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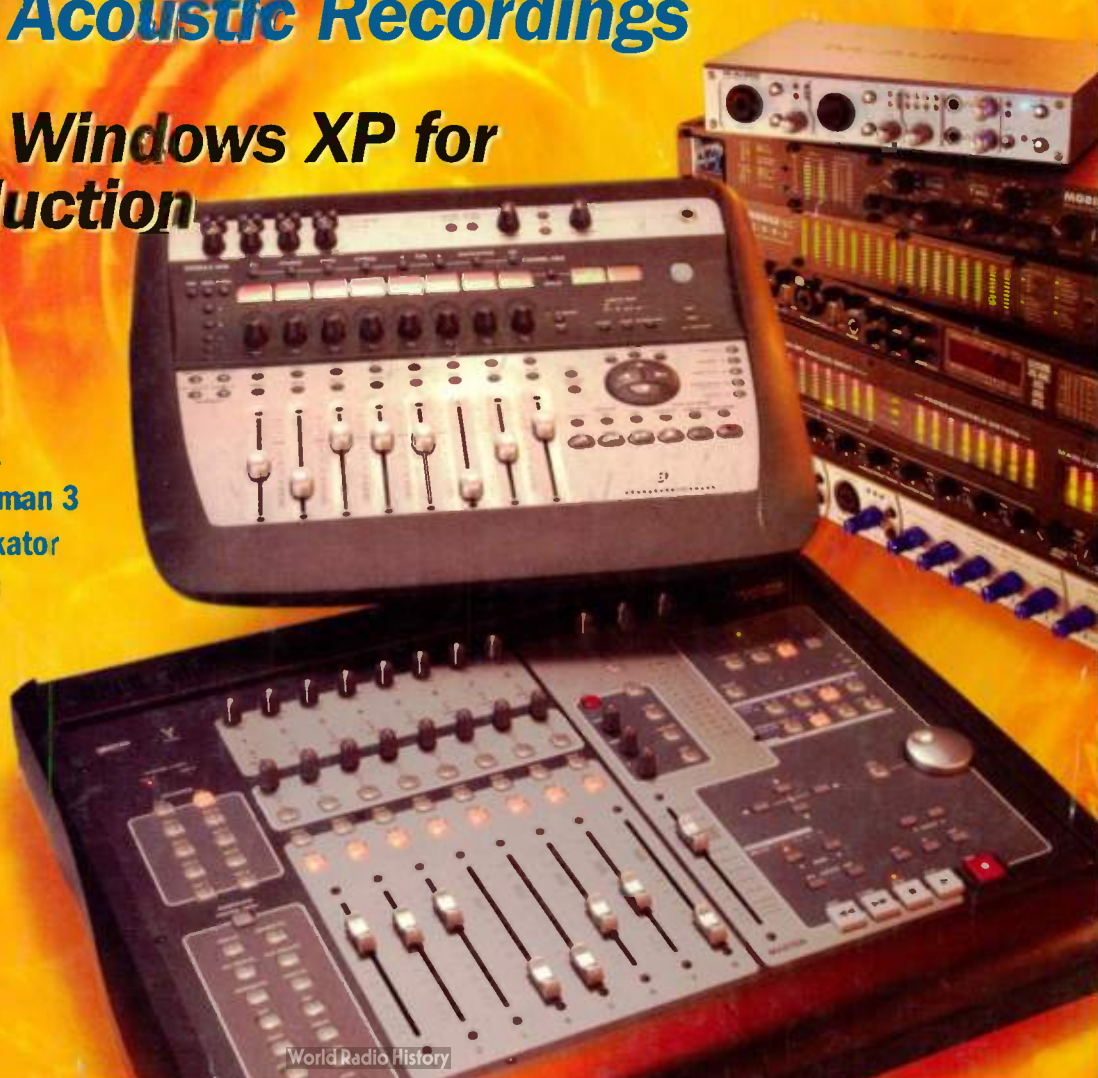
**8 FireWire audio interfaces
deliver blazing performance**

**How to Make
Great Acoustic Recordings**

**Optimizing Windows XP for
Audio Production**

REVIEWS:

KORG MicroKorg
DRAWMER Tube Station 1
APPLIED ACOUSTICS Tassman 3
NATIVE INSTRUMENTS Vokator
AUDIO-TECHNICA AE2500
BLUE SKY ProDesk 2.1
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Countless legendary film scores have been recorded at 20th Century Fox's Newman Stage. These days, most of the composers working at Fox count on Logic 6 to make their scores legendary. "Logic has become the ultimate tool for our composers to keep up with the pace and demands of contemporary film scoring," says Mike Knobloch, Vice President of Film Music at Fox Music. "And on various recent movies, from Anthony Fisher with composer Michael Danna to Ice Age with composer David Newman, Emagic's Logic and Fox's Newman Stage have worked brilliantly together. The current package is so versatile that we see composers with simple laptop studios or full-blown rigs working in concert with small ensembles and big orchestral sessions alike. It's absolutely amazing how powerful and indispensable Logic is for the modern film composer — from the early conceptual stages of a film score, during the tedious process of writing to an ever-changing picture, and finally for recording and mixing." Widely regarded as the most powerful native music production system for the Macintosh, Logic meets the challenge of soundtrack production with ease. It offers a comprehensively equipped internal mixer with over 50 plug-ins, professional real-time notation editing, and MIDI functionality that's second to none. Expand Logic's creative potential even further with an optional series of Emagic Software Instruments. And the best thing is that Logic still fits handily into any recording studio. Mike Knobloch adds, "I've always thought that film scoring was the coolest part of movie making. Now when I see a composer playing a cue in Logic running software instruments, audio tracks, plug-ins and effects, outboard gear, and digital video all in sync — I know that it is!"

Technology with soul.

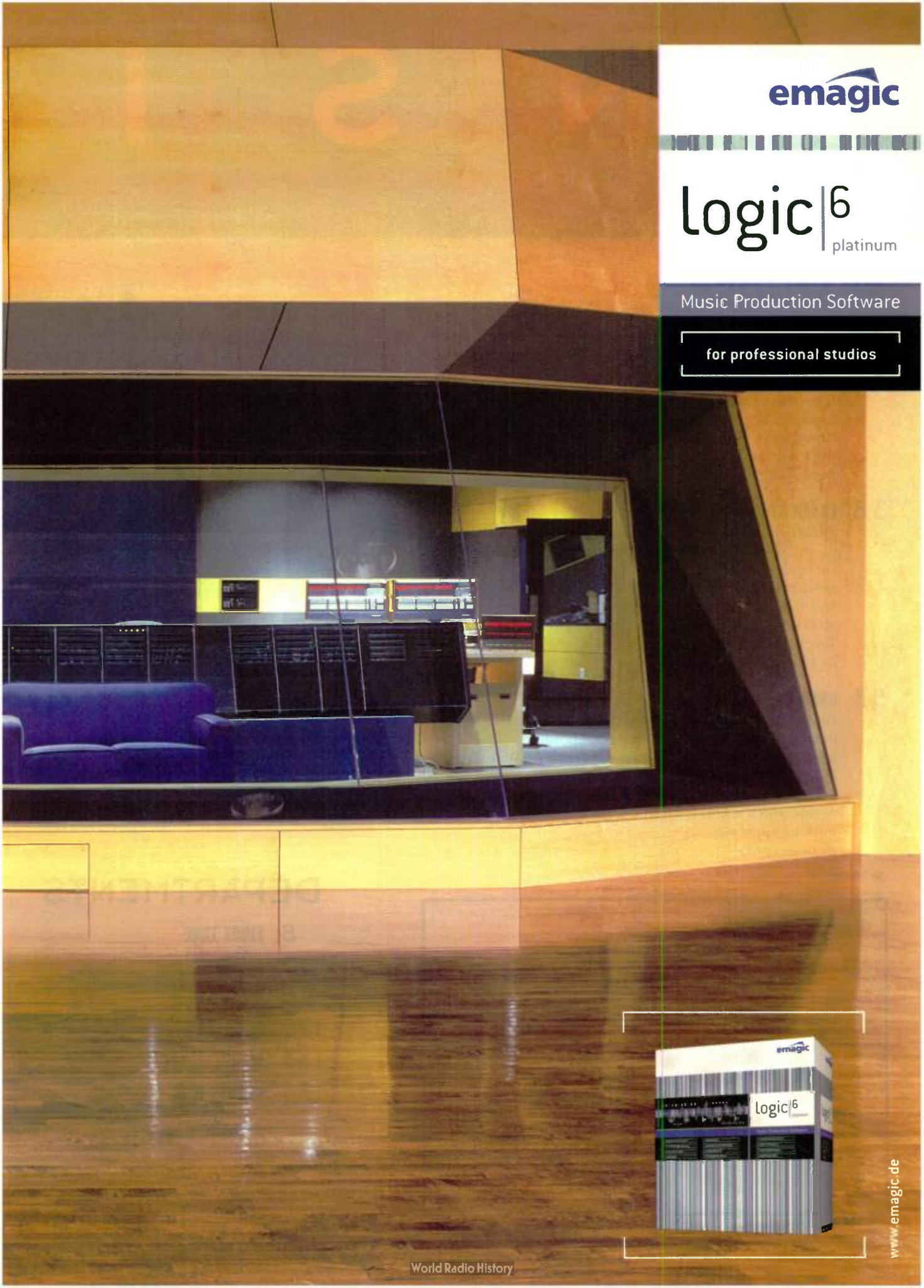
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Logic|6

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Music Production Software

for professional studios



FEATURES

27 TRACKING IN THE UNPLUGGED WORLD

Whether you're using a stereo-mic pair or a complex multimic setup, knowing what you're doing is crucial when recording small acoustic groups in the studio. This article examines key concepts and techniques and analyzes the strategies used in four disparate acoustic-recording situations.

By Myles Boisen

38 COVER STORY: ALL FIRED UP

FireWire audio interfaces are among the hottest new devices for the personal studio, thanks to the high-speed bus's convenience and bandwidth. Feature for feature, we compare Digidesign's Digi 002, M-Audio's FireWire 410, Metric Halo's Mobile I/O 2882 and Mobile I/O ULN-2, MOTU's 828mkII and 896, PreSonus's FireStation, and Tascam's FW-1884.

By Brian Smithers

53 GAME OF CHANCE

Desktop musicians can access a wealth of creative options by using computer-assisted music composition; algorithmic-composition software makes it possible. We examine the approaches and feature sets of six Windows programs (and point the way to plenty more) to help you decide which is best for your compositional style and working approach.

By Dennis Miller



Cover photo by Philip Kaake



DEPARTMENTS

- 8 FIRST TAKE
- 12 LETTERS
- 16 WHAT'S NEW
- 128 AD INDEX
- 131 MARKETPLACE
- 136 CLASSIFIEDS

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COLUMNS

24 PRO/FILE: Switched-on Monk

Thelonius Moog takes Monk's music into the electronic realm.

66 DESKTOP MUSICIAN: XP and Audio

Get the best performance from Windows XP.

78 WORKING MUSICIAN: Stressing Out

Protect yourself against debilitating repetitive stress injuries.

146 FINAL MIX: Now's the Time

When should you upgrade your software?

66

REVIEWS

86 KORG MicroKorg

analog-modeling synthesizer

96 NATIVE INSTRUMENTS Vokator (Mac/Win)

software vocoder

102 DRAWMER Tube Station 1

channel strip

106 APPLIED ACOUSTICS Tassman 3.02 (Mac/Win)

modular software synthesizer

112 SONIC IMPLANTS Symphonic String Collection

sample library

116 QUICK PICKS: Audio-Technica AE2500 dual-element kick drum mic; Steinberg Groove Agent (Mac/Win) virtual drummer; Blue Sky ProDesk 2.1 close-field monitors; The Sound Guy, Inc. SFX Machine RT (Mac/Win) multi-effects plug-in; M-Audio Sonica Theater (Mac/Win) USB surround-sound audio interface; Big Fish Audio *Tower of Funk* by David Garibaldi sample library



27



Listening to You

In the heat of the creative process, it's awfully easy to get in so deep that you lose perspective. That goes double when you produce a large part of a project yourself: you are likely to get so close to your project that you fail to question your creative decisions. The personal studio can be a fortress of solitude that simultaneously stimulates our creativity and leaves us vulnerable to the effects of creative tunnel vision.

I've written in the past about stepping back periodically from your project and asking "Who gives a rat's ass?"—that is, questioning the relevancy of your project. But you also need to challenge individual creative decisions. Some people are able to judge their own work ruthlessly and without sentiment, as if it were someone else's work. In my experience, however, such people are rare; most of us need outside feedback. We are producing projects for other people to hear and enjoy, and if we fall too much in love with our own work, we might find we are in love alone.

Useful feedback has to come from the right people, though. Some people know how to listen to a track or a rough mix and project what it might sound like when the final parts and sweetening are in place. Others can't get past the incompleteness. So ask people whose ears, judgment, taste, and sensitivity you trust to listen to key tracks, rough mixes, or whatever you have, and consider the source. It can also be helpful to talk with musicians you trust about your goals and projected songwriting, production, and technology strategies. They might bring up fundamental questions that you never considered.

The secret is to listen without getting defensive. If your consultants think that, for example, the guitar part is too busy, the lyrics are confusing and hard to follow, or the vocals are too far down in the mix, you need to be able to hear that, whether you choose to act on those opinions or not. Being able to do that is often very difficult for artists because our egos are involved in our creative decisions. But the alternative is to risk creating a project that appeals to us alone. Of course, you don't have to buy into everything—or anything—you're told; you just need to be able to listen to and consider it.

These points apply to any creative project, including the production of *EM*, which is why letters to the editor are extremely important. Sure, if you have a technical question, and we can help you, that's dandy. But e-mailing us about what you want to learn from the magazine is the best of all. Tell us if you think our lyrics are confusing, the mix is unbalanced, or the timbre is too dark or too shrill. Let us know when we got things right, too.

After all these years, I am confident in my ability to step back and judge our work, but I make my share of mistakes and can miss the point at times. You, the readers, are the ultimate judges of what we print. Please give us the benefit of your opinions!




ANTHONY PIDGEON

Editor in Chief

— Steve Oppenheimer, soppenheimer@primediabusiness.com

Managing Editor

— Patricia Hammond, phammond@primediabusiness.com

Senior Editors

— Mike Levine, mlevine@primediabusiness.com

— Gino Robair, grobair@primediabusiness.com

Associate Editors

— Dennis Miller, emeditorial@primediabusiness.com

— David Rubin, emeditorial@primediabusiness.com

— Geary Yelton, emeditorial@primediabusiness.com

Assistant Editor

— Matt Gallagher, mgallagher@primediabusiness.com

Senior Copy Editor

— Anne Smith, asmith@primediabusiness.com

Contributing Editors

— Michael Cooper, Mary Cosola,

Marty Cutler, Larry the O, George Petersen,

Rob Shrock, Scott Wilkinson

Web Administrator

— Dan Cross

Group Art Director

— Dmitry Panich, dpanich@primediabusiness.com

Art Director

— Laura Williams, lwiliam@primediabusiness.com

Associate Art Director

— Mike Cruz, macruz@primediabusiness.com

Informational Graphics

— Chuck Dahmer

Senior Vice President

— Peter May, pmay@primediabusiness.com

Publisher

— Dave Reik, dreik@primediabusiness.com

Associate Publisher

— Joe Perry, jperry@primediabusiness.com

East Coast Advertising Manager

— Jeff Donnenwerth, jdonnenwerth@primediabusiness.com

Northwest/Midwest Advertising Manager

— Greg Sutton, gsutton@primediabusiness.com

Southwest Advertising Manager

— Mari Deetz, mdeetz@primediabusiness.com

Sales Assistant

— Anthony Gordon, agordon@primediabusiness.com

Marketing Director

— Christen Pocock, cpocock@primediabusiness.com

Marketing Manager

— Angela Muller Rehm, arehm@primediabusiness.com

Marketing Trade Show Coordinator

— Megan Koehn, mkoehn@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 Production Coordinator

— Mary Mitchell, mmitchell@primediabusiness.com

Group Production Manager

— Melissa Langstaff, mlangstaff@primediabusiness.com

Senior Advertising Production Coordinator

— Julie Gilpin, jgilpin@primediabusiness.com

Group Audience Marketing Director

— Philip Semler, psemler@primediabusiness.com

Audience Marketing Managers

— Craig Diamantine, cdiamantine@primediabusiness.com

— Jef Linson, jlinson@primediabusiness.com

Human Resources/Office Manager

— Julie Nave-Taylor, jnave-taylor@primediabusiness.com

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Chief Operating Officer

— Jack Condon, jcondon@primediabusiness.com

Senior Vice President — Sales Operations

— John French, jfrench@primediabusiness.com

PRIMEDIA Business-to-Business Group

— 745 Fifth Ave., New York, NY 10151

Chief Executive Officer

— Martin Maleska, mmaleska@primedia.com

Creative Director

— Alan Alpanian, aalpanian@primediabusiness.com

PRIMEDIA Inc.

Interim Chief Executive Officer

— Charles McCurdy, cmccurdy@primedia.com

Vice Chairman & General Counsel

— Beverly Chell, bchell@primedia.com

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

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World Radio History



TAKING A STAND

Of the many magazines I receive each month, I read yours religiously, from cover to cover. Your editorial "When Times Get Tough" ("First Take," September 2003) showed me why.

As a management consultant by day and a musician by night and weekend, I straddle two very different worlds. I was thrilled to see your editorial message, which is so consistently in touch with what I believe is the philosophy that will guide successful companies through the shoals of very hard times to come.

I agree with you completely that organizational integrity is what will determine who will survive and who will drown in the turbulent times we all face in the uncertain world that challenges us.

Core values (see Jim Collins's most recent few books) are critically important today. Companies that know who they are and what they stand for will have the capacity to withstand, adapt, survive, and prosper. Those that are buffeted by the exigencies of the moment will not do well.

In another life, I was the president of a medical association that publishes a journal and therefore understand the pressures that advertisers can bring to

bear on a publication. I have had to make difficult decisions, and I think I know where you are coming from. And you are exactly right! I applaud you.

Stick to your values, and your magazine will continue to convey the truth. Continue to tell your advertisers that your credibility is worth more to them than a gratuitously favorable review.

You've written some hard words in some hard times, and all of them ring true to me. Right on, Steve! Stay the course!

Will W.
via e-mail

Thanks for your editorial about being pressured by advertisers to write favorable reviews (see "First Take: When Times Get Tough," September 2003). I've always been skeptical about reviews in magazines like yours because of the dependency you have on your advertisers. You really drew a line in the sand for your advertisers and for your readers, as well. I can take your magazine more seriously now.

I'm guessing here, but I imagine that you understated the extent of the pressure and that you must have been pushed too far by someone in order to come out and say what you said. I'd like to see you take the next step and give the names of the companies that engage in this behavior.

Dean Haas
via e-mail

Dean—Over the years, numerous companies have attempted to twist our arms in ways that I consider to be inappropriate, so identifying specific companies would serve no purpose. Besides, as Will W. perceived (see the previous letter), I was also making a broader point about how companies in many industries respond during

hard times. Indeed, I hope that I prompted some readers to critically examine the philosophy of the companies they work for or operate, whether in the music industry or not.—Steve O

MORE FIREPOWER, PLEASE

Len Sasso's article about using soft synths ("Desktop Musician: Soft Touch," September 2003) is helpful in the growing world of soft-synth plug-ins and formats. However, the article doesn't address one troublesome issue. I am having a difficult time finding host software that gives me enough flexibility to use soft synths live. I run Cakewalk's Sonar on a new PC that has enough firepower to run an army of soft synths, but I was unaware that I couldn't play live through two soft synths simultaneously until I contacted Cakewalk's tech support and learned that Sonar can echo only one MIDI channel at a time.

In this era of powerful computers, it seems like a fairly modest expectation to be able to run an electric-piano soft synth with a reverb plug-in on one MIDI controller along with a synth bass from another soft synth on another MIDI controller. What kind of solutions are there (particularly for DXi), and are there any hosts that let you play more than one soft synth at a time and also let you use plug-in effects?

Greg Roberts
via e-mail

Author Len Sasso replies: Greg—I've seen this topic show up on several message boards recently. I don't know about Sonar, but I assume that your comments are correct. You can layer two or more audio instrument plug-ins in Steinberg's Cubase, Emagic's Logic, and MOTU's Digital Performer.

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Wave64: Breaking the 2 GB barrier when recording

Export to DV Pro (Video and Audio)

Export of multi-channel files in split or interleaved

Ability to export multi-channel interleaved files into mono-bus during export

Track Exchange

DMF Import/Export: Music information is converted to MIDI

Sample-rate and Bit-rate conforming

Real-time export

Import/Export Tempo Map

Recording and playback

Record files can be up to 6 channels wide

Long file recording using 64 Bit WAV format

Multiple users can record and playback on track

New record mode: real-time

Local Loop: Local playback for windows only

Project Scrubbing

Project Shuttle

Import/Export

Various shuffle speeds can be triggered with key commands

Enhanced marker Management

Editing

Time Warp Tool: New filertrack with timeline editing and tap tempo function

Tempo Record slider in Tempo Track Editor

Unlimited view/zoom undo/redo

Open tool-box with right click

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Real-time non-destructive zoom/fade

Auto-fade and Auto-cross-fades with user definable fade times

Separate FX return mixdowns

Sync points scrub the audio

Drag and drop: Regions from the sample editor to the Arrange window

Framerate display locked to project setting

Option to move cycle selection with key modifier

Option to link L/R locators to the Range tool (cycle follows selection)

Auto-select events under cursor on selected Track

Jump from cursor to event and end Fade from event begin to cursor

Remove unused tracks

Open default editor for active track when no events are selected

Score

Multiple audio parts combined in audio editor

Define active part (when multiple parts are selected)

Improved grid in key editor (pitch visible)

No selection after event cut

Draw Tools in Controller Editor Lanes

Add Controller # to Names

Select options (Invert, equal pitch)

Shortcut Events in drum editor (with pre-defined velocity values)

Key Commands: mute, solo, key wise (step bar)

Repeat events/parts using pencil tool

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Key commands open with last action selected

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Configurable track controls

Plug-ins

Multiple VST plug-in directories

Q

SurroundDither

Integrated Waveshell support for Waves plug-ins

Mix Delay

Magneto

MIDI & Music

Drag & Drop of MIDI Files into project window

Chord recognition in editor windows

Convert ITap in MIDI Tracks to tempo track

Metronome Settings: Precount from tempo track

Transpose: scale correction

User definable PPQ display resolution

Bar offset in ruler

Chase MIDI Events (improvements)

Score

MIDI Meaning

More definable guitar symbols

Talulators for 12 strings

Colorize notes

Lyrics assigned to verse

Paste lyrics from clipboard

Copy chord symbols

Auto layout improvements

Various

MMC Slave

Advanced Search field with preview option

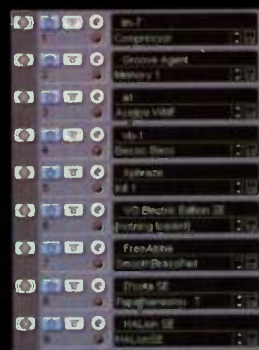
Time stamping relative to start time

Audio Re-sampling offline process

Activate/deactivate offline process in process history

Notepad

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BAKING TIME

Aloha! First of all, let me say that you do a wonderful job producing your magazine. Thank you!

I'm still living in the analog world, and recently pulled out some old tapes for remixing. To my surprise, the tapes deposited a sticky substance along the tape path, rendering my machine incapable of playback—not to mention rewind and fast-forward. I read somewhere about how some problems with tapes can be remedied by baking them. Would that solution work for the situation I have described here? If so, how is it done? If I'm totally off base, I would appreciate any advice or recommendations you might have for somehow saving these recordings. Thanks!

Tony Suazo

Honolulu, Hawaii

Mix magazine editorial director and EM contributing editor George Petersen replies: Tony—What you're experiencing is known in the biz as "sticky shed syndrome," and it

can be a major problem with older analog reel-to-reel tapes. One solution, involving the baking of tapes, was described in the May 1990 issue of Mix magazine, in which Mix contributing editor Phil DeLancie (then a mastering engineer at a record label) first discussed a home-brewed method of "baking" tapes using a sealed cardboard box fed from a hair dryer. The method was simple and effective, although monitoring and controlling the temperature of the internal air using a hair dryer was problematic.

Mix's tech guru, Eddie Ciletti, reexamined tape restoration in his "Tech's Files" column in the July 2002 issue of Mix, offering other methods, some historical background on different tape types, and more. If you don't have a back issue, you can read the article online at http://mixonline.com/ar/audio_sleep_egyptian/index.htm. I hope this helps!

SAX TRACKS

I play the saxophone and other related woodwind instruments, and I record them with a Boss BR-1180CD portable digital studio. I'd like to sweeten, warm up, and fatten the sax sounds that I've recorded after working with the BR-1180CD's effects patches, and I feel that the unit doesn't quite do the job. Guitars, synthesizers, and drums sound fine, but sadly, the industry offers little (if any) focus on other instruments.

I feel that I need some kind of hardware interface that could enhance the sax and woodwind sounds passing from mic to recorder—an interface that I could also use on gigs. Should I use a mic preamp? What type of equipment is used to record professional saxophonists such as David Sanborn and Dave Koz? Any suggestions?

Tom

via e-mail

EM author Myles Boisen replies: Tom—Rather than starting your search for a better sound with a preamp or hardware processing box, I'd suggest that you first refine your sax sound with a more appropriate microphone. Without knowing the specifics of David Sanborn's recorded sound, I can

tell you that most engineers like to use large-diaphragm condenser mics on saxophones. For a classic warm tone, vintage tube mics like the Neumann U 47—or more modern emulations from Blue Microphones, Lawson, Soundelux, and so on—are the way to go.

After you find the mic that best suits your tastes, you will find that mic placement and the type of room in which you record also make the most noticeable difference in your recorded sound. Then, after you have worked out all of the acoustical solutions, you will find that the mic preamp and onboard effects in your Boss BR-1180CD sound much better. And if you find the magical sonic combination in a studio environment, you will have a relatively portable rig that you could use at live shows.

ROAD MAP TO SUCCESS

Great magazine. I look forward to each issue. I rely heavily on EM's reviews and feedback, because I live in an area where pro-audio equipment is nonexistent.

I especially enjoyed your July 2002 cover story entitled "Build a Personal Studio on Any Budget." I would like to see you revisit this topic in 2003, if possible. I have made three purchases over the past year using this story as a guide, and with great success—each purchase was a hit.

Bill Fussell

via e-mail

ERROR LOG

September 2003, "Review: Novation KS4," p. 116. In the "Product Summary" sidebar, the 4.0 meter rating for Documentation is actually the meter rating for Quality of Sounds. The review cites the KS4's documentation as a weakness.

WE WELCOME YOUR FEEDBACK.

