; tel. (206) 232-6191; e-mail dandean@dandeanpro.com; Web www.dandeanpro.com.



PATCHMAN MUSIC

As accurate as sample playback instruments can be, wind instruments can acquire new life with the proper programming. For wind players who want greater control over their sounds, Patchman Music offers *Volume 1: Wind Controller Essentials* (\$39.95), a bank of 128 Patches and 64 Performances tailored to electronic wind controllers.

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synth leads. You may not need it for every occasion, but Patchman singles out the collection's bagpipe patch—complete with drones—as a killer.

Six Performances have been specially tailored to take advantage of Yamaha's WX-series wind instruments and MFC2 foot controller, which lets you solo over sustained pads. Patchman Music; tel. (216) 221-8282; e-mail matt@patchmanmusic.com; Web www.patchmanmusic.com.

▼ BIG FISH AUDIO

Big Fish offers *Off The Hook*, vol. 2 (\$99.95), a collection of construction kits suited for smooth R&B sounds. You get two audio CDs and two CD-ROMs of Acidized WAV files.

Anthony Myers, producer of the first volume, again occupies the producer's chair. The overall flavor of the kits is mellow, with tempos ranging from 60 to 108 bpm. The Acidized WAV files allow you to accommodate faster or slower tempos. Construction kits include individual drum and bass tracks with guitars, pads, solo strings, pianos, vintage keyboard and synth sounds, and even log drums as the arrangements call for them. Each construction kit provides tempo and key signature information. Big Fish Audio; tel. (800) 717-FISH or (818) 768-6115; e-mail info@bigfishaudio.com; Web www.bigfishaudio.com.





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▶ BLUESHOCK TSUNAMI

Blueshock's *Tsunami* (Mac/Win; \$69), an analog modeling synthesizer, is available as a VST instrument and a standalone application; both versions provide 64-note polyphony. Although *Tsunami* is not multitimbral, you can load multiple instances of the synth.

Tsunami has three oscillators and a noise generator. The oscillators offer a variety of waveforms, including triangle, sawtooth, reverse-sawtooth, and three different pulse waves. The single LFO uses the same waveforms as the oscillators, and you can use oscillator three as a sec-

ond LFO. Two ADSR envelope generators (EGs) are also included. The first two oscillators and the 24 dB resonant lowpass filter can be modulated by the LFO, the EG, MIDI Velocity, or MIDI Note Number. The effects section offers ring modulation and delay.

Tsunami requires a Pentium II/266 MHz running Windows 98 with 64 MB of RAM, or, on the Mac, a PPC G3/233 MHz com-



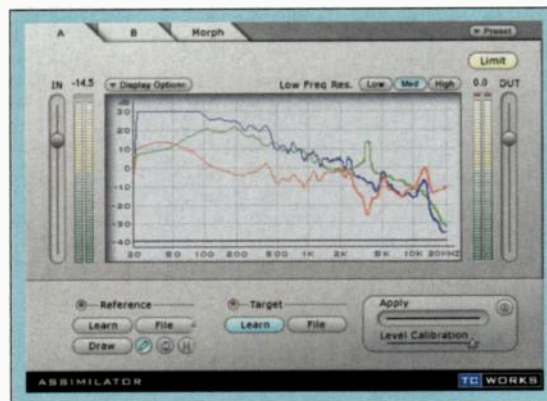
puter, 64 MB of RAM, and Mac OS 8.0. Blueshock; tel. (831) 335-2776; e-mail tsunami@blueshock.com; Web www.blueshock.com.

▶ TC WORKS ASSIMILATOR

If you've ever coveted the sound of another mix, consider TC Works' *Assimilator* (Mac/Win; \$299), a VST plug-in for the company's Powercore DSP card. The plug-in captures the EQ curve of any reference mix using a Fast-Fourier Transform (FFT) and applies it to your program material using multiband EQ. *Assimilator* provides phase-linear processing that TC claims is equivalent to thousands of bands of EQ. Powercore's engine allows you to run four instances of *Assimilator* on a single card.

Assimilator's interface is simple;

two mouse clicks capture the reference material's EQ curve, and the Apply fader lets you adjust the amount of influence on



the target audio material. You also get a Morph page that lets you combine different sets of curves and provides an on-screen fader for adjusting and automating settings.

Although the required Powercore card handles *Assimilator*'s DSP tasks, Mac users will need at least a G3/300 MHz, Mac OS 8.6, a VST host application, and enough RAM to meet the host's requirements. PC users will need a Pentium III/500 MHz; Windows 98, 2000, ME, or XP; and enough RAM to accommodate the host program. TC Works; tel. (805) 373-1828; e-mail us@tcworks.de; Web www.tcworks.de.

▶ Z-SYSTEMS OPTI-PATCH+

As more and more personal studio components rely on digital I/O, routing your data and reconciling multiple I/O formats becomes increasingly complex. The single-rackspace *Opti-Patch+* (\$999) from Z-Systems provides an easy-to-use routing matrix for multiple streams

of S/PDIF or 8-channel ADAT Lightpipe data. The unit can route 15 sets of ins and outs in either format for a total of 120 asynchronous channels of ADAT Lightpipe I/O or 30 channels of S/PDIF.

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supports 24-bit word lengths and sample rates as high as 192 kHz. Port-to-port latencies are matched, providing synchronization between channels. The unit is powered by an included 9 VDC power supply. Z-Systems Audio Engineering; tel. (352) 371-0990; e-mail z-sys@z-sys.com; Web www.z-sys.com.



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▶ LINPLUG ELEMENT P

Element P (Mac/Win; \$39) is a VST synthesizer plug-in that focuses on percussion and bass sounds and offers an alternative to stock TR-808 and TR-909 emulations. Element P can yield 30 notes of polyphony and 8 multitimbral parts (depending on how much your computer's CPU can handle), and the program comes with 128 presets to get you started.

You get four envelopes: pitch, timbre, noise, and volume. According to the manufacturer, the synthesizer's envelopes are extremely fast in order to accommodate the needs of percussion program-



ming. Although LinPlug has declined to disclose synthesis engine details, the company claims that the plug-in uses a technique similar to frequency modulation (FM).

Parameters are few and simple, but all can be altered and automated using MIDI Control Change messages. You get six monophonic audio outputs, and you can

route outputs to the host program for additional VST processing. For the Mac, Element P requires a G3/300 MHz, Mac OS 9, and enough RAM to support the host application. Windows users need at least a Pentium II/233 MHz, Windows 98, and sufficient RAM to support the host. LinPlug; e-mail support@linplug.com; Web www.linplug.com.

▼ HARTMANN NEURON

Hartmann's Neuron synthesizer (\$4,999) bases its engine on analysis of audio files to create models of the incoming sound and its behavior. After audio data is sampled and analyzed by the company's optional proprietary software application, ModelMaker (Mac/Win), you can edit and combine unique parameter sets for each sound in real time. Intuitive real-time controls abound; the keyboard sports five joysticks and twelve infinite rotary encoders.

The basic structure of a Neuron sound

has two signal paths called Resynators, each of which holds a synthesis model. You can edit and modulate Resynators independently. The unit's Blender function lets you mix or merge the results in a variety of ways, including morphing and crossfading. The filter section provides a 12 dB high-pass, a 24 dB lowpass, a 12 dB lowpass, and a bandpass filter. Digital multi-effects processors are integrated into the filter module and the patches retain effects settings even when the synth is used as a multitimbral instrument. The envelope

generator offers three ADSR-type EGs per Resynator, an ADSR amp envelope, and a user-definable EG. You can configure the definable envelope into two additional ADSRs or a single EG with four rates and levels.

The Neuron provides several ways to sample audio: unbalanced 1/4-inch stereo analog inputs, coaxial S/PDIF I/O, or the built-in USB port. You can store models on Neuron's built-in 20 GB hard drive or offload them to any USB storage device.

Other I/O includes MIDI In, Out, and Thru jacks; six user-definable unbalanced 1/4-inch analog outputs (configurable as 5.1 surround, six monophonic, or three stereo outputs); 1/4-inch TRS jacks for a footswitch and expression pedal, and a stereo headphone jack. GSF Agency/TSI International Sales (distributor); tel. (310) 452-6216; e-mail hartmann@hartmann-music.com; Web www.hartmann-music.com.



▼ NADY AUDIO SDP-20

Nady Audio's SDP-20 (\$174.95) is a dual-engine multi-effects processor with 256 presets and 20 user programs. The effects include reverb, delay, echo, flange, gating, chorus, pitch shift, rotary speaker simulation, and overdrive. The SDP-20

also includes a discrete 4-band digital EQ.

The SDP-20 has 20-bit, 44.1 kHz converters with 128x oversampling. Internal processing is at 20 bits. The front panel offers push-button programming in conjunction with a rotary encoder, and you can address all functions and param-

eters with MIDI Control Change messages.

The processor features balanced 1/4-inch and XLR analog inputs and outputs, as well as MIDI In, Out, and Thru jacks. Nady Systems, Inc.; tel. (510) 652-2411; e-mail ussales@nady.com; Web www.nady.com. ●



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Virtual-Orchestra Maestro

While manipulating digital audio is all the rage among many electronic musicians, San Francisco-based composer Jerry Gerber is excited about the possibilities of MIDI. "I look at MIDI as an art form, not as a mock-up for some other medium," Gerber says. "We're a long way from where we were ten years ago. The tools have evolved and the samples have gotten better. I'm interested in blending fine art and electronics. Electricity is a fundamental force in the universe. Making music with electricity is just another extension of humankind's desire to make tools and make music with those tools."

Gerber works in his personal studio, composing music for film, video, television, radio, and computer games. He also composes modern classical music for electronic instruments, and *Moon Festival* is his most recent release. It showcases his lush, expressive, and highly dynamic MIDI ensembles. Soprano Janet Campbell's operatic vocals are featured on the album's centerpiece, a suite titled "Five Songs on the Poetry of Tu Fu," which is based on eighth-century Chinese poetry.

"A sequencer can play things right on the beat, but that doesn't make it mechanical," Gerber says. "It reveals the weaknesses in a composition. You have to work hard to create gesture and expression in your phrases so they sound natural, so there's a sense of punctuation." Gerber researches sounds from his sample libraries, synthesizers, and samplers; builds ensembles; and sequences his ideas in Cakewalk's Sonar—his primary tool for composing, recording, editing, and mixing. He uses Steinberg's WaveLab for mastering.

"I start every piece in Sonar. I do all my composing in the notation view," he says. He manipulates the MIDI parameters of each note to infuse the performance with human

Jerry Gerber

works to unleash

the full potential

of MIDI.



expressiveness. "It's time-consuming; it isn't magical," Gerber says of the process. "I pay attention to details."

As for building MIDI ensembles, Gerber says "orchestration is like sculpture: you get rid of everything you don't need. I don't follow the way an orchestra is set up onstage because our ears hear a recording differently than a live performance. I try to find a balance between each instrument. Transparency is an important value in orchestration."

Gerber uses three Pentium III PCs—one serves as his digital audio workstation and the other two run Tascam's GigaStudio. His studio also includes an Echo Digital Audio Layla24 digital audio interface and a Mackie Digital 8-Bus mixer. A Roland XP-30 synth serves as his MIDI controller, driving Roland JV-1080 and XV-3080

synth modules and E-mu E6400 and E6400 Ultra samplers. Gerber recorded Campbell's vocals in a WhisperRoom isolation booth using an Audio-Technica AT4033 condenser mic.

Gerber's "stock sounds" for *Moon Festival* include Illo Entertainments' *Miroslav Vitous Symphonic Orchestra String Ensembles* sample library; Dan Dean's *Solo Brass*, *Solo Strings*, and *Solo Woodwinds* sample libraries; and E-mu Emulator sample libraries for percussion sounds. "I'll go through hundreds of sounds to find one [sound], and even then, I might edit it," Gerber says.

"I enjoy being a composer more than a sound designer," Gerber adds. "I enjoy working with counterpoint, harmony, and structure. You can do so many things with a virtual orchestra that you can't do with an acoustic orchestra, and vice versa. You have to know the limitations of the medium." ☺

For more information, contact Ottawa Records; Web www.jerrygerber.com.



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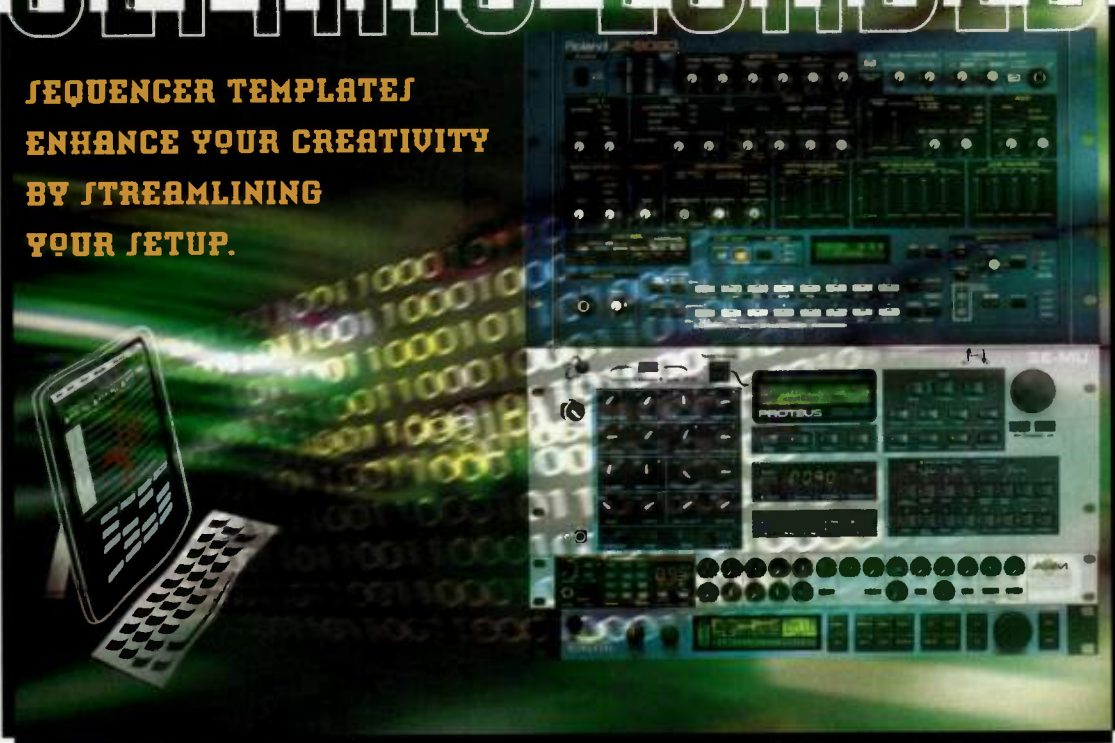
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BY NICK BATZDORF

It's time to work on some music. You boot up your computer, start up your sequencing program, turn on your MIDI instruments one by one, and begin setting up the instruments with the sounds that you think you'll need on various channels. You take out some sample CD-ROMs to load, scroll through lists of patches on synthesizers, maybe bringing up some reverb to listen to while you're working (making certain that the instruments are routed to the reverb), and then bring up faders on your board.

In the sequencer, you create a new song and a few new tracks and make sure everything is talking over the right MIDI channels. You might set up some software instruments, as well. Time elapsed: a good half-hour.

At this point it's obvious why people

who have to churn out a lot of music in a short period of time have racks full of samplers and synths, all fully armed and loaded. They leave their studios powered up all the time, and they have configured their sequencers so that they can just select the sounds they want and get to work. A well-constructed sequencer template can organize your sound palette and substantially reduce the amount of time you spend searching. If you're dealing with a more modest rig, templates can help automate the startup process so that when your gear fires up, it's all ready to go. Here are some strategies for setting up sequencer templates.

ON THE SAME PAGE

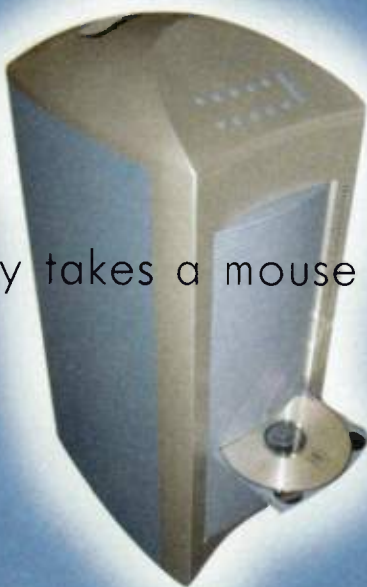
Sequencer templates are simply song files that you use as starting points. They probably don't contain any music,

although they certainly could (see the sidebar "A Good Track Record"). It's perfectly legal to create more than one template for different situations.

The template can be the default sequence that opens when you start up your sequencer, but it doesn't have to be. Steinberg Cubase Audio and Emagic Logic call this default sequence the Autoload file. In MOTU Digital Performer the startup sequence is stored in the program's Preferences file. Cakewalk Sonar opens a default file called normal.tpl (the file extension is an abbreviation of template). Sonar lets you create templates for different applications; each one is saved with a TPL extension. You can load a template that is relevant to a specific project type in an instant. Renaming a file normal.tpl creates Sonar's default sequence.

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You'll probably want to lock your template files to prevent them from being overwritten accidentally when you save your work. On a Macintosh, you lock files in the Finder's Get Info dialog box; then when you save your work the first time, you'll get the Save As dialog box to rename the template. To protect a file in Windows, you right-click on it in the Windows Explorer File Manager view and set it to Read Only in the Properties dialog box.

Having said that, a central feature of sequencer templates is that they're constantly evolving. While working, you'll almost certainly set something up that

you'll need to add to or modify in the template. This is especially true of screen sets, which are snapshots of the arrangement of the windows you work with (Sonar calls them Layouts). You can resize and arrange windows to suit your working style and save your layout as a screen set. Consequently, your last song—minus the music—often evolves into your next template.

SOUND PLANNING

Without wanting to suggest that you should box yourself in by using the same tired patches over and over, it's safe to say that most musicians have core sets of sounds that they always come back to, at least within a given type of project. We all have our signature sounds, along with our favorite drum kits, bass patches, and so on. You might also have one template for orchestral writing, one for contemporary

electronic music, and another for acoustic instruments. The goal is to have your core sounds load automatically at the beginning of the session.

The first thing you'll want to do, though, is decide which MIDI channels you're going to use for specific categories of sounds. For example, you may want to use Channel 10 for drums to accommodate a General MIDI drum kit. With those channels reserved for core sounds, you can dedicate different channels to sounds that are unique to the project you're working on, without disrupting your base setup.

Another approach you can take is to dedicate certain synths and samplers to specific groups of sounds. Obviously, that won't work when sounds are available on only one instrument. But if you have two samplers that can read, say, the same Akai-format discs, then you could use one for your core sounds and the other for project-specific sounds.

PATCHING THINGS UP

Getting sequencer templates to call up patches on synthesizers and other MIDI devices is easy (that's not the case with samplers, which I'll discuss shortly). Just assign tracks to the appropriate MIDI channels, and the sequencer will send MIDI Program Change messages to call them up. For this to work, however, you need to provide patch lists for all your instruments so that the sequencer knows which bank and Program Change numbers to send.

Whatever they're called in your sequencer (for example, Patchlists in Performer and Instrument Definitions in Sonar), patch lists let you call up synthesizer programs by name rather than by bank and program number. Sequencers generally come with patch lists of factory patches for many popular synthesizers, and you can usually find lists for other instruments floating around the Internet. If you cannot find a list for your instrument, or if you want to catalog user programs that you've added, you'll need to create your own.

Where you create patch lists depends on the MIDI driver that your sequencer

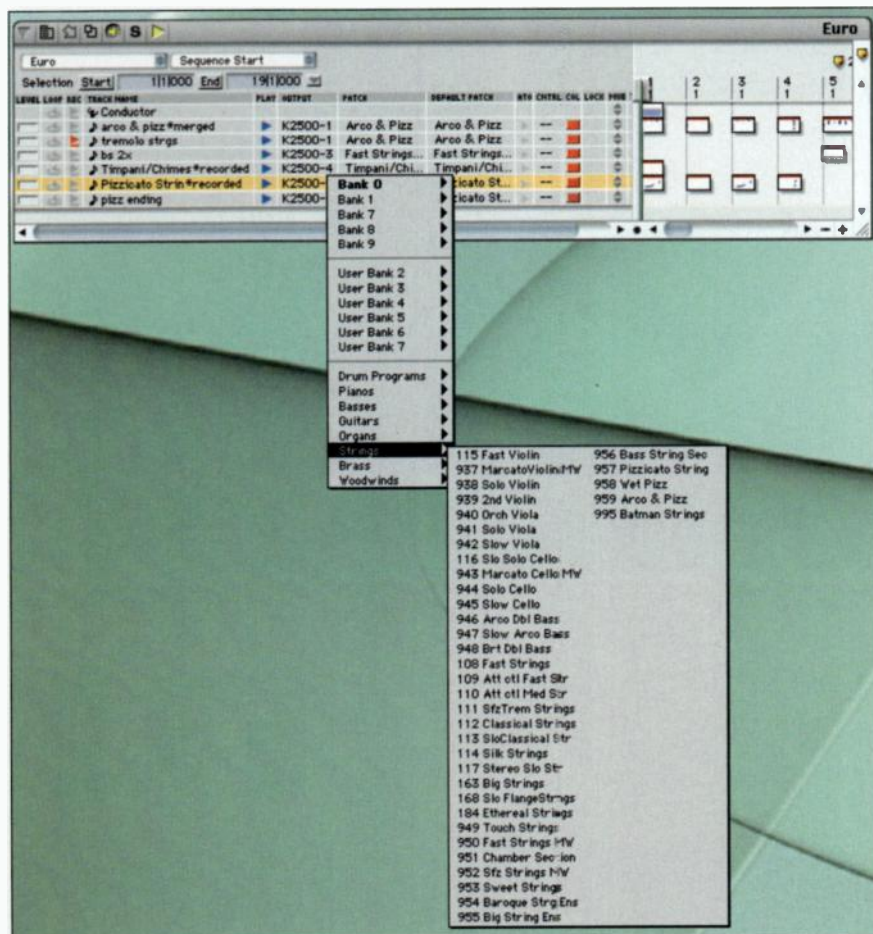


FIG. 1: This FreeMIDI patch list for the Kurzweil K2500 in MOTU Digital Performer shows an open Strings folder. Folders for specific categories of instruments make selecting patches very easy.

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The most modern, reliable equipment is an important requirement for successful professional music production. Apple has created an operating system that more than meets these special demands: Mac OS X. With the release of Logic Platinum 5.4, Emagic is the first manufacturer to deliver a host program that supports Audio Units, Apple's new, system-level standard for DSP plug-ins. In addition, Logic Platinum 5.4 for OS X contains over 50 integrated effect plug-ins and support for all Emagic's optional Software Instruments (right). REX files are also supported, as is Emagic's current range of audio, MIDI and controller hardware. Choose the unrivaled complete studio solution for Mac OS X to fulfill the most important requirement for your success.





is using. If you're working on a Mac, you probably know about Open Music System (OMS), a standard MIDI driver that all Mac sequencers either can or (as with Digidesign Pro Tools) must use. When the sequencers are not using OMS, they're using their own MIDI drivers.

OMS comes with lists of factory patches for a good number of instruments, and you can create your own lists using OMS Names, a free utility program. MOTU's equivalent to OMS is called FreeMIDI, and it comes with even more lists of factory patches. FreeMIDI can run under OMS if necessary, and by tossing out a couple of OMS items you can force OMS to use FreeMIDI's patch lists. (See the support sec-

tion of MOTU's Web site, www.motu.com, for step-by-step instructions.)

FreeMIDI patch lists are text files that you can create in any word processor or text editor. A great feature of FreeMIDI's patch lists is that they can organize programs into folders, so programs can be grouped into categories such as keyboards, basses, and strings (see Fig. 1).

The Mac versions of Cubase and Logic can run under their own MIDI drivers and under OMS. Cubase can be instructed to use OMS patch lists when it's using OMS; Logic requires that you create a text entry for each patch name one by one directly in its Environment window. Typing in a list of individual patch names is a tedious process. However, some programs can use MIDI System Exclusive (SysEx) commands to ask synthesizers to let you paste names in a bank at a time.

There are lots of programs that can perform that trick. The best tool for it—and for program management—is a

patch editor-librarian. Emagic's SoundDiver is a good one that used to come in both Mac and Windows versions (the Windows version is due to be discontinued by the time you read this); MOTU offers Mac and Windows versions of Unisyn; and Sound Quest's MIDI Quest is a prominent Windows editor.

SoundDiver and Unisyn work hand-in-hand with their manufacturer's sequencers and automatically update your patch lists. Moreover, they can transfer SysEx data from your entire system to your sequencer as a bundle, so you can retrieve a new bank of patches and the new names will show up in your patch list. MIDI Quest is independent, but its integration with Sonar is extensive. For one, it can save patch lists in Sonar's master.ins file, which keeps track of instrument definitions. More than that, it comes as a Cakewalk plug-in that can be assigned to a Sonar track, where it can send blocks of SysEx data to your MIDI

A GOOD TRACK RECORD

Consider saving templates with favorite parts and other MIDI data. For example, you might want to use that perfect samba groove as an inspiration for your next samba. You can always program another drum part later; the point is that your groove will surely provide more inspiration than a click track when you are sketching out the new parts. Digital Performer provides a Clippings folder that lets you store your favorite sequencer information. All versions of Cakewalk's sequencers contain Session Drummer, a drag-and-drop collection of MIDI drum grooves to get you started (see Fig. A). Cakewalk's sequencers and Digital Performer all let you capture MIDI grooves for quantizing templates—it's a good idea to capture and store them for your next project and easy recall.

Those who use MIDI controllers other than keyboards will need to shape their templates in different ways. If you're a MIDI guitarist, for example, you'll want



FIG. A: Cakewalk sequencers store a wide variety of MIDI drum grooves in the Session Drummer plug-in, letting you quickly build a drum track and move on to other parts.

to take advantage of the independent MIDI output of each string. If your sequencer can't record discrete multiple MIDI channels onto a single track, you'll have to create a track for each string, assign each track's output to a different MIDI channel, and give each track an

input based on the MIDI output of a corresponding string (first string to channel 1, second string to channel 2, and so on). To make the most of your controller in that setup, it's best to embed Pitch Bend Change messages in each track so that you can quickly set them all up for a Pitch Bend range that matches your controller's output. Embedding preferred Pitch Bend ranges in tracks is a good idea for keyboardists, too.

Consider embedding other types of data in your tracks as well. Pan Position, MIDI Volume, Expression levels, and Control Change messages that adjust filter cutoff settings, for example, can get you off to a good start. You can even store your favorite curves for MIDI Volume messages if you need to revisit that perfect sforzando volume curve. Make sure to save these in a Clippings folder or a muted track so that they don't affect your sequence in the wrong place at the time.

—Marty Cutler

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instruments. Because all of MIDI Quest's windows are available from the plug-in, you can fine-tune your patches on the fly.

Don't make a big investment in an editor-librarian just to grab patch names for your sequencer; there are lots of inexpensive and free instrument-specific editor-librarians and utilities. For example, FreeMIDI is freeware and comes with a utility called Patchlist Manager that requests patch names. Jeff Glat's freeware MIDI Patch Lister (Win) lets you grab patch names from your synths and paste them into the sequencer of your choice. You can download the program—and much more—from his Web site (www.borg.com/~jglat).

You'll find scads of editor-librarians at any of the music shareware Web sites, and many will let you pull patch names en masse into a text file to import into your sequencer. A casual glance at the Shareware Music Machine site (www.hitsquad.com/smm) revealed editor-librarians for BeOS, DOS, Unix, and Atari as well as Mac and Windows operating systems.

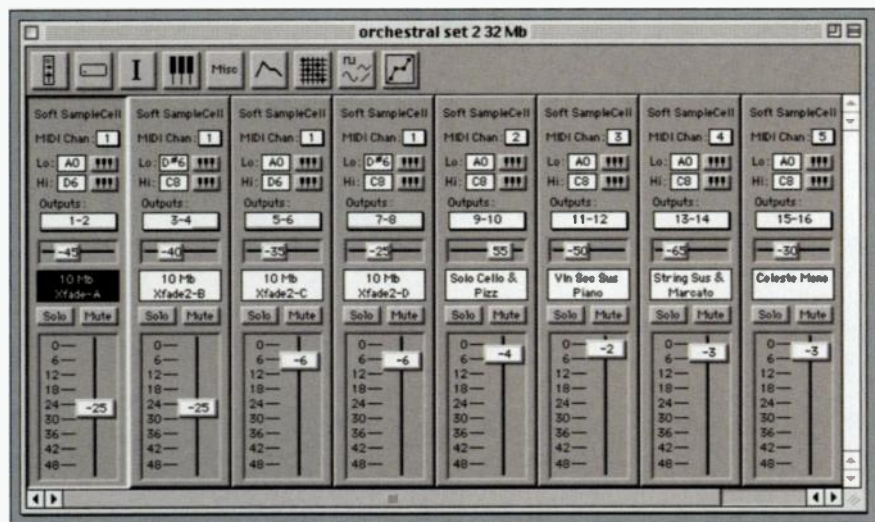


FIG. 2: This is a fairly small Digidesign Soft SampleCell bank. Banks provide a quick way of loading sample programs en masse.



FIG. 3: In Emagic Logic, selecting the "strgs" folder at the top of the main Arrange window (right section, above) shows its contents in the other Arrange window (left section). Folders are good for organizing instruments and for abbreviating the track list if it becomes unwieldy.

SAMPLE LOADING ZONE

Getting samplers to load programs when they're powered up is nothing new. As far back as 1985, the Sequential Prophet 2000 would load the floppy disk in its drive when you turned it on.

Many modern instruments are capable of doing the same thing, often in a more advanced way. For example, Kurzweil samplers from the K2000 on up have Boot Macro, which loads all kinds of data on powering up. It will even prompt you to insert missing media if necessary.

You can also record Kurzweil Macro

files as SysEx data into your sequencer templates; play the data back, and your programs will automatically be loaded on the correct MIDI channels. The Roland S-760 has almost identical functions. Korg's Triton samplers let you save everything related to a project in a single folder. They do not automatically load sample data on startup, but once a Triton is on, the folders let you load related samples, programs, combinations, internal effects bus assignments, and global information data in one fell swoop.

E-mu EOS machines have an auto-loading feature, as well as the Magic Preset feature, which can load a bank on the fly when it receives a Program Change message. Most Akai samplers have an autoloading feature, and most older Akai models have a feature just like the E-mu Magic Preset. Clearly, it's well worth a trip to the manual to find out whether your sampler (if it's not one of the above) can load sounds automatically.

Digital Performer offers a Samplers window from which you can store samples with your sequence and send them out to your samplers. However, the transfer provides only raw sample data; keymaps, envelope parameters, filter settings, and such are not transmitted. In order to have your sampler ready to play, you'll need to store the raw sample

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data in Digital Performer and capture SysEx data as it pertains to the programs you require.

SOFT MONEY WELL SPENT

Software-based instruments make child's play out of this whole endeavor. You just arrange the instruments on tracks with the patches and samples

they should have, and the entire snapshot is saved with the sequence file.

Digidesign Soft SampleCell and the original PCI card-based SampleCell let you create Banks, which are groups of instruments that all come up when they're loaded (see Fig. 2). This is a great way to load lots of instruments at once, and these Banks are independent of your sequencer templates.

Like standalone samplers and SCSI hard drives, an inexpensive IDE hard drive inside your computer can hold immense sample libraries. The latest disk-streaming samplers take full advantage of that capacity to access samples as large as you need them to be.

There are five disk-streaming samplers available today: Tascam's Gigasampler series (Win), which started the phenomenon; Steinberg's HALion (Mac/Win); Emagic's EXS-24 (Mac; the Windows version is scheduled to be discontinued by the time you read this); Bitheadz's Unity Session (Mac/Win); and Speedsoft's VSampler (Win; distributed by CakeWalk). Many people run Giga-series samplers on a standalone machine: they can practically set themselves up. The same applies to any computer being used as a standalone soft-instrument machine. Windows offers an Autoexec folder; anything put inside the folder will launch as soon as you turn on the computer. The Startup Items folder serves that purpose on the Mac.

Propellerhead Reason (Mac/Win) is a popular pattern-based sequencer that controls several soft instruments you load into its rack. Using a system called ReWire, it can stream its output into another sequencer. If you use it, be sure to assign tracks for it in your sequencer templates.

THE PALETTE

If your goal is to be able to sit down, click on a track, and start recording on it, your only solution is for the template to have a list of tracks set up with all your sounds. The problem is that long lists can quickly become unwieldy, es-



FIG. 4: Another way to organize sounds in Logic is to put them in their own Environment layers. Dragging the "vln leg" icon (which represents a sample program loaded into a K2500 on MIDI channel 1) from this layer onto a track in the Arrange window behind it is all it takes to assign that track.

pecially if you're using large sample libraries and you need to have, say, 15 different string articulations alone. (Because this scenario is so common, the top-of-the-line Giga Studio 160 can access 64 MIDI channels.) It helps to map multiple sounds onto the keyboard when possible rather than using separate MIDI channels for each one. Not only does that make sounds more playable and reduce the track count, it conserves MIDI channels.

Cubase and Logic both have a Folder Tracks feature that lets you pack multiple tracks into a single track that only opens when you double-click on it. That would allow your hypothetical 15 string tracks to take up only one space in the list. You can use these tracks as palettes in Cubase; when you find the one you want, you can "unpack" it onto the main track list.

Logic can unpack only the entire folder, but you can get around that limitation by opening two Arrange windows, which are the same as the standard track windows at the heart of every sequencer. In Fig. 3, the main Arrange window shows the entire piece of music; the second Arrange window is linked to the first so that it shows the contents of the string folder when you click on the folder icon in the main Arrange window. A second monitor can really come in handy here.

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Another way to organize sounds in Logic is to use separate Environment layers for each category of sounds (see Fig. 4). For example, your strings would all be in one layer. Rather than using a Multi-instrument (in which all 16 MIDI channels in a multitimbral device are represented by one icon) for a device, you'd use regular single-channel Instruments for each sound. You could even choose violin icons for the string sounds. Then you would simply locate the Instrument icon for the patch you want and drag it onto a track in the Arrange window; the track will take on the correct assignment.

In any sequencer, it helps to consider the order in which you place your tracks. Most people put them in score order, but any system that makes sense to you is as good as another.

MIX AS YOU GO

Working with audio and MIDI tracks side-by-side can blur the lines between what used to be separate stages (such as writing, performing, editing, mixing, and mastering) in the production process. It has become normal to do a lot of the mixing as you go.

Just as it's helpful to ready sounds for writing in a sequencer template, it's a great idea to include effects and signal processing the way a mixer would set them up initially. This is particularly easy if you're using plug-ins, but almost all hardware digital-effects processors can have their programs called up by patch changes. The effects and processes will almost certainly need fine-tuning for each piece of music, but there's no reason not to get a head start.

A typical rock mix might have a

large-space main reverb; a plate or smaller reverb; depending on the style, some tempo-synced delays set to various musical values; and, of course, EQ and compression on all the mixer channels. The mix might also have a "spreader" program consisting of dual hard-panned delays set to about 15 and 40 ms and possibly detuned a couple of cents from one another. That simulates walls in a room to add some dimension. Spreaders are great for a lot of things, including mono synth programs that need some depth. If appropriate, you can then send the whole thing, wet and dry, through the main reverb.

BUT WAIT, THERE'S MORE

There are all kinds of other conveniences that you could easily include in a

good sequencer template. Maybe you need a switch that remaps Breath Controller messages to another MIDI controller number that your sampler understands, or perhaps one of your keyboards puts out too high a velocity for another instrument. Just about any sequencer today will let you create a control that can transform one MIDI message into another, and you can store that as part of a template.

Additionally, all of the sequencers mentioned here provide control panels that you can customize to let you animate synth parameters in real time. Merely save the sequence file with your new control panels as your default sequence, and they'll be ready to rock from the start. As sequencers develop more features and your working style evolves, you'll find more ways to save time and energy.

Nick Batzdorf writes articles and music in Los Angeles. Many thanks to Andrew Keresztes for inspiring this article, and to Mark Ayers and Andy Hardwake for their help.

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GOOD THINGS COME IN SMALL PACKAGES

BY MARTY CUTLER

*'Twas the holiday season and all through the house
Not a sound could be heard but the click of a mouse.
Crammed in, I elbowed by my synth and my board
All in an effort to get my songs heard...*

*Long after the neighbors had all gone to bed
Dreams of an iPod glowed warm in my head.
My studio had started to feel rather crowded,
And I couldn't quite see how to get it all routed—
When out in the night there arose such a clatter
I leapt from my chair to see what was the matter.*

*Away from my desktop I flew like a flash
Afraid that behind me I'd hear something crash.
I looked to the front yard where snowflakes still fell
Anxious that soundwise things weren't going well.
When what on my icy cold street should emerge,
But a red Astrovan that appeared on the verge
Of stopping in front of my house in the snow—
I knew in a moment it must be Steve O.*

*More rapid than FedEx with products he came,
And he whistled, and shouted, and called them by name;
"Now, Reason! Now, Pluggo! Now, Waves Native Platinum!
On, Roland! On Mackie! On Yamaba! Let us come!
To the top of the porch! To the top of the wall!
We'll deliver great gifts, every one of them small!"*

—Anne Smith

(with apologies to Clement Clarke Moore)



It's that time of year again. Shopping for gifts—and the anxiety associated with it—can bring out the humbug in anyone. With that in mind, **EM** comes to the rescue with a list of gear that is sure to please.

This year we decided to look at products that carry an enormous amount of usefulness and versatility in a deceptively small container: Swiss army-style synthesizers, processors, converters, and gizmos, if you will. In true seasonal spirit, **EM** editors gathered to argue, debate, cajole, wheedle, nitpick, and then argue some more in order to choose the products that offered the most versatility and bang for the buck. Happy shopping!



1 No studio is complete without a good set of monitors. JBL's compact, biamped **LSR25P** monitors (\$399 each) share design features with the company's larger LSR monitors. These shielded speakers are housed in aluminum cases and are perfect for use next to a computer monitor. The Boundary Compensation control lets you compensate for the effects of your work surface on the speaker's response. The LSR25Ps include front-panel volume and power controls and are designed for horizontal or vertical orientation. JBL Professional; tel. (818) 894-8850; e-mail info@jblpro.com; Web www.jblpro.com.

2 Røde's **NT4** (\$899) is a high-quality stereo condenser mic that is equally at home in the studio or in the field: it can run on 48V phantom power or on a 9V battery. The NT4 is preconfigured in an XY pattern and has a frequency response of 20 Hz to 20 kHz. The mic comes with an XLR adapter cable and a stereo miniplug cable, so you can use the NT4 with a portable DAT or minidisk recorder. Røde Microphones; tel. (310) 328-7456; Web www.rodemicphones.com.



3 Yamaha's **AW16G** (\$1,299) is a textbook example of something good in a small package. The AW16G gives you 16 tracks of 44.1 kHz, 16-bit recording and mixing; a built-in CD burner, which can rip tracks from audio or WAV-file CDs; drum-machine-like pads for triggering samples; a separate memory area for loop recording; and faders and knobs that transmit MIDI Control Change messages. All of this, in a device the size of a laptop computer, helps the AW16G stand well ahead of its class. Yamaha Corporation of America; tel. (714) 522-9011; e-mail info@yamaha.com; Web www.yamaha.com/proaudio or www.aw4416.com/e/16g.

All photography by Leslie Hirsch



www.emusician.com

4 Roland's **XV-2020** (\$695) is a half-rack synth that is ideal for the sequencing musician on the go. Its four oscillators are arranged in an assortment of signal-flow paths that add sonic versatility through its ring- and cross-modulation capabilities. The XV-2020 has 64 MB of waveform ROM (expandable to 128 MB with Roland's SRX cards), 64-note polyphony, 16-channel multiimbral capabilities, and multi-effects galore. Roland even throws in editor-librarian software (Mac/Win), so you can get into the heart of the instrument and build your own sounds. Roland Corporation U.S.; tel. (323) 890-3700; Web www.rolandus.com.

5 Dave Smith Instruments packed two analog and two digital oscillators in the **Evolver** (\$475), a pint-size, monophonic tabletop synthesizer. Evolver produces fat, evocative, and yes, evolving timbres. The analog oscillators handle sawtooth, triangle, and pulse waveforms, while the digital oscillators re-create all of the tangy wavetables from the venerated Sequential Circuits Prophet synthesizer. You also get a built-in sequencer and a pair of inputs for processing external audio. Dave Smith Instruments; e-mail dave@davesmithinstruments.com; Web www.davesmithinstruments.com.



You can tote and play Korg's **microKorg** (\$500) anywhere: this battery-powered synth and vocoder fits easily into a knapsack. The synth engine is actually the same one as in Korg's MS2000, offering

beefy analog-modeled textures, digital wavetable sounds, external-audio processing, an arpeggiator, and plenty of real-time control. The vocoder can freeze vocal formants, which can add wacky and wonderful characteristics to

incoming sounds. Five knobs transmit MIDI Control Change messages, and you can program the pitch and modulation wheels to send the controllers of your choice. Korg USA, Inc.; tel. (516) 333-9100; Web www.korg.com.

surface area than this magazine does but offers two mono channels with mic preamps and phantom power, two stereo channels, and a pair of tape inputs—for a total of eight inputs. In addition, the UB802 has a postfader aux send and a stereo aux return. Each channel has 3-band EQ, with low-cut filters added to the mono channels. Behringer U.S.A.; tel. (25) 672-0816; e-mail support@behringer.com; Web www.behringer.com.

8 packs two mic preamps and 24-bit, 96 kHz A/D converters into a diminutive package. A front-panel knob lets you add a touch of 12AX7 tube character to your signals, and the input control provides up to 20 dB gain. The DI/O includes ¼-inch unbalanced analog outputs and a S/PDIF coaxial output for desktop versatility. A.R.T.; tel. (585) 436-2720; e-mail art@artroch.com; Web www.artproaudio.com.

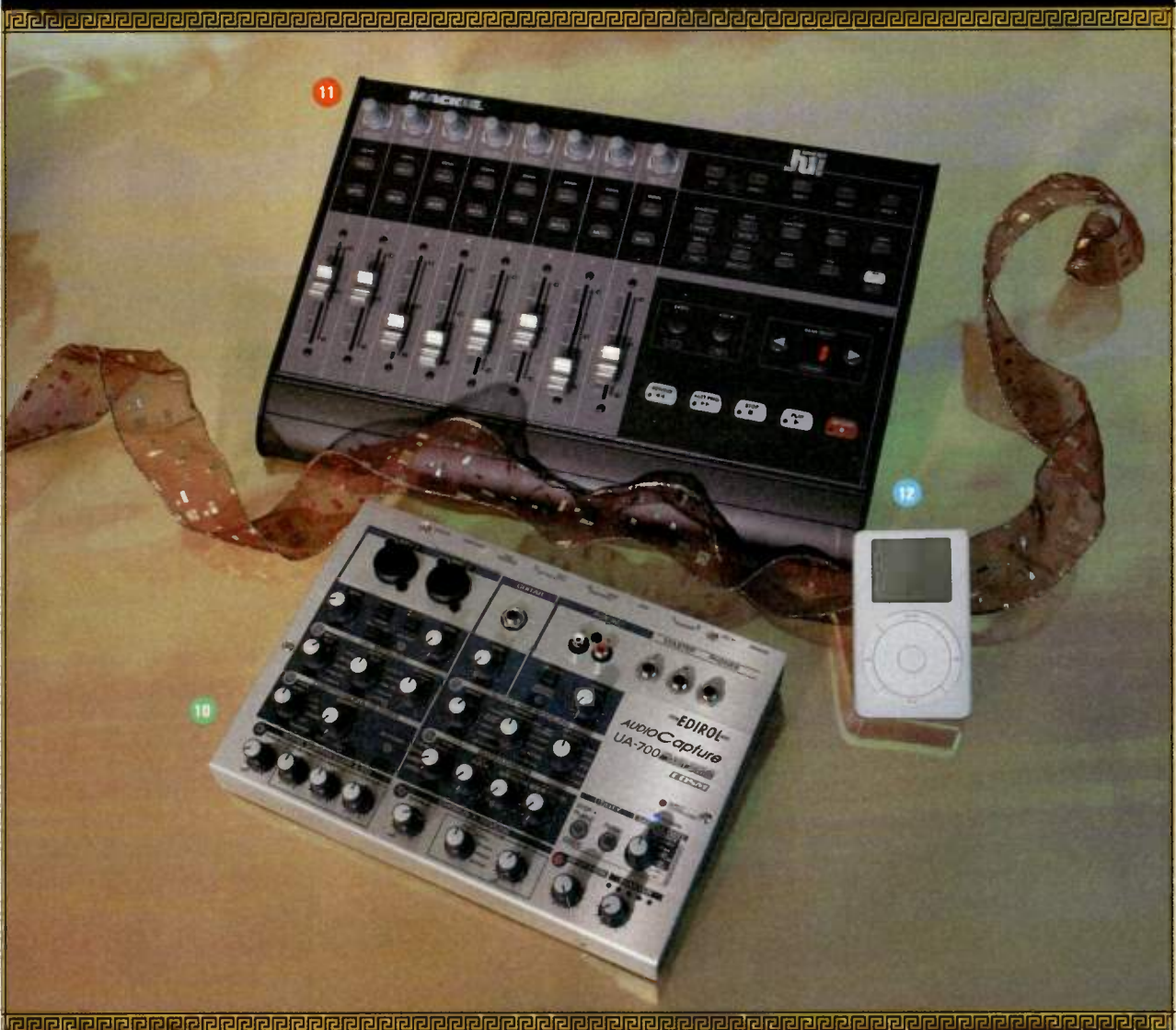


9 If your digital recording system isn't dishing up enough warmth, richness, or punch, check out the Joemeek MicroMeek MQ3 (\$299). This tabletop

optical compressor, and 3-band EQ. You can use the optical compressor at light settings to add warmth, increase the compression for more punch, or squeeze the living

tailored for instruments and vocals, make the MQ3 Meequalizer section easy to use. Joemeek/Penins Marketing, Inc. (PMI; distributor); e-mail themeeke

11 Mackie's **Baby HUI** (\$799), a compact version of its popular Human User Interface (HUI), offers eight channel strips, motorized faders, rotary encoders, mute and solo buttons, and an LED display. You can use the rotary encoders to change pan and send levels, arm channels for recording, or enable automation. In conjunction with the shift button, the encoders can perform additional tasks. Baby HUI is compatible with Digidesign's Pro Tools S.1 and Digi 001, MOTU Digital Performer, Steinberg Nuendo, and Mackie's Soundscape 32 and Mixtreme. Mackie Designs; tel. (800) 898-3211 or (425) 487-4333; e-mail sales@mackie.com; Web www.mackie.com.



