Roland JP-8080, Line 6 Pod, and 9 more reviews • Special Bonus REMI

Electronic Musician

www.emusician.com

July 1999

SEQUENCER GAMES

We flight-test 9 top digital audio sequencers

Power Hungry!
State-of-the-art power amp technology

Theremin
Master Class

INTERTEC /PRIMEDIA Publications

U.S. $4.95/Canada $5.95

07>

0 71896 47104 5

WHY DOES THE RESPONSE OF BECAUSE IT'S

WHERE'S THE EXTRA SUBWOOFER?

Greg Mackie and his team were recently invited to present the Digital 8•Bus to Britain's top engineers and producers in the "A" rooms at two of the world's most famous recording studios. Of course we used HR824 active monitors.

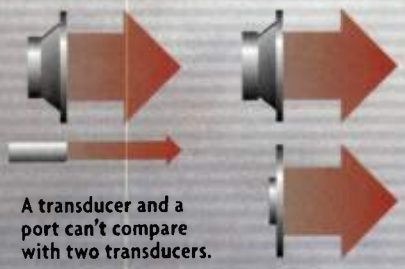
When the presentations were over, many of the veteran engineers were astonished to learn that they had been listening to 8-inch monitors instead of the studio's Big Speakers. Some even so far as to touch the house monitors' 12 and 15-inch cones while the HR824s were playing. They just couldn't believe the bass output from such a compact box.

Last fall we won the pro audio industry's coveted TEC Award for best near field monitor. Modesty prevents us from listing the impressive field of competitors but you'll probably encounter their ads in this magazine.

TIGHT, RESPONSIVE BASS FLAT DOWN TO 39HZ. Reviewers and owner's warranty card responses are unanimous: The HR824 has the most accurate bass they've ever heard from an 8-inch monitor. And the **quality** is as astonishing as the quantity. Fast low frequency transients like kick drum slaps and electric bass notes have a crisp articulation that makes other monitors sound like mush.

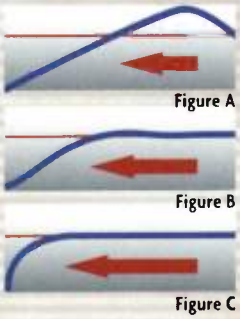
ANOTHER TRANSDUCER INSTEAD OF A PORT.

The more LF transducer cone area a speaker has, the more bass it can produce. But a huge low frequency transducer isn't an option on a compact near field monitor. To augment primary bass output, other monitors resort to using ducted ports that can convert cone movement into extra low frequency air movement. But for optimal output, a ducted port needs to have the **same area** as the low frequency transducer. In other words, an 8-inch near field monitor would need an 8-inch vent. Needless to say, you haven't seen any vents this big on our competitors' near field monitors. When vent size is reduced to maintain compact enclosure size, bass output is compromised. And, forcing a lot of energy out of a couple of small ports can create audible wheezing and whooshing.



A transducer and a port can't compare with two transducers.

Instead, the HR824 adds a large passive transducer with the cone area of another 8-inch woofer. Occupying the entire rear panel of the monitor (see photo below), this ultra-rigid honeycomb laminate piston tightly couples with the 824's active bass transducer. With a combined cone area greater than a single 12-inch woofer, you get exceptionally extended bass without port noise complaint.



Pushing out the curve: redistributing LF energy with synthesized mass.

SYNTHESIZED MASS AND OTHER STORIES.

The cool thing about an active speaker system is that you can basically rewrite laws of physics that otherwise limit passive speaker designers.

A low frequency transducer's free air response graph looks like a bell curve—it's most efficient in the mid band (Fig. A above). To flatten the curve (and extend low bass), you have to proportionally reduce higher frequency output. Acoustic designers use all sorts of tricks to do this—and usually end up with response something like Fig. B.

The most effective way to "shape" an LF transducer's output would be to increase its mass (cone weight). But for designers of traditional passive speakers, adding mass hasn't been a practical option since it would dramatically slow down the woofer's transient response.

Rear view: The HR824's electronics conceal an ultra-rigid, honeycomb composite passive transducer.

© 1999 Mackie Designs. All Rights Reserved. The following are registered trademarks or trademarks of Mackie Designs Inc. "Mackie," the "Running Man" figure, HR Series and FR Series.

HR824 HAVE THE MOST ACCURATE BASS ANY 8-INCH ACTIVE STUDIO MONITOR? REALLY A 12-INCH MONITOR IN DISGUISE.

Because the HR824 is internally powered (active), we could precisely control parameters that normally occur outside of the loudspeaker. Greg and the engineering team were able to create an electronic "symbiotic relationship" between the low frequency transducer's voice coil and its FR Series amplifier voltage output. At mid-band frequencies, the woofer "sees" extra synthetic "electronic mass." This effectively pushes out its lower bass response without compromising its lightning-fast transient response (Fig. C).

MASSIVE POWER THAT WOULD PROBABLY POP A PASSIVE MONITOR. Punching out crisp bass requires a lotta watts. The FR Series™ high-current bass amplifier module inside the HR824 delivers a solid 150 watts of power with peak output in excess of 250 watts (plus another 100 watts for mid and treble). That's significantly more than any other 8-inch active monitor. Moreover, the HR824's servo coupling and ultra-short signal path put that power to work far more effectively than a passive monitor and a 250-watt stereo amp could.

PART OF A TIGHTLY-INTEGRATED SYSTEM. Our servo bass system is only one contributing factor to the HR824's amazing accuracy.

Internal power amplifiers are "fed" by phase-accurate, low distortion electronic circuitry instead of a crude coil-and-capacitor passive crossover. The HR824's proprietary logarithmic wave guide not only widens treble dispersion but also smooths the midrange transition between high and low-frequency transducers. At the critical 3500Hz crossover point, the alloy HF transducer's output is acoustically the same diameter as the LF transducer's output, thanks to the wave guide's flaring design (refer to the actual HR824 photo on the other page, not our ad folks' fanciful rendering at left).

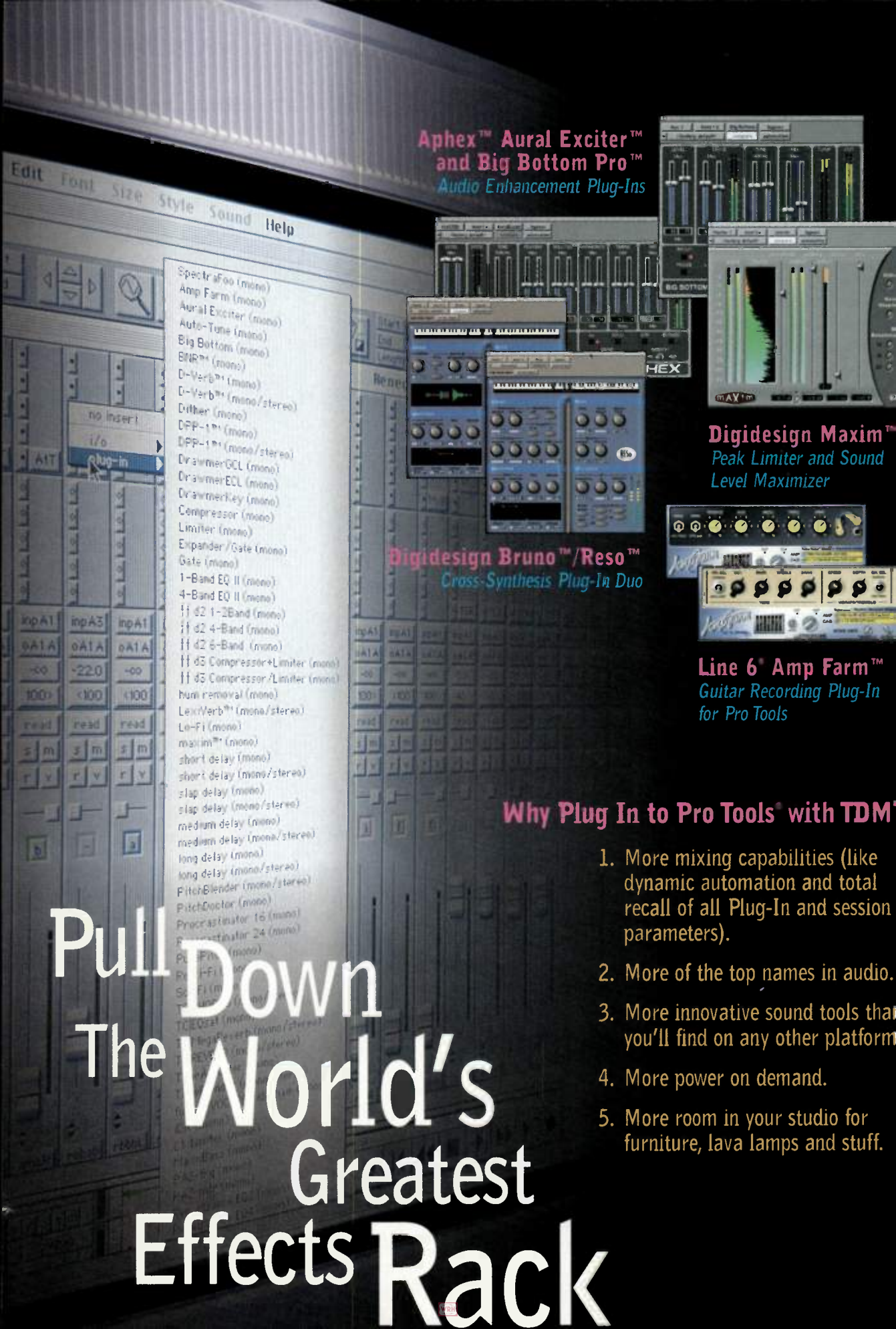
Indirectly, the HR824's LF transducer even contributes to high midrange accuracy. In many monitors, woofer cone harmonic vibrations bounce around inside the enclosure and then exit through the thin woofer cone. The result: smeared imaging and muddled details. Instead of a chintzy chunk of fluff, the HR824's enclosure is utterly packed with high-density absorbent foam. Cone vibrations go in, but they don't come back out.

DON'T SKIMP. It's amazing how many studio owners will mortgage the farm for money-is-no-object, esoteric microphones... and then monitor on cheap, passive loudspeakers. If you aren't using ACTIVE near field monitors, you're seriously compromising your creative product.

We urge you to visit your nearest Mackie Designs Dealer and seriously audition **all** of their active monitors with some demanding, bass-rich program material. Judge our claims (and those of our competitors) for yourself. We think you'll agree that the HR824 is truly the best of the best.

MADE BY MACKOIDS IN WOODINVILLE USA
PHONE TOLL-FREE
888-226-9847
www.mackie.com

circle #502 on reader service card


Aphex™ Aural Exciter™
and Big Bottom Pro™
Audio Enhancement Plug-Ins
Digidesign Maxim™
Peak Limiter and Sound
Level Maximizer
Digidesign Bruno™/Reso™
Cross-Synthesis Plug-In Duo
Line 6® Amp Farm™
Guitar Recording Plug-In
for Pro Tools
Why Plug In to Pro Tools® with TDM
1. More mixing capabilities (like dynamic automation and total recall of all Plug-In and session parameters).
2. More of the top names in audio.
3. More innovative sound tools that you'll find on any other platform
4. More power on demand.
5. More room in your studio for furniture, lava lamps and stuff.
Pull Down
The World's Greatest
Effects Rack

TC | WORKS
ULTIMATE SOFTWARE MACHINES

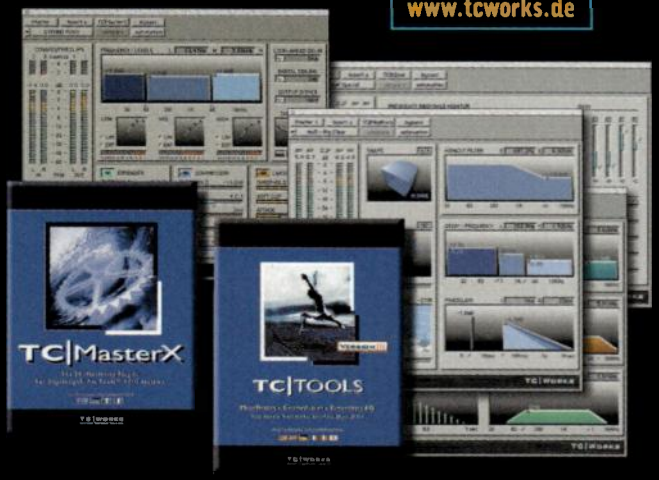
TC | Works™
TC | MasterX™ and TC | TOOLS™

TC | WORKS makes TC-quality processing available to you on the Pro Tools platform: MasterX is a multiband expander/compressor/limiter by the makers of the award winning Finalizer mastering processor.