Address correspondence and e-mail to "Letters," Electronic Musician, 6400 Hollis Street, Suite 12, Emeryville, CA, 94608, or emeditorial@primediabusiness.com. Published letters may be edited for space and clarity.



"This really is one serious piece of kit that's been well thought out to make sense in the real world of desktop recording."

— Paul White, *Sound on Sound*, September 2003

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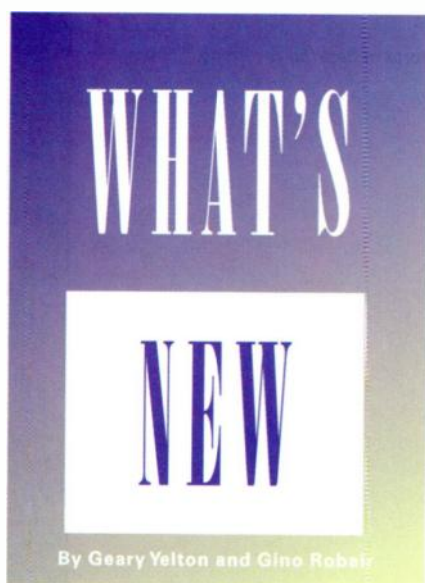
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▼ TAPCO S-5 ACTIVE STUDIO MONITOR

The first powered reference monitor from Tapco is the S-5 Active Studio Monitor (\$499 per pair). The 120W bi-amped S-5 allocates 60W to the 5.25-inch, polypropylene-cone woofer and 60W to the 1-inch, silk-domed tweeter. The high-frequency driver is wave-guide loaded, and the monitor features a rear-facing bass port.

The S-5's frequency response is 64 Hz to 22 kHz (± 3 dB). An input-level control and rear-panel switches for low-frequency boost (+2 dB and +4 dB at 65 Hz) and high-frequency cut/boost (± 2 dB at 5 kHz) let you tailor the monitor to your studio. A 24 dB-per-octave crossover is set to 4 kHz. An MDF cabinet houses the 15.5 pound monitor.

The rear-panel includes XLR, balanced 1/4-inch, and unbalanced RCA input jacks as well as an outlet for the removable IEC power cable. The S-5's THD rating is <0.035 percent at full power; the signal-to-noise

ratio (unweighted, 20 Hz to 20 kHz, at 60W into 4 Ω) for the woofer is >101 dB; for the tweeter, SNR is >93 dB. Loud Technologies, Inc. (distributor); tel. (800) 258-6883 or (425) 487-4333; e-mail sales@tapcogear.com; Web www.tapcogear.com.



▼ VOX VALVETRONIX TONELAB

As part of its Valvetronix series of digital modeling amps, Vox has released the ToneLab (\$600), a desktop modeler with a tube stage. The ToneLab's front panel resembles that of the Valvetronix guitar amps, with chicken-head knobs to select Amp, Cabinet, and Pedal models and dedicated controls for Treble, Middle, Bass, Presence, Gain, VR Gain, and CH Volume. However, the ToneLab's interface is roomier, with a large multi-character LCD and a 12AX7 visible under glass, to prove there is a tube in this device.

The ToneLab offers 16 amp models, 10 cabinet models, and 22 effects. The amps include a host of Voxes and a mixture of categories such as Tweeds, Blacks, Boutiques, and UKs. There are also Tweed, Black, UK, and Vox cabinets to choose from, as well as an Off setting. Vox included its Valve Reactor circuit in the ToneLab to introduce authentic tube-based coloration to the models.

The ToneLab has four effects categories—Pedal, Modulation, Delay, and Re-



verb—and you can use one effect from each category at a time. Among the included effects are overdrive, compression, auto wah, chorus, flange, phase shift, tremolo, rotary speaker, three types of delay/echo, and three types of reverb (spring, plate, room). The ToneLab has a built-in tuner and an amp/line-level switch that tailors the output for use in a performance or recording environment.

You can save as many as 96 of your amp-cabinet-effects setups as Programs. Vox offers the freeware ToneLab Editor (Windows 98, 2000, ME, XP) on its Web site, so you can edit your Programs from a computer.

The ToneLab has a 44.1 kHz sampling rate, 20-bit A/D/A converters, and an optical S/PDIF output. Analog I/O includes a front-panel 1/4-inch low-impedance instrument input. There's also a headphone jack, MIDI I/O, and a pair of balanced 1/4-inch outputs. The rear panel has an output level control and a jack for attaching a VC-4 (\$200) or VC-12 (\$350) Valvetronix Foot Controller. Korg USA, Inc.; tel. (516) 333-9100; Web www.valvetronix.com.

▼ BIAS PEAK 4

Berkeley Integrated Audio Software (BIAS) has updated its flagship stereo audio editor, Peak, to version 4.0 (Mac, \$499; upgrade, \$149). The new version offers multiprocessor support, new DSP tools, and enhanced functionality. You can now burn Red Book CDs directly from the Playlist or any audio document. Peak 4 encodes MP3 files at rates as high as 320 kbps. It's the first Peak that requires Mac OS X; for OS 9 users, the installation disc includes Peak 3.2.

Peak 4 supports Audio Units, and its five available inserts let you freely combine AU and VST plug-ins. More than 25 VST plug-ins are bundled, including Sqweez, a dynamic compressor/limiter for mastering applications. You also get ImpulseVerb, a convolution-based reverb that uses sampled impulse responses; over 230 MB of impulse re-



sponses from more than 150 spaces are included, and users can import their own. The program's QuickTime capabilities now include movie looping and the ability to record audio during movie playback.

Peak 4 requires at least a G3/300 MHz, 256 MB of RAM, Mac OS X 10.2, QuickTime 5.0, and 80 MB of available disk space. BIAS; tel. (800) 775-BIAS or (707) 782-1866; e-mail sales@bias-inc.com; Web www.bias-inc.com.

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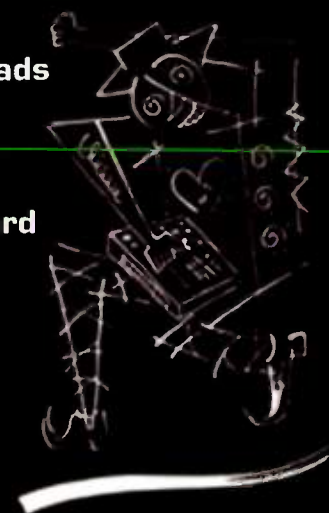
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▶ AUDIOFINDER 2.4.4

There's nothing quite like sitting back and letting the computer walk you through your audio library. AudioFinder (Mac OS X shareware, \$35) from Mystical Sun Software (www.mysticalsun.com/software) offers a number of convenient features for browsing and collating your audio files. For example, you can copy or alias selected sound files to a Favorites folder. You can calculate a file's tempo from its length and beat count, or simply tap the tempo in. The program also includes classic-style pitch-shifting using an onscreen piano keyboard; this feature comes in handy if you're using AudioFinder to audition files in conjunction with other audio material. You can even run several instances of AudioFinder at once to hear how different files work together.

You select the sound files you want to audition in AudioFinder's Browser window. The Browser window is organized like the OS X Finder window in Columns mode, with horizontal and vertical scroll bars. The Browser window's Seeker mode displays all the files in the

selected folder as well as any of its descendants. In Seeker mode, you can filter the display of files by name or directory path. For instance, you could instruct the program to display all files whose names contain the word *loop*. The Browser window is all that's needed to use AudioFinder, and all of its functions can

be accessed with the mouse or a key command. Two other windows—BPM Tap Pad and MIDI Patch Changer—allow you to tap in the tempo of a loop as it plays and step through patches on any receiving MIDI device, respectively.

AudioFinder lets you step through the files in the selected folder using the arrow keys, and each selected file plays automatically. When you click the Auto button, AudioFinder automatically steps through the file list, starting at the selected file and playing each file in turn. If you activate the Shuffle-Play option, AudioFinder plays files from the list at



random. In addition to copying or aliasing files to the Favorites folder, you can move them to any bookmarked folders you set up. That makes quick work of distributing files from a CD among several folders.

Currently, AudioFinder supports AIFC, AIFF, WAV, SDII, MP3, and some REX audio-file formats. If you're using Mac OS X and have a sample library, this is a must-have download. Some AudioFinder features are time-limited in the demo version. However, the application is well worth the shareware fee, and Mystical Sun continues to release enhancements at a steady pace.

▶ CASIO WK-3500

Casio has upped the ante in the portable-keyboard market with the introduction of the WK-3500 (\$549.95), a 76-note touch-sensitive keyboard with built-in speakers, a SmartMedia card slot, Flash ROM for adding sounds and songs, and pitch-bend and modulation wheels. The instrument is 32-note polyphonic, 16-channel multitimbral, and General MIDI Level 1 compatible.

The WK-3500 comes with 790 presets, or tones, including 128 GM presets, 16 drum sets, and 50 drawbar organs. (The virtual drawbars appear on the backlit LCD). There are also 224 user-programmable sounds,

including 4 drum sets and 100 drawbar organs. The instrument, which can be split and layered, includes a dedicated switch



that lets you instantly access the stereo piano sound. For effects, the WK-3500 includes 16 reverbs, 16 choruses, and a digital equalizer. There are 200 slots for saving user-edited effects.

The WK-3500's Song Memory functionality lets you create and save five 6-track

songs, using either real-time or step recording. The instrument includes Casio's Chord/Fingered Chord autoaccompaniment system, with 156 one-touch tone presets. Also included are 140 rhythm patterns, 16 of which the user can alter and save. SMF playback is supported, and the LCD shows editing information, staff notation, the notes being played, and a metronome icon.

The WK-3500 has a pair of unbalanced 1/4-inch outputs, a 1/4-inch stereo headphone jack, an assignable pedal input, and MIDI I/O. The instrument can be powered by D batteries or from the optional AC-power adapter. Casio, Inc.; tel. (973) 361-5400; Web www.casio.com.



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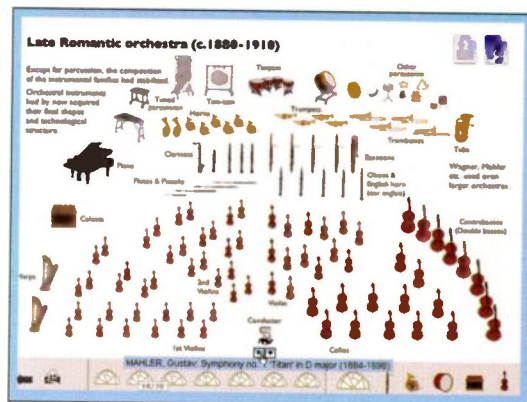
▶ SIBELIUS SOFTWARE SIBELIUS INSTRUMENTS

Sibelius has introduced an effective way to learn about composing for and arranging more than 50 traditional orchestral instruments: an interactive encyclopedia called Sibelius Instruments (Mac/Win, \$119). The program presents instruments individually and in the context of various ensembles, describing each instrument's history, its characteristics, and how to write for it. Performance techniques and articulation details are explained, and audio examples are presented throughout.

Individual instruments are organized by family (woodwinds, strings, and so on) and by type. More than 20 ensembles are arranged into orchestras, bands, and cham-

ber ensembles. Orchestras are divided by period (early classical to modern); bands are divided by musical style (symphonic to jazz).

Sibelius Instruments includes a downloadable bonus: G7 Guitar Guide. This interactive PDF file offers similar information and audio examples for classical, steel-string, semiacoustic, and electric guitars. For the PC, Sibelius Instruments requires a minimum Pentium II/100 MHz and Windows 98 or later. Mac users need at least a Mac G3/266 MHz and Mac OS 8.6 or OS X. Both platforms require 32 MB of RAM and 170



MB of disk space. Sibelius Software, Ltd.; tel. (925) 280-0600; e-mail info@sibelius.com; Web www.sibelius.com.

▼ EJ ENTERPRISES EJ MIDI TURNTABLE

EJ Enterprises has released the EJ MIDI Turntable (\$749), a system that allows anyone with a standard turntable to control sound and video files using MIDI data. The package includes a special grooveless vinyl record that is printed with a time-code pattern, an optical cartridge to read the disc, a MIDI interface, and ScratchTV LE (Mac/Win) software, which also lets you activate an account on www.scratchtv.com so you can post your own files.



The optical cartridge, which attaches to

any standard turntable arm, rests on the surface of the vinyl record to read the time code. The cartridge eliminates skipping, and the software lets turntable-savvy performers use such common techniques as beat-matching, scratching, needle-dropping (to jump between different points in a digital file), and beat-juggling (for seamless looping). Using SysEx, you can customize the type of MIDI messages that the interface sends, and the company reports that latency is less than 1 ms.

The MIDI interface includes a PS/2 port

for plugging in the optical cartridge, MIDI In and Out, and a pair of analog RCA inputs. ScratchTV LE is compatible with QuickTime, AIFF, WAV, AVI, and MP3 file formats and, according to the manufacturer, takes full advantage of dual-processor computer systems. In addition, the EJ MIDI Turntable is fully compatible with the Edirol DV-7 video-editing system.

To run ScratchTV LE, you'll need 512 MB of RAM. Macs require a G4/500 MHz (1 GHz and dual processor recommended) and OS X; PCs require a Pentium III/1 GHz and Windows 2000 or XP. The system is available directly from EJ Enterprises Worldwide, Inc.; tel. (386) 574-6664; Web <http://mixmusicvideo.com>.

▼ YAMAHA SPX2000

The newest multi-effects processor from Yamaha is the SPX2000 (\$1,249). This 1U rackmount unit is the first SPX device to offer 96 kHz DSP with 32-bit internal processing and 24-bit, 128x oversampling A/D/A conversion. The SPX2000's highlight is the REV-X reverb, which offers new Room Size and Decay Envelope parameters. Other algorithm types include delay, distortion, modulation, filter, pitch, and combination effects.

Three Program banks are stored in memory, containing 97 Preset Programs, 25 Classic Programs (reminiscent of the original SPX90), and locations for 99 User Programs. All factory Programs are original and not available in any other effects processor. The SPX2000's 32-character LCD offers a choice of five backlight colors, allowing you to instantly recognize the effects type at a distance. Reverbs are cyan, delays are white, and so on; red is reserved for warning messages. You can easily assign colors to User

Programs, too. By the end of 2003, Yamaha plans to release SPX2000 Editor (Mac/Win) software for Program editing, data management, and remote control capability.

The SPX2000 has XLR and 1/4-inch jacks with +4 dBu/-10 dBV selection switches. AES/EBU I/O is on XLR jacks, and word clock is on BNC jacks; you also get MIDI In, MIDI Out/Thru, USB, and a footswitch jack. Yamaha Corporation of America; tel. (714) 522-9011; e-mail infostation@yamaha.com; Web www.yamaha.com.



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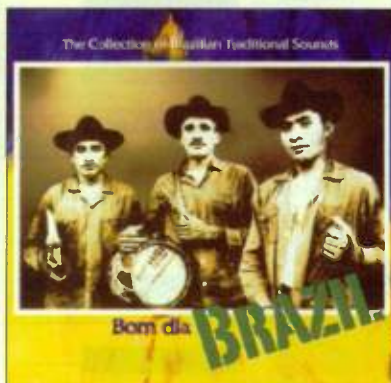
The three audio CDs in *LA Riot: Big Rockin' Beats*, vol. 2 (\$99.95) offer up more than 200 four-to-the-floor stereo drum tracks. The collection features a wide variety of feels played by six session pros: Bubba Bryant, George Dum, John Montgomery, Alec Puro, Josh Quirk, and Aaron Yedidia. A song-form performance begins each track, with the player switching between ride patterns on cymbals and hi-hat. According to the manufacturer, this format gives you all the components you need to build a song, including verses, choruses, and break downs. The performances are followed by fills, single hits, intros, and endings.

Each drummer plays a different kit, giving this collection numerous diverse drum and cymbal timbres. The individual instruments from each kit are available as single hits on the final six tracks of the collection. Tempos on *LA Riot* range from 85 to 180 bpm. Big Fish Audio; tel. (800) 717-FISH or (818) 768-6115; e-mail info@bigfishaudio.com; Web www.bigfishaudio.com.

▶ DISCOVERY FIRM

Japanese soundware developer Discovery Firm has added a few interesting titles to its illustrious catalog. *Amazing Thailand* (audio/Acid/Wave/

Rex2, \$91) is a two-disc set that includes 16-bit, 44.1 kHz samples of traditional Thai instruments and singing as well as everyday ambient sounds. The instruments are divided according to type—voice, percussion, stringed, and wind instruments—and include gong circles, drums, bells, xylophones, reeds, and plucked and bowed strings. The vocal category includes men and women speaking the local language. The ambient selections offer an aural journey through the country, including a ride in a taxi and an elevated train, and walks



through a cafe, a royal palace, an airport, and a market. Accompanying the sound collection is a short promotional film shot in Thailand, offered in WindowsMedia and QuickTime formats.

Similarly engaging is *Bom Dia Brazil* (Acid/WAV/Rex2, \$55), a collection of traditional sounds from the largest country in South America. Represented in this CD-ROM's 61 Groove files are styles such as Baiao, Choro, Coco, Forro, Marcha, and numerous Sambas. More than 100 files—divided into Angola, Maculele, and Regional categories—are dedicated to the unique sounds of the Brazilian martial art of capoeira. And no library of Brazilian music would be complete without including its most important export: percussion. Among the samples included are such staples as the cuica,

chequere, caxixi, tamborim, berimbau, surdo, reco-reco, pandeiro, and congas. Discovery Firm, Inc.; tel. 81-11-623-6663; e-mail overseas@discoveryfirm.com; Web www.discoveryfirm.com.

▼ PRIME SOUNDS

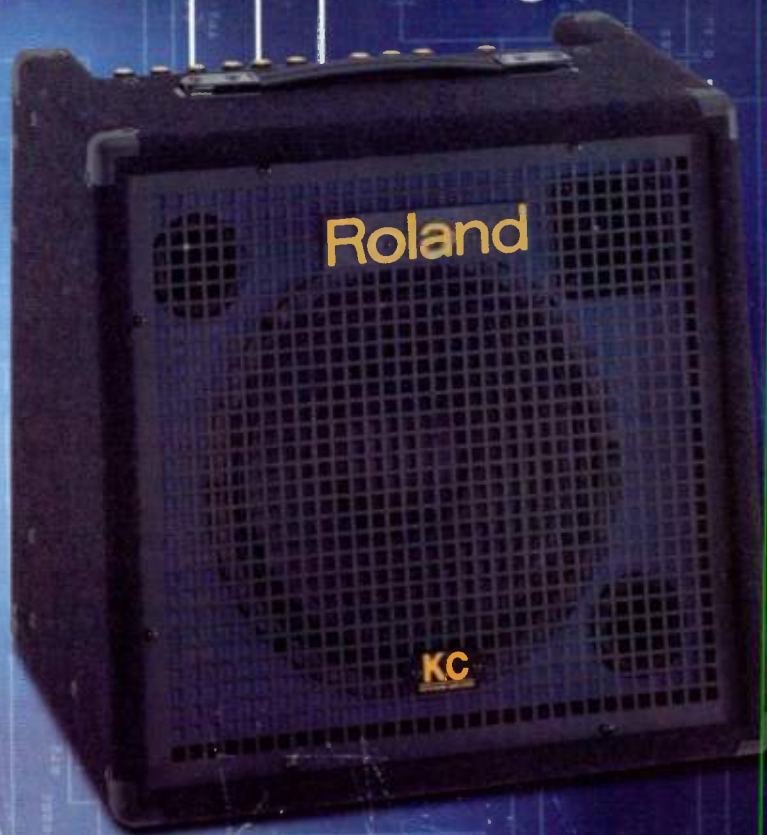
Looking for authentic sounds for your next Parliament- or Funkadelic-style track? *Dirt Keeps the Funk* (audio/WAV/Rex2, \$99.95) has all the ingredients you require for a delicious P-Funk stew: solid backbeats, analog synths (including a Korg MS-20, a Moog Micromoog, and a Moog Minimoog), bass guitar, electric guitar, Fender Rhodes, Hohner Clavinet, and organ.

The two-disc set includes 30 complete rhythm tracks, followed by the individual components that make up each track. Each loop is several bars long, allowing the human feel of each performance to shine through. The tempos range from 80 to 110 bpm, and the key of each track is indicated in the file. The CD-ROM includes 16-bit, 44.1 kHz WAV- and Rex2-format files. Big Fish Audio (distributor); tel. (800) 717-FISH or (818) 768-6115; e-mail info@primesounds.com; Web www.primesounds.com. ●





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Switched-on Monk

I was probably listening to too much Esquivel and Tomita at the time," explains Joe "Guido" Welsh about the genesis of Thelonious Moog. "But I always wondered how Thelonious Monk's music would sound if it was set in Moog-record arrangements."

The band's outstanding first release, *Yes We Didn't* (Grown-Up Records, 2003), recalls the best of Tomita and Esquivel, as well as Jean-Jacques Perrey, Gershon Kingsley, and the marvelously tacky Moog-pop records of the late '60s and early '70s. "We definitely picked songs we thought would translate well to this quirky genre," Welsh adds.

For his marriage of Monk and Moog, Welsh invited pianist Steve Million to join in on the fun. "It was a chance to perform Monk's tunes in a completely original way," Million explains. "When Guido described the project, I thought it was the perfect fit for our mutual talents."

Yes We Didn't was recorded the old-fashioned way, using live performances and eschewing MIDI sequencing. Tracking took place in Welsh's Nashville-based studio, Guidotoons, over the course of eight months. The control room, professionally built into his attic, is well appointed, with a Trident Series 80 mixer; an Otari MTR-90 Mk III 24-track tape machine; an iZ Radar 24 hard-disk recorder; and outboard gear by API, Focusrite, Manley, and Neve. Tie lines connect the control room to the kitchen, and a snake feeds the other rooms in the house.

"Although the control room saw most of the action," Welsh continues, "we cut 'Misterioso' and 'Off Minor' live in the living room, with drums, a Hammond C-3 going through a Leslie 122, and bass and guitar amps—without headphones. All of the rooms in the house have vaulted ceilings, so they sound big on tape." Welsh particularly likes to put a Coles ribbon mic in the kitchen and use the room as a reverb chamber. "And then slam the sig-

The well-tempered

jazz of

Thelonious Moog.



nal into an Empirical Labs Distressor," he adds.

The stars of the CD are Welsh's vintage synths, including an ARP 2600 and String Ensemble; a Buchla 100-series modular and Music Easel; an EMS Synthi AKS; two Moog modulars, a Minimoog, a Voyager, and a Sonic VI; an RMI Keyboard Computer II; and a Sequential Circuits Prophet Five. These instruments, combined with Welsh's masterful synth programming, make *Yes We Didn't* an encyclopedia of classic analog timbres.

For example, Welsh painstakingly re-created Tomita's Sound Creature patch on the Moog modular for the melody of "Bemsha Swing" and copped the Japanese synthesist's whistling sound for "Ugly Beauty." A vocoder also plays

an important role in "Ugly Beauty" as well as in "Bye-Ya." "We See" features a ring-modulated Fender Rhodes. "It's just like 1974," says Welsh.

Acoustic instruments were also given unique treatments. "For the left channel of the distorted piano on 'I Mean You,'" explains Welsh, "we stuck an AKG C 60 tube mic in one end of a vacuum cleaner hose and put the other end inside the grand piano's sound hole. We combined that with a Shure bullet mic through a Rat fuzz box, in the right channel."

Although jazz purists have already begun turning their noses up at the project, Welsh and Million feel their CD has the right spirit—a mixture of seriousness, audacity, and

humor. "We took a no-rules approach to the whole project," Guido points out. "We judged each part or overdub by whether or not it made us laugh out loud, but we also made certain that we didn't get too far-out with the original heads and chord progressions. I think Monk would dig this record!"

For more information, contact *Thelonious Moog*; e-mail guido@guidotoons.com; Web www.theloniousmoog.com or www.guidotoons.com.



Yes We Didn't/Thelonious Moog

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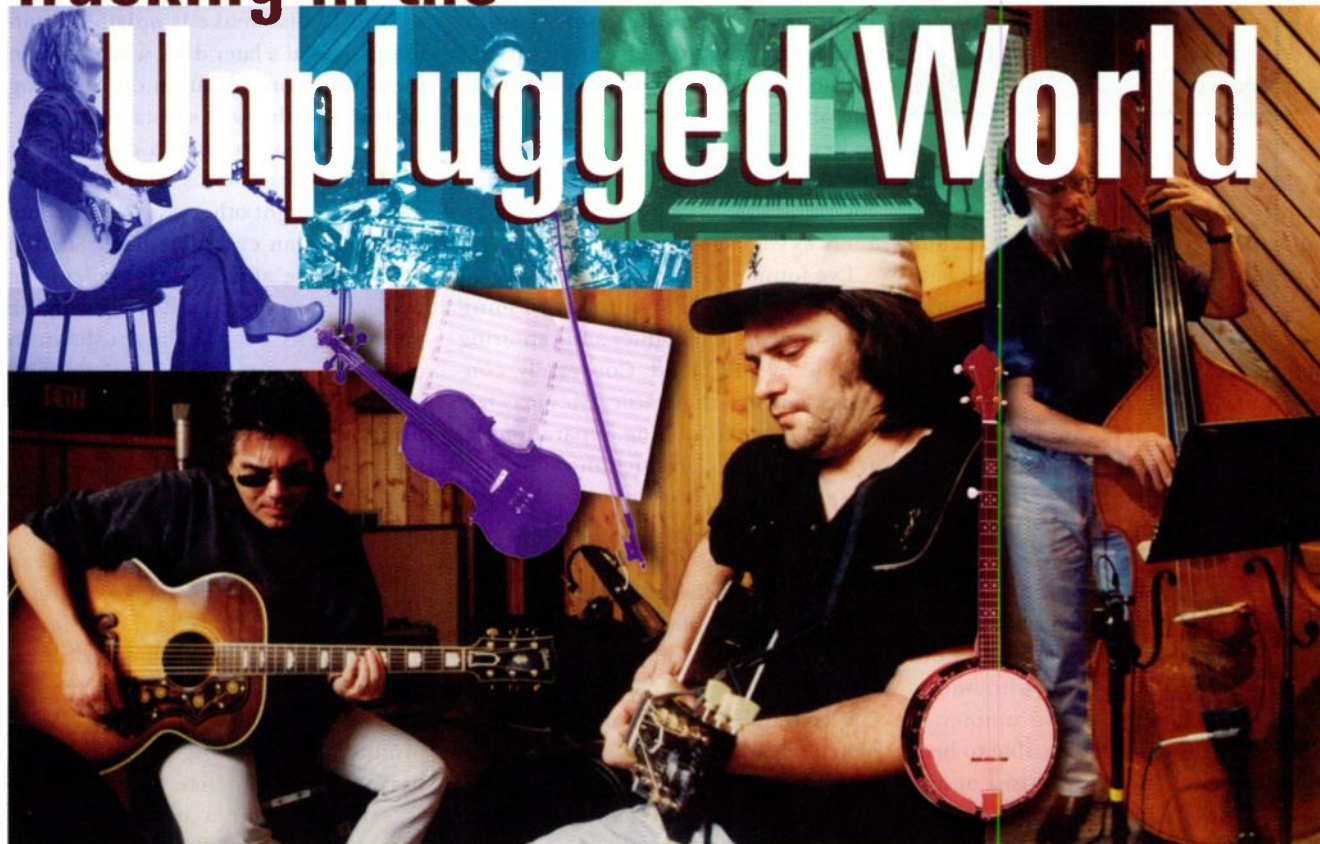
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Tracking in the

Unplugged World



LAURA WILLIAMS

Practical strategies for recording acoustic ensembles.