0 Edirol **UA-700** (Mac/Win \$595) digital audio and MIDI interface gives you 24-bit, 96 kHz converters and a built-in COSM-based effects processor with guitar amp and mic-modeling capabilities. The UA-700's effects include EQ, chorus, reverb, and dynamics processors. There's also a phono input with a preamp so you can use your turntable as an input. The UA-700 uses a USB connector to interface with computers and comes with WDM and ASIO 2.0 drivers. Roland Corporation U.S. (distributor); tel. (323) 890-3700; e-mail edirol@edirol.com; Web www.edirol.com.

12 Apple **20 GB iPod** (\$499) is a pocket-size device that can store and play back uncompressed AIFF and WAV files, as well as MP3s. You can also use the iPod as a FireWire hard drive or even as a PDA with the help of third-party software—the freeware Musician's iPod Tools can be found at the Sweetwater Sound Web site (www.sweetwater.com). Windows users shouldn't feel left out; Apple offers Windows-compatible iPod software with MusicMatch software. Apple Computer; tel. (800) 538-9696 or (415) 996-1010; Web www.apple.com.

3 of Waves' most prized plug-ins—enough to cover chores from tracking to mastering. The newest plug-ins include the Linear Phase, which offers EQ without phase distortion; the Linear Phase Multiband, offering independent EQ, compression, and limiting on five discrete frequency bands; the L2 Ultramaximizer, for controlling gain; the Renaissance Bass, a pumped version of the MaxxBass low-frequency extension algorithm; and Renaissance DeEsser, which offers smooth and natural de-essing. Waves; (865) 546-6115; e-mail info@waves.com; Web www.waves.com.

14 station on a disk, replete with synthesizers, samplers, drum machines, and much more. Reason has an intuitive user interface; the virtual rack flips around revealing a patch bay and rear-panel inputs for everything in the rack. Reason includes a polyphonic analog modeling synthesizer, two samplers, a drum machine, a granular synthesizer, a loop sequencer, and a slew of effects processors. You can even use Reason inside any sequencer supporting ReWire. Propellerhead Software/M-Audio (distributor); e-mail info@propellerheads.se; Web www.propellerheads.se.



5 Cycling '74's **Pluggo** (Mac; \$199) comes with over 100 different plug-ins, with even more available on the Web. Pluggo opens up

with version 3, it is compatible with VST, VST2, MAS, and RTAS hosts. Pluggo includes a wide variety of delays, filters, granulators, reverbs, dynamics proces-

tools—from meat-and-potatoes effects to the esoteric and the bizarre. Cycling '74; tel. (415) 971-1818; e-mail info@cycling74.com; Web www.cycling74.com.

The Ultimate Bass Library



Illustration by Laura Williams

This is the first in a new series of features aimed at spotlighting the best available sounds. As the availability of sound libraries continues to grow, sorting out what's hot and what's not has become increasingly difficult. Reading detailed reviews is a great way to learn about the specifics of a particular product, but sometimes you need broad comparisons of products that share the same goals.

With that in mind, each installment of "In Search of . . ." will focus on a particular category of sounds or instruments, with the goal of featuring the best collections and illuminating their particular strengths. This new series will serve as an ongoing resource for demanding professionals as well as amateurs and hobbyists seeking the best sounds for their productions. Inclusion implies cream-of-the-crop status, so rest assured that this series won't be covering any inferior products.

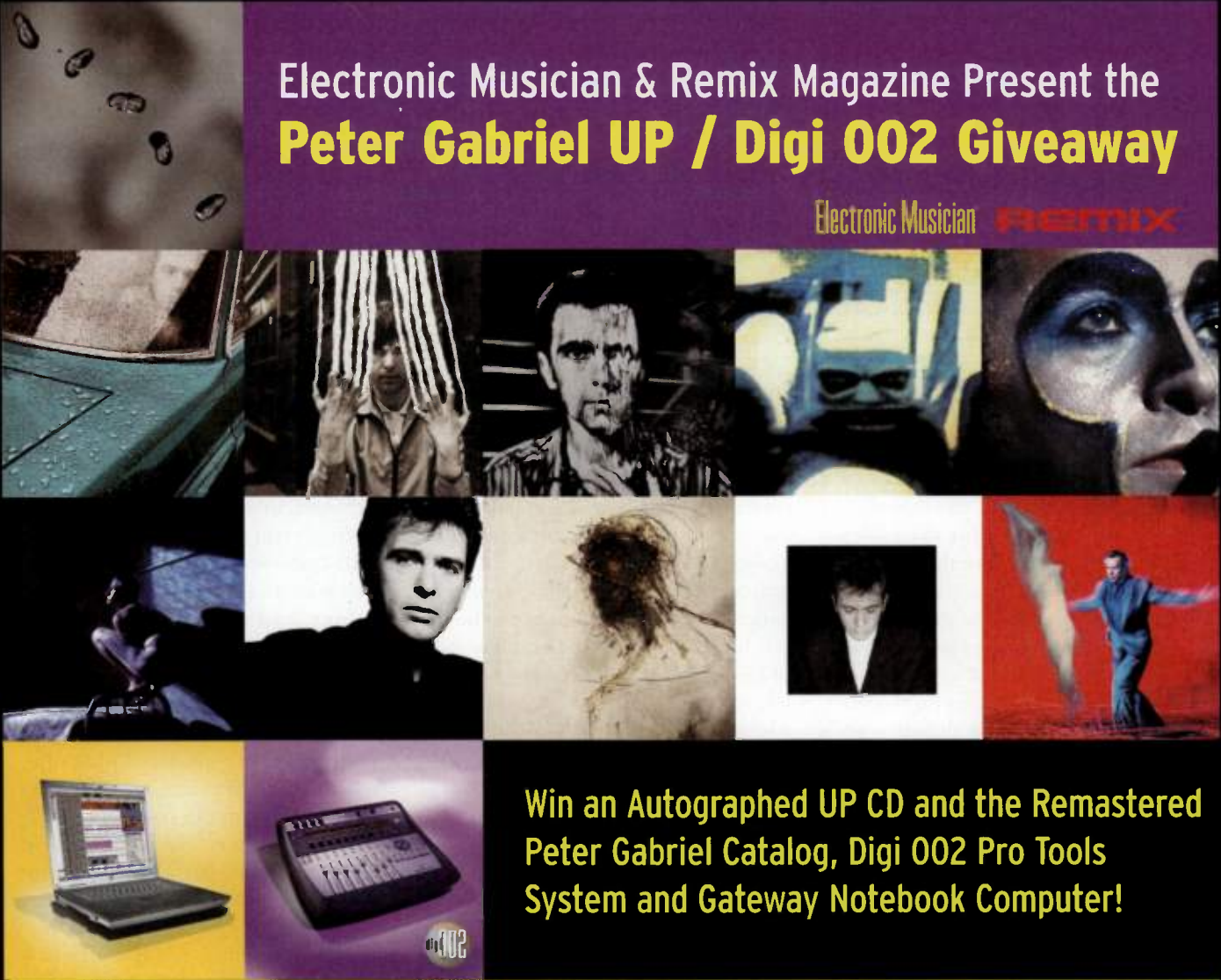
"In Search of . . ." will focus on sample libraries and custom synth patches, as well as soft synths, samplers, and their add-ons, because those areas are commonly the paths to upgrading sounds.

By Rob Shrock

We have omitted hardware units, as it would be impossible to include all of the available synths and sound modules in a continuing series of roundups. In the spirit of searching for the ultimate sounds in a given category, however, a particular piece of hardware will be mentioned if it's crucial to achieving that ultimate sound.

Achieving the perfect bass track for a song is an obsession for some folks. Certain professional mix engineers believe that if you nail at least the bass, drums, and vocals in a mix, it's much less likely to get vetoed by the record company or radio programmers, because everything else in the mix is only a matter of taste and style. Whether or not you agree with that philosophy, achieving a great bass sound usually takes some work.

Lots of excellent synth-bass sounds are available, but the subtleties of a good electric or upright acoustic-bass performance are much harder to capture in a sample. Out of all the bass guitar libraries available today, a dozen titles stand out.



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The Ultimate Bass Library

BIG FISH AUDIO

Old School Funk Bass (\$99.95; audio, WAV)

If bass patterns and grooves turn you on, then you'll love *Old School Funk Bass* (see Fig. 1). More than 460 loops lay down the funk, and the collection also provides hip-hop, disco, and other old-school grooves. The playing is great, and the tones, articulations, and feel will put you smack back in the '70s. Multisamples of the Vigier bass used for the patterns blend well with most of the loops. Unfortunately, the multisampled bass notes provide just one sample per chromatic note—with no variety of articulations—and the bass notes are fingered only.

The library is packaged on two discs. One is in audio format; the other gives you the same data in WAV format, which has been Acidized for software programs that take advantage of such capabilities. *Old School Funk Bass* is a great resource for songwriters, hip-hop producers, and commercial composers.

DAN DEAN

Giga Bass (\$149.00; Giga)

Giga Bass features 13 different instruments, including mono and stereo versions of an upright bass, an amplified Alembic five-string electric, an Alembic four-string Spoiler, a Fender Jazz, a

Fender Precision, and a direct and an amplified Gibson Thunderbird. Also found in the collection are a fretless Guild Ashbory, a five-string Guild Pilot, an amplified Hofner Violin "Beatle" bass, a direct Hohner fretless acoustic, several direct and amplified versions of a Rickenbacker 4001, a Toucan Fretless, and a Washburn AB-20 acoustic bass. Every chromatic note was recorded.

Giga Bass packs a lot of punch in a single library (see Fig. 2). Most basses have a few variations such as picked and fingered; neck, bridge, and both pickups; pops and slaps; amp and direct; and so on. *Giga Bass* makes clever use of Tascam GigaStudio's exclusive keyswitching feature, which uses a MIDI note outside the instrument's range to switch between articulations on the fly. For instance, keyswitching allows you to instantly switch between picked and fingered versions of the same bass as you play. *Giga Bass*'s keyswitching feature also works in Steinberg HALion.

EAST CONNEXION

East Collexion Bass (\$99.95; Akai)

Compared with some of the other libraries in this roundup, *East Collexion Bass* weighs in on the light side. The samples are labeled only as Pick Bass, Finger Bass, Jazz Bass, Slap Bass, Fretless, Dan-O Bass, Chapman Stick, and Wood Bass (acoustic upright). The 3.7 MB Chapman Stick bank is outstanding and works great in a track.

All of the included basses are very

good. Because most of the sounds are between 1 and 3 MB, *East Collexion Bass* is a good value if you don't have a GigaStudio rig or lots of RAM in your hardware sampler for bass-guitar sounds. More than a dozen good synth basses are also included (see Fig. 3).

EASTWEST

ProSamples, vol. 16, Guitar & Bass

(\$49.95; AIFF, Akai, audio, EXS24, HALion, WAV)

Culled from the *Quantum Leap Guitar & Bass* library, the two-disc *ProSamples, vol. 16, Guitar & Bass* aims for maximum compatibility by providing the included content in multiple formats (see Fig. 4). Only two basses are included: a MusicMan StingRay in hard and soft versions, and a Fender bass in soft, medium, and bend-up versions. *Guitar & Bass* also has a dozen or so useful acoustic and electric guitar sounds.

The package's value is in its flexibility and low cost. The quality of what's included is high. If you're interested in more sounds from this collection, look at the full *Quantum Leap Guitar & Bass* library, for Akai, Giga, Roland, and Unity formats, which adds another MusicMan (finger and funk), a Fender fretless, a slap bass, a "ChubbyFunk" bass, and a picked rock bass.

SAMPLEHEADS

Ultra Freakin' Bass

(\$99.95–\$179.95; Akai, audio, E-mu, Giga, Roland, SampleCell, WAV)

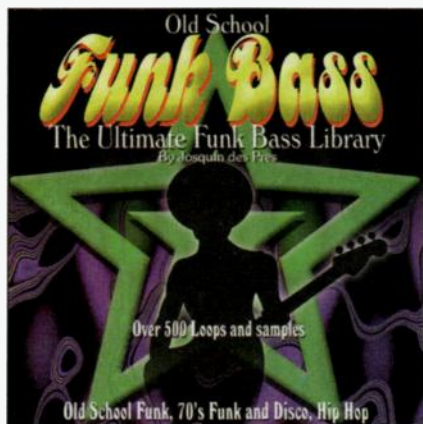


FIG. 1: *Old School Funk Bass*, from Big Fish Audio, supplies an assortment of bass grooves in funk, hip-hop, disco, and similar styles.

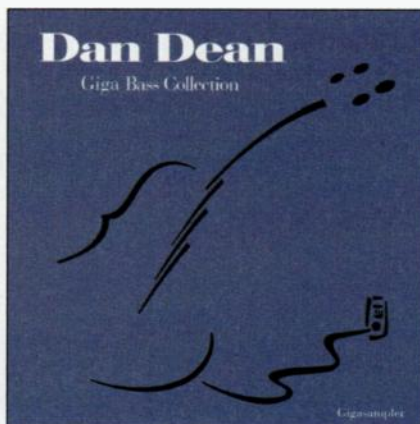


FIG. 2: Dan Dean *Giga Bass* takes full advantage of GigaStudio's keyswitching capabilities to vary the playing style.

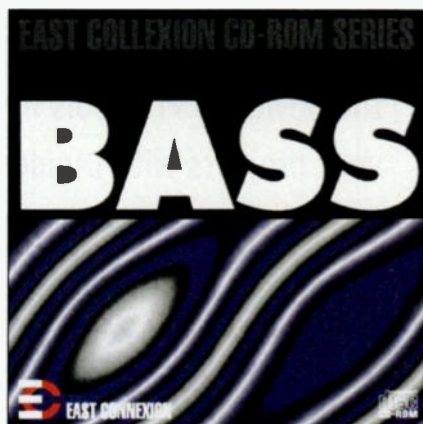


FIG. 3: *East Collexion Bass*, from Japanese soundware developer East Connexion, makes economical use of sample RAM.



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The Ultimate Bass Library

Also called *Will Lee Bass Library*, vol. 2, *Ultra Freakin' Bass* consists of licks, riffs, and grooves played by the master himself (see Fig. 5). A variety of styles are covered, and the performances are full of character. Tempos for the loops are provided, but the three new multisampled basses in the Giga version have a noticeably different tone than the loops.

Although the bass sounds aren't transparently integrated with the basses from the first volume (which I'll discuss next), with a little extra effort you can find some that match the loops. Using the library to its full potential feels a little improvisational, but both Will Lee libraries

have a "just relax and make music" vibe about them. If only a handful of loops work for your productions, then the collection is worth buying. Some of the performances are so good that *Ultra Freakin' Bass* can also serve as a private lesson in great bass playing. (Note that the Giga version is distributed by Tascam and not by Sampleheads.)

SAMPLEHEADS

Will Lee Bass Library

(\$99.95–\$149.95; Akai, audio, E-mu, Giga, Roland, SampleCell)

When it comes to character and attitude, the *Will Lee Bass Library* has them in spades. Eleven of Lee's basses were sampled chromatically, and care was given to preserving performance aspects such as fret noise and buzzes; these bass sounds drip with personality. Harmonics, mutes, pulls, slides, drops, x-notes,



FIG. 4: ProSamples, vol. 16, Guitar & Bass was compiled from *Quantum Leap Guitar & Bass*.

pats, stops, and other articulations add to the palette of performance colors.

Fender Jazz and Precision, Sadowsky 4-string and 5-string, Hofner "Beatle," Pedulla 8-string, Martin Acoustic 4-string, Yamaha acoustic fretless 5-string, Spector, APX, and

GETTING THE MOST FROM . . . BASS GUITAR SOUNDS

If you were to solo a track played by a world-class bassist, you would probably hear much more than just fundamental pitches holding down the roots of chords. In addition to pure notes, you would probably hear finger noise, slides, x-notes, and taps, as well as different articulations and dynamics. All of those performance elements add up to a bass part with much more life, energy, and interest than the typical keyboard player creates with a single bass patch.

Realistically emulating bass guitar takes work, though. Of course, note choice and register (octave) of the bass part are extremely important; you have to think like a bass player to create a compelling part. At some point, you might want to decide whether you're emulating a four-string- or a five-string-bass part, which will affect the range of notes you play.

One effective technique is to load your sequencer with patches for all of the articulations that you think you'll use for a specific bass part—long notes, staccato notes, slap notes, slides, x-notes, and so on—and assign them to different MIDI channels. Record the

basic bass part using a sustained fingered or picked sound; that will give you a context in which to work.

Once you've sequenced the basic track, it's time for some creative editing. Make a copy of the bass part (as a backup) and begin selectively cutting out notes and pasting them into tracks assigned to the other MIDI channels to create variety in the performance. As you edit, you'll hear places where you should obviously add a slide, thump, slap, or noise. Go ahead and add the broader strokes, but don't get too caught up in details yet.

The key to creating a great bass part is making it fit within the context of the entire arrangement. Keep in mind that some of the subtle details of a real bassist's performance get buried in the track. You don't want the part to become too busy before the rest of the instrumentation has taken shape, nor do you want to waste time on elements that no one will hear.

After you've sequenced a rough bass performance, move on to other aspects of the song. As you work on the other tracks, you'll inevitably find holes in

the bass part that need to be filled, as well as places where you need to add color. In some sections, you might even decide to delete slides or other colorations that sound like you were trying too hard. Use your instincts. Don't get too cutesy; bass parts aren't usually meant to be cute.

A great bass part is typically a foundation on which to build, so pick your moments of coloration wisely and make them count. When you're sequencing a detailed bass-guitar emulation, take the time to make sure you have a balance between a solid bass part and embellishments. A world-class bassist can usually achieve such a balance in just a few takes.

You might need to add some processing to tie all the various articulations together in a more cohesive manner, especially if you're combining sounds from different sample libraries. A little compression, EQ, or amp simulation can help combine slightly different timbres into a unified sound. Once you have the right combination of elements, you should print your composite bass part to a new audio track.

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The Ultimate Bass Library

Hamer 12-string basses are all included. When you use these sounds, it sounds as though a bass player played the part.

If you don't want to commit to an entire library of bass samples, you can download individual Giga, SampleCell, SoundFont, and WAV files from Sampleheads' Web site. They range in price from \$9.95 to \$24.95, and Sampleheads offers a 100 percent credit toward the purchase of a CD-ROM. (Note that the Giga version is distributed by EastWest rather than by Sampleheads.)

SCARBEE SAMPLE LIBRARIES

J-Fingered (\$139.00; Giga)

The designers of *J-Fingered* have taken the approach of focusing on capturing the subtleties and nuances of a single

bass guitar in enormous detail (see Fig. 6). Only one aspect of bass performance was captured in *J-Fingered*, which was created to complement Scarbee's *J-Slap* sample library. ("Light" versions of either disc are available for \$79 each, with an upgrade path to the full versions.)

In *J-Fingered*, Scarbee recorded almost 1,100 samples for each of three pickup settings (bridge, neck, and both) of a custom Celinder J Update 4 electric bass. I'm not familiar with that particular instrument, but it sounds stellar in this library. The sampling quality is superb and the detail is mind-blowing.

SCARBEE SAMPLE LIBRARIES

J-Slap (\$139.00; Giga)

If slap bass is your thing, it doesn't get any better than *J-Slap*. More than 900 samples are dedicated to each of the three pickup settings of the same Celinder bass. The slap samples are immaculate, and after hearing the avail-

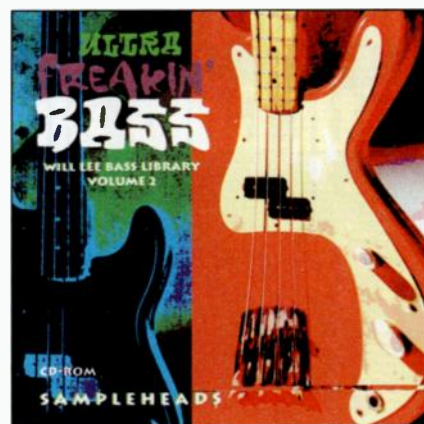


FIG. 5: Samplehead's successor to the popular *Will Lee Bass Library*, *Ultra Freakin' Bass* is a collection of licks, riffs, patterns, and grooves.

able nuances and performance potential of the slap bass sounds, you'll turn up your nose whenever a rerun of *Seinfeld* comes on the tube. Used together, *J-Fingered* and *J-Slap* give a well-rounded picture of a single instrument, though there are no picked bass samples.

Bass Sample Libraries

Manufacturer	Title	Formats
Big Fish Audio	<i>Old School Funk Bass</i>	audio, WAV (Acidized)
Dan Dean Productions	<i>Giga Bass</i>	Giga
East Connexion	<i>East Connexion Bass</i>	Akai
EastWest	<i>ProSamples, vol. 16, Guitar & Bass</i>	AIFF, Akai, audio, EXS24, HALion, WAV
Sampleheads	<i>Ultra Freakin' Bass</i>	Akai, audio, E-mu, Giga, Roland, SampleCell, WAV
Sampleheads	<i>Will Lee Bass Library</i>	Akai, audio, E-mu, Giga, Roland, SampleCell
Scarbee Sample Libraries	<i>J-Fingered</i>	Giga
Scarbee Sample Libraries	<i>J-Slap</i>	Giga
Sonic Implants	<i>Amps + Pickups</i>	Akai, E-mu, Giga, Kurzweil
Spectrasonics	<i>Bass Legends</i>	Akai, audio, E-mu, Roland
Spectrasonics	<i>Trilogy-Total Bass Module</i>	MAS, RTAS, VST; Mac/PC
Tascam	<i>Larry Seyer's Upright Acoustic Bass</i>	Giga
Yellow Tools	<i>Pure E-Basses, vol. 2</i>	Akai, EXS24, Giga

SONIC IMPLANTS

Amps + Pickups

(\$149.95; Akai, E-mu, Giga, Kurzweil)

If clean basses are what you want, you'll find them on *Amps + Pickups* (see Fig. 7). Bases include an acoustic upright; Spector slap bass; hard-picked rock bass; an Alembic bass that's picked, fingered, and slapped; and Fender Jazz and Precision basses. The well-recorded raw samples have lots of attack, almost to the point of sounding a bit generic.

Much attention went into programming the various formats, however. Each takes advantage of the effects and envelope capabilities of the hardware or software sampler for its format, which is where the character lies. (As a result, some of the cool programming in the Giga version I evaluated did not translate well in HALion.) One of my associates preferred the Alembic fingered bass in this library to everything else he heard. Plenty of cool guitars are on the disc, as well.

SPECTRASONICS

Bass Legends

(\$99.00–\$299.00; Akai, Audio, E-mu, Roland)

Although it's the oldest library in this roundup, *Bass Legends* is still one of the best (see Fig. 8). Three of the world's finest bassists—Abe Laboriel, Marcus Miller, and John Patitucci—teamed up on the bottom end. The two-CD set contains extensive multisampled basses and a great collection of chromatically multisampled grooves. Acoustic bass, Fender Jazz and Precision basses, fretless basses, and amplified basses combine into one of the most flexible and complete libraries available. It's also the most expensive sample library of the bunch.

SPECTRASONICS

Trilogy-Total Bass Module

(\$399.00; MAS, RTAS, VST; Mac/PC)

By the time you read this, the third of three new sample-based virtual instruments from Spectrasonics should be on the streets (see Fig. 9). I evaluated a beta

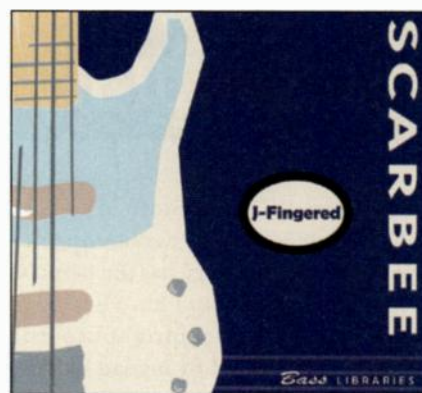


FIG. 6: Scarbee Sample Libraries *J-Fingered* and *J-Slap* will reward you for your meticulous editing efforts with its realistic performances.

version of Trilogy-Total Bass Module, a plug-in instrument that features acoustic, electric, and synth-bass samples. It has a slick and intuitive interface that works as a MAS, RTAS, and VST plug-in on the Mac and PC. The final release will contain about 3 GB of bass samples.

Description	Price
2 CDs. 1 audio CD and 1 Acidized WAV CD containing more than 460 hip-hop, old-school funk, '70s funk, disco, and basic groove patterns. Multisampled Vigier electric bass.	\$99.95
1 CD. Acoustic bass, Alembic 5-string and Spoiler, Fender Jazz and Precision, Gibson Thunderbird, Guild Ashbory fretless and Pilot 5-string, Hofner Violin "Beatle" bass and fretless acoustic, Rickenbacker 4001, Toucan Fretless, Washburn AB-20. Features keyswitching between articulations.	\$149.00
1 CD. Acoustic bass; Fender Jazz and Precision; finger, fretless, pick, and wood bass; various synth basses.	\$99.95
2 multiformat CDs. Includes the StingRay and the Fender basses from the <i>Quantum Leap Guitar & Bass</i> library.	\$49.95
1 CD. Grooves, licks, and riffs. Funk, fusion, jazz, Latin, R&B, rock 'n' roll, soul, and effects.	\$99.95 audio; \$129.95 WAV; \$179.95 Giga; \$149.95 other formats
1 CD. Fender Jazz and Precision, Sadowsky 4-string and 5-string, Hofner "Beatle" bass, Pedulla 8-string, Martin acoustic 4-string, Yamaha acoustic fretless 5-string, Hamer 12-string, Spector 4-string, APX 4-string.	\$99.95 audio; \$149.95 other formats
1 CD. Celinder J Update 4 electric bass.	\$139.00
1 CD. Celinder J Update 4 electric bass.	\$139.00
1 CD. Spector slap; upright acoustic; hard picked rock; Alembic fingered, picked, and slap; Fender Jazz and Precision; various acoustic and electric guitars.	\$149.95
2 CDs. Multisampled basses and grooves played by Abe Laboriel, Marcus Miller, and John Patitucci. Acoustic, amplified, electric, and fretless basses.	\$299.00 CD-ROM; \$99.00 audio CD
Virtual-instrument plug-in with 3 GB of electric, acoustic, and synth bass samples.	\$399.00
1 CD. Acoustic bass. Every note of every string sampled in stereo at 4 MIDI Velocities with no loops. Plenty of variations.	\$149.95
4 CDs (EXS24, Giga) or 3 CDs (Akai). Ibanez BTB 5-string, Epiphone Jack Cassidy, Warwick Streamer Stage 1 fretless. 4–8 Velocity splits per note.	\$149.95

The Ultimate Bass Library

The sounds I heard were excellent, though much of the programming was not yet finished. Trilogy has the best collection of synth basses I have heard. In addition, a fantastic upright acoustic bass is accompanied by myriad electric basses. According to Spectrasonics, all of the samples are brand new. Given the editing capabilities of its interface and the quality of sounds you always get from Spectrasonics, Trilogy will be a bass monster with thunderous potential.

TASCAM

Larry Seyer's Upright Acoustic Bass
(\$149.95; Giga)

A whole library dedicated to the upright bass, *Upright Acoustic Bass* rocks and rolls (see Fig. 10). If serious jazz, rockabilly, or country upright bass is what you're looking for, then you won't find a better sample collection. A Del Serra $\frac{3}{4}$ -size bass made in Pisa, Italy, in 1817 is sampled in exquisite detail. The programs are great, and the bass sound is fabulous. Taking full advantage of GigaStudio's capabilities, some layouts provide patches with one entire string per MIDI channel. One variation assigns the Mod Wheel to change fingerings on the fly, making it possible to play the full range of each string.

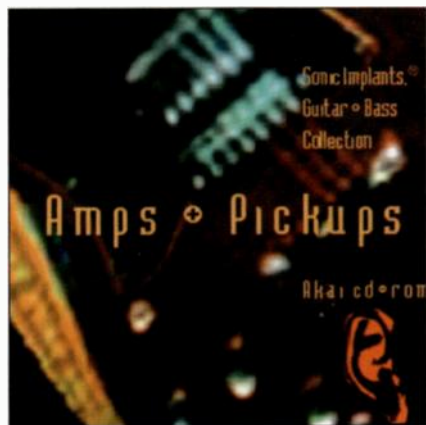


FIG. 7: *Amps + Pickups*, a disc from Sonic Implants, features a well-rounded variety of guitars and basses.

A "singular optimum layout" patch crams lots of articulations into a single program that uses key ranges and MIDI controllers to give access to sustained notes, finger-damped staccato releases, harmonics, slides, x-notes, vibrato notes, and others. It's a beast to wrap your mind around at first, but this single patch can produce some stunning upright-bass parts in real time. Because the *Upright Acoustic Bass* library offers a single instrument done right, it's not the place to look if you want a variety of basses. Sometimes, though, one is all you need.

YELLOW TOOLS

Pure E-Basses, vol. 2
(\$149.95; Akai, EXS24, Giga)

The Most Exhaustive Collection award goes to *Pure E-Basses*, vol. 2 (see Fig. 11). Four CDs are devoted to capturing practically every nuance of an Ibanez BTB five-string, and, in lesser detail, a Warwick Streamer Stage 1 fretless and an Epiphone Jack Cassidy Signature four-string. The Ibanez is given additional time with the inclusion of slap sounds and short, fingered articulations. Ghost notes, taps, slow and fast slides, harmonics, vibrato, hammer-ons, and effects are included for all the basses. The tones are big and fat, and the articulations integrate with each other naturally.

IN THE STUDIO

All the basses in this roundup are great, though some excel at certain techniques. The recording quality is consistent

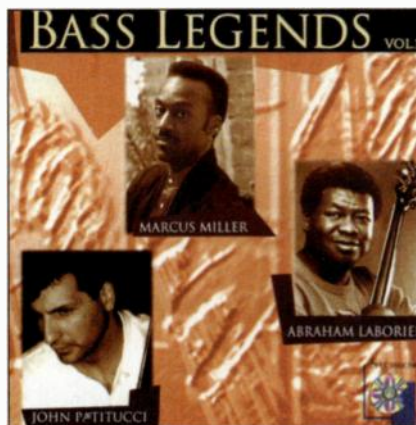


FIG. 8: Demand for samples by Abe Laboriel, Marcus Miller, and John Patitucci has kept Spectrasonics *Bass Legends* a popular choice.

MANUFACTURER CONTACTS

Big Fish Audio

tel. (800) 717-FISH or
(818) 768-6115; e-mail info@bigfishaudio.com; Web www.bigfishaudio.com

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The Ultimate Bass Library

throughout all the titles, and I had more success than I thought I would at combining sounds from different libraries. As in most great sequencing, expect to spend some time laboring over the details to create a truly exceptional bass track with any of these sounds.

For speed and ease of use, *Bass Legends* and *Giga Bass* pay great dividends. The *Bass Legends* basses are immediately useful, and the real-time keyswitching of *Giga Bass* provides plenty of instant flexibility with articulations, which is especially useful if you're on a deadline. Trilogy also promises to be fast and easy to use. If you want to be meticulously detailed and don't mind spending a little more time and effort assembling your sequences, then the *J-Slap*, *J-Fingered*, and *Pure E-Basses* will not disappoint you. None of the other libraries are as detailed as those three, but you might need a tweaked-out hardware sampler or GigaStudio rig to take advantage of their full potential. To create an exposed bass solo that includes slapping and fingered passages, the Scarbee basses would be my first choice.

If you're looking for pure attitude, I'd start with either the *Will Lee Bass Library* or the Abe Laboriel sounds from *Bass*

Legends. Although it's not as exhaustive as the Scarbee basses or *Pure E-Basses*, the sheer mass of detailed articulations in the *Will Lee Bass Library* is enough to keep anyone busy. Will's and Abe's basses maintain the most personality; when you use those sounds, it really feels as though you had a bass player on the date—warts and all. The *StingRay* from *Guitar & Bass* also has cool attitude.

Though other bass groove libraries are out there, I like *Old School Funk Bass* the best. The number of patterns and loops offered is mind numbing, assuming that '70s-style funk bass is what you're after. If you're looking for more Latin, jazz, swing, or bebop bass grooves, listen to *Ultra Freakin' Bass* and *Bass Legends*.

The best values are the *Guitar & Bass* and *East Collexion Bass* libraries. If limited RAM is a consideration, then *Guitar & Bass*, *East Collexion Bass*, *Bass Legends*, and several of the *Will Lee* instruments will get you through.

For clean basses, *Amps + Pickups* and *Giga Bass* get first nod. None of the other libraries are particularly noisy, but those two stand out because of the clarity of their raw samples. *Amps + Pickups* and *Giga Bass* also have the best programming features of the bunch. If you want to distort, twist, and mangle bass sounds, start with *Amps + Pickups*, because most of its sounds are very pure.

That brings up a good point: you don't have to use the bass sounds as provided by the manufacturer. With all

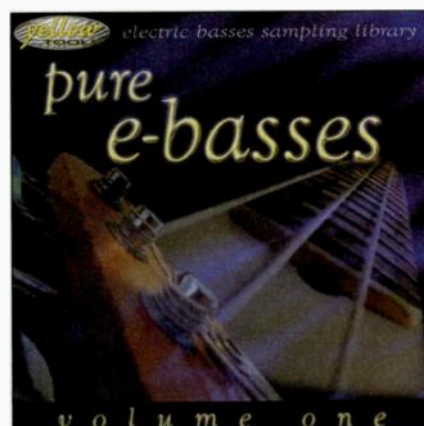


FIG. 11: *Pure E-Basses*, from German developer Yellow Tools, has the most exhaustive collection of articulations of the group.

the cool filters, amp simulators, and other outboard and plug-in processing available, bass guitar parts don't need to sound bland or dated. Remember, some very cool synth-bass sounds are made by creatively processing basic oscillator tones that might have been static and uninteresting in their raw form. Even with plenty of dynamics and variations in articulation, your bass parts can be remarkably improved with filtering and envelope processing. Bottoms up!

Producer and keyboardist Rob Shrock has recorded and performed with Burt Bacharach and many others. He wishes he still had the 1/4-scale Fender P-Bass he had as a kid.

We welcome your feedback. E-mail us at emeditorial@primediabusiness.com.



FIG. 9: New from Spectrasonics, *Trilogy-Total Bass Module* is a virtual-instrument plug-in that plays a 3 GB library of electric, acoustic, and synth basses.



FIG. 10: *Upright Acoustic Bass*, which was created by Larry Seyer and is distributed by Tascam, captures the rich sound of a 185-year-old Italian bass.

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Master the intricacies of Ableton Live with these power-user tips.

By Len Sasso

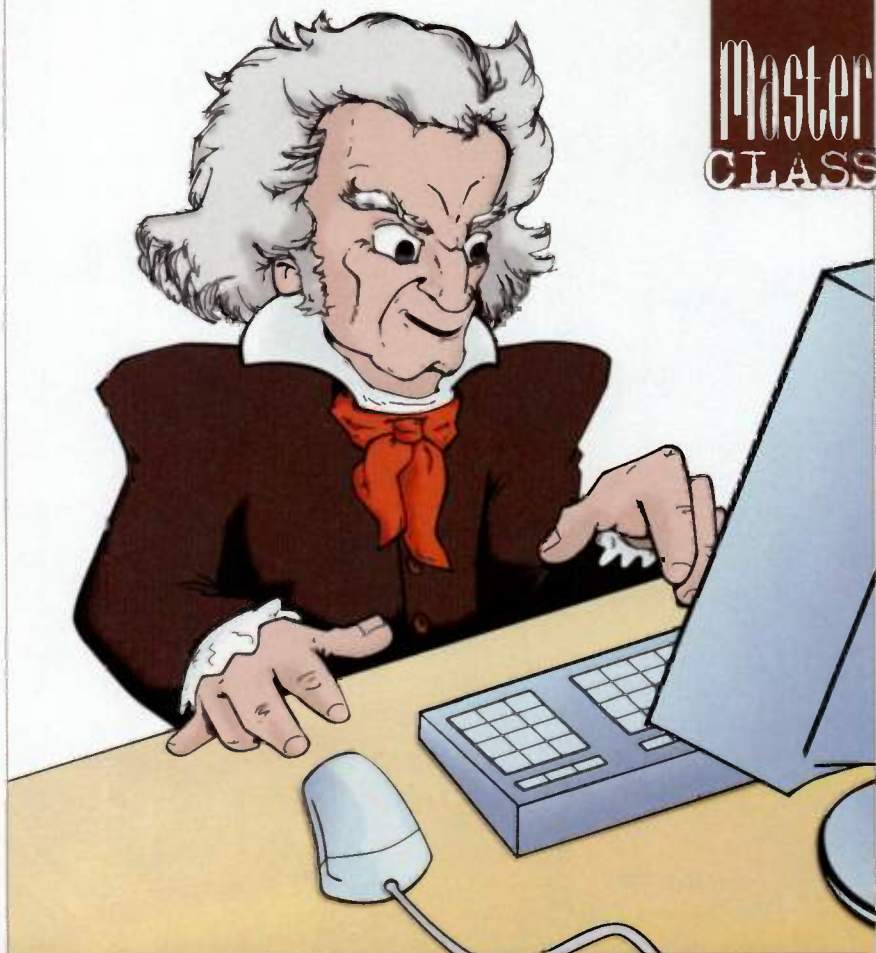


Illustration by Mike Cruz

GOING LIVE

Ableton Live is a multifaceted tool for looping, processing, and sequencing audio. It offers a deep feature set that's equally suited to real-time performance and desktop composition.

To get the most from Live, it helps to develop a set of standard procedures, a hands-on familiarity with Live's user interface, and a good grasp of how Live does what it does. Using Live is like learning to play an instrument, because, at heart, Live is just that: a live-performance instrument. In this article, I'll examine Live's capabilities and its user interface, and I'll offer some techniques that will help you take advantage of some of its less obvious features.

I will focus on Live 1.5, which offers several enhancements over version 1.1 (see the June 2002 issue for a review of Live 1.1), including rendering to disk, full ReWire 2 support with bidirectional MIDI synchronization, and built-in, high-quality reverb. If you're still using Live 1.1, you can download a free update to version 1.5 from Ableton's Web site (www.ableton.com).

MAKING THE SCENE

For users who are new to the program, here's a quick overview. Live's single-window interface has two different but intimately connected views: the Session view and the Arranger view. The Session view holds individual audio Clips whose playback can be triggered in various ways. It uses the metaphor of a standard mixing console with controls at the bottom and Slots for holding individual audio Clips in columns above the controls. The Arranger view resembles traditional sequencers and arranges Clips sequentially on tracks.

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GOING LIVE

At the top of the Session view, you'll find a timeline overview that corresponds to the tracks of the Arranger view. Those views are connected in two important ways: they share audio channels, and the Arranger view can record and play back any activity in the Session view (such as Clip triggering and control automation).

It's important to remember that although only one view is displayed at a time, both views are active at all times. You can remotely trigger audio Clips from the Session view while viewing the Arrangement, and you can start the Arrangement playing while in the Session view. In fact, triggering a Clip from the Session view automatically starts Arrangement playback.

You can switch between the Session and Arranger views using the Tab key or an onscreen button. The two views share a number of common components arranged around their periphery (see Fig. 1). The File Browser (on the left side) lets you grab audio Clips and plug-in effects. The Control Bar (at the top)

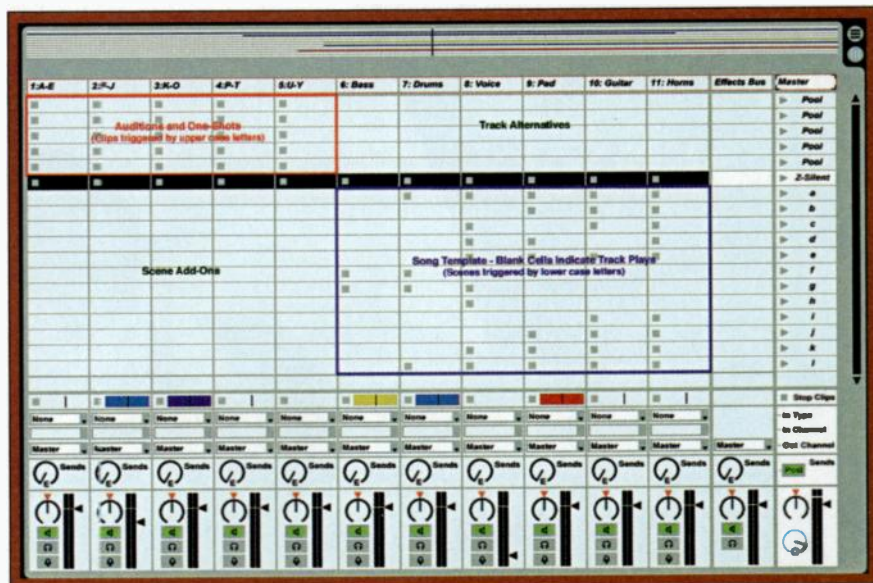


FIG. 2: The Clip Pool is where you drag audio Clips to be triggered either individually or in Scenes. Columns correspond to audio channels and rows correspond to Scenes. The annotations (red, blue, and dark green) indicate my way of organizing the Clip Pool into separate Clip and Scene regions.

manages song playback. The Detail view (at the bottom right) provides editing for Clips and also controls effects plug-ins. The Info view (at the bottom left) describes features when you roll over onscreen objects with the cursor.

Because each Live audio channel is hardwired to a specific Arranger view track, audio channels are simply called *tracks* in the Session and Arranger views, and I'll use that terminology here. Keep

in mind that each track has its own audio configuration, including volume and pan settings, effects sends, insert effects, and input and output assignments.

Another important thing to consider is that each track can play only one audio Clip at a time. Because tracks are shared between the Session and Arranger views, that can lead to some confusion about which window "owns" the track, but as you'll see, that sharing of tracks can be very useful. I'll start with a look at the Session view; that's the view that appears when you start Live, and it's the most unusual.

GET WITH THE PROGRAM

Creating a song template. Examine the Session view of the Live song that I use as a template (see Fig. 2). At the top is an overview of the Arranger tracks with colored lines indicating audio material. The vertical black line indicates the current playback position. At the bottom is the Mixer view, which contains a channel strip for each track. The colored bars above some of the channel strips indicate that the track is playing (and that there is audio at the current playback position on that track).

The area with the gray Slots in the center, called the Clip Pool, holds individual audio Clips. I've divided the

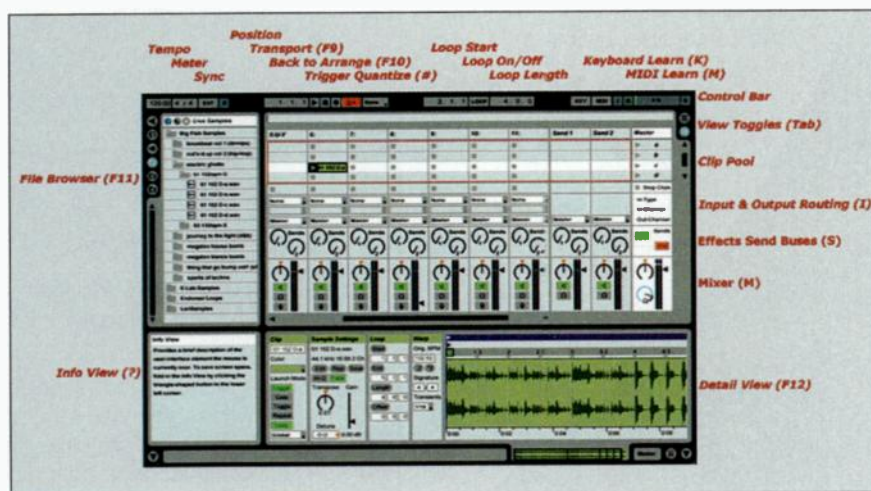
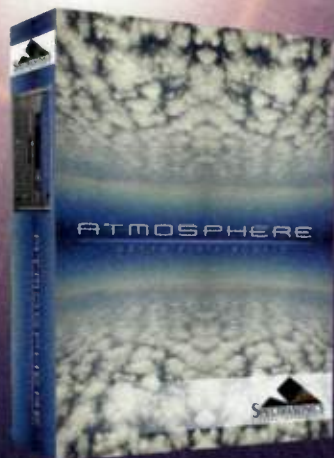


FIG. 1: Ableton Live's user interface has two modes: Arranger view and Session view (which is shown here). You can hide windows around the periphery, including the File Browser, Info view, Control Bar, and Detail view. The Mixer, Effects Sends Buses, and Input and Output Routing strips may also be hidden. Keyboard shortcuts that toggle the displays appear within parentheses. Red labels across the top indicate the individual items in the Control Bar, with keyboard shortcuts for automation.

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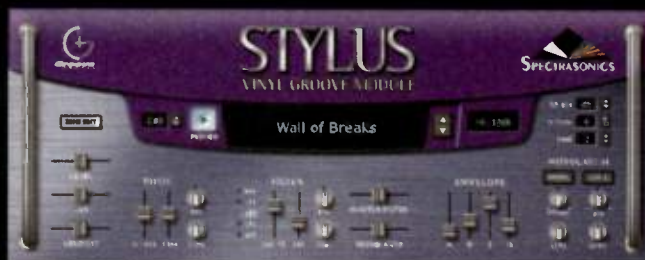
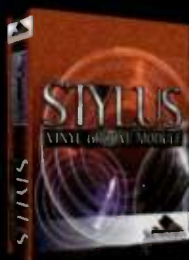


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GOING LIVE

Clip Pool into four sections and added my own color coding to the screen shot (red, blue, and dark green) to indicate their intended use. My section divisions are somewhat arbitrary; you can, of course, change them to fit your needs. All of the Slots are currently empty. Some Slots contain a gray square on the left; those are Slot buttons, and they're very important. (I'll discuss them more in a moment.)