TC | TOOLS is a hi-end FX bundle featuring EQSat, TC Chorus/Delay and MegaReverb, the ultimate reverb for Pro Tools.

Call 1.800.738.4546 for more information.

www.tcworks.de



KIND OF LOUD

Kind of Loud Technologies™
SmartPan Pro™

At last, surround sound comes to Pro Tools: Introducing SmartPan Pro, Kind of Loud's comprehensive surround sound panning Plug-In. With support for 5.1, 7.1 and LCRS, SmartPan Pro provides the tools to mix for Dolby Digital, DTS, DVD audio and other surround formats. Professional mixers will appreciate clever features like divergence control, multiple panning modes, monitoring functions and sub-woofer/LFE management with adjustable filtering. SmartPan Pro is just the first in a series of Plug-Ins from Kind of Loud, your friendly surround sound specialists.

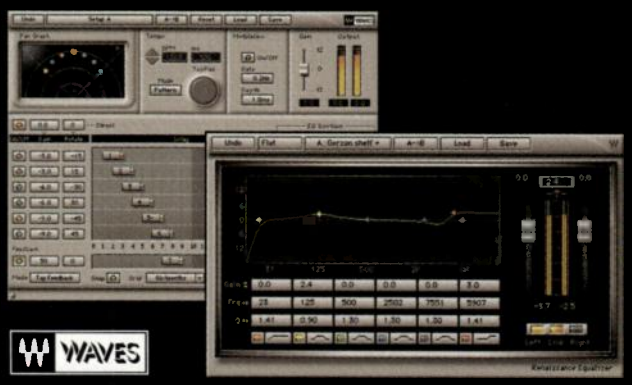
www.kindofloud.com

Wave Mechanics

Wave Mechanics™
SoundBlender™ and UltraTools™

And now for something completely different. SoundBlender, the ultimate new effects processor for Pro Tools, is rapidly becoming the tool of choice for top recording engineers. "Amazing!", "It rocks!", and "This is the BOMB!" are just some of the rave reviews coming in daily for SoundBlender's totally unique and totally phat sound. UltraTools bundles SoundBlender with PitchDoctor™, the high-end pitch correction tool, and PurePitch™, natural vocal harmony processor. Created by the designers of the world's most successful high-end hardware effects processor, UltraTools brings a new level of sound quality and creativity to the Pro Tools platform.

www.wavemechanics.com



WAVES

Waves™
SuperTap™ and Renaissance Equalizer™

Waves Renaissance Equalizer brings exceptional 48-bit resolution audiophile EQ to TDM, then properly dithered to a 24-bit output. Some have said it's better than $5000 hardware EQs. And our new SuperTap processor features 6-second 24-bit stereo delays with EQ, feedback, and rotation (panning) on every tap. It's the delay you've been waiting for. That's just two of our 19 Plug-Ins, available in powerful, cost-effective bundles. Check www.waves.com for all the details.

www.waves.com

For More Information
1.800.333.2137, code 474

SEE US AT NAMM BOOTH #3122
circle #503 on reader service card

www.digidesign.com

digidesign®
A division of Avid

©4/99. Bruno, Digidesign, Maxim, Reso, Pro Tools, and Pro Tools|24MIX are trademarks or registered trademarks of Avid Technology, Inc, or its subsidiaries or divisions. All trademarks are the property of their respective holders. All features and specifications subject to change without notice.

I N S I

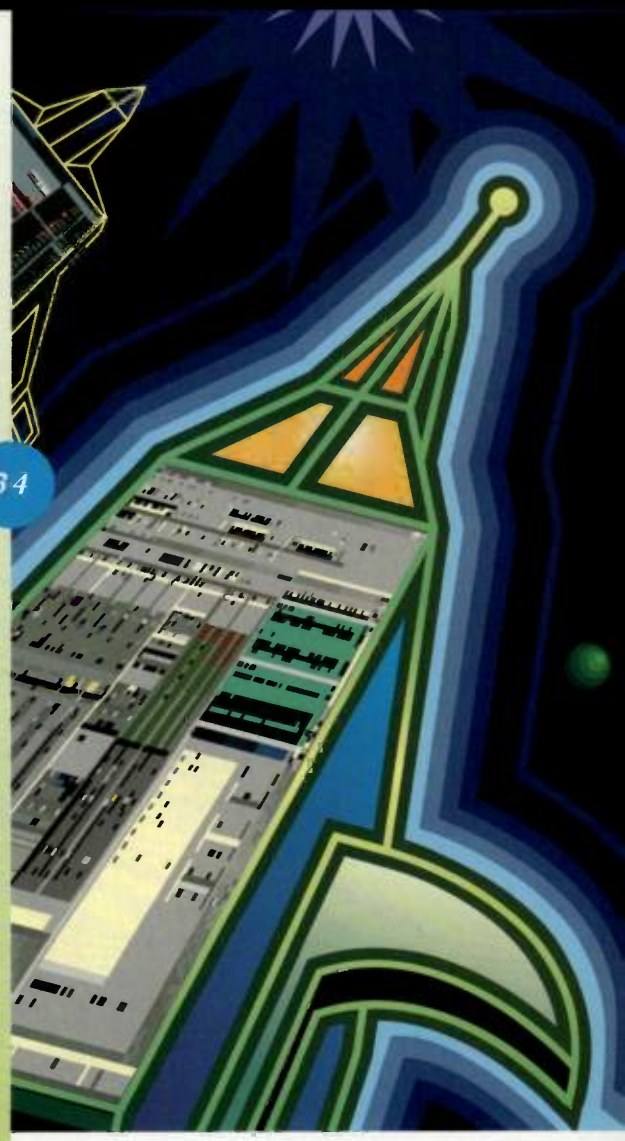
FEATURES

34 COVER STORY: SEQUENCING GAMES
Have digital audio sequencers become so universally powerful that choosing one is like picking between Tweedledee and Tweedledum? Don't you believe it! We've analyzed, in detail, every commercial digital audio sequencer for Mac and Windows to help you discover your dream program.
By Dennis Miller, Brian Smithers, and Jeff Casey

80 POWER HUNGRY
All power amps are not created equal, and each manufacturer is confident that its design offers superior performance, efficiency, reliability, and value. We talked power-amp design with representatives of Mackie Designs, Hafler, QSC, Crown, and Velodyne Silicon Systems and learned that, while they agree on some of the basic principles, their philosophies differ in important ways.
By Scott Wilkinson

90 STAGE VIEW: SWIMMING IN THE AIR
Theremin virtuoso Lydia Kavina teaches performance techniques for this beautiful but extremely challenging electronic musical instrument.
By Olivia Mattis

129 SPECIAL SUPPLEMENT: REMIX
Everybody's talking about remixing nowadays. We explain what this exciting music is about, what gear you need to get started, and how the experts create their magical grooves.



DEPARTMENTS

8 FRONT PAGE
12 LETTERS
20 WHAT'S NEW
194 AD INDEX/SALES INFO
195 CONTACT SHEET
210 CLASSIFIEDS

Electronic Musician
JULY 1999 VOL. 15, NO. 7

COLUMNS

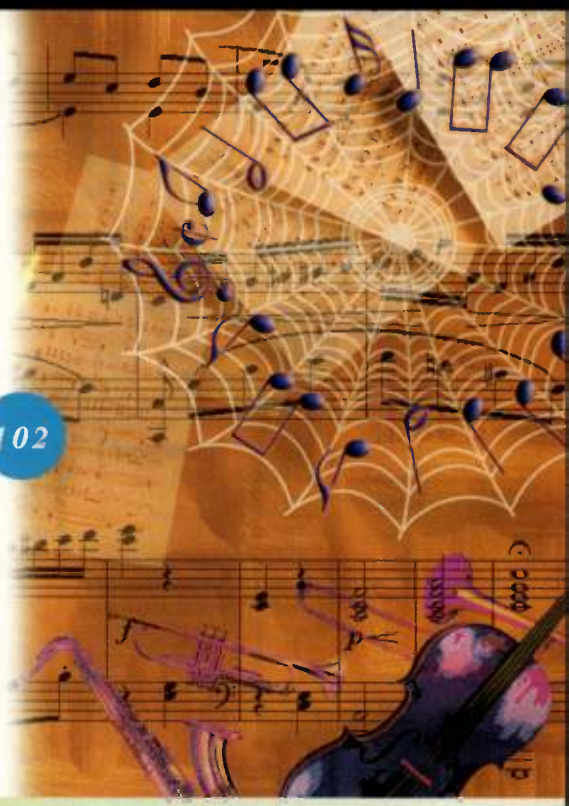
32 **PRO/FILE: Straight, No Reverb**
Heaven is an analog synth for Add N to (X).

102 **DESKTOP MUSICIAN: Scoring on the Web**
Without a standard file format, displaying music notation on the Web remains problematic.

110 **RECORDING MUSICIAN: The Twice-Baked Mix**
Strategies for remixing a song when you don't have the multitrack masters.

118 **WORKING MUSICIAN: Playing the Game**
How to get your independent release distributed to the masses.

226 **FINAL MIX: Is Reality Overrated?**
In sound design, reality is nearly always an artifice. Does it matter?



REVIEWS

150 **TASCAM TM-D1000** digital mixer

160 **ROLAND JP-8080** synthesizer module

170 **QUASIMIDI Sirius** keyboard workstation

176 **LINE 6 Pod** guitar direct box

182 **SOUND QUEST Midi Quest 7.0 (Win)** MIDI editor/librarian

190 **HHB Circle 5A** powered close-field monitors

196 **AUDIO DEUTCHKRAFT A-51s** large-diaphragm condenser mic

200 **QUICK PICKS:** **Ilio Entertainments** *TranceFusion* sample CD; **Shane Etter** Sound Subscriptions Kurzweil K2000/K2500 patches; **Guitar Center** *Synchroloops*, vol. 1 sample CD; **Arboretum** *Ray Gun* (Mac/Win) audio restoration software

Cover: Illustration by Dave Ember

Celebrating Independence Day

ANTHONY PIDGEON

July 4, of course, is Independence Day in the U.S.A. That means it's time to bring out the fireworks: we're giving our readers a July bonus, and our U.S. subscribers two bonuses!

If you are a U.S. subscriber, you received a free copy of our third annual *Personal Studio Buyer's Guide* with your July issue. Newsstand buyers and subscribers in foreign countries can purchase *PSBG* wherever they buy **EM**. It's a valuable resource; I refer to my copy regularly throughout the year.

Personal Studio Buyer's Guide lists personal-studio products available in the United States, within a wide range of categories, complete with essential specifications. This year's edition also features three articles that focus on personal-studio construction.

We strive to cover every type of product in *PSBG*, and each year we draw closer to that goal. This year, we've added several new product types. To make room, we removed the "Recording/Editing Software" and "Software Plug-Ins" categories. However, these, and four other computer-related charts, will appear in our second edition of *Desktop Music Production Guide*, available in November 1999.

The sequencer chart remains in *PSBG* this year; it serves as a great companion to our July cover story, "Sequencing Games" (see p. 34), in which we evaluate all the leading commercial digital audio sequencer programs for the Mac and Windows. "Sequencing Games" is divided into three sections: cross-platform software, Windows-only software, and Mac-only programs. We considered having only two sections, for Mac and Windows, which would include direct comparisons with the crossplatform programs. However, the crossplatform products would then have been covered twice, which seemed unfair, and it was more practical to split this gigantic task into three pieces.

Ultimately, the three-part concept works because, although we offer plenty of opinions, the article is not a "face-off." All nine programs are fine products; our aim is to help you pick the right one for you, rather than to designate "winners" and "losers." We discuss these programs in terms of features and user interface, to give you a sense of what it's like to work in each environment.

As a July bonus for *all* of our readers—newsstand buyers and foreign and domestic subscribers alike—a special *Remix* supplement has been bound into this issue. I'd like to thank all of our sponsors—especially Bruce Gerrish of IVL and project editor Joe Humphreys—for helping make this supplement happen.

Remixing is not new, but its popularity has soared in the past few years, and there are many new products for this market. Electronic musicians experimenting in remixing—whether they are "turntablists" or electronica artists—are producing exciting, fresh music. The *Remix* supplement is intended to help educate those who wish to know more about how this type of music is created. Also of interest to remixers, "Recording Musician: The Twice-Baked Mix" (p. 110) discusses how to do a remix when you have only a stereo master to work with.