Trends in recording come and go, but acoustic music is a constant that can be relied on to sustain and challenge all engineers. From miking to mixing, successfully capturing an acoustic ensemble in the studio always puts one's engineering skills to the test.

Having engineered a wide range of acoustic groups, I can say that the techniques necessary for a successful outcome can vary greatly from project to project, based on factors such as musical style, group composition, and budget. I'll delve into specific examples of certain projects that I've worked on, which will show a variety of engineering approaches. But first I'll give an overview of some of the key issues and challenges you'll face in almost any acoustic-recording situation.

GETTING COMFORTABLE

When setting up for an acoustic session, my first concern is always for the comfort and relaxation of the players. Most

acoustic musicians need to play near to each other, so that they can hear and see subtle musical cues and can feel supported by and involved with the ensemble. Engineers, on the other hand, prefer to separate sound sources in order to retain maximum control over the individual instruments in the mix.

After more than 20 years of recording, I've learned that putting the musicians' needs first always increases my chances

of capturing an inspired, connected performance. Certainly, technical compromises may result, but ultimately

there is no point in pushing for a technically "perfect" recording that ends up feeling stiff or unmusical. I like to start with a tight circular arrangement in an acoustically appropriate room. My objective is to create an environment that is as similar to an informal living-room jam session as possible.

With this goal in mind, I don't automatically make musicians play with headphones on sessions of this type.

By Myles Boisen

Tracking in the Unplugged World

My experience has shown that musicianship thrives when the musicians in an acoustic ensemble find their comfort zone and play at an appropriate level for the room. More often than not, the elusive qualities of blend, acoustic balance, and solo volume go out the window when a group disconnects from the room and becomes dependent on headphone monitoring.

On the other hand, if hearing problems in the studio can't be solved acoustically—by repositioning performers, changing the room's characteristics, or suggesting a different playing dynamic—I'll gladly hand out headphones to anyone who wants them. For example, a kit drummer or percussionist will rarely be able to hear an unamplified acoustic bassist or guitarist clearly in the controlled acoustics of my studio. In that case, headphones will enhance the recording by allowing the drummer to play at his or her desired performance volume.

Using quality microphones and giving careful attention to placement are essential in a tracking session, especially when recording natural acoustic sounds. Besides capturing accurate, pleasing sounds on the intended instruments, it's important to consider how every mic on an acoustic session deals with off-axis sound, also known as bleed or leakage. Typically, there will be noticeable coloration in the timbre of signals picked up at the sides and rear of a unidirectional microphone, and this is a particularly crucial factor when you have a number of instruments in the same room.

STYLE CONSCIOUS

Acoustic ensembles come in many sizes and varieties, and you have to adjust your technique to fit the style and vibe of a given group. For example, a mandolin-guitar-bass lineup performing old-time music in the style of the

popular *O Brother Where Art Thou* soundtrack will need to be tracked and mixed differently than the same combo recording high-tech "new-acoustic" music or modern bluegrass. Similarly, the production values of a singer-songwriter combo will vary drastically depending on whether they are aiming for pop-radio airplay or pursuing careers as Chicago-blues revivalists.

I've found that in general, older genres require special attention to minimalist miking techniques and capturing a good overall blend. Conversely, contemporary acoustic-music styles may rely heavily on overdubbing, separation, effects, and other production values that are standard practice in the rock world. Therefore, the best advice I can give as far as recording a specific group is to do your homework and listen to some recorded examples before venturing into unfamiliar production territory.

TO PUNCH OR NOT TO PUNCH

When recording any live ensemble, questions about fixing parts will inevitably arise. In the case of acoustic groups, there is no set answer that an engineer can give, especially when recording everyone in the same room. If the question is "Can I rerecord that solo?" it is useful to remind the group that, because of the leakage that is inherent in the situation, it will likely be faster to record a fresh take of the entire song with the whole group, rather than to punch-in a replacement solo. For something such as a missed guitar chord, bass note, or clarinet squeak, my answer is usually, "I'll try."

It's most efficient to do a punch-in fix immediately after a take, before the musicians change their mic positions. That way, if a recorded "ghost" of the mistake is still audible on other tracks or if the punch-in or punch-out doesn't work, the group will be most amenable to doing another take

right away. Taking detailed notes about mic selection, placement, preamps, and so on will also make it possible to attempt fixes at a later date, when you can focus your concentration on repairing flaws in an otherwise satisfactory take.

Overdubbing is often a great way to deal with vocals, solos, and tricky passages that might otherwise slow the momentum of an ensemble date. Scratch tracks of the aforementioned can be performed and recorded along with the ensemble, as long as the musician in question is acoustically isolated. But normally that entails everyone using headphones, which can make players hypercritical or can skew the group dynamics. In my experience, it is always best to persuade players in this situation to slip one headphone cup off their ear, so that at least half of their hearing is trained on the balance in the room.

When it comes time to overdub replacement tracks or to add entirely new musical layers onto an acoustic music production, don't forget about the importance of ambience. It can be distracting to hear a natural, roomy ensemble with one foreground vocal or instrument that is obviously overlaid or isolated in a different (usually dead-er) room.

If your intent is to obtain a unified blend of all the mix elements, make your overdub merge into the whole using mic placement rather than added effects. Record the overdub in the same

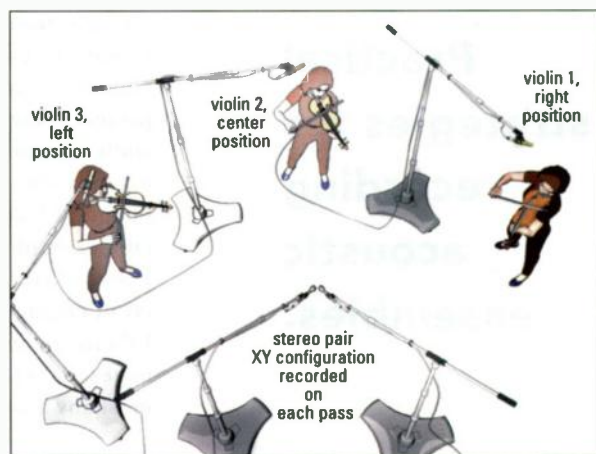


FIG. 1: In order to simulate the sound of a violin trio, Carla Kihlstedt overdubbed three individual violin parts while standing in three different locations relative to the stereo mic pair.



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space that the ensemble used, rather than in an iso booth. And don't be afraid to add extra room sound to the track by using a more distant mic position, using an omnidirectional or bidirectional (figure-8) mic, or recording a second room mic. If you can get the track to fit in with the overall ambience right off the bat, that's one less challenge during mixdown.

For those musicians who are working alone or who are layering many instru-

ments one by one, similar principles can be used to create a colorful ensemble sound on a track-by-track basis. Incorporate a room ambience you like into your foundation track—be it percussion, acoustic guitar, or whatever—and make it a point to match or complement that room sound on each successive overdub.

Again, using a separate room mic for each track is an effective technique that allows for many creative possibilities in the mix. Excellent examples of this approach can be heard in the recent records of Tom Waits. When working as a session guitarist on Waits's *Blood Money* (Anti Records, 2002), I was delighted to find that my guitar, mandolin, and banjo parts were being

picked up simultaneously by any combination of mics set up around the room, including an old boom box that was wired directly into the console.

STANCH THE BLEEDING

In live-ensemble recording scenarios, leakage is frequently a fact of life. It's always best to deal with excessive bleed at the source, by using proper mic placement and pickup pattern control. Getting a tight, focused sound when tracking guarantees that when you're mixing, raising a single fader will boost the desired instrument without distorting or washing out any other source in the room.

After mixing a few acoustic sessions, the ear begins to discriminate between

RECORDING SINGING GUITARISTS

Sooner or later, anyone who records acoustic music has to deal with the challenge of recording a vocalist who plays acoustic guitar. For tracking purposes, seasoned musicians are usually able to overdub to a scratch guitar or vocal track. There are those instances, however, in which the performer's needs—perhaps influenced by inexperience or irregular timing—dictate that the vocal and guitar tracks be recorded simultaneously. On such occasions, it is good to have a few miking tricks up your sleeve.

Although it is possible to mic a singing guitarist with a single microphone, let's start this discussion with a minimal two-mic setup. As always, leakage and phase cancellation between the two sound sources is a crucial factor. Most engineers have dealt with this common problem before. Typically, the vocal or guitar will sound fine alone. But once the second mic is brought into the mix, unpredictable tonal distortion dominates the sound, changing as the faders are moved.

To minimize those problems, start by miking the guitar using either an omnidirectional mic by the bridge or sound hole, or a figure-8 mic in

front of the neck joint aimed at the sound hole, with the off-axis side or "null" of the pickup pattern carefully oriented at the singer's mouth. In an acoustically dead room, the figure-8 guitar mic should do a very good job of rejecting vocal sound, especially with a quiet vocalist. Conversely, the omni mic will not reject much vocal sound, but since it has no proximity effect, it can be placed very close to the guitar without boominess.

To pick up the vocals, start by using your favorite vocal mic, positioned a bit higher and farther away from the mouth than usual (see Fig. A). Trying to get the vocalist to sing with his or her chin up toward the mic, and head turned somewhat to the left (for a right-handed guitarist). Such placement increases the distance between the two mics, and prevents the singer from projecting toward the guitar mic. When placed properly, the vocal mic



FIG. A: One successful method for miking a singing guitarist involves using an omnidirectional mic placed close to the bridge or sound hole. The vocal mic is positioned slightly above and off to the side of the singer's mouth.

will add sparkly guitar harmonics to the mix, and midrange boxiness from the guitar will be minimal.

If you want a more elaborate setup, try using a pickup-equipped acoustic and recording its output to supplement the signal picked up by the guitar mic. Or try replacing the omni or figure-8 guitar mic with a pair of cardioids in an XY configuration. With such a pair, you'll need to experiment in order to maximize rejection of the voice.

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relatively quietly. The Royer R-122 ribbon mic, which I used on the violin, sounded great, and I was able to place it pretty close to the source (within a foot above the bow in most cases). Its tight pattern yielded significant drum rejection when positioned with its off-axis side fins aimed at the kit.

The use and careful placement of cardioid condenser mics on the cello, combined with a bit of baffling, also contributed to the success of this method. On medium-intensity numbers, the drum leakage onto the violin and cello mics contributed an interesting, roomy sound, which I hear as one of the CD's most intriguing facets.

In some cases, the off-mic drum coloration on the Royer was a bit too midrange-heavy or boxy, as it can be on a dedicated drum-room mic. In these



KATHERINE COPENHAVER

The old-style country music of Loretta Lynch was recorded through a stereo mic pair in a Blumlein configuration, and relied heavily on room ambience.

instances, a judicious midrange cut between 350 and 750 Hz tamed the problem without negatively affecting the string timbre. As expected, for Two Foot Yard's more aggressive rock songs, isolation of the violin and cello was required to keep those instruments from

being overwhelmed by pounding snare and cymbal wash. On these pieces, a separate drum-room mic was used in the mix to capture the room sound and maintain consistency in the drum tones.

For the classically influenced pieces, on violin and cello only, I turned the XY drum overhead mics around to face the strings, and printed their stereo signal as an ambient pair to fill out the close-miked string sound. On one song, this process was repeated three times to create a faux violin trio!

For the first of the three scored parts, Kihlstedt stood in her usual position in the room, on the right relative to the stereo mic pair. For the next track I moved her, along with her close mic, to the center position, and then she went over to the left side for the final pass (see Fig. 1). With careful balancing and panning of the three close-mic tracks, and the three pairs of stereo ambience, a very credible approximation of a live trio was created.

After the basic tracking was done to 16-track analog tape, overdubs were added to most of the compositions. Because very little of the string sound bled onto the drum mics, some fixing was able to be done on the original violin and cello tracks. Kihlstedt's vocals were not cut live, except in the case of songs in which the feel of live performance was essential, or when the timing of the

UPRIGHT ADVICE

Here's a trick to increase separation when recording the acoustic bass, particularly in a jazz or a rock setting and with a drum kit. Select a dynamic mic that has good low-end response (my favorite is the Sennheiser MD 441

because of its supercardioid pattern and onboard EQ), wrap it in a towel or a piece of foam being careful not to block the mic's grille or acoustic vents, and wedge it in the tailpiece of the bass.

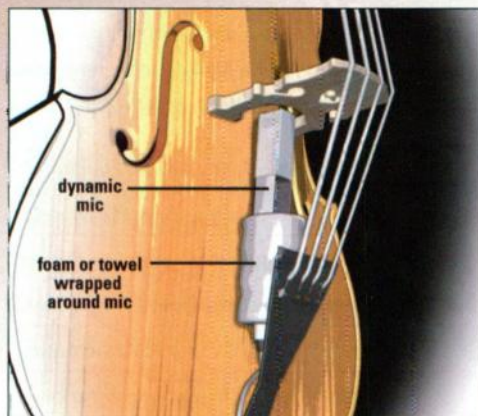


FIG. B: A good way to mic an upright bass so that you obtain minimum bleed is to wrap the mic in a towel or a piece of foam and wedge it in the tailpiece of the bass.

The mic should be pointing up and positioned with its diaphragm just below the opening between the legs of the bridge (see Fig. B). This ingenious technique, which was shared by veteran German bassist Peter Kowald during his recording with Damon Smith of the bass-duo CD *Mirrors—Broken But No Dust* (Balance Point Acoustics, 2001), yields the most favorable ratio of bass to room sound. In addition, the bassist can move freely without any change in timbre or level.

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violin and vocal was so intricately interlocked that it would have been impossible to overdub.

In the final assessment, the decision to cut as many tracks as possible in the same room paid off for all involved. Although the CD is very stylistically eclectic, it has a unified organic feel and a unique sonic signature. These would have been difficult to achieve had greater separation been pursued from the outset.

Ya Elah. When I was originally contacted by Bon Singer—leader of this vocal-oriented world-music group—to record their CD, several scenarios were discussed. For cost-effectiveness and authentic concert-hall ambiance, we determined that location recording was the best option. After some searching around, several tracking days were booked at Temple Beth-El in Richmond, California.

In the initial planning session, several factors had to be addressed. In addition to my production concerns and the physical setup, notes on mic and preamp selection, additional gear, and other considerations also had to be relayed to remote specialist Karen Stackpole of Stray Dog Recording. After the



When recording Carla Kihlstedt and Two Foot Yard's self-titled CD, the basic tracks and overdubs were cut in the same room in order to help unify the sound.

initial session, Karen would be working alone to bring in the equipment and record the basic tracking sessions to eight tracks of ADAT.

My strategy was to arrange the group's six female singers in a tight half-circle and record them on a stereo mic pair, with one spot mic for soloists if needed. Although I have recorded vocal combos of this size with individual mics for each performer, I have always found that the blend and balance of the voices is more pleasing when captured with a phase-coherent coincident XY pair. Ya Elah also has three instrumental accompanists who play *vielle* (the ancestor to the viola), oud, and hand percussion. With close mics on these instruments, and a stereo pair of room mics to capture the Temple's ample reverberation, all eight ADAT tracks were spoken for.

Temple Beth-El offered a large multipurpose room with a raised stage, uncarpeted floors, and no fixed seating. The openness of the space allowed us to move the group around and explore some different setup possibilities. Initially, various group arrangements—with the singers on the carpeted stage and the musicians down on the floor—resulted in hearing problems between the two factions. Putting the entire group on the stage was also problematic.

Rather than settle for a flawed setup or add the complications of a monitoring system, I got creative and scanned the room for more possibilities. We ended up arranging everyone on the bare floor at the back of the room, in front of a sliding, segmented room divider. That area of the room was much more live, which solved everyone's hearing difficulties and put the singers more at ease. Adding a few carpets under the vocalist's half-circle and slightly opening the room divider behind the singers eliminated most of the close reflections, making the space more conducive to favorable recording.

With those arrangements set and with the group well rehearsed, the first recording session ran smoothly. A few trial takes were necessary to perfect the acoustic balance of the singers, and strips of tape were then placed in front of their feet to keep them in position.



The biggest challenge when recording the jazz quartet Collective Amnesia's self-titled CD was minimizing leakage from the drums into the other instruments' mics.

The musicians, who were seated facing the choir, also had to be kept as close as possible to their mics, since leakage from the robust vocals was significant. Once those details were tightened up, it was simply a matter of running pieces in the hope of capturing that magical take.

Rough mixes created at the first session sounded great to Karen Stackpole and to me. And although the project is currently on hold, it's an exciting prospect to think about mixing the tracks, considering their big-room sound and natural reverb. Obviously the preplanning, gear transport, and coordination of remote sessions is labor intensive when compared with the ease of booking a studio. But this approach was necessary to make to the project work within the given budget. More importantly, it gave the singers the chance to shine in a space that was acoustically supportive and appropriate to the music.

Collective Amnesia. Recording a jazz session entails many elements that are similar to the other types of acoustic sessions discussed here. It is essential that everyone is comfortable, close together, and connected visually and musically so that the communication can flow unimpeded. A less obvious, but equally important point for any acoustic music with drums is that the ensemble has to play at a level that works for that particular room.

Although the music of the five-piece group Collective Amnesia is decidedly

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www.collectiveamnesia.com

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www.Tzadik.com

Information about Carla Kihlstedt and Two Foot Yard. Order the CD *Two Foot Yard* (Tzadik, 2003).

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modern, I envisioned a warm, classic, Blue Note sound to mirror their standard all-acoustic lineup of drums, bass, piano, trumpet, and sax. We chose to record the project at Bay Records in Berkeley, California, a wood-floored studio with a fine Yamaha grand piano, and I brought a selection of my favorite tube condenser mics. Recording was done to 16 tracks of ADAT, in order to keep tape costs low and allow flexibility in the choice of a mixdown facility.

The members of the group set up in a circle, fairly close to one another. Because pianist Leonard Thompson plays with a soft touch, special attention had to be paid to minimizing leakage of the drums and horns into the omnidirectional Schoeps mics that I'd placed inside the Yamaha grand. Rolling the piano about ten feet away from the rest of the group helped, as did some carefully placed blankets and baffles for the piano and drums. I achieved additional separation by positioning the instrument so that the slightly opened lid blocked any direct sound from the other instruments.


The horns were close-miked, and the bass had one mic on the tailpiece (see the sidebar "Upright Advice" for details of the miking method). To control drum bleed, I asked drummer Bryan Bowman to play more quietly, and made sure that he had the right headphone mix to accomplish that. Once the group found its balance in the room, the overall dynamics, en-

semble balance, and solo levels snapped into focus, with very gratifying recorded results. When listening to playbacks, I remember that I rarely had to move any faders. But as soon as the drums got too loud, the mix became a struggle, with the bass and piano getting drowned out and the cymbals becoming diffused and washy.

Because of scheduling difficulties, I was unable to be present for the mix of this project. But I did master the Col-

lective Amnesia CD and was very pleased to hear that the band, producer Justin Morell, and mix engineer Jon Evans remained faithful to the straightforward ensemble sounds that were captured during tracking.

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 at mylesaudio@aol.com.



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ALL FIRED UP

BY BRIAN SMITHERS

FireWire (more formally known as IEEE-1394) was once considered the future of audio interfaces, but it's not anymore. It's the present. FireWire's high-speed serial communications protocol offers plug-and-play installation, hot-swap capability, and enough bandwidth for high-resolution multichannel digital audio. Understandably, many musicians have watched with eager anticipation as the burgeoning FireWire market-

place has moved to center stage. You can now equip your studio with any of several high-quality digital interfaces that boast cross-platform compatibility, tons of I/O, and easy portability.

I spent my summer vacation getting up close and personal with an array of FireWire interfaces, checking them out on Windows XP and Mac OS 9 and OS X. The contenders include Digidesign's Digi 002, M-Audio's FireWire 410, Metric Halo's Mobile I/O 2002 and ULN-2, MOTU's 820mkII and 896, PreSonus's FireStation, and Tascam's FW-1004. I found a lot to like in each of these devices, and it was a joy not to have to take my computers apart every time I swapped interfaces.

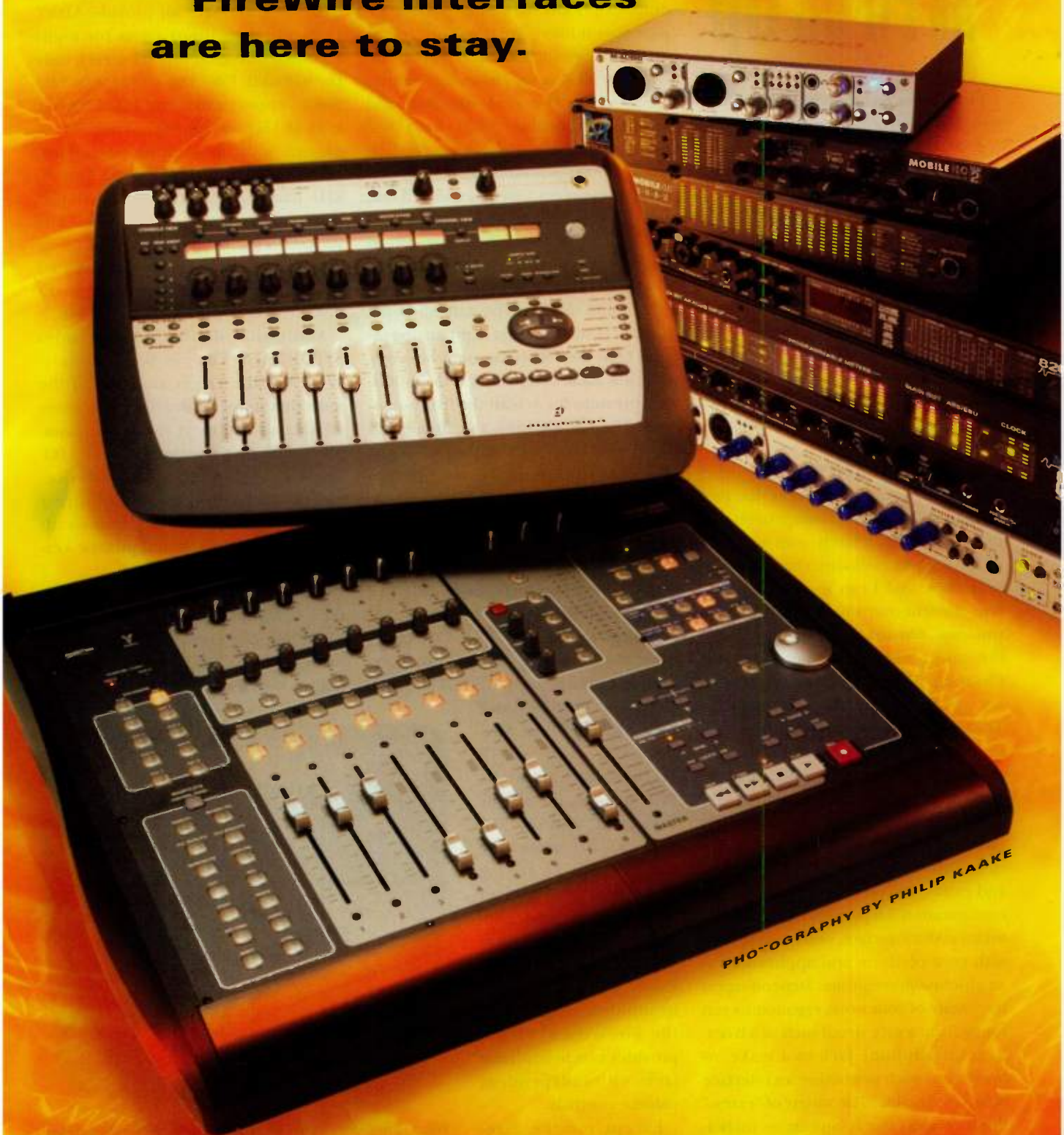
WHERE'S THE FIRE?

Industry pundits like to gush over FireWire's 400 Mbps bandwidth, but to most electronic musicians the protocol's appeal is simple: it connects to the computer externally. Traditionally, audio interfaces have been based on PCI cards with a bunch of connectors squeezed onto the back of the card or with a separate breakout box for the audio connections. That means you have to open your computer, press a card firmly into an available slot (while handling the card only by the edges), and worry that if your flesh should accidentally contact the wrong component you could fry the card, your computer, or both with a sudden burst of static electricity.

Of course, with a bit of care the process isn't really that treacherous, but a good number of musicians and engineers who are used to handling delicate instruments and microphones are nevertheless filled with trepidation at the prospect of reaching into the guts of a computer. Plugging a FireWire cable into a port on the back of a PC or Mac is a lot less intimidating and indisputably more convenient.

Moreover, FireWire offers new possibilities when it comes to portability. Moving a PCI-based interface from one computer to another is a pain, but with FireWire, moving your interfaces around is a snap. And speaking of portability, if you want to use your PCI interface on the road with a notebook computer, you're out of luck. With a FireWire-equipped laptop, however, or with a CardBus-to-FireWire adapter, portable high-quality audio production is very much a reality.

Move over, PCI!
FireWire interfaces
are here to stay.



PHOTOGRAPHY BY PHILIP KAAKE

All Fired Up

FireWire interfaces don't much care whether they're connected to a desktop or a notebook system. Likewise, most FireWire interfaces don't care whether they're attached to a Mac or a PC, though there are some exceptions. For example, Metric Halo has Windows drivers under development, but it hasn't yet committed to a release date for them. Frustratingly, I was never able to get my Windows notebook fully functional with any of the interfaces that I tested, although I've concluded that the fault lies with my notebook (see the sidebar "Best-Laid Plans").

FEATURE PRESENTATION

For the most part, the devices that I examined aren't in direct competition with one another. Each has its own approach to solving the audio-interface needs of musicians, and I can see choosing any one of them over the others in a given situation. On the other hand, none of the units is quite so revolutionary that I'm compelled to rush out and replace my existing CardBus-based interface. That isn't intended as a slight to any of the FireWire interfaces; it merely illustrates how important it is to match an interface's features to your specific needs.