Live allows you to trigger individual Clips as well as Scenes, which are entire rows of Clips. You trigger Scenes by clicking the gray triangles in the Master column on the right. Because only one Clip per track (meaning one Clip in each column) can play at a time, playing a Scene might cause Clips in other rows to stop playing. If a Scene doesn't have a Clip in one of its Slots, then another Clip playing on that track will stop playing only if the Slot contains a Slot button. Carefully arranging which Slots do and which Slots don't have Slot buttons is essential to efficiently managing the Clip Pool and Scenes. You can select a Slot or group of Slots and toggle Slot buttons on or off, either from the Edit menu or by using the key command Command + E on the Mac or Control + E on the PC.

Here's how the Clip Pool in Fig. 2 is set up: the top five rows are intended for playing individual Clips, and the re-

maining rows are for holding Scenes. Because of the one-Clip-per-track restriction, separate tracks are used for the individual-Clip area (outlined in red at the top left) and the Scene playback area (outlined in blue at the bottom right). Slot buttons below the individual-Clip area have all been removed so that Scene selection won't affect Clips playing on those tracks.

The Scene area has six tracks, which are named for instruments in the song, and 12 Scenes, which correspond to 12 sections of the song. You can, of course, set up as many tracks and Scenes as you like, but starting each song with a standard template that has everything visible will speed up your song-creation process.

Notice that the Scene area has some Slots with Slot buttons and other Slots without. I use the Slot buttons to indicate which tracks will be playing in each Scene; that's one way to outline a song before you start adding Clips. That method has a couple of less obvious advantages that I'll point out in a moment. Before I do, look at the Scene and track labels.

I've labeled the Scenes alphabetically with lowercase letters to indicate the computer keyboard key that I've assigned to trigger the Scene. You can assign each Scene and Slot to an upper- or lower-case letter. (Note that assignments remain with the Slots and Scenes—moving Clips around doesn't move the assignments.) The track names start with a number to indicate both the track number and the MIDI Channel I use to automate the track's channel-strip parameters. The first five

track names also indicate the upper-case letters that I've assigned to trigger the top five Slots. In short, I can trigger any Scene with a lower-case letter and any Clip from the individual-Clip area with an upper-case letter.

In the sixth row, I've set up a Scene labeled Z-Silent that I use to turn all Clips off. I've assigned an upper case Z to that Scene because it's easy to type whether Caps Lock is on or off. (The button at the bottom right labeled Stop Clips serves the same purpose, but it cannot be assigned to a keyboard or MIDI trigger.) Because triggering any Slot in the Session view that contains either a Clip or a Slot button gives the Session view control of its track, the Z-Silent and Stop Clips buttons also serve the function of turning off all tracks in the Arranger view. Clicking the Back To Arrange button in the Transport section of the Control Bar (function key F10) returns control of all tracks to the Arrange view (I'll discuss that in a later section).

Back to the Slot buttons: in addition to providing visual clues, setting up a Scenes template and removing buttons for all Slots that you intend to play greatly increases your Scene sequencing flexibility. Suppose, for example, that you have Clips in the Bass track for Scenes "a" and "c" and Clips in the Drums track for Scenes "b" and "c." Scene sequence a-b-c-b will play bass-a, bass-a with drums-b, bass-c with drums-c, and finally, bass-c with drums-b. This very simple example offers four Scenes for the price of three. Extend that technique over more tracks, and the possibilities grow exponentially.

Filling a Scene Slot with a Clip offers the advantage of always triggering a Clip with its Scene. However, if you want a Clip to continue playing through a Scene change (rather than being re-triggered with the new Scene), an empty Slot with no Slot button is the way to go.

The individual-Clip area (the red rectangle) is a good place to drag Clips from the File Browser during song construction. I drag alternative Clips to the same track and switch between them while playing the Scene I'm assembling.



FIG. 3: The Clip view shows all the data that Live uses when it streams an audio file from your hard drive. That data is saved in a Clip file that points to the actual sound file. Each copy of a Clip file can have its own settings.

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GOING LIVE

Once I choose a Clip, I drag it to its position in the Scene. After the Scenes are constructed, the individual-Clip area is useful for one-shots and effects that you want to trigger individually rather than as part of any Scene.

The two remaining areas in the Clip Pool are not necessarily wasted. The area labeled “Scene Add-Ons” is a handy way to bring Clips into a Scene at the last minute without having to create new tracks. The area labeled Track Alternatives is handy for temporarily substituting individual Clips for tracks in an Arrangement.

Get more for your MIDI. In addition to using the computer keyboard to trigger Clips, you can use MIDI Control Change and Note messages to trigger Clips and automate mix and effects parameters. If you use Live in performance, you will definitely want to create a

MIDI setup to work with. Live receives on only one MIDI port, but it does receive on all MIDI channels, so with a flexible hardware controller layout, you can control almost everything. Live can “learn” MIDI assignments—simply click the MIDI Map button (Command + M on the Mac and Control + M on the PC), select the target Slot or control, and send the desired MIDI message from your controller.

For mixing controls, a MIDI fader box is the most obvious choice. Live 1.5 will also accept data from infinite rotary encoders—such as the ones on Tascam’s US-428 and Native Instruments’ 4Control—and try to detect the encoders’ format (which determines the direction and update speed of the values they send). If Live doesn’t recognize the format, you can select it yourself. Live sends out MIDI control data, which you can use to update motorized faders.

I use three basic controller setups with Live each with the same computer keyboard assignments. For a compact setup, I add a Peavey PC-1600 fader box to control mixing, and I use the computer keyboard for triggering Scenes and Clips. When I’m playing with a full-size MIDI keyboard controller, I use the area around the bottom octave to trigger Scenes. For percussion parts, I use a Roland HPD-15 with the ten peripheral pads assigned to trigger Scenes, the larger central pads assigned to individual Clips, and the ribbons and D-Beam assigned to effects parameters. I always start with those assignments as templates so that I don’t have to relearn the setup each time and can concentrate on the music. To define your template as Live’s default song, save it with the name “LiveTemplate.als” in the Ableton Preferences folder.

CLIPTOMANIA

Ableton Live streams audio directly from your hard drive. However, not all audio files are created equal; for example, they may be short hits, loops, segmented compilations of hits and loops, or dubs of entire parts. Consequently, you need to manage how Live interprets those files. For that, Live of-

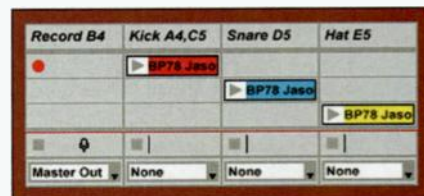


FIG. 5: You can record Slot and Scene playback for immediate use in the Session view. This graphic shows how individual kick, snare, and hi-hat hits would be inserted for recording a three-part drum loop in the Slot with the red record button.

fers Clip files—data files containing information about the audio files on your hard drive. Because Clip files are small, a Live song can hold many of them without unduly straining computer memory.

When you drag an audio file into Live’s Session or Arranger view, Live looks for an associated Clip file (with the .asd suffix added to the audio file name). If none is found, Live creates one. When Live creates a Clip file, it initializes some settings and tries to calculate others. You can change almost all of the settings. In fact, you can have different settings for different copies of the same Clip file (in different Slots). Those individual settings become part of the Live song. However, if you want the settings saved in the Clip file on your hard drive, you need to save them manually. The settings in the Clip file are the ones that appear every time the audio file is dragged into a Live song.

Fig. 3 shows the Clip view (available at the bottom of either the Arranger or Session view) of a Clip file. It has four data sections and a Sample Display window with a waveform view of the audio file. The section labeled Clip applies only to Slot playback and controls how the audio file is triggered. The Sample Settings section controls audio-playback properties such as transposition and gain. That is also where you replace the audio file the Clip file refers to, save the Clip-file data to disk, and open the audio file in your favorite sample editor. The Loop section controls the loop boundaries, as well as the playback start-point within the loop. The Warp section contains

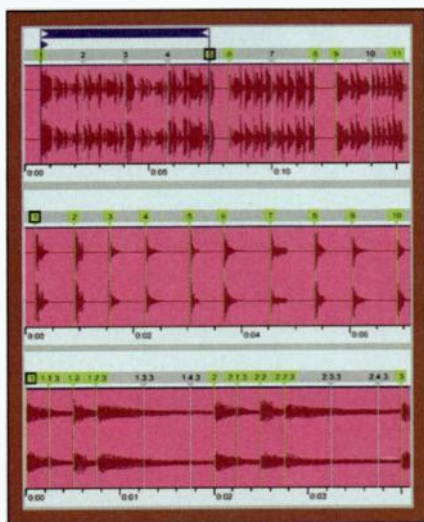


FIG. 4: Warp markers (with green labels) designate fixed meter positions within a Clip. The time and number of beats between Warp markers determine the tempo from which the audio is time-warped. The top Clip has been cut into three loops. The middle Clip has been cut into ten sounds (hits). The bottom Clip has been sliced, ReCycle-style, so that the individual slices can be retriggered without time-warping.

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GOING LIVE

the most critical settings; it determines how Live time-warps the audio file to match the overall song tempo. Understanding how Live time-warps your audio files is the key to successful Clip synchronization.

Don't assume. It's important to understand that Live treats long and short files differently. Live assumes that short files are properly cut loops and assigns them a tempo between 87 and 174 by further assuming that the number of beats in the file is a power of two (1, 2, 4, 8, 16, 32, and so on). However, you can override those assumptions, as you'll see shortly. Live assumes that long files are the same tempo as the song, which will cause the files to play back without time-warping; that's usu-

ally what you want for dubs and remixing. For poorly cut loops and single hits that are not intended to be tempo-synced, such as individual drum hits and sound effects, you need to manually adjust the Warp markers and tempo settings. (I'll get to that in a moment.)

In the Sample Display window in Fig. 3, you'll notice a tempo grid over the sound file. At the ends of the grid are green Warp markers (labeled 1 and 3). Those were automatically placed by Live after it calculated the Clip to be eight beats (two measures) long at a tempo of 130 bpm. The presence of Warp markers at each end is the tip-off that Live is treating the Clip as a short file with a calculated tempo. For long files, Live places a Warp marker at the beginning only and assigns the song tempo to the Clip. By adding, deleting, and moving Warp markers, you can define the boundaries of a poorly cut loop and indicate tempo changes within a Clip. Remember that Warp markers delineate metered regions (beat counts)

within the Clip. Live will time-warp the playback between Warp markers to match the tempo of the song.

Extracting loops. To deal with a poorly cut loop or, as is often found on audio CDs for sampling, a Clip that contains several loops, you need to adjust the Warp markers to the ends of the desired loop and indicate the correct number of beats. First, eliminate all but the first Warp marker by double-clicking on any others, and then move the first Warp marker to the exact beginning of the first loop. (Click in the waveform display at the position of the Warp marker and drag down to zoom in as necessary for accurate placement.)

Next, find the grid line that matches the number of beats in the loop and double-click it to create a new Warp marker. (Note that the grid line might not be anywhere near the actual end of the loop.) Finally, drag the new Warp marker to the exact end of the loop, using whatever zoom resolution is necessary for accurate placement. If you want to do it by ear, set the loop playback Start and End points to match the Warp marker numbers using the numerical values in the Loop section of the Clip view, and trigger the Clip to start playing in Loop mode. You'll hear the effects of time-warping as well as the accuracy of the loop.

To deal with an audio file containing several loops, simply repeat the above procedure for each loop. It doesn't matter what meter position you pick for each beginning Warp marker, so pick something convenient, such as a bar division. The end Warp markers must, of course, be the proper number of beats later. Typically, some dead space will be between the loops, so you won't be able to use the Warp marker for the end of one loop as the beginning of the next. The top of Fig. 4 shows a Clip cut into three loops starting respectively at Warp markers 1, 6, and 9.

Once you've sliced up a multiloop Clip, it's easy to select the desired loop. Simply set the Length numerically in the Loop section of the Clip view and scroll the Start value to the desired Warp marker. Note that if you copy the Clip to a new Slot, your Warp marker



FIG. 6: Live's Arranger view differs from its Session view only in its central window, which resembles a typical linear audio sequencer. Clips are arranged in a timeline for playback on audio tracks. Session and Arranger views share audio channels, so that using a channel in one view disables it in the other. That allows for complex playback and recording combinations using audio in both views.

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GOING LIVE

settings will be copied with it, so you can easily create a Clip for each of the loops you've extracted. If you intend to use the loops in another Live song, click the Save button in the Sample Settings section to save your Warp marker setup in the Clip file on your hard drive.

Hits and kits. Another case in which you'll have to override Live's calculations is with Clips containing one or more hits that you do not want to be time-warped. Live's treatment of long files indicates how to do that: eliminate all but the first Warp marker and move the marker to the beginning of the hit. If Live calculated a tempo for the Clip, it probably won't match the song tempo, so change the Orig. BPM numerical to the tempo of the song. Remember that if you change the song tempo or use the Clip in another song, you will need to adjust the Clip tempo accordingly.

For multiple hits in the same audio file (again typical of audio sampling CDs), the loop technique just described is not particularly satisfactory, because you need to change the tempo setting for each Warp marker whenever you change the song tempo or use the Clip in a different song. What's worse is that changing the tempo at a particular Warp marker moves all the Warp markers to its right.

Here's how to avoid those hassles: In the Clip view's Warp section, select Bar from the Transients menu, and place bar-division Warp markers at the beginning of each hit. Because Live's time-warping is quantized to the Transients setting, it will not time-warp the hits regardless of the song tempo. That method has the added convenience of allowing hit numbers to correspond to measure numbers (see Fig. 4, middle). If you set the Length to 1.0.0 and select the left-most Start numerical, you can step through the hits with the up and down arrow keys.

A hardware percussion controller is ideal for use with sampled drum-kit elements—especially when using Live in performance. Depending on

your playing abilities and preferences, you may find two of the Clip setup options useful. At the bottom of the Clip section of the Clip view, you'll find a quantization menu (new in Live 1.5) that allows you to set an individual triggering quantization for each Clip. The Repeat Launch mode causes the Clip to retrigger at the quantization rate.

For example, you might use quarter-note quantization in Repeat Launch mode to lay an automatic four-on-the-floor kick pattern, while using finer quantization or no quantization at all with Trigger mode for playing other percussion. The one drawback to using Live as a kit is that there is no Velocity sensitivity. If you can program your percussion controller to send different notes for different Velocity zones, you can partially compensate by assigning notes to Clips with different sampled dynamics.

You can use Live's internal, real-time recording feature to create instant loops from your kits. Begin by choosing a track for recording, setting its input to Master Out in the Input/Output view's top menu, and arming it for recording

REASON TO LIVE

You can use Live as a ReWire 2 master or slave application. When Live is the master, audio from other ReWire applications is routed to Live's inputs; when Live is the slave, its audio is routed to other ReWire applications. ReWire 2 also synchronizes tempo and transports for all applications.

Typically, you would make Live the master when working with programs that generate audio, such as Reason, and you would make Live slave to another audio sequencer in order to record Live's output to that sequencer. Setting up the relationship is easy: launch the master application first and the slave application second, and then select the slave as the input to channels in the master application. It's that simple, but bear in mind that you can not use Live as both a master and slave simultaneously.

Reason is an excellent match for Live because it offers the two things that Live lacks: sound generation and MIDI sequencing. While you can import ReCycled loops into Reason's Dr. Rex REX file player as an alternative to Live's time-warping, the Redrum module, with its built-in pattern sequencer, provides a way to play sampled drum kits that is

easier and more full featured. Furthermore, Redrum adds Velocity sensitivity, and it's easier to generate patterns. It also provides envelope generators and pitch and sample-start modulation. For much finer pattern-sequencing control, consider importing whole Clips into Redrum for triggering from its pads.

Reason is also a great tool for generating Clips that you can use in Live. You can record Reason's output on the fly, just as you can Live's output. That allows you to quickly capture synthesizer and sampler loops, pads, and sequences and then use Live's Clip tools to manipulate them.

A convenient way to set up your Reason Rack for ReWiring Reason in Live is to cable each Reason Instrument to its own audio output (there are 64), bypassing Reason's mixer. Use a separate Live track for each Reason Instrument. You can simultaneously record the output of each Reason Instrument into a separate audio file, and you can apply your favorite Live or VST plug-ins to individual Reason Instruments. Reason, ReCycle, and Live clearly make a formidable combination for loop-based performance and composition.

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GOING LIVE

by clicking the button with the microphone icon in the Mixer view. The Slot buttons will turn into red Record buttons. Triggering any Slot or Scene that contains a Record button will start the recording process. (To avoid accidentally triggering unwanted recording when triggering Scenes, I remove all but one Slot button.) Stopping Live playback (Spacebar), clicking the recording track's Stop Clips button, or triggering any other Slot on the Recording track will terminate recording. Everything that appears at Live's Master

Out is recorded, so be sure to mute tracks that you don't want to dub. The new audio file, along with its Clip file, is placed in the Audio Record Directory specified in Live's Path Preferences.

Setting up the Slots for recording can be a little tricky to handle at first, but Fig. 5 shows one simple way to record a three-part drum loop. The track on the left, labeled Record B4, has its input set to Live's Master Out, and its top Slot is armed for recording. I've assigned MIDI Note B4 to trigger that Slot. Slot buttons have been removed from the other Slots on that track so that only that Slot will record. The three other tracks have a hit on consecutive Scenes and MIDI Note messages C5, D5, and E5 trigger their Slots respectively (Live defines Middle C as C5).

Finally, MIDI Note A4 is set up to trig-

ger the top Scene; it will play the Kick and start recording. Playing MIDI Notes C5, D5, and E5 will cause their associated hits to trigger and be recorded. Playing MIDI Note B4 will stop recording and immediately start looped playback of the recording. Playing A4 will accomplish the same thing, but it will also trigger another Kick.

SLICE AND RELOOP

Live's automatic time-warping is what makes it such a convenient tool for combining loops of different tempos, but time-warping comes at a price: there is an inevitable sacrifice in quality. In critical cases, such as when the loop is up-front in the mix, you can get around Live's time-warping of loops by creating your own slices and sequencing them individually. However, you will

JUST FOR EFFECT

Fig. A shows Live's Effects view with the Arranger view above it. Live comes with 11 CPU-efficient effects that cover compression, EQ, chorus, delay, distortion, and reverb, as well as some quite unusual effects such as Auto Filter, Filter Delay, and Grain Delay. If you can't find what you're looking for in Live's kit, you can use your favorite VST plug-in.

The Effects view shares the same screen space with the Clip view, and either view is available in both the Arranger and Session views. Some of Live's built-in effects and all VST effects have an onscreen x-y control for managing two parameters at a time with the mouse. In the case of VST effects, you can assign any of the effect's parameters to either axis.

Live provides two control panels for VST effects: the effect's control panel and a layout of horizontal sliders within Live's Effects view. The advantage of the slider layout (in addition to being more compact) is that you can use Live's MIDI Learn feature to assign MIDI controller messages to the effect's parameters. All VST effects settings are saved with the Live song;

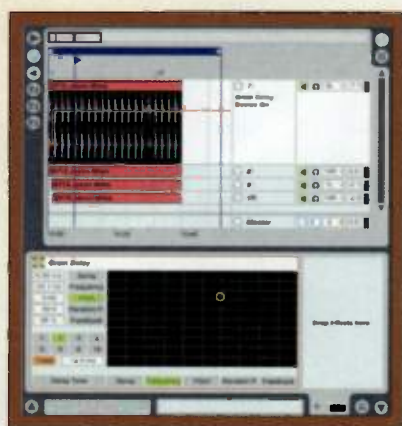


FIG. A: In Live's Effects view (bottom), you can drag, set up, and automate Live's built-in and VST plug-ins. The Arranger view automation shown here turns the Grain Delay effect on at the second measure. The red corners on the enable button (to the left of the Grain Delay label) indicate that the button is automated.

however, the effect's preset selection is not, so you might think you've lost your effects settings when you reopen a song. Fear not; they're still there.

Live's flexible effects routing allows for complex effects setups. Any effect can be inserted into any Live track, but you can also have up to four

send buses, which can tap either pre- or post-track gain control. Send buses show up just like regular tracks in the Session and Arranger views, each with send controls of their own. That means you can route effects to other effects and even back to themselves (watch out for feedback). Finally, you can put effects on Live's Master track, which is a good location for mastering and spectral-analyzer plug-ins.

When your CPU runs out of gas, don't forget that you can bounce tracks. Note that you can show or hide the Sends view independently in the Arranger and Session views. If you want to see and manipulate a send effect's automation, make the Sends view visible in the Arranger view.

The MP3 file **EMWEB** "GrainyDay" illustrates **CLIPS** the Grain Delay effect as well as cross-busing. The source is a four-on-the-floor kick-drum pattern. Each kick has its own Grain Delay, and alternate kicks are sent to a pair of Filter Delay effects on two send buses. The send buses are cross-fed to each other to create a three-over-four-rhythm feedback pattern.

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need to search for the slice points and, in many cases, do a little editing when reconstructing the loop.

To hear the difference, listen to the MP3 file “ReLoop”. It begins with a two-measure guitar Clip at 120 bpm, followed by the Clip automatically time-warped to 100 bpm and 144 bpm, and ends with examples of the Clip sliced and relooped at the same tempos. Everything was done within Live.

The bottom of Fig. 4 shows the guitar Clip with Warp markers inserted at the slice points. The Clip has strums on the first four eighth notes with the last strum

sustaining to the end of the measure, and I’ve created a Warp marker for each strum. The Clip has its Transients parameter set to Bar, and a separate copy has been made for each slice.

You could record the results in real time, as with the previous example, but in this case, it’s often better to record into the Arranger view, edit, and then Render the loop. That’s particularly true when you lower the tempo, because the slices won’t completely fill the space and Live will pad them out, causing unwanted artifacts. In that case, you can shorten the Clips in the Arranger view and decide whether you prefer the gaps or the padding. (A little judicious reverb can help mask the gaps.) If you’re raising the tempo, the slices will be truncated. Almost all you can do in that case is to alternate the slices between two tracks and allow them to overlap slightly. (Note that once you are dealing with

individual hits, you can adjust for syncopation or bad timing, either as you trigger the hits or after the fact in the Arranger view.)

If you still can’t get satisfactory results using that method, consider using Propellerhead ReCycle, which offers better tools for selecting slices and its own set of time-stretching and pitch-shifting algorithms. From ReCycle, you can export the Clip as a single sample with its tempo adjusted, and then use it in Live.

Alternatively, you can export the individual slices for use as separate Clips. That offers the option of making minor tempo changes in Live without having to repeat the relooping process. If you intend to use ReCycle often to work on Live Clips, consider selecting it as your sample editor in Live’s Path Preferences; clicking the Edit button in the Sample Settings section of the Clip view will automatically open the Clip in ReCycle.

Finally, if you have Propellerhead Reason, you can use the REX file generated by ReCycle in Reason’s Dr. Rex module and ReWire the results back into Live (see the sidebar “Reason to Live”).

BY SPECIAL ARRANGEMENT

As I mentioned in the overview, Live’s Arranger view (see Fig. 6) is similar to a traditional audio sequencer; audio Clips are arranged sequentially on a timeline for playback on multiple tracks. Each track corresponds to an audio playback channel, and a track can play only one audio Clip at a time. The sharing of audio channels between the Session and Arranger views, the means of getting Clips onto Arranger view tracks, and the tools for manipulating those Clips are what distinguish the Arranger view from traditional sequencers.

The first and most important thing to remember is that Arranger tracks are always playing when Live is playing. When you trigger Clips or Scenes—which you can do from either the Arranger or the Session view—you automatically start playback of Arrange tracks at the Arrange view’s Start marker (the blue wedge at measure 129 in the top center of Fig. 6). However, all Arranger tracks used for playback of

Keys to the Kingdom

Live has built-in keyboard shortcuts for many of its menu items, onscreen controls, and view toggles. Here are some of the most useful, broken into two categories.

Better Viewing

Key	Modifier Mac/PC	Action
?		Hide/Show Info view
O	Command/Control	Hide/Show Overview
I	Command/Control	Hide/Show Input-Output view
S	Command/Control	Hide/Show Sends view
M	Command/Control	Hide/Show Mixer view
F11	Shift	Hide/Show File Browser
F12	Shift	Hide/Show Detail view (Clip & Effects views)

For Getting Things Done

Key	Modifier Mac/PC	Action
F1-F8		Toggle Tracks 1–8 output buttons
F9		Record automation
F10		Back-to-Arrange
F11		Select next File Browser tab
F12		Select next Detail view (Clips>Effects>Buses)
R	Command/Control	Render
E	Command/Control	Add/Remove Slot button
M	Command/Control	Toggle MIDI Map Learn function
K	Command/Control	Toggle Keyboard Learn function
Arrow Up/Dn		Move Loop by loop length (Clip view)
Arrow Lt/Rt	Command/Control	Select next (previous) Warp marker
0...6	Command/Control	Select Trigger Quantize (None, Bar, Whole-Note, and so on)
G	Command/Control	Toggle Snap-to-Grid/Snap-to-Quantize (Arranger view)

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Clips or Scenes from the Session view are disabled in the Arranger view.

The Return-to-Arrangement button in the Control Bar at the top turns red to indicate that some Arranger tracks

are disabled. You can click it or press F10 to return control of all tracks to the Arranger view (and consequently terminate playback of any Clips in the Session view). Conversely, you can disable all Arranger tracks by clicking the Stop Clips button in the Session view. That's a very handy feature when you want to go back to working exclusively with Clips and Scenes after constructing an Arrangement.

You can place Clips on Arranger

tracks in two ways: by recording Clip and Scene triggering, and by dragging a Clip to a track from the File Browser. To record Clip and Scene triggering, simply click on the round record button in the Control view at the top. Any Clip or Scene you then trigger with the mouse, the computer keyboard, or MIDI will be placed on the appropriate Arranger track at the current play position. Note that once a Clip appears on an Arranger track, it is independent of its source; you can edit its parameters in the Clip view, and those edits apply only to that instance of the Clip on that Arranger track.

Once you have a Clip on an Arranger track, you can slide it around freely, and you can stretch it from either end. Stretching it in either direction will make it loop to fill the space, but stretching it from the left will also cause its Start marker to shift in an attempt to keep it synchronized in time. For example, if you shrink a Clip by one quarter note from the left, its Start marker will shift one quarter note later in the Clip.

A Clip's Launch mode and quantization parameters have no effect when the Clip is on an Arranger track, but all other Clip view parameters have their usual effect. In particular, the Clip's Loop markers set the playback boundaries of the Clip; the section between the Loop markers will be repeated or truncated as you stretch the Clip in the Arranger track.

Everything that I've discussed in the context of Clip editing can also be carried out directly in the Arranger view. You can extract loops and hits, construct loops from kits, and perform slicing and relooping. You can add automation of mix and effects parameters either by directly adding automation break-points with the mouse, recording onscreen changes made in the Mixer and Effects views, or recording MIDI automation. Finally, you can record the Arrangement into Slots in the Session view, using exactly the same procedure as for Scene and Slot playback. Remember you can trigger any Slot or Scene from the Arranger view as well as the Session view.

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GOING LIVE

Live 1.5 lets you render from an Arrangement back into a Slot. Rendering allows you to bounce audio from any portion of any selection of tracks faster than in real-time recording. Rendering always applies to the selected region, and all output appearing at Live's Master Out will be rendered. Therefore, to render only selected tracks, you need to mute the unwanted tracks using the green buttons with the speaker icons in the Mixer view of either the Arranger or Session view. If Live's Pre-Listen Preference routing is set to Routed through Master, you can use the buttons with the headphone icons as solo buttons.

Rendering includes all effects pro-

cessing, so if your Arrangement starts pushing the CPU envelope, bounce a few tracks with effects on them, and you'll be back in business with a lighter load on your processor.

WHADDYA WANT FROM LIVE?

One area that I haven't touched on explicitly is Live's strengths as a remixing tool. You've seen how easy it is to create and record parts in the Session view. Sequencing those parts with automated mixing and effects in the Arranger view is also straightforward. Those two processes let you create remixes with full automation; in many cases, you never need to leave Live's domain. When you do, Live supports the necessary links through ReWire and external sample editor integration.

Because Live offers several ways to perform almost any task, it's necessary to develop specific work habits that suit the way you use the software. For live performance, you'll want a

full-featured MIDI control setup, whereas for desktop composition, you can probably get by with the computer keyboard and a basic control surface for mixing and effects. If you're creating parts for use in another audio sequencer, you'll probably spend most of your time in Session view with occasional forays into the Arranger view for basic editing and Rendering. If you want to use Live to create a finished product, you'll surely use the Arranger view as you would any other audio sequencer.

The bottom line is that although Live is built for speed, it is not necessarily built for simplicity. Time spent learning your way around and customizing Live to your needs will put a tremendously powerful tool at your fingertips.

Len Sasso can be contacted through his Web site at www.swiflick.com.

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Stealth MP3s

Disguise compressed audio files as WAVs and sneak them onto the Web.

By David Battino

Few people realize that WAV files, perhaps the most universal sound-file format, are actually containers that can hold many different types of data. Using a free, 44 KB program by Peter Luijter called WaveMP3, I've been converting standard MP3s into files that look and play back like WAVs but retain the tiny size of the originals. These MP3-encoded WAVs are especially useful on the Web, because unlike other compressed audio files (including straight MP3s), they play back without helper applications or esoteric plug-ins.

Disguising your MP3s as WAVs also enables you to use them in some programs that don't officially support the

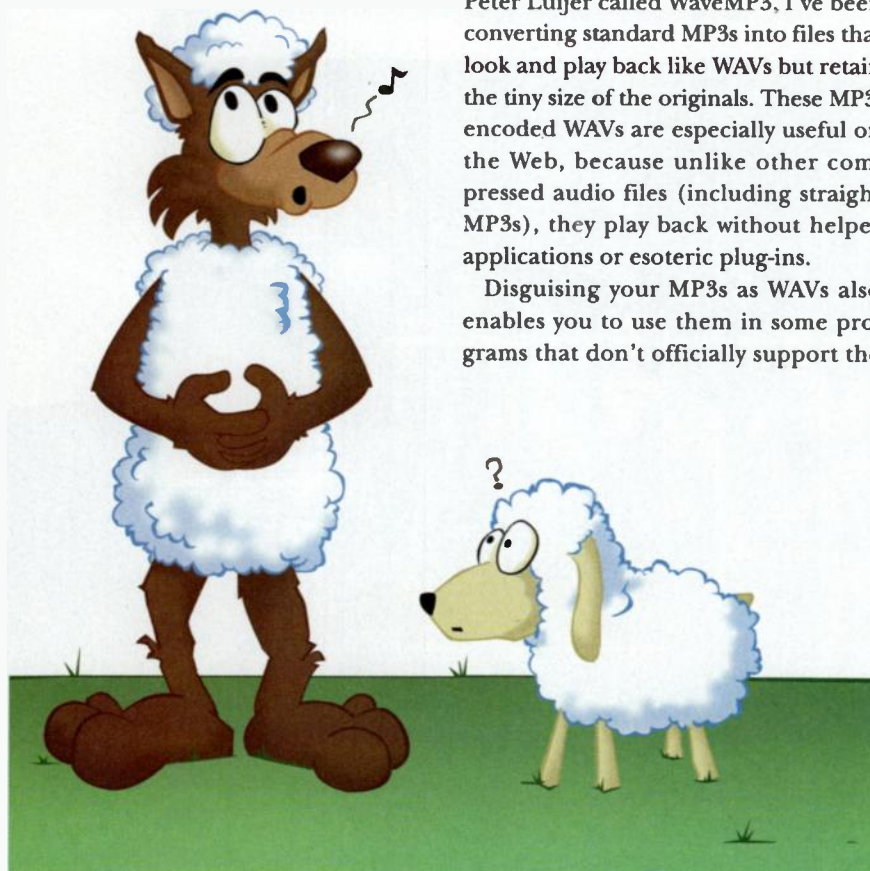
MP3 format, such as older versions of Microsoft Office and some underground video encoders. In this article, I'll explain how MP3-encoded WAVs work, how to create them, and how to use them to pump up your site.

ONE WAV OR ANOTHER

Along with AIFF and AU, WAV is one of the few sound-file formats that almost all Web browsers support "right out of the box." However, AU is an obsolete, compressed format that sounds rather nasty, and AIFF plays back unpredictably on certain browsers. Further, AIFF technically doesn't support data compression, which is why the AIFC format was developed. According to two Mac audio programmers that I contacted, Tom Erbe (SoundHack) and Norman Franke (SoundApp), it should be possible to embed an MP3 in an AIFC file, but neither has come across such a beast. WAVs, on the other hand, are everywhere. For short sound effects, such as an "audio logo" that announces your home page, they're often ideal. (See the sidebar "Embedding Manual" for the HTML code to create such background sounds.)

The drawback with standard WAV files, however, is their gargantuan size. A 2-second stereo WAV file at 16-bit, 44.1 kHz resolution gobbles up 341 KB,

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FIG. 1: At BambooSoul.com, a custom JavaScript triggers random musical excerpts every time the home page loads. Because the music is in MP3-encoded WAV format, it downloads quickly and transparently.

which could easily take 50 seconds to download on a standard 56 kbps modem. You can cut that by 75 percent by collapsing the file to mono and

downsampling it to 22.05 kHz; because most of your visitors will have wimpy multimedia speakers, they won't hear much difference. Still, 12.5 seconds is a long time to wait on the Web, and that doesn't count the download times for any graphics or text on the page. With sounds that don't have much high-frequency content or dynamic range, you can lop off another 75 percent by pummeling the files down to 8-bit, 11.025 kHz mono, but the resulting trashy quality is more appropriate for comedy vocal effects than elegant logos. It's better to shorten the sound. A 1-second, 16-bit, 22 kHz, mono WAV file should download in about six seconds, which is reasonable.

But for a site I recently designed to promote a friend's new shakuhachi CD (see Fig. 1), I wanted to introduce the page with longer musical excerpts; a

brief blip wouldn't be enough to set the meditative mood. And I didn't want to monkey with formats like Flash, RealAudio, QuickTime, WMA, or straight MP3s that might require the visitor to install a plug-in or a helper application.

That's when I discovered MP3-encoded WAVs. Using Steinberg WaveLab, I extracted multibar phrases from the CD, mixed them to mono, and encoded them as 64 kbps MP3s, which I then camouflaged with WaveMP3.

Due to the way MP3 compression works, a 64 kbps mono file has about the same audio quality as a standard 128 kbps stereo file. That's because kbps is a measure of the data rate, not the audio frequencies. Reproducing an extra stereo channel requires more data, so the encoder must reduce the sound quality to maintain the rate.

You lose some sense of spaciousness by converting to mono, of course, but in this case the duration was more important. As an example, I reduced a 6.7-second, 585 KB mono WAV file to a

EMBEDDING MANUAL

Fig. A shows the technique I used to play a random sound every time a visitor loads the BambooSoul.com home page. The code is based on a JavaScript by Peter Gehrig and Urs Duclli of 24fun.com, a bonanza of offbeat JavaScripts. The randomizing technique shown here can also be used to display movies, links, images, text, or other objects.

To use this script, place the `<SCRIPT>` section anywhere between the `<BODY>` tags on your page, depending on how much of the other content (images and text) you want your visitors to see before the sound starts loading. Loading may take several seconds for sound files that are larger than 50 KB, so it's best to put the script toward the end of the body section so your visitors aren't stuck staring at a blank screen. Remember that large sound files may take so long to load that you lose the effect of synchronicity.

Here's how the script works: the "var Waves" line sets up an array

called Waves that contains MP3-encoded WAV files. I used five files here, but you can use any number. The next line picks a random integer between 0 and the number of items in the array and assigns it to the variable WaveNumber. Because items in a JavaScript array are numbered from 0, that step enables the script to call up a specific sound by number. (For example, Waves[2] would be the third item in the array.) The subsequent "document.write" lines embed the designated WAV file in the page.

Note that the `<EMBED>` tag contains width and height attributes of 2, even though the playback controller is hidden. That was done to prevent problems with QuickTime. The `<NOEMBED>` section, which contains the `<BGSOUND>` tag, is included for older versions of Microsoft Internet Explorer that can't handle the `<EMBED>` tag.

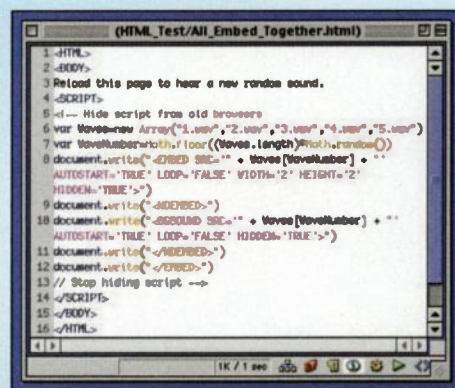


FIG. A: HTML sample for creating random sound.

Think hard before adding sounds to your site. They can clash with music that visitors are already listening to or, when triggered in an office environment, disturb coworkers or clue a boss that an employee is goofing off. A bad sound is worse than no sound. But when it is done tastefully, Web audio can make a world of difference.

From mic-pre to CD...



DPS24 DIGITAL PERSONAL STUDIO

The DPS24 is the only affordable integrated hardware digital workstation that offers 24 tracks of recording without data compression. Most types of data compression throw out portions of your audio during recording, and use a mathematical algorithm to approximate the original audio upon playback.

Data compression can adversely affect your audio quality and stereo imaging, especially with multiple generations of track bouncing.

And of sounds like your old cassette multi-track, doesn't it?

It's important to know what you're getting when you invest in any recording solution. The DPS24 was designed from its inception as a professional production tool and not simply a scaled up portable studio.

We combined a 24bit/96kHz linear 24-track hard-disk recorder, a 46-input moving-fader automated digital mixer, a sample-accurate multi-track graphic waveform editor, 4 stereo multi-effects processors, akSys TrackView and VST plug-in platform software, and a CD mastering and archiving suite, without creating the performance or user interface compromises found in many integrated workstations.

Utilizing our Q-Link navigation design, the DPS24 offers access to any major function with one button press. The Q-Channel strip of automated LED rotary controls enables instant access to any channel strip on the mixer.

Features like two banks of inputs to eliminate re-patching, balanced channel inserts which enable external mic preamps to bypass the on-board preamps, multi-function Q-Knobs for realtime effect control, and up to 24 channels of ADAT I/O offer professional production capabilities that give you the real-world advantages you need to bring your artistic vision to its full potential.

52 KB, MP3-encoded WAV with negligible reduction in sound quality—at least for this Web application. That's more than a 20:1 compression ratio over the original stereo file.

DO YOU KNOW THE WAV?

Most types of audio files—including WAV, AIFF, and MP3—contain raw samples of the original analog waveform and additional descriptive data about those samples, usually stored in the *file header*. Without that so-called *metadata*, the playback device or program would have no clue which sampling rate, resolution, or number of channels to use. (In the case of compressed formats like MP3, the player also needs to know which decompression algorithm to use.) An audio file without metadata is called a *raw file*. (For more on sound-file anatomy, see "Square One: Making Waves" in the April 2002 issue of EM.)

Rather than use a single header, WAV files store data in *chunks*. Typically, the Data chunk contains uncompressed, pulse-code-modulation (PCM) audio samples. But if the preceding Format chunk specifies a different format, other types of audio data—such as MP3—can be stored instead. WAV files also contain a List/Info chunk, which can hold textual information about the file, just as ID3 tags can be used to store artist and song names (and even simple graphics) in an MP3 file.

Converting MP3s into MP3-encoded WAVs with WaveMP3 is easy. (See the sidebar "Extend Your MP3" for a download link.) Just drag an MP3 file onto the program's icon, and WaveMP3 adds the correct chunks and creates a new WAV file. If the program finds an ID3v1 tag at the end of the MP3, it creates a List chunk and fills in the corresponding data fields, which can then be displayed in newer versions of Windows Media Player.

Dragging an MP3-encoded WAV file onto the icon changes it back to an MP3. The program also works on groups of files. Unfortunately, it only works in Windows. I couldn't find a similar program for the Mac, although I successfully ran WaveMP3 under Connectix Virtual PC. (Incidentally, Virtual PC is a terrific tool for Web developers, because it lets you quickly test your pages on multiple operating systems.)

During my file-format experiments, I noticed that I was able to "convert" MP3s to MP3-encoded WAVs and play them in Windows Media Player just by changing the file extension from MP3 to WAV, so I asked WaveMP3 author Luijer if his program was really necessary. "Unfortunately, simply renaming an MP3 doesn't make it a real WAV file," he replied. That point was borne out when I tried unsuccessfully to open the bogus WAV file in other programs. "The reason Media Player will still play it is because it determines the format by looking at the contents of the file," Luijer continued. "Try renaming an MP3 or WAV to DOC and

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Links to freeware, shareware, and demo MP3 programs

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<http://mpeg.telecomitalia.com>

The official Moving Picture Experts Group home page

MPEG.org

www.mpeg.org/MPEG/mp3.html

Numerous links to MPEG resources

VideoRipper Home Page

<http://videoripper.cjb.net>

Home of WaveMP3

WAV File Format

www.borg.com/~jglatt/tech/wave.htm

Technical detail on the innards of WAV files

Wave PCM Soundfile Format

www.ccrma.stanford.edu/CCRMA/Courses/422/projects/WaveFormat

A graphic overview of the basic WAV-file architecture

opening it in Media Player [from the File menu by setting the file type to 'All files']. It will still play."

Luijter also notes that it's not possible to rewrite the file chunks with a text editor, because "MP3 files and the WAV header use raw byte data—values from 0 to 255." It might be possible with a binary file-viewing utility and a morbidly detailed knowledge of the file formats, but we're here to make music.

IT'S A BRAND-NEW WAV

Rather than disguise an MP3 as a WAV to sneak it onto a Web page, you can embed the MP3 itself, using the syntax in the "Embedding Manual" sidebar. But for that to work, your server must be configured to handle the MP3 MIME type. Also, some Web-hosting services specifically prohibit MP3s. With Macromedia's Flash Player supposedly deployed in 90 percent of browsers, saving the MP3 as a Flash file is a good alternative. Another option is to save the

MP3 as an audio-only QuickTime movie with the extension MOV; although not as universal as WAV or Flash, QuickTime is reasonably well supported.

Nonetheless, there's a lot to be said for near-universal compatibility. "I actually did a rewrite of WaveMP3 because I received many requests from users of FlasK MPEG and VirtualDub," says Luijter. "Those programs are used to make backup copies of DVD-video discs and to recode DVDs to the new DivX format [for CD-ROM]. They support only WAV files as audio input, so people are using my program to be able to use MP3s."

If you don't label your MP3-encoded WAVs clearly, you could inadvertently use one in a situation in which you would otherwise want a high-quality WAV file—burning a CD, for example. Besides that, I've found only one drawback with the format, and although it's potentially serious, it probably won't affect many people.

Specifically, the Mac version of Microsoft Internet Explorer crashes if RealNetworks' RealPlayer has been set to handle WAV files and the Mac tries to load a page with embedded MP3-WAVs.

"On Windows systems it all seems to work nicely," Luijter says. "Because the WAV format was designed to be flexible, it is not very optimized when it comes to adding data like cue points, playlists, and so on. Those chunks need to be 'wrapped' inside subchunks and filled with 'junk' chunks—empty bytes—to make sure they're all correctly aligned, which increases the file size. Another drawback of the format is that it's not streamable. But apart from those minor drawbacks, it's a good, well-thought-out format."

David Battino makes big sounds and little sounds for Batmosphere.com, a music-technology consulting service.

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The Voices Have It

Tips and techniques for recording voice-overs.

By Jeffrey P. Fisher

Voice-overs are all about conveying information—think of a documentary movie, an audio book, or a radio spot. When recording spoken-word performances, your job is to craft recordings that sound natural, accurate, and pleasant. Do that and you'll succeed.



Distinguished voice actor Harlan Hogan, whom many will recognize from commercial spots such as "Raid: kills bugs fast, kills bugs dead" and "Life: the cereal even Mikey likes," records 80 percent of his voice-over work in his personal studio using a vintage Neumann U 47 and Syntrillium's Cool Edit Pro.

Voice-over recording requires, at minimum, a recording space, a microphone, a mic preamp, and a recorder. As is always the case, the better each of these components, the better your finished recordings will sound—at least potentially. I say "potentially" because it's always possible to screw up, even when using the best of tools. The purpose of this article is to help you minimize screw-ups and maximize the quality of your voice-over recordings.

ROOM RUMINATIONS

In general, the ideal room for recording voice-overs is small, quiet, and acoustically dead. *Quiet* means soundproof (that is, free from exterior sound coming through the walls, ceiling, or floor); *acoustically dead* means free of unwanted room sound (reflections, flutter echoes, boxiness, or what have you) that might adversely affect the recordings.