I am delighted to announce that on March 28, **EM** Managing Editor Mary Cosola and her husband, Kevin Jackson, gave their son Drew a beautiful baby sister, Rachel Marie Cosola-Jackson.

Electronic Musician®

Editor Steve Oppenheimer
Managing Editor Mary Cosola
Associate Editors Jeff Casey, Brian Knave, Dennis Miller, Gino Robair, David M. Rubin
Copy Chief Patricia Hammond
Assistant Editors Carolyn Engelmann, Rick Weldon
Editorial Assistant Matt Gallagher
Contributing Editors Larry the O, George Petersen, Scott Wilkinson
Art Director Dmitry Panich
Associate Art Directors Tami Herrick-Needham, Laura Williams
Graphic Artist Steve Ramirez
Informational Graphics Chuck Dahmer

Publisher John Pledger

Marketing Manager Christen Pocock
Eastern Advertising Manager Joe Perry
Midwest Advertising Associate Julie Clark
Northwest Advertising Associate Joanne Zola
Southwest Advertising Manager Erika Lopez
Sales Assistants Alex Boyd, Mari Stancati
Classifieds Advertising Manager Robin Boyce-Trubitt
Classifieds Sales Assistant Jef Linson
Classifieds Assistants Mark Hopkins, Becca Pickens
Sales Promotions Manager Julie Shandrew
Sales Promotions and Events Coordinator Lauren Gerber
Sales Promotions Coordinator Robert Irwin
Sales Promotions Graphic Designer Alex Butkus
Director of Operations and Manufacturing Anne Letsch
Production Manager Jane Lowe
Advertising Production Coordinator Amanda Weeden
Production Assistant Jeremy Nunes
Computer Systems Coordinator Erik Shank
Circulation Director Philip Semler
Circulation Assistant Austin Malcomb
Business Manager Cindy Elwell
Administrative Coordinator Michael Devine
Assistant to the Publisher Monica Cromarty
Receptionist Shannon Kenoyer

National Editorial, Advertising, and Business Offices
6400 Hollis St., #12, Emeryville, CA 94608
tel. (510) 653-3307; fax (510) 653-5142;
Web www.emusician.com

Subscriptions, Customer Service, Back Issues
PO Box 41525, Nashville, TN 37204
tel. (800) 843-4086 or (615) 377-3322; fax (615) 377-0525

Intertec Publishing Corporation
9800 Metcalf Ave., Overland Park, KS 66212

Intertec Publishing
Ray Maloney, Chairman
Cameron Bishop, President and CEO
Ron Wall, Chief Operating Officer
John Torrey, Vice President, Entertainment Division
Stephanie Hanaway, Division Director of Marketing

PRIMEDIA Information Group
Curtis Thompson, President

PRIMEDIA Inc.
William F. Reilly, Chairman and CEO
Charles McCurdy, President
Beverly C. Chell, Vice Chairman

Electronic Musician (ISSN: 0884-4720) is published monthly by Intertec Publishing, 6400 Hollis St., #12, Emeryville, CA 94608. ©1999. This is Volume 15, Number 7, July 1999. One-year (12 issues) subscription is $36; outside the U.S. is $65. Periodical postage paid at Oakland, CA, and additional mailing offices.
All rights reserved. This publication may not be reproduced or quoted in whole or in part by any means, printed or electronic, without the written permission of the publishers.
POSTMASTER: Send address changes to Electronic Musician, PO Box 41525, Nashville, TN 37204. Editeur Responsable (Belgique): Christian Desmet, Vuurgatestraat 92, 3080 Overijse, Belgique. Canadian GST #129597951. Canada Post International Publications Mail Product (Canadian Distribution) Sales Agreement No. 0478741.

PHOTOCOPY RIGHTS: Authorization to photocopy items for internal or personal use of specific clients is granted by Intertec Publishing, provided that the base fee of U.S. $2.25 per copy, plus U.S. $00.00 per page, is paid directly to Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923 USA. The fee code for users of this Transactional Reporting Service is ISSN 0884-4720/1999 $2.25 + $00.00. For those organizations that have been granted a photocopying license by CCC, a separate system of payment has been arranged. Before photocopying items for educational classroom use, please contact CCC at 978-750-8400. Organizations or individuals with large-quantity photocopy or reprint requirements should contact Cherie Wood at (913) 967-7212. Microfilm copies of Electronic Musician are available by calling/writing Bell & Howell Information and Learning, 300 N. Zeeb Road, P.O. Box 1346, Ann Arbor, MI 48106-1346; (313) 761-4700, (800) 521-0600.

INTERTEC PUBLISHING
A PRIMEDIA COMPANY
Printed in the USA.
BPA

Also publishers of *Mix*® magazine & *The Recording Industry Sourcebook*

PROTEUS 2000

Demand More.

$995

Extreme Performance

- 128 voices of polyphony provides you with the power to make music that demands attention.
- 1024 standard presets (512 additional user presets), and expansion capabilities of up to 128MB of ROM or Flash (four 32MB slots), offers you enormous sound expandability.
- SoundNavigator provides you with ultra-fast access to every sound (searchable by bank, category, and name).
- Ground-breaking authoring technology allows you to develop your own custom sound ROMs using 16 or 32MB Flash Memory boards and an E-MU® E4 Ultra sampler.
- Enhance your sounds with E-MU's famous array of filters, powerful 96 patchcord synth architecture, and clock-based Digital Rhythmic Modular Synthesis.

Extreme Sound Support

- Skeleton Keys - Niacin B3/ Classic 70s Keyboards from E-MU SYSTEMS
- Millennium Synths from E-MU SYSTEMS
- Extreme GM from E-MU SYSTEMS
- Orchestral Odyssey - Orchestral Library from E-MU SYSTEMS
- Protozoa - Original PROTEUS® (1-3) Sounds from E-MU SYSTEMS
- World Expedition - World Sounds from E-MU SYSTEMS
- D'n B/Jungle Syndicate - Drum & Bass/Jungle from AMG
- Urban Foundation - Industrial/Hip-Hop from E-LAB
- Siedlazcek Advanced Orchestra from Best Service
- Holy Grail Piano from Q-UP Arts

Demand more information. Call the E-MU SYSTEMS office nearest you or visit **www.emu.com.**

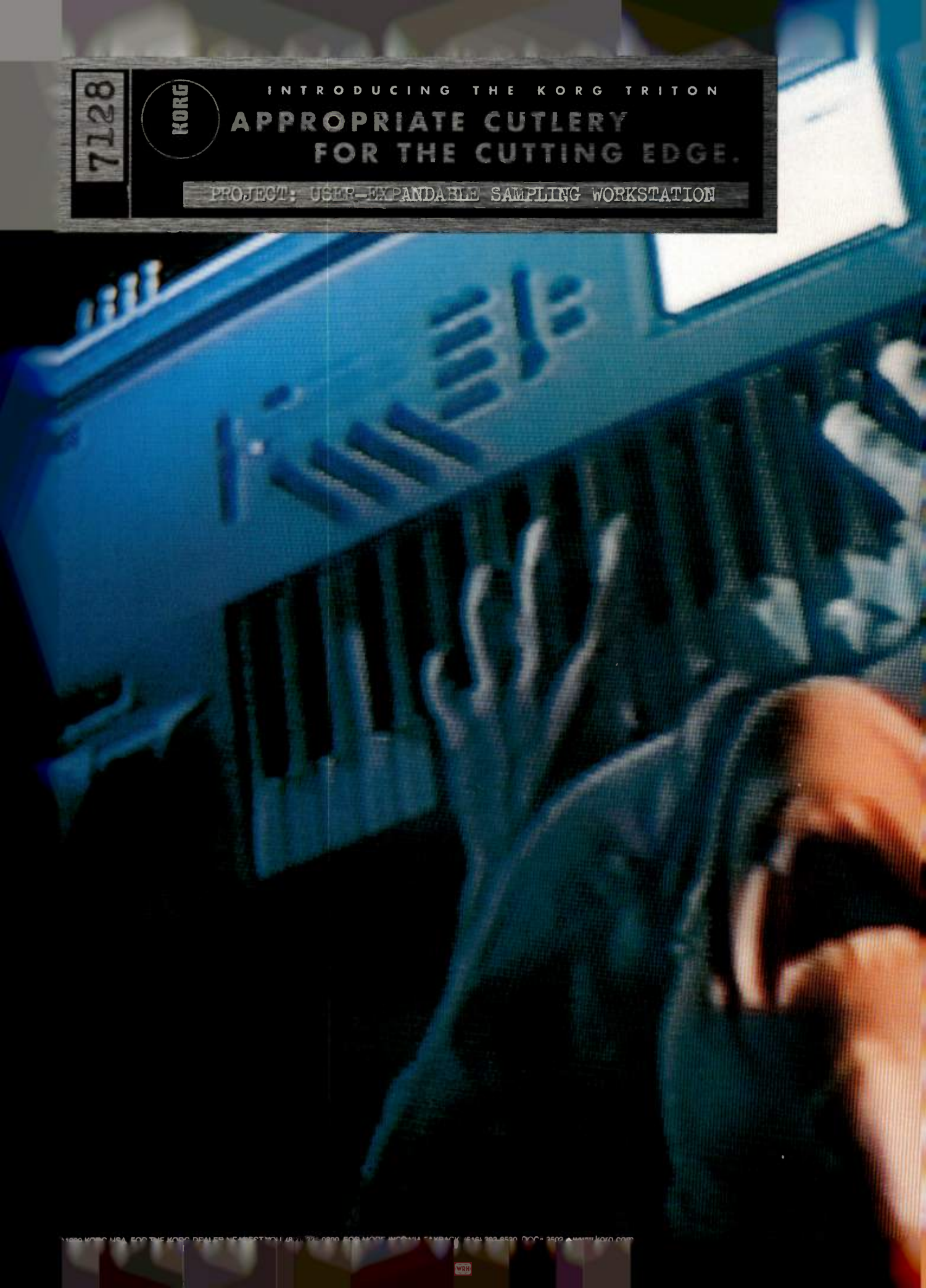
© 1999, EMU-ENSONIQ.
EMU-ENSONIQ, E-MU, ENSONIQ, EMU SYSTEMS, the EMU-ENSONIQ logo and Proteus® are trademarks owned or licensed by EMU-ENSONIQ, registered in the United States as indicated by ®, and in numerous other countries worldwide. All other trademarks are property of their respective owners. E-MU and ENSONIQ are wholly-owned subsidiaries of Creative Technology, Ltd.