Those features can be divided roughly into four categories: inputs and outputs, compatibility and drivers, ergonomics, and extras. Of course, input and output configuration is a primary consideration for an audio interface, and compatibility with your platform and applications is an absolute prerequisite. Depending on the nature of your work, ergonomics can range from a nice detail such as a front-panel headphone jack to a make-or-break issue such as whether an interface is rackmountable. The variety of "extras" these devices offer is impressive, including standalone mixer functions, bundled software, and virtual control surfaces.

COMING AND GOING

Because an audio interface, FireWire or otherwise, is literally your DAW's connection to the outside world, most of us start by looking at a device's input and output options. How many analog inputs does it have? Are they line level or do they have mic preamps? Do they use 1/4-inch or XLR jacks? How many outputs are provided? How many digital ins and outs does it include? What digital formats does it support? What sampling rates and resolutions does it support? Once these specs have been sorted out, you're left with the more subjective question of whether you like the sound of the converters and mic preamps.

With the exception of the Mobile I/O ULN-2 and the FireWire 410, all of the interfaces offer at least eight analog inputs. Most use TRS connectors, but every unit has XLR connectors with built-in mic preamps for at least the first two inputs. The 896, FW-1884, and Mobile I/O 2882 have mic preamps on all eight channels. All of the various mic preamps provide phantom power that is selectable on each channel except on the Digi 002, where one switch serves two channels (two pairs are provided), and on the FW-1884, where two switches handle the eight inputs in groups of four.

Except for the Mobile I/O ULN-2, all of the interfaces have at least eight analog outputs, and all use TRS jacks except for the 896, which uses XLRs, and the FireWire 410, which uses TS jacks. Other than the FireWire 410, the Mobile I/O 2882, and the FW-1884, all the units have a spare pair of analog outputs called Main or Monitor; they offer an independent connection to your monitoring system. Every device offers a headphone output, and the FireWire 410 even provides two headphone jacks with independent volume controls.

Except for the FireStation—which maxes out at 48 kHz—all of the

units have A/D/A converters that support sampling rates up to 96 kHz. The FireWire 410 even supports 192 kHz audio on outputs 1 and 2. Except for the Mobile I/O ULN-2 and FireWire 410, the interfaces all provide ADAT Optical (Lightpipe) ports for eight channels of digital I/O. However, only the 828mkII, FW-1884, and Mobile I/O 2882 support sampling rates higher than 48 kHz via Lightpipe. The S/MUX extension to the Lightpipe standard, providing four channels at 88.2 or 96 kHz, has been around long enough that you might assume—as I did—that any 96 kHz-capable interface would support that sampling rate through its Lightpipe ports. Unfortunately, that's not the case.

Additional digital I/O includes S/PDIF, AES/EBU, or both on everything but the FireStation. All of the units that support sampling rates above 48 kHz also support the higher sampling rates on their stereo digital I/O. The FireStation is an mLAN device, meaning it is also capable of direct peer-to-peer digital connections with mLAN-compatible digital mixers, keyboards, and other devices.

GETTING ALONG

All of the interfaces in this survey are ready for Mac OS X 10.2, and they also still work under OS 9.2. Only the Metric



FIG. 1: Digidesign's Digi 002 is notable for its well-designed control surface and its integration with Pro Tools LE, which comes with the interface.

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will take a brief look at each unit individually. The observations that follow are intended to elucidate the sort of applications for which each device is best suited. However, because some of the distinctions are necessarily subjective, you should assess the different products based on your particular needs and studio setup.

Digidesign Digi 002. Although it's the most expensive interface in the roundup, the Digi 002 (see Fig. 1) also includes the most extras. Buying a program equivalent to the bundled Pro Tools LE to use with any of the other interfaces would add several hundred dol-

lars, and buying an equivalent control surface would cost a grand or more, so all things considered, it's really on par with the others.

As with the 896, the Digi 002's lack of S/MUX support makes it either a 10-channel 96 kHz interface or an 18-channel 48 kHz interface. If you can live with either the lower track count or the lower sampling rate, you'll have a wonderfully integrated system to work with. The control surface is seductive—it's difficult to do without once you get used to it. The 100 mm touch-sensitive faders are a pleasure to work with, and

the Digi 002 includes some nice touches like the bright yellow LCD channel/parameter labels.

Because the control surface and interface comprise a single unit, this is one of the least portable of the bunch. Still, it's pretty light and reasonably compact for all its functionality. Digidesign even offers a special 2U carrying bag, the DigiPack (\$125), that fits the Digi 002 or the 002 Rack perfectly. If what you really want is Pro Tools, the Digi 002 (or 002 Rack) is a good way to go, and it's currently the only FireWire option in the Pro Tools product



FIG. 6: MOTU's 896 is the only 2U rackmount model in this group. In addition to ADAT I/O, its larger size accommodates a full complement of analog and digital (AES/EBU) I/O with XLR connectors. Its front panel also offers more extensive metering than the other interfaces.

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line. Add a MIDI controller keyboard and some RTAS soft synths and you have the core of a great home studio.

M-Audio FireWire 410. M-Audio's compact and affordable FireWire 410 packs a lot of 24/96 connectivity into a package that is (unfortunately) just a bit wider than half a rackspace (see Fig. 2). Its front panel features two Neutrik combo connectors for mic and high-impedance inputs, and the back has separate 1/4-inch unbalanced line inputs that substitute for the ones on the front. The FireWire 410's mic preamps feature individual pads and a single phantom-power switch. Eight analog outputs are available on unbalanced 1/4-inch connectors on the back panel, and the S/PDIF I/O (in both coaxial and optical formats) brings the total I/O count to four inputs and ten outputs, as the unit's name suggests.

The two front-panel headphone jacks with independent volume controls are a nice touch. The S/PDIF outputs support AC-3 and DTS streams. Drivers are available for Windows 2000 and XP and Mac OS 9 and OS X. For simplicity and portability, it doesn't get much better than this, and the price is by far the lowest of the group.

Metric Halo Mobile I/O 2882. The Mobile I/O 2882 (see Fig. 3) joins the 828mkII and the FW-1884 as the only ADAT-equipped interfaces that are fully operational at 96 kHz. Unfortunately, both Mobile I/O models lack Windows drivers. Moreover, the Mac installation procedure is remarkably uncharacteristic of Macs, requiring that you manually copy drivers to specific folders. Perhaps Metric Halo was too busy working on the excellent 100-page manual to write an installer.

The Mobile I/O 2882 has no bells or whistles. It's just the essentials, done well and packed into a single rackspace. Other than a headphone jack and Mute and Dim buttons, the front panel is entirely devoted to 16 channels of 10-stage meters. You'll need XLR-to-TRS adapters to use microphones in inputs 5 through 8, but that's all spelled out in the aforementioned manual.

The Mobile I/O 2882 fits perfectly under a laptop, a real plus for anyone

trying to squeeze a remote rig into tight spaces. Add bus- or battery-powered operation, and you have a strong contender for the title of Ultimate Remote Rig.

Metric Halo Mobile I/O ULN-2. ULN stands for "ultra low noise," a reference to the mic preamps in this unit (see Fig. 4); they're a step up from the ones in the Mobile I/O 2882. Each channel has a send and return for inserting dynamics or EQ in the signal path. The main 1/4-inch inputs are high-impedance

instrument inputs, but you can use the returns as line-level inputs, thereby covering all the bases.

Compared with the Mobile I/O 2882, the ULN-2 trades channel count for preamp quality and flexibility. If you're doing stereo location recording, that might be an excellent trade-off.

MOTU 828mkII. The original 828 won EM's 2002 Editor's Choice award in part because it was the first of this new breed of multichannel FireWire

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All Fired Up

interfaces. The second generation 828mkII (see Fig. 5) adds significant functionality along with an impressive feature set that MOTU has managed to pack into a single-rackspace unit for the same price as the old 828.

Unlike the 828, the 828mkII has its Neutrik combo mic/instrument jacks mounted on the front with separate phantom-power switches and individual TRS send/return jacks for each channel. The front-panel metering displays are also much more elaborate and more detailed. In addition to the multi-segment LED meters, a separate backlit LCD section with six accompanying

push-button/rotary encoders lets you view and edit parameter settings and provides hands-on access to the built-in 8-bus mixer (with four separate monitor mixes).

The combination of the multifunction LCD and the array of editing knobs makes this unit an effective standalone mixer-interface as well as a sophisticated DAW front-end. And speaking of DAWs, the 828mkII comes bundled with MOTU's latest version of AudioDesk, which now supports OS X. Although it doesn't offer MIDI sequencing, AudioDesk is a full-featured multitrack audio-recording and -editing application that is comparable to

Pro Tools LE. Too bad it isn't available for Windows.

Other noteworthy features include MIDI I/O, S/MUX support for the ADAT port, word clock I/O, and direct SMPTE time-code sync. With its removable rack ears, the 828mkII nicely accommodates tabletop use, and it's easily small enough and light enough to throw into a backpack with your notebook for remote gigs.

MOTU 896. When I first saw the 896, the only 2U device in the bunch, my minimalist nature recoiled at such a "big" interface (see Fig. 6). Upon further reflection, I realized that bringing the 828mkII or FireStation up to



FIG. 7: The two mic preamps on the Presonus FireStation offer tube drive that you can dial in or switch off entirely. The FireStation is also noteworthy for being the only mLAN-compatible unit in the group.

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eight mic inputs would require a second rackspace anyway. Only the Mobile I/O 2882 provides as many mic inputs in less rack space.

The reason the 896 is two spaces high is because it has an all-XLR back panel, arguably its most attractive feature. Its front-panel real-knob-and-switch controls and its extensive and flexible hardware metering (with 20 10-segment meters spread across the front) are a real convenience. In addition to word clock I/O, MOTU has always made a point of including ADAT sync in its interfaces, which for some users is important enough to steer their choice by itself. (The 828mkII also offers this feature.)

If you're not too put off by the lack of S/MUX support, you could easily rack up a couple of 896s and a couple of 8-channel preamps and have 32 channels of mic inputs in six rackspaces for a compact and powerful 24-bit, 48 kHz rig at home or on the road.

PreSonus FireStation. I found the FireStation pretty appealing, and it's not just because of its pretty blue knobs (see Fig. 7). Although it trails most of the pack in both sampling rate and I/O count, its two mic preamps offer tube drive that can be dialed in or switched off entirely. Like the Mobile I/O ULN-2

and the 828mkII, it also has a send and return on each of the two channels, so you can massage the signal before it hits the converters. The top of the unit features adjustments for calibrating the line inputs to the A/D converters, something not usually seen in this price range.

I'm not sold on PreSonus's choice of mLAN for this unit, however. If I owned a bunch of other mLAN devices I might see things differently, but for many users it only represents another layer of complexity in installation and configuration.

Tascam FW-1884. Codeveloped with Frontier Design Group, Tascam's FW-1884 (see Fig. 8) is the answer for desktop musicians who like the Digi 002 design concept but don't want to switch to a new DAW.

Incorporating an 18 I/O interface (or 14 I/O at 96 kHz) with a control surface that's compatible with a variety of different programs, the FW-1884 covers a lot of ground. Being the largest of the interfaces under scrutiny, it's probably most at home in a studio, but remote recording is not out of the question.

All eight mic/line inputs have inserts, and the eighth input can be switched to high-impedance guitar operation. Phantom power is switchable in groups for inputs 1 through 4 and 5 through 8. A headphone output is also provided on the back panel. Digital I/O comes in coaxial S/PDIF and optical connectors that can serve up either S/PDIF or ADAT Lightpipe; word clock I/O is provided on standard BNC connectors.

The control surface features nine 100 mm motorized touch-sensitive faders, transport controls, a jog/shuttle wheel, eight channels of rotary encoders, a dedicated set



FIG. 8: Tascam's new FW-1884 is currently the largest of the FireWire interfaces. It sports a full-featured control surface with a 4-port MIDI interface. The FW-1884 is designed to support a number of DAW applications.

of knobs for controlling EQ, and more buttons than you can shake a stick at. Compatibility with host applications is provided either by a control surface plug-in or by emulating the behavior of a Mackie Control or HUI. Tascam did a pretty good job with its earlier US-428 USB interface, and with the FW-1884 it has not only raised the bar, it has answered all of the major limitations of the US-428. Tascam even plans to offer an eight-fader expansion unit (due out by the end of the year), called the FE-8, for more channels of control.

CHOICE FEATURES

The current batch of interfaces represents an impressive array of choices, and more options are on the horizon. Because the bandwidth of a FireWire connection is ample, manufacturers are able to focus on distinguishing their feature sets rather than battling over track count.

Being able to buy one interface and use it with either your notebook or your desktop, or with either your Mac or your PC, is a great convenience and cost saver. With FireWire's power and flexibility and with the range of interface options that are currently available, you really can start to think (and create) outside the box.

Brian Smithers is Course Director of Audio Workstations at Full Sail Real World Education in Winter Park, Florida.

CONTACT INFO

Digidesign

tel. (650) 731-6300; e-mail prodinfo@digidesign.com;
Web www.digidesign.com

M-Audio

tel. (626) 445-2842; e-mail sales@m-audio.com;
Web www.m-audio.com

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Game of Chance

In this article, I'll describe the approaches taken by several representative algorithmic-composition programs on the PC and explore the various features each offers. (See the "Contact Information" sidebar for a list of the developers' Web sites. You will also find a list of some other software, including programs for the Mac, in the sidebar "More in Store.") Two of the programs in this roundup allow you to tweak parameters in real time and hear the results, while the others require that you configure your settings, then wait for the data-generating process to run. And all of the programs generate MIDI data except one—Rajmil Fischman's AI and Erwin processes WAV files in very unusual ways—while Nyr Sound's Chaosynth can produce MIDI and audio files.

A MUSICAL GENERATOR 3.0

MuSoft's a Musical Generator (aMG; shareware, \$25) is a powerful yet intuitive program that incorporates many of the data-generating techniques of the other programs in this roundup but with some added twists. For starters, you



FIG. 2: Granular synthesis parameters are controlled by probability curves, which are displayed in AI and Erwin's Erwin plug-in.

can apply algorithmic processes to four different musical parameters, which aMG calls Aspects (note selection, duration, Velocity, and note start time), independently. You can also customize all of the algorithms, then see what type of data they will generate by plotting them on a 2-D grid. And because you can interact with the Windows Clipboard, it's easy to import data to or copy it from the program. This allows you to use nearly any source of information to control an Aspect—a spreadsheet, a database, an e-mail to your publisher, or even the lyrics to your latest song.

AMG's algorithms are divided into five categories: 1D Fractals, Dynamic Systems, Complex Maps, Data, and Other. When you pick a category (by selecting its tab at the top of the screen), thumbnails of the processes available from that category appear (see Fig. 1). Click on a process, and its icon shows up in the Data section at the left of the screen. From here simply drag the icon onto the Aspect you want it to control.

To edit a process, double-click on its icon and choose Edit. A window opens in which you can set a high and low range for the algorithm's output, change its color, set its start and end points, and tweak other parameters depending on the algorithm you're working with. For example, if you're working with a fractal image, highlight a small area of the image, and that area will be magnified to fit the entire screen. It will also become the new source of the data that gets applied to the Aspect.

There are algorithms for generating numbers randomly using various types of noise distribution, and you can just as easily generate a linear succession of integers within any range. You can also import a text file from your hard drive directly using the Text Editor (found in the Data group). I converted this article to a text file and used it for the Notes (pitches) parameter of a track—you can hear the first 30 seconds of this effect played by a marimba **EM WEB** in the file articlescore.mp3 **GROUPS** at the EM Web site.

ON TRACK

AMG supports up to 16 voices (version 4.0, in early beta, extends that to 128), each of which is assigned to a track. In addition to a MIDI channel and patch, you can assign each voice a default "style" and scale. There are 50 scales

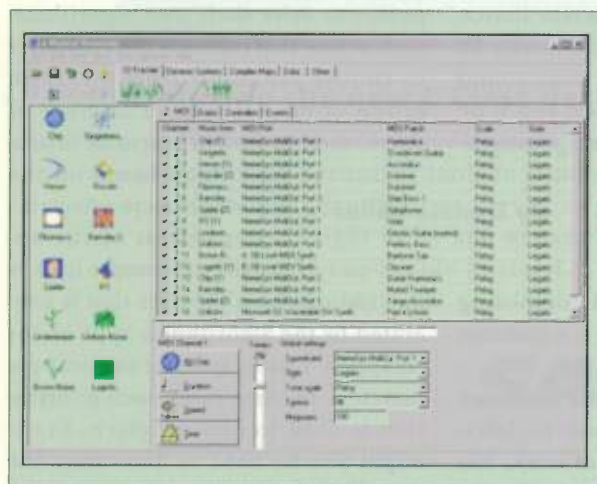


FIG. 1: The algorithms used to generate data for the parameters of a Musical Generator are represented as small icons, shown at the left of the screen. To use a process, drag it onto the parameter (shown bottom center) of your choice.

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D16XD

Game of Chance

to it. More subtle is the Transition Interval parameter; it determines what amount of time (represented as a percentage of a grain's total duration) that a grain will move in a particular direction.

You can introduce a high degree of randomness in the movement of grains by setting a high value for the Maximum Scatter Jitter parameter and set minimum and maximum values to which a grain will be transposed. A user-adjustable 6-stage linear amplitude envelope (accurate to four decimal places) is applied to each individual grain by default, but you can use a number of other preset envelope shapes if you prefer.

When you're done setting parameters, click on OK and Erwin will calculate the distribution curves that control grain-generating parameters. It then displays colorful plots of your control data that cry out for graphical editing (see Fig. 2); but alas, you must return to the previous screens to make any adjustments.

HEARING IS BELIEVING

To hear the new file, press any key, and you are returned to the main screen where you can choose to play all Events or only selected ones. Positioning Events and adjusting their gain and fades is simple, which makes Al and Erwin very useful for mixing tasks. I experienced some problems with the Duration parameter in the Event Properties dialog—Events shrank to an unreadable size when I increased their length. But other than that, the software performed as advertised.

Though it's easy to get good results by using the presets or minor variations thereof, it will take many hours to master and be able to predict the result of some of the more esoteric features. That's not necessarily a bad thing; just be sure to devote an adequate amount of time to exploring the program's many options. Whether you mastered physics in school or not, give Al and Erwin a try.

ARTSONG 5.05

Digital Expressions' ArtSong (\$59.95) offers a vast number of algorithms that

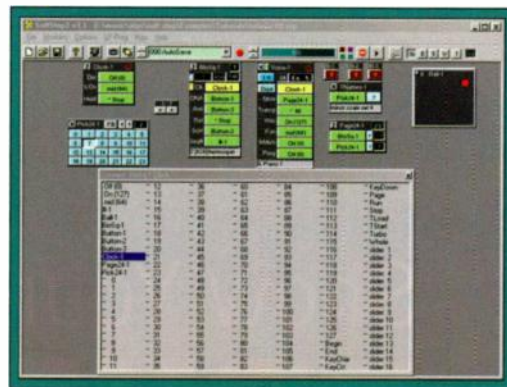


FIG. 6: SoftStep is a powerful toolkit for processing and generating MIDI data and graphics. Its unique Connection screen (shown at bottom center) is used in place of patch cords to connect modules.

can be applied to a variety of musical parameters. The program is laid out somewhat like a sequencer, with tracks and other program elements arranged vertically along the left side of the screen and data arranged on a timeline to the right (see Fig. 3). To generate new music or process existing data, you insert one or more Components into a project—these can be as simple as an arpeggiator with only a few parameters or as complex as a Julia fractal image from which more than a dozen parameters are extracted. You then press the Compose button, and ArtSong will create a composition according to your specifications.

Each of the Components allows you to fine-tune its operation and/or output. You can use pattern generators to create melodic riffs or looping drum tracks or any of the Arrange Components to help control the overall form of your piece. The Arrange category also includes options for generating your music's texture algorithmically. For example, you can determine how many different textures will be used and how often the music will change from one to another. Other Arrange Components allow you to create a process whereby the existence of notes in one track determines whether notes in later tracks are generated. You could use this, for example, to automatically build harmonies from a single-note melody.

The Text Mapper will take a plain

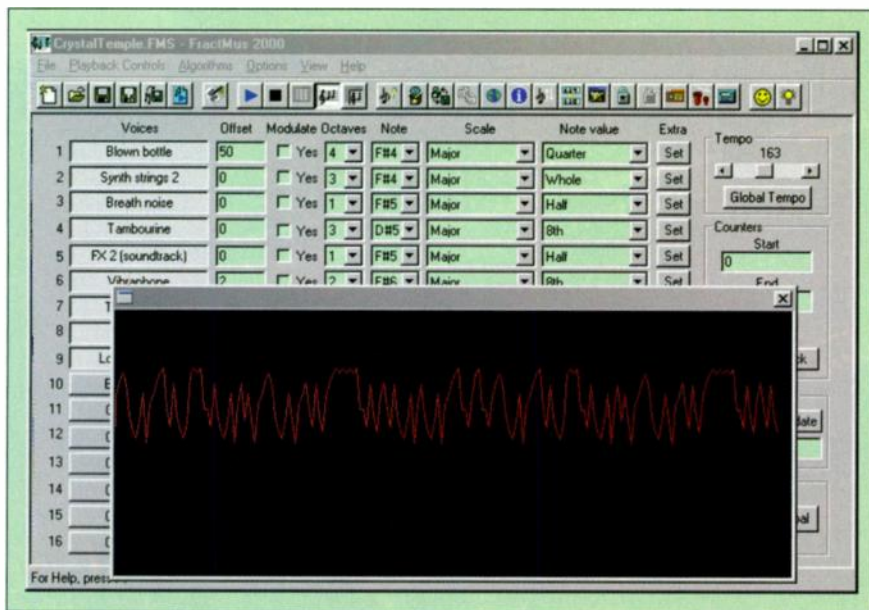


FIG. 5: FractMus 2000 provides a variety of algorithms for controlling the pitch content of any voice. You can visualize the data that will be generated by any of the algorithms, such as the 3n+1 Numbers process shown here.

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Data shuttle and shortcut keys mapped to popular workstation programs.

Model	I/O	Analog Audio Inputs	Hi-Z Option	Analog Audio Outputs	Aux/ inserts	Digital Inputs	Bitz	Midi I/O	Free Software	Controls	EQ
US-428	4-in / 2-out	2 XLR mic, 2 1/4" TRS (bal.), 2 1/4" (unbal.)	YES	2 RCA (unbal.) + headphone	four aux sends	four S/PDIF	24 bit	2 x 16	GigaStudio & Cubasis VST	8 faders ² + stereo master, Aux, Pan, Phones, Line, Jog, Transport, DAW	4-band parametric
US-224	2-in / 2-out	2 XLR mic, 2 1/4" TRS (bal./unbal.)	YUP	2 RCA (unbal.) + headphone	N/A	two S/PDIF	24 bit	1 x 16	GigaStudio & Cubasis VST	4 faders ² + stereo master, Phones, Line, Jog and Transport	N/A
US-122	2-in / 2-out	2 XLR mic, 1/4" TRS (bal./unbal.)	YEAH	2 RCA (unbal.) + headphone	two inserts	N/A	24 bit	1 x 16	GigaStudio & Cubasis VST	2 rotary input level controls, Line, Phones, Direct Monitor	

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Game of Chance

ArtWonk, that expands on these features in dramatic ways.

Like Native Instruments' Reaktor or other modular synth-building toolkits, SoftStep opens as a blank screen onto which you place the various modules that you'll use in your design. Right-click on the screen and you'll see a drop-down menu containing 20 categories, each of which breaks out to many more individual routines (see Fig. 6). There are display elements such as sliders, faders, and knobs to which you can assign a specific range of values; clocks, pattern generators, and random processes; modules that manage and mangle every type of MIDI event imaginable, and much more.

Rather than using "patch cords" to connect the various modules, SoftStep's Connect window displays a list of all the modules currently onscreen, from which you select the source of a hookup. The Connect screen also includes a number of default options, such as MIDI controller numbers, the values 0 through 127 (which you can use as constants), On and Off, and a list of sliders.

Speaking of sliders, there are 9 modules that offer from 4 to 128 sliders each. You can set the positions of the sliders manually or use the handy Fill feature to assign values to the sliders in a vast number of ways. You can generate values using several different random distributions; invert, normalize, scale, and reverse existing slider data; quantize the sliders to a variety of major and minor scales; and more. You can also restrict values to a high and low range and store up to five different slider configurations.

ON THE BALL

Among the most unusual data-generating modules is SoftStep's Bouncing Ball. The interface for this module is an animated ball, and when the ball hits the side of its frame, a trigger is

sent out. The trigger can be used by any other module that is loaded; for example, it could initiate a program change in one module and generate a MIDI note in another. You can resize the frame to slow the time between successive triggers or "process" the Ball's output with a Ball Control module, where both its duration and output value can be manipulated.

More traditional modules include a variety of clocks (Free Run, Arpeggio, Stepper, and the like), math and logic functions, a large number of random-data generators and processors, and modules to read in data from external sources. Matrix modules, found in the Sequencer category, are especially useful for generating data. In addition to assigning values to the various rows of knobs manually and using the Fill feature, you can use the Matrix modules to generate numbers using cellular automata. You can also create your own function generators using the User Controlled Functions feature.

Be careful, as there is no Undo command for many operations—inserting a new module, for example. But that's one of the few missing features in this massively powerful program. And though building simple processes is mainly an intuitive endeavor, there's lots of support in the form of tutorials and electronic documentation to take you to more advanced levels.

MAKE IT YOUR OWN

Algorithmic composition is a fascinating field that can generate an unlimited amount of musical material. But using one of these programs is no guarantee that you'll come up with hours of great music. Rather, in some cases, you'll have to dig in and learn how to control the features of these programs just so you'll have a clue as to what kind of music will result. But take the plunge and try one or more programs and see if you can't make it work for you. Take a chance—what do you have to lose?

EM associate editor Dennis Miller has decided to let his computer write his next symphony. Check back in a few minutes to hear the results!

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- stereo record out*
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* balanced/unbalanced operation



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XP and Audio

Microsoft's Windows XP offers a lot to desktop musicians.

By Daniel Keller

It seems like only yesterday that Microsoft rolled out Windows XP, with the requisite hype, to an understandably skeptical public. For many people, XP appeared to be little more than the latest in a seemingly endless procession of face-lifts (beginning with Windows 95) that were more marketing than substance. For audio users in particular, the Windows operating system had yet to address the core-level issues of stability and performance that

had long kept the PC out of the professional arena.