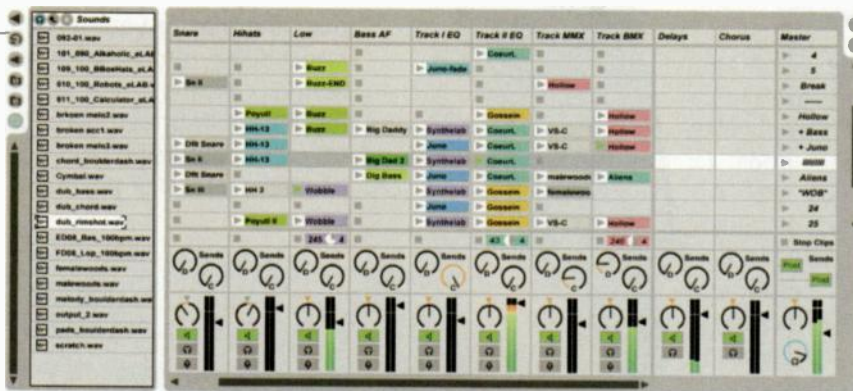
Many professional studios feature a separate voice-over isolation booth, which typically is treated heavily with absorptive foam rubber. A convenient and tidy solution for the home studio is to use one of the portable sound-isolation enclosures from WhisperRoom (see Fig. 1), which is what voice actor Harlan Hogan chose for his studio. In a home-recording situation, a walk-in

BRIAN MCCONKEY

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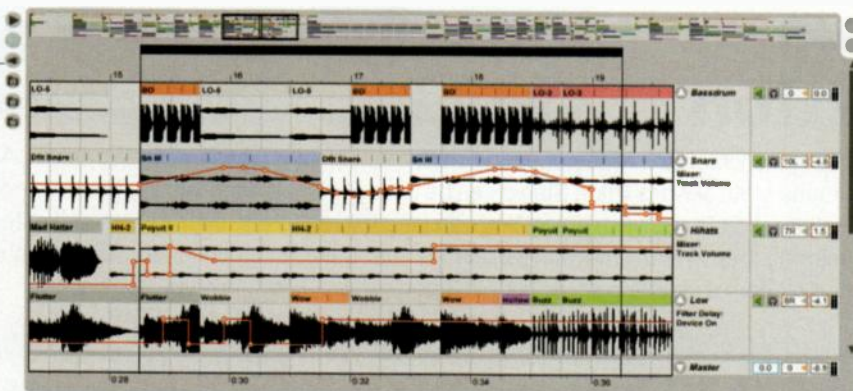
Real Time control

All mixer and FX parameters can be fully automated and operated using any MIDI controller.

live. sequencing instrument

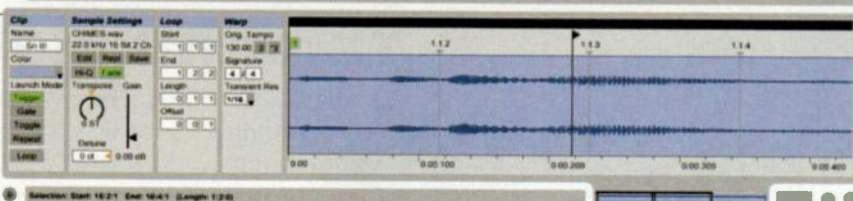
Time Warping

Bring together audio from any source. All clips will automatically play with the project tempo—even long pieces with tempo changes. You can even scale the tempo of each clip relative to the project tempo, and it always stays in sync.



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"Every now and then a program redefines what music is all about - like Sound Designer, Acid or Reason. Live is that kind of program. Its ability to record your performance for later editing bridges the gap between stage and studio." Craig Anderton



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KORG



Presonus FIREstation

Presonus' 8-channel FIREstation interface is designed to be the heart of your digital recording studio. Any mLAN compatible keyboard such as the Yamaha Motif or Korg Triton Studio can be seamlessly patched into the FireWire ports of the FIREstation to send audio and MIDI information to your computer. You can plug microphones, instruments and external preamps into the analog inputs while monitoring them in realtime without latency. Need more inputs? Just daisy-chain multiple FIREstations for up to 40 channels of I/O. There's even a built-in 1x1 MIDI port for interfacing with MIDI devices.



Yamaha Motif

Yamaha's MOTIF master synthesizer sets a new standard for sonic performance and creative freedom. It offers a whopping 85MB of Yamaha's finest sounds and the revolutionary Integrated Sampling Sequencer, a 16-track sequencer that lets you easily add vocals, guitars and drum loops to MIDI sequences.

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GET FIRED UP

Join the FIREstation studio revolution

Presonus' FIREstation interface, with state-of-the-art mLAN technology, is destined to become the most essential piece of gear in your digital studio. Just as AES/EBU and MIDI have set the standard for the way music technology communicates, so mLAN or FireWire technology promises to bring that level of integration to the recording and audio set-ups of the future. But unlike USB, an mLAN FireWire solution uses separate data streams for different types of data in a single wire. There's no need for a card or large cable. Video and other FireWire devices can be run on the same FireWire cable without affecting the timing of the mLAN musical data. And because mLAN is non-proprietary, any mLAN-equipped product will work with any other mLAN-equipped product.

Yamaha 02R96



Along with a feature set more advanced than any other digital mixer in its class, the 02R96 offers multiple channels of pristine 24-bit, 96 kHz audio, surround sound capabilities, DAW compatibility, and much more! Connect your 02R96 via the FireStation to a standalone recorder or to a computer-based system like ProTools or Nuendo for powerful and flexible audio production.



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- Eight Channels of Analog I/O

- Eight Channels of ADAT I/O
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- External Recording Punch Input
- Word Clock Input/Output via BNC Connectors

Apple iMac

You can drive your whole mLAN system with a top-of-the-line iMac. Thanks to mLAN, the latest iMacs are as adept at providing pro-level audio/MIDI communication as the expensive PCI-based desktops of the past. The new iMacs feature an 800 Mhz PowerPC G4 with Velocity Engine, the ferociously fast NVIDIA GeForce4 MX graphics processing unit, and the Super Drive — a combination DVD-R/CD-RW — that lets you burn your own CDs and DVDs. The striking 17-inch flat panel widescreen LCD display gives you more space for viewing all your windows and toolbars.



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closet filled with clothing can serve as a decent makeshift isolation booth.

If you're a one-room recordist, as I am, position the performer far from noisy gear (computer fans being the main culprit). If necessary, use a noise gate or a downward expander to suppress background sounds when the talent isn't speaking. Also, place additional sound-absorbing material around him or her. A simple, inexpensive trick is to hang heavy moving blankets from the ceiling to form a kind of tent around the performer (see Fig. 2). Obviously, this won't prevent the sound of airplanes flying overhead from destroying your recordings, but it will isolate the voice enough from unwanted room sounds to make the recordings sound better.

When recording in a one-room studio (or in a control room), monitor through headphones. Don't rely on them entirely, though. First, record a quick run-through so you can set appropriate levels. Then mute the mic and play back the track through your studio monitors to make sure you're getting the best sound. If necessary,



FIG. 1: WhisperRoom makes an assortment of professional sound-isolation enclosures, including vocal and voice-over booths, drum rooms, broadcasting enclosures, and even rooms large enough to hold rehearsing bands. Shown is model MDL 4242 S (\$2,275), which is ideal for voice-over and vocal recording.

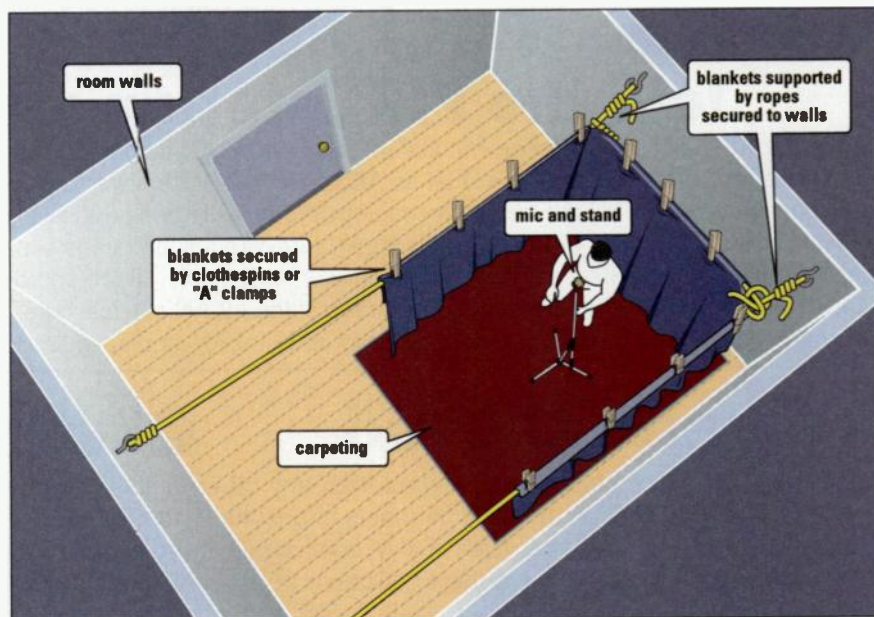


FIG. 2: An inexpensive solution for quelling flutter echoes and other unwanted room sounds is to construct a tent baffle from heavy blankets hung from the ceiling.

make adjustments and record another test. When you're happy with the sound, continue recording while monitoring on headphones.

You can also monitor on the speakers by keeping the level low. Avoid feedback and unwanted leakage by putting some distance between the mic and the monitors and by facing the (unidirectional) mic's capsule away from the speakers. Remember to mute the mic when evaluating takes.

MIC MACHINATIONS

Generally, the best microphones for recording voice are large-diaphragm, unidirectional (cardioid-, supercardioid, or hypercardioid-pattern) condensers. Unlike omnidirectional mics, which theoretically "hear" equally in all directions, and bidirectional (figure-8-pattern) mics, which hear equally from the front and the rear, unidirectional microphones reject, or at least minimize, off-axis sounds, especially those coming from behind the capsule. In addition, unidirectional mics naturally provide some amount of bass boosting from the proximity effect, which typically adds low-end fullness and authority to voices.

Though unidirectional mics are usually the best choice, condensers may not be—especially bright condensers that

accentuate sibilance. Instead of using EQ to reel in those essences, try selecting a different mic or positioning the mic further away, higher, or slightly off-axis; save the EQ and de-essers for editing and mixing. In the case of overly sibilant voices (more often female than male), you might opt for a darker-sounding condenser, such as certain tube models. I sometimes even use a dynamic, such as the Shure SM58 (the SM57 sometimes adds more unwanted sibilance to certain voices). It all depends on the particular interaction of the voice and the mic, of course, which is why a test run is always recommended.

In pro studios, the first pick for voice-over work is often a Neumann U 87 or U 89. If those are beyond your reach, you can also do a fine job with one of the many less expensive condensers on the market. There are terrific offerings from Shure, AKG, and Røde, for example. Also, I've had great success with the Marshall 2001 and 2003. Douglas Spotted Eagle, the Grammy-winning performer and producer (see www.spottedeagle.com), prefers either the Audio-Technica 4033 or the Audix SCX-25. Many radio stations use the Electro-Voice RE20 or the Sennheiser MD 421—both dynamics—for that distinctive radio-voice quality.

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A closely guarded voice-over secret is to use an interference tube or shotgun mic, specifically the Sennheiser MKH 416 (see Fig. 3). This mic's tight polar pattern and hefty proximity-effect bass boost lend a deep, rich character to voices, especially male ones. "Voices just naturally sound full and punchy on the 416," says Hogan, who often prefers it to his vintage Neumann U 47.

PLACEMENT PLATITUDES

Minor changes in mic positioning can greatly affect the sound you capture. Start by suspending the microphone from a boom stand, preferably using a shockmount, which will reduce floor rumble and other stand-borne vibrations. Position the capsule so that it is centered and even with the talent's mouth, between four and six inches away. (When using a shotgun mic, position it a little farther back, between six and ten inches from the lips.) Insert a pop filter about halfway between the mouth and the mic capsule.

When testing the mic, listen not only for accentuated sibilance but also for susceptibility to plosives (popped *ps*, *ts*, and even *chs* and *tchs*). To reduce plosives, try positioning the mic capsule a bit higher than the talent's upper lip and aimed downward slightly. Another approach is to mic the voice from the side, between 20 and 30 degrees off center. (Side miking has the additional ben-

efit of making it easier to position the talent's script.)

Sometimes capsule repositioning alone doesn't solve the problem. For such cases, Spotted Eagle suggests taping a pencil directly over the center of the mic (see Fig. 4). This trick stops popping simply by breaking up the air flow.

PREAMP PERMUTATIONS

The same preamps you use for recording music will usually work fine for recording spoken voice. In general, though, go for clean, low-noise preamps rather than those that provide coloration or a particular sonic signature.

In my studio, I often record straight into the onboard mic preamps of an Edirol UA-5 USB audio interface. The sound is basic, uncolored, and low noise. Hogan uses the mic preamps in his Mackie 1202 VLZ mixer, which he routes to an M-Audio Delta 66 interface. Spotted Eagle relies on his John Hardy M-1 mic preamp.

RECORDING RETORTS

Any decent recorder, analog or digital, can work well for voice-overs. You can even use 2-track software, such as Sonic Foundry Sound Forge, to record and edit your tracks. Hogan uses Synttrillium Cool Edit Pro and simultaneously records to DAT as a backup. He leaves the DAT running during the session to avoid missing any takes because of computer problems. The always-running DAT also captures warm-ups and rehearsals—possibly useful takes that typically are lost.

When recording to a digital medium, set your levels so you still have plenty of wiggle room should the talent suddenly get louder. Average levels around -10 dB to -12 dB



FIG. 3: The Sennheiser MKH 416 shotgun mic is known among insider voice-over recordists for capturing a tight, punchy, and full sound, especially from male performers.

are usually sufficient. (Remember that 0 dB analog is equivalent to about -20 dB digital.) Record in mono at the highest sampling rate and bit depth that you have available. I record, edit, and mix at 24-bit, 48 kHz; later, if necessary, I convert the bit depth and downsample the sampling rate, depending on the client. Some clients want a CD or WAV or AIFF files, which mean a 16-bit word length and a 44.1 kHz sampling rate; others want a high-quality MP3; and some prefer to take the 24/48 files on CD-R.

In general when recording voice-overs, use no EQ, compression, or effects. Engage the highpass filter on any mic that has one, or roll off everything below 80 Hz at the preamp or mixer or during editing or mixdown to get rid of any rumble and subharmonic junk.

Be sure to keep written notes—about good takes, blown lines, and so forth—on a copy of the script. That way, you won't waste precious time later trying to locate what you need. Also, listen back to all tracks on your main monitors *before* the talent leaves—there may be a glitch you didn't hear during the take, and if you don't fix it immediately, you'll likely have to pay the talent again to rerecord it later. Another tip: after the session ends, immediately burn a backup CD of the raw tracks.

TALENT TIPS

For shorter projects, most spoken-word performers will want to stand while recording. For longer projects, such as an audio book, they will probably need to sit, so make sure to have a chair or stool that doesn't squeak or otherwise make noise. Position the script nearby on a music stand, ideally at eye level so

NARRATION ON LOCATION

Recording narration on location in noisy environments brings another set of challenges. Isolating the performer or using acoustic absorbers may be impractical. Use them if you can, of course. But either way, choose a good unidirectional mic and position it close to the performer.

Later, when you edit the location sound, you may notice tiny jumps in background noise as you compile takes. Using a noise gate often compounds the problem. The solution is to record 30 seconds of room tone (no talking, just the sound of the room), either at the beginning or the end of the recording session. You can then mix in a bit of this background track to help smooth over problem areas.



FIREstation

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[audio electronics]

Preamplifiers

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Power

Power jack and on/off switch.

FireWire

The FIREstation features dual FireWire ports which allow you to chain multiple units together (up to 40 channels). You can also chain hard drives or other peripherals to these ports.

MIDI S/PDIF

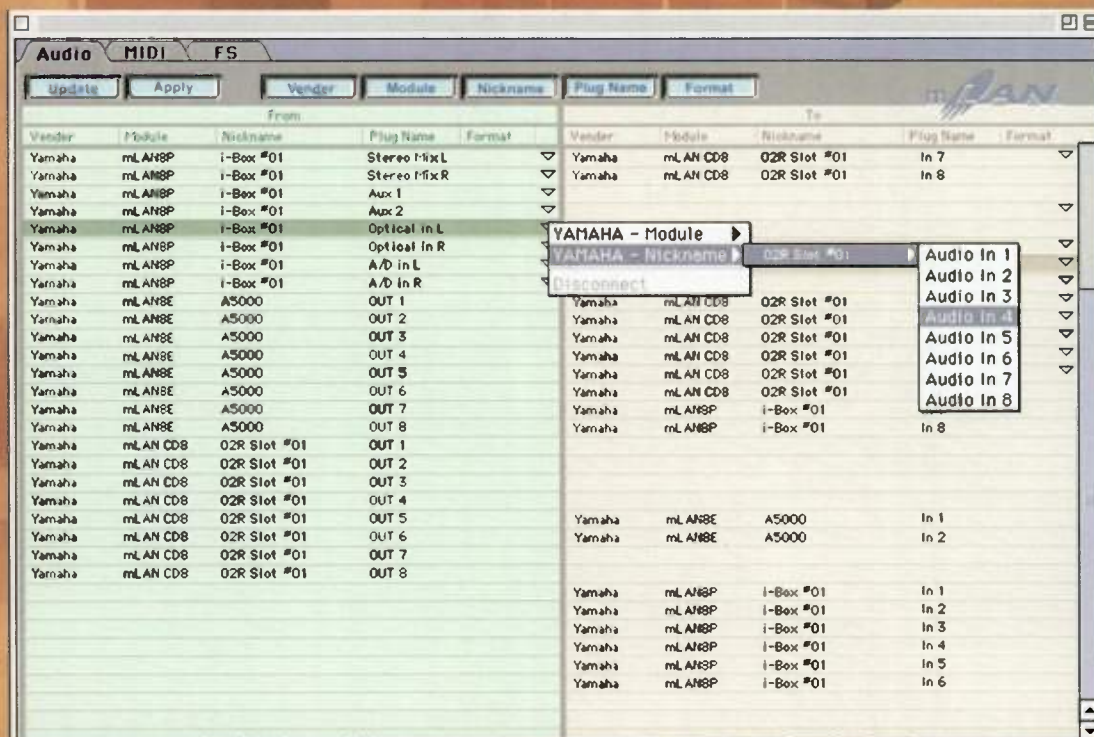
This DB-9 port can be used for a breakout cable that can connect both MIDI and S/PDIF input/output jacks.

FireWire



FireWire, the ultimate recording media network, solves the problem of having to use an internal recording interface sound card or large cable connecting to a recording interface. The benefits of FireWire and the IEEE-1394 standard are many, including: hundreds of channels of digital audio and midi on one network, easy connection of additional interfaces between products, master clock control bus that precludes the need for word clock distribution.

Why mLAN?



The FIREstation uses Yamaha's protocol for FireWire recording called mLAN. The difference between mLAN and other FireWire recording systems is that mLAN is an 'open' platform allowing compatibility with other manufacturer's hardware including Apogee, Korg, Kurzweil and Yamaha with many more to come. mLAN stands for 'Music Local Area Network' and works just like a computer network. Multiple mLAN devices can be chained together so that digital audio, MIDI and Word Clock information can be sent to and from each device. Now, audio interfaces, digital mixers and keyboards can all communicate using mLAN.

Zero-Latency Monitoring

The FIREstation utilizes an onboard line mixer that eliminates latency (monitoring delay). All eight channels of the FIREstation are routed to this onboard line mixer – the first four inputs are mono and the last four are stereo. The main outputs of your recording software (Outputs 1 and 2) are also sent to this mixer and assigned to a knob (labeled mLAN Return) so that you can control the volume of what has already been recorded while you overdub. Since this is all done in real time, there is absolutely no latency even if you are using a slower computer.



ADAT

Eight channels of 24-bit ADAT input/output.

Word Clock

Word Clock input/output via BNC.

Footswitch

Footswitch record punch I/O jack.

Balanced Analog I/O Plus Pre

All of the analog inputs and outputs of the FIREstation are on balanced. You can also plug a line level device into Inputs 1 and 2 that disconnects the Preamp Sends) which allow you to send the balanced output of the preamp. The best part is that since all of the inputs and outputs including the preamp

Add to your FIREstation Recording System...

DigiMAX LT

Eight-Channel Mic-Preamplifier w/ ADAT™ Lightpipe Output



Featuring dual-servo preamps and the same 48k A/D converters as the original DigiMAX, the DigiMAX LT offers direct digital interfacing with many of today's popular recorders, sound cards and digital mixers. The DigiMAX LT features insert points on every channel for patching in dynamics or EQ. The inputs feature dual Neutrik™ connectors for XLR or 1/4" inputs. Because the DigiMAX LT features line inputs on every channel, it can also be used as a stand-alone eight-channel A/D converter. Add in 48V phantom power and -20dB pad on every channel as well as Word Clock in/out and the DigiMAX LT is an unbelievable value for the modern digital recording studio.

- > ADAT™ Lightpipe Output
- > Eight Dual-Servo Mic Preamps
- > Eight Line Inputs
- > Eight 1/4" TRS Insert Points
- > Linear Internal Power Supply
- > 48V Phantom Power on Each Channel
- > -20 dB Pad on Each Channel
- > Adjustable Sample Rates
- > BNC Word Clock I/O for Sync

DigiTUBE

Single-Channel Tube Mic-Preamplifier w/ S/PDIF Output



Brother to the award winning BlueTUBE, the DigiTUBE adds a three-band sweepable EQ and 24-bit digital output. The DigiTUBE features 70dB of gain with 22dB of headroom. A 24-bit digital output via S/PDIF makes the DigiTUBE the perfect front end for soundcards and digital recording systems. The DigiTUBE offers XLR output and a 1/4" insert point for patching in a compressor or other outboard effects unit.

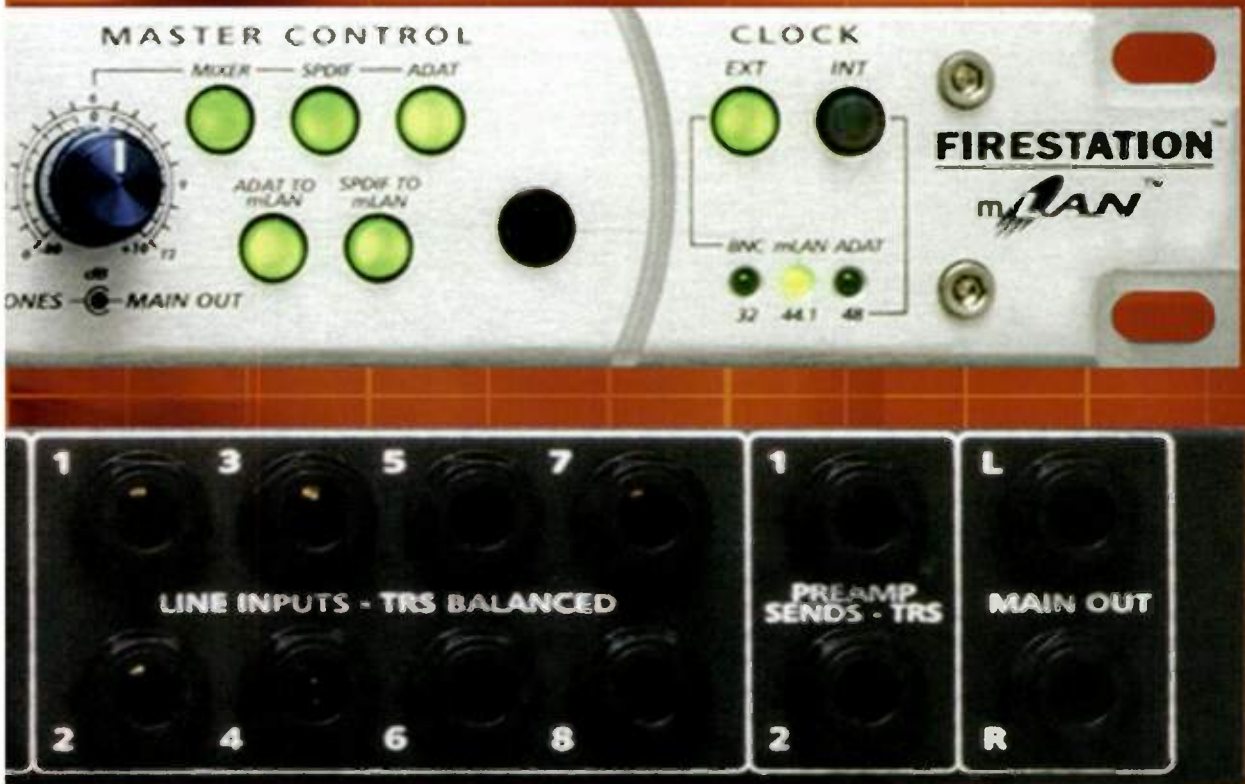
- > Tube Preamp with 70dB of Gain and 22dB of Headroom
- > Fully Sweepable Three-Band EQ with Bypass Switch
- > Insert Point after Mic Preamp
- > 24-bit Digital Output via S/PDIF
- > Word Clock Input via BNC Connector
- > Rack Mountable via BMRA
- (Optional)
- > 44.1 or 48 kHz Sample Rates

Master Control

The master control section selects what is monitored through the headphone and main outputs. You can choose between analog, ADAT or S/PDIF inputs on the line mixer as well as choosing which inputs will go to the computer. This section also provides separate volume controls for your headphones and main outputs.

Word Clock

The FIREstation has a selectable Internal and External Word Clock. If you are using an external source, you can receive Word Clock from BNC, ADAT or FireWire from the computer. Internal Word Clock allows you to switch sampling rates from 32kHz, 44.1kHz or 48kHz.



Preamp Sends

The preamp sends are located on the back panel, you can connect the FIREstation to your patchbay. The outputs of the mic preamps are directly routed to the first two line inputs, but the direct connection with the preamps. However, the preamps have their own direct outputs (labeled 1 and 2) to an external processor, like a compressor or EQ, and then return it into the line input of your choice.

Main Outputs

The main outs are designed for use with monitors. The line mixer dictates the content of this output.

Welcome to the FIREstation by Presonus

FireWire is rapidly becoming the new standard in computer recording and the FIREstation by Presonus is the best way to get connected. The FIREstation provides uncompromising audio quality and a world-class feature set to deliver the perfect solution to many of the problems associated with recording audio into a computer.

- Interface Simplicity - Uses Your Computer's FireWire Port, No PCI Cards Required
- Bi-Directional Audio, MIDI and Word Sync Information All On One FireWire Bus
- Zero-Latency Monitoring of Recorded Material During Overdubbing
- Multi-Format Analog and Digital I/O - Balanced/Unbalanced TRS, ADAT and S/PDIF
- Expandable to 40 Channels I/O
- Stand-Alone Eight-Channel A/D or D/A Converters or 8x2 Analog Line Mixer
- Dual-Path™ Tube or Solid-State Preamps for Maximum Tonal Flexibility
- Built-in 1x1 MIDI Port for Use with Keyboards and MIDI Devices
- mLAN Compatible
- Mac and PC Compatible (IEEE-1394 Port Required) for Use with Today's Hottest Audio Software (Ships with ASIO Drivers)

Make the FIREstation the heart of your digital recording studio. Plug in microphones, instruments and external preamps into the analog inputs while monitoring the signal with zero-latency. Keyboards with mLAN (i.e. Yamaha Motif or Korg Triton Studio) and DAW's (Yamaha AW series) may be seamlessly patched via the dual FireWire ports on the FIREstation to route audio and MIDI information to your computer. Need more inputs? No problem, daisy-chain multiple FIREstations to add up to 40 channels of I/O!



Stand Alone Mode



The FIREstation can also be used without a computer in 'Stand Alone Mode' where all eight channels of analog inputs are routed to the ADAT Lightpipe outputs and vice versa. In this mode, you can use the FIREstation simply as an eight channel A/D and D/A converter. This is a great way to add I/O to many of today's popular digital recorders and interfaces such as Digi001, MOTU 2408, and many others. In addition, all eight channels of analog inputs are simultaneously routed to the FIREstation's line mixer. The mixed signal is sent out of the MAIN Outputs as well as the Headphone Outputs. This allows the FIREstation to be used as a stand alone 8x2 analog line mixer. Since the Dual-Path preamps have balanced direct outputs in addition to the mixed Main Outputs, the FIREstation offers even more flexibility by allowing you to use it as an independent stereo mic preamp.

Technical Specifications

Preamp Bandwidth	10Hz to 50kHz	Headphone Output	100mW 20-20k
Preamp Input Impedance	1.3kOhms	Preamp PAD	20dB
Instrument Input Impedance	2M0hms	Phantom Power	48V +/- 2V
Preamp THD	0.002%	Meter	-20dBu, -10dBu, Clip at +18dbu
Residual Noise Floor	-96dBu	Internal Supply	Linear
Preamp Gain	70dB	Analog to Digital Converters	24bit / 44.1K or 48K
TRS Input Impedance	10kOhms	ADC Dynamic Range	107 db
TRS Input Nominal Level	+4dBu	DAC	24bit / 44.1K or 48k
TRS Output Impedance	510hms	DAC Dynamic Range	107db
TRS Output Nominal Level	+4dBu	DAC Noise Floor	-96dB
TRS Main Outputs Impedance	510hms	Internal Word Clock Jitter	Ultra low
TRS Main Outputs Nominal Level	+4dBu	MLan Speed	200mbps



Presonus Audio Electronics, Inc. / 7257 Florida Blvd. / Baton Rouge, LA 70806 / Website: www.presonus.com

Phone: 225-216-7887 / Fax: 225-926-8347 / Toll Free: 800-750-0323 / Email: sales@presonus.com

Get turned on

DigiMAX 96k



Now with 96k, the DigiMAX is the newest member of the award-winning family of Presonus mic preamps. Combine eight channels of pristine mic preamplification with 24 simultaneous digital and analog outputs, and the DigiMAX seamlessly integrates into any digital recording system. The DigiMAX is the perfect front-end for DAW's as well as adding mic preamps to digital mixers and sound cards.

- 44.1, 48, 88.2 and 96kHz Sample Rates
- Dual-Domain Limiter, EQ Enhance and -20dB Pad on Every Channel
- 48V Phantom Power on Every Channel
- Instrument Input and Phase Reverse on Channels One and Two
- ADAT™ Lightpipe Output
- S/PDIF or AES/EBU Outputs
- 1/4" TRS Balanced Analog Outputs
- BNC Word Clock I/O for Sync

ProTools® HD Users:

The DM008 cable interfaces the DigiMAX 96k directly with the Digidesign® 192 I/O into the DB25 AES input while also providing eight channels of AES outputs on a DB25 connector.



DigiMAX LT



The DigiMAX LT is essential to the modern digital recording studio. Eight channels of pristine mic preamplification, inserts on every channel, and an internal power supply set this unit apart from anything else on the market. Each channel features our award-winning, high performance, dual-servo microphone preamplifiers with 48V phantom power, and -20dB pad. Each channel also features Neutrik™ connectors that accept line level or microphone input. Digital synchronization is achieved through word clock in and out via BNC connectors.

- ADAT™ Lightpipe Output
- Eight Dual-Servo Mic Preamps
- Eight TRS Insert Points
- Linear Internal Power Supply
- 48V Phantom Power on Each Channel
- -20 dB Pad on Each Channel
- Adjustable Sample Rates
- BNC I/O for Sync

the performer doesn't have to look down or turn away from the mic while speaking.

When working with a professional, you can pretty much hand him or her the script, get a level, and press Record. Most pros know how to work a mic—for example, how to minimize plosives, back off on loud passages, and generally deliver a consistent vocal quality and dynamic range.

Recording amateurs is the greater challenge. Most are uncomfortable recording and, yes, they will almost always tell you how much they hate the sound of their voices. To get the best performance, do everything possible to put them at ease and make them feel comfortable. Depending on the personality, it might even help to explain what you're doing at various stages in the recording process.

Amateurs tend to rush, so look for ways to slow them down. "It's important that they relax," says Spotted Eagle, "because a tense voice is higher in pitch than a relaxed voice. To some extent, excitement can be created in the mix, but tension cannot be removed, no matter how many tools you have in your arsenal."

Bad breathing is another common



JEFFREY P. FISHER

FIG. 4: One of the oldest tricks in the book for foiling plosives: simply tape a pencil over the center of the mic capsule.

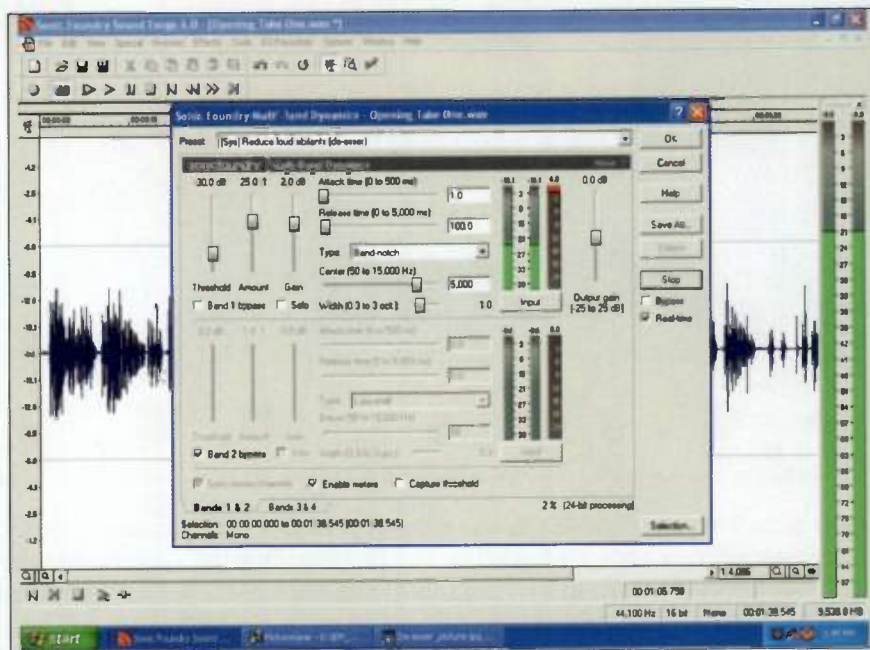


FIG. 5: A multiband compressor, such as this Sound Forge Multiband Dynamics plug-in, can help reduce sibilance. This example shows good starting-point settings: center frequency at 5 kHz, bandwidth at 1 octave, ratio at 25:1, and threshold at -30 dB.

problem among novices. Long sentences and strings of complex nouns often force the talent to take "catch" breaths. These gasps for air sound horrible and can really hurt a take. If you run into this problem, go through the script with the performer to indicate natural pauses for catching a breath. This will help the talent pace his or her breathing.

If you're still not getting a great performance, tactfully suggest ways for the performer to improve delivery of the lines. Of course, when working with a director or producer, it is usually up to him or her to make those suggestions. But as a general safeguard—and especially if you're recording without input from others—try to get at least three takes of each line. That way the client can choose—later—the best takes or performances.

When the performer blows a line, don't redo just the blown words. Sentence pickups, even when expertly edited, rarely sound natural—often the emotion or inflection is wrong, making them stick out. Instead, go back to the beginning of a sentence or some other logical starting point and pick it up from there.

EDITING EXCLAMATIONS

One problem with recording and editing in the same room is that your brain tunes out any background din, which is present, naturally, both in the recording and in the room itself. Before cleaning up and editing takes, listen carefully on your best headphones to find glitches and other background sounds—things that you might miss on your monitors. Headphones can help you focus on the recording and ignore your noisy studio. Of course, when it comes time to edit, you should return to listening on your reference monitors.

Before starting to edit (digitally), always make a copy of the original file and then work on the copy. That way you can go back to the original file if something goes wrong. (The session CD is yet another backup.) Referring to your notes, choose the best takes, fix mistakes, and get rid of unwanted bits such as background noise, chatter between takes, unnecessary breaths, lip smacks and other mouth noises, digital ticks, and so on.

When it comes to editing breaths, note that, if you cut them out completely, the finished version can sound

unnatural. On the other hand, excessive breathing can sound bad, too. The trick is finding a balance. Work to eliminate big breaths that add nothing to the performance, as well as distracting "catch" breaths that occur between phrases. Leave the more natural breaths in place (though you may want to play them down somewhat by reducing their volume).

If you're hired only to record the narration, work to get a good basic sound and leave the EQs, compressors, and effects off—those responsible for the final mix can do the creative work. Hogan delivers only his voice tracks to producers, who then add the other elements. They insist he send a clean file, free of special effects. "I might normalize the tracks, but that's about it," says Hogan. "For auditions, though, I usually use some compression to make my readings sound louder, which helps them stand out from the other actors' submissions."

On the other hand, if you are hired

to do the whole project—voice, music, and sound effects—you can be more adventurous. After recording and cleaning up takes in Sound Forge, I load them into Sonic Foundry Vegas Video to arrange the final piece. The editing I do in Vegas is more to perfect timing than to fix mistakes. Vegas is also where I add EQ, compression, and other sweeteners, if needed.

FINAL FIXES

On dull-sounding voice recordings, add a slight EQ boost somewhere between 3 and 4 kHz. Avoid boosting in the 5 to 8 kHz range, though, because that's where sibilance often resides. For a more in-your-face sound, Spotted Eagle suggests also punching up the low mids (150 to 250 Hz) and the extreme highs (8 to 10 kHz).

If sibilance persists, apply some frequency-dependent compression, known as de-essing, to reduce it. This usually works better than EQ alone. Sound

Forge includes a Multiband Dynamics plug-in that's ideal for minor sibilance issues (see Fig. 5).

Gentle compression can even out levels and make for a smoother, more natural sound. Spotted Eagle always uses compression to maximize the impact of the voice, whether it's heard alone or over sound effects, music, or *walla* (nonsynced crowd sounds). He recommends a 4:1 ratio with a fast attack and a slow release as a good starting point. "If you need the level hotter," he says, "such as for radio or TV, then compress even more."

Jeffrey P. Fisher helps musicians improve their careers through books such as Profiting from Your Music and Sound Project Studio (Allworth Press, 2001). Check out his web site at www.jeffreyppfisher.com. Special thanks to Douglas Spotted Eagle and Harlan Hogan.

We welcome your feedback. E-mail us at emeditorial@primediabusiness.com.

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Oldies but Goodies

How to get a good deal and avoid getting burned.

By Mark Nelson

I have a confession to make: I'm a used-gear junky. Just about everything in my home studio—synths, samplers, digital multitrack recorder, effects, even my desk and patch bay—originally belonged to strangers. I have bought (and sold) used gear since my earliest days as a musician, wired money to people I've never met, shipped valuable cargo halfway around the world on a promise, and lived to tell the tale.

In spite of the many horror stories

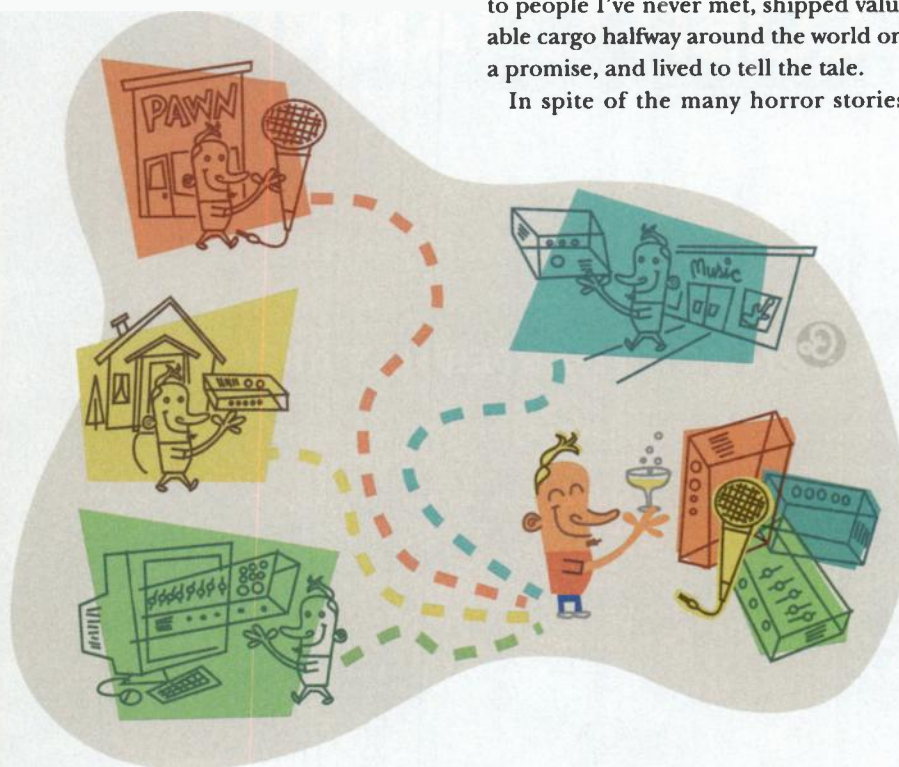
in circulation, buying from auction sites or print classifieds is as safe as any arm's-length transaction, as long as you take a few simple precautions. In this column I'll discuss where to find the best deals, how to protect yourself, what to look for, and where to find manuals and service for older gear (see the sidebar "After You Buy").

So why not just buy new stuff and avoid the hassles? Well, for one thing, used gear usually sells for half as much as new. Also, by the time a product reaches the used market, it has often developed a substantial user base. That base can prove invaluable to you when you are researching what to buy; additionally, it will help you in determining what type of support and assistance you can expect to get after you have made your purchase.

For the purposes of this article, let's differentiate between the terms *vintage* and *used*. Vintage, unlike used, connotes a certain level of desirability, function, and class that goes beyond mere age.

CHOOSE WISELY

Before you start bidding or make an offer on anything, know what you want and why you want it. Peruse online user groups (most manufacturers maintain links) or run a search on the name of the product—and don't be shy about





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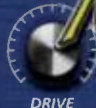
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Product Description	Year Released	List Price	Average Price	Pricing Trend	Number Tracked	Recent Popularity
1212 IO			\$159	▲	96	8000
100RC			\$398	▲	61	8000
707			\$103	▼	54	8000
880			\$135	▼	12	8000
A1			\$317	▼	20	8000
A2			\$248	▲	29	8000
A3			\$183	—	86	8000
A4			\$80	▲	46	8000
A5			\$63	—	78	8000
AG10			\$68	—	15	8000
AT1			\$33	—	11	N/A
AT12			\$68	—	29	8000
AT2			\$18	—	18	8000
AX1000G		\$350	\$171	—	168	8000
AX1000			\$114	—	71	8000
AX1B			\$72	—	87	8000
AX1G			\$64	—	185	8000
AX30G			\$89	—	64	8000
CA-20			\$16	—	148	8000
C19800			\$1943	▲	11	N/A

FIG. 1: PrePal.com tracks current prices for thousands of music products. This figure shows current auction prices for a number of Korg devices.

asking questions. Subscribe to relevant newsgroups, many of which have extensive searchable archives (see the sidebar “Net Sources”). And of course, don’t overlook EM’s online review archives.

Check out the manufacturer’s Web site to learn about the product and to read any available technical reports. Surprisingly, even gear that’s been off the market for years may still be supported with downloadable updates, user tips, FAQs, and more. Try to learn if a product has recently been orphaned (dropped from the development process). Dead-end gear may look like a bargain, but it’s not if you can’t get media, accessories, and supplies.

Purchasing items having obsolete technology and an entrenched user base is another story. Just because everyone’s hyped about 24-bit, 96 kHz audio doesn’t mean you should pass on a perfectly good 16-bit recorder if it fits your needs and budget. Or consider this: the venerable Yamaha SPX 90 digital multi-effects processor remains a staple in many studios even though it boasts only 12-bit internal processing. Some obsolete gear attracts a fanatical following—yet another reason to peruse user groups.

Once you have an idea of what you want, go to PrePal.com to check the price—it tracks all of the major online auctions, posting daily updates for more than 3,500 products in its database (see Fig. 1). PrePal.com is a great resource for finding pro and project-studio gear and synths; sadly, no such service exists for guitars and other musical instruments. However, you can get a pretty good idea of current selling prices for those by searching recently completed auctions or the past few weeks of the Sunday classifieds.

But be forewarned: I’ve noticed a couple of instances in which the prices for used gear were actually higher than what you’d pay for the same gear new from a discount retailer. It therefore pays to check the new prices, too.

GOING ONCE, GOING TWICE

EBay is the world’s biggest garage sale—sooner or later just about everything real or imagined shows up for auction on this hugely successful, and large, Web site (see Fig. 2). There are many additional general-purpose auctions on line, offering everything from cars to collectibles. One, Digibid, specializes in equipment relating to music, video, and film, making it a good place to begin your search.

The secret to success with auctions is to know your price and stick to it. Don’t get caught in a bidding war just to satisfy your ego; by the time the smoke clears, you may realize your winning bid was half your annual salary.

By the same token, you can’t simply post your maximum bid and walk away—some dog is sure to top you. I’ve seen people cruise auction sites, upping bids by a dollar or two seemingly at random. Please don’t adopt this strategy, because it doesn’t work and it’s really annoying.

I like to automate the bidding process, letting my robot agent top each new bid as it’s placed, up to a preselected maximum. Most auction sites offer this service. If you’d rather participate, most of the action happens toward closing time, so set your alarm. Sometimes it all comes down to who’s quickest with the Send button at the final gun.

Be aware of *reserves*, which are hidden

minimum prices. It’s pretty frustrating to discover after two weeks of nail biting that your winning bid won’t be accepted after all. Digibid doesn’t allow reserves; minimum bids are clearly posted.

PROTECT YOURSELF

EBay’s system of rating sellers (and buyers) offers a modest amount of protection. Nonetheless, trust is the name of the game. Escrow services (optional on eBay, but standard on Digibid) foster peace of mind. Here’s how they work: both the buyer and the seller agree to use the service and negotiate the terms. Once you win a bid, the escrow service holds on to your payment until you’ve received and inspected the gear. If it isn’t as advertised, you can return it for a full refund, less a small handling charge.

If the seller is signed up with an online payment service such as PayPal, you get fraud protection built in to your credit card without the risk of giving a stranger your number.

AFTER YOU BUY

It is surprisingly easy to replace a lost or missing manual. Many manufacturers maintain downloadable archives; others will sell you a hard copy. Some retailers specialize in out-of-print and hard-to-find manuals. The Online Manual Archive (see the sidebar “Net Sources”) has links. User groups are another great source—I’ve had complete strangers offer to make copies of hard-to-find manuals and tech documents.

Finding parts and service for obsolete equipment is more of a challenge. I always check the manufacturer’s tech-support pages for a nearby service center. The Musical Instrument Technicians Association maintains a members’ list sorted by state. If the company you’re looking for is out of business, your best bet is to subscribe to a newsgroup or listserv. Sometimes posting a want ad will bring results.