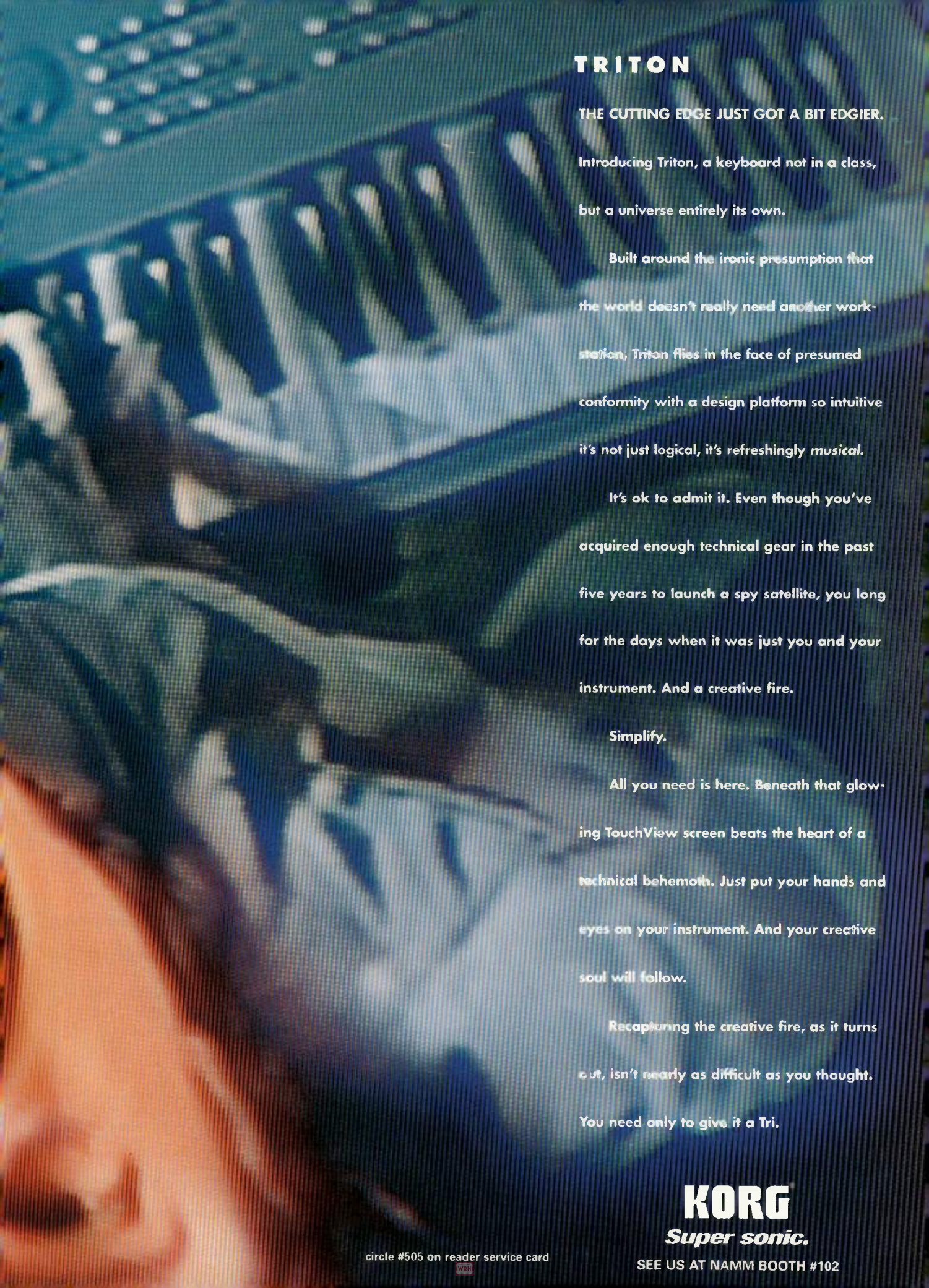
E-MU SYSTEMS

US Office
1600 Green Hills Road
P.O. Box 660015
Scotts Valley, CA
95067-0015
(831) 438-1921

UK Office
Suite 6, Adam Ferguson House
Eskmills Industrial Estate
Musselburgh, Scotland
EH21 7PQ U.K.
+44 131 653 6556

circle #504 on reader service card


7128
KORG
INTRODUCING THE KORG TRITON
APPROPRIATE CUTLERY
FOR THE CUTTING EDGE.
PROJECT: USER-EXPANDABLE SAMPLING WORKSTATION



TRITON

THE CUTTING EDGE JUST GOT A BIT EDGIER.

Introducing Triton, a keyboard not in a class, but a universe entirely its own.

Built around the ironic presumption that the world doesn't really need another workstation, Triton flies in the face of presumed conformity with a design platform so intuitive it's not just logical, it's refreshingly *musical.*

It's ok to admit it. Even though you've acquired enough technical gear in the past five years to launch a spy satellite, you long for the days when it was just you and your instrument. And a creative fire.

Simplify.

All you need is here. Beneath that glowing TouchView screen beats the heart of a technical behemoth. Just put your hands and eyes on your instrument. And your creative soul will follow.

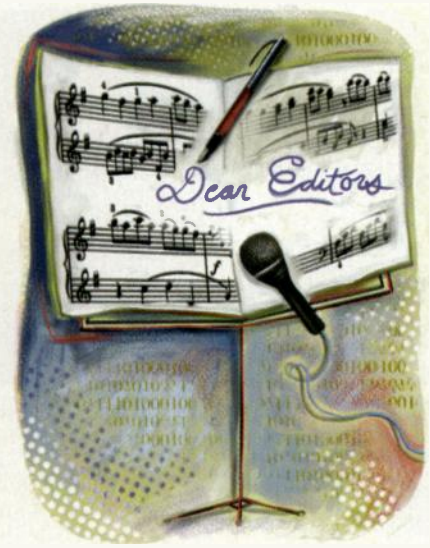
Recapturing the creative fire, as it turns out, isn't nearly as difficult as you thought. You need only to give it a Tri.

KORG

Super sonic.

SEE US AT NAMM BOOTH #102

circle #505 on reader service card



WHAT WOULD GEORGE SAY?

Having the interview with George Martin in the same issue as the article on basic recording techniques ("To Sir with Love" and "Electronic Euphoria," February 1999) was truly incongruous. I strongly doubt that George Martin would agree with the statement that lead vocals not mixed to the center are "distracting"—just listen to "Here Comes the Sun" (and others) on *Abbey Road*. I suspect that Martin and the Beatles agreed that it would sound best that way, despite what your author may think. Also, there *used* to be a really good reason for always mixing drums (or at least the kick) and bass to the center: on vinyl recordings, a heavy bass or kick mixed too far from the center could cause a ballistic excursion that might well cause the stylus to skip. With digital media, this is no longer the case, which opens up all kinds of interesting possibilities. But your article, as with mixing vocals in the center, reinforces doing it the way it's always been done—a sure prescription for the ordinary and dull.

Bruce
brucenolen@ca.slr.com

Bruce—"Electronic Euphoria" was written to outline some techniques typically employed in mixing a commercial record, not to discourage readers from coming up with alternate approaches. "There are no rules" has always been one of **EM***'s mantras, and I certainly agree with that statement. However, there are indeed guidelines you can follow, based on the techniques of successful commercial engineers, that will more than likely improve the quality of your mixes.*

Panning is a difficult subject to make categorical statements about, and many engineers have different approaches to building a virtual soundstage. My main concern is always mono compatibility; let's face it, much of the audience won't hear your mix in 100 percent stereo. Because of this, I try to keep lead instruments toward the center of the "stage"—perhaps not dead center, but rarely panned past 10 and 2 o'clock. This produces a more versatile mix that translates well to a greater number of systems.

In spite of the near obsolescence of vinyl recordings, there remains a very good reason for panning low-frequency instruments toward the center of a mix: low frequencies propagate in omnidirectional patterns. By placing instruments like the kick drum (usually in the 80 Hz range) and bass guitar (usually around 200 Hz) so that equal levels are delivered to both speakers, you'll get a more powerful low-end content. In my years working on commercial projects, I have rarely panned a bass guitar or kick drum off-center (unless I have split the high- and low-end content of those tracks first, putting the lows in the center and the highs elsewhere).

Now, I'm not suggesting that this is the only way to go. As you said, George Martin and Geoff Emerick were known for trying new things. But before you break the mold, it's wise to know what that mold is and why it exists so that you can deviate from it more effectively. My articles have always encouraged experimentation. "Electronic Euphoria" merely provides a formula for constructing a solid mix. Take from it what you want and leave the rest. I stand by my statements, all of which I have found to be tried-and-true techniques in practice.—Jeff C.

BURNING SAMPLES

Thank you for publishing a (long overdue) feature about making sample CD-ROMs (April 1999). However, I missed information about creating the actual duplication masters. Is it possible to use the usual suspects (such as Adaptec *Toast*), or is specialized software or hardware required? It would be nice to find out what equipment your interviewees use.

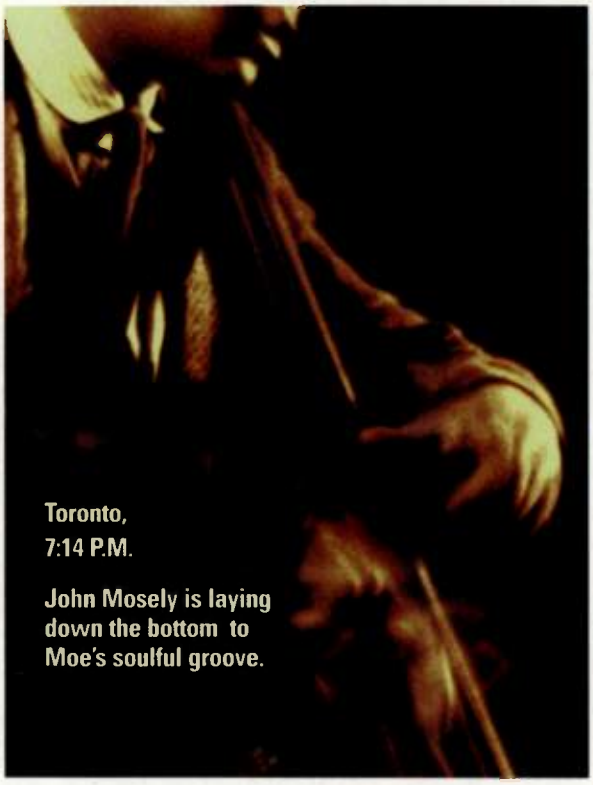
Sven Isaksson
svenisak@hotmail.com

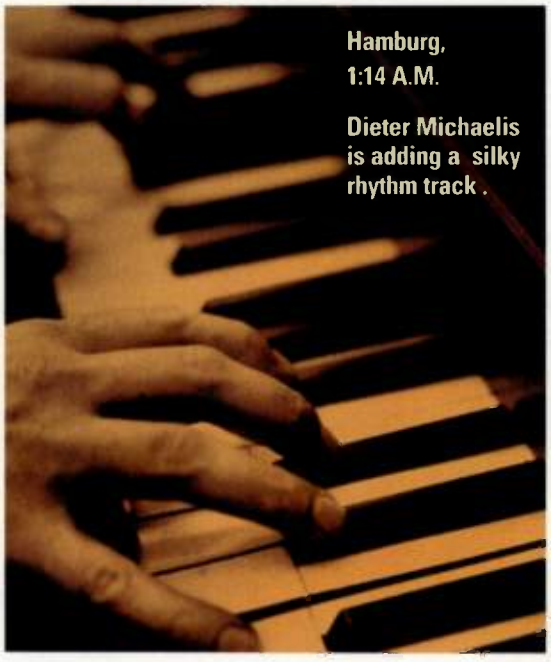
Sven—For creating an audio sample disc, you can use whatever burning software you're already using. However, if you are using product-specific files, there can be some complications. The short answer is that the format the sampler reads determines which way you will work.

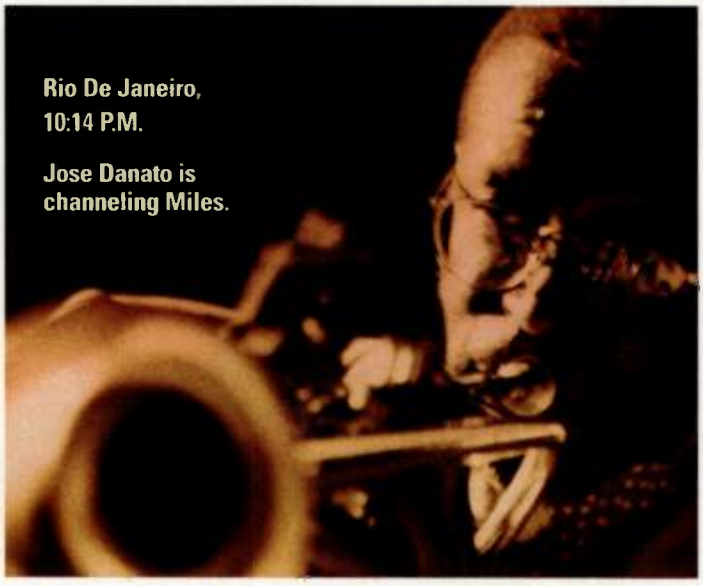
According to Daniel Fisher, director of soundware engineering at Sweetwater Sound, "This is probably one of the most confusing issues in the sampling world at the moment. You can use standard CD-ROM-burning software if your sampler can read the ISO 9660 CD-ROM format (the standard PC format for CD-ROMs that Macs can also read). However, some samplers are unable to read that format. If the sampler reads a proprietary format, you may need to save the files to a drive formatted by the sampler and then make an image copy of the information; the drive should contain less than 650 MB of files, since that's the maximum amount a CD-ROM can hold. Some samplers come with proprietary utilities that allow you create CD-ROMs for that particular brand."

If you are unsure whether your particular sampler has a proprietary format, contact the manufacturer or check its Web site for FAQs that pertain to creating and using libraries.—Gino R.

BARBARA POLLAK







Welcome to the world of Cubase VST.

It's a smaller, closer world, where creative musicians in different places and different time zones can collaborate. Online. As if they're in the same studio. Thanks to the amazing technology of Rocket™. With this new feature, Cubase VST is the first music software to offer realtime collaboration across the Internet. Now you're connected like never before. So you're not limited to the best talent in town. You're jammin' with the best talent in the world.