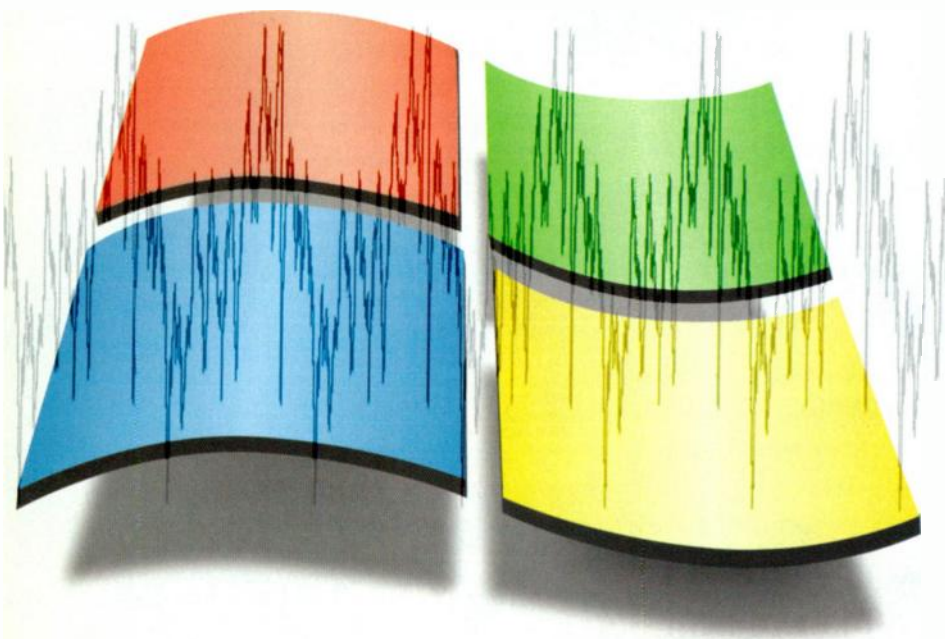
But this time Microsoft had the good sense to rebuild Windows at the core level, based on something different—something that worked. Microsoft's own NT kernel, proven in business-critical applications, had been “married” to a user-friendly Windows-style GUI (graphical user interface), and thus reengineered for public consumption.

The release of XP is good news for all Windows users, from Web-surfing gamers to business professionals. But it is exceptionally beneficial to anyone involved in digital multimedia. Windows XP, and the evolution of hardware and software built to take advantage of its features, has had a dramatic impact on the PC's role in professional media production. For many, the Windows platform can now hold its own against the Mac, and the PC is popping up more frequently in what were once Mac-dominated fields.

WHAT'S THE DIFFERENCE?

The original Windows was created when Microsoft grafted a GUI onto its text-based DOS (Disk Operating System). And while Windows has certainly evolved over the past decade, the core of the operating system has remained

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FIG. 1: Right-click on the desktop to get to XP's Display Properties dialog.

that if one program causes problems, it no longer takes down the entire system.

Another aspect of Windows 98 that won't be missed is that of system-resource limits. With XP, your computer's resources are no longer allocated 64 KB at a time, meaning that multiple open programs no longer fight for available resources. Although running too many programs at once might bog down the pace a bit, those fatal-exceptions errors and blue screens of death occur far less often than with Windows 98.

SOUNDS GOOD

For many desktop musicians, XP's improved stability is its most appealing aspect. While Windows' native WDM (Win32 Driver Model) audio protocol does work on earlier versions, its performance under XP is much better. WDM provides kernel-level support for multiple channels of audio with audio mixing and resampling through a component called the KMixer. WDM- and ASIO-based hardware can deliver lower latency under higher CPU loads than previous versions of Windows, so with XP you're less likely to experience dropouts or crashes, even when running multiple tracks with lots of plug-ins. XP has also shown greatly improved MIDI timing.

Moreover, XP offers built-in support for a wider assortment of devices, making the search for drivers a bit easier. CD burning is supported directly

through the OS, rather than requiring third-party programs. Simply dragging files to your CD burner's drive icon opens XP's CD-writing dialog, which supports the most common audio, data, and mixed-media formats.

XP OR 2000?

Although Windows 2000 was marketed mainly toward business users, some savvy musicians were among its early adopters. A few users still prefer 2000 to XP, based on the premise that 2000 is a more mature operating system with fewer unresolved issues. It's true that early versions of XP reported problems with ACPI (Advanced Configuration and Power Interface) and other issues; as with any new operating system, updates and bug fixes have been a matter of course.

But overall, XP offers many advantages over Windows 2000. XP includes native support for a far wider array of motherboards, devices, and expansion cards. It raises the maximum number of WDM audio and MIDI devices from the 10 imposed by Windows 2000 to a more realistic 32. In addition, XP's power management under ACPI is now vastly improved from that of Windows 2000.

Furthermore, because Windows 2000's interface was designed for professional users, it requires more computer savvy to change settings. The bottom line is that while either OS will offer more stability than Windows 95 or 98, Windows 2000 has little real advantage over XP for most audio users.

MAKING THE SWITCH

If you're still running a Windows 98- or ME-based system, chances are good that there will be a change in your future. Microsoft will soon stop supporting versions older than Windows 2000, and the major audio-software companies have already begun to follow suit. Unless you plan never to upgrade your DAW again, you'll have to make the move sooner or later. Assuming that your hardware is up to the task (see the sidebar "Movin' on Up"), here are a few tips and tricks for making the switch.

Keep it fresh. While you can upgrade any Windows 98 version to XP, a fresh

install on a hard drive that's been wiped clean is generally the best insurance against potential problems. Leftover Registry items and other orphaned legacy files can lurk in your system for months, only to cause conflicts with a newly installed program or driver at a later date. Unless you're upgrading from Windows 2000, a fresh install is your best bet.

Home or professional. If you're running a dedicated audio machine, you'll have little need for the networking and server-security features of XP Professional. Even if your computer is more of an all-purpose machine, the Home edition can handle a small home network and Web-surfing chores. The Home edition doesn't support multiple processors, though, so you'll need to opt for XP Professional if you'll be running a dual-processor machine.

FAT32 or NTFS. FAT32 (File Allocation Table) is the native file system for Windows 98, while Windows XP and 2000 use NTFS (New Technology File System). Both have their advantages and detriments, and your choice of one over the other depends largely on your usage and compatibility needs. NTFS can handle much larger files and is less prone to data corruption. It's also more secure in a networked environment. And if you do any work with Mac OS-based Sound Designer II files, NTFS can read the resource fork and time-stamp information when importing those files.

Keep in mind that once you partition a

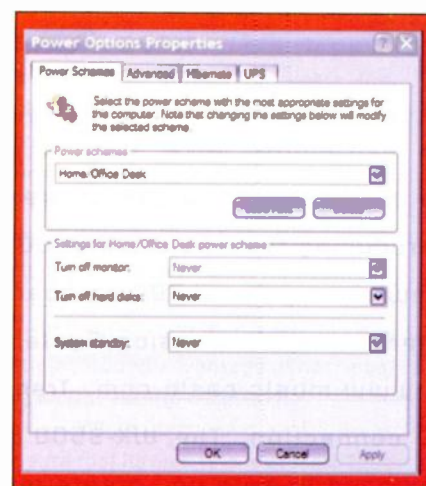


FIG. 2: Unless you're running a laptop on batteries, it's best to disable XP's power-saving options.



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drive using NTFS, a system running Windows 98 cannot mount that drive. If you have data on an external drive (USB, for example) and need to move it between two computers running different operating systems, you're best off sticking with FAT32. However, third-party utilities such as PowerQuest's PartitionMagic (www.powerquest.com) allow you to convert existing partitions without losing any data and provide other file-system management tools as well.

Don't interrupt. Under most circumstances, XP manages IRQs very efficiently, particularly in ACPI mode. Contrary to some claims, ACPI does not assign all devices to IRQ 9; rather, it uses IRQ 9 for IRQ Steering (thus giving the impression that all devices are on that interrupt). While common wisdom in XP's early days was to opt for Standard PC mode over ACPI, most newer hardware seems to prefer ACPI. In fact, in some cases disabling ACPI

can cause greater problems, particularly with laptops. Unless you've exhausted all normal adjustments, it's generally best to let ACPI do its thing.

If you do suspect IRQ issues, a better solution can sometimes be to disable an unused resource. For example, disabling a COM or USB port that isn't in use will free up an IRQ.

Driver signs. Another issue that often arises is that of driver signing. When installing a new device, XP frequently pops up an "urgent" message warning you that the drivers you are installing have not been certified. All that indicates is that the manufacturer hasn't paid Microsoft's licensing fee to obtain its blessing or the use of its logo yet. In most cases, the drivers are safe to install; when in doubt, contact the manufacturer.

Current affairs. Microsoft has issued a number of updates and fixes since XP's release. Some of them (included in Service Pack 1) address critical known issues such as audio stuttering and dropouts, so it's important to check Microsoft's Web site for updates.


FINE-TUNING

Given the problematic nature of Windows 95 and 98, fine-tuning your system was an essential requirement if you wanted decent audio performance. Indeed, the science of tweaking Windows to improve its audio handling has evolved into an electronic black art, with nearly as many opinions being offered as people offering them. Although XP is far from flawless, there are generally fewer adjustments needed to coax good performance from it. Here are a few worth noting.

Get graphic. Microsoft has always put a priority on snazzy visuals over performance, and XP is no exception. Three-dimensional menus that dissolve, paisley desktops, and aquarium screen savers may be cute, but they suck resources from your audio. Fortunately, it's pretty simple to disable those features.

Begin by eliminating the background image. Right-click on your desktop and select Properties. Click on the Desktop tab and select None in the Background field in the Display Properties dialog box (see Fig. 1).


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Next, select the Screen Saver tab. Because screen savers always seem to kick in when you least want them to, the best choice is None. On the same page, click on the Power button. In most cases, it's best to set all the energy-saving functions to Always On and set Hibernate mode to Never. It's also a good idea to deactivate the power-down function for your hard drive. Starting and stopping the drive typically contributes more to hard-drive wear than does running the drive continuously. Disable any options that slow down the CPU when it's unused. Those settings may be useful for laptops running on battery power, but they offer no benefit to an AC-powered computer (see Fig. 2).

Finally, select the Appearance tab, click on the Effects button, and disable Use Transition Effects. Now click on Apply to save your changes.

Windows sounds. It's a good idea to kill the Windows sound scheme. Those low-resolution sounds can interfere with

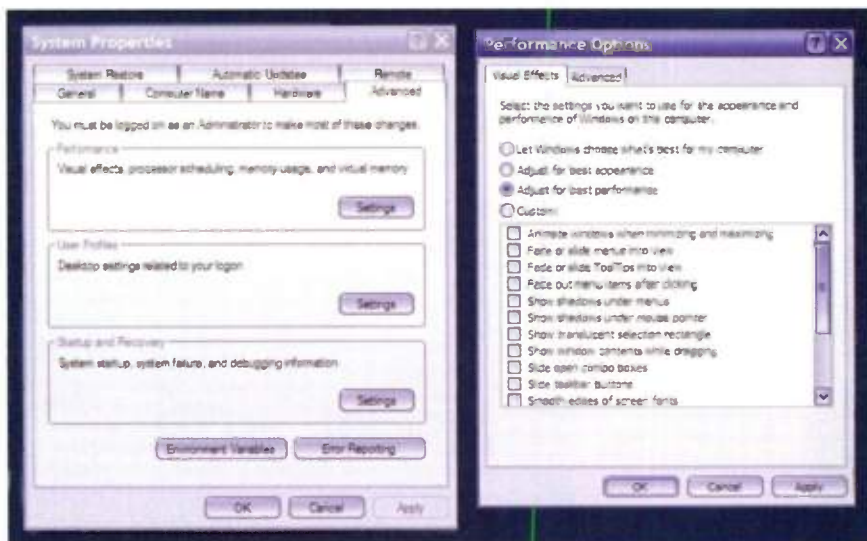


FIG. 3: Do without the techno look and disable XP's animated menus and 3-D graphics.

audio performance by temporarily causing your audio application to lose sync with your audio hardware. Select Sounds and Audio Device in the Control Panel and switch to the Sounds tab. Choose

the No Sounds option and click on OK.

Performance settings. Open the Control Panel, select System, and click on the Advanced tab. Click on the Performance Settings button and select the



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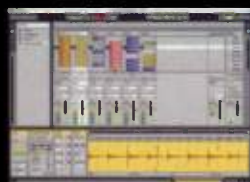


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related to poor posture rather than your keyboard technique. *Trigger points* are hypersensitive areas in a muscle or muscle fascia that can cause irritability to surrounding nerves. A trigger point in your shoulder may manifest itself as wrist pain. Trigger points are activated just the way RSI is—through overuse, fatigue, direct trauma, and chilling. Treating these trigger points through massage therapy or chiropractic care may alleviate the symptoms.

EARLY INTERVENTION

A balanced mix of playing, using the computer, doing alternative activities, and resting frequently can all help you avoid the debilitating RSI specter. Here are some other general tips.

Because RSI is caused by many repeated small movements, give your affected body parts something different to do. Put them through larger ranges of motion. Do stretches and other exercises that move them counter to the routine of playing, keyboarding, and mousing. Consider making regular, vigorous exercise, such as taking a power walk, part of your plan, too.

Treat the affected area to some deep massage. Don't just rub gently; really get in there and palpitate the area aggressively. Consider regular deep-tissue massages with a qualified massage therapist as a preventative and prescriptive therapy for RSI. Also, tai chi, yoga, and dance are great exercises for preventing and relieving RSI.

Pain can also be treated through al-

ternative methods, specifically acupuncture and acupressure. The Chinese have embraced those two treatments for more than 5,000 years. Acupuncture and acupressure are based on the belief that *qi* (pronounced "chee") is the vital life energy force that flows through the body on paths called *meridians*. When the *qi* flow is blocked or restricted, illness results. Acupuncture uses fine needles inserted into specific points on the body to relieve blockages and stimulate *qi* flow. Acupressure uses massage on those same pressure points. Both treatments stimulate the nervous system and release endorphins, which are our own natural pain killers. Regular chiropractic care can also help stave off RSI by relieving pressure on your joints.

In general, your body is more susceptible to injuries when it is chilled, so keep your room warm. Be sure that your fingers, hands, wrists, arms, and shoulders are warm. My basement project studio can often get rather cold, so I've invested in a space heater to keep me comfortable during the Chicago winters.

The human body is made up primarily of water, so make sure to keep yourself hydrated. Caffeinated drinks and alcohol dehydrate you, which stresses your system in general. Reach for a glass of water instead, and have several glasses a day.

Other activities, such as participating in certain sports or hobbies, can aggravate RSI. If your idea of fun after hours of playing and computing is to spend several more hours playing video games, you put yourself at greater risk for developing RSI.

For immediate relief when RSI symptoms flare up, consider using ice and heat therapy. To relieve swelling, apply an ice pack (with a moist towel between it and your skin) to the affected area for no more than 15 minutes. For pain relief, use moist heat for



FIG. 3: Computer control devices, such as the Contour ShuttlePro 2 shown here, can help alleviate strain in the nonmousing hand by giving it something to do other than sit on the keyboard.

no more than 15 minutes. If you feel worse after using heat, try the ice therapy. You can also alternate cold and warm (one immediately after the other) to stimulate blood flow through the affected area.

Keep a log of your activities and symptoms so that you can find any correlations and learn your limitations. You'll discover how long it takes when playing or using the computer before you start to feel some discomfort. Once you know your limit, stop a few minutes before that time.

It is also important to take breaks. For maximum benefit, take shorter, more frequent breaks. Be sure to stop what you're doing for at least five minutes of every hour. Really relax during your time off, and give your fingers, wrists, arms, shoulder, and back a much deserved respite. Additionally, perform some mild stretching exercises that work RSI-susceptible muscles and tendons contrary to your playing/working positions. Refresh yourself with some

DO YOU HEAR WHAT I HEAR?

Don't forget to take care of your ears. While Messrs. Fletcher and Munson tell us that 85 to 90 dB is the ideal listening level for making critical sound judgments—it's the level at which the ear's frequency response is most flat—those excessive sound levels can cause damage over time. Protect your ears from prolonged exposure to loud levels by turning your monitors down most of the time and taking frequent rests when in extended mixing sessions. Get more information at Hearing Education and Awareness for Rockers (HEAR) at www.hearnet.com.

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REVIEWS

K O R G
MICROKORG

Bite-size behemoth.

By David Battino

Playing the MicroKorg, I'm reminded of those clever Bose speaker demonstrations in stereo stores: after blaring some impressive full-range music, the demonstrator slyly pulls the grilles off what look like two enormous speakers at the front of the showroom, revealing the impossibly small speakers behind them. But whereas the Bose system needs a hidden subwoofer to work its magic, the thunderous MicroKorg fits comfortably on your lap or desktop. It even runs on batteries.

Somehow, Korg has packed most of the features of its beefy-sounding MS2000 analog-modeling synthesizer into an instrument about the size of two issues of this magazine laid end to end. (For more information about the MS2000, see EM's review of the Korg MS2000R in the August 2000 issue and the August 2002 cover story, "Analog Supermodels," both online at www.emusician.com.) To further sweeten the deal, the MicroKorg adds a vocoder

innovation called Formant Hold, an improved arpeggiator, and a condenser microphone. What's more, it costs \$650 less than the MS2000.

Shrinking the size and price required some compromises to the MicroKorg's physical layout, however. During the several months I spent with the instrument, I was continually impressed by its



FIG. 1: The MicroKorg delivers the enormous sound of Korg's MS2000 in a lightweight, battery-powered box less than 21 inches wide. Its five control knobs work with two 11-step selector knobs to adjust nearly 200 parameters.

86

Korg MicroKorg

96

Native Instruments Vokator (Mac/Win)

102

Drawmer Tube Station 1

106

Applied Acoustics Tassman 3.02 (Mac/Win)

112

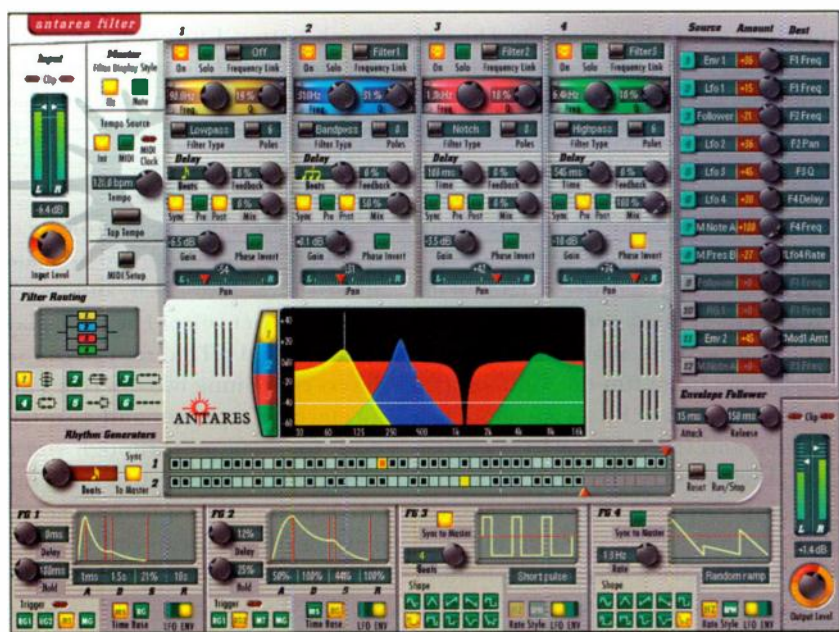
Sonic Implants *Symphonic String Collection*

116

Quick Picks: Audio-Technica AE2500; Steinberg Groove Agent (Mac/Win); Blue Sky ProDesk 2.1; The Sound Guy SFXMachine RT (Mac/Win); M-Audio Sonica Theater; Big Fish Audio *Tower of Funk* by David Garibaldi

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Antares's new Filter plug-in gives you everything you need to shape your tracks with surgical precision or animate them with an almost limitless variety of tempo-synced rhythmic effects.

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FEETS, GIT MOVIN'

To really get you dancing, Filter includes two drum-machine style Rhythm Generators for loop-based grooves or complex polyrhythms. And to make sure everybody stays in step, every time-based parameter—from tempos, to delay times to envelope rates—can be locked to Filter's internal master tempo or your host's MIDI clock.

Filter will be available for RTAS (Mac+PC), VST (Mac+PC), MAS and DirectX. Check it out at your local Antares dealer or drop by our web site to download a fully functional demo.

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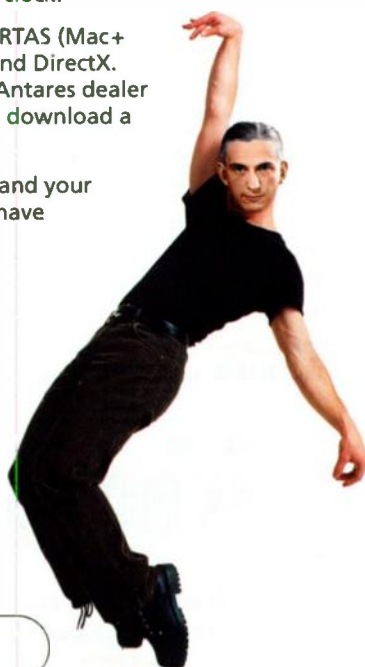
A DANCING SURGEON?

CONTROL FREQ

Since filters sound the coolest when they're whizzing around, we've given Filter a modulation section that would make many a full-blown synthesizer jealous. Pretty much everything that matters can be modulated. Control sources include four multi-shape LFOs, four Envelope Generators with delay and hold times, two Rhythm Generators, an envelope follower and a slew of MIDI controllers. All routed through a Mod Matrix with more than enough patches to get yourself into serious trouble.



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World Radio History

sound and its programming flexibility but was often frustrated by its user interface. The MicroKorg delivers extreme portability and sonic punch for a bargain price, but is it for you? Read on.

CASE THE MUSIC

In a strange collision of futuristic and retro design, the MicroKorg's case combines a gold-flake plastic body and real wooden side panels with 14 light-up buttons and 8 Minimoog-style knobs (see Fig. 1). Above the pitch and mod wheels are two clever octave-shift buttons. With each successive press, the illuminated buttons change from off to green to yellow to red, so you can tell at a glance how far the keyboard is transposed.

The MicroKorg's back panel offers some unexpected interfacing capabilities (see Fig. 2). You get MIDI In, Out, and Thru; two unbalanced 1/4-inch audio outputs; and a 1/4-inch stereo headphone jack, as well as two audio input channels with trim pots. The first input channel provides both 1/4-inch and 1/8-inch jacks, which you can switch between mic and line level; only one of those jacks can be active at a time. The included gooseneck condenser microphone slides neatly into a slot in the back panel and plugs into the 1/4-inch input. The mic signal can either feed the vocoder's analysis (modulator) input or replace oscillator 1 in a synthesizer Timbre (more on this in a moment).

The second input channel has a single 1/4-inch line-level jack. It can either feed the vocoder's carrier input or, again, replace oscillator 1 in a synthesizer Timbre. In Synthesizer mode, you can use both input channels at the same time (they're summed to mono), controlling the balance with a knob or MIDI. I seriously warped a drum groove by running a sample loop through the synth engine and changing parameters in real time.



Two tricolor LEDs on the front panel show the signal strength at the inputs.

The MicroKorg doesn't have a sustain pedal jack, but with its limited polyphony, there's not a lot to sustain. The jack would have been handy when using the MicroKorg as a MIDI controller, though. The bottom of the case has a hatch for six AA batteries. I got about three hours of continuous operation from NiMH rechargeables before the display started flashing like an online banner ad.

The keyboard has three octaves of unweighted, Velocity-sensitive minikeys. The white keys are about three-fifths the length and four-fifths the width of standard keys; the black keys are about half as long and four-fifths as wide as standard keys. Although I enjoyed being able to reach extended chord voicings, the key action is annoyingly stiff and shallow, and the black keys are much stiffer than the white ones. Perhaps that's because their 1.75-inch length reduces leverage, but their unusual feel makes it difficult to play accurately (the arpeggiator compensates for that somewhat).

As a keyboardist, I initially found the MicroKorg's toylike keys to be a major drawback, but then I made a startling discovery: only a handful of the 128 factory presets have Velocity enabled. After turning on Velocity-sensitivity in the Virtual Patch section, I was able to play the instrument much more expressively. Because nonkeyboardists—a large part of the market for a groove tool such as the MicroKorg—are often confused by the apparently inconsistent response of touch-sensitive keys, omitting Velocity response is perhaps understandable, but it makes more work for experienced players, who will probably want to program it back in.

It may seem unfair to criticize a highly portable 4-voice instrument for having awkward keys, because it's likely that few people will use the MicroKorg as

their only keyboard, and many will use MIDI to trigger it from a full-size keyboard. However, a little less miniaturization would have made the MicroKorg much better. I would have preferred two octaves of full-size keys to three octaves of tiny ones, even if that had increased the instrument's size and price.

BIG ON FEATURES

Like the MS2000, the MicroKorg offers 4-note polyphony with two oscillators, a noise source, two LFOs, and two ADSR envelopes per voice. The basic playable unit is called a Timbre. You can set up layers containing two discrete Timbres (a staccato arpeggio and a sustaining pad, for example), though you can't play the Timbres individually on two MIDI channels or split them across the keyboard as you can on the MS2000. The single or layered Timbres feed a single effects chain containing a modulation effect, delay, and 2-band EQ. You can also add mild distortion, but it's not adjustable.

In vocoder mode, there's just one oscillator—the carrier—and layering is disabled, as are four flexible modulation routings Korg calls Virtual Patches. In their place, you have access to several useful vocoder parameters. Unlike most modeled (or real) analog synths, the MicroKorg provides 71 oscillator waveforms, not just the standard sine, sawtooth, and square.

Tempo synchronization is one of the MicroKorg's strong points. You can lock the LFOs and delay to the internal arpeggiator or MIDI Clock, with various rhythmic subdivisions. As with some groove boxes, you can use illuminated buttons to mute and unmute individual steps in an arpeggio as the pattern plays—a feature the MS2000 lacks.

KNOB STORY

In Performance mode, the five knobs on the front panel's top right adjust filter cutoff frequency, resonance, envelope attack and release times, and internal tempo. All five knobs transmit MIDI Control Changes. (On layered Programs, they affect only the currently selected

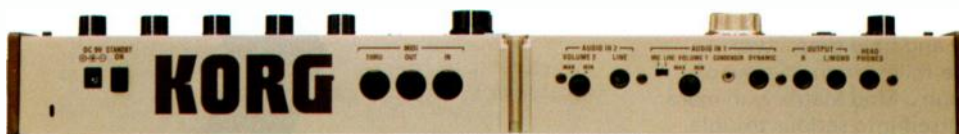


FIG. 2: The MicroKorg's back panel provides audio inputs to the onboard vocoder's carrier and modulator sections. You can also route external audio through the synthesizer's filters, envelopes, and effects.

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M U S I C I A N S F I R S T

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IK MULTIMEDIA

Timbre. Pressing the nearby Timbre Select button toggles between Timbres 1 and 2.) I wish the display switched briefly to show the new value when you turn the Performance knobs. To see the tempo, for example, you have to enter Edit mode.