A detailed view of the Korg D1600 Digital Recording Studio. The unit is a light grey, rack-mountable device. It features a large, orange-backlit LCD screen at the top left displaying track information. Below the screen is a row of 16 track buttons, each with a small LED indicator. To the right of the track buttons is a large, circular jog wheel and several other control buttons. A CD is partially inserted into the front-loading disc tray at the bottom left. The background is a soft, blue gradient.

EASY DOES IT.

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KORG

* Model number D1600V40 includes 40GB hard drive and built-in CD-RW.
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The overwhelming majority of sellers are folks just like you who are looking to turn over some of their surplus gear. Nevertheless, it's never a bad idea to be careful. Be wary of generic e-mail accounts like hotmail.com or yahoo.com—they are impossible to trace if something does go wrong. Always make sure you get (and verify) a phone number, as well as a valid street address.

CLASSIFIED INFORMATION

As with the classified section in print publications such as **EM**, online classified ads can be a great place to check out when trying to pick up used gear. Away from the bidding frenzy, you have time to ask questions, negotiate a price, and work out details of shipping and payment. User groups, forums, and news groups often allow members to post ads, a great resource when you are looking for something specific. Dedicated classified sites range from huge international listings to tiny pages with a few specialized ads. A number of online retailers and informational sites host independent classified sites as well.

Most classifieds work the same way: you contact the seller directly to make the deal. At some sites you post your offer for a set amount of time, during which the seller can accept it or pass.

FROM THE SOURCE

Products that have been returned to a manufacturer or retailer for one reason or other, although not technically used, can be huge bargains. Returns may be reconditioned by the factory to the original specifications, or they can be offered as "dented-and-scratched" merchandise. Both types offer the significant advantage of warranty protection and service from a reputable dealer. Beware of merchandise offered "as is"—that means it isn't covered by a warranty.

Used-gear retailers combine great selection with the protections of an established dealer (credit cards, returns, and so forth), albeit at a somewhat higher cost than classifieds or auctions. Most have a set trial period for all purchases, and some even offer limited warranties.

FACE TO FACE

Even in this wired world, a lot of commerce still happens at arm's length. Classified ads, garage sales, even the neighborhood pawn shack have a lot going for them; what you give up in privacy and convenience is offset by the



**The vintage market is
fickle and has a
unique set of pitfalls
and strategies.**

chance to get your mitts on the object of your desire. Looking the seller in the eye while you decide the fate of your last paycheck isn't a bad idea, either.

Just about every newspaper runs a classified section for musical instruments—the bigger the town, the more choices you'll have. For even greater selection, check out alternative and free papers in larger metropolitan areas and college towns. I've seen some terrific rags dedicated to the local music scene, with listings for gear, rehearsal spaces, musicians wanted, and more. As with online classifieds, the key is to gather information

in advance. Phone up and ask questions before you make the drive. If you like what you hear, make an appointment. And be prompt—no one likes to lose an afternoon waiting around for some joker who has no intention of showing up.

You may be entering someone's home to inspect the gear, so keep the conversation to a minimum and avoid trash talk. Bring what you need to check out the gear: headphones, your guitar, a favorite CD, and so on. Some people like to bring along an experienced friend for a second opinion. If you want to haggle, go ahead. For many people, that's half the fun; others find it insulting. Unless you are buying from a studio or other established business where credit cards and personal checks are accepted, bring enough cash to do the deal. Chances are that you won't be able to arrange an overnight trial deal, but it doesn't hurt to ask.

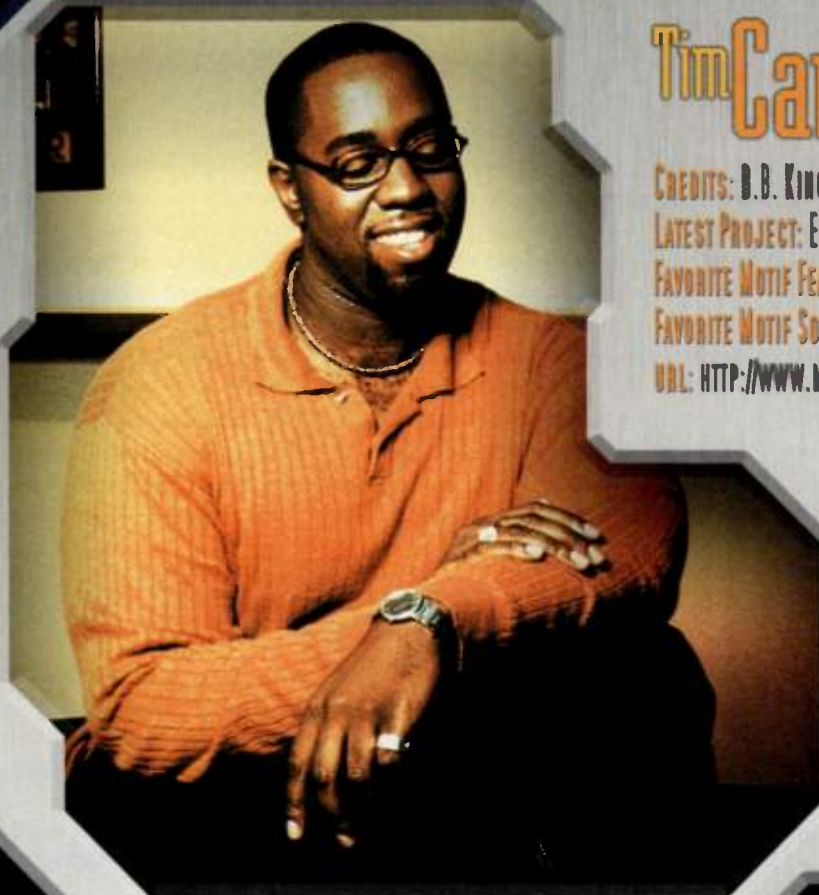
Garage sales are the stuff of legend. Everyone knows someone who knows someone who picked up a 1955 Fibson Trem-o-Valve with the original hound's-tooth grill cloth for \$25 and change. The reality is a little more mundane: when you see the words "musical instruments," expect a battered clarinet or cheesy chord organ. That being said, you never know when a sweet old RCA ribbon mic in perfect working order will show up. If

Picture	Item Title	Price	Bids	Ends
	KURZWEIL K2500 reloaded w/ sampling option	\$958.00	-	Aug-01 07:38
	Kurzweil Synth Drum Sample CD-ROM K2000 K2500	\$29.95	-	Aug-01 10:01
	6000 Samples for your Kurzweil K2000 or K2500	\$9.99	-	Aug-01 17:34
	KURZWEIL K2600 K2500 K 2500 2600 64MB MEMORY!	\$2.95	-	Aug-01 18:19
	Korg Trilon, Kurzweil K2500, 14,000 Samples!	\$19.99	-	Aug-02 06:31
	6000 Samples for your Kurzweil K2000 or K2500	\$9.99	-	Aug-02 17:10
	6000 Samples for your Kurzweil K2000 or K2500	\$9.99	-	Aug-03 17:09
	KURZWEIL K2000, K2500 SAMPLE CD-ROM 1500 ...	\$9.99	-	Aug-03 18:26
	KURZWEIL K2000 K2500 32MB K-2000 K2500 MEMORY!	\$24.95	-	Aug-03 19:32
	Kurzweil K2500 Sample CD-ROM Akai Giga WAV	\$27.95	-	Aug-04 18:26
	Kurzweil K2500 K2600 CD-ROM drive w/ cable	\$119.00	-	Aug-04 18:38
	KURZWEIL SMP1K UPGRADE KIT FOR K2500 @NINJA	\$149.00	-	Aug-05 20:25
	Kurzweil K2500 Rack Sampler! w/ Extras	\$799.00	1	Aug-05 19:00
	ATA Style Case For KURZWEIL K2500 & K2600	\$69.00	-	Aug-07 13:33

FIG. 2: eBay is the world's largest online auction site and is a great resource for buying used music gear. Searching for "Kurzweil K2500" returned a page full of hits.

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you have the time, you can have a lot of fun and maybe even make a score.

Pawnshops get a bad rap in the used-gear world. Everyone knows the story: some out-of-luck soul had to pawn her axe in order to raise bus fare to go to her father's funeral, and then couldn't get back to reclaim her instrument before the loan ran out . . .

In most cases, however, the used musical equipment in a pawnshop is actually sold to the store, not pawned. Many shops maintain a lively trade buying and selling used (and new) gear, both retail and wholesale.

AVOIDING GEAR PROBLEMS

The bulk of the used gear you'll come across is good-quality stuff that has outlived its usefulness to the owner. Then there's that funky, broken junk that never was any good to begin with. How do you tell the difference?

First off, don't trust the photo posted next to an ad—especially an online one. Most likely it came from the manufacturer's Web site and doesn't represent the specific item. Always ask the seller about the manual and supplemental paperwork, and whether the unit comes with any add-ons or accessories such as power supplies, rack hardware, extra sounds, and so on. If you're buying online, you either post your questions using a query form or contact the seller directly for a confidential reply.

I always want to know if the owner has the original shipping materials and box, not just because they will help ensure that the unit will reach my door safely, but because it suggests that the gear has been well cared for by a meticulous owner.

Not all used gear is created equal; the quality of effects units, solid-state compressors, direct boxes, synth modules, and the like tends to be fairly reliable. Barring a serious electrical accident or outright stupidity, it's pretty hard to break them. A dead battery simply means that you won't be able to store your edits until you change it; a burned-out LED or LCD may not affect the operation; tubes are easy to change. Look out, however, for excessive noise at the outputs, crunchy pots and switches, and

obvious shorts. In my experience, most older digital gear works perfectly well long after it has become obsolete.

Buying used microphones is another story. I've seen mics for sale that looked as though they'd been used as hammers. Insist on a trial period and test as thoroughly as you are able. At the very least, A/B your purchase against another mic of the same type. Make sure that you are getting all the accessories—clips, power supplies, boxes—that you bargained for.

As a rule of thumb, the more moving parts, the greater the chance for trouble. Recorders and mixers in particular require periodic maintenance to operate at tip-top shape. That's why I always ask the owner of an item I want to buy to give me as much detail about it as possible. Where was the unit used—a nonsmoking studio? As a remote rig? For house sound in a biker bar? When

was its last scheduled maintenance? Who worked on it, and what was done? What is the current software version?

If you make a deal and are having the gear shipped, have the seller insure the shipment for its full value and be sure to get the tracking number. Inspect the package as soon as it arrives; shippers are liable for merchandise damaged in transit only if it was properly packaged and you file your claim promptly. Do not accept delivery if the packaging is obviously subpar—some unscrupulous weasels may be trying to stick you with a broken piece of junk by pretending it was damaged in shipment.

If during your agreed-upon trial period you feel that the unit is not as advertised, contact the seller and arrange a return. Expect to pay the return shipping, because most sellers insist on that in order to cut down on frivolous returns.

Outright fraud is pretty rare, but it

NET SOURCES

www.communitymusician.com

Musicians classifieds, services, and more listed by city. Mostly U.S. cities, with a few Canadian.

www.digibid.com

Great auction site for music, video, and film technology.

www.ebay.com

The granddaddy of online auctions.

www.emusician.com

Electronic Musician's online presence.

www.escrow.ca

www.safebuyer.com
Escrow and financial services.

www.harmony-central.com

Reviews, tips, classifieds, and great links.

www.mitatechs.com

The Musical Instrument Technicians Association has a members' directory and an interesting assortment of old organ manuals.

www.musicians-classifieds.com

The International Musician's Trading Post. Listings in the United States, the United Kingdom, and New Zealand.

www.musicians.about.com

Informational site containing subsections including reviews, links to auctions, and tips on buying used gear. See also www.altmusic.about.com.

www.musicgearreview.com

Reader reviews of new and used gear. Affiliated with retailer Musician's Friend.

www.olywa.net/blame/mummanual.html

The Online Manual Archive. This site is invaluable for helping users find old manuals, parts, and service information.

www.paypal.com

This site functions as an online banker, allowing individuals who have e-mail accounts to send and receive money.

www.prepal.com

An excellent source for used gear pricing information.

www.promusicfind.com

Music database and worldwide marketplace. Members include retailers, appraisers, and collectors. Still mostly under construction as of this writing.

www.sonicstate.com

Musician's classifieds, and more.

www.sweetwater.com/tradingpost

Extensive, searchable classified listings. Hosted by retailer Sweetwater Sound.

www.synthzone.com

Good general site for information and links for synths, primarily.

does occur; that is another argument for using an escrow service. (EBay guarantees your purchase price up to \$200, regardless.) Most auction sites can lead you through the steps for filing a claim with the proper authorities. Remember, you may also be covered under your credit-card agreement, so take the time to read the fine print.

READY, SET, SHOP

Buying used gear doesn't have to be scary. For the most part sellers are honest and the bulk of the horror stories you hear are urban legends. A few simple precautions, a little foresight, and a healthy dose of common sense can make all the difference between disaster and delight. And think of all the stuff you can buy next year with the money you save today!

Mark Nelson *lives and works in southern Oregon's Applegate Valley.*

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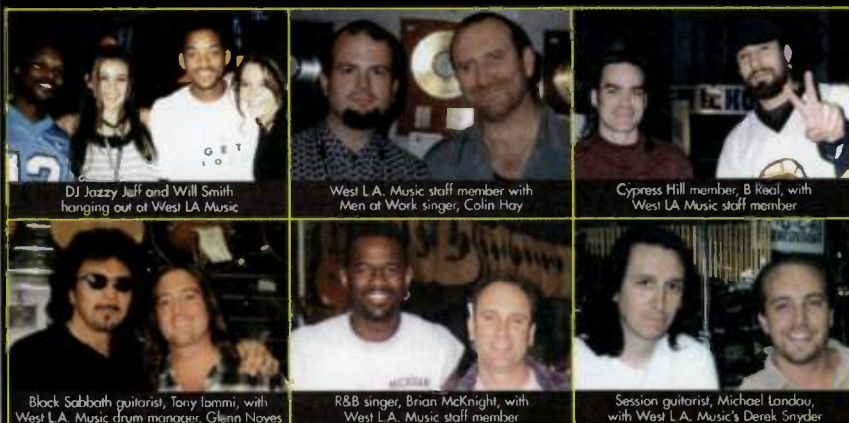
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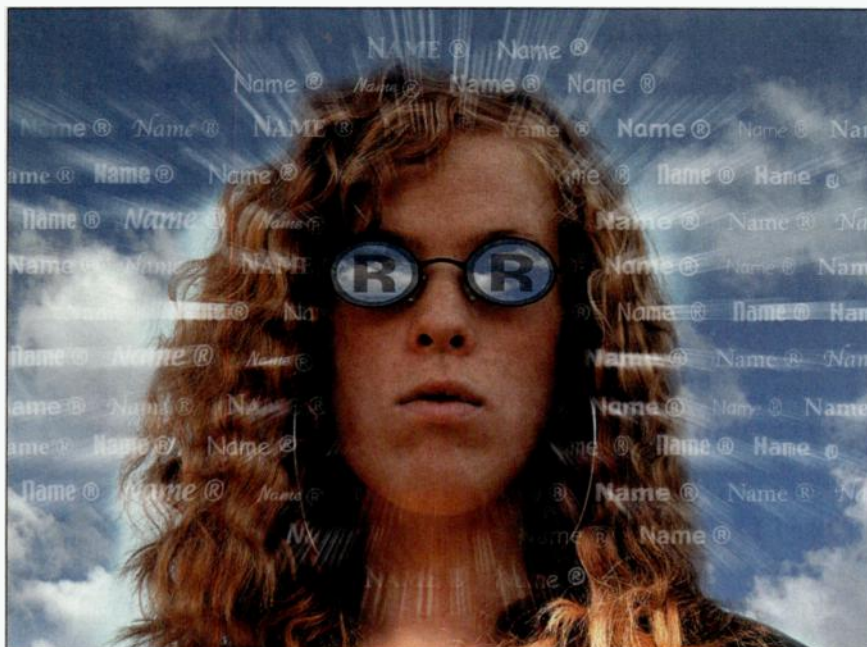
By Michael A. Aczon

Over the years, names of bands have served as guideposts of popular culture. The mere mention of the Supremes, the Sex Pistols, Jefferson Airplane, and the Beatles conjure up many images of cultural and political events of the times; but most importantly, the names bring to mind images of the acts themselves. The strength of association between an act's name and its music means that you must choose a name carefully and protect it fiercely.

Except for its songs, the most important thing a band possesses is its name. For that reason, you need to understand why you should own the trademark for your band name and learn how to obtain it.

A trademark is a brand name associated with a source of goods available to the public. Trademark law specifies that brand names be unique so that the public can distinguish one seller of goods from another. You should keep two technical points in mind as you read this column. First, all references to "bands" can be extended to include other entities, such as production companies, recording studios, and songwriting teams. Second, bands provide "services" (in the form of live performances) and "goods" (CDs and other merchandise) in the eyes of trademark law, so all references to trademarks include "service marks" as well. For a look at the differences between trademarks, service marks, and copyrights, see the sidebar "Getting the Rights Right."

Before going over the procedural aspects of obtaining a trademark, I want to underscore the importance of establishing ownership rights in your band name. One reason for you to do so is to give the public—your fans and consumers—a unique name to grab on to so that they don't confuse your band



RON BROWN



“Two Publishers Fought Over My Music Because I Joined TAXI”

Bill Gordon – TAXI Member

You would think that after thirty-five years of writing, and recording my own music, I would have had some major commercial success. Sadly, that wasn't the case.

Then I joined TAXI.

As a result of my membership, I signed a deal with a boutique publisher that got me my first placements in TV and film.

Soon after that, a large-scale, international publisher contacted me about publishing some of my tunes.

The next thing you know, the two publishers were “fighting” over my music!

While nobody threw any actual punches, it was incredible having two great companies slug-ging it out over my songs. A musician's dream-come-true.

The end result? I'll tell you in a minute.

First, I want to tell you the ironic part – I almost didn't join TAXI. I thought it sounded too good to be true. Man, was I wrong!

TAXI's comprehensive feed-back shows me where I'm strong,

and where I'm not – a constant reality check. And getting tons of opportunities to pitch my music has helped me stay focused and very productive.

It's obvious to me that the people at TAXI *really* want me to succeed. And they do so much to make sure that I do. It feels like I've got a team of experts who are on “my side.”

I can unequivocally say that the people at TAXI are the most informed, honest, honorable, helpful and loyal folks I have ever known in the music business. They never make a promise they can't deliver on, and they do it all at a reasonable price.

Then there's TAXI's private convention which is FREE to members and their guests. The Road Rally isn't just the icing – it's a whole other “cake.” It gives me a deeper understanding of the music business, a bunch of great new contacts, and a jolt of inspiration.

TAXI also connected me with a Grammy™ winning producer who has worked with such legends as Jackson Browne, Michael McDonald, Luther Vandross, Maynard Ferguson, Freddy Hubbard, and Sarah Vaughn.

Two years later, he produced my album. The very same album that started the publisher slug-fest I told you about earlier. And how did it turn out?

I'm happy to tell you that *both* publishers signed some of my songs!

Thirty-five years as a working musician, a degree from Berklee, and all it took was a membership to TAXI to make me an “overnight success.”

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REARVIEW MIRROR

Iowa-based rock band got a label deal with legendary producer Steve Lillywhite's new label, Grabstapper Records.

DAMIEN FONTANA

New Jersey songwriter scored a publishing deal with Warner/Chappell Music Publishing.

WHO'S NEXT?

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with another one using a similar, or even identical, name. A more subtle reason is to ensure that the name of your band is secure when you deal with third parties. Recording agreements will sometimes state that an act must transfer the trademark for its name to the label or allow the label to trademark the band's name if the band hasn't already done so. As a consequence, you could be forced to change the name of your band if your relationship with the third party ends. For example, if you do a trademark search for the name "Jackson 5," you'll see that this valuable mark is owned by the label, Motown. Establishing ownership of your trademark before dealing with all of the other details involved in negotiating a record or management deal leaves one less legal loophole to close. In short, if you want to control as many aspects of your band's business as possible, getting your trademark is a good place to start.

A BAND BY ANY OTHER NAME

Obtaining a federal registration of your trademark demands that you spend a

significant amount of time, effort, and expense. Therefore, you need to examine some initial business considerations before you set the process in motion. For example, will your band stay together long enough to justify protection of the name? Bands that play only occasional gigs probably do not require as much multiyear, long-range planning as does a band that has two indie CDs out, has already established a touring plan, and is seeking a major-label record deal. What is the anticipated territory of your band's business? You might not need national protection if the extent of your musical reach is the border of the next town.

Most important of all, however, is the name you choose for your band. Because musicians are by definition creative, they usually manage to pick band names that fulfill the legal requirements for a trademark. That is, the name must be unique and must not infringe on another trademark. Most bands, therefore, are able to choose a name without having to seek the legal opinion of a trademark lawyer.

GETTING THE RIGHTS RIGHT

If you are confused as to how a service mark differs from a trademark or whether you should copyright or trademark your band's logo, read on to learn about the distinctions between these types of rights.

Copyright. You are probably familiar with copyright as it pertains to a piece of music, but any original artistic or literary work, such as a musical work, a book, or a painting, may be copyrighted. The U.S. Patent and Trademark Office (PTO) does not grant copyrights. They are covered by the Library of Congress (tel. 202-707-5959; Web <http://lcweb.loc.gov/copyright>). However, a logo that is an original work of art incorporating a band's name is copyrightable, so you may obtain both a copyright and a trademark for it.

Trademark. A trademark is any word, name, or symbol—or any

combination of those—used to identify the source of goods in the marketplace. The PTO further specifies that the purpose of a trademark is to identify and distinguish one seller of goods from another.

Service mark. A service mark is the same as a trademark, except that it identifies a source of services, rather than a source of goods. For example, a service mark would apply to the name of your band in connection with your services, such as gigs, whereas the trademark would apply to your band name as it appears on your CD and any other band merchandise. According to the PTO, "Normally, a mark for goods [a trademark] appears on the product or on its packaging, while a service mark appears in advertising for the services."

—Mary Cosola

The more distinctive your band name is, the better off you are when it comes to getting it trademarked. When you come up with a name that has had no prior existence, such as "Zorfwyx," other bands—and the public—can easily see that the name is clearly intended to be a unique mark. Or you can incorporate a proper name into your band name; for example, "Graham Central Station" is a clever usage that combines band leader Larry Graham's name with a play on New York's Grand Central Station.

Using a word or phrase that is common in one context but is unique when attached to a band is yet another way to meet the requirements of a trademark. "No Doubt" alone as a phrase is not unusual, but when used to describe a certain group of musicians, it is. Taking into account the aforementioned trademark requirements, choose your name wisely, consider its longevity and potential strength in the marketplace, and proceed.

THE TRADEMARK SEARCH

The next step toward securing your trademark is to conduct a search to make sure that it is not currently being used. That is a crucial part of the process because regardless of how unique you think your band name is, if someone else has beaten you to the punch and established a strong trademark already, you will likely have to choose a different name.

A variety of sources are available to conduct your trademark search including the U.S. Patent and Trademark Office (PTO) Web site (www.uspto.gov), which publishes registered and pending federal trademarks, trademark registration listings for each particular state, compilations of yellow pages, electronic and hard-copy listings of business names, and listings of band names online. The Trademark Electronic Search Service (TESS), the PTO's online database, lists more than 3 million pending, registered, and ex-

pired trademarks. Any visitor to the PTO Web site may use TESS free of charge. In addition to TESS, the PTO has the same information available in a database called Cassis on CD-ROM, which is available to the public at no charge at any one of the several Patent and Trademark Depository libraries located around the country.


If you would rather not take care of the search yourself, you can also hire a trademark search firm to do it for you. MicroPatent (tel. 800-648-6787 or 203-466-5055; e-mail info@micropat.com; Web www.micropatent.com) offers an array of services pertaining to intellectual property. Of particular note here is its trademark database and search services. Other firms can be found in the yellow pages or by searching online. Fees range from less than \$100 to around \$300, depending upon the extent and detail of your search.

You can find a number of online databases of bands by surfing the Web, but

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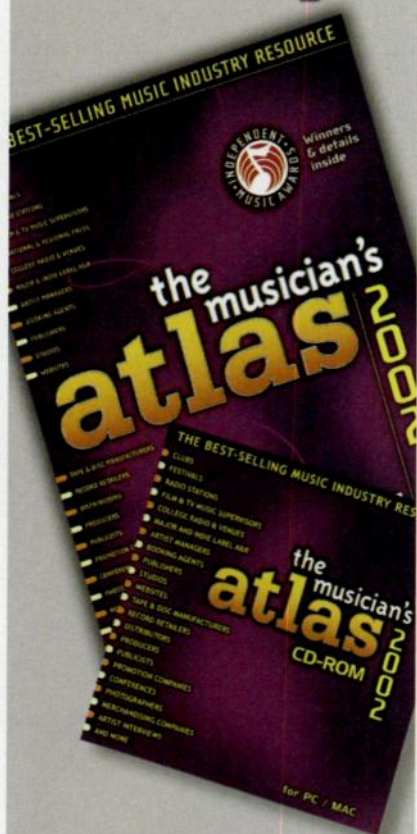
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my favorite site for researching band names is bandname.com. Additionally, because of the importance of your band's presence on the Internet, you should conduct a domain search of your proposed trademark. After you've conducted your search and found that your name has not yet been used, registered, or applied for with the PTO, you've cleared an important hurdle and can proceed in registering your trademark.

THE TRADEMARK APPLICATION

Once you have determined that your band name fulfills the requirements of being singular enough to trademark and that it does not encroach upon someone else's trademark, you need to obtain the forms from the PTO. You can do that in person by visiting a U.S. Government Printing Office in your town, requesting the forms be sent by mail from the PTO (tel. 703-308-HELP), or obtaining the forms online from the PTO Web site.

The application form has a series of questions about your trademark. If you are applying for just the name of your band, you type the name in block letters on the application. If, however, you are applying for the name in connection with graphics (for example, if your name is always displayed in a certain font or if there is a distinctive logo that always appears with the name), you submit a drawing of the graphics. The guidelines are very specific for submitting a drawing, so pay close attention to the instructions on the application. I prefer to apply only for the name; that way, you make the protection for the trademark as broad as possible.

You then need to provide contact information and describe what kind of entity will own the trademark. For example, is it owned by one person, your band as a partnership, or a corporation? You also have to describe the type of service you will be providing. Be sure to give a detailed description that includes the services you anticipate providing. For example, even if you do not have a recording contract yet, your description of services could read as follows: "Musical and entertainment services and goods in the form of live

performances, audio recordings, video recordings, and clothing."

This brings us to the next question: what types of trademark classes do you want to register in? The PTO provides a number system of classes under which trademarks are categorized. The two most common classes for bands are Class 41-Education and Entertainment to cover musical services and Class 25-Clothing to cover merchandise sales. You have to pay a separate fee for each class you apply for.

The application then asks you to provide a basis for your registration. You will base it either on the trademark being used in commerce or on the intent to use the trademark within six months of application. If you are already using your band name over state lines—a Web site for your band, gigs across state lines, or CD sales in another state will qualify—you can base your application on use in commerce. If based on an intent to use, you must pay an additional fee and you will have to prove the use of the trademark to the PTO down the road. You then need to state how the trademark will be used in connection with your services and sign a declaration under oath that you are making truthful statements about your trademark.

Send to the PTO your application, a block-letter printout or drawing of the mark, fees, and three examples for each class of how you have used the mark. Include a stamped, self-addressed postcard so that the PTO can send back your serial number and notify you of the date on which your application was received. (Your serial number is your lifeline to the PTO, so don't lose it once the postcard is returned to you.) The PTO Web site also provides an online application that is convenient and easy to follow.

An examiner with the PTO will be assigned to your trademark. The process of researching and granting you the trademark begins upon the receipt of your application. Be patient though—obtaining your trademark can take months, and sometimes more than a year, to complete. Once your process has begun, if you discover someone else trying to use your name during this

period, you at least can claim to have a pending trademark. If any questions should arise during that time about your trademark application, the PTO will contact you in writing. It is wise to keep a correspondence file in a safe place with copies of all letters that you and the PTO exchange. If you filed an "Intent to Use" application and you require an extension of time to use your trademark in commerce, you should make that request in writing. Note that additional fees will be required to do so and that there is a time limit for you to "reserve" a mark.

After you have clarified any issues for the PTO, amended your application, and responded to any preliminary rejections of the trademark, your trademark is then published in the *Trademark Official Gazette*, a PTO publication that is designed to publicize your trademark application in case others want to challenge it. And, as stated previously, circumventing a challenge is the

main reason that doing your trademark research early on is so important. (A hard-copy version of the *Trademark Official Gazette* may be ordered directly from the PTO by phone or over their Web site. You can also download it in PDF format from the PTO Web site.)

If you have done your search thoroughly, it is highly unlikely that you will have to deal with anyone opposing your trademark. On rare occasion, however, that can happen and you may have to defend your claim to the trademark.

A few weeks after you have cleared all of these obstacles, the PTO will send you a Certificate of Registration officially granting you the exclusive right to use your trademark in the course of doing business in the music and entertainment trade. The trademark is signified by the distinctive "circle R" warning others not to infringe on your trademark.

Trademarks are a "use it or lose it" right, and you should make two mental notes about that. The first is that after

five years you need to file an affidavit with the PTO letting them know that you are still using the trademark. The second is that you need to vigorously defend your trademark—in federal court if necessary—against potential infringement.

Granted, securing a trademark isn't as glamorous as picking up a new synth or some other piece of gear, but the time and dollar investment made in obtaining it will pay dividends repeatedly as your band's name gets known. Once a procedure reserved for high-priced lawyers, the PTO and other services have turned the application process for trademarks into yet another task that you can add to your DIY skill set.

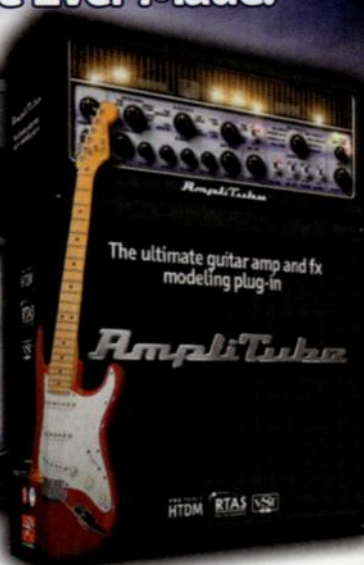
Music-business educator and entertainment lawyer Michael A. Aczon recently took his act on the road by completing the San Francisco Half Marathon and living to tell about it.

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REVIEWS

M O T U

896 (MAC/WIN)

96 kHz audio with deluxe metering and eight mic preamps.

By Gary S. Hall

Mark of the Unicorn (MOTU) has an enviable position among manufacturers of computer audio interfaces. The 828 FireWire interface (reviewed in the November 2001 EM) has been a major hit, thanks to its winning combination of features, performance, and portability. MOTU has taken the 828 to another level with the 896, adding high sampling rates, deluxe metering, eight mic preamps, professional connectors, switchable and trimmed levels, and built-in sampling-rate conversion. The 896 adds a bundle of value to a winning design concept.

FEATURE PACKED

It's difficult to discuss the 896 without referring to the 828. Both audio interfaces have eight analog channels in and out at 24 bits, eight channels of optical Lightpipe I/O,

stereo digital coaxial I/O, direct monitoring, and a programmable footswitch jack. They also include MOTU AudioDesk DAW software.

Beyond those details, the 896 diverges from the 828 with additional features and capabilities. The 896 doubles the 828's sampling rates, operating at 44.1, 48, 88.2, or 96 kHz. Instead of two LEDs per channel to indicate level, the 896 has slick ten-segment meters (see Fig. 1).



FIG. 1: On the 896's front panel are 20 ten-segment level meters with latching and continuous indication of clipping, as well as status indicators for sampling rate, digital I/O, and clock status.

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MOTU 896 (Mac/Win)

124

Syntrillium Cool Edit Pro 2.0 (Win)

136

Novation Supernova II 2.0

144

Digidesign Mbox (Mac)

152

FMR Audio RNC1773

156

CDP Composers Desktop Project 4.5 (Win)

166

Aphex Model 207

172

Quick Picks: Nomad Factory Blue Tubes VST Bundle 1.01 (Mac); Bitshift Audio Phatmatik Pro 1.1 (Mac/Win); PSPaudioware.com Lexicon PSP 42 (Mac/Win); Wilderness Press Wild Soundscapes

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FIG. 2: The MOTU 896's rear panel is densely packed with connectors. The XLR analog audio inputs also accept 1/4-inch plugs, but the XLR outputs do not.

Rather than -10 dBu fixed level inputs on 1/4-inch phone jacks and two channels of mic preamplification, the 896 has preamps on *all* analog inputs, as well as individually switchable input and output levels at +4 or -10 dBu that are fixed or individually trimmed. The 896 also has switchable phantom power on all eight mic inputs. All analog inputs are combination XLR and 1/4-inch jacks, and all analog outputs are XLR jacks (see Fig. 2).

The 896 provides AES3 digital audio I/O on a pair of XLR connectors, with real-time sampling-rate conversion options and word-clock in and out. The 896 also gives you two FireWire connectors for daisy-chaining multiple units without a separate hub.

Compared with the 828, the 896 offers a lot of value for the price difference. Does it have any downsides? If

you trot around with your laptop and converter in a shoulder bag, the size and weight of the 896 might be a consideration. The unit measures 2U high, whereas the 828 is 1U. The 896 is also two inches deeper and weighs significantly more than the 828. Furthermore, XLR outputs might not be the most convenient for you.

UP AND RUNNING

Installing the 896 was easy, with drivers for Macintosh OS 8 and 9 and Windows 2000, ME, and XP. (OS X drivers should be available by the time you read this.) I used the device exclusively on a Mac G4 with OS 9.2. MOTU includes a Mac control panel and an equivalent console for Windows to control hardware settings. I immediately put the 896 to work with AudioDesk and other applications.

The manual is well designed, with critical information concentrated near the front, making it easy to get under way. Detailed explanations in the text are clearly written and illustrated.

I used the 896 for studio and location recording and in live performance. In all situations, the unit performed flawlessly and reliably and was a very clean audio converter at all sampling rates.

SMOOTH OPERATOR

What's it like to record at 96 kHz? It's much like recording at lower rates, except that disk space disappears more quickly. Depending on your input source, you may or may not realize much improvement in audio quality. If you record standard-rate digital synthesizers and samplers at 96 kHz, you might not hear any difference at all. Recording acoustic sources is another matter; with good miking, 96 kHz recording captures transients and spatial information that would be lost at 44.1 or 48 kHz. The differences can be subtle, but you'll hear them. The 96 kHz rate more accurately captures the octave of frequencies between 10 and 20 kHz, which is where most spatial information lies. If acoustic recording is your thing, 96 kHz is the way to go.

High-rate recording does have costs, however. Besides disk space, you lose channels of processing and access to specific interface features. Securing the benefits of high-rate recording requires that you pay careful attention to the total recording chain.

The more I worked with the 896, the more I realized that the 96 kHz sampling rate is just one of its many advantages. The input and output metering is to die for. With programmable peak-hold and clip-hold times, you can see all your levels at a glance. If superior metering were the only difference between the 896 and the 828, I would still consider the 896 worth the money.

For recording with several microphones, the availability of eight preamps with input trim and switchable phantom power makes for a tight system. The 896's preamps are quiet and

896 Specifications	
Analog Inputs	(8) balanced Neutrik combo XLR and 1/4" TRS (+4/-10 dBu—switchable, with trim)
Analog Outputs	(2) balanced XLR main outs (+4/-10 dBu—switchable, with level control); (8) balanced XLR line outs (+4/-10 dBu—switchable); (1) 1/4" TRS stereo headphone out
Digital I/O	(1) ADAT optical in; (1) ADAT optical out; (1) AES3 coaxial XLR in; (1) AES3 coaxial XLR out
Sync I/O	(1) word clock BNC in; (1) word clock BNC out; (1) 9-pin ADAT in
FireWire	(2) IEEE 1394 ports
Phantom Power	48V, switchable for each analog input
Sampling Rates	44.1, 48, 88.2, 96 kHz
A/D Converters	24-bit, 64× oversampling
D/A Converters	24-bit, 128× oversampling
Footswitch Jack	(1) 1/4" TS, software programmable
Power Supply	Internal; IEC connector
Dimensions	2U × 7" (D)
Weight	7 lb.

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Yamaha's Modular Synthesis Plug-in System expandability lets you add more polyphony (up to 190 notes), more effects, and even different technologies to your S90 System.

*S*uberb Action

Thanks to Yamaha's Balanced Hammer Effect keyboard, the S90 feels as great as it sounds.

*S*imple Operation

The S90's large LCD screen and intuitive hands-on user interface make it remarkably easy to use.



YAMAHA

more than adequate for standard recording. For true audiophile recording, though, you might still want to consider investing in high-end outboard preamps.

According to MOTU, you can run as many as four 896s on a single FireWire connection. Operating at 96 kHz, though, the number drops to two units. If you have multiple FireWire interfaces on your computer, you can connect additional units, but you could run out of bandwidth on the motherboard—*caveat connector*.

ADAT Lightpipe digital I/O is a popular and useful feature on both the 828 and 896. If you have one of the gazillion ADAT units in the field, you can use the 896's Lightpipe capabilities to add eight channels of audio conversion. There's a catch, though: Lightpipe I/O is limited to 48 kHz, and if you're running at 96 kHz, Lightpipe is disabled.

In contrast to the 828's S/PDIF, the 896 updates coaxial digital I/O to AES3 on XLR connectors, operating at rates as high as 96 kHz, including sampling-

rate conversion. The 896 also has word clock I/O for resolving disparate devices to a common sample clock; that's a great feature for professional users.

THE SOFT MACHINE

The AudioDesk application (for Mac only) is killer when you consider that it's free with the interface. The application can record, edit, and mix multiple channels at 96 kHz with 24-bit resolution. AudioDesk provides MIDI machine control but no MIDI sequencer features. The application and



**If acoustic recording
is your thing, 96 kHz
is the way to go.**

its manual haven't been updated in a very long time, though. Owners of AudioDesk can upgrade to the most recent version of Digital Performer for \$395.

AudioDesk worked well for me, but I found an undocumented anomaly. While recording a live show at 96 kHz, I set the application to record and let it run. About two hours in, I noticed that recording had stopped, with a bogus message that disk space had run out. Examining file sizes, I found that they were exactly 2 GB. AudioDesk apparently enforces the pre-OS 9 file-size restriction of a 2 GB maximum. I restarted recording with a new file name, and the system continued as if nothing had happened. However, I did lose several minutes of the show. For live recording with AudioDesk, bear in mind that attempts to record continuously for long periods can terminate without warning. If you need longer recording times, you can always upgrade to Digital Performer, which has no file-size restrictions.

BOX LIKE A ROCK

The 896 is solidly built, with a durable, attractively finished metal case and

front panel. When I opened the case, I could see that the unit is designed and built to high standards, with careful attention to isolation between digital and analog elements and ample ground plane. Another plus is that the heavy-duty power supply has a low-emission toroidal transformer.

I am impressed that MOTU is able to sell the 896 for such a remarkably low price. Multiple circuit boards are densely packed with high-quality components. The mechanical construction is excellent, with plenty of screws tying circuit boards rigidly to one another and to the case. The unit is a testimony to the competitiveness of American manufacturing, as well as a credit to MOTU.

I had the opportunity to measure the 896's audio characteristics using a PrismSound dScope Series III measuring station. The device easily met the manufacturer's claimed performance of a 109 dB dynamic range, and it performs quite respectably in standard measures of total harmonic distortion and noise, as well as frequency response.

THE SUM OF ITS PARTS

The MOTU 896 is a *grrreat* audio interface with solid features, and it's a tremendous value for the price. For almost any audio application, it's a true winner. Audio quality is impeccable, software drivers work dependably, and the hardware is built for long-term performance and reliability. The included AudioDesk application is a little weak compared with higher-end workstation applications, but considering that it's free, who's complaining?

Is the 896 ideal for your needs? It's relatively bulky and heavy compared with the 828, so it might not be if portable laptop production is your thing. Apart from that, I urge you to take a serious look at the MOTU 896 for all your high-end production and recording needs.

Gary S. Hall invented the infinite audio delay in 1979, the prototype of which is still in testing. So far, nothing that's gone in has come out. This is good.

PRODUCT SUMMARY

Mark of the Unicorn

896

FireWire audio interface

\$1,295

FEATURES	4.0
EASE OF USE	4.5
QUALITY OF SOUNDS	4.0
VALUE	5.0

RATING PRODUCTS FROM 1 TO 5

PROS:

High-quality audio conversion. 96 kHz sampling rate. Plenty of I/O with pro-level connections. Built-in mic preamps. Phantom power switchable per channel. Excellent level metering. Word clock in and out. Easily expandable.

CONS:

XLR outputs inconvenient for interfacing to 1/4-inch phone plugs.

Manufacturer

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SYNTRILLIUM

COOL EDIT PRO 2.0 (WIN)

An audio Swiss army knife gets several new blades.

By Allan Metts

A new version of Cool Edit Pro has arrived, and it's loaded with fresh features and functionality. Once a simple shareware audio editor, Cool Edit Pro has blossomed into a full-fledged environment for audio recording, mixing, and mastering.

With version 2.0, Cool Edit Pro adds real-time EQ and effects, audio buses, CD ripping, and playback support for MIDI and video files. The program also provides a comprehensive environment for loop-based composition and support for several hardware controllers. In addition, the new version

boasts new windows, new effects, and plenty of improvements to the previously existing feature set.

The program installed without a hitch on my Pentium 4/1.5 GHz computer; after entering a serial number, I was ready for business. Cool Edit Pro was reviewed in the August 1998 issue of EM, so I'll focus primarily on the new features in this review.

SPLIT PERSONALITY

Cool Edit Pro has two primary modes of operation: Edit View, which operates on a single stereo or mono audio file in much the same way as a traditional audio editor, and Multitrack View, which provides access to 128 tracks of audio at once (see Fig. 1). That's twice as many tracks as the previous version of Cool Edit Pro gave you.

A prominent button in the upper left corner switches you between Multitrack View and Edit View (see Fig. 2), and a number of auxiliary window panes complement both views, offering related controls and status indicators. The transport controls, level meters, position indicators, and Session properties all appear in their own panes. ("Ses-

Minimum System Requirements

Cool Edit Pro 2.0

Pentium II/233 MHz CPU (Pentium III/700 MHz recommended); 64 MB RAM (128 MB recommended); Windows 98/2000/ME/XP

sion" is Cool Edit's term for a song or project). You can dock, undock, reposition, or hide the auxiliary panes, and if you don't like where the program puts the transport controls, you can move them or have them float as a separate window.

New in version 2.0 is the Organizer, which is a pane for managing the files and effects associated with your project. Each time you add a file to the Multitrack view, and each time you record or edit a file in the Edit view, a reference to the file appears in the Organizer. You can open files directly in the Organizer, audition them, edit them, and insert them into your Session by clicking a button or dragging and dropping. You can filter the file display by file type and sort the display in several ways.

CAUSE AND EFFECT

Another tab in the Organizer shows all of the available effects. (These were called Transforms in the previous version.) Cool Edit Pro comes with a healthy selection of audio processing tools, and it lets you use all of the DirectX effects that are installed on your system.


Version 2.0 supports real-time effects in the Multitrack view and real-time previews in the Edit view. Many of the program's effects have been modified to operate in a real-time mode. (The exceptions include noise reduction, pitch bend, sound generation, and FFT filtering.)

To use an effect, you double-click on it in the Organizer. In the Multitrack view, that adds the effect to the currently selected track. (You can also drag the effect from the Organizer to the track.) In the Edit view, double-clicking the effect opens a dialog box for offline processing. All of the effects in




FIG. 1: Cool Edit Pro's Multitrack View supports 128 audio tracks and extensive real-time effects. The new Organizer section on the left provides easy access to files, effects, and tools.


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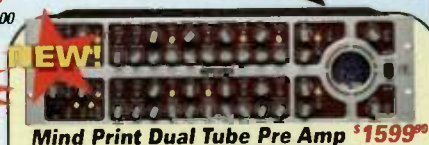
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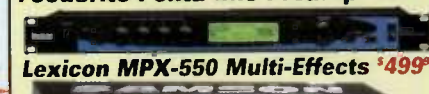
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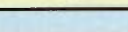
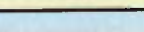
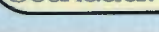
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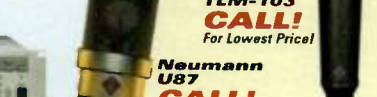
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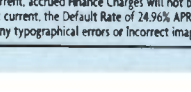
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the Organizer are categorized by function; effects are disabled when they are inappropriate for what you are currently doing (offline effects in the Multitrack view, for example).

If you use a particular effect frequently, you can add it to the Organizer's Favorites tab. That tab lets you set up an effect with specific settings and associate the effect setup with a name and an optional shortcut key. In addition to favorite effects, you can also set up favorite Scripts for batch processing in the Edit view and favorite Tools to access other applications on your system.

All of your favorites can be organized into a hierarchy for easy access.

MULTITRACK ATTACK

Cool Edit Pro's multitrack capabilities have undergone a number of improvements. For starters, there are tools for managing the real-time effects associated with each track. With the Effects Rack for each track, you can add, remove, reorder, and access your effects' settings.

Each track has an Effects Mixer (see Fig. 3) that provides amazing control over the way your effects are applied.

Each effect can receive its signal from the original source or from the previous effect in the chain; you decide how much of each. Every effect also has an output fader that adjusts its contribution to the track's output. An additional fader is provided for the original unprocessed signal. Handy buttons let you speedily bypass an effect or configure effects in a serial or parallel arrangement.

Several of Cool Edit Pro's effects are EQ-related, but you may find it more convenient to use each track's dedicated 3-band parametric EQ with optional

RED ROVER

If you need to remotely control Cool Edit Pro, check out Syntrillium's Red Rover (\$129). This handy box is about the size of a paperback book, yet it provides access to nearly everything you need to lay down tracks in Cool Edit Pro (see Fig. A). Red Rover is ideal for recording your instruments well away from a noisy computer environment.