For more info on Cubase, check out our website at www.us.steinberg.net

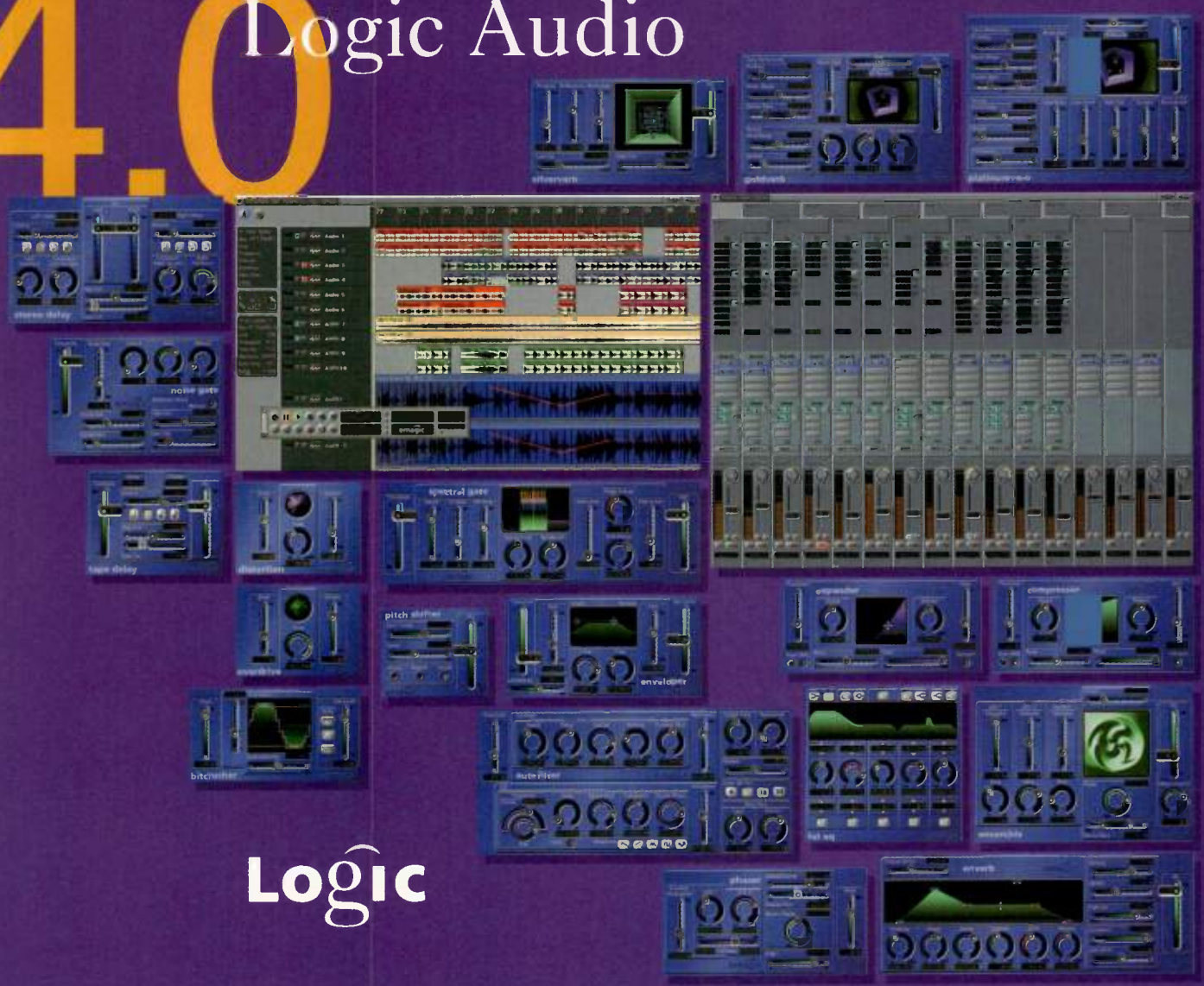
Steinberg
Creativity First™

www.us.steinberg.net • U.S. (818) 993-4161 • Fax: (818) 701-7452 • Fax On Demand: (800) 888-7510 • Canada: (416) 789-7100 • Fax: (416) 789-1667

All trademarks are registered by their respective companies.
circle #506 on reader service card

- 31 (thirty one!) High End Audio Plug-Ins included
- Windows: 24 Bit Audio, ASIO, EASI, DirectSound
- Windows: Polyphonic Waveplayer with DirectSound, DirectShow AVI-Player (QuickTime)
- Windows: SoundDiver Autolink, AMT, 64 MIDI Ports
- Individually zoomable tracks in Arrange Window
- Multi-track Record for MIDI (up to 16 times)
- Multiple Sequence Editing in Matrix Editor
- Environment: Macro- and Alias-Objects and much more
- Enhanced User Interface with complete localization (multiple languages) plus many more improvements

Emagic proudly presents the new Logic Audio 4.0



Logic

LOGIC SERIES
Advanced Music Production Software
in the pursuit of
technical
excellence
Emagic Inc
13348 Grass Valley Ave.
Building C, Suite 100
Grass Valley, CA 95945
Tel. +530. 477 1051
Fax +530. 477 1052
Emagic Web-site
http://www.emagic.de
Emagic E-Mail
info@emagic.de
emagic
Technology with Soul.
Logic Audio® and Emagic® are registered trademarks of Emagic. All other trademarks are property of their respective owners.
circle #507 on reader service card

ANTHROCART®

Take Control of Your Space!

Configure your AnthroCart to fit your specific music application. We'll be happy to work with you so you have just the right solution. Call us!

LIFETIME WARRANTY • DOZENS OF SHAPES AND SIZES • OVER 75 ACCESSORIES • TOUGH AS NAILS

CALL FOR A FREE CATALOG!

800-325-3841

6:00 AM to 6:00 PM PST, M–F

ANTHRO®

ANTHRO CORPORATION®
TECHNOLOGY FURNITURE®
TUALATIN, OR 97062
FAX: 800-325-0045
JAPAN: 03 (TOKYO)-3947-2735
www.anthro.com

Since 1984. Prices from $299. GSA contract. Available for OEM applications.

PEDALS & MIXERS

I have a Mackie 8-Bus mixing console and would like to be able to patch in some old Boss stomp boxes through the aux send and returns. The problem is that these units are, of course, extra high impedance for guitars (1 MΩ input), which does not match well with the board's sends/returns. When I try simply patching the effects in, I get distortion or lose signal level.

I know that I could use rack-mount effects devices, but for some things I would really like to be able to patch in these goofy boxes. I read about artists doing this all the time, so how do they do it? Is there a gizmo that can match signal levels between these stomp boxes and the Mackie?

jc
suntower_systems@csi.com

JC—You can get the signal from the Boss box to the console by using a direct box. The DI will take the high impedance, instrument-level signal produced by the Boss unit and convert it to either a low-impedance mic- or line-level signal (depending on which model DI you have). You can then patch the return into the Mackie.

Getting the signal from the console to the effects pedal requires a different approach, and for that you'll need to use an impedance-matching transformer. Several companies make these units; I recommend that you check out the Edcor MM1 ($21.95; www.sound.edcorusa.com), which converts signals from low to high impedance and vice versa. An additional boost in level going to the pedal might also be necessary; this can be accomplished by boosting the aux send, or, if that's not enough, with an external line-level amp.—Jeff C.

ERROR LOG

May 1999, "What's New," p. 22: The correct contact information for IVL Technology is tel. (250) 544-4091; fax (250) 544-4100; Web www.ivl.com. Also, the Electrix-series products are 2U rack-mount.

WE WELCOME YOUR FEEDBACK.

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

The biggest thing in samplers wouldn't even fit on this page

- Up to 128 Voice polyphony
- Up to 256 Mb RAM
- Up to 16 outputs
- Multi-channel Digital I/O opt.
- .WAV File Format

The complete list of features is too massive to print here . . . so check out the big picture at your local Akai dealer.

AKAI *professional*

S5000

S6000

www.akai.com/akaipro

Akai Musical Instrument Corporation • 4710 Mercantile Drive • Fort Worth, TX 76137 • [phone] 817-831-9203 • [fax] 817-222-1490

In Canada contact Power Marketing • 372 Richmond St. W. #112 • Toronto, Ontario, Canada M5V 1X6 • [416] 593-8863

SEE US AT NAMM BOOTH #218

circle #508 on reader service card

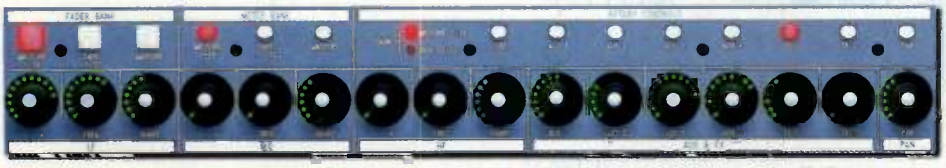
Digital Control With the Human Touch

The Spirit 328 represents a **new way of thinking** in digital console design, bringing all the functionality and sonic excellence of digital mixing to all audiences. With its unique **console-based interface**, the Digital 328 finally bridges the gap between analog and digital mixers, retaining the **spontaneity and ease of use** of an analog console yet providing all the advantages of digital, such as instant Total Recall of all digital parameters, Moving Fader Automation and Onboard Lexicon Effects.

Simply put, the Spirit **Digital 328** is the most advanced analog 8-bus you have ever seen combined with the easiest digital console you have ever used.

328's E-Strip may be configured as...

...a horizontal input channel with full EQ, Aux and Pan facilities..



...or a row of 16 Auxes or FX Sends for the 16 faders below the E-Strip...

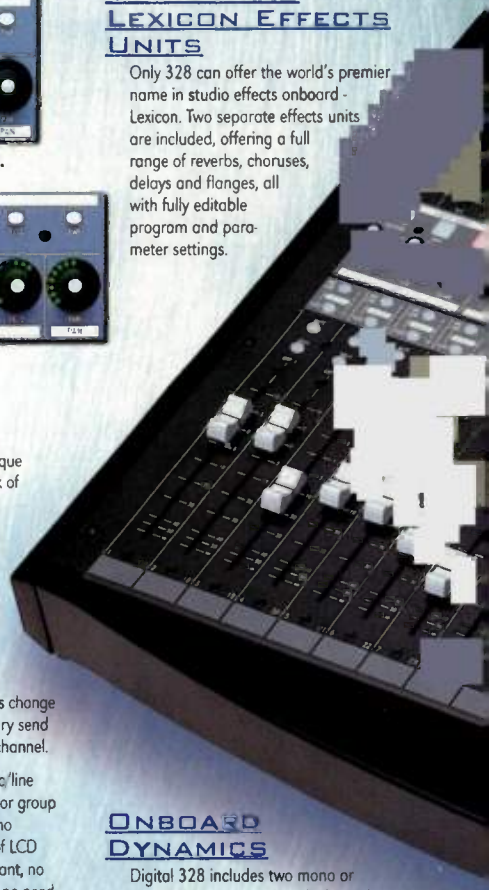
...or a set of rotary level controls for the Tape Returns.

All the Digital I/Os you need as standard

Most digital mixers don't include digital multitrack I/Os, which means that to get digital recording and mixdown you have to buy extra, expensive I/O options. In contrast, Digital 328 includes **two Tascam TDIF™ and two Alesis ADAT™ optical interfaces as standard**, allowing you to record 16 tracks entirely in the digital domain, straight out of the box. As you would expect, we've also included a pair of **AES/EBU and SP/DIF interfaces** assignable to a wide range of inputs and outputs, including group and auxiliary outs. In addition, a third optical output may be used as a digital FX Send or as eight Digital Group Outs. All in all, there are 28 Digital Outs on 328 plus 20 Digital Returns, providing enough flexibility for the most demanding applications.

2 Onboard Lexicon Effects Units

Only 328 can offer the world's premier name in studio effects onboard - Lexicon. Two separate effects units are included, offering a full range of reverbs, choruses, delays and flanges, all with fully editable program and parameter settings.



42 Input/8 Bus Configuration

For a mixer with such a small footprint, Digital 328 packs an extraordinary number of inputs. Sixteen full spec. analog mono mic/line channels - each with its own balanced XLR connector, dedicated insert point and access to phantom power - come as standard, along with five stereo inputs.

With the 16 digital tape returns on 328's TDIF™ and ADAT™ optical interfaces, there's a maximum of 42 inputs. Every input is fully routable to any of the 8 groups and has access to the full complement of 328's parametric EQ, signal processing, onboard effects and auxiliaries.