Turning either of the two big Edit Select knobs in the center of the panel puts the MicroKorg in Edit mode, mapping the five Performance knobs to the parameters listed in the 22-row table below them in 2 mm high type. Beige listings are for Synthesizer-mode parameters; green listings are for Vocoder mode. The detented Edit Select knobs snap solidly into place—a dramatic contrast with the flimsy-feeling Performance knobs. On my review unit, several Performance knobs wiggled like loose teeth.

As you learn the locations of your favorite parameters in the table, editing becomes much faster. If you want to adjust the mod wheel's vibrato response, for instance, you can turn the upper Edit Select knob to eight o'clock (Pitch) and then twirl Performance knob 5 (Vibrato Int). It would be much easier if an LED were next to each row of parameter listings so you could avoid scanning all 11 row headings to find the one that matches the current Edit Select knob setting. The hardest part is making sense of the display, which attempts to create words out of seven-segment LEDs (eight if you count the decimal). A positive-only square wave is identified as 59.2, for example, which looks like Sq.2 if you squint. (Korg points out that it isn't the only company pinching that particular penny.)

Although editing from the MicroKorg's front panel sometimes feels like trying to draw a perfect circle on an Etch A Sketch, two hidden tricks make it easier. One is to use the numerous shortcuts you access by pressing the Shift button and then any other button. (Annoyingly, though, none of those functions are labeled.) The second trick is to press the currently lit Program Number button, which temporarily reverts the Performance knobs to their normal functions without erasing your other edits. For the easiest tweaking, download the free MicroKorg

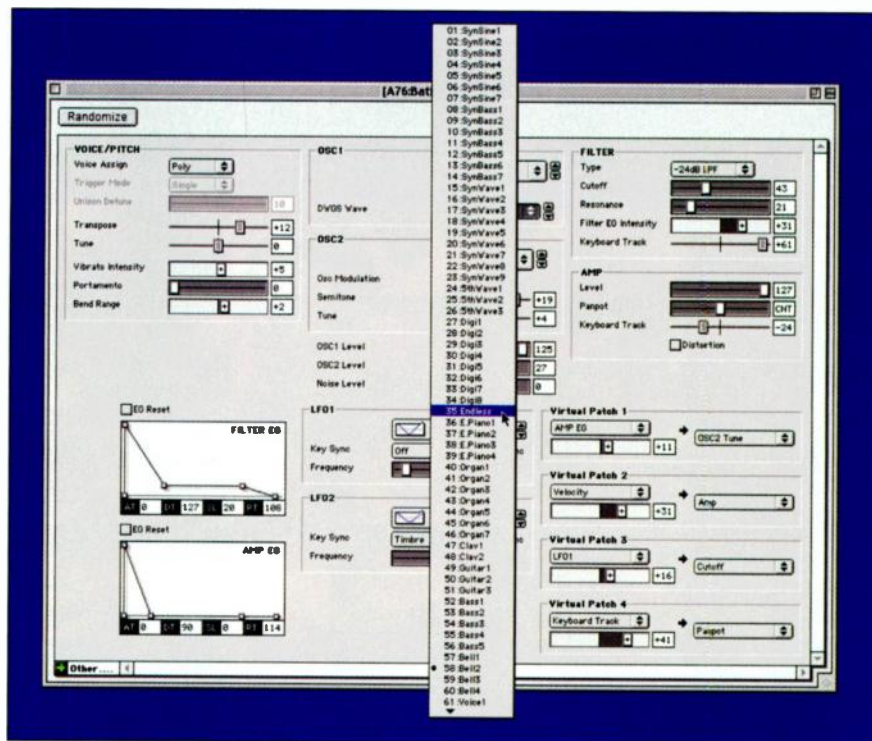


FIG. 3: Korg's free patch editor-librarian (Mac/Win) lets you make sonic adjustments in real time and name your patches (though the MicroKorg can't display the names). The Mac version has a randomization feature.

editor-librarian software from Korg's Web site (see Fig. 3).

SYNTH YOU'RE HERE

Because **EM** has previously covered the nearly identical MS2000 synthesizer engine in detail, I'll concentrate on the differences while highlighting some features that impressed me. The main feature missing from the MicroKorg is the MS2000's slick Mod Sequencer, which automates playback of performance changes. The MicroKorg has 8 vocoder bands instead of the MS2000's 16, but it adds the Formant Hold and arpeggiator step-muting features. However, the two instruments are conversant; I was able to load MS2000 patches I found on the Web into the MicroKorg, and the MS2000 loads MicroKorg patches. Each instrument simply ignores features it doesn't support.

The first thing that struck me about the MicroKorg was what a huge sound it makes with only two oscillators. Unison mode and the onboard chorus thicken things considerably. Just dial up Program B28, NRG Stab, to see what I

mean. Depending on the original waveform, an oscillator parameter called Control 1 warps the waveshape in six different ways—from varying pulse width to adding FM—and it can be modulated by knob, LFO, envelope, or any other source in the Virtual Patch section to produce animated timbres. (From looking at the front panel, you'd never guess that it does that, but I've provided some examples **EMWEB CLIPS** online.) You can also set oscillator 1 to play a perfect fifth, generating lush chords despite the 4-note polyphony.

I was disappointed that you can't modulate envelope attack time with Velocity, which can make leads and brass patches more expressive; nor can the MicroKorg generate long, synchronized sweeps, because its LFO rate maxes out at one bar. On the plus side, the MicroKorg has an interpolating delay effect. On many synths, if you change the delay time as you play, you'll hear clicks, whereas the MicroKorg morphs the echoes to produce cool tape-scrubbing effects. You can hear this sound at the end of the MP3 demo Vocoder on Korg's site.



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A big knob selects from eight Program banks labeled Trance, Techno/House, Electronica, D'n'B/Breaks, HipHop/Vintage, Retro, S.E./Hit, and Vocoder. (S.E. stands for Sound Effect.) Pressing the adjacent Bank Side button toggles between the A and B subbanks, each holding eight Programs, for a total of 128 memory locations. It's odd that Korg put genre names on the panel when all the Program locations are user-rewritable (you can store a vocoder Program in any bank, for example), but perhaps that makes the MicroKorg more intuitive to prospective buyers.

To call up a specific Program, you turn the big knob, press the Bank Side button if necessary, and then press one of the eight Program Number buttons. The button will light up and the three-digit LED display will indicate the current Program number, from A11 (Trance Program A1) to B88 (Vocoder Program B8). The factory sounds are impressive, though many seem designed mainly to show off the arpeggiator. Still, the MicroKorg offers a big helping of truly seismic basses, cutting leads, some gorgeous pads, and even a few usable organ sounds.

DARTH VOCODER

The MicroKorg's vocoder is amazingly flexible. It has dozens of parameters, and I experimented with them all using the included condenser mic, an external dynamic mic, and various line-level signals. No matter what I did, however, I got a decidedly fuzzy sound. With just eight bands, the vocoder isn't the smoothest or most intelligible, but it has an appealing retro quality. Getting a consistent level while vocalizing takes practice—several players recommend inserting a compressor—but once you get the hang of it, you can shape notes very expressively. In fact, if you reduce the level of the direct signal, you can blithely sing off-key without affecting the pitch of the output.

Pressing the Formant Hold button while vocalizing "locks in" the current sound of the vocoder, effectively creating a single-cycle oscillator waveform so you can play subsequent notes with-

out additional audio input. Formant Hold is a snapshot of the vocoder's filter settings, providing an easy way to make raspy, Mellotron-like tones. You can include Formant Hold data when you save a Program. The only downside is that you give up almost all modulation options when you use the vocoder—even Velocity.

Although the MicroKorg's arpeggiator has the same six basic patterns as the MS2000, there's a bonus: when you turn the lower Edit Select knob to Arpeg.A or Arpeg.B, the eight Program Number buttons become mutes for the first eight steps of the pattern. If you hold a four-note chord with the Up

pattern engaged, the first note will always hit on steps 1 and 5. But with patterns or chords that don't divide evenly into eight parts, the mutes will affect different notes each time through the arpeggio. Furthermore, you can limit the step count to any number between one and eight. I made a wind-chime sound and triggered five black keys with a seven-step random arpeggio, producing *hours* of unique patterns. Adjustable gate-time and swing add to the variety.

IN A CLASS BY ITSELF

The MicroKorg defies categorization. Viewed as a toy, it's fun, powerful, and

MicroKorg Specifications

Sound Engine	analog-synthesis modeling, PCM-waveform playback
Audio Inputs	(1) unbalanced 1/4" line (oscillator 1/carrier); (1) unbalanced 1/4" mic/line (oscillator 1/modulator); (1) unbalanced 1/4" mic/line with 5 VDC power
Audio Outputs	(2) unbalanced 1/4" TS; (1) 1/4" stereo headphone
Keyboard	37 Velocity-sensitive minikeys
Polyphony	(4) notes in Poly mode; (2) notes in Layer mode
Multitimbral Parts	1 (layered timbres share a MIDI channel)
Program Memory	(128) RAM locations
Oscillators	(2) plus noise and external input
Oscillator Waveforms	oscillator 1: saw, square, triangle, sine, vox, noise, (64) DWGS waveforms; oscillator 2: saw, square, triangle
Filters	resonant 2-pole lowpass; 4-pole lowpass, bandpass, and highpass
Envelopes	(2) ADSR, assignable to amplitude, filter cutoff, pitch, oscillator 1 waveform modulation, oscillator 2 detuning, noise level, panning, and LFO 2 level; switchable retriggering
LFOs	(2) with tempo sync (whole-note to 32nd-note resolution); five waveforms
Effects	delay (3 types), chorus/flanger, phaser, 2-band shelving EQ, switchable distortion
Vocoder	(16) channels grouped as (8) stereo pairs; each pair has adjustable panning, level, frequency, and resonance
Arpeggiator	(6) types; (8) step mutes; adjustable gate and swing; quarter-note to 16th-note triplet resolution; 20–300 bpm or external sync
Controllers	(5) knobs; (8) arpeggio mute buttons; pitch wheel; mod wheel
MIDI	In, Out, Thru
Power	9 VDC AC adapter (included) or (6) AA batteries
Dimensions	20.6" (W) × 2.8" (H) × 9.1" (D)
Weight	4.9 lb. (without batteries and mic)

great-sounding. Viewed as a sound module and vocoder, it's inexpensive, flexible—and great-sounding. Viewed as a standalone instrument, the MicroKorg is still inexpensive, but it's compromised by a clumsy keyboard and a cramped display. That said, no other keyboard instrument delivers the MicroKorg's killer sound in a package that weighs less than five pounds and runs on batteries.

In the end, it comes down to portability. The MicroKorg is ideal for generating analog sound effects, vocoded pads, synchronized arpeggios, and simple riffs and bass lines on the go. For more traditional keyboard duties such as playing electric piano, Clavinet, and organ, you're probably better off with a more expensive (and more expressive) instrument.

For studio use, most members of the Korg users' groups on Yahoo seem to prefer spending the extra \$100 for a rackmount MS2000R or a used MS2000 keyboard, because the 2000s offer many more knobs, a bigger display, and the powerful Mod Sequencer. (Korg recently announced a repainted MS2000

called the MS2000B. Other than a new finish and set of patches, the only apparent difference is the included microphone, which has obviously been a hit on the MicroKorg.) Those instruments lack the MicroKorg's unlimited portability, however.

It's easy to slip into critic mode and forget that making music is supposed to be fun. The MicroKorg is frustrating if you expect to play and program it like a full-size keyboard synthesizer,

but as a portable, creative gadget, it stands alone. If you can justify spending \$500 on a terrific-sounding musical toy (and I use that word in a very positive sense), you won't go wrong with the MicroKorg.

David Battino is hard at work on *Crank It Up to 1*, a book about digital music production based on interviews with groundbreaking artists, producers, and visionaries. More at www.crankitupto1.com.

PRODUCT SUMMARY

Korg

MicroKorg

analog-modeling synthesizer

\$499

FEATURES	3.5
EASE OF USE	2.5
QUALITY OF SOUNDS	4.0
VALUE	4.0

RATING PRODUCTS FROM 1 TO 5

PROS: Low price. Huge sound. Compact and lightweight. Can run on batteries. Free patch editor-librarian. Numerous waveforms. Formant sampling. Includes mic. High fun factor.

CONS: Stiff, tiny keys. Crude display. Flimsy knobs. Four-note polyphony. Fiddly editing. Few factory patches use Velocity. Unlabeled Shift functions.

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DBX 166XL \$249⁹⁹

DBX Digital Vocal Strip \$299⁹⁹

Roland XV5050 \$795⁹⁹

DIGITAL RECORDING



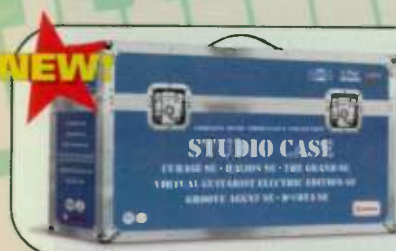
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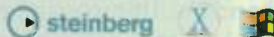
Boss BR1180
\$745⁹⁹ List: \$895.00



Korg PXR4
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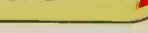
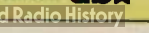
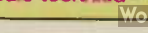
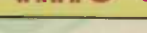
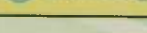
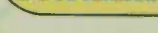
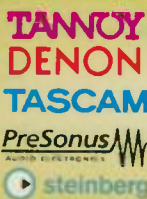
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DRAWMER

TUBE STATION 1

A solid-state channel strip with a tube attitude.

By Myles Boisen

Drawmer, a respected British manufacturer of midpriced pro gear, is reaching out to the personal-studio and gigging musician with its Tube Station 1 (TS1). The processor combines a Class-A mic preamp, a high-impedance instrument preamp, a stereo compressor, a tube circuit for coloration, a highpass filter, and an optional 24-bit, 96 kHz A/D converter. The TS1 can be used as a single-channel voice processor, channel strip, or stereo compressor; add the A/D card, and it can act as a front end for a DAW.

Like all Drawmer gear, the TS1 is built to last. Housed in a 1U solid-metal chassis, the look is basic black with easy-to-read white and red labels. The only concession to fashion is a swirly red logo that alludes to the symbol used at London Underground stations, known colloquially as "tube stations."

ALL ABOARD

The TS1 front panel is divided into seven subsections corresponding to the internal signal flow (see Fig. 1). First on the left is the Input section, which includes a 1/4-inch high-impedance jack (identified by a picture of a guitar), a preamp input switch, and status LEDs that show whether the instrument or the mic input is being used. The XLR mic input is located on the rear panel next to the 1/4-inch preamp output and insert jack (see Fig. 2). Also on the rear panel are a pair of

line-level XLR inputs, a pair of line-level XLR outputs, and a TRS sidechain jack. The optional A/D card offers rear-panel AES/EBU I/O on an XLR jack, S/PDIF on an RCA jack, a BNC word-clock input, and sampling-rate selection switches. The card converts the signal to 24 bits without provisions for dithering to 16 or 20 bits.

Moving to the right on the front panel, the Front End section has a continuously adjustable input gain control with instrument gain values (ranging from -20 to +40 dB) marked in red and microphone gain values (ranging from 0 to +60 dB) in white; a red LED next to the control indicates clipping. The 48V phantom-power and polarity-reverse switches are accompanied by red status lights, and this section also includes a highpass filter, which ranges from 25 to 250 Hz, and a control labeled H.F. Contour that adds a broad-band high-shelving boost.

The Compressor section has a source switch that selects either the mono front-panel input or the two rear-panel line inputs. The Compress knob controls input gain to the compressor circuit and is marked 1 through 10 (those values bear no relation to a decibel scale). The compressor uses VCAs for dynamic control and has a fixed, non-adjustable threshold: increasing the Compress value produces higher gain and more compression. Next to the Compress knob are standard continuously variable controls for Attack (from 0.5 ms to 50 ms) and Release (from 0.05 seconds to 5 seconds); below the knobs, an LED ladder indicates the amount of gain reduction.

Unlike most compressors in its price range, the TS1 compressor has no individually adjustable parameters for 2-channel mono operation. That doesn't mean you can't use the unit on two different signals at once, but it does limit an engineer's options.

The Tube Drive circuit uses a pair of ECC83/12AX7 vacuum tubes to increase the amount of harmonic distortion in the signal. Smartly, Drawmer made the effect bypassable rather than simply creating a hybrid circuit for tube coloration. Controls in the Tube section are an Active switch with a status light, and a continuously adjustable knob (ranging from 1 through 10). With Tube Drive bypassed, the signal path through the inputs and compressor is entirely solid-state.

Because the TS1 is essentially solid-state and is marketed as a "stereo vacuum tube compressor with instrument and mic pre," I asked company founder Ivor Drawmer for clarification. "The TS1 is a compressor with a tube," he said. "We figured it was better to make the tube available or not, because we would be asked why the tube can't be switched out. Of course, a real tube compressor uses all tubes, weighs a ton, and doubles as central heating."

The next two sections have to do with output gain and metering. The Trim control has a limited range (-30 to +5 dB) and controls the level after the compressor but before the limiter and the A/D converter. For digital output from the unit, Trim is the final gain control. After this point in the circuit, the signal is sent to a fixed threshold limiter (set at +16 dB, or 12 dB above 0 VU referenced to +4 dBu), which has a status LED but no bypass switch.

The Analogue Output knob, which ranges from off to +16 dB, is the final gain control for the TS1's XLR outputs. Below the Trim and Output knobs is the unit's master digital-output-level meter. A bypass switch to the right of the meter disables all compression and gain; when the switch is engaged, the meter indicates input levels. A power switch and status LED are on the far right.



FIG 1: The front panel of the Tube Station 1 is clearly laid out and easy to use. The compressor section features a one-touch Compress control as well as Attack and Release knobs.

JUST THE FACTS

The TS1 manual covers only the basics. The illustrated descriptions of each control are clear and concise, and it includes a few diagrams of common setups.

Technical specifications about the unit's filters, compressor ratio, and even the bit rate of the A/D converter are conspicuously absent. Considering the TS1's versatility and its many possible operational modes, I was surprised that the manual contained no practical or creative user tips.

DI ANOTHER DAY

A custom Telecaster guitar seemed to lose a little bit of midrange warmth when preamplified by the TS1 (using the TS1's 1/2-inch preamp output at unity gain, with no tone controls active and no compression) and then run into an all-tube Fender Pro Jr. But I got a kick out of playing through the unit and could imagine it catching on



FIG 2: The rear panel gives you stereo line-level I/O for using the TS1 as a stereo compressor. The XLR mic preamp includes a balanced 1/2-inch insert point and a preamp output. The digital output card appears on the left of the panel.

among tech-savvy instrumentalists on-stage. The Drawmer's preamp gain boost was very useful and added a convincing crunch when set at about +35 dB. I also enjoyed using the unit's high-frequency contour knob, which can function as a smooth and subtle alternative to the "bright" switches on many guitar amps.

Running the guitar signal from the compressor out jack allowed me to audition the Drawmer's onboard tube processing, which seemed surprisingly subtle with this guitar and amp combination. And in contrast to most compressor stomp boxes, the Drawmer's dynamics were a dream. Regardless of

the playing style, the TS1's compressor was always transparent and gentle, with the attack-time adjustment being a major plus.

In studio testing on a variety of vocal and instrumental tracks, the TS1's class-A mic pre was a solid performer. My studio partner, Bart Thurber, and I found it to be consistently reliable for definition, subtle ambience details, and flat response without sounding clinical. At its best—for example, when used with a Neumann TLM 103 as a distant mic for drums—the TS1 delivered a very hot, modern sound that rivaled any of the top-notch mic preamps in my racks. A touch of compression

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APPLIED ACOUSTICS

TASSMAN 3.02 (MAC/WIN)

Get physical with the much improved new version of Tassman.

By Dennis Miller

Sometimes the third time is the charm. That's certainly true with Applied Acoustics' Tassman 3.02, the third incarnation of the award-winning modular physical-modeling synthesizer. Though the previous two versions were more than adequate for live performance, various issues relating to integration and usability as a plug-in made Tassman less than an ideal platform. Applied Acoustics has addressed many of these issues and enhanced other aspects of the program as well.

Tassman runs both as a standalone application and as a plug-in using a DXi, MAS, and VST host or Pro Tools' Di-

rectConnect. I tested it on the PC as a plug-in under Sonar 2.2 and as a standalone program. The host computer was a Pentium 4/2.2 GHz running Windows 98SE.

I'll give a short overview of Tassman then focus primarily on the new features. First, a brief overview of physical modeling. (For more on the subject, see "Square One: Let's Get Physical" in the May 2002 issue of EM.)

MODEL THE PHYSICAL

Though physical modeling (PM) has been available in hardware for some time, its appearance in software instruments has lagged. With few exceptions, you won't find more than an occasional plucked-string model in any of the dozens of soft synths on the market today, or even in such otherwise powerful toolkits as Native Instruments' Reaktor. That may be because physical modeling places such a heavy burden on even a modern CPU, or maybe it's because PM is one of the most complex forms of sound synthesis.

Regardless, unlike acoustic or "spectral" modeling, where the intention is to mimic the movement of molecules in the air using additive, subtractive, or

Minimum System Requirements

Tassman 3.02

MAC: G4/400 MHz; 128 MB RAM (256 MB with OS X); Mac OS 9 or OS X 10.2

PC: Pentium III/500 MHz; 128 MB RAM; Windows 98SE/2000/ME/XP

other synthesis methods, PM's goal is to model those components of a musical instrument that contribute most to its sound production. These include things like the body of a cello, the shape and material of a flute mouthpiece, and the interaction of a pick and a string. Good PM-synthesis tools give the user intuitive and thorough control over such components and use very fancy math to produce the desired sound.

Tassman is one of the few commercial programs that focus on PM. Its designers, veterans of IRCAM, the French advanced sound-research facility, have created an interface that resembles more-traditional soft synths and samplers, but that includes parameters for instrument design that you won't find anywhere else. For example, you can change the shape or size of a cello as it

plays, modify the amount of air pressure being applied to a flute mouthpiece in real time, or increase or decrease the finger pressure used to pluck the string of a harp.

Tassman is not just for building acoustic-instrument models, however. You'll also find components for building synthetic instruments that employ FM, additive, subtractive, and other synthesis methods. A large number of modulation sources, such as LFOs and envelopes, coupled with a vastly improved sequencer, are only a few of the additional tools on hand.

START UP

Tassman's interface is split into two main work areas: the Builder, where you construct Instruments, and the Player,

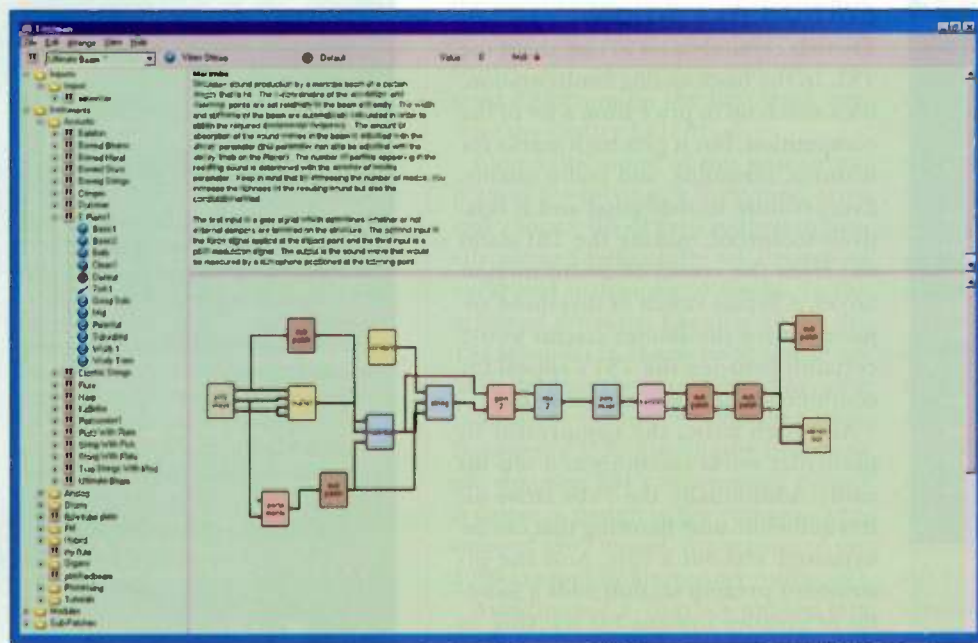


FIG. 1: Tassman's Builder Window is used to design Instruments. Modules are dragged from the Browser window at the left and connected in various configurations. A description of the currently selected Module appears at the top of the screen.



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where you perform your creations. In versions before 3.0, these were actually two separate programs, and they were not well integrated. With the new release, the two are tightly integrated, and you can move from one to the next by clicking a single button. Also, when you made a change to a device in the Builder in the older version, you had to recompile it before those changes would show up in the Player. Now updates are automatic.

To create a new instrument, open the Builder, and you'll see a Browser window on the left containing folders for each group of Modules, which are the program's basic building blocks. The Modules are arranged into ten categories: Effects, Envelopes, Filters, Generators, I/O, Logic, Mixers, Resonators, Routing, and Sequencers.

To use a Module, drag it from its folder to the main workspace on the right of the Builder screen. When you release the mouse, a description of the Module appears at the top of the window (see Fig. 1). To edit the Module (if you want to change its label or MIDI channel, for example), right-click on it and choose Module Settings from the drop-down menu that appears or double-click directly on the Module. From the drop-down menu, you can also cut, copy, or paste a Module, and you can use the menu's Locate command to

identify the source folder it came from.

Connecting Modules is easy—just click on the output of one and drag to the input of another. Removing a connection is just as easy: click on the "patch cord" to select it, then press the Delete key. A number of new commands allow you to align Modules in various ways, and a new multiple Undo command makes it easy to return to any point in your current work session if needed.

Navigating in the Builder is still a bit of a hassle. If you open a Sub-Patch to see its structure (more on this later), there's no button to take you back to the top level. Instead you have to choose the Previous Patch option from a drop-down menu. It would also be nice if the Browser represented actual folders on your drive. As it stands, you have to use an Import command to add a new patch to your collection.

MODULARITY

Though Tassman doesn't have the same number of building blocks as Native Instruments' Reaktor, its offerings are thorough nonetheless and very different in type from what any other modular synth provides.

Physical modeling often involves combining an *exciter*, which is the source that stimulates the movement of a vibrating object (such as the reed of a

clarinet or mouthpiece of a trumpet), with a *resonator*, which is the body of an instrument that amplifies certain frequencies, attenuates others, and in general transmits the movement into the air. Tassman provides a number of exciters (which it calls Generators) and resonators that can be freely matched.