In my case, installing the Red Rover was as easy as plugging it in to the USB port (a ten-foot USB cable is provided). Windows immediately recognized it as a Human Interface Device and activated the drivers that were already part of my Windows 2000 installation. What's more, the device is powered from the USB port; I didn't even deal with a wall wart or batteries.

The Red Rover sports a 2-line by 20-character backlit LCD screen, a 7-segment level meter (with a clipping indicator), and knobs for master volume, track volume, and track selection. It has a full set of transport controls, as well as buttons for muting, soloing, and arming the currently selected track. Each of the buttons has a corresponding LED that indicates its status.

Rounding out the controls are two more buttons, one to add cue markers and another to toggle the metronome on and off. You can adjust the display

contrast or switch off its backlight with controls on the side of the unit. A foot-switch connector lets you set up hands-free access to the Record button. (A foot-switch is not included.)

Recording with the Red Rover couldn't be easier. You select the track you want, arm it for recording, and press the Record button. The LCD shows which track you're on, the device numbers in use for playback and recording, and the current settings for master and track volumes. If data already exists in a particular track, a special indicator shows that, too.

The LCD also shows the current transport status and position, using whatever format Cool Edit Pro happens to be using. If you change Cool Edit Pro's display from bars and beats to SMPTE, the change is immediately reflected in the Red Rover (nice touch).

The Red Rover is great for tracking but not so great for mixdown; after all, it has no pan controls or fader banks. I only wish the device were wedge-shaped (or had an easel on the back to tilt it). The display faces nearly straight up, so unless the device was right under my nose, the LCD was dif-



FIG. A: The Red Rover is a handy and inexpensive USB device for remotely controlling basic Cool Edit Pro functions.

ficult to see. A bracket for mic-stand mounting would also improve matters.

Syntrillium advises against placing the Red Rover more than ten feet from your computer without using an active USB cable extender or hub. My acoustic piano is in a different room (about 30 feet away) from my computer. With its built-in position indicator and transport controls, Red Rover would be ideal for tracking the piano. But unfortunately, extending a USB signal that far is an expensive proposition. (Hey Syntrillium: How about a MIDI-based version?)

All in all, this is a spiffy little box. If you use Cool Edit Pro for tracking, be sure to check out the Red Rover.

PC headaches not included.



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high and low shelving. (The bands are labeled simply H, M, and L.) You can specify two different sets of EQ settings for each track and quickly switch between them with a button click.

If your processor can't handle all of the real-time effects that you're piling on, it's easy to reduce the load. Just press the Lock button on one or more tracks. Cool Edit Pro then preprocesses the track with all of its effects, thereby reducing the work your CPU performs when playback begins. What's more, the Lock button does not affect the real-time track EQ, so even if you lock down a track's effects, you can still make the track fit better in the mix.

In the current version of Cool Edit Pro, you can send the outputs of your tracks to buses. By using a bus instead of a physical output device, you can group related tracks for mixdown and effects processing. (Buses can have Effects Racks, just like tracks.) The program supports up to 26 buses.

GUADA LOOP

Remixers and loop-based composers will be glad to hear that Cool Edit Pro now lets you create special Cool Edit

Loop (CEL) files that store tempo, beat, and key information with the audio. You can then insert the CEL files into the Multitrack view where the program handles the tempo and key matching for you. Syntrillium offers more than 2,000 royalty-free CEL loops in 15 different styles for free at www.loopology.com.

For each loop, you specify the number of beats and the waveform's key. (You can specify a key of "non-voiced" for percussion parts.) Cool Edit Pro calculates the tempo for you, based on the length of the loop. Each loop can run continuously with no gaps or can repeat after a user-definable number of beats. You can enter a number of seconds instead, if you aren't trying to synchronize the loop with the beat.

Cool Edit Pro does its magic when



FIG. 3: Each track's Effects Rack includes an Effects Mixer where you can determine each effect's contribution to the sound of the track and configure the effects for serial or parallel operation.

you change the tempo or key of your Session. It then automatically repitches all of the voiced loops to the new key. Each loop gets a new tempo, according to one of four methods that you specify for each loop: you can have the loop stretched in time without affecting pitch, you can resample the loop (which affects pitch), you can specify a fixed length, or you can use beat splicing.

The Fixed Length method doesn't change the loop when the tempo changes. Beat splicing chops the loop into beats to change its length. You can tell Cool Edit Pro to use beat markers embedded in the file (not all files have them), or the program can try to find the beats automatically. In the latter case, you must first specify an amplitude change over a specific duration to define the beats. (For example, a beat may be defined as a 10 dB rise in amplitude within a period of 4 ms.)

MIDI AND VIDEO

Cool Edit Pro now supports video and MIDI files in the Multitrack view. When you insert them into your Session, the files also appear in the Organizer along



FIG. 2: In the Edit View, you can operate on a single mono or stereo audio file. The Organizer section makes it easy to add and locate files and effects.

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Outputs	4	2	2
Arpeggiators	16	1	1
Arpeggiator Types	300	128	45
Aftertouch?	Yes	Yes	No
Polyphony	64	64	64
Effects?	Yes	Yes	Yes
Street Price	\$599*	\$799*	\$695*

* Based on on-line advertised price October 2002



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with distinctive icons to indicate their file type.

MIDI files are supported for playback only, so I wouldn't recommend tossing out your sequencer just yet. You can view video content as it plays, and you can extract the audio portion of a video file. AVI files are the only officially supported video format, although you can extract audio—and sometimes see the video—from several variants of MPEG files.

A "filmstrip" view of the video in the Multitrack view is a bit disappointing. Typically, these kinds of displays provide still images of the video frames to help you navigate within the file. In Cool Edit Pro, however, the filmstrip is blank and adds little value other than to indicate the length of the video.

Cool Edit Pro's new Mixers window offers an alternative to the controls in the Multitrack view. It functions in much the same way as the mixers in

other DAW products, so I won't cover it in detail here. However, I do lament the lack of MIDI-based controller support for the mixer controls (here and in the Multitrack view). Cool Edit Pro supports Syntrillium's Red Rover controller (see the sidebar "Red Rover") as well as Tascam's US-428 and US-224, but the program supports none of the fancy new hardware control surfaces on the market (nor does it support the MIDI fader boxes you may already own).

Even if you have a supported hardware controller, you can't record volume, panning, or other changes in real time as your masterpiece plays. You can, however, draw envelope curves into the Multitrack view. I like the envelopes, but they're better suited for editing existing level and panning automation—not for generating the automation



**You can automate the
overall wet-to-dry
mix of a track with
effects.**

events in the first place. For that, I want to record my fader movements.

Speaking of envelopes, some new envelope types were added to this version of Cool Edit Pro. In addition to panning and volume, you can automate the overall wet-to-dry mix of a track with effects. New Dynamic EQ, Dynamic Delay, and Stereo Field Rotate effects have parameters that you can automate by drawing envelopes in the Multitrack view.

THE REST OF THE STORY

The remaining version 2.0 enhancements are really too numerous to cover. In addition to the new effects mentioned above, Cool Edit Pro offers a new Doppler Shifter (for "fly-by" pitch-shifting effects) and a Graphic Phase Shifter. The Doppler Shifter was a blast to play with. I entered distances, a velocity, and a direction of travel, and the

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program figured out what to do with the sound. The Graphic Phase Shifter lets you map a sound's phase across the frequency spectrum. A new Phase Analysis tool is also provided.

A Group Waveform Normalize feature lets you establish the same perceived level for a group of files (which is useful for compiling your tunes on a CD), and a Frequency Band Splitter effect lets you create up to eight separate tracks, each of which contains only

a certain band of the frequencies in the source track. Want to put some delay on only the middle-high frequencies of your vocal track? With this feature, you can do it.

Wrapping up the list of enhancements are CD-ripping capability, a metronome, and the ability to act as the time-code master for SMPTE and MTC. (Previously, only slave mode was supported.) The program also provides a number of cosmetic and interface

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PRODUCT SUMMARY

Syntrillium

Cool Edit Pro 2.0
multitrack audio editor
\$249 (download)
\$279 (boxed with printed manual)

FEATURES	4.0
EASE OF USE	4.0
DOCUMENTATION	4.0
VALUE	4.5

RATING PRODUCTS FROM 1 TO 5

PROS: Well-designed, intuitive user interface. Extensive variety of real-time effects. Effects locking allows effective management of CPU resources. File looping support with tempo and key matching. Organizer section provides easy file and effects management.

CONS: Minimal support for hardware controller surfaces. Cannot record envelope changes in real time.

Manufacturer

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enhancements, and Syntrillium has recently announced Cool Edit Pro's support for the new Windows Media Audio 9 Professional codec that enables you to stream multichannel 5.1 surround mixes at resolutions as high as 24-bit, 96 kHz.

All in all, this is a feature-packed upgrade to an outstanding product, and at \$249, it's a tremendous value. Even if you use a different program for recording and mixing, Cool Edit Pro is worth the price just for its comprehensive (and sometimes unique) effects. The PDF-based documentation is readable and thorough, and the program's context-sensitive Help usually found me the answer I needed with one or two button clicks. What's more, the audio quality of the program's recordings and effects sounded great in my small project studio.

Allan Metts is an Atlanta-based musician, software and systems designer, and consultant.

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NOVATION

SUPERNOVA II 2.0

A galaxy-class synthesizer with a stellar feature set.

By David Bryce

When I'm shopping for an analog-modeling synth, I want all the features I'd wish for in a real analog, and more. I want an instrument that sounds luxurious, with thick oscillator banks and juicy filters. I want expressive control capabilities and flexible modulation routing. I want silky-smooth transitions and imperceptible zipper noise. I want to reach out and change almost any parameter with the turn of a knob or the touch of a button. I want more polyphony than real analogs offer. I want hundreds of rich, versatile sounds at my command. When I dream, I dream big.

I was immediately intrigued with the appearance of Novation's Supernova the first time I saw one. Once I began exploring the unit, I was so entranced, I didn't come up for air until I realized I was late for an appointment. When **EM** asked me to review the synth's most recent incarnation—the Supernova II with OS 2.0—I jumped at the chance. What I found was a thoughtfully designed instrument that sounds great and boasts a feature set

that should satisfy the most demanding synthesist (see Fig. 1).

EYE OF THE BEHOLDER

The Supernova II's front panel is laid out quite intuitively, which makes it easy to use without having to spend much time reading the manual. Almost every function has a dedicated knob or button, and the buttons light up to show what the knobs currently control. Menu buttons in each section flash when selected. A bright blue, two-line, fluorescent display shows two parameters at a time. You can scroll the display by using page-up and page-down buttons located at its left, and you can edit using a pair of detented, infinite-rotation data knobs located at its right.

The remaining knobs are standard pots with finite throws. If you select the global Pickup mode, the parameter you're editing doesn't reflect any changes until the knob "passes through" its stored value. I prefer that scheme to one in which the parameter instantly jumps to an arbitrary value whenever you touch the knob. Additionally, all knob moves and button presses transmit MIDI data as continuous controllers and NRPNs (no messy SysEx), which you can record into any sequencer.

The rear panel presents a well-conceived series of I/O options. Besides +4 dB main stereo outputs, three pairs of balanced stereo outs are provided (see Fig. 2). Strangely enough, two additional jacks can serve as either balanced audio inputs or assignable footswitch jacks.

You can route external signals directly to the Effects section or process them with the synth engine, passing audio through the filters and envelopes. You

can manually key the envelopes or press the Constant Gate button to open them and keep them open as if you were holding a note. Also on the rear panel are a dedicated pedal input, a headphones output, and the obligatory MIDI In, Out, and Thru ports. An optional Lightpipe and S/PDIF board can provide digital audio I/O.

The Supernova II's keyboard and rack versions are both available in three configurations. The basic unit (\$2,999) has 24 notes of polyphony; the Pro (\$3,299) and Pro-X (\$3,499) upgrade the unit to 36 and 48 notes respectively. If you already have a Supernova II Pro, upgrading it to a Pro-X requires removing the installed SIEX12 card and replacing it with the SIEX24 card. Consequently, it costs less to buy an instrument with the polyphony already expanded than to do it later.

INNER BEAUTY

The Supernova II contains eight banks of 128 Programs (all of which can be overwritten) and features a useful Find function that allows you to search for sounds by category. The Novation sound-design team did an outstanding job, providing an extremely varied selection of sounds. As in previous versions, the dance and techno-oriented Programs are still on-board, but the current set also has loads of delicious meat-and-potatoes synth patches that are guaranteed to excite even an aging proghead like me.

Performance mode is capable of 8-part multitimbral operation. Each Part can have its own set of 7 effects, adding up to 56 simultaneous effects in a single Performance (yow!). That capability alone puts the Supernova II in a class by itself. Each Part can be split or layered across any key range, so you can make some really massive timbre stacks (especially if you have the 48-note Pro-X).

Independent arpeggiators can be assigned to each Part, and each responds to its own clock. Auditioning individual Parts within a Performance is effortless, thanks to dedicated Mute and Solo buttons. And because each Part can control an external MIDI channel, the Supernova II is an excellent live controller.

The synth features a very cool Drum



FIG. 1: For the electronic musician who wants it all, the Supernova II packs an abundance of tantalizing features. The three available models differ only in their polyphony—24, 36, or 48 notes.

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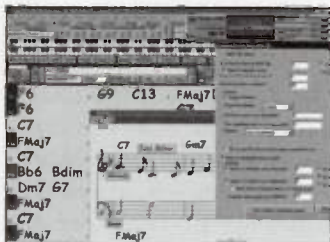
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NEW FEATURES IN BAND-IN-A-BOX VERSION 11...

THE LATEST VERSION OF BAND-IN-A-BOX ADDS 50 MORE NEW FEATURES! First off, you'll get the "MIDI File Chord Wizard" that reads any MIDI file and interprets the chords for you to be displayed in Band-in-a-Box. We've added new "Jazz Music Fonts" for music, chords, lyrics and titles, giving you the option of authentic-looking jazz notation and symbols. We've added a "Direct-to-Disk" Audio Rendering feature that allows you to directly convert your Band-in-a-Box song to an audio .WAV file in 5-10 seconds, rather than having to wait 3-4 minutes for the song to render in real time!

There's a new **Melody Embellisher** that automatically adds life to existing Melodies by adding slurs, grace notes, vibrato, legato changes, extra notes and more, to simulate the varied interpretations that different musicians make when playing a Melody.

To make all of your Band-in-a-Box music sound better, we've added the famous Roland VSC3 MIDI Synthesizer — this greatly improves the sounds that you hear from Band-in-a-Box. In our "blindfold" listening test (www.pgmusic.com/blindfold_compare.htm), our users rated the sounds from the VSC3 to be #1 — better than Waveable soundcards and even better than hardware sound modules! This synthesizer works with Band-in-a-Box and any other Windows MIDI program to improve your sounds.

The **Guitar Styles** have been enhanced with a **Jazz Guitar "highest-4-strings-comping mode"** that has voice leading on the highest four strings to simulate a "sax section." The **Melodist** now composes songs for **BeBop** tunes and **Jazz Ballads**. The **main window chordsheet** now has selectable fonts, font size, and number of rows.

Band-in-a-Box Version 11 also includes **Notation Enhancements** such as the ability to display and print **Multiple Tracks of Notation** at once. Now you can view and print bass, piano, etc. tracks at the same time! You can also add "**Section Text**" and **Boxed Test** to your notation. The appearance of the notation has also been enhanced with **slanted beams**, **chord/music/lyric font selection** and more. There's a new **Scrub Mode** that allows you to quickly hear a part of the notation by moving the mouse over the notes. **And much more...**

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Map mode that lets you access 49 sounds simultaneously in the lower four octaves of the keyboard. The 50th Program in each Drum Map makes no sound but controls the effects configuration and parameters for the whole Map. One thoughtful feature in Drum Map mode allows noise to be filtered separately from the waveforms, providing control over the transient attack when you're programming drums. With eight banks of 50 Drum Maps, the Supernova II provides a plentiful percussion palette.

A special menu is provided for storing Favourites (spelled that way on the front panel so you won't forget the unit is British). The Supernova II provides 128 slots, and into each you can copy a Program, a Performance, or even a new arpeggiator pattern for the currently selected Program. I was disappointed that I couldn't scroll through the selections; the only way to choose Favourites is by using the Program select keys.

WAVES OF THE FUTURE

I first learned synthesizer programming on a Minimoog, and I've always been partial to synths that offer three oscillators per note. Consequently, while I was predisposed to like the Supernova II's Oscillators section from the get-go, it operates quite differently from most of the synths I've used.

On the front panel, the oscillators appear to offer only sawtooth and square waves, but a Hardness parameter (in essence, a lowpass filter) changes the waveforms' harmonic content by smoothing their shapes to create additional waveforms. The Special button

accesses the Double Saw waveform, which multiplies the sawtooth wave without consuming more notes. An LFO varies the depth of phase shift or detuning between the two sawtooth waves. If all three oscillators are set to Double Saw, the result is essentially six oscillators per note with no loss of polyphony. Unison Detune (using from two to eight notes) and Simulated Oscillator Drift let you fatten the sound even further.

You can do some basic FM-style programming by using Supernova II's oscillators and envelopes as FM operators. Oscillators 1 and 2 serve as modulators, and oscillator 3 as a carrier. A noise waveform can substitute for either modulator. Although much less flexible than the 6-operator system used in the old DX7, the Supernova II's FM programming allows a variety of possibilities, especially for creating sounds with biting transients. In Performance mode, you can conceivably stack two or more 3-operator FM programs for more-intricate tones. You can also use the filter to further control harmonic content.

The Supernova II takes a unique and innovative approach to handling oscillator sync. Each oscillator has its own virtual slave oscillator, so that each of the three oscillators can be independently synced as if there were three masters and three slaves. However, that's just the beginning of the fun.

The oscillators have three funky sync parameters that you probably won't find on conventional synths, letting you do some very interesting things with the raw waveforms. Key Sync lets you independently adjust the slave oscillator's pitch tracking, which changes the

sync effect as you play up and down the keyboard. Sync Skew allows you to manually adjust the slave oscillator's frequency within one cycle of the master's, making the sync effect sound even harsher. You can apply Sync Skew to a square wave to simulate pulse-width-modulation effects, or to a sawtooth for cross-modulation-type effects. A third sync parameter, Formant Width, controls the sync oscillator's level. When you use Formant Width with the Hardness parameter to smooth out sharp edges, it can simulate resonance within the oscillator. Formant Width can also boost the treble content of the sawtooth and square waves. To create even more interesting waveforms, you can use the Sync Skew and Formant Width parameters together.

FILTER FRENZY

The Supernova II's Filter section is quite flexible. Dedicated buttons let you choose from three slopes—12, 18, or 24 dB-per-octave—as well as high-pass, lowpass, and bandpass modes. Increasing the resonance kicks the filter into self-oscillation quite naturally, so you can use it as a sine-wave generator. In addition to the obligatory Frequency and Resonance knobs, you can adjust the filter's overdrive (for a saturation effect), keyboard tracking (in half steps), and Q Normalization. That last parameter determines whether audio levels stay the same as you change the amount of resonance, and it's especially useful for live performance.

In addition to the three standard filter modes, a Special mode provides nine additional filter types. Three

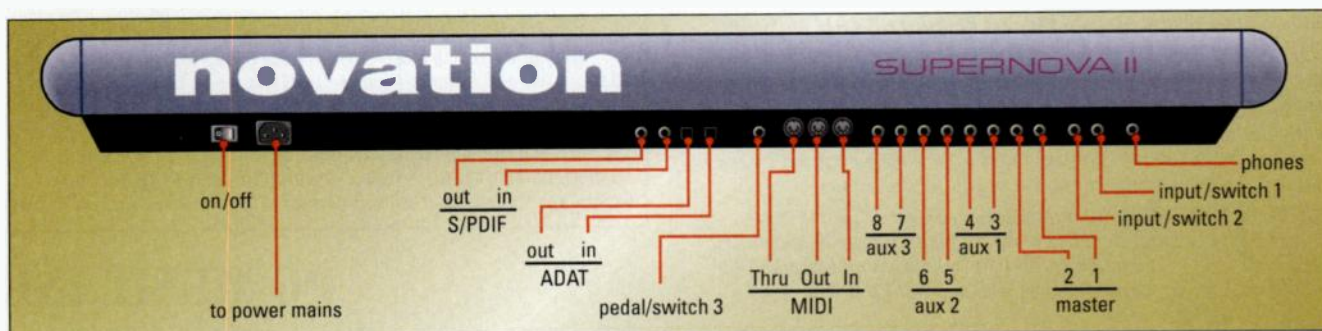
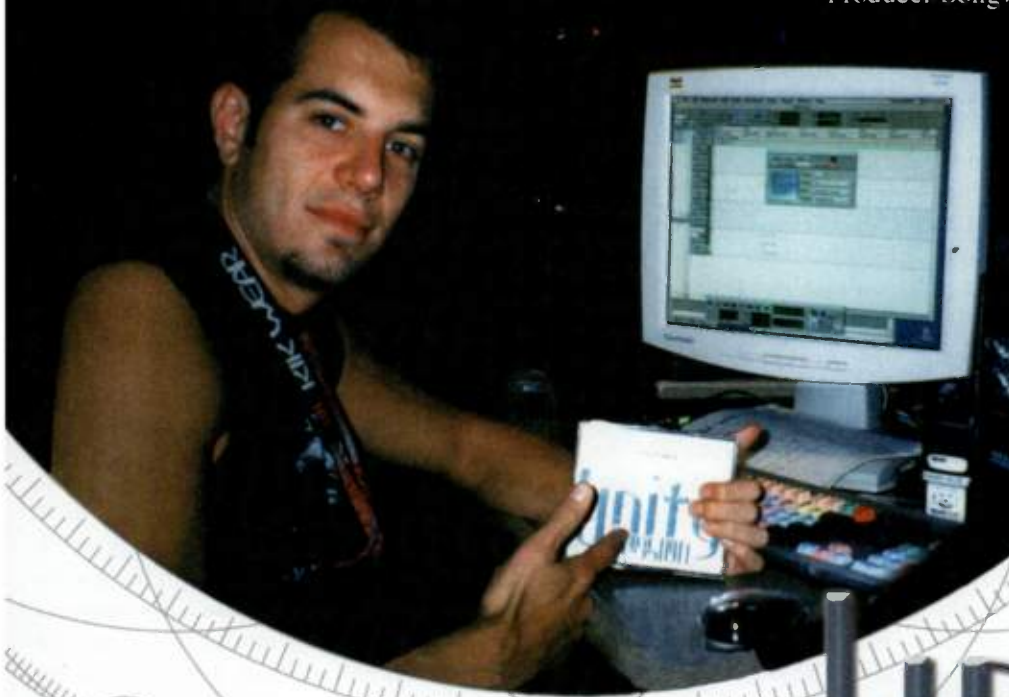


FIG. 2: The Supernova II's rear panel provides ports for power, an optional S/PDIF and Lightpipe card, a footswitch, MIDI, eight audio outputs, two audio inputs that double as control inputs, and stereo headphones.

Nick Hexum, 311
Producer Songwriter Musician



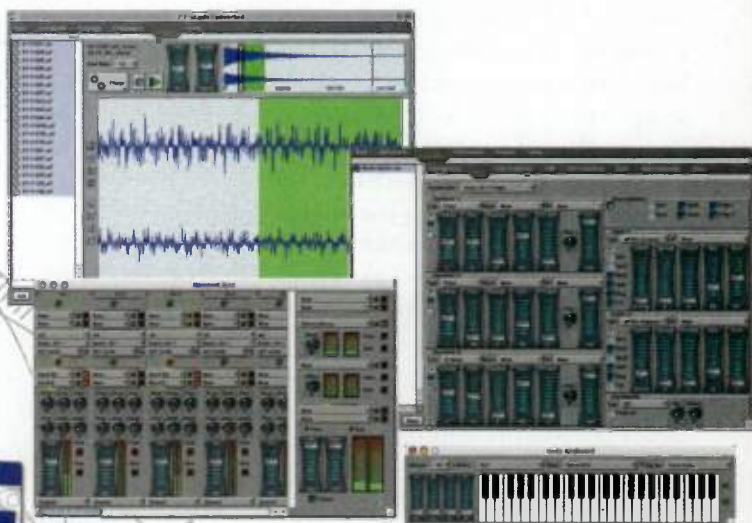
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Hyper Resonant types (Res LPF, Res HPF, and Res BPF) let you turn the resonance "up to 11" (sorry, I couldn't resist). The other six types combine two parallel filter blocks in various configurations: LPF + LPF, BPF + BPF, HPF + HPF, LPF + BPF, BPF + HPF, and Notch (LPF + HPF). In those dual-filter modes, you can offset the two cutoff frequencies with the Filter section's Width parameter to produce some great-sounding speechlike effects. When dual filters are in use, the Resonance Modulation knob in the filter's Modulation section affects filter width instead of resonance. I was a bit disappointed that I couldn't split the dual filters discretely, so that each could process a separate oscillator; that would have been a nice feature.

The Filter section's modulation matrix is comprehensive and easy to use. Simply touch a source button (such as LFO 1) and adjust the frequency and resonance modulation depths to taste. You can even route all modulation sources to both parameters in varying amounts—nice touch, Novation!

BLOCKS AND CLOCKS

The Supernova II has three envelope generators (EGs) per note, though only two of them have dedicated controls. EG 2 and 3 share the same controls, whereas EG 1 (the amp envelope) has its own set of controls. Although they look like mild-mannered ADSR envelopes (except EG 2/3, which has a dedicated knob for adjusting delay), much more control is available. The sustain segment features parameters for Rate and Time; Rate determines the sustain's slope, and Time determines how long it lasts. You can loop the attack and decay stages individually, and you can specify how many times they'll loop before entering the sustain segment. Another neat feature is that you can sync the delay time of EG 2 and 3 to internal or external MIDI Clock, and you can individually set each envelope's sync value to note lengths.

You can positively or negatively adjust the depth and rate at which the keyboard tracks envelope times and levels, and you can set tracking to engage

or disengage at a particular note number. You can also switch between single- and multiple-triggering modes. I was glad to see dedicated knobs for controlling the amount that Velocity modulates the envelopes. I was also pleased that Novation provided sliders for controlling the ADSR segments; I really prefer using sliders to knobs for envelope control, as I suspect most synthesists do.

The LFOs section contains two low-frequency oscillators that can generate square, sawtooth, and triangle waves and provide a sample-and-hold function. Although the LFOs have no sine wave, you can use the LFO Slew Amount parameter to smooth the other waveforms (much like the Hardness parameter in the Oscillators section). You can

set the LFOs to run at fast, normal, or slow speed, allowing oscillations ranging from DC to audibility. A dedicated Delay knob and an Offset parameter increase the flexibility of control; you can even use Delay to make the LFOs act as very simple envelopes if you need extras.

Both LFOs can be synced to an internal or external MIDI Clock and independent time signature; a huge range of meters is available. You can also set the LFOs' Triggering parameter so that they either Freewheel (run independently) or Keysync (synchronize their phases at the beginning of every note).

Like the rest of the machine, the Supernova II's full-featured arpeggiator is extremely easy to use. It has enough memory locations for 640 patterns—128

Supernova II Specifications

Sound Engine	analog synthesis modeling
Keyboard	61-key semiweighted; transmits Velocity and Channel Pressure
Polyphony	24 notes
Multitimbral Parts	8
RAM Programs	1,024 (512 preloaded)
RAM Performances	512 (256 preloaded)
RAM Drum Programs	400
Sound Sources (per note)	(3) oscillators; (1) noise generator
Filter Types	12, 18, or 24 dB-per-octave; resonant lowpass, highpass, bandpass; (6) dual filter modes; (3) Hyper Resonant modes
Effects	(18) configurations; (7) effects simultaneously available per Program or Performance Part: distortion, comb filter, 2-band EQ, reverb, delay, panning, chorus/flanger/phaser
Vocoder	42-band with sibilance modes, spectrum analyzer, freeze function
Arpeggiator	(128) monophonic presets; (128) polyphonic presets; (192) monophonic user locations; (192) polyphonic user locations
Analog Audio Outputs	(2) balanced ¼" TRS main; (6) balanced ¼" TRS assignable; (1) ¼" stereo headphone
Analog Audio/Footswitch Inputs	(2) balanced ¼" TRS assignable
Control Input	(1) ¼" TS footswitch or expression pedal
Digital Audio I/O	optional Lightpipe and S/PDIF
MIDI Ports	In, Out, Thru
Display	fluorescent 2-line × 22-character
Dimensions	40.0" (W) × 4.5" (H) × 13.0" (D)
Weight	22 lb.

I'M BIASED



David Torn aka splattercell Guitarist/Texturalist/Producer

Collaborators include: david bowie • ryuichi sakamoto • carter burwell • kd lang • david sylvian • cliff martinez • me'shell ndegeocello • chute • page hamilton • b.l.u.e.

Soundtrack work includes: traffic • a knight's tale • three kings • heist • the velvet goldmine • simone

Photographed by Karjean Ng at the studio of film composer Carter Burwell, New York City

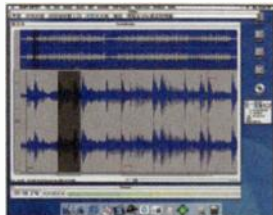
David Torn is a genuine musician's musician — one of the most respected of our time.

Whether working with David Bowie on his latest album, or creating trademark textural soundscapes for *Traffic* and other blockbuster movies, or crafting a new splattercell CD, David's aesthetic for raw sonic exploration goes far beyond a conventional approach to music, let alone guitar. And to help him make his discoveries, David turns to BIAS software.

As he puts it, "I'm not much interested in what's been done before, especially when it comes to my own work. I need to keep uncovering new ground — and I love how BIAS products help me do that so intuitively, with critical speed & stability. Like my guitar, they feel like they were built just for me, letting me create a vocabulary for the language of my music."

It only makes sense that BIAS software is an integral part of David's creative process. After all, we share a common focus: the intersection of technology and art, where creativity flows on a path of least resistance. And it's from this place we create tools to help you define your own unique vocabulary.

Ambitious? Idealistic? Perhaps. Unless, of course, like David, you also happen to be biased.



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monophonic presets, 128 polyphonic presets, and 384 user slots (which ship empty). Patterns can be up to 64 steps long. Each step can be a note, rest, tie, or glide between steps, and you can set the Velocity and gate time for every step.

The arpeggiator has dedicated buttons for octaves (from 1 to 4), direction (up, down, up/down 1, and up/down 2), latching, key sync, and zone transposition, as well as knobs for Speed and Gate Time—just about everything you'd need in live applications. That's just the beginning, though: the submenus have plenty of options for tweaking parameters such as latch type, quantization, and sync, along with a Fill-in mode that you can set to do clever musical things when you play a different number of notes than the pattern is expecting.

EFFECTS COLLECTION

The Supernova II's effects processors are nothing short of mind-blowing.

They're one of the strongest selling points for the Nova line of synths. As I noted earlier, each Program has as many as seven simultaneous effects—distortion, high and low EQ, panning (with auto-pan and tremolo), stereo comb filtering, delay, reverb, and chorus/flanger/phaser—and each Program retains its effects settings in Performance mode.

You can arrange the delay, reverb, and chorus effects in 18 different configurations, and the synth can morph between two configurations in real time. A more-than-satisfactory selection of dedicated controls is provided for most parameters that you'd want to tweak in real time, and menus for each section make it easy to fine-tune anything else. You can route dozens of parameters to the Mod Wheel for outstanding real-time control. You can internally or externally sync LFOs and delay taps, and you can set individual clock values for each. It's a blast to cre-

ate complex rhythms by syncing several LFOs to control phase, flange, pan, and so on on eight Programs at the same time. My only negative observation is that the reverbs sound somewhat metallic, but that's a minor complaint.

Once the audio inputs are appropriately routed, the 42-band vocoder has an amazingly simple interface: just a Menu button and a Balance knob. You can assign either input or any Program as the carrier or modulator; instead of being restricted to an internal sound as the carrier, you can use an audio signal being fed to the external input. Only one vocoder is available in Performance mode, but you can select Parts 1 through 6 as the modulator. Submenus provide control over sibilance level and type, as well as stereo width. One menu page turns the display into a 42-band spectrum analyzer. Voc Freeze, a new feature in OS 2.0, lets you freeze the vocoder's spectrum by pressing a footswitch.

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MANUAL LABOR

The owner's manual began promisingly with lessons on subtractive synthesis, FM, effects processing, and other basics. Unfortunately, it soon deteriorated into an overly dry, outline-type format that was ponderous to slog through. What's more, the manual was written for earlier models of the Supernova II. The software has been revised several times since the original documentation was written, and I found cases in which information is either incorrect or out of date. For instance, the example Programs used in the programming tutorials are not at the locations specified (if they're in the machine at all).

Two addenda are included, but one is mostly for features added in OS 1.4, and the addendum for 2.0 is quite technical and contains no Program lists. The other texts contain Program and Performance lists, but each is different and both are wrong. A current list would have been welcome. Fortunately, Novation says that a new manual has been written in the more casual style

of the K-Station manual, and it will be shipping by the time you read this.

CREATION SUPERHIGHWAY

Except for the manual, I liked everything about the Supernova II. Its industrial design is beautiful, its semiweighted keyboard feels great, and its user interface is intuitive and easy to navigate. The synth contains a slew of widely varied sounds, multitimbral setups, Drum Maps, and arpeggio patterns—enough to keep any

synthesist busy. Almost every feature was in exactly the place I expected to find it, and the Supernova II performed almost precisely as I had hoped it would. In addition, more than a few unique twists allowed me to do things I've never done with any other synth. Outstanding work, Novation—two thumbs way up!

David Bryce is a keyboardist, composer, and voice-over artist living in the Los Angeles area. He also claims to make killer lasagna.

PRODUCT SUMMARY

Novation

Supernova II 2.0
analog modeling synthesizer
\$2,999

FEATURES	4.0
EASE OF USE	4.0
QUALITY OF SOUNDS	4.5
VALUE	3.5

RATING PRODUCTS FROM 1 TO 5

PROS: Abundant features. Lots of killer sounds. Intuitive user interface. Has 56 simultaneous effects. External audio processing. Versatile arpeggiators.

CONS: Needs current documentation. No way to scroll Favourites. Dual filters can't be used discretely.

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DIGIDESIGN

MBOX (MAC)

Pro Tools goes portable with a 2-channel USB box.

By Nick Peck

A couple of years ago, Digidesign made Pro Tools affordable by introducing the Digi 001. When combined with Pro Tools LE, that relatively inexpensive I/O box made it possible for just about anyone to make music the Pro Tools way, albeit without the power of the bigger TDM-based systems.

Digidesign has now extended its line of affordable front-end solutions with the debut of the Mbox (see Fig. 1). The Mbox is a 2-channel, 24-bit, USB-based digital audio interface for Pro Tools LE. When combined with a laptop such

as the Apple iBook, the unit becomes an inexpensive 24-track mixing and recording system that can easily fit into a book bag.

FORE AND AFT

The compact Mbox stands upright on plastic feet and is designed to be placed within easy reach of the user. All the adjustment knobs are on the front panel, and all the jacks (except one of the two headphone jacks) are in the back (see Fig. 2). The overall design is simple and straightforward with flowing, curved lines that add a bit of style. (For a look at a matching hard drive, see the sidebar "Designer Drives.") The light plastic case, however, is not as rugged as the metal housings on some I/O boxes (such as the Sound Devices USBPre), which might be better able to withstand the rigors of portable recording.

A phantom-power indicator LED sits at the top of the front panel above controls for the pair of input channels. A Source button selects between mic, line, and instrument level inputs for each channel with corresponding LEDs showing the current selection. Gain knobs adjust the input, and a single peak LED indicator for each channel helps you set your levels.

The S/PDIF LED lights when the digital inputs are active, and a USB indicator shows when there is communication between the Mbox and your computer. A Mix knob blends the input signal with the playback signal, and the result is passed to the outputs. At the bottom of the front panel, a Headphone knob controls the level of the front ($\frac{1}{4}$ -inch) and rear ($\frac{1}{4}$ -inch) headphone jacks, and a Mono button lets you center a mono input in the headphones, so it isn't panned hard left or right when overdubbing. (It doesn't mono the output.)

The top of the rear panel sports a 48V phantom-power button, a $\frac{1}{4}$ -inch headphone jack, a USB port, and 24-bit S/PDIF coaxial I/O. The Mbox always sends its analog output signal to the digital outputs as well, which is great for monitoring with speakers while recording to a DAT machine, for example.

The $\frac{1}{4}$ -inch analog outputs can handle balanced (TRS) or unbalanced (TS)

Minimum System Requirements

Mbox (with Pro Tools LE)

Any Mac CPU with a built-in USB port; Mac OS 9.1 through 9.2.2 (9.2.2 recommended); 192 MB RAM (256 MB recommended); OMS 2.3.8 (included)

plugs; the 24-bit D/A converters are clean and quiet. Two $\frac{1}{4}$ -inch insert jacks are provided for adding an external processor in to your input signal chain. However, you can only use the hardware inserts on the input signals before they are converted to digital signals and recorded into Pro Tools LE. You can't use the jacks as aux sends or returns within Pro Tools, which would be much more useful (although latency could become an issue with that kind of configuration). The two Neutrik combo input jacks at the bottom of the rear panel can accept $\frac{1}{4}$ -inch or XLR plugs, allowing you to connect line, mic, or instrument inputs without adapters.

THE SOFT SIDE

The Mbox comes with Pro Tools LE 5.2—a trimmed down version of the software used by the TDM-based systems. Pro Tools LE supports up to 128 tracks of MIDI and 24 tracks of audio with 16- or 24-bit resolution and sampling rates of 44.1 or 48 kHz. The software also supports the AudioSuite and Real Time AudioSuite (RTAS) plug-in formats.

On my midrange iBook, I was able to get 24 channels of audio running off the internal drive with a limiter plug-in strapped across the main insert of a stereo master fader and with EQ and compression plug-ins on every channel. It was a little creaky around the edges, and I couldn't add any additional buses with reverb plug-ins, but it basically worked.

Digidesign has purposely left a few features out of Pro Tools LE, such as support for SMPTE time code and Feet/Frames displays (most useful in post-production) as well as the time-saving single-keystroke macros for many common functions. Nevertheless, the most essential tools are available and easily accessible.



FIG. 1: Digidesign's stylish, upright Mbox provides an affordable yet powerful USB audio interface for Pro Tools. The front and back headphone jacks have a dedicated front-panel volume control.

A man, Al Caiati, is sitting in a recording studio filled with various pieces of audio equipment. He is holding a yellow P-Touch label that says "Quiet Please". In front of him is a large mixing console with many sliders and buttons. To his right is a rack of electronic equipment. The studio has a warm, wooden floor and shelves filled with more gear.

"MY NAME IS AL. THIS IS MY OFFICE."

Quiet Please

Al Caiati,
Owner/Engineer
Coyote Studios
Williamsburg, NY
Uses the PT-2300

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PORTABLE DESIGN

Though I own my own studio, I am often called to do sound-design projects at other facilities. I also do a good deal of field recording for film. As a result, I have often thought about creating a portable Pro Tools rig. Recently, a post facility called, asking me to design the sound for a game onsite. I had one week to put together a system to do the job, so I decided to take the plunge.

I purchased a new Apple 600 MHz iBook laptop and grabbed the Mbox that I had been sent for review. To the basic system I added a couple of old-school synthesizers, a FireWire drive, and a pair of Mackie HR824 monitors. I was up, running, and churning out laser blasts by the end of the day. And though the system has some quirks (more on that later), it still performs like a workhorse, allowing me to consistently produce at the same pace and quality level that I normally do on my big, expensive Pro Tools system.

I wouldn't try to mix a film with my Mbox setup, and the lack of time code in Pro Tools LE precludes the possibility of editing serious post-production projects. But for the creation of individual sound-design elements and

for mixing short animated projects, it can't be beat.

LIVE RECORDING

I also decided to try out the Mbox in some live recording situations. I took my setup to a gig and put the iBook and the Mbox right on top of my Hohner Clavinet. I connected a pair of Neumann KM 184s in an XY configuration in front of the band and recorded into Pro Tools LE. I adjusted the input level a bit as we started playing, and away we went.

I recorded three hours of music directly onto the internal drive, with the iBook's battery powering the computer, the Mbox, and the microphones. Everything went perfectly—no crashes, no problems. The resulting recording sounded fine. I wouldn't sell off my Millennia Media or Grace Design mic preamps in favor of the Focusrite preamps in the Mbox, but admittedly, they're in a completely different league and price range. Once the gig was over, I bounced the recording to disk with a bit of compression and EQ, then burned it straight to CD using the iBook's internal CD writer.

When I was asked to record the Foley for the film *Adaptation*, I decided to take a chance and use the Mbox on location instead of recording the tracks in my studio. I compressed the movie to a

320x240 QuickTime file and opened the movie in Pro Tools LE along with the original production recording and several open audio tracks for takes. Next, I attached a portable LCD monitor to the external video output of an Apple Titanium PowerBook and held the display so that the Foley artist could mimic the onscreen movement while wading hip-deep in a lake. We recorded the sounds of her movement directly into Pro Tools LE; the process worked beautifully, the system was stable, and the sound quality was excellent.

TRACK RECORD

Although the Mbox is great for live recording, sound design, mixing, and general audio use, I have reservations about using it as a primary unit for overdub-style multitracking. The problem is latency. As with all host-based recording systems, there is a discernable time lag between the audio coming into and the audio going out of the system. The time lag sounds like a slapback echo, and on my G3/600 MHz it felt like somewhere between 40 and 80 ms. That makes recording tracks over a rhythmic bed a dicey proposition. Your internal musical timing can get confused, making it really tough to nail a part.

The Mix knob that affects the balance

DESIGNER DRIVE

If you're the type of person who likes to match your shoes to your belt (hey, I do; I even have matching purple road cases for my keyboard



FIG. A: Glyph Technologies Companion lets you add a high-quality matching FireWire hard drive to your Mbox.

rig), then you'll be happy to know that Glyph Technologies (www.glyphtech.com) has released the Companion, a high-quality FireWire hard drive for the Mbox (see **Fig. A**).

The Companion comes in 40, 80, and 120 GB flavors (\$549, \$599, and \$799 respectively), allowing up to 7 hours of 24-track, 24-bit, 48 kHz recording. It features a high-quality AC- and DC-filtered power supply and an advanced cooling system that kicks up the fans when the drive gets hot. The ATA drives run at 7,200 rpm with a sustained data-transfer rate of greater than 30 MB per second. In addition, the ATA-to-FireWire bridge circuitry uses the high-bandwidth Oxford 911 chip Glyph chose in conjunction with Digidesign for use with Pro Tools systems.

The Companion's case is quite rugged

(much more so than the Mbox's) to better withstand abuse by musicians. All of the drive's components have been assembled to minimize acoustic vibrations and resonance (although I didn't find the drive to be any quieter than a run-of-the-mill Maxtor FireWire unit). The Companion is heavier than you'd expect, but high-quality power supplies and fans weigh more than the normal versions.

Glyph has successfully marketed a variety of storage devices that visually coordinate with popular audio interfaces, and the Companion continues that trend. The case is designed to sit right next to the Mbox, with a similar shape and a matching powder-blue curved faceplate. Although a hard drive should be evaluated for how it performs, not by how it looks, the Companion's matching case is a nice touch.

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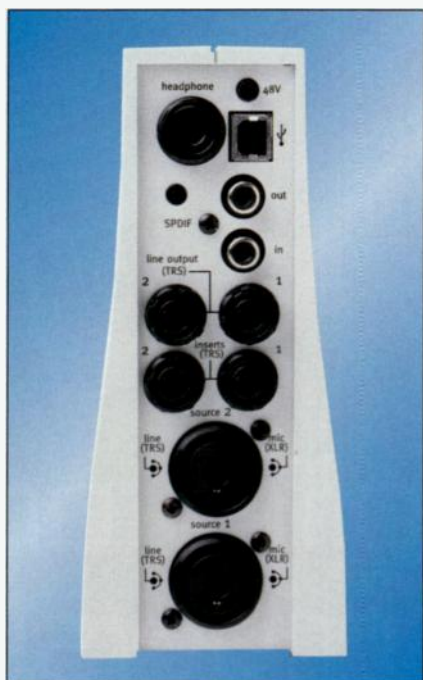


FIG. 2: The Mbox's rear panel provides Neutrik combo connectors for XLR mic inputs and 1/4-inch line and instrument inputs. Stereo analog outputs, analog inserts, and coaxial S/PDIF jacks are also provided.

between the input and the playback is meant to alleviate the problem somewhat by allowing you to focus to a greater or lesser degree on the new part or the background tracks. But mixing a blend of the incoming signal with the same signal going out in sync with the backing tracks makes everything coming in sound flamed.

Moving the Mix knob all the way to the playback position lets you hear only your audio as it is being recorded relative to the backing tracks. But then there is a disconnect between your fingers playing the instrument and the resultant sound emanating from the box. (Digidesign recommends lowering the volume on the record-enabled track in Pro Tools LE to prevent the delayed signal from coming back into the headphones.)

PLAYS WITH OTHERS

Though the Mbox and Pro Tools LE are designed to work together, the Mbox is capable of serving as a general-purpose audio front end for other applications. The DigiSystem extension makes the Mbox selectable as the sound-output

device through the Sound Manager, making it easy to play back files from such applications as BIAS Peak or Norman Franke's SoundApp.

Getting sound into third-party applications through the Mbox is a more complicated matter: different applications require different drivers, not all of which have been thoroughly tested. If you're planning to use the Mbox with a primary application other than Pro Tools LE, be sure to check with the manufacturer to make sure that the appropriate drivers are available. (Digital Performer 3 is confirmed to be fully compatible with the Mbox through the Digidesign Direct I/O driver.) In addition, because Direct I/O only allows one client to talk to it at a time, switching back and forth between Pro Tools LE and other audio applications can be a headache if the other programs route their signal through the Mbox.

READY FOR PRIME TIME?

The problem with new products is that they often suffer from problems that more mature products have already worked out. The Mbox suffers from a number of hardware and software problems that range from mildly irritating to thoroughly annoying.