As easy to use as your current analog console

Although most digital mixers offer an amazing array of functions, it can often be a nightmare to access them.

In contrast, we've designed Spirit 328 to operate like your old analog 8-bus console, and not like a computer with faders. You can practically take it out of its box and get started without even opening the manual! Unlike other digital mixers, there's instant access to any channel, group or master feature with one button press, and you can see that feature's status from the front panel without having to rely on an LCD display. Access is so immediate that you could even use 328 as a live console.

The key to it all is Spirit 328's unique "E-strip", the lighter-colored bank of encoders and switches that runs across the center of the console. Simply select a channel and the E-strip immediately becomes a "horizontal input channel" with instant access to all that channel's EQ, aux sends, channel pan and routing. Alternatively, press any button in the rotaries section above the E-strip and the encoders change to become a channel pan, auxiliary send or Lexicon effects send for each channel.

Select a fader bank to display mic/line input faders, tape returns faders or group and master faders and that's it; no delving through level after level of LCD menus to find the function you want, no delays in making alterations and no need to study complicated EQ curves. With 328, everything you need is immediately accessible from the front panel of the console - giving you the freedom to let your ears decide.

If you want the functionality of a digital console but the usability of your old analog 8-bus, then Spirit 328 is for you.

Onboard Dynamics

Digital 328 includes two mono or stereo signal processors which can be assigned to any input, output or groups of ins or outs. Each processor provides a choice of compression, limiting and gating, as well as combinations of these effects.

TDIF is a registered trademark of Tascam/TEAC Corporation.
ADAT is a registered trademark of Alesis Corporation.

digital

three two eight

Comprehensive EQ

All of 328's mic/line, tape return and stereo inputs have access to three bands of fully parametric EQ, designed by British EQ guru and co-founder of Soundcraft, Graham Blyth. A man with over five million channels of his EQ designs in the field, Graham has brought 25 years of Soundcraft analog EQ circuit experience to bear on Digital 328. If you want the warm, musical sound of real British analog EQ, with proper low, mid and high frequency bands (rather than the low resolution 20Hz - 20kHz bands found on some consoles), look no further.

Unparalleled Sonic Spec

Garbage in, garbage out! It doesn't matter whether the console is digital or analog – if you have poor mic preamps, your sound will be compromised. That's why 328 includes Spirit's acclaimed UltraMic+™ padless preamps, giving your input signals the cleanest, quietest start of any digital mixer on the market. With 66dB of gain range and a massive +28dBU of headroom, they offer an extremely low noise floor and are virtually transparent. Spirit 328 is 24-bit throughout, with 56-bit internal processing; your signal hits the digital domain through state-of-the-art 24-bit ADCs with 128 times oversampling, guaranteeing that it maintains its clarity, while 24-bit DACs on all main outputs equal this sonic integrity should you wish to return your signal to the analog world.

Moving Fader Automation

All of Digital 328's 100mm faders (including the master) are motorized to allow current channel, tape return, group and aux master levels to be viewed at a glance.

All Parameters Instantly Recallable

In addition to level automation, every other digital parameter of 328 is instantly recallable, allowing snapshots of the entire console's status to be taken. Up to 100 of these "scenes" may be stored internally and recalled either manually, against MIDI clock, or against MTC or SMPTE. Alternatively, every console function has been assigned its own MIDI message allowing dynamic automation via sequencer software.

Easy To Edit - Direct From The Control Surface

The majority of 328's input and routing parameters may be edited from the control surface without resorting to the console's LCD. Settings and levels may be copied and pasted from one channel to another with just two button presses and, using 328s query mode, the routing or assignment status of every channel on the console may be viewed instantly simply by selecting the function (such as Group 1 or Phase Reverse) you want to question. In addition, with 328's Undo/Redo function located in the master section, editing is entirely non-destructive, allowing you to A/B test new settings with previous ones.

Grows With Your Needs

Two Digital 328s may be digitally cascaded, giving you up to 84 inputs at mixdown and 32-track digital recording capability.

Full Metering & Monitoring Options

All of the mic/line inputs, tape return inputs, group and master levels may be monitored per bank via Digital 328's 16 10-segment bargraph meters. Additionally, 328's onboard dynamics processors may be monitored using the console's master meters. Any input may be solo'd using AFL, PFL or Solo-in-Place.

Timecode & Machine Control

Digital 328 reads and writes MTC and reads all SMPTE frame rates, with a large display instantly indicating current song position. Store and locate points are accessible from the console's front panel, with 328's transport bar controlling a wide range of devices including Tascam and Alesis digital recorders.

Software Upgradeable

328's open architecture means that any functional improvements and software upgrades can be made easily available off Spirit's website. 328 Mixer Maps for popular sequencing software packages are also available free of charge.

Add-On Module Options

To meet the needs of a variety of users, there are three module options:

8 Channel Analog I/O Interface

Connecting to the TDIF ports, 16 phono connectors provide eight analog group or direct outs and eight analog inputs for tape returns 17-32. Two interfaces may be connected, allowing 16 track analog recording or access to 16 more sequenced keyboard or sampler inputs.

AES/EBU interface

Four pairs of AES/EBU connectors allow optional digital interfacing to hard disk production systems such as Pro Tools. A maximum of two interfaces may be connected.

Mic Pre-Amp Interface

Each interface provides eight XLR mic ins with UltraMic+ preamps. Connecting two interfaces turns 328 into a 32 mic input, 8-bus mixer for PA or theatre applications.

Suggested Retail Price:
$4,999.95

Spirit By Soundcraft, Inc. • 4130 Citrus Ave., Suite 9 • Rocklin, CA 95677
Toll-free: (888) 459-0410

www.spiritbysoundcraft.com

SPIRIT
by Soundcraft

A Harman International Company

circle #509 on reader service card

WRH

WHAT'S NEW

By the EM Staff

▲ PRECISION AUDIO LABS SRD-1

If you need a continuous, authoritative display of word-clock and slave-clock sample rates, you might want to check out Precision Audio Labs' SRD-1 sample-rate detector ($149.95). The unit, which measures 5 x 2.5 x 1.5 inches, detects whether the incoming signal is word clock or slave clock. A 2-line, backlit LCD displays sample rates up to a maximum rate of 52 MHz. The readout, however, displays all sample rates in kHz, to avoid the confusion of rates listed in both kHz and MHz. This also circumvents the need to calculate word clock by dividing the slave-clock rate by 256.

Input is on a single BNC connector, and power is supplied by an included 9 VDC adapter. Input impedance on the unit is set by internal termination, selectable between 50Ω, 75Ω, or a high-impedance setting of 50 kΩ. Precision Audio Labs rates the SRD-1's frequency detection range at 5 Hz to 52 MHz. The company provides a one-year warranty on the SRD-1. Precision Audio Labs; tel. (818) 888-0388; fax (818) 704-7614; e-mail pas3@pacificnet.net; Web www.pacificnet.net/~pas3.

Circle #401 on Reader Service Card

▼ MACKIE COMPACT VLZ PRO SERIES

Mackie Designs has upgraded its VLZ line of compact mixers to the new VLZ Pro Series, which includes the 1202-VLZ Pro 12-channel, 2-bus mic/line mixer ($459); 1402-VLZ Pro 14-channel, 2-bus mic/line mixer ($629); and 1604-VLZ Pro 16-channel, 4-bus mic/line mixer ($1,249).

Each of the three Compact VLZ Pro mixers features Mackie's new Extended Dynamic Range microphone preamps, which are capable of up to 60 dB gain apiece. Other features common to all three units include a DC-pulse transformer for greater radio-frequency rejection; steel chassis; sealed, dustproof rotary pots; a global phantom-power switch; and an 18 dB/octave low-cut filter with a 75 Hz cutoff frequency on every mic/line channel.

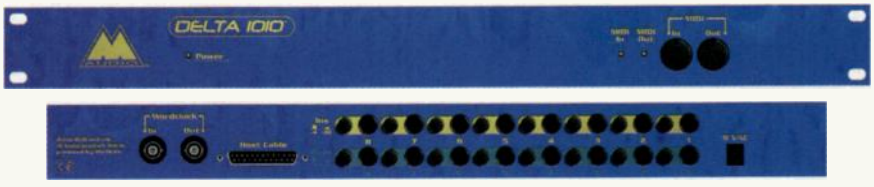
Like comparable mixers from the earlier VLZ series, the 1202-VLZ Pro and 1402-VLZ Pro feature an ALT 3/4 stereo bus on ¼-inch connectors, in addition to each mixer's two main buses. The 1202 and 1402 also each feature 3-band EQ on each channel, with center frequencies of 80 Hz, 2.5 kHz, and 12 kHz. The EQs on the 1604-VLZ Pro's channels sport the same high- and low-frequency bands, but also include a mid-frequency band that is sweepable between 100 Hz and 8 kHz.

According to Mackie, the VLZ Pro line offers a lower distortion rating and greater dynamic range (130 dB) than previous VLZ models. Mackie rates the mixers' frequency response at 20 Hz to 60 kHz (+0/-1 dB) and total harmonic distortion at <0.005 percent (20 Hz to 20 kHz). Mackie Designs; tel. (800) 898-3211 or (425) 487-4333; fax (425) 487-4337; e-mail mackie@mackie.com; Web www.mackie.com.

Circle #402 on Reader Service Card

▼ MIDIMAN LAGOON AND DELTA 1010

Midiman's new digital audio division, M-Audio, has debuted two new products, the Lagoon ($425) and the Delta 1010 ($995.95). The Lagoon is a half-sized PCI audio card that has one pair of optical digital I/O ports. The in and out ports can be independently set as 24-bit ADAT Lightpipe or stereo S/PDIF. The card features full-duplex I/O modes for simultaneous playback and recording.



The Lagoon supports ADAT sample rates between 39 kHz and 51 kHz and S/PDIF sample rates of 32, 44.1, 48, 64, 88.2, and 96 kHz. ADAT sync is provided on a 9-pin D-sub connector that can also be used as a 1-In, 1-Out MIDI interface; a breakout MIDI cable is included. You can sync multiple Lagoons together. The card supports downloadable audio effects and processing and includes 768 KB of D-RAM for audio streaming and effects.

The Delta 1010 is a recording system for PCs and Macs that includes a PCI host card and 1U rack-mount audio interface with eight channels of analog I/O (with 24-bit ADCs and DACs) on balanced TRS ¼-inch connectors and two channels of 24-bit S/PDIF I/O on RCA connectors. The unit supports sample rates of up to 96 kHz. Each channel of analog I/O on the breakout box can be individually configured to operate at +4 dBu or -10 dBV.

The breakout box also includes MIDI In and Out connectors and word clock I/O. Multiple Delta cards can be linked with sample-accurate synchronization. The system has drivers for Windows 95, 98, and NT; ASIO; and OMS. Midiman; tel. (800) 969-6434 or (626) 445-2842; fax (626) 445-7564; e-mail info@midiman.net; Web www.midiman.net.

Circle #403 on Reader Service Card

▲ FURMAN SRM-80

Furman has created the SRM-80 signal router and monitoring system ($499) to simplify the task of mixing down to two tracks and making dubs of your stereo material. The single-rackspace device allows you to receive a stereo signal from your mixing board (on two balanced ¼-inch TRS connectors) and connect up to four stereo devices, such as DAT machines, cassette decks, and CD recorders, for recording and playback.

With the SRM-80, you can dub to all four devices (channels A–D) simultaneously, if you wish. Input and output for channel A is on balanced ¼-inch TRS connectors; I/O for channels B, C, and D is on unbalanced RCA jacks. You can monitor the output of any unit and switch the signal between three sets of speakers. Separate level controls for each channel give you the option to set equal levels for each set of monitors.

On the rear panel of the SRM-80 are two outputs on balanced ¼-inch TRS connectors. Using these, you can run through a separate power amp. You connect the returning speaker-level signal from the power amp to the SRM-80 on 5-way binding posts, and it is then routed internally to two sets of speaker-level outs, also on binding posts. These outputs drive up to two sets of passive monitors. A pair of self-powered monitors can also be used; outputs for active monitors are provided on two balanced TRS jacks.

The SRM-80 is switchable between -10 dBu and +4 dBV operating levels and also features a ground-lift switch. There is a 5-pin connector for the optional SRM-RU remote ($79), which allows you to control the push-button functions of the SRM-80 from a distance. Furman Sound; tel. (707) 763-1010; fax (707) 763-1310; e-mail info@furmansound.com; Web www.furmansound.com.