In the Generators category, for example, you'll find a plectrum (pick), two types of mallets, a noise source, a flute mouthpiece, and more. These can be freely mixed with the various Resonator Modules, which include membranes, plates, strings, and tubes. The **EMWEB** MP3 file Flutetubeplate, **0000** which you can hear at the **EM** Web site, uses, as its name implies, a flute passing through a tube and then running "across" a plate. Different amplitudes and varying amounts of noise are used in the example. The result has a clear metallic ring to it, with a good deal of breath noise and some overblown qualities as well. Also listen to **EMWEB** Pluckedbeam.mp3, which **0000** uses a plectrum to stimulate a metal beam. Here, the Damping Frequency of the Beam Module changes on every note.

In the Envelopes category, you'll find no fewer than 15 Modules for adding time-varying qualities to a sound. In addition to ADSR and a number of variations thereon, Envelopes offers Rms, which can track the amplitude of one sound and use it to control some parameter of another, and Portamento, which can apply a smoothing effect to any type of input signal. The Envelopes category is also where you will find various knobs and sliders that can be used for a variety of purposes—for example, adjusting the gain of a signal or modifying the range of values sent out by an Effects Module.

You can type values into the parameter fields for an Envelope—defining the initial attack, decay, sustain, and release values for the ADSR, for example—or assign a MIDI Control Change message to



FIG. 2: A vastly improved sequencer is among the new features of Tassman 3.02. Notes are entered using the graphic display that appears at the top of this synth (which is open in the Player window).

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PRODUCT SUMMARY

Applied Acoustics

Tassman 3.02
modular software synthesizer
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\$449 (download)
upgrade free to registered users

FEATURES	4.0
EASE OF USE	3.5
QUALITY OF SOUNDS	5.0
VALUE	4.0

RATING PRODUCTS FROM 1 TO 5

PROS: Wide range of unique sound-design models. Myriad excellent Instruments and presets included. Well-integrated user interface.

CONS: No support for Program Change messages. Sub-Patches need to be better identified. Song mode not entirely intuitive.

Manufacturer

Applied Acoustics Systems
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animate the parameters of an Envelope or any other component of a Module. However, there's no way to create an Envelope graphically.

Moving to the Effects arena, there are a number of new Modules, including a compressor, tremolo, delay, and several filters. The Reverb module is unique in that it models an array of three tubes, with the mic and speaker set in the center of the array. The lengths and radiuses of the tubes can be set individually, but Decay is the only Reverb parameter that can be adjusted in real time.

There are a number of "ready-made" processes available in the Sub-Patch category, including several effects; two filters; a large number of drums, plates, and strings; and a variety of utilities. Unfortunately, descriptions are included for only a small number of the Sub-Patches, so you'll have to use the Open command to see what they contain. You could also build them into a patch and then switch to the Player to

see what controls appear on the Module's interface, but that's an awkward work-around. Moreover, the name of the Sub-Patch does not appear on the icon as it does for the other Modules. Though you can see the name if you choose Module Settings from the right-mouse-button menu, things can get very confusing when you have more than one icon labeled "sub patch" onscreen.

Tassman includes a Player Module, used to read in and play a preexisting sound file on your drive, and a Recorder, for recording the output of an Instrument directly to disc. Though it's no trouble to add a Recorder to a new or existing Instrument, it would be nice if every Instrument had one by default. Of course, if you're using Tassman as a plug-in, you can always record its output in your host program.

SEQUENCE THIS

Among the most important new features are Tassman's vastly improved sequencers, which come in several flavors. In the past, the one Tassman sequencer offered a very lame "virtual keyboard" for entering notes with the mouse. Now, three different Sequencer Modules provide a number of new options, including the ability to enter notes by selecting pitches in a clearly marked graphic display (see Fig. 2).

The Single Gate Sequencer is the most basic—like the others, it supports patterns of up to 16 notes and can store up to 32 different patterns for recall. The Dual Gate Sequencer adds a second layer of 16 steps; a Shift feature, which will delay the output of any step in increments of 0 to 127 steps; and a Loop button, which is used to change the length of the pattern. The top-of-the-line Multi-Sequencer has all the features of the first two and adds a Slide function, which doubles the length of a step, and a Velocity parameter.

All of the Sequencers offer a Mode control that determines which of five different arrangements (forward, backward, bidirectional, and two types of random play) of the pattern will play. You can also use Song Mode with any of the Sequencers to create a much longer

chain of events. A Song can contain up to 1,000 patterns, and any of the Sequencers can hold up to eight Songs. Songs are selected using the eight Song buttons at the top of a Sequencer, and you can start playback at any point within a Song by selecting the current pattern using the plus and minus controls.

Despite the major enhancements, it would be nice if there were other ways to create patterns, such as recording them directly from an external MIDI controller or reading in a MIDI file. It would also be useful if you could select patterns, especially within Song mode, using MIDI note numbers.

Speaking of MIDI, there's still one major flaw that I hope will be addressed soon: you can't change Instruments or even presets using Program Changes. Though you can load as many instances of Tassman as your host software will allow (an improvement over previous versions—in Sonar, for example, loading more than one instance of earlier versions often caused Sonar to crash), or include several Instruments in a single Tassman instance, that's not as efficient as being able to switch Instruments or presets on the fly. According to the manufacturer, this feature will be available in a forthcoming release.

GET PRESET

Applied Acoustics has provided a large number of prebuilt Instruments along with a vast collection of presets. In total, there are nearly 1,000 patches ready to play. The included Instruments fall into a variety of categories that break down even further into subgroups. For example, in the Acoustic category, you'll find Malafons, Bowed Beams, Bowed Metal, Congas, Dulcimers, Electric Pianos, Harps, and more. In general, the quality of the Instruments and their presets is excellent, and even if you never edit a patch, the range of included sounds is alone worth the price of the program.

The Flute sounds are uncanny—I've never heard a more realistic model. You can dial in a significant amount of noise to get an almost entirely non-pitched breath sound or change the physics of the mouthpiece (strength

and angle of airflow) as the sound plays. Particular care has been given to the presets here—I can imagine a creative use for nearly all 18. Listen to **EMWEB** the MP3 example Model-bach, which uses a flute model (complete with artifacts that result from fast note changes) and a dulcimer in a transcription of a Bach two-part invention.

The various beam instruments are also unique, especially those based on a bowed beam (one of my favorite avant-garde performance techniques). The Bowed Vibes is very nice, though I prefer less tremolo than the Default preset uses, and the Bowed Marimba is also

versions, there were far too many layers of individual program components to deal with. These included Builder files, Player files, preset files, snapshot files, and even samples that were used by an Instrument. Now, all elements except samples are neatly bundled into a “master” collection.

Tassman’s documentation, which includes a printed manual and a duplicate PDF file, has also been improved. There are four tutorials to get you going,

and there’s a complete description of every Module.

Tassman 3.02 is a unique program that can provide a huge range of unusual sounds. Any composer or sound designer would appreciate the high quality of its models and the extensive tweaking opportunities it provides, and if you’re an instrumentalist, you might consider using it for your next gig. If you have any interest in physical modeling, Tassman is the place to start. ☺



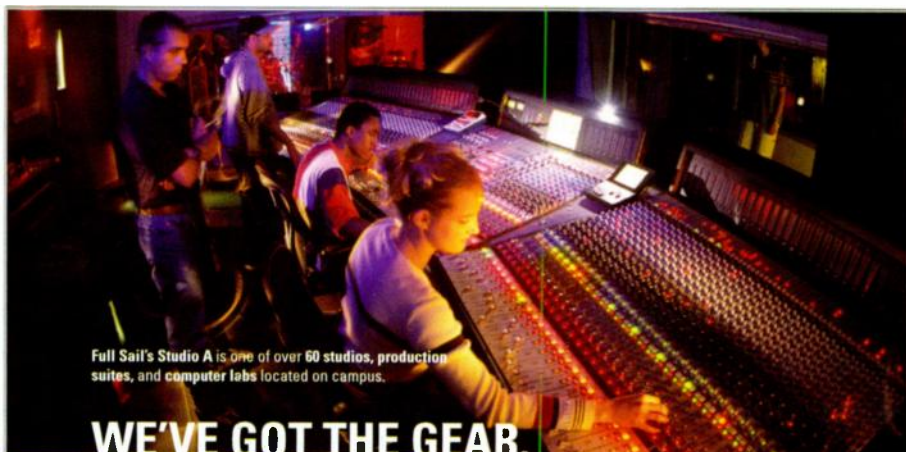
The Flute sounds are uncanny—I’ve never heard a more realistic model.

especially noteworthy. If I were scoring a remake of a 1950s horror film, the Singing Beam would come in very handy—it does an excellent impression of a theremin.

The Plate instruments are another excellent resource, especially the Glass, Metal, and Plastic presets. The Bisbo Gong preset (named for the new-age artist Robert Bisbo perhaps?) has an eerie afterlife and a cleverly ambiguous tonal center. FM is well represented, with over five dozen presets for the four Instruments. Among my favorites is Freak Mod FM, whose presets range from the Default, a ghostly, haunting underwater chorus, to the delicate and serene Watery. The Bell Grains preset is tasty, though I would kill the delay effect, which is used too often in general. Remarkably, almost no latency results when switching presets—the change seems to occur nearly instantaneously.

ON FILE

Tassman’s file handling has improved dramatically with version 3.02. In older



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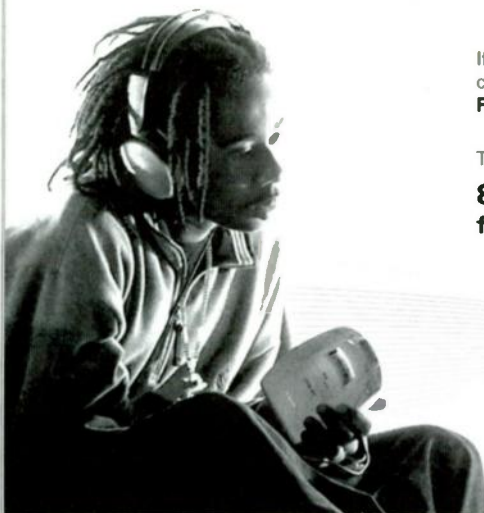
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SONIC IMPLANTS

SYMPHONIC STRING COLLECTION

*Playing at the high end
of high-end sampled
string libraries.*

By Rob Shrock

With its considerable array of string articulations and its thoughtful preparation, Sonic Implants' *Symphonic String Collection* (SSC) is one of the finest large-scale string-ensemble libraries currently available (see Fig. 1). World-class musicians from the Boston Pops and the Boston Ballet Orchestra were recorded in 24-bit, 48 kHz resolution at Sonic Temple Studio in Roslindale, Massachusetts. An old wooden meeting hall with a high vaulted ceiling serves as the soundstage at Sonic Temple and was chosen for its size and exceptional acoustics. Bruël & Kjær, Schoeps, and Neumann microphones were combined with high-end preamps

and A/D converters to maintain pristine fidelity throughout the recording process.

The resulting samples include First and Second Violin, Viola, Cello, and Bass sections as well as a complete set of Ensemble programs. The massive 12.3 GB library comes on 20 CDs (or 3 DVDs) and is packaged as a nicely designed boxed set reminiscent of an old 78 rpm record collection. Two 30-page booklets are included: one explains the basic library layout, and the other serves as an instrument-list and controller-assignment reference. At the time of this writing, the full library was available in Giga and EXS24 formats; a Kontakt version should be available by the time you read this.

ART AND ARTICULATIONS

Each string section includes an extensive set of articulations (playing techniques): legato, espressivo legato, col legno, con sordino, bowed harmonics, pizzicato (tight and loose versions), spiccato, staccato, marcato, tremolo (sul ponticello and ordinaire versions), whole- and half-step trills, and miscellaneous effects (clusters, glisses, knocking, scratching, tremolo behind the bridge, and so forth). All sections were sampled with the same articulations, although the cellos and basses also include pizzicato harmonics.

The full string ensemble comprises eight First Violins, six Second Violins, six Violas, five Cellos, and four Basses. The resulting sound is clear and present but also lush and orchestral. Moreover, the various programs lend themselves well to layering with other programs from the SSC library (combining espressivo and legato patches, for instance) or with programs from other sample libraries to make the sections sound larger. I prefer this approach because it's always easier to add samples on top of other

samples when needed than it is to create intimacy with a sample that's too large-sounding to begin with.

It's noteworthy that SSC is one of the few orchestral libraries that properly treats the First and Second Violins as separate sections by creating completely different sets of samples for them and placing the two violin sections in their proper stereo perspective on the soundstage (to the left of the conductor with the Firsts farthest to the left). In fact, all of the individual string sections were recorded in their usual orchestral positions, which automatically yields the proper panning of the sections when they are combined in a sequenced orchestration.

PROGRAM MUSIC

With SSC, producer (and Sonic Implants founder) Jennifer Hruska has really outdone her previous work for Kurzweil and Sonic Implants. She clearly understands that having a collection of great samples is only part of the formula; it still takes great programming to create a truly useful library. That's especially true in this age of streaming software samplers when some manufacturers think that a collection's size is the only thing that matters. Not so with Sonic Implants; the detailed programming in this substantial library is consistently well done. The organization of the various articulations, the naming scheme used for the programs, and the use of MIDI controllers are uniform throughout the library, so learning your way around this huge collection is not overly daunting.

The bowed articulations include up and down bows as separate programs. Versions incorporating both bowing directions are also provided, allowing you to control the bowing direction in real-time with the Mod wheel. Velocity-switched two-layer and three-layer programs are provided along with versions that use the Mod wheel to cross-fade between the layers. Slow attack versions of most of the sustained programs are also included. MIDI CC 16 and CC 17 are assigned to control the envelope attack and release in most



FIG. 1: Sonic Implants *Symphonic String Collection* provides a complete array of string articulations in a well-programmed and well-recorded string-section library.



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programs. All of the sustained samples are looped, but they sound great, and I have yet to find a perceptible loop point.

However, I've found that some of the Velocity-layer transitions are not quite as smooth as I'd like, which makes many of the Velocity-switched programs somewhat hard to control while playing. Although it's fairly simple to edit MIDI Velocity data in a sequencer after the tracks are recorded, I find myself editing Velocity a bit more than usual in this library. Nevertheless, the end results make the extra effort worthwhile.

Unlike some high-end string libraries, SSC does not include an auxiliary real-time MIDI application that can automatically alternate bow directions in real time or enable you to play a smoothly connected legato line by inserting transition samples between notes. In SSC you must work with the slow attacks when using the legato sam-

ples, although you can compensate for the problem by overlapping notes and playing early. Still, I hope that Sonic Implants will add a real-time performance application in the future, because

▼

**I especially love the
gorgeous con sordino
samples.**

the results can be impressive when the program is manipulated correctly.

The SSC library is greatly enhanced by the addition of release samples for most of the articulations (indicated by an *R* after the program name). With these programs, a separate sample of the room ambience is triggered with each MIDI Note Off. Programs with release samples chew through more polyphony than the other programs because the release samples often continue to ring as additional notes are played. Nonetheless, the effect is excellent, giving more depth to the sound in a very natural way. In fact, for many of your projects, you probably won't have to add any artificial reverb to the programs that include the release samples.

The Ensemble programs for each articulation (with and without release samples) are assembled from the individual sections. The Ensemble patches stand up extremely well on their own, although the panning and crossfading between the various sections has been adapted somewhat to create a more uniform sound across the keyboard.

If you're in a serious time crunch, though, the full-range Ensemble programs sound terrific by themselves. For example, I've gotten some great results on pop-ballad string arrangements by just using the Ensemble Con Sordino R bank. I simply duplicate the one bank on four separate MIDI channels and plunge ahead sequencing First Violins, Second Violins, Violas/Cellos, and Bases on the different tracks.

SONIC CHARACTER

The legato patches in SSC offer a beautiful, warm sound with a tender quality. I especially love the gorgeous con sordino samples. The marcato, staccato and spiccato samples, on the other hand, dig in nicely with the proper bite. I didn't find any clunkers in the whole library, and that's saying a lot considering the sheer number of samples included in this gargantuan collection. I would have loved sul tasto samples (bowed closer to the neck), but I can't really complain.

The amount of ambience included in the string samples is—dare I say it—perfect; there's just enough to give a three-dimensional presence without being too much or too little within a musical context. Sure, you can always pour on more of that Lexicon 480 if that's the sound you want; however, the natural acoustic ambience always seems to be just right for me in every setting, and I've had no problems blending SSC samples with samples from other libraries. If you want, you can also use the program versions without the release samples for a drier sound. They still sound terrific, but it's a shame not to use the great sound of this hall.

SAMPLE DELIGHT

If you're on a tight budget, "Mini" versions of SSC are available in SoundFont format (2.6 GB on 4 CDs) or Giga format (over 5 GB on 7 CDs). They provide the major articulations for all of the sections, including ensembles. Of course, the samples and programming have been pared down, but the main part of SSC is provided for desktop musicians who can't afford the full library.

If you must have a top-of-the-line string library, however, the complete SSC is one of the most comprehensive collections of string articulations currently available, and anyone who is serious about orchestrating with samples should own *Symphonic String Collection*.

Producer-composer Rob Shrock is back in Los Angeles developing new artists. He has worked with Elvis Costello, Faith Hill, Stevie Wonder and many others. He currently serves on the Board of Governors for NARAS.

PRODUCT SUMMARY

Sonic Implants

Symphonic String Collection

sample library

\$995 (full version)

\$449 (Mini version)

QUALITY OF SOUNDS	5.0
PROGRAMMING	4.5
DOCUMENTATION	4.0
VALUE	5.0

RATING PRODUCTS FROM 1 TO 5

PROS: Extensive collection of articulations. Highly detailed and organized programming. All sustains are excellently looped. Up and down bows are controllable in real time. All programs have versions with and without ambient release samples.

CONS: No détaché or sul tasto samples. No MIDI application for automatically switching between up and down bows or creating a true legato as found in some competing high-end string libraries.

Manufacturer

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World Radio History

Quick Picks

plenty of creative control over both. You can combine the program's 54 musical styles and more than 275 MB of sounds in many ways.

The difference between Groove Agent and a sample loop library is that a loop library supplies prerecorded beats. In Groove Agent, the samples are recordings of individual drum hits. Groove Agent generates beats by triggering samples one at a time from its own internal MIDI tracks.

That approach yields some big advantages. First, no matter how much you change the tempo, there's no sonic degradation. Second, individual drum sounds can be retuned or swapped in and out as needed. For instance, you can substitute a different kick sound from a pop-up menu without disrupting the rest of the beat, or even trigger a sample in a hardware sampler. Third, because Groove Agent can send four independent audio outputs to its VST host, you can add processing to individual drum hits using VST effects. Fourth, after recording the MIDI notes from Groove Agent into a sequencer track, you can freely edit your drum tracks.

When I recorded a Groove Agent performance into a Cubase SX track and opened the piano-roll editor, I found that Groove Agent was not sending Note Off messages for many of its notes. That isn't usually a problem with percussion instruments, because the notes die away on their own, but it makes a mess of the sequencer's editing display. I made all of the notes one 16th-note long, which took care of the problem.



Steinberg's Groove Agent is a VST instrument that can substitute for a live drummer. You select the musical style and the level of complexity, and Groove Agent does the rest.

Groove Mania

Groove Agent's menu cleverly lists its styles chronologically, one per year from 1950 through 2003. Selections range from Swing, Samba, and Cha-Cha ('50s) through Reggae, Funk, and Disco ('70s) to Drum N Bass, Hip-Hop, and Nu RnB. Each style has its own associated drum kit, but you can unlink the style from the kit and play New Orleans funk with a world ethno kit, for instance. For still finer control over the kit, you can mix and match by choosing from a menu of between 11 and 25 different sounds for each of the eight drum channels (kick, snare, tom-toms, and so on). Some of the channels play more than one sound (closed and open hi-hat, for instance), and those are always selected as a group. Some electronic blips are included with the acoustic drum samples.

Swapping sounds is just the beginning of the fun, though. Each style includes 25 different patterns, arranged in order of increasing complexity, and 25 fills. Groove Agent has ten preset-memory slots, so you can capture combinations that appeal to you. Need more control over playback? Groove Agent can record SysEx data into Cubase automation tracks.

Groove Agent is packed with useful features. Global knobs let you apply a compressor/limiter, add room ambience and shuffle, and even randomize the timing slightly. Even without randomization, the timing sounds very human. You can individually mute the eight drum channels, and you can also control parameters such as loudness, tuning, Velocity response, and ambience level, but not panning. You can switch from snare to sidestick without having to select a new type of snare sound. The ambience samples can be sent to their own VST output, so you can mix them to taste. There's even a bit of preset filtering, which can be switched off or applied to the vintage (pre-1975) drum kits to give them a more authentic "recorded to vinyl" sound.

Beat It

I've always preferred writing and editing my own MIDI drum tracks to using loops, so I'm sure I'll be using Groove Agent a lot. At first

I felt its sound was a bit bland and generic. No matter how I twiddled the Ambience and Limiter knobs and auditioned more and less complex patterns, it never jumped out of my speakers with the over-the-top sound design of a good loop library. Once I started adding other instrument tracks, though, I began to appreciate Groove Agent's versatility. The lack of a strong identity in its sound palette made its beats more adaptable to my musical ideas. For anyone who needs to produce good-sounding drum tracks in a variety of styles, Groove Agent will be a great tool.

Overall EM Rating (1 through 5): 4

Steinberg North America; tel. (818) 678-5100; e-mail info@steinberg.net; Web www.steinberg.net

BLUE SKY

ProDesk 2.1

By Nick Batzdorf

Although monitors with drivers less than six inches in diameter serve as an important reference tool, they cannot accurately reproduce the lowest part of the audio range on their own. To address this limitation, Blue Sky created the ProDesk 2.1 system (\$1,195), which combines a pair of SAT 5 monitors with the Sub 8 subwoofer. The SAT 5's sealed "acoustic suspension" cabinets take care of the frequencies above 80 Hz, leaving the subwoofer to cover the 20 to 80 Hz range.

Setting the Atmosphere

The SAT 5 satellite monitor is a biamped two-way speaker with a 5½-inch woofer and ¾-inch tweeter powered by individual 60W amps. Blue Sky made the cabinet as narrow as possible while still accommodating the abbreviated woofer frame; narrow cabinets are often used to maximize a speaker's horizontal dispersion. The speakers use soft dome tweeters with a uniquely designed wave guide that results in excellent imaging. The SAT 5 also has an 80 Hz crossover filter, switchable on the rear panel.

The Sub 8 is powered by a 100W amp, and like the SAT 5 woofers, it has an

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The SFX Machine RT control panel has a browser for effects presets that is organized into categories. A bank of sliders controls each preset's parameter values. Descriptions of the sliders and the preset appear at the bottom.

good thing because there is no manual to speak of.

SFX Machine RT includes a large number of effects that don't require any audio input, but instead produce sound effects of their own. Examples include Chopper (helicopter), Water Drips, UFO Descending, and Surf Noise. Although you've heard most of these before, they make great source material for a second instance of the plug-in. For example, you can spend hours (and I have) making all kinds of self-playing tuned percussion instruments by passing Water Drips through various filter, tap-delay, and resonator effects in a second SFX Machine RT plug-in. The file EauNo.mp3 shows some of the results.

Flexible Effects

The broad assortment of effects programmed into SFX Machine RT makes it usable on any kind of audio material. Effects that emphasize delay and resonance can completely transform a percussion loop; for example, you can impose rhythm on pads and ambiences using gating, fragmenting, and multitap effects. Widely varying chorus, flange, and phase effects produce actions ranging from subtle to in-your-face. Reverbs range from natural-sounding to other-worldly; one of my favorites, Train Station, falls somewhere in between. In general, the sound quality is very good, although it won't likely replace your favorite dedicated reverb, EQ, or compressor.

A large selection of motion effects—pitch shift, panning, vibrato, and tremolo—are also provided, with many incarnations

of each. In short, you can mangle any sound beyond recognition, create your own sounds from scratch (using two SFX Machine RTs), and do a good bit of classic sonic adjustment with this one plug-in. SFX Machine RT is one of those plug-ins that you will think you understand in minutes but won't fully grasp for years. It's well worth downloading the demo from The Sound Guy Web site, and at \$150, it's a lot of plug for the buck.

Overall EM Rating (1 through 5): 4

The Sound Guy, Inc.; tel. (831) 425-0448; e-mail sfx@sfxmachine.com; Web www.sfxmachine.com

M-AUDIO

Sonica Theater (Mac/Win)

By David Myles Huber

Successful surround-sound production requires not only a thorough understanding of mixing and encoding techniques, but also the right gear. It's particularly important to have a flexible and well-laid-out monitor-mixing environment. To that end, M-Audio's Sonica Theater (\$119.95) offers a versatile and inexpensive solution for getting surround audio from your computer into your monitoring system.

Marketed through M-Audio's Consumer division, Sonica Theater is a USB audio interface and software package for the Mac (OS 9 and OS X) or PC (Windows 98SE, 2000, ME, and XP). Although it's small enough to fit in the palm of your hand, it includes features that can turn your computer into a fully functional multiformat surround-sound monitoring environment. In addition, the unit gives you 24-bit, 96 kHz stereo audio input. (M-Audio also offers a more fully featured PCI version, the Revolution 7.1, for \$119.95.)

Bells and Whistles

The front of the self-powered Sonica Theater has a solitary blue LED; the back panel is where the action is. There you'll find a

USB port, an RCA S/PDIF digital output, an 1/8-inch stereo Line In for recording, and an array of 1/8-inch line-level stereo outputs for Front L/R, Surround L/R, Center/Subwoofer, and Surround-Center L/R. These outputs can be used to connect Sonica Theater to powered monitors or a surround receiver. Sonica Theater can output a variety of formats ranging from stereo all the way to 7.1 surround, with audio resolutions as high as 24 bit, 96 kHz.

Control and configuration of Sonica Theater is achieved by using the intuitive, software-based control panel that can be opened by clicking on the M-Audio icon in the Taskbar (Win), the Control Panel (Mac OS 9) or the Applications Folder (Mac OS X). At the top of this panel are five icons that let you quickly change stereo and surround monitor modes. Below these are a series of tab menus for tailoring the system to your specific environment.

First is a Speaker Setup tab that's used to adjust the output to match the size of your main stereo speakers. The Speaker Bass Management tab allows you to tailor the speaker-to-sub crossover points. Surround test tones can also be selected from this tab to set level balances.

The Output Mixer lets you adjust individual speaker levels, with full metering and solo-mute capabilities. The Surround Sound tab graphically shows your surround setup and includes options for monitoring in full SRS Circle Surround II. This handy LRCS (left-right-center-surround) decoder is similar to Dolby ProLogic in that it generates a pseudosurround mix from an ordinary stereo—or Dolby ProLogic—recording.

The Input/Other tab lets you change input levels and choose the sampling rate



M-Audio's Sonica Theater is a USB audio interface that allows for multiformat surround output as well as stereo input.