The first issue is that there is no master volume control for the analog outputs. There's a headphone volume knob, but it doesn't control the line outputs. As I mentioned earlier, the input/playback Mix knob blends the

relative levels of the incoming signal with the internal playback signal and then routes the mix to the outputs. If there is no input signal, the knob works as a volume control because it is mixing between the playback signal and silence. But if you have any input, such as an open mic in the room, that approach doesn't work. I understand the desire to create new paradigms, but an output volume control is an essential feature for most audio devices.

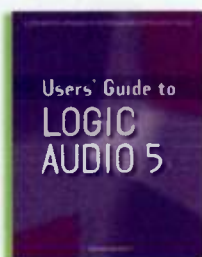
Another welcome feature would have been MIDI In and Out. I assume that there would not have been enough bandwidth on the USB bus to accommodate it, but it sure would be a useful addition.

The Mbox also suffers from a series of hardware and software glitches. To start with, the box outputs noise and ticks when it's powered up but before the Digidesign extensions have loaded. That means you have to turn off your audio monitors every time you reboot. In addition, upon first powering up, the Mbox often outputs silence or distortion rather than a normal signal; the problem occurs with Pro Tools LE as well as with other audio software. My work-around is to boot up with the Mbox connected to my Mac and then disconnect and reconnect the unit before starting to work.

The Mbox is also persnickety when it comes to switching back and forth between Pro Tools LE and other audio software. Problems even occur when

Mbox Specifications	
Analog Inputs	(2) 1/4" XLR Neutrik combo connectors
Analog Outputs	(2) 1/4" balanced/unbalanced TRS
Analog Inserts	(2) balanced 1/4" TRS, pre-A/D only
Digital I/O	stereo 24-bit S/PDIF (RCA jacks)
Headphone Outputs	(1) 1/4" on front panel; (1) 1/4" on rear panel
Resolution	16- and 24-bit
Sample Rate	44.1 and 48 kHz
Dynamic Range	(Analog Outputs) 103 dBA
Total Harmonic Distortion	(Analog Outputs) 0.004%
Frequency Response	20 Hz–20 kHz (±0.5 dB)
Dimensions	3.52" (W) × 6.24" (H) × 7.20" (D)
Weight	1.475 lb.

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using a program like Peak; if I quit Peak and then launch Pro Tools LE I might on occasion only get silence instead of an audio signal. The issue involves using the Digidesign sound drivers to output non-Pro Tools audio from the Mbox. The work-around is to output all other audio through the Mac's headphone output, which involves adding a mixer to the situation, taking away from the simple, portable aspect of using the Mbox in the first place. You may often

need to unplug the Mbox from the USB connection and then plug it back in to clear hardware glitches, so you'll want to keep the Mbox close at hand when you're using it.

When Digidesign learned about the problems that I was having, it promptly shipped out a new Mbox. When I installed revision 20 of the firmware, Digidesign USB driver 1.0.1, and Pro Tools LE 5.2.1, a number of other problems that I had been experiencing dis-

PRODUCT SUMMARY

Digidesign

Mbox
USB audio interface
\$499

FEATURES	3.0
EASE OF USE	3.5
AUDIO QUALITY	4.0
VALUE	3.5

RATING PRODUCTS FROM 1 TO 5

PROS: Small, simple, and powerful. Decent-sounding mic preamps and A/D converters. Supplies +48V phantom power from the USB port. S/PDIF in and out.

CONS: Hardware and software still glitchy. No master volume control. No MIDI I/O. Hardware inserts are prerecording only. Loud noise from outputs when powering up or rebooting computer.

Manufacturer

Digidesign, Inc.
tel. (650) 731-6300
e-mail info@digidesign.com
Web www.digidesign.com

appeared. The problems that I've just described, however, remained.

STUDIO IN A SATCHEL

The age of the truly portable recording studio is upon us, and Digidesign's Mbox is helping to make it a reality. By offering two channels of high-quality, USB-powered, 24-bit analog and digital I/O, the Mbox delivers an affordable and compact front end for Pro Tools software. It is, however, a terrific idea that is marred by some hardware and software glitches and by the absence of a couple of important features.

In spite of its shortcomings, the Mbox offers a great-sounding digital recording studio that you can carry around in a briefcase. For live stereo recording, sound design, and general-purpose audio work, the Mbox has a lot to offer at a very reasonable price.

Nick Peck creates sound for film and games and is currently working on the film Adaptation. You can e-mail him at nick@perceptivesound.com

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FMR AUDIO

RNC1773

*An affordable
stereo compressor that
truly delivers.*

By Barry Cleveland

If you're looking for a compressor with vintage styling and loads of sonic personality, look elsewhere. The FMR RNC1773 (RNC is short for "Really Nice Compressor") contains no tubes or optical circuitry, and it isn't tricked out with oversize VU meters, chicken-head knobs, or bright colors. Functionally, the unit combines digital control circuitry with an ultraclean, VCA-based analog signal path to provide the best of both worlds. You get very precise control over all parameters—when you dial in, say, an attack time of 0.2 ms, that's exactly what you get—but audio signals are never converted to digital, so any analog "warmth" they possess is retained.

HAVE IT BOTH WAYS

The RNC features two very different operational modes—Normal and Super Nice—which is another way of saying you get two types of compressors in one. In Normal mode, the RNC functions as a standard hard-knee, peak-response compressor. Normal mode is best for compressing individual instruments, particularly when you need to really

clamp down on a sound or want to intentionally create artifacts such as pumping and breathing.

When set to Super Nice mode, the RNC engages three cascading compression stages that use aspects of peak-, average-, and RMS-sensing technologies. All of the controls still function—Super Nice mode isn't a preset—but they affect the sound more subtly. This mode takes a much gentler approach and was designed to be particularly effective on program material. However, it also works well on many individual instruments and on any source for which smooth, transparent compression is desirable. Surprisingly, even with three compressors chained together, the RNC in Super Nice mode is still remarkably quiet.

CONTROL ISSUES

The RNC has five knobs, two buttons, and an 8-segment gain reduction LED on its off-white front panel. The knobs—labeled Threshold, Ratio, Attack, Release, and Gain—are spaced far enough apart to let you access them easily without inadvertently changing the position of adjacent knobs. Additionally, all level indicators around the knobs are screened in dark ink, making it easy to see settings from a distance or in dim light. The first button toggles between operational modes (Normal and Super Nice). The second engages the Bypass function. A tiny LED next to each button indicates status.

All controls are continuously variable over their entire ranges. Threshold ranges from -40 to +20 dBu. Compression ratios extend from 1:1 to 25:1, with markings at 2:1, 6:1, and 10:1 along the way. Attack time is adjustable from 0.2

PRODUCT SUMMARY

FMR Audio

RNC1773

stereo compressor

\$199

FEATURES	4.0
EASE OF USE	4.0
AUDIO QUALITY	4.5
VALUE	5.0

RATING PRODUCTS FROM 1 TO 5

PROS: Clean, transparent sound. Precise parameter control. Super Nice mode is subtle enough for mastering applications. Compact. Mono or stereo operation.

CONS: Wall-wart power transformer. Requires adapters for use in balanced audio paths. Not dual-mono capable.

Manufacturer

FMR Audio/Transamerica Audio Group
(distributor)

tel. (512) 280-6557

e-mail mark@fmraudio.com

Web www.fmraudio.com

to 200.0 ms and release time from 0.05 to 5.00 seconds. The Gain knob has a detent at 0 and provides as much as 15 dB of makeup gain or attenuation.

The RNC's rear panel (see Fig. 1) provides two ¼-inch jacks for the right channel (In and Out), two for the left channel, and one for the sidechain I/O. The RNC has no balanced connections, so you'll have to use adapters if you want to use it in a balanced signal path.

The unit was designed for use in small studios where unbalanced connections on ¼-inch TS cables are the norm. But don't put your ¼-inch TRS cables away, because the RNC is cleverly wired to perform a slick trick: the input jack on each channel is a TRS connector that also carries the output signal on the ring, making it possible to patch an RNC channel into a console insert jack with a single TRS cable. Brilliant!

RACK 'EM UP

I worked with the RNC (actually, a pair of them, mounted on a cool, Funk Logic 1U rackspace) for several months, and I found it to be useful—sometimes

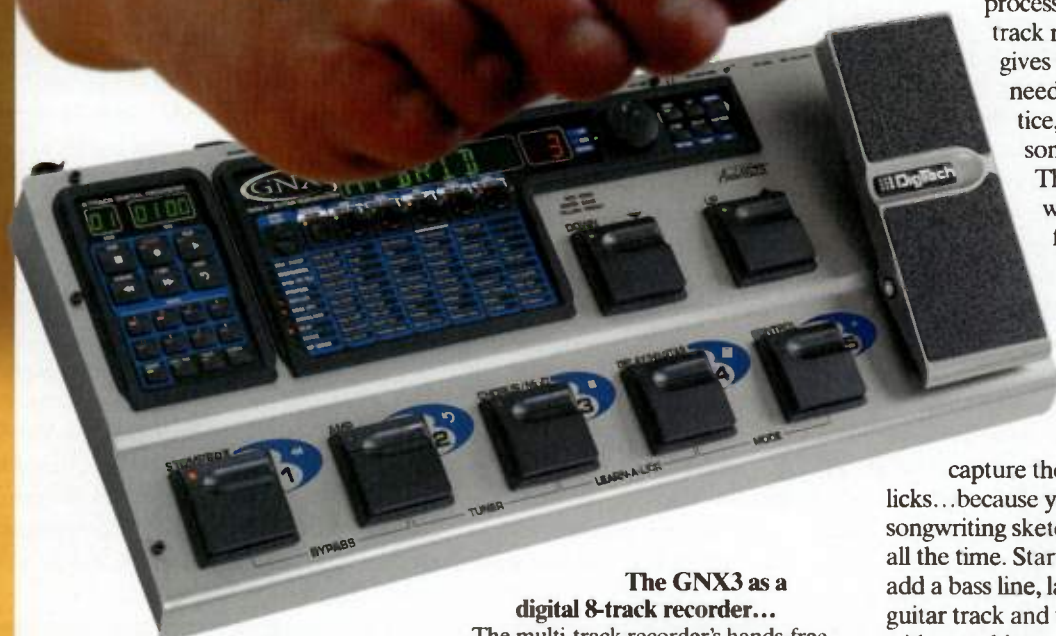


Word on the street about FMR Audio's Really Nice Compressor has been laudatory for good reason: the RNC provides clean, transparent compression, two operational modes, and precise parameter control.

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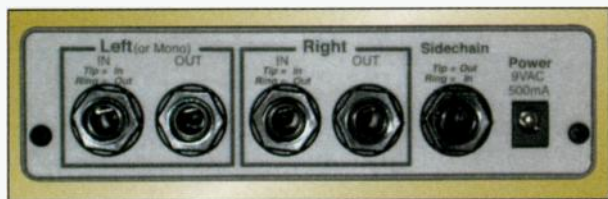


FIG. 1: The RNC's I/O jacks may look like the usual suspects, but in fact there's a neat little extra that isn't readily apparent—the unit's inputs are wired to allow connection to a console insert jack using a single TRS cable rather than the standard Y-cable.

very useful—in a wide variety of applications. First I used it while tracking electric guitar, acoustic guitar, bass, bass synth, and hand percussion. I preferred Normal mode on electric guitar because it allowed me to seriously squash some rhythm tracks in much the same way that a stompbox might, but without any of the noise or unpredictable artifacts. Super Nice mode worked best on acoustic guitar, providing gentle compression that evened out the playing without affecting the sound of the high frequencies. (During mixdown I compressed that track again in Super Nice mode, this time at a much higher ratio, in order to give it more presence at a lower relative volume. Even then, there were no noticeable artifacts.)

Both modes sounded great on bass, though I wound up using Super Nice because it kept the bottom end tight and punchy without affecting the higher frequencies as noticeably as Normal mode. Bass synth required a lot more control, so I clamped down hard with a 10:1 ratio and a 2 ms attack time in Normal mode. For hand percussion, I preferred Normal mode for individual drums—particularly the large and boomy variety—and Super Nice for stereo subgroups. The latter was particularly effective; for example, it pulled six drums, ranging from bongos to large box drums, into a tightly focused whole. I had to tweak the attack and release controls a good bit to find the optimal combination, but once I found those ideal settings the tracks really jumped forward and sat together nicely in a stereo mix.

I didn't use the RNC for tracking vocalists; however, I did use it in Super Nice mode while mixing both male and

female singers, and it sounded great. Even when I had to dial in a lot of gain reduction on a particularly unruly track, the compression was hardly noticeable, causing me to wonder if I had accidentally engaged the Bypass button—I hadn't. I achieved similar results

with flute, clarinet, and three types of saxophone. Super Nice also worked amazingly well on hammered dulcimer, bringing out great detail and allowing the instrument to cut through a dense mix without an increase in level.

DOWN AND DIRTY

Though the RNC is remarkable for its clean and transparent sound, it *can* get nasty. I experimented with a variety of extreme settings while processing various drum, bass, and synth samples, and I was able to get some truly hair-raising results. The RNC can not only pump and breathe in ways that would bring a smile to Joe Meek's face, but it can also be overdriven into raspy distortion tones that would please Trent Reznor.

Finally, I also patched the RNC directly into some guitar and bass rigs—both be-

tween the instruments and their amps and in the amps' effects loops—and it performed extremely well in all cases. Minimal amounts of compression made guitars and basses sound great, so you might consider just patching an RNC in and leaving it on all the time.

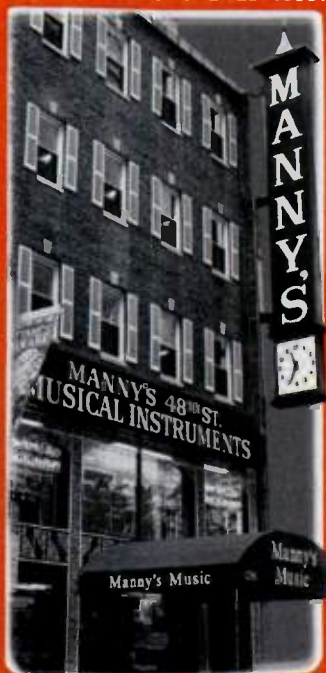
MAIN SQUEEZE

Whether you're a compressor aficionado wanting to expand your collection or a newcomer searching for an inexpensive, multipurpose dynamics processor, the FMR Audio RNC1773 could be just the box for you. This little wonder provides clean, quiet, supertransparent compression; two very different modes of operation; and all the control you need to handle a wide range of signals. The RNC not only beats out most comparably priced competing products, but it also performs as well and sounds as good as some products costing tens times as much. In short, the Really Nice Compressor really is really nice—really!

Barry Cleveland is a guitarist, engineer, and producer living in Belmont, California. He is the author of Creative Music Production: Joe Meek's Bold Techniques (MixBooks, 2001), and his latest CD, Volcano (AMP Records, 2002), has just been released. Check out www.barrycleveland.com for more info.

RNC1773 Specifications	
Audio Inputs	(2) unbalanced 1/4" TS/TRS
Audio Outputs	(2) unbalanced 1/4" TS
Sidechain I/O	(1) 1/4" TRS
Maximum Input Level	+22 dBu
Maximum Output Level	+22 dBu
Frequency Response	10 Hz–100 kHz (±0.5 dB @ 0 dBu)
Signal-to-Noise Ratio	>90 dBu (20 Hz–20 kHz)
Distortion	>0.5% (1 kHz, 6:1 ratio, 6 dB gain reduction)
Crosstalk	>–90 dBu (@ 1 kHz)
Meter	8-segment LED; gain reduction
Threshold	–40 to +20 dBu (continuously variable)
Ratios	1:1–25:1 (continuously variable)
Attack Time	0.2–200.0 ms (continuously variable)
Release Time	0.05–5.00 secs (continuously variable)
Makeup Gain	±15 dB (continuously variable)
Power Supply	9 VAC adapter
Dimensions	1.6" (H) × 5.5" (W) × 5.5" (D)
Weight	2 lb.

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C D P

COMPOSERS DESKTOP PROJECT 4.5 (WIN)

*An enormous collection of
sound-processing tools
at a very reasonable price.*

By Peter Hamlin

CDP's Composers Desktop Project 4.5 (CDP) is a huge sound-processing library that has been in development for personal computers since 1986. CDP includes a wide range of innovative, sophisticated, and flexible processing functions, and though mastering the system can be a challenge, the creative control it gives you is worth the effort. The full-release core system costs \$184 (\$165 with educational discount). This collection will be of use to a wide range of composers and sound designers who wish to manipulate and transform sound in various imaginative ways. It has also proven useful for music and video production, advertising, and music for theatrical productions. I can imagine it being used to create teaching demonstrations about electronic music or acoustics as well.

Originally CDP was designed as a collection of processing routines that were run separately as command-line programs—for example, in an MS-DOS command window running under Windows or in another operating system such as Unix. But CDP also provides

graphic user interfaces (GUIs) to let you get at the functionality of the routines in a more convenient way. Ensemble Software's SoundShaper 1.02 (\$48; \$43 with educational discount) and Trevor Wishart's Sound Loom (free) give you access to the entire collection of commands. A third GUI, GrainMill (free), focuses on the granular synthesis features of CDP. (All three supplemental programs are available at the CDP Web site.)

CDP comes on a single compact disc, and installing the program amounts to simply copying all the files onto your computer. Follow the instructions carefully, because CDP needs to have its components in the right directories. You will need to edit your autoexec.bat file to ensure proper settings each time you boot up. You'll also need to remove the read-only setting from some files so they will function properly. If your experience is like mine, you'll have a few details to fine-tune after installation (making sure the programs can locate all the executables and online documentation, for example). Because CDP doesn't use an automatic installation program that creates links on the desktop and in the Start menu, you have to create any desired quick start-up links manually.

GETTING IN SHAPE

As mentioned, SoundShaper is one of two graphic interfaces for working with the many CDP functions. When you launch SoundShaper, you see a long, narrow window with menu names across the top that access CDP's functions (see Fig. 1). The area to the left is for the display of working directories

Minimum System Requirements

Composers Desktop Project

Pentium II/333; 64 MB RAM; Windows
95/98/2000/NT 4.0 (with SP 3)/XP

and currently selected files, and in the center are two transports for listening to your work. There are other buttons for simple editing functions and for using markers with the open file.

To process a file, press the Open button; a File/Open dialog appears. After you've located the desired file, the IN-File Folder and INFile text boxes (which are slightly hidden under the overlay in Fig. 1) display your selection. Next, go to the ProcessSF Menu item and select a function—Reverb/Echo, for example. Once you've made your choice, a new window, called the Command Page, appears (see Fig. 2).

COMMAND PERFORMANCE

Each of the many CDP commands has a Command Page containing easily adjustable parameters. To the lower right are boxes confirming your choice of sound files for the input and output; even though you already chose the input file in the main window, you can change your mind here. The name of the output file is created automatically, but you can also change it if you wish (the WAV extension is added by default). Note that CDP commands always produce a new file, so you will not inadvertently destroy your originals.

The area in the lower left, labeled Presets and Snapshots, lets you save settings to use again. Presets can be saved to disk, but Snapshots are available only for a single work session and will not be remembered after the program is closed. Presets and Snapshots can greatly speed up your work and let you move easily from one frequently used area of the program to another.

After you press OK, an MS-DOS window appears showing a progress report on the function you're running. (On my computer, the MS-DOS window often first showed a message saying "Parameter value not in allowed range." It

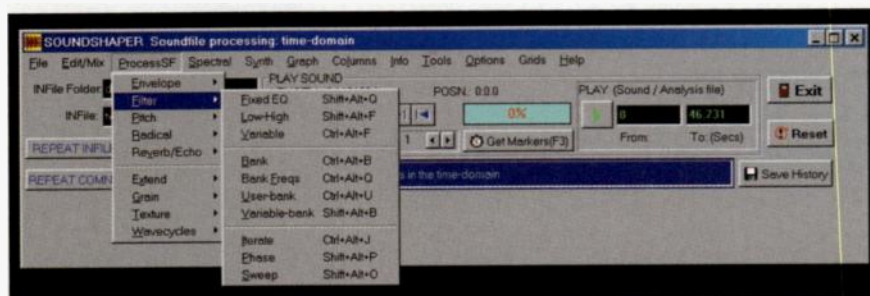


FIG. 1: Ensemble Software's SoundShaper GUI gives you quick access to CDP's huge library of sound-processing routines. The Filter group is shown here.

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doesn't seem to mean anything and can be ignored.) When the process finishes, you'll see some new information, such as the length of the newly created file. You must then close the MS-DOS window and click on OK in a seemingly redundant small dialog before you are returned to the main window. Here, the file you just created is displayed in the INFile window.

To hear the new file, press the green triangle in the Play Sound transport. If you push the Repeat INFile button, the previously selected file reappears in this space; in effect, Repeat INFile works as an Undo command. (This feature steps back only once to the most recently used sound file. A multilevel Undo command would be helpful.) The Repeat Command button brings up the most recently used Command Page with all of your last settings intact; that's a handy way to repeat a process and fine-tune the parameters to your liking.

Rounding out the main features, there's an Exit button to close the program and a Reset button for clearing the INFile box. Despite the minor issues I've mentioned, SoundShaper is a huge improvement over command-line operation of the CDP routines.

TIME-DOMAIN COMMANDS

The CDP library itself consists of two main categories: time-domain and frequency-domain processes. Notice in Fig. 1 the two menu items for these

functions: ProcessSF (time-domain) and Spectral (frequency-domain). (The documentation uses the word Groucho to refer to time-domain functions, reflecting a fondness for the Marx Brothers on the part of Andrew Bentley, who wrote the first set of time-domain programs some years ago.)

The ProcessSF commands are divided into nine categories: Envelope, Filter, Pitch, Radical, Reverb/Echo, Extend, Grain, Texture, and Wavecycles. There are 11 envelope functions (and many more if you count the additional 15 functions for warping the envelope in various ways). These are for creating and applying amplitude envelopes and include many exotic options, such as applying the envelope of one sound to another.

The ten Filter commands give you lots of interesting options for filtering a sound, including the ability to create customized filter banks tuned to the harmonic series or whatever pitches you'd like. You can even create your own time-varying filter bank by precisely specifying the desired times and frequencies for the filters' settings.

The four Pitch commands let you transpose a sound (either by semitones or by ratio), create vibrato, or accelerate or decelerate a sound as it plays. There are five commands in the Radical category: Ring-mod (multiplying a sound file by a second user-selected tone for a nicely robotic-sounding distortion

effect), Cross-mod (multiplying two signals by each other), Reverse, Degrad (intentionally reducing the resolution and sampling rate to create distortion), and Scrub.

There are ten varieties of Reverb/Echo commands. The options available here exemplify the flexibility CDP provides throughout. The Reverb command, for example, lets you specify the settings of each comb and allpass filter directly in the Reverb Command Page, but you can also

create a control file specifying early reflections of a reverberating space. The six Extend functions start with the idea of looping but go far beyond it. For example, you can select the loop-segment start times at random so the sound can be radically scrambled; you can include backwards loops or pitch changes in the process; or you can move the start point of the loop gradually forward through the sound file. I particularly like the potential that this family of processes presents for creating gradually evolving sounds, as well as sounds with abrupt surprises. (You'll find a number of sounds produced with the CDP system on the EM Web site.)

There are 17 functions in the Grain category and 14 in the Texture category, and CDP comes with a useful set of tutorial examples in those areas to get you started. The basic idea here, called *granular synthesis*, is to take segments of a sound file (*grains*) and play them back in various ways to create many different kinds of textures. There are a vast number of ways to manipulate the grains, such as controlling their duration and density or changing the pitch of an entire file. You can also create a detailed text file that specifies how the pitch should change over time, or you can scramble the grains in various ways. Another interesting option is to use the Find Grains command to locate grains in a sound file and use that information in "granulating" a completely different file.

The Texture functions also work with fragments of a sound file. By controlling the pitch and rhythmic characteristics of the fragments, you can create a wide range of specific harmonies and melodic patterns in the resulting textures. That can lead to some splendidly interesting and beautiful sounds that unfold in ways you can hardly imagine.

To hear an example, listen to the file texture sine.mp3 at the EM Web site. It started life as a homely sine wave (sine source.mp3) and was processed by a Texture routine that got its pitch information from a separate text file.

Wavecycles has 20 distortion routines

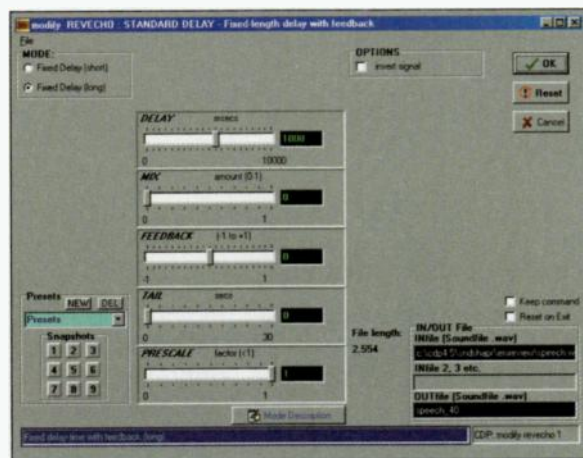


FIG. 2: Each of CDP's functions uses its own Command Page for setting parameter values. Here, parameters for the Fixed Delay command (found in the Reverb/Echo category) are shown.

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that offer some very imaginative possibilities. Among these are interleaving single cycles from two different sound files, adding harmonics to each cycle of a sound, averaging a sound over a specified number of cycles, and omitting cycles or otherwise telescoping the sound by overlapping cycles. You can also delete cycles that are in a specified frequency range, randomly change the frequency of cycles, or duplicate a waveform a specific number of times and smoothly shift between the various versions. This process can produce a weird random melody using the most innocent source material.

You can hear an example of the Average command at the **EMWEB CLOPS** EM Web site. I started with a simple piano passage (piano source.mp3) and produced a new file by averaging groups of 16 successive cycles (average piano.mp3). You can vaguely trace the original in the transformed sound, but anyone hearing the cascading effect of electronic tones would never guess that they were produced from a piano recording.

IN THE FREQUENCY-DOMAIN

All the tools discussed so far operate in the time domain (that is, directly on the waveform data found in a sound file). Another powerful group of com-

mands, accessed through the Spectral menu of SoundShaper, operates in the frequency domain. To use this group, you first create an analysis file containing information about the changing amplitudes of a sound's frequency components. The analysis routine isolates successive groups of samples (called *windows* or *frames*), the size of which is determined by the user. To create the analysis file, CDP uses a process called phase vocoding.

To access the phase-vocoding routine in SoundShaper, choose Convert (PVOC) from the Spectral menu and then choose Analyze. After you pick the file you want to dissect, the Phase Vocoder screen appears, giving you two options: FFT (Fast Fourier Transform) Size and Filter Overlap Factor. The default FFT Size (1,024) and Filter Overlap Factor (3) work in many cases, but you can increase the FFT Size to obtain a higher-resolution frequency analysis or the Filter Overlap Factor to obtain greater temporal accuracy. The Spectral commands create analysis files that you can preview using the rightmost SoundShaper transport; when you're satisfied with your settings, you can resynthesize the analysis file back into an audio file using the Synth option under Convert in the Spectral menu.

There's not much point in doing an

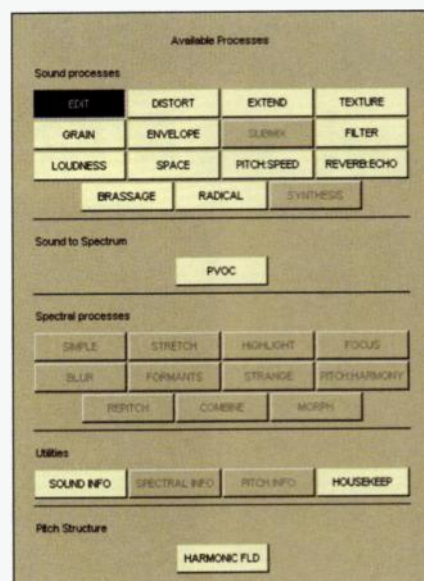


FIG. 4: Sound Loom, included with the CDP system, offers a well-organized and uncluttered interface for accessing the software's numerous features.

analysis just to resynthesize the data back into its original form—tweaking the analysis before resynthesizing lets you transform sounds in ways that are simply not possible in the time domain. CDP offers a host of options in this area.

Among the many spectral-processing tools are 15 Spectral Amplitude functions that process the amplitude values in the analysis file. They include various filtering options, arpeggiating through the frequency bands, applying a pseudo-sustain-pedal effect to selected bands, and averaging bands. One of the Spectral Amplitude functions, called Focus, finds the most prominent spectral peaks in the sound and emphasizes them throughout the duration of the resynthesized sound file, in effect “focusing” the sound energy on those bands. I applied a moderate amount of Focus to a simple speech recording (speech source.mp3) to create a new file (focus speech.mp3) in which you can still discern the original.

There are also 15 Frequency/Pitch commands that can change the frequency values in the analysis file. You can transpose the pitch without changing the length of the sound file (which is one of the classic uses of the phase

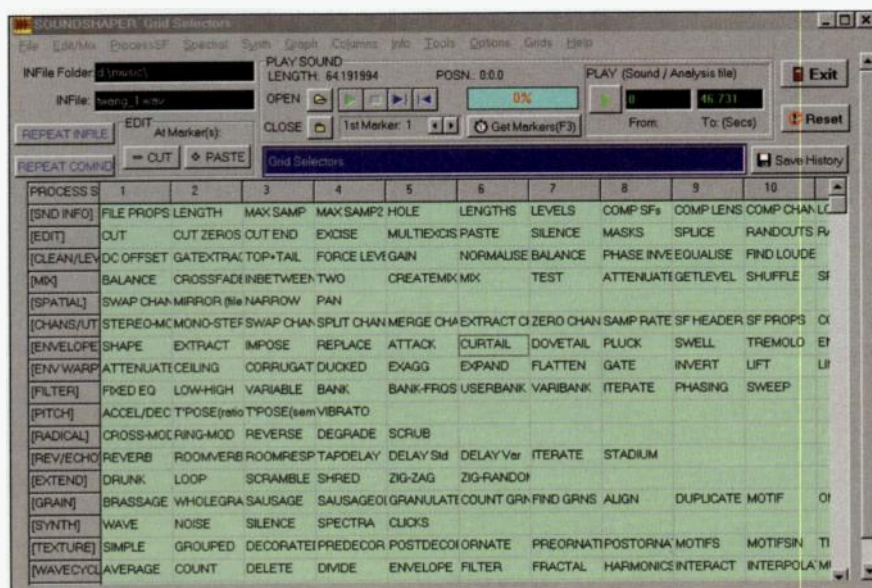


FIG. 3: SoundShaper's Grid menu provides access to all the functions of either the ProcessSF or the Spectral group at a glance. You can run any of the functions by clicking on its name.

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vocoder), spread the pitch bands out over a selected range, shift the frequency values in various ways, create a chord built on the original sound, tune the original sound to a specified pitch or set of pitches, and much more.

The nine Morph/Formants commands use the analyses of two different sound files and include various ways to blend their spectra. One possibility is cross-synthesis, which uses spectral data from one sound to alter the data of another. There are also tools for storing extracted data from the analysis file for use elsewhere or for viewing. In addition, six so-called multifile processes do things such as averaging the amplitudes of each frequency band in two files or taking their differences and creating a new file from the original two. That's quite an extensive set of options!

If that's not enough to keep you occupied, you'll also find ten Time functions for manipulating a file's temporal characteristics. In addition to changing the length of a sound file without altering its pitch, you can, for example, freeze a single window of the sound or freeze frames periodically, blur the spectrum across frames, or change the playback order of windows in various

ways. Try as you might, you won't find this range of processing functions in any other software-only system. The file  freeze speech.mp3 at the EM Web site applies the Freeze Time function to the file speech source.mp3.

One of the largest groups is called Pitch Data, which contains 19 options. Here are functions that let you randomize, quantize, invert, smooth, shift, and otherwise alter the pitch data in the analysis. Finally, there are six useful utilities for tasks such as changing the gain of an analysis file or grabbing a single analysis window.

MENU, PLEASE

SoundShaper's Tools menu provides access to ViewSF, a simple WAV-file viewer in which you can place and record markers. Though ViewSF is useful, you'll probably prefer to have a more sophisticated external sound-file viewer and editor available while working with CDP. Another tool is BreakEdit, a visual breakpoint editor. BreakEdit lets you create envelopes with an unlimited number of break-points for use anywhere you wish. You can also extract an amplitude envelope from an existing file and reuse

it elsewhere—for example, to control the frequency of another file. The Graph Editor tool can be called up whenever a command requires time-varying control. Unlike BreakEdit, Graph Editor does not support logarithmic and exponential curves.

SoundShaper also has an Edit/Mix menu. Functions there include cutting, pasting, and copying marked areas of a sound file. Working with markers (through the ViewSF tool) in CDP is not very convenient, and I generally did not find the editor functions particularly useful. You can create complex mixes from a text-file script, however, though I'd much rather use a program like Sonar for that kind of activity.

Another menu, Columns, lets you work with columns of numbers. You could, for example, access a series of frequencies used in a filter bank or a time-varying loudness control for a signal. The Columns menu includes numerous tools for creating, editing, and converting such lists. The Info menu has commands that give you basic information about sound or analysis files (for example, file length and number of channels), although similar information is routinely given on Command

COMPOSER TREVOR WISHART

A central force behind the development of CDP is composer Trevor Wishart. He has coded all of the CDP spectral programs and most of the time-domain programs, and also created the Sound Loom interface. Wishart was born in Leeds, England, in 1946. His early electro-acoustic work *Red Bird* (EMF CD022, 1977) illustrates his interest in and mastery of sound transformation, even though, remarkably, this piece was composed in an analog studio using tape, splicing, and mixing techniques.

As personal computers became more powerful, Wishart began to work in the digital medium. *Vox-5* (Wergo 2024-50, 1986) was created by Wishart at IRCAM in Paris, using his own programs to manipulate the analysis data created with a phase vocoder. These programs represented some of the early Composers Desktop Project tools, then running on an Atari ST computer. *Vox-5* is a good example of how sound can be altered, morphed, and cross-synthesized in the frequency domain.

The CD *Voiceprints* (EMF CD029, 2000) contains more recent examples of Wishart's work. By manipulating familiar

material—the voice, for example—he generates a wide assortment of unexpected sounds. Listening to this music is like opening a geode: tap what appears to be an ordinary rock and a ravishing display of crystal colors and designs is revealed. The CD also has something of the quality of an M. C. Escher etching, a sort of sonic illusion of contrast deriving magically from gradual transformation. The music is alternately beautiful, haunting, harrowing, and whimsical. One striking example is the harmonic and rhythmic richness that flows from recordings of the voices of Martin Luther King, Elvis, and Neil Armstrong in the piece *American Triptych* (1999). There is also a dramatic quality and even a political statement in the use of the recorded voices of Princess Diana and Margaret Thatcher in *Two Women* (1998). *Tongues of Fire* (1995) presents everything from fanciful gnomelike chattering (which Wishart describes as “slightly angry, disgruntled, comic muttering”) to voices that subsume themselves into weirdly mechanical and very inhuman sounds. All of the more recent pieces reflect the kinds of sculpting and transforming of sound that CDP makes possible.

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Pages. The Grids menu offers another handy way of navigating through the CDP library: it presents four grid patterns featuring all the commands laid out in a table (see Fig. 3). To run a command, simply click on it. (It would be nice if you could resize the grid to make more of it visible at one time.)

OTHER GUIs

Sound Loom, written by CDP guru Trevor Wishart (see the sidebar "Composer Trevor Wishart"), is another GUI available for the CDP package. Space constraints do not permit a detailed look at Sound Loom here, but briefly, Sound Loom, like SoundShaper, gives you access to all the CDP commands in an integrated graphical environment. Sound Loom differs in its layout and operation, however. It has several very useful features: First, you can apply processes in bulk to many files at once. Second, you can create *instruments*, which are any chain of processes that

can be stored and easily reapplied. (SoundShaper lets you work in a similar way using DOS batch files.) I also like the way Sound Loom's interface organizes the CDP commands (see Fig. 4).

The full release of CDP includes a well-designed interface called GrainMill that is made especially for granular synthesis. You can also get an algorithmic-composition package called Tabula Vigilans (\$70; \$63 with educational discount). CDP comes packaged with Csound, the sophisticated public-domain sound-synthesis program. Csound is a separate program and not within our purview here, but note that you get not only the program but some excellent detailed documentation and tutorials designed to help you get started. (For information about Csound, see "Csound Comes of Age" in the July 2002 issue.)

ROOM FOR IMPROVEMENT

I have already noted some areas in which SoundShaper's user interface

could be improved. There are also certain ways in which the interface seems incomplete. For example, there are occasional inconsistencies that can be confusing, such as the use of the term *Q* in the filters where *bandwidth* would be more appropriate. File extensions are displayed in some cases but not others. Also, sometimes the default values and ranges of parameters on Command Pages are not within legal limits for the current command.

It would be wonderful if the Sound Loom interface could support dragging and dropping files from one work-space window to another. The above mentions are little things that you get used to as you use the system and are not significant detriments, but I hope they can be worked on in future upgrades.

The documentation is full of great material: tutorials, insights into sound processing, advice about learning the commands, and detailed information



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about each function. The contextual help is also very handy: all Command Pages have a Help menu with an associated key-press shortcut that gives access to the CDP Help page. At times, however, I found it difficult to locate information in the documentation because it is not always organized in the same way as the GUI. One example is SoundShaper's use of the term *EDIT*: the documentation uses *SFEDIT*, and neither term is in the documentation's alphabetical index. I get the impression that CDP has been evolving away from a set of many individual commands into a more integrated environment, and that that evolution is not yet fully realized. As before, I would characterize these points as minor.

Though the program could be made more usable in some areas, the bottom line is that CDP is an amazing resource for anyone interested in creative and imaginative sound processing. It offers exceptional flexibility and an enormous

range of features at a very reasonable price. CDP's future prospects are exciting, too. Plans include developing real-time VST and Direct-X plug-ins, creating DLL versions of the functions to make them work more seamlessly in Windows environments, broadening file-format compatibility, and developing multichannel and algorithmic-compositional capabilities. A Mac OS X port is also expected before long.

But even in its present form, CDP

gives you more than enough to work with. The quality of sounds produced by CDP is uniformly excellent. Give yourself lots of time to learn the wealth of materials here, because CDP will let you do pretty much anything you can think of with your sounds, and maybe a lot you haven't yet imagined.

Composer Peter Hamlin teaches at St. Olaf College. He is also a member of the live electronic-music improv band Data Stream.

PRODUCT SUMMARY

CDP

Composers Desktop Project 4.5 (Win)
signal-processing software

Core system \$184

SoundShaper GUI \$48

Tabula Vigilans

algorithmic-composition processor \$70

FEATURES	5.0
EASE OF USE	3.5
DOCUMENTATION	4.0
VALUE	4.5

RATING PRODUCTS FROM 1 TO 5

PROS: Huge number of flexible and powerful sound-processing functions. Reasonable price. Comprehensive. No external hardware required.

CONS: Working with GUI that runs programs in an MS-DOS window can take some getting used to. Some room for improvement in the operation of the GUIs.

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mic pre.*

By Myles Boisen

Back before outboard preamps were all the rage, Aphex Systems made a splash with its model 107, a dual-channel mic preamp priced for the personal-studio market. That was 1996—practically ancient history considering the rapid turnover of today's audio marketplace. In the wake of the outboard-preamp explosion, Aphex has wisely updated the 107, keeping the price competitive and adding some unique and attractive features.

FRONT AND CENTER

The 207's single-rackspace faceplate, finished in a soft-looking silver powdercoat, is logically laid out with two sets of identical left- and right-channel controls. At the left side of each section is a $\frac{1}{4}$ -inch high-impedance instrument input for DI connections. Five switches are labeled from left to right as follows: Phantom (48V phantom power for condenser microphones), Polarity (reverses polarity when engaged), Pad (20 dB), Low Cut (70 Hz at 12 dB per octave, plus additional compensation at 120 Hz), and MicLim.

The MicLim circuit is an Aphex innovation. Essentially, it is an automatic and nonadjustable peak limiter placed before the mic preamp to keep input levels under control, thus avoiding the common problem of input-stage clip-

ping and distortion. When the MicLim feature is engaged, an adjacent yellow LED lights up any time the input level is sufficient to trigger limiting.

The on/off switches are a neat, attractive touch: they glow a cool alien green when engaged and are shiny and clear when disengaged. To the right of each channel's button array are an easy-to-grasp gain knob and a recessed output trim pot (0 to -12 dB.) The trim can be adjusted with a small screwdriver, and it enables users to match the 207's metering and output to diverse analog and digital recording setups.

Ten-segment LED ladder meters, located in the center of the front panel, register output headroom for both channels. The meters are implemented as a typical digital dBfs display (with 0 dB of headroom and red indicator lights at the top) rather than like conventional analog meters. An AC power on/off switch with indicator light is mounted on the far left of the front panel. When the unit is powered up, the meters surge for a few seconds, but output is muted to prevent the possibility of audible voltage spikes and blown speaker cones.

BRINGING UP THE REAR

All inputs and outputs are found on the 207's back panel (see Fig. 1). In addition to a balanced XLR mic input and line-level output, each channel has a balanced $\frac{1}{4}$ -inch TRS output and a $\frac{1}{4}$ -inch TRS insert jack. Output level is switchable on each channel (+4 dBu or -10 dBV.) Also located on the rear panel is a standard IEC power-cord connector. The unit is designed to operate from all nominal power sources from 100 to 240V. There is no external access to fuses (the manual claims the internal fuse will "never blow unless the power supply fails catastrophically"), nor is there provision for digital output or an A/D converter card.

The model 207's all-metal chassis has no vents, which is a bit unusual for a device using a vacuum tube. A single American-made ARS brand 12AT7/ECC81 is housed inside, and the remainder of the model 207's circuitry is solid-state. During testing, the unit ran much cooler than any of the all-tube gear in my racks, and even cooler than other Aphex products I use.

MANUAL DEXTERITY

The 207's 28-page manual is the most thorough I have seen for a product of this type; it explains every feature in exhaustive detail. In addition, the documentation offers ample diagrams, as well as supplemental information on wiring, balanced lines, and stereo-microphone recording techniques.

The only flaws in the exemplary text are occasional lapses into marketing-speak. Repeated assertions that the 207's solid-state/tube hybrid design is "real tube," "true tube," "new and better," and "unmatched for sonic detail and dimensionality" detract from what is otherwise good, solid technical information.

PERFECT MATCH

I tested two Model 207s for this review and was impressed to find that the units sounded virtually identical—something that can't be said for some other preamps I have reviewed.

Equally impressive, in a stereo-matching test, both channels of the two units calibrated easily and identically according to gain-knob settings and internal and external metering. In addition, each set of two channels matched sonically when fed the same split-mic input. Clearly, Aphex maintains careful control over its manufacturing.

IN THE CHAIN

Sonic differences between various makes and models of mic preamps are typically subtle—much more subtle,



The Aphex Model 207 2-channel mic pre provides a wealth of features, including a MicLim circuit designed to prevent peak overloads.

The Professional's Source

<p>Digidesign ProTools-TDM Digidesign Control-124</p>	<p>AKG C12VR Neumann M149 Tube U87Ai</p>	<p>Emagic Logic Audio Platinum 5 MOTU Digital Performer 3.1 Steinberg Cubase VST</p>	<p>Tascam DM-24 24-Track Studio Tascam MX2424</p>
<p>GLYPH Hard Drives X-Project</p>	<p>Serato Pitch'n Time Plug-in McDSP Synthesizer-One</p>	<p>Blue Condenser Microphones</p>	<p>Aphex 2 Channel Digital Mic Pre Amp dbx 160SL Stereo Compressor</p>
<p>Focusrite SA110 Mic Preamp & EQ SA430 Producer Pack</p>	<p>The Professional's SOURCE for all your PRO-AUDIO and RECORDING needs</p> <ul style="list-style-type: none"> • Built To Order Computer Based Turnkey Systems for Macintosh or Windows • Expert Advice from Working Professionals! • World's Largest In-Stock Inventory! 		<p>WAVES Gold TDM Bundle</p>



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usually, than dissimilarities between different microphones. Drawing a clear bead on a mic pre's sound requires, therefore, careful comparison testing. I compared the Aphex Model 207 with several more-or-less comparably priced preamps, including an A.R.T. Tube MP (tube-hybrid), a PreSonus MP20 (solid-state), a Peavey VMP-2 (all-tube), a Focusrite Green (solid-state), a Grace 101 (solid-state), a Drawmer 1960 (a combined preamp and compressor; a tube-hybrid), and a stock preamp in my Soundcraft Spirit board (solid-state). Of those preamps, two (the Soundcraft and Tube MP) cost less per channel than the 207, one (the PreSonus MP20) costs about the same, and the others cost more.

I recorded a number of instruments, including acoustic and electric guitars, bass guitar (using the 207's DI input), saxophones, and several percussion sources. My main trial for the 207 was undertaken with the assistance of a multi-instrumentalist acquaintance who agreed to overdub a composition for my testing purposes. Each instrument was recorded, using Blue Kiwi cables, through a matched stereo pair of microphones (Oktava MC012s or Neumann U 87s), with one mic patched through the 207 and the other hooked up to one of the comparison preamps. I monitored all tracks on both Tannoy PBM8s and Dynaudio Acoustic BM 15s.

Overall, the 207 produced a uniformly present, detailed, and up-front signature sound. In most cases, however, it sounded a bit dull or dry, slightly compressed, and a little shy on bass content, and it consistently captured less room sound and sense of space than the other preamps.