Circle #404 on Reader Service Card

▶ YAMAHA RM1X

Getting into the DJ and dance-music act, Yamaha has released the RM1X MIDI sequence remixer ($899). The unit boasts full MIDI control and real-time editing capabilities for live dance-mix performances. With its built-in floppy-disk drive, you can save and import Standard MIDI Files to integrate the RM1X with your computer-based synth or sequencer.

The RM1X includes Yamaha's AWM2 synthesis engine and comes with 654 preset voices and 46 drum kits. The synth is 32-note polyphonic and 16-part multitimbral. You can apply up to three effects per voice, including reverb, chorus, phasing, flanging, distortion, and more. For that popular bass boom, you can apply 24 dB of boost/cut in the 50 Hz to 2 kHz range.

For real-time tweaking, the RM1X has a number of "Play FX," such as harmonizing, clock shifting (moves tracks backward and forward in time), note-duration quantizing, and note Velocity editing. Other real-time effects include filter cutoff, resonance level, and envelope decay.

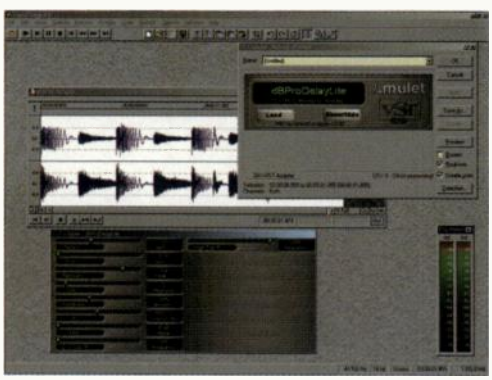
The sequencer records at 480 ppqn resolution and has a 110,000-note internal memory. In addition to imported SMFs, you can use the built-in library of 7,000 drum, bass, guitar, percussion, and keyboard phrases to get your grooves going. These phrases come in a variety of styles, including trance, hip-hop, trip-hop, acid jazz, house, and techno. Yamaha Corporation of America; tel. (714) 522-9011; fax (714) 739-2680; e-mail info@yamaha.com; Web www.yamaha.com.

Circle #405 on Reader Service Card

▶ AMULET VST-TO-DIRECTX ADAPTER

Windows users running DirectX-compatible software can now greatly expand their range of available plug-ins by using the *VST-to-DirectX Adapter* from Amulet (Win; $50). The program operates as a transparent plug-in shell that allows a DirectX-compatible host program to run VST plug-ins. The VST plug-in behaves exactly as though it were a DirectX plug-in, and all of its original controls are retained.

The software has been proven to work with more than 100 VST-format plug-ins, and the manufacturer believes that it will work with many more. Using *VST-to-DirectX Adapter* will not significantly affect CPU performance, as it consumes less than 3 percent of CPU power with a Pentium II/350 or higher, and no more than 10 percent with a Pentium 133.



Amulet will provide free upgrades to registered users when the VST 2.0 specification is released by Steinberg. The company will also offer free VST plug-ins for its customers in the near future. Amulet Audio Software UK; e-mail afh1@ukc.ac.uk; Web http://surf.to/amulet.

Circle #406 on Reader Service Card

XP-30
TONE SWITCH

Before we sent it to market, we fattened it up.

Jam-packed. That's the word to describe the over 1,500 professional sounds we stuffed into our new XP-30. First, we took our best XP synth and loaded it with three Wave Expansion boards to cover virtually any style of music including orchestral, techno, and today's hottest sessions.

Then we included two expansion slots to add whatever sounds you'd like. Finally, we beefed it up with 40 multi-effects, Patch Finder,™ a serial interface, SmartMedia™ storage and an advanced arpeggiator that lets you play parts you never thought possible.

The result is a 64-voice, 16-part multitimbral marvel that easily reigns as the world's new heavyweight champ among affordably priced synths.

Roland

XP-30
64-Voice Expandable Synthesizer

Roland Corporation U.S., 5100 S. Eastern Avenue, P.O.910921, Los Angeles, CA 90091-0921 (323) 890-3700 www.rolandus.com Faxback Information: (323) 890-3700, ext. 2271 (Doc.# 10350)
Roland Canada Music Ltd., 5480 Parkwood Way, Richmond, B.C. V6V 2M4, (604) 270-6626
Specifications and appearance are subject to change without notice

circle #510 on reader service card

PERFORMANCE TOOLS ▲▲▲▲

▶ MACKIE

The SRM450 ($799) from Mackie is a 2-way speaker developed in association with Radio Cine Forniture, part of Mackie's new European manufacturing facilities. The bi-amplified SRM450 has 300- and 100-watt amplifiers for its 12-inch low-frequency driver and wide-dispersion horn, respectively. The signal is divided by a 24 dB/octave Linkwitz-Riley electronic crossover. The horn uses a titanium compression driver for maximum fidelity at high SPLs and sports a wide dispersion pattern that is designed to provide smooth off-axis response.

On the back panel of the SRM450 is a level knob that provides up to 40 dB of gain, a switch that provides a 12 dB/octave low-frequency rolloff at 75 Hz, a Contour control that boosts the signal level by 3 dB below 100 Hz and above 12 kHz, and a switch that allows the SRM450 to go into a sleep mode when not used for three minutes. There is also an XLR connector for input and another for parallel connection to another SRM450.

The speaker's enclosure is made from a high-impact plastic composite and features a handle on top, as well as a recessed handle on each side. The enclosure can be hung, mounted on a pole speaker stand, or placed on its side to act as a floor wedge monitor. Mackie rates the SRM450's frequency response at 45 Hz to 20 kHz, THD at 0.1 percent, and maximum SPL at 123 dB (@ 1m). Mackie Designs; tel. (800) 898-3211 or (425) 487-4333; fax (425) 487-4337; e-mail sales@mackie.com; Web www.mackie.com.

Circle #407 on Reader Service Card

▼ BEYERDYNAMIC

Designed for use in broadcast or on stage, the Beyerdynamic SMS 600 stereo in-ear monitor ($4,999) is a wireless UHF system that operates at a frequency range of 798 to 822 MHz. It uses phase-locked-loop tuning, and you can choose among 64 frequencies, stored in four banks, in order to avoid radio-frequency interference.

The system consists of three components: the SMT 600 transmitter, the SMR 600 receiver, and an earpiece. The half-rackspace SMT 600 can be used in mono or stereo. It features a limiter for each channel and a programmable 5-band equalizer. There are five EQ presets, including low-frequency cut, bass and treble boost, and others. Parameters for the EQ and limiters can be controlled by a PC using a special connector supplied with the SMS 600.

The SMR 600 receiver is powered by a 9V battery and has controls for setting volume and selecting equalization presets. An LCD displays the selected frequency. The SMR 600 has an ⅛-inch TRS connector for the accompanying earpiece.

Input is on two balanced ¼-inch/XLR combination connectors. The frequency response is rated at 30 Hz to 18 kHz and signal-to-noise ratio at 70 dB (stereo use) or 80 dB (mono use). Beyerdynamic; tel. (516) 293-3200; fax (516) 293-3288; e-mail salesusa@beyerdynamic.com; Web www.beyerdynamic.com.

Circle #408 on Reader Service Card

BE HERE NOW ▲▲▲▲

Be, Inc., is picking up steam as more audio-industry manufacturers commit to developing versions of their products that will work with the Menlo Park, California, company's cross-platform Be operating system. The products are predominantly ported versions of software and digital audio cards, but companies that manufacture other interesting music-making products have begun development, as well.

On the software side, **Arboretum** is porting its *Hyperprism* and *Ray Gun* software for BeOS use. **Steinberg** will port *Nuendo,* a multitrack recording and editing program written for SGI computers, which will use floating-point audio processing and support VST plug-ins. Italy's **IK Multimedia** is bringing its entire product line, including *GrooveMaker* and *T-RackS,* over to the system. **Seer Systems** will develop Be versions of its *Reality* and *SurReal* synth and sampler software.

Companies that manufacture PCI-based audio cards and other hardware have thrown their hats into the ring, as well. For instance, **Emagic** has announced its plans to develop a driver that will allow the company's Audiowerk8 card to work with BeOS. (Emagic is also preparing Be-compatible versions of its flagship *Logic Audio* software.) **Sonorus** and **CreamWare** have promised similar drivers, as have quite a few companies that make systems that integrate an audio or MIDI interface with a PCI card, including **Event, Lucid, Aardvark,** and **Terratec. E-mu** will make its Audio Production Studio hardware/software system available for Be use.

Other types of items are Be-ing developed, as well. Amsterdam-based **N2IT** has released a BeOS version of FinalScratch, a hardware/software product designed for DJs who wish to manipulate digital audio by way of their turntables. **Harrison**'s Live Performance Console features the company's proprietary IKIS automation, which is written for the BeOS. MIDI interfaces will also become available: **Opcode** is currently developing drivers for such products as the Studio 64 XTC and Studio 128X.

You might like to know exactly when all these products will Be delivered. So would we.

—Rick Weldon

▶ ARBORETUM RESTORATION-NR

Arboretum Systems proclaims that its new high-resolution hiss-removal software plug-in, *Restoration-NR* (Win; $299), can eliminate more hiss with less coloration and signal loss than other noise-reduction software. The program uses 32-bit floating-point calculations for up to 4,000 filter bands and supports 24-bit, 96 kHz audio.

The clean, hardwarelike user interface provides a simple set of controls for threshold selection, amount of attenuation, high-end cutoff, and high-end boost to avoid muddiness. The program's automatic noise-recognition function can pinpoint the bandwidths where there is hiss, or you can identify the noise floor yourself and let *Restoration-NR* take over from there.

Restoration-NR will run on a Pentium/166 MHz or faster PC with Windows 95/98/NT. It will operate under any DirectX-compatible host program and with any Windows audio card. Arboretum Systems; tel. (800) 700-7390 or (650) 738-4750; fax (650) 738-5699; e-mail info@arboretum.com; Web www.arboretum.com.

Circle #409 on Reader Service Card

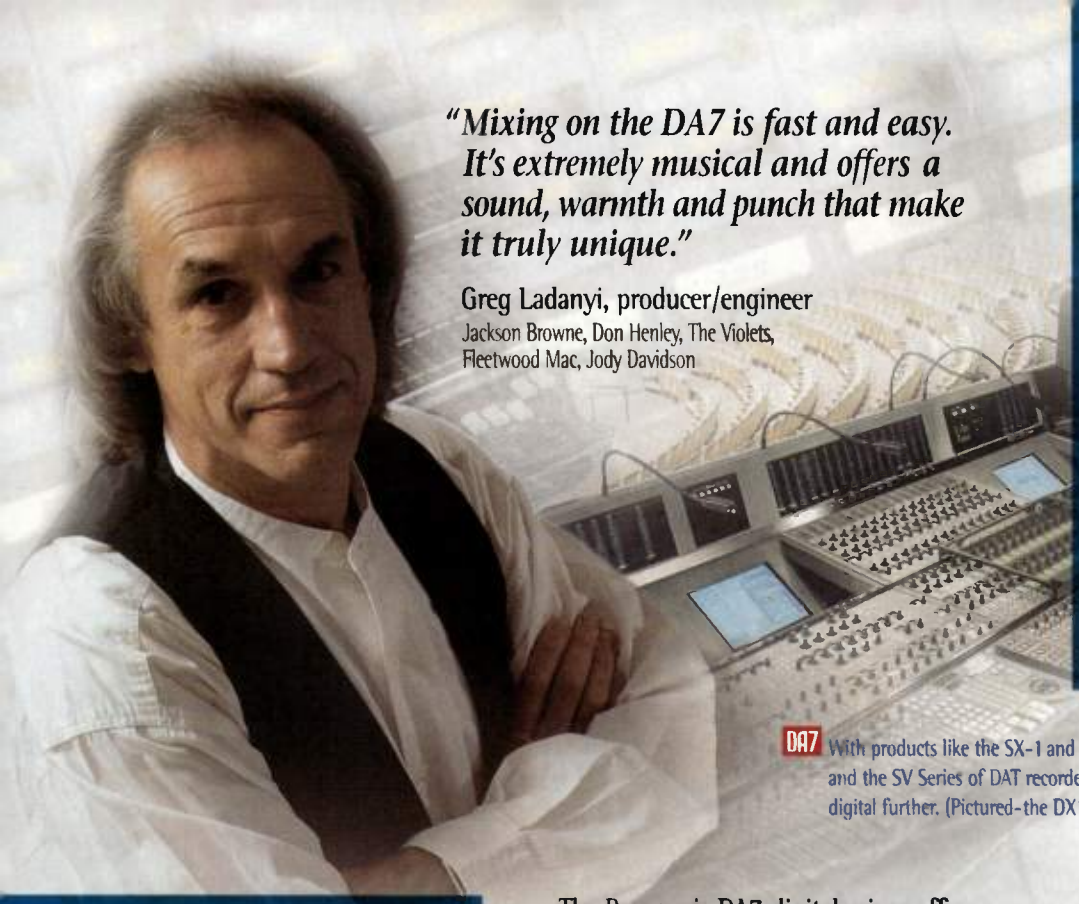
▼ DEMETER H-SERIES TUBE DIRECT

The new H-Series Tube Direct/Line Driver ($899) from Demeter is designed to be used either as a direct-injection box for mic- or instrument-level signals or to add tube warmth to line-level audio. The front panel of the stereo unit provides a high-impedance input and a low-impedance output for each channel, all of them on unbalanced ¼-inch connectors. Additional low-impedance outputs are provided on the back with both XLR and ¼-inch TRS connectors for each channel.