The Professional's Source

Digidesign ProTools TDM



Digidesign Control 124

AKG
C12VR



Neumann
M149 Tube U87Ai



Emagic

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- Identify **KEYS** of songs *by ear alone*
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Akai.....	www.akaipro.com.....	17	Roland.....	www.rolandus.com.....	23
American Educational Music	www.perfectpitch.com.....	126-127	Sam Ash.....	www.samash.com.....	98-99
Antares.....	www.antarestech.com.....	87	Samson Technology (C Class).....	www.samsontech.com.....	52
Atomic Mary.....	www.atomicmarydigital.com.....	10	Samson Technology (Resolv).....	www.samsontech.com.....	89
B&H Photo-Video.....	www.bhphotovideo.com.....	123	Sonic Implants.....	www.sonictimplants.com.....	93
Berklee Music.....	www.berkleemusic.com.....	10	SRS Labs.....	www.srslabs.com.....	72
BIAS.....	www.bias-inc.com.....	97	Steinberg.....	www.steinbergusa.net.....	13
Big Fish Audio.....	www.bigfishaudio.com.....	45	Sweetwater Sound #1.....	www.sweetwater.com.....	9
Broadjam.....	www.broadjam.com.....	26	Sweetwater Sound #2.....	www.sweetwater.com.....	74-75
BSW.....	www.bswusa.com.....	129	Sweetwater Sound #3.....	www.sweetwater.com.....	142-143
Cakewalk (Project 5).....	www.project5studio.com.....	43	Sweetwater Sound #4.....	www.sweetwater.com.....	144-145
Cakewalk (Sonar).....	www.cakewalk.com.....	11	Tascam (FW-1884).....	www.tascam.com.....	25
Carillon.....	www.carillonusa.com.....	147	Tascam (GigaStudio).....	www.tascamgiga.com.....	109
Carvin.....	www.carvin.com.....	95	Tascam (USB).....	www.tascam.com.....	59
Casio.....	www.casio.com.....	69	Taxi.....	www.taxi.com.....	79
dbx Professional Products.....	www.dbxpro.com.....	81	TC Electronic.....	www.tcelectronic.com.....	31
DigiTech.....	www.digitech.com.....	29	Toft Audio Designs.....	www.toftaudiodesigns.com.....	73
DigiTech (Vx400).....	www.digitech.com.....	115	Waves (Morphoder).....	www.waves.com.....	19
Disc Makers.....	www.discmakers.com.....	101	Waves (TransX).....	www.waves.com.....	61
Echo Digital Audio.....	www.echoaudio.com.....	64	West LA Music.....	www.westlamusic.com.....	85
Ediol.....	www.ediol.com.....	21	World Replication Group.....	www.worldreplication.com.....	77
emagic.....	www.emagic.de.....	4-5	Yamaha (Mixers).....	www.yamaha.com.....	57
Ex'pression.....	www.expression.edu.....	121	Yamaha (Motif).....	www.motifator.com.....	35
Focusrite.....	www.focusrite.com.....	15	Zaolla.....	www.zaolla.com.....	32
Full Compass Systems.....	www.fullcompass.com.....	107			
Full Sail.....	www.fullsail.com.....	111			
Garritan Orchestral Strings (GigaStrings).....	www.garritan.com.....	119	ELECTRONIC MUSICIAN MARKETPLACE ADS		
HMB.....	www.hmbusa.com.....	50A-H	AEA - Audio Engineering.....	www.wesdooley.com.....	131
IK Multimedia.....	www.sampletank.com.....	90-91	CD Labs.....	www.cd labs.com.....	133
Ilio (SoundScan).....	www.soundscan2.com.....	76	Central Computer Systems.....	www.centralcomputer.com.....	135
Ilio (Spectrasonics Virtual Instruments).....	www.spectrasonics.net.....	41	Clearsonic.....	www.clearsonic.com.....	133
Karma Lab.....	www.karma-lab.com.....	105	Crystal Clear Sound.....	www.crystalclearcds.com.....	133
Korg (Macro/Micro).....	www.korg.com.....	83	Digital Audio Wave.....	www.digitalaudiowave.com.....	131
Korg (Triton Le).....	www.korg.com.....	2-3	Digital Pro Audio.....	www.digitalproaudio.com.....	132
Korg(DI6XD/32XD).....	www.korg.com.....	55	ELS Productions.....	www.elsproductions.com.....	131
Kurzweil.....	www.kurzweilmusicsystems.com.....	67	Europadisk, LLC.....	www.europadisk.com.....	134
Mackie.....	www.mackie.com.....	117	Gefen Systems.....	www.gefen.com.....	133
MacWorld Expo.....	www.macworldexpo.com.....	130	Instrumentpro.com.....	www.instrumentpro.com.....	134
Mark of the Unicorn.....	www.motu.com.....	148	Lonely Records.....	www.lonelyrecords.com.....	133
M-Audio (Luna).....	www.m-audio.com.....	33	Media Manufacturing.....	www.mediamfgcorp.com.....	131
M-Audio (OmniStudio).....	www.m-audio.com.....	65	Media Services.....	www.mediaomaha.com.....	133
M-Audio (ProSessions).....	www.m-audio.com.....	103	MiBac Music Software.....	www.mibac.com.....	134
Mesa/Boogie.....	www.mesa boogie.com.....	49	Omnirax.....	www.omnirax.com.....	131
Music 123.....	www.music123.com.....	50	Play-It Productions.....	www.play-it productions.net.....	132
Musician's Friend.....	www.musiciansfriend.com.....	71	PreSonus.....	www.personus.com.....	134-135
Musician's Friend (DiskFaktory).....	www.musiciansfriend.com.....	113	Recording Workshop.....	www.recordingworkshop.com.....	134
Neumann/USA.....	www.neumannusa.com.....	37	Shreve Audio.....	www.shreveaudio.com.....	132
Phonic America.....	www.phonic.com.....	85	Vancouver Film School.....	www.vfs.com.....	135
			Voyager Sound.....	www.remixcentral.com.....	132

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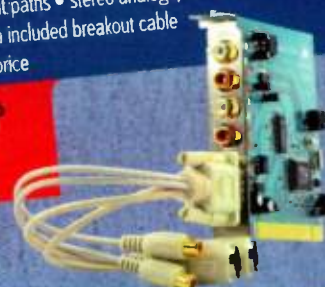


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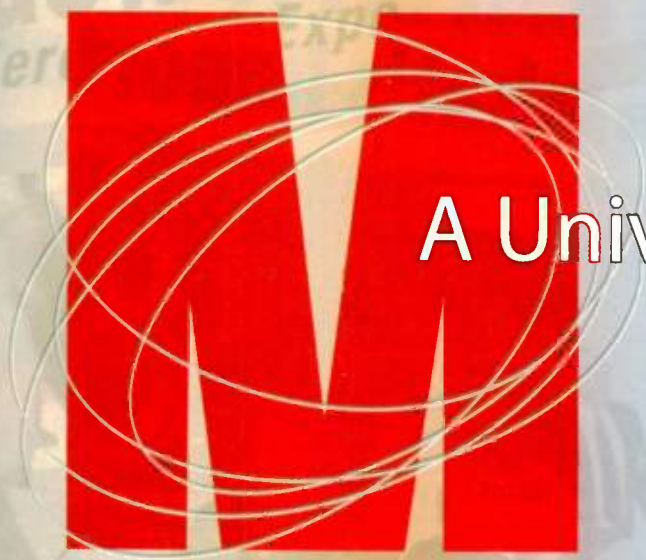
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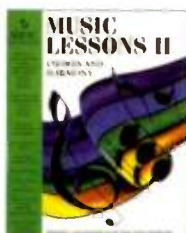


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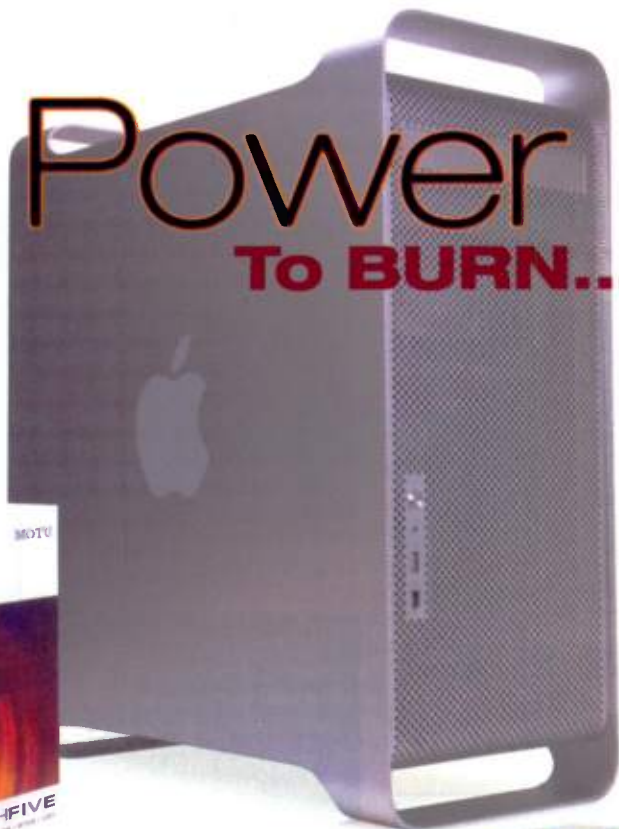
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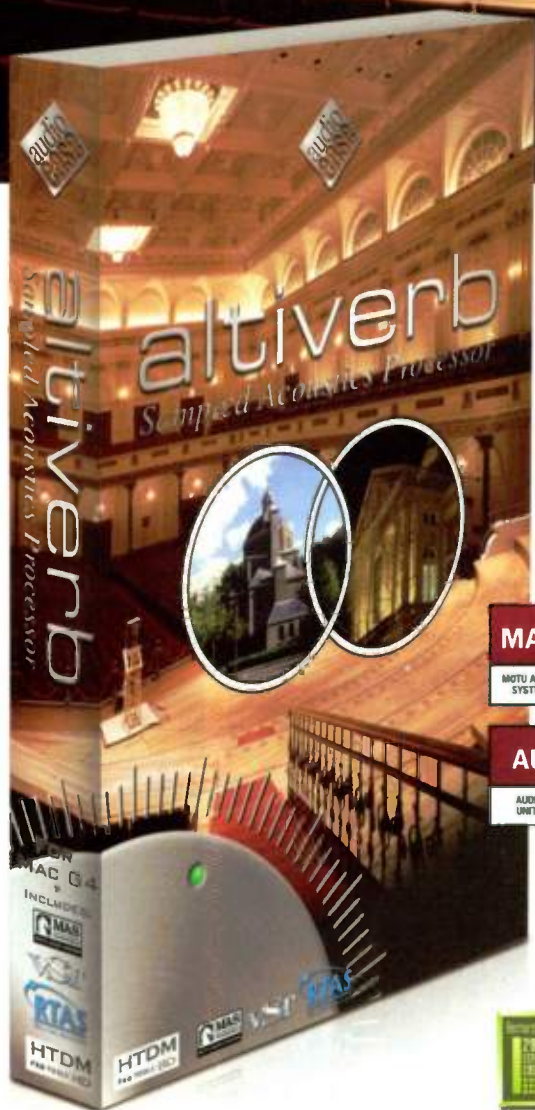
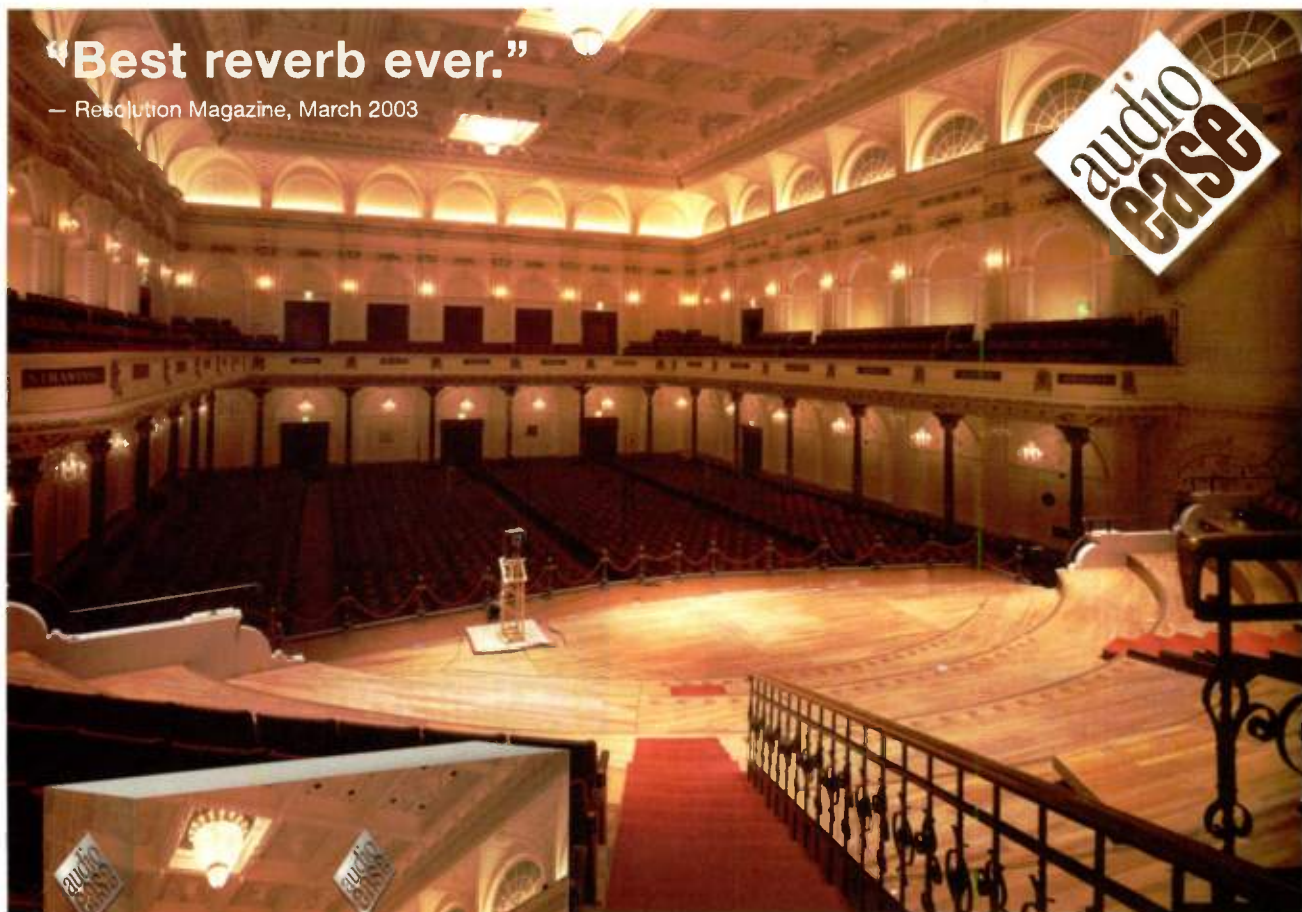
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Imagine the feeling of touch-sensitive, automated Penny & Giles faders under your hands, and the fine-tuned twist of a V-Pot™ between your fingers. You adjust plug-in settings, automate filter sweeps in real-time, and trim individual track levels.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



Native Instruments B4

This virtual instrument classic is now available for DP4 as an AU

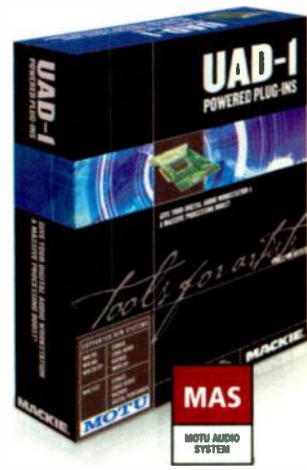
The B4 is another classic keyboard from the 20th century which Native Instruments brings into the studio and onto the stage of the 21st century. The B4 is a complete virtual tonewheel organ, capable of reproducing in authentic detail the sound of the legendary B3 organ and rotating speaker cabinet, including tube amplification and distortion. Beneath the attractive, photo-realistic vintage-looking graphics operates an up-to-date audio engine, with perfect sound and lots of options for fine-tuning, all with full MIDI automation. This instrument is a must-have for every DP4 studio. Includes a full set of 91 tonewheels, photo-realistic graphics in the original look, full MIDI automation and many options for easily fine-tuning the sound.



Mackie UAD-1 Powered Plug-ins

Accelerated effects processing for DP4

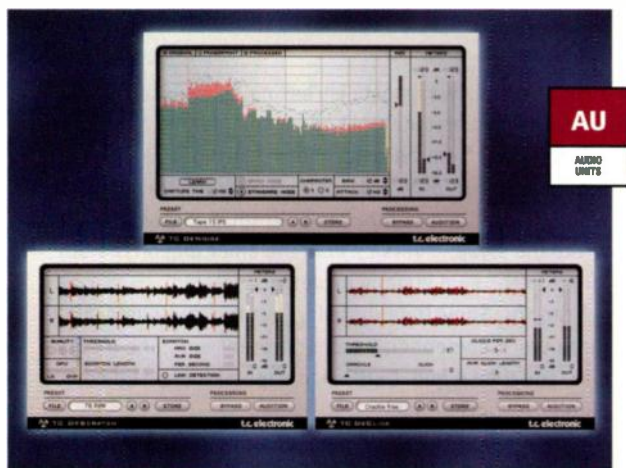
Install a UAD-1 card in your Mac and then run dozens of sophisticated effects plug-ins inside Digital Performer without bringing your Mac to its knees. What's the secret? UAD-1 is a custom DSP-equipped PCI card. It's like adding an extra \$20,000 worth of effects gear to the dozens of native plug-ins included with DP. UAD-1 ships with a growing list of powered plug-ins, including Nigel, a complete palette of guitar tones combined with every effect a guitarist could ever need. Authentic vintage sounds include the Pultec Program EQ, a stunningly realistic recreation, and the 1176LN Limiting Amplifier and Teletronix LA-2A Leveling Amplifier, two more analog classics reborn inside Digital Performer. Apply liberally with host CPU cycles to burn.



TC Electronic Restoration Suite

Ground-breaking audio restoration plug-ins for DP4

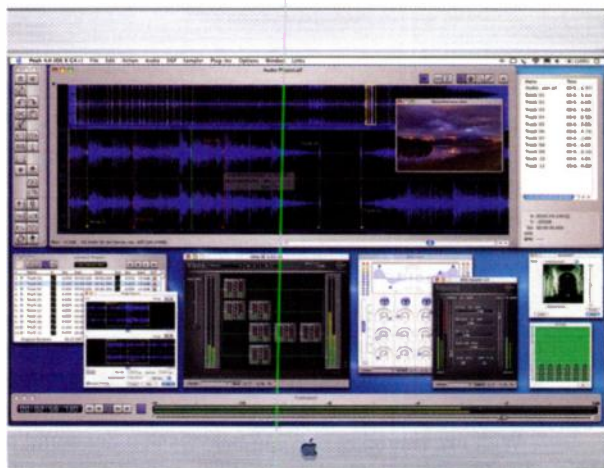
TC Electronic revolutionizes audio restoration with the new Restoration Suite for the PowerCore platform. Powerful, fast and easy to use, this bundle of hi-end restoration plug-ins provides descrambling, denoising and declicking for the most critical applications in audio restoration. The descrambling algorithm, based on a collaboration between TC Electronic and Noveltech from Finland, employs a breakthrough first-to-market technology and delivers incredible results. Both the Denoiser and Declicker plug-ins are based on TC's many years of experience in the field of restoration, now with extended functionality. Restoration Suite is one of the first hybrid plug-ins, utilizing CPU and PowerCore DSP processing at the same time to combine the best of both worlds for optimal sound quality and best real-time results.



BIAS Peak 4 — 4 Is More

The ultimate waveform editing companion for DP4 and MachFive

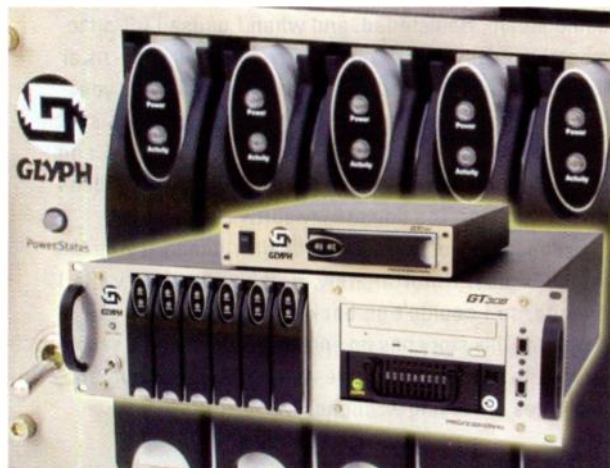
Burns redbook CD's directly. Reads/writes MP3, MP4(AAC™), 24 bit WAVE & more. Batch process dozens or even thousands of files. Ultra fast waveform editing now even faster. Launch directly from DP4. Unlimited undo/redo with graphic edit histories. Unique DSP and looping tools like the stunning new sample based ImpulseVerb™, Change Duration envelope, Harmonic Rotate, Bit Usage graph, Grid Markers from Tempo, plus Repair Clicks, Loop Tuner™, Loop Surfer™, Guess Tempo™, Duplicate, and more. Improved Region Cross-fade Editor and new Content Drawer. Hot swap real-time effects using Peak's included Vbox™ SE VST matrix. Supports Audio Units and Core Audio. Optimized for Mac OS X, multi-processors, and the AltiVec G4 Velocity Engine. Includes new Squeeze™ pro compressor/limiter, Freq™ EQ, and more.



Glyph Technologies GT 308

Ultimate backup and storage for your MOTU desktop system

The Glyph Technologies GT 308 is the perfect all-in-one storage and backup solution for the MOTU desktop studio. A 3U rack-mount eight-bay enclosure, the GT 308 comes with up to six hot-swappable GT Key FireWire drives, perfect as target drives for multitrack audio recording, storing your MachFive soundbank folder or temporary archiving of your DP4 projects. The right-hand expansion bays offer options of AIT backup, SCSI hot-swap receivers, DVD-R/RW and/or CD-R/RW. Like other GT Series solutions, the GT 308 features QuietMetal™ for ultra-quiet performance and Glyph's Integrity™ FireWire hot-swap technology to ensure the best reliability and performance. Included with the GT 308 is the GT 051, a tabletop hot-swap enclosure that makes content more portable and expansion easy.



ADAM Audio P11A Studio Monitors

Two-way shielded active monitors for your MOTU studio

With groundbreaking innovation in electro/acoustic transducers, no-compromise design, superior materials and the same A.R.T. (Accelerated Ribbon Technology) folded ribbon tweeter found in all ADAM monitors, ADAM's P11A two-way shielded active monitors deliver your mix with astonishing clarity. Connect a pair to the main outs of your MOTU 828mkII FireWire audio interface — or any MOTU I/O — to hear your mixes with unique imaging and outstanding transient response at a very attractive price point. Europe's "Keyboards" magazine held a studio monitor shootout between no less than 25 professional monitor systems, and the ADAM P11A's came out at the top of the heap. One listen, and you'll be hooked, too!



Now's the Time

It is said that the best things in life are free but computer hardware and software cost money. The following story is true, although everything in it has been changed to make a point. Nothing here is new, but the story is relevant because it addresses a question that's of perpetual interest to computer users: when is the right time to upgrade?

Roughage Systems recently released Brainfart 4.0, a new version of my main digital audio defibrillator program. The upgrade finally fixes some annoying bugs and adds several cool new features, and it wasn't too expensive, so I went for it.

With my Thursday evening mix session done and no client sessions scheduled until Tuesday, it seemed a good time to install the upgrade. I would have been happier lying on a bed of nails, visualizing a colonoscopy.

The installation began well enough: I inserted the CD and clicked the button for the "regular" install. A couple of dialog boxes appeared and disappeared; I figured they must not have been very important if they didn't stay onscreen. Then a dialog appeared and stayed. It said: "Error A437DUQ-U92111: Missing ChixParmGobl-GooMRN. Code: 666." I dismissed the dialog box, and my machine locked up completely. An ominous darkness fell on my studio, though the sun was shining outside.

I rebooted and found nothing helpful in the troubleshooting section of the electronic documentation or in the support section of Roughage's Web site. With a long sigh, I logged on to the independent user-group site, plowed backward through the flame exchange about whether MacAppendage or WinLobotomy has the stupider name, and finally found a long message, in all caps, that asked (deleting expletives and condensing considerably), "What the heck is Missing ChixParm, etc.?" A Roughage support tech replied that a hardware driver update is needed before installing the new version of Brainfart, a topic that is well-documented nowhere at all.

So okay, I downloaded the driver update, installed it, and rebooted—but the boot process was interrupted by a dialog telling me that SlimeTimeFlowerWrapLib is from an older version of SlimeTime than SlimeTimeSharedMessDriver. SlimeTime is part of the operating

system, so this was most distressing. I dismissed the dialog, and my computer locked up completely. Again.

I rebooted from an emergency startup CD, prowled around my hard disk, and found that the driver update, which needs SlimeTimeFlowerWrapLib, blithely overwrote the existing version with the older one on the CD. "Oh, I@#!," said I (many expletives deleted).

I ran the SlimeTime installer, but it complained that there were components from different versions on my disk, and then it quit. Duh! My computer locked up completely. Is this normal?

I hand deleted every SlimeTime component I could find on my disk, somehow successfully installed SlimeTime, and even rebooted without dialogs. My driver was updated at last. On to Brainfart.

I put the Brainfart disk in, double-clicked the installer, and got a dialog that said, "This upgrade only operates on versions 3.5.6.8.2 or higher. Please upgrade to this version and try again." I have version 3.2.2.2.2.2. "Oh, @#\$*&!!" (expletives incoherent), I blurted.

I downloaded the 3.5.6.8.2 updater, installed it without incident, rebooted, and ran the 4.0 upgrade. At last, things were looking good. I rebooted, and a dialog came up that said, "SlimeTimeFlowerWrapLib is from an older version of SlimeTime than SlimeTimeSharedMessDriver."

Time passed. Fur flew. Somewhere in the firefight, I installed the upgrade. I looked up at the clock: it was Tuesday morning. I took a break to call a friend and vent some steam. He listened, and when I paused for a moment, he quietly said, "You do know that your plug-ins all have to be upgraded to work with BrainFart 4, don't you?"

Two words came to mind—and soon, to hand: *shut down*. I headed to the garage to find my old ADAT and start thinking up excuses I could give my client. I couldn't do better than "The dog ate my software."

Epilog: once version 4.0 was finally running, it was too buggy to use. Unfortunately, it converted every file I opened, so I couldn't go back to the old version of the program. This story has no ending, but I did find a simple answer to my question: there is no right time to upgrade, just times of varying wrongness. ☹

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