Model 207 Specifications	
Amplifier Type	tube/solid-state hybrid, transformerless
Tube Type	12AT7/ECC81
Inputs	(2) balanced XLR (mic); (2) balanced TRS $\frac{1}{4}$ " (insert); (2) unbalanced TS $\frac{1}{4}$ "
Outputs	(2) balanced TRS $\frac{1}{4}$ "; (2) unbalanced $\frac{1}{4}$ " (line)
Operating Level	+4 dBu; -10 dBV (switchable)
Gain Range	20–65 dB (mic, +4 dBu), 8–53 dB (mic, -10 dBV); ∞ –65 dB (line, +4 dBu), ∞ –38 dB (line, -10 dBV)
Maximum Input Level	0 dBu (mic); 10 VRMS (line)
Maximum Output Level	+21 dBu (+4 dBu); +6.75 dBV (-10 dBV)
Frequency Response	30 Hz–30 kHz (+0, -0.5 dB)
Dynamic Range	113 dB
Equivalent Input Noise	-129 dBu (input shorted)
Total Harmonic Distortion + Noise	<0.18% (10 Hz–22 kHz @ -11 dBfs)
Crosstalk	-79 dB (10 Hz–22 kHz)
Highpass Filter	70 Hz, 12 dB/octave
Attenuation Pad	20 dB
Phantom Power	48V
Dimensions	1U \times 7.5" (D)
Weight	9 lb.

For example, on a set of conga drums, the 207 provided a detailed and intimate sound with plenty of skin attack. The overall tone, however, was drier and less roomy than that provided by the Focusrite Green. With tambourine and jingling keys (a test of the unit's handling of complex, high-end transients), the 207 provided more accuracy and detail than the Tube MP. But it sounded a bit fuzzy and compressed in contrast to the MP20's more clearly etched realism. On an electric-bass-guitar track, which sounded full and warm through the Peavey VMP-2, the 207 came across as midrangey and a bit thin. And on an electric-guitar solo, I was surprised to find that a preamp in my Spirit board

offered a richer tone, including lusher treatment of the Fender guitar amp's spring reverb.

For dense, electronic, or highly processed mixes, this kind of dry, compressed character may have its advantages. But for acoustic recording, the Aphex always came in second place. It consistently lacked depth, room sound, richness, and other subtle sonic attributes of good tube gear, and it often sounded edgy and one-dimensional compared with the solid-state preamps.

STOP THAT PEAK

On some sources, such as electric bass (through the DI), the Model 207's MicLim feature was generally transparent and useful for catching occasional peaks, as long as input levels were moderate and limiting was not excessive. On a conga part, engaging the MicLim circuit helped tame the drummer's fluctuating levels. Unfortunately, it also dulled the percussive attack a bit.

Because there are no adjustable parameters, MicLim is probably most useful as a "set it and forget it" fail-safe for the unpredictable world of live-sound recording.

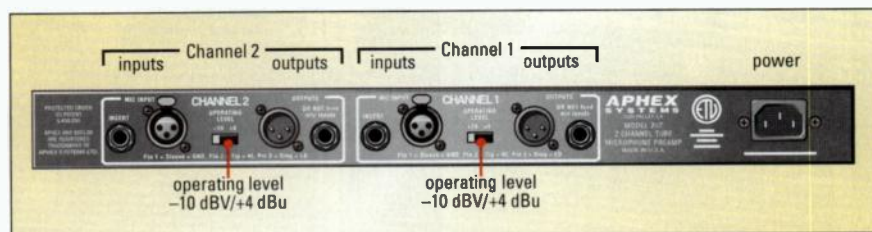


FIG. 1: The 207's rear panel provides a balanced XLR mic input, balanced XLR line-level output, balanced $\frac{1}{4}$ -inch TRS output, and a $\frac{1}{4}$ -inch TRS insert jack. Output levels are switchable per channel.

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● MODEL 207

PRODUCT SUMMARY

Aphex

Model 207

2-channel microphone preamp

\$649

FEATURES	4.5
EASE OF USE	4.0
AUDIO QUALITY	2.5
VALUE	2.5

RATING PRODUCTS FROM 1 TO 5

PROS: Adjustable metering. Polarity reverse. DI input. Switchable output levels. MicLim feature. Thorough and informative manual.

CONS: Mediocre sound quality. Sounds are slightly compressed as well as bass-lean on many sources. Lacking in depth, warmth, and other sonic attributes of tube gear. Absence of parameter adjustments diminishes MicLim usefulness.

Manufacturer

Aphex Systems, Ltd.

tel. (818) 767-2929

e-mail sales@aphex.com

Web www.aphex.com

SECOND PLACE

The Aphex Model 207 provides all the features one could want in a basic mic pre, including commendable options such as adjustable metering, polarity reverse, and switchable output levels. To its credit, the unit runs coolly and quietly, and has plenty of headroom. Sonically, it adds an up-front presence and slightly compressed sound to many sources, which may offer recordists a more exciting flavor than the sound of some stock console preamps or other solid-state/tube hybrids. However, based on what I heard, I am forced to disagree with Aphex's claim that the Model 207 is "unmatched for sonic detail and dimensionality."

Myles Boisen is a guitarist, producer, composer, and head engineer/instructor at Guerilla Recording and The Headless Buddha Mastering Lab in Oakland, California. He can be reached by e-mail at mylesaudio@aol.com.

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Quick Picks

NOMAD FACTORY

Blue Tubes VST Bundle 1.01 (Mac)

By Barry Rudolph

Nomad Factory's Blue Tubes VST Bundle 1.01 (\$156; available for download at www.nomadfactory.com) is a collection of six commonly used processors for tracking and mixing. The interface's design, look, and feel combine elements of venerable old tube gear from Pultec, Teletronix, Universal Audio, and the Danish TubeTech line, among others. The graphics include big, blue front panels with large adjustable black knobs and beefy-looking toggle switches.

I tested Blues Tubes in Mark of the Unicorn's Digital Performer 2.7 using Audio Ease's VST Wrapper and also in the Mac A/V mixer within a Pro Tools Mixplus TDM system running Emagic's Logic, v. 4.8.1. The results differed vastly. Under VST Wrapper, the plug-ins worked great, though I didn't get the full automation of effects that you would in a host such as Cubase. With in the Logic rig, however, performance was problematic and buggy, but that was due more to Logic's VST implementation than any fault of the plug-ins.

The six plug-ins in the Blue Tubes bundle are Compressor CP-2S, Equalizers PEQ-2A and PEQ-2B, Limiter LM-2S, Driver DR-2S, and Analog Flanger/Chorus/Autopanner

CH-2S. All are available in both stereo and mono versions. Nomad Factory uses a challenge-and-response authorization scheme, and once I got the proper code, I was able to quickly install and launch the plug-ins on both of my systems.

Great Sounds

All the plug-ins sound great—very analog—and they include many useful presets to get you going. I especially like the Flanger/Chorus/Autopanner for its versatility and smooth, simple operation. It runs the gamut from very pretty chorusing to grainy flanger effects and has the ability to decouple the Rotate (autopan) feature from the chorus or flanger LFO modulation. (This is not possible with the Flanger/Chorus in Nomad's Liquid Bundle.) Although I'm not a big fan of LFO syncing, I was unable to find a way to sync the LFO to MIDI clocks and was annoyed that the LFO speed and delay times are expressed in numbers from 0 to 100 rather than in seconds or milliseconds. I was also irritated by the touchy Speed and Depth controls—all the useful settings are "compressed" within a quarter of the knobs' ranges.

The PEQ-2A equalizer's front panel looks like the famed Pultec tube EQ with the same frequencies and operation. One of the Pultec's main features is its ability to boost and cut the same frequency at the same time. This yields a contorted EQ curve and produces a sound coloration not achievable otherwise. The PEQ-2A does this trick just fine. The PEQ-2B is a 3-band equalizer with a similar sound profile but more carving abilities. After hours of sessions, my producer and I appreciated the warm and natural sound of both equalizers.

Also immediately likable is the Blue Tubes Driver DR-2S. This is a stereo analog overdrive plug-in that simulates tube amplifier saturation. Using very gradual steps, you can "dial in" just the right amount of filth. Designed for electric guitar, the DR-2S has a natural-sounding gating feature with four nonadjustable -preset release-time settings. However, for gating short percussive sounds, I would have liked an even shorter release-time setting than the shortest one of-

fered. The Overdrive and Gate Threshold settings were also labeled 0 to 100, but thankfully, the useful highpass and lowpass filters offered more intuitive settings (5 to 500 Hz and 160 Hz to 16 kHz, respectively).

On the Level

The LM-2S compressor does a pretty good imitation of a Universal/Teletronix LA-2A leveling amp. I like the glowing blue tubes and the three attack- and release-time choices—a welcome departure from other LA-2A plug-ins. The CP-2S is a more full-featured compressor with variable Attack (0 to 500 ms) and Time Constant or release settings (5 to 5,000 ms). The Threshold and Ratio are again labeled 0 to 10, and there are Low, Medium, and High peak-detection buttons. Both of these compressors sound good when applied in light to medium strength; I don't think I'd use them heavily on mission-critical lead-vocal tracks or across the stereo-mix bus.

For just \$156 and a fast download, the Nomad Factory Blue Tubes VST Bundle is an easy-to-use and totally musical collection of simple utilitarian tools for tracking and mixing. Versions for PC, MAS, and TDM, along with LFO sync, are coming soon.

Overall EM Rating (1 through 5): 3.0

Nomad Factory Professional Audio Products; e-mail info@nomadfactory.com; Web www.nomadfactory.com

BITSHIFT AUDIO

Phatmatik Pro 1.1 (Mac/Win)

By Len Sasso

Bitshift Audio brings beat slicing into your digital audio work environment with Phatmatik Pro (\$99), available in VSTi format for Windows and Mac OS 9 and Audio Unit 2.0 for Mac OS X. What differentiates Phatmatik Pro from other beat slicers, most notably Propellerhead's ReCycle, is that, in addition to slicing up audio files, it plays the resulting slices. A full-featured demo version is available for download from Bitshift Audio's Web site. If you're looking for a REX-file player, pick up a copy of the free Phatmatik VSTi plug-in while you're there.

Having a slicer and player that integrates



The Blue Tubes VST Bundle from Nomad Factory is a set of six functional plug-ins that are useful for many tracking and mixing needs. The Mac-only bundle emulates a number of tube devices.

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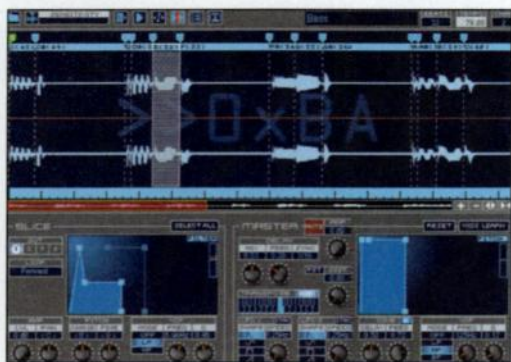


FIG. 1: Bitshift Audio's Phatmatik Pro control panel consists of a waveform display (upper half) for creating and editing slice points, controls for individual slice processing (lower left), and controls for global processing (lower right).

as a plug-in in your digital audio sequencer eliminates the need for launching and transferring audio files between different applications. A single instance of Phatmatik Pro is capable of slicing and playing back files on each of 16 MIDI channels, so if your CPU permits, you can accomplish a lot of loop processing and synchronizing **EMWEB** at one go. For an example, **GLIPS** listen to the file kicks.mp3. It was recorded in one pass using a single four-on-the-floor kick-drum loop processed in five Phatmatik Pro channels.

The What and Why

Beat slicing is the process of dividing an audio file into short segments, called slices, for the purpose of gaining independent control of tempo and pitch. Most often the audio file is a beat loop, and the slices correspond to individual beats. Playback typically involves sequencing the slices at a different tempo than the original beat loop, thereby changing the tempo of the loop without mangling the sound by changing its pitch and formant structure. Of course, the opposite is also possible—you can change the pitch and apply other DSP effects to the individual slices and resequence them at the original tempo.

Phatmatik Pro does everything you'd expect of beat-slicing software and quite a bit more. Let's start with slicing. There are two ways to approach slicing an audio file: you can make the slices at metric divisions without regard to the audio content, or you can try to detect individual audio events—drum beats, for example—and use those

for the slices. Phatmatik Pro offers both options and, in the latter case, allows you to set the sensitivity with which it interprets audio transients (that is, spikes) as slice points. However you choose to initially create the slice points, you can add, delete, and move them at will. **Fig. 1** shows Phatmatik Pro's control panel with a bass loop sliced into individual notes.

Phatmatik Pro automatically assigns consecutive MIDI notes to individual slices starting with C2 (MIDI Note Number 48) for the left-most slice. You can play the slices back from your MIDI keyboard for auditioning and setup purposes,

but in practice, you will undoubtedly want to trigger the slices from a MIDI sequence. Phatmatik Pro will generate a MIDI sequence with timing to match the slice spacing; you can either drag the sequence directly into your host application or save it on your hard drive for use elsewhere. A nice touch, Phatmatik Pro gives you the option to vary the Velocity of the MIDI notes according to the amplitude of the individual slices. That lets you capture the accents as well as the timing of the beat loop in the MIDI file—an essential feature for groove extraction that, as far as I know, is unique to Phatmatik Pro.

Phat DSP

The bottom half of the Phatmatik Pro control panel is devoted to effects processing. The left section, labeled Slice, applies separate processing to each slice, whereas the processing in the right section, which is labeled Master, applies globally. Slice processes include choice of audio output channel (four are available if supported by your host software); slice playback direction and looping; amplitude, pan, and pitch settings; resonant high- or low-pass filtering; and ADSR envelopes for amplitude, pitch, and filter cutoff. The Master section includes global transpose, tempo-synchronized feedback delay, distortion, comb filtering, and multimode resonant filtering. Additional ADSR envelopes are provided for filter cutoff and pitch, and you'll also find two multiwaveform LFOs with sample-accurate tempo synchronization. A four-by-four modulation matrix allows

you to route the LFOs, Mod Wheel, and Velocity to filter cutoff, pitch, amplitude, and filter-envelope amount.

Phatmatik Pro is designed for playing as well as slicing and will save audio files to your hard drive complete with all Phatmatik Pro settings. You can also save or drag individual slices to your host application or hard drive. That makes fast work of converting audio files containing multiple hits to sample maps for your favorite sampler.

I started out thinking of Phatmatik Pro as handy tool for integrating beat slicing into my sequencing environment. I wound up viewing it as a kind of Swiss army knife for audio-file deconstruction. The one drawback is the small size of the sample editor, which is critical for setting and moving markers, and which must inevitably be compromised to fit the plug-in format. Still, I found slice positioning quite doable. Whether or not your music involves beat loops, Phatmatik Pro is definitely worth a look. It is well thought out and has a lot of creative potential.

Overall EM Rating (1 through 5): 4.5

Bitshift Audio; tel. (413) 623-0000; e-mail info@bitshiftaudio.com; Web www.bitshiftaudio.com

PSPAUDIOWARE.COM

Lexicon PSP 42 (Mac/Win)

By Gary S. Hall

Polish developer Professional Sound Projects (PSP) has introduced a plug-in emulation of Lexicon's PCM 42 hardware, and it bears investigation. But first, I must make a disclosure. I designed the Lexicon PCM 42, so this won't be your usual review. I can't claim total objectivity, but I hope that I can offer some insight.

The PCM 42 is a pre-DSP digital delay line that was introduced in 1981. Its audio delay is digital, but everything else is analog. The original PCM 42 offers as much as 4.8 seconds of delay (which is doubled in the PSP emulation). The PCM 42 includes primitive clock-sync functions that made it a favorite among loop performers. Sweep effects are provided by a time-base modulation section with an envelope follower

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and a low-frequency oscillator that generates sine or square waves. A Delay X2 button cuts the sample rate in half, doubling the delay time. The PCM 42 also has an infinite-hold setting that lets you use it as a simple phrase sampler.

Most importantly, the PCM 42 has a characteristic sound that made it a studio standard. Even today, used PCM 42s command a premium price.

The Virtual PCM 42

So how does a plug-in emulation compare with the original unit? Of course, you gain the advantages of software over hardware, including multiple instances. Want a PCM 42 on every input? You got it! PSP 42 offers preset memories, automation through VST or MIDI, and improved delay-sync functions—all for \$149 for the downloadable version, a fraction of the PCM 42's original selling price. (A backup CD is available for \$9.90, and shipping is \$6.50.)

PSP 42 comes in VST and DirectX formats, and a MAS version is also promised. You can purchase the product directly from PSP (www.pspaudioware.com) or from Lexicon's Web site (www.lexicon.com). PSP and Lexicon have an arrangement under which Lexicon offers PSP 42 for sale but PSP provides all support. In turn, PSP can use the company name; hence, the product is officially the Lexicon PSP 42, although it's made by PSP.

New Wrinkles

I ran PSP 42 under VST on a Mac. When you open the control panel, you get a photo-realistic image of the PCM 42's front panel (see Fig. 1). If you compare it to the original, though, you'll notice an extra knob for output level. For reasons best left unmentioned, that control ended up on the rear panel of the original. PSP did well to rectify the situation. Additional controls let you select and store presets. The controls and indicators generally act the same way they do on the original.

Not everything on PSP 42 works exactly as it did on the original, though. On the original PCM 42, hitting the infinite-repeat button (∞ RPT) immediately locks whatever is in the entire memory. Infinite repeat in PSP 42 is more akin to a modern phrase sampler, instituting a one-shot capture at the current delay setting. PSP's implementation is probably more useful.

The Clock mode also works differently. The PCM 42 generates a signal that reflects the clock rate. You can use it to drive drum machines, arpeggiators, and the like, allowing for tempo-synchronous loops. It was cool for its time, but nowadays your gear can easily share clocks, and insisting on being the master is just not polite. PSP 42 locks to system tempo, or you can set the tempo from the front panel. Up and down buttons set the note value (16th, eighth, quarter, and so on) and the number of note units.

You can control all PSP 42 parameter values using VST automation or MIDI Control Change (CC) messages, with fixed assignments of CC numbers in the range of 102 to 118.

PSP 42 does a very nice emulation of clock sweep, something that most software-based audio delays don't handle well. It also does a very satisfying octave shift when you hit the Delay X2 button.

But what about the sound? The PCM 42 became a classic because it sounded *good*—not transparent, and certainly not clinical, but with a nice characteristic for delay and echo. I'm happy to say that PSP 42 holds its own, exploiting PSP's expertise in emulating tape saturation to achieve a sound that is pleasing and warm. In fact, I resurrected my old PCM 42 and tried it right up against the PSP version. I have to say that for some settings, I actually preferred the sound of PSP 42.

Looper's Delight

My hat's off to the developers at PSP. They've taken a classic design and updated

it for the modern world, keeping the best of the original and judiciously enhancing it with up-to-date technology. If you want classic delay in your arsenal of DSP plug-ins, PSP 42 is an excellent investment.

Overall EM Rating (1 through 5): 4.5

PSPaudioware.com s.c.; tel. 48-601-963-173; e-mail contact@pspaudioware.com; Web www.pspaudioware.com

WILDERNESS PRESS

Wild Soundscapes

By Gino Robair

Wild Soundscapes: *Discovering the Voice of the Natural World* (\$19.95) is a guide to field recording by es-

teemed naturalist, composer, and bio-acoustician Bernie Krause. The book is intended for anyone interested in the outdoors—not just people with a background in music or recording.

Wild Soundscapes is written in a casual, conversational way that makes the book easy and pleasant to read. A CD of audio examples from Krause's vast archive accompanies the book and illustrates both the beauty and the fragility of the subject.

All Creatures Great and Small

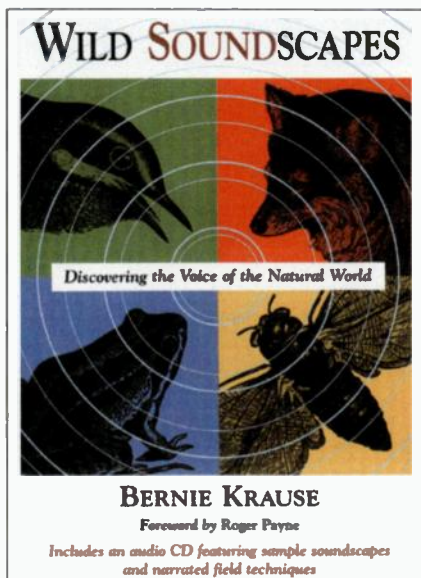
To begin, Krause introduces the concepts of acoustic ecology and bioacoustics by sharing anecdotes from the field in which he details how listening to and analyzing natural soundscapes is an excellent way to measure the health of an ecosystem. Early on, he introduces musical concepts useful in describing sound and addresses the lack of terms that are aurally based, pointing out how we use metaphors from the visual arts when discussing music.

From there, Krause offers exercises for improving the reader's listening ability. He notes that using microphones and headphones to listen to an environment is akin to using a microscope or binoculars: it allows you to focus on aspects of a habitat that your unaided ears cannot immediately hear.

Krause's concept of a biophony is an important contribution. It suggests that the



FIG. 1: The control panel of PSPaudioware.com's Lexicon PSP 42 effects plug-in is the spitting image of the original Lexicon PCM 42 digital delay processor, except for an additional knob for output-level control.



Bernie Krause introduces the reader to the joy of recording natural sounds in *Wild Soundscapes* from Wilderness Press.

listener try to hear a soundscape as a blend of voices, similar to the way we listen to symphonic music. This stands in contrast to the way scientists have previously approached listening in the wild, where the focus was on a single type of animal (such as birds or frogs). Krause notes that each creature has a unique sonic niche in a biophony, just as instruments have a particular tessitura and special place in the orchestral mix. By examining a biophony, Krause has learned to differentiate between healthy and damaged ecosystems, and he includes spectrograms of his recordings to illustrate his point.

Recording 101

Although *Wild Soundscapes* was written for people unfamiliar with recording technology, I was surprised at the gear-related topics Krause delves into, such as microphone pickup patterns, differences between stereo recording techniques (XY, binaural, and M-S), and differences between portable digital recorders. Krause does a nice job of making the important details easy to understand without overwhelming the reader with jargon.

Enough information is presented to get someone new to recording up and running quickly and cheaply. Krause's recommendations lean toward inexpensive and easy-to-use items, beginning with products

available at Radio Shack. I was hoping to read about every available product for nature recording, but such a gear roundup is beyond the scope of this book: only a couple of items are presented as examples.

Krause is more concerned with the *art* of recording, and he deftly tackles the aesthetics of presenting recorded soundscapes. Krause dispels the myth of the "pure" nature recording, arguing that anyone who records a natural setting is, in fact, editing the work by determining what and when to record, mic placement, and the kind of microphone to use. He also notes that, because the recorded version of a soundscape is not the same as hearing it in person, the recordist should work to create "an illusion that conveys an honest sense of place" when presenting his or her work. He also discusses archiving and troubleshooting.

Krause describes a number of projects for the reader to explore. His suggestions of unusual audio phenomenon—singing sand dunes and the movement of glaciers, for example—are intriguing and made me consider vacationing in a remote place so I could have my own aural safari. Advanced projects are suggested for several unique environments (such as deserts, rain forests, and islands), and Krause describes the challenges and rewards in each for the recordist.

The audio examples (which include descriptions by the author) include singing ants, aquatic insect larvae, a meadow before and after logging, and an absolutely amazing Amazonian jaguar. My only regret is that the CD is too brief; I wish it included some of the other sounds described in the book, such as calving glaciers.

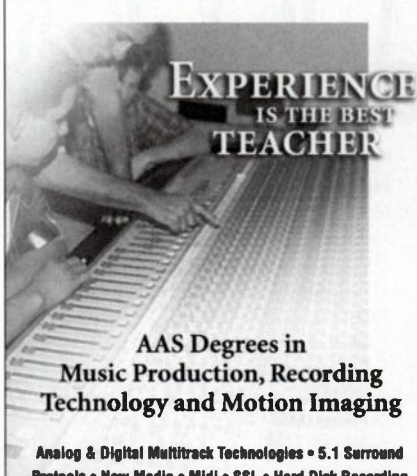
Natural Selection

Wild Soundscapes is a wonderful, thought-provoking book that will appeal to musicians and naturalists alike. Krause's enthusiasm for the subject is infectious, and even the casual reader will be inspired to do some recording. If you have ever considered recording outdoors, *Wild Soundscapes* is worth exploring. ☉

Overall EM Rating (1 through 5): 5

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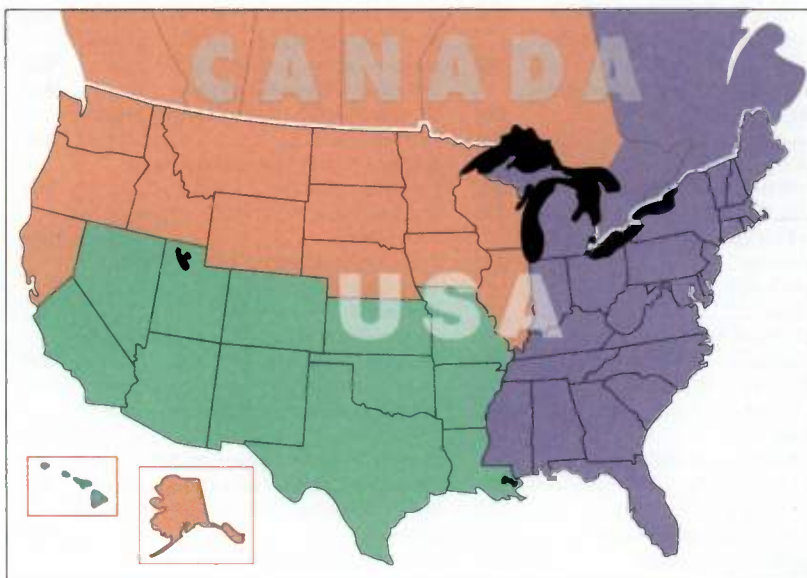
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"MAKING AN ALBUM IS A TEAM EFFORT,
SO WHEN SOMEBODY PIRATES
A RECORD, THAT NOT ONLY
AFFECTS THE ARTIST, BUT ALSO THE
PEOPLE WHO WORKED ON
IT LIKE CO-PRODUCERS, CO-WRITERS
AND MUSICIANS. SAY NO TO PIRACY."
-SHAKIRA

"WE REALLY LOOK AT IT
AS STEALING, BECAUSE TO US IT'S
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AND, YOU'RE NOT PAYING FOR IT."
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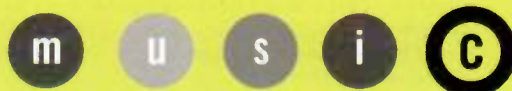
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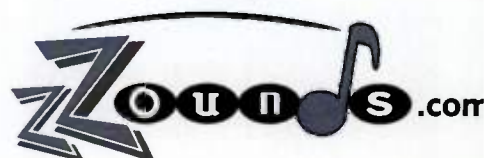
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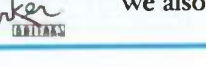
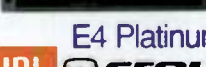
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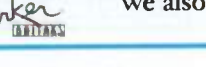
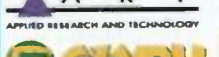
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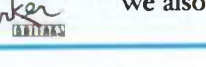
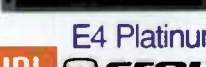
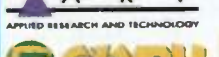
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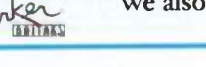
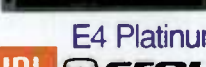
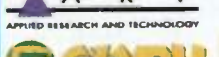
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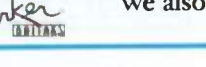
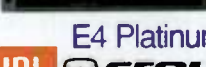
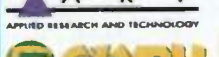
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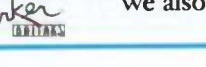
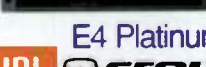
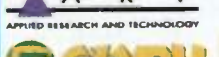
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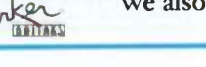
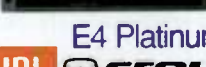
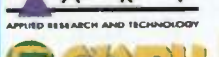
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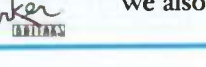
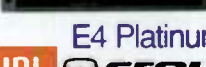
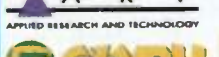
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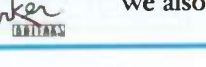
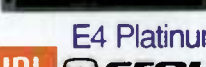
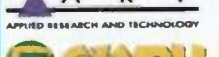
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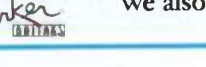
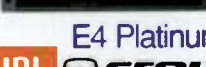
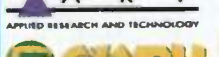
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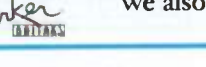
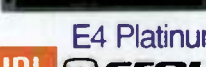
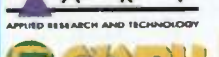
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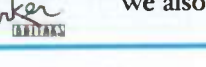
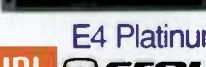
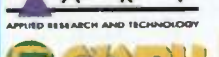
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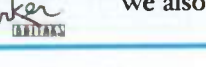
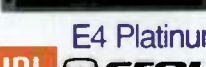
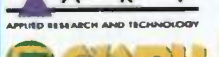
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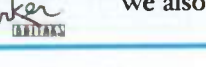
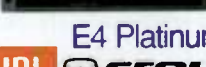
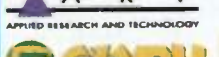
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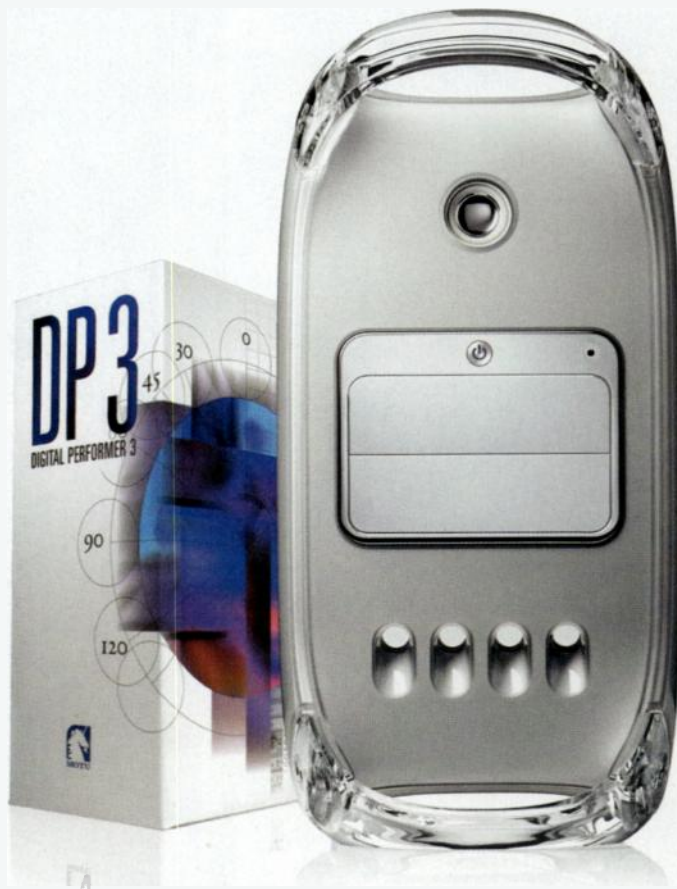
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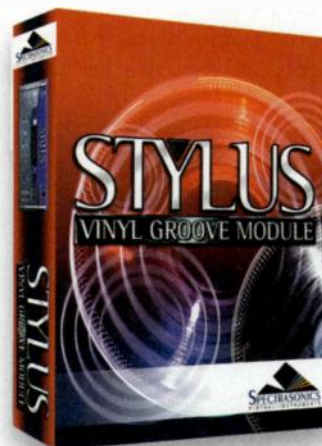
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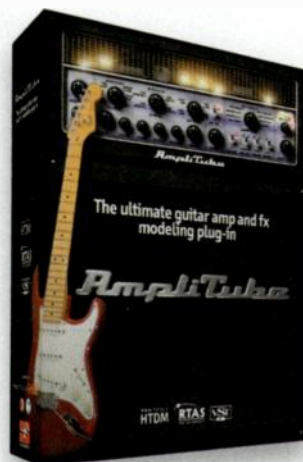
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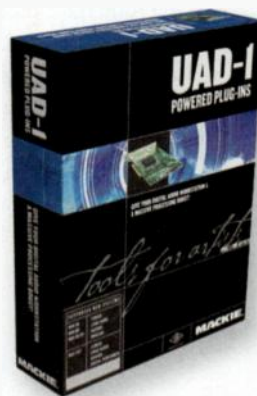
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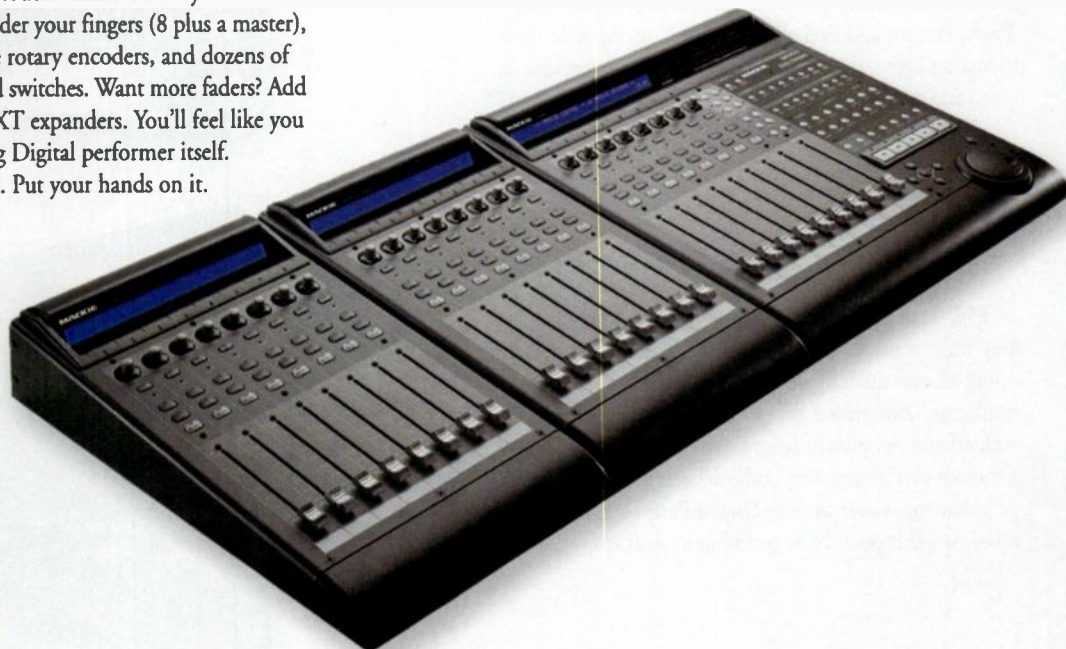
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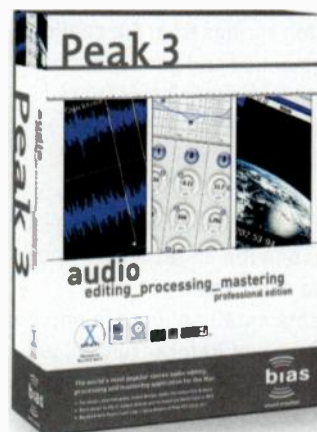
Three bundles. Three incredible opportunities. Available only from Sweetwater. Bomb Factory is known for its meticulously crafted, exquisitely authentic vintage effects plug-ins, from the Fairchild Model 660 (shown) to the JOEMEER VC5 "meequalizer". You've just gotta' have 'em.

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Your Least Prized Possession

Great art often springs from the confluence of dedication and good fortune. In attempting to realize this wonderful confluence, however, there's a significant risk of being *too* dedicated: going too far and falling into the abyss of overwork. Obviously, the trick is judging the distance to the edge. Where does shadow turn to darkness?

Most projects entail an intense and concentrated period just before fruition, which generally requires working very long hours. This can be your entrée to high-stakes personal brinkmanship. You often must push yourself right to the edge in order to get the job done. But past that point lies self-destruction: once you enter into working crazy hours, you are headed toward the abyss.

In the best case, inspiration and enthusiasm for the project generate a momentum that carries you along. In such cases, the amount of work you do, while certainly noticeable, does not seem to be an issue. This is a blessed state. Certainly, the reward for extreme effort is clear: accomplishing something great and grand, or at least, accomplishing something. The value of this accomplishment requires no further comment.

But what can you lose by working all the time? Rest, diet, society, personal business, and primary relationships can get put on hold. Not all of these are necessarily compromised (though they frequently all are), but it's a good thing to figure out how much of any one or all of those things you are willing to sacrifice and for how long. Consider, too, your physical limitations: some people can maintain a relentless pace for months, others wear down and start getting sick. Know yourself.

Before you can fully evaluate how much you can endure, you must consider how much the project is worth to you. Is this your first solo album or an ad campaign for a good client? One of those is likely to bring



more satisfaction and the other more money. Put it all on the scales.

An interesting lesson I wish I'd learned earlier is that there can come a point past which devoting oneself to a project in place of living life causes long-term damage to the soul. Going up to the edge is dedication; beyond that is possession: you belong to your work. Admittedly, many great works have come from artists going over the edge, but the image of that experience has been greatly romanticized. In reality, a tragic life sucks.

I've known a couple of great musicians who got stuck on one set of works, constantly refining them without end. In both cases, it was an eerie thing to see the person after years and hear about the latest work on the same pieces. Perhaps more common is a job that's the proverbial three-alarm fire and requires full attention. If the burst is short-lived, that's normal, but if it goes on for months, watch out. At some point, you simply have to say "*basta!*" no matter how carefully you word things.

Freelancers' clients always want to negotiate a project fee rather than an hourly one. This is how freelancers get slaughtered, financially and timewise; that is why I eventually instituted a time cap on any bid, beyond which the contract went hourly. The idea is to take possession of your work and be the one who decides where the edge is. Know when you must draw a line and follow through, even if you must spend some time and flexibility working things to a firm stop before you reach the edge.

If your work owns you, keep one thing in mind: you are its least prized possession.

Larry the O has been one of Electronic Musician's bluebirds of happiness since 1986. Yes, his arms are tired.

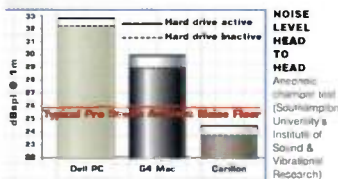
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the audio pc

The Carillon AC1 is the only PC designed from the ground up for audio. Broadcast quality FCC certified hardware, features an all steel/alloy enclosure, Sorbothane

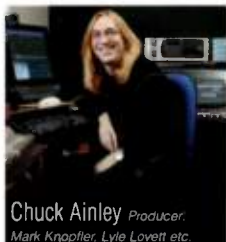
vibration damping & the very best components including our own Ultramute PSU. Ultra low noise performance & a host of audio specific features, like front panel patching and inexpensive 'real controllers', have earned praise from journalists & name professionals alike.



"The Carillon AC1 is silent, robust and portable. I can keep it switched on in the control room without even thinking about fan noise."



"The AC-1 is really fast and it doesn't crash. It's also extremely quiet. I'm now using it for all my DSP work."



"The Carillon computer rocks! The hardware is beautifully designed and barely audible. It's also really well optimized - Nuendo runs like a dream!"

- SONAR XL professional studio recording software
- Integrated multitrack recording, editing, mixing, and delivery of audio and MIDI.
- Sounds - built in DXi software synths
- Loop Construction Toolkit with beat matching and time stretching
- 24bit recording with twin mic preamps, guitar inputs and two headphone sockets
- Inserts on inputs for use with hardware compressor
- FX sends for use with hardware effects processors
- Session Drummer for instant drum patterns
- Mixing and effects to produce a finished track ready for burning to CD

The Pro Studio package has all the facilities, features and versatility demanded by the serious musician. SONAR operates like a multitrack recording studio, with all the facilities and tools you need to produce professionally recorded music. You have a large range of FX like reverb, delay, and dynamics like compression and EQ to get the best out of your music. You even have a built in guitar tuner!

You get a great selection of sounds, like the Virtual Sound Canvas with 256 instruments, plus 9 drum kits to use with SONAR's Session Drummer

SONAR PRO STUDIO



System shown with optional monitor



to call up instant drum patterns. Or you can create beats using loops from Carillon's Loopstation and then bend them to your own rhythms with the Loop Construction Toolkit. You can record from a MIDI keyboard or write notes directly onto a staff. The 2-port MIDI interface can connect 2 external synths to the computer.

You can then record your voice, or guitar, or any real instrument. The M-Audio Omni Studio works like a mixer, connected directly to a 24bit PCI card. You have 4 inputs, two of which can be mic inputs with 48V, or direct inputs for guitar. Each input

has an insert so you can patch in a hardware compressor. You have 4 FX sends to route through external FX processors. 2 headphone amps make it easy to collaborate with other people. To complete the hardware versatility you have 4 aux inputs so you can route your synths back though the Omni for monitoring and recording.

This awesome studio system would satisfy the most demanding musicians and Pro songwriters.

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\$2219
Lease packages from \$83

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Sonar Foundation	FROM \$1849	Core Systems	FROM \$1399
Sonar Studio	FROM \$1959	Configure custom	Carillon
Sonar Pro Recordist	FROM \$2699	systems online with	system builder
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✓ Standard with all these systems:



System specific set-up manuals, tutorials & help



Our own one-stop online remote control tech support



Loopstation sound source & search engine with over 5000 pro samples



Custom set of Software specific, short-cut command key caps.



Cakewalk Pyro MP3 conversion and audio CD burning software.

TOTAL SYSTEM INTEGRATION

SONAR

M-AUDIO

Carillon

SONAR 2.0 XL is the leading digital multitrack recording system for Windows. It provides you with a complete audio and MIDI production environment.

Designed and optimized by Cakewalk exclusively for the Windows platform, SONAR 2.0 ensures that you get the best performance and stability from your workstation. Includes DXi soft synths, real-time DirectX effects processing, audio loop construction tools, support for hardware control surfaces, OMNI and Broadcast Wave file support, extensive MIDI and audio editing tools, and many other essential features. The XL edition of SONAR 2.0 includes Sonic Timeworks EQ and Compressor X effects, and the award-winning FXpansion Audio DR-008 DXi drum sampler/synthesizer.

M-Audio (formerly Midiman) is a leading provider of digital audio and MIDI solutions for today's electronic musicians and audio professionals.

M-Audio's mission of "Redefining the Studio" delivers new levels of control, virtualization and mobility that transform the way computer-centric musicians compose, perform and live their creative lives. In addition to manufacturing its own product lines like the popular Delta audio cards, audiophile reference monitors and USB Keystation MIDI controllers, M-Audio also distributes best-of-class products such as Propellerhead's Reason, Ableton's Live and Groove Tubes microphones.

Carillon have become renowned in the music industry for their dedication to creating the ultimate in computer based studio systems. Designed expressly for the purpose of music production and creation, Carillon's systems are the pinnacle of performance, stability and sheer beauty, and we've done everything to ensure that our systems are a dream to use.

Each of our true "turnkey" systems include manuals, tutorials & help written for each system as an entity. Expertly optimized and configured, they're ready to run so you can focus on making music.

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Patent Application Nos. US 09/909,130 CE 01/306,246/8 GB 0018000.0

24 analog inputs.

24 analog outputs.

All at 96kHz.

In one rack space.



Introducing the 24 I/O

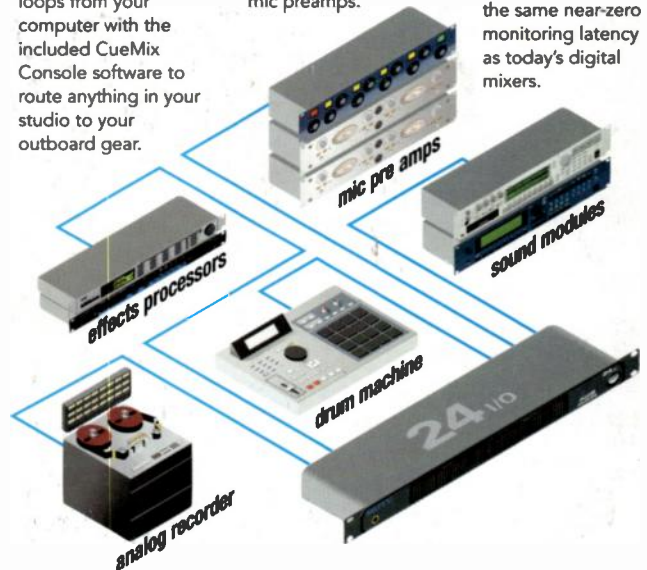
What makes the 24 I/O audio interface unique? It's like a 24-channel mixer and patch bay for your computer — at a remarkable price. Connect all the gear in your studio and then control it from your Mac or PC. Keyboards, samplers, mic preamps, sound modules, drum machines — you name it. Got a vintage EQ or favorite outboard reverb unit? Connect it to the 24 I/O as a send-return loop and then patch any live input to it in real time with no audible latency and no drain on your host computer. Or you can create multiple sub-mixes for musicians during live recording sessions. The 24 I/O bridges the hardware side of your studio with the virtual world of your favorite audio workstation software to create a unified system controlled entirely from your desktop.

- **24 analog ins/outs** — transfer 24 channels at a time at 96kHz, into or out of your computer.
- **Expansion** — connect up to four 24 I/O's for 96 ins and outs at 96kHz.
- **Extension** — mix and match with any MOTU PCI audio interface (2408mk3, mkII, 1296, 1224, etc.)
- **PCI-424 card** with CueMix DSP — DSP-driven mixing and monitoring with zero host buffer latency.
- **Sync** — on-board SMPTE sync, word clock sync and ADAT sync.
- **Compatibility** — works with virtually all audio software for Mac and Windows 98SE/Me/2000/XP.
- **Available** as a core system (with PCI card & Macintosh AudioDesk software) or as an expansion I/O.

Connect outboard effects processors to the 24 I/O, just like a mixer or patchbay. Then set up effects loops from your computer with the included CueMix Console software to route anything in your studio to your outboard gear.

With 24 channels of balanced, 96kHz audio, the 24 I/O records every nuance of today's mic preamps.

Use the 24 I/O as a digital patchbay. Connect synths, sound modules, drum machines, you name it, on switchable +4/-10dB inputs. There's no processor overhead and you experience the same near-zero monitoring latency as today's digital mixers.



Need to transfer from an analog multitrack? The 24 I/O can send 24 channels in a single pass with pristine 96kHz quality. For 48-track transfers, just add a second 24 I/O.

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