There are controls on each channel for ground lift and phase inversion, and a switch for unity gain/volume control. When using the H-Series Tube Direct as a DI box, you can apply a tube-driven boost of up to 20 dB, controllable with a volume knob. If you simply want to add some tube warmth to your signal, you can operate the Tube Direct at unity gain for a low-impedance output.

Demeter rates the Tube Direct's frequency response at 20 Hz to 20 kHz and signal-to-noise ratio at greater than 98 dB. The THD is rated at 0.035% (at 1 kHz) when operating at unity gain and 0.081% when the boost is applied. Demeter Amplification; tel. (818) 994-7658; fax (818) 994-0647; e-mail info@demeteramps; Web www.demeteramps.com.

Circle #410 on Reader Service Card



"Mixing on the DA7 is fast and easy. It's extremely musical and offers a sound, warmth and punch that make it truly unique."

Greg Ladanyi, producer/engineer
Jackson Browne, Don Henley, The Violets, Fleetwood Mac, Jody Davidson

IF THE DA7 LET YOU WORK ANY FASTER...

DA7 With products like the SX-1 and DX1000 (the DA7's big brothers), and the SV Series of DAT recorders, Panasonic is truly taking digital further. (Pictured-the DX1000 digital console.)

...YOU MIGHT NEED A SEAT BELT.

Let's face it. Today's fast paced production environments require more from a mixer than ever before.

You need instant scene recall, dynamic moving fader automation, 5.1 surround mixing capabilities and an intuitive interface that easily controls analog, digital and MIDI signals.

All with 24-bit audio quality.

The Panasonic DA7 digital mixer offers all of this and more. The DA7 has 38 inputs that let you easily route signals between 16 mic/line analog inputs to a hard disc recorder or MDM. You can even get up to 32 channels of analog or 24 channels of digital I/O in ADAT, TDIF or AES format. Or control MIDI devices or sequencer software right from the DA7's 16 MIDI faders.

So if you'd like to speed yourself up without running out of money, take a test drive at your nearest Panasonic Pro Audio Dealer today.

DA7 Many magazine editors have raved about the DA7's exceptional sonic quality, intuitive user interface, automation and affordability. (Some editors even bought the DA7 after the review!)

THE ASSOCIATES Only $170 a month!

DA7 We've made it affordable. Now you can own a DA7 with our incredible 36-month, no money down, $170/month lease-to-own program.* See your dealer for details or call The Associates at 1-800-526-8638. Make your move to digital now.

* Program subject to customer credit approval and acceptance by Associates Commercial Corporation.

Panasonic
Broadcast & Digital Systems Company
TAKING DIGITAL FURTHER.

Call us to receive an informative brochure and reprints of the magazine reviews. Or simply visit our web site.

www.panasonic.com/proaudio
1-800-528-8601
product code 23

MIC CABINET ▲▲▲▲

◀ AKG

AKG Acoustics touts its new C4000B large-diaphragm, backplate condenser mic ($848) as an optimum choice for vocals and wind or string instruments. The heart of the dual-diaphragm C4000B is a 1-inch-diameter, 6-micron-thick, gold-sputtered mylar membrane designed for excellent transient response and complementary tonal coloration in the high frequencies. The mic has selectable omnidirectional, cardioid, and hypercardioid polar patterns.

With a transformerless output stage, the C4000B provides low self-noise; the capsule is contained in an internal suspension cradle to further reduce unwanted noise. The heavy-duty protective wire grille also conceals a layer of wire mesh that insulates the capsule from electrostatic and electromagnetic interference, as well as a 0.12-inch-thick internal wind screen. The XLR connector and all other electrical contacts are gold plated.

The C4000B has a frequency-response range of 20 Hz to 20 kHz and a dynamic range of 137 dB (A weighted, at 48V phantom power). It features a switchable 10 dB attenuation pad and a bass-cut switch that reduces low end at 12 dB/octave below 100 Hz.

Phantom power from 9V to 52V is required to power the C4000B. An elastic-suspension shock mount and a foam windscreen ship with the mic. AKG Acoustics U.S.; tel. (615) 360-0499; fax (615) 360-0275; e-mail ccarroll@harman.com; Web www.akg-acoustics.com.

Circle #411 on Reader Service Card

▼ NEUMANN

Following up on the success of its KM 184 miniature cardioid microphone, Neumann has introduced two new miniature transducers to its line: the KM 183 omnidirectional mic ($749) and the KM 185 hypercardioid mic ($749). All three are well suited to miking acoustic instruments. Built using modern manufacturing techniques and transformerless electronics, these mics were designed by Neumann to offer superior quality at an affordable price for home recordists.

The KM 183 omni provides a 7 dB boost at 10 kHz when placed on-axis and is thus "diffuse field" equalized. It has a signal-to-noise ratio (DIN/IEC 651) rated at 78 dB and a dynamic range of 124 dB, and it can handle a maximum SPL of 140 dB for total harmonic distortion of less than 0.5%. Like the KM 184, the KM 183 is available as a stereo set.

The KM 185 hypercardioid boasts smooth frequency response both on- and off-axis, like the KM 184. It gives a slight boost (about 4 dB) at 10 kHz, and a gradual attenuation of lows below 500 Hz (when measured at 1 meter). It has a S/N ratio rated at 76 dB, its dynamic range is 124 dB, and its maximum SPL is 142 dB.

All of these miniature mics feature an overall frequency response of 20 Hz to 20 kHz. They are 48V phantom powered and provide balanced output. The incorporation of a newly developed DC-to-DC converter enables connection to equipment with unbalanced inputs, such as DAT recorders.

Available in either matte black or nickel finish, the 180-series mics come with a folding box, a windscreen, and two styles of stand mount. They are each 4.21 inches long and 0.87 inches in diameter. Neumann USA; tel. (860) 434-5220; fax (860) 434-3148; e-mail neumlit@neumannusa.com; Web www.neumannusa.com.

Circle #412 on Reader Service Card

▶ ROYER

The Royer/Speiden SF-12 stereo coincident ribbon microphone ($1,950) is the latest microphone from Royer Labs. Like the company's single-ribbon R-121, the SF-12 uses aluminum ribbons weighing approximately one-third of a milligram. The stereo microphone's ribbon is 1.8 microns thick. The SF-12's ingot-iron outer casing is designed to function as part of the magnetic circuit for better sensitivity. The microphone's ribbons are placed in an over/under style and are aimed 90 degrees apart from one another. Each of the ribbons captures a figure-8 polar pattern.

The SF-12 is finished in matte black chrome, and it ships in a lined, padded wooden case. An 18-foot cable, wired as an XLR 5-pin connector to two standard 3-pin XLR connectors, is also included. Options include a windscreen ($47.50) and shock mount ($72). Royer rates the microphone's frequency response at 30 Hz to 15 kHz (±1 dB) and maximum sound-pressure level at 135 dB. The company offers a lifetime warranty on the product. Royer Labs; tel. (818) 760-8472; fax (818) 760-8864; e-mail info@royerlabs.com; Web www.royerlabs.com.

Circle #413 on Reader Service Card

Take Giant Steps

Alesis' all-new QS Series™

Expand your creativity by leaps and bounds.

Start with a huge array of onboard sounds – everything from richly detailed pianos, keyboards, organs and acoustic instruments to cutting-edge synth tones. Then limitlessly broaden your sonic palette using Alesis QCards™ and Sound Bridge™ sample importing software. Escalate your skills with expressive keyboard feel and flexible controllers. Step out for live performances with rugged, roadworthy construction. And step up your MIDI production capabilities with the powerful Alesis Synthesizer CD-ROM software pack.

Ready to experience a whole new level of creative inspiration? Take giant steps forward with the world's favorite synthesizer family. The **QS6.1™**, **QS7.1™** and **QS8.1™** keyboards and **QSR™** module...available today at your Alesis Dealer.

QSSERIES

® Alesis is a registered trademark; QS Series, QS6.1, QS7.1, QS8.1, QSR, QCard and Sound Bridge are trademarks of Alesis Corporation.
Alesis Corporation 1633 26th Street Santa Monica CA 90404 800-5-ALESIS www.alesis.com

ALESIS

circle #512 on reader service card

QUALITY CONTROL ▲▲▲▲

▼ KIND OF LOUD

The *SmartPan Pro* (Mac; $995) from Kind of Loud Technologies is a TDM plug-in that allows you to use your Pro Tools/24, Pro Tools/24 Mix, or Mix Plus system for surround-sound mixing in a variety of formats, including 5.1, 7.1, and LCRS. The system works by allocating three stereo tracks within Pro Tools to serve as a virtual output bus. You can then change pan positions for

the six discrete audio channels and preview the results in real time.

To position elements in a mix, you can use a virtual joystick to place an audio channel among the surround-sound speakers. The graphic interface displays each speaker's volume, in decibels, as it plays that channel's signal. You can also pan sounds using another graphic interface, called the SmartKnob, which represents the room as a circle with speakers located around its circumference. You can adjust a sound's location by changing its azimuth, or location along the circumference. The position of a signal is expressed in degrees from the front-center speaker.

The width of the sound can be adjusted as well, by spreading out the sound among the speakers. *SmartPan* also features divergence and convergence controls, with which you can change the volume ratios that govern how a sound is spread out among the three front speakers in a surround-sound environment.

You can link multiple tracks and pan them together. Panning can be automated, and all *SmartPan* parameters can be saved. There are high- and low-pass filters and independent level controls for surround and subwoofer channels. Kind of Loud Technologies; tel. (831) 466-3737; fax (831) 466-3775; Web www.kindofloud.com.

Circle #414 on Reader Service Card

TC WORKS

Based on the core technology of TC Electronic's M5000 hardware reverb unit, TC Works' *TC MegaReverb* (Mac; $795) provides high-end reverb in a TDM plug-in. It uses the DSP architecture of Digidesign's Pro Tools systems and is compatible with Pro Tools/24 Mix, Pro Tools/24, and Pro Tools PCI. For performance efficiency, *TC MegaReverb* lets you run up to two independent processors on a single DSP chip. The new plug-in provides higher density and more realistic room impressions than its predecessor, *TC Reverb*.

Six different room shapes are offered: Hall, Fan, Prism, Horseshoe, Small, and Club. A 3-band crossover section allows for easy customization of reverb tails. The simple user interface lets you view all parameters at once, including room shape and size, wall diffusion, initial reflections, and tail balance. You also get input and output level controls, accompanied by left/right meters with clip indicators, and a fader for the wet/dry ratio.

To get you started, *TC MegaReverb* comes loaded with 100 preset programs that include churches, halls, stages, clubs, and plates. System requirements are a Power Mac with Mac OS 8.0 or higher and a Pro Tools TDM host system. TC Works; tel. (805) 373-1828; fax (805) 379-2648; e-mail us@tcworks.de; Web www.tcworks.de.

Circle #415 on Reader Service Card

▶ DRAWMER MX60 FRONT END ONE

The MX60 Front End One ($629) from Drawmer is a mono "channel strip" that includes a preamp, EQ, and dynamics processor. It has a variety of inputs, including an XLR mic input with switchable 48V phantom power and phase reverse; balanced and unbalanced ¼-inch line inputs; and a high-impedance ¼-inch instrument jack. Output can be either +4 dBu or -10 dBV.

The MX60's dynamics section includes a gate, a compressor, and a de-esser. Attack and release times are automatically optimized for both the gate and the compressor. The gate provides a knob for threshold and a switch for selecting fast or slow autorelease. Ratio, threshold, and make-up gain knobs are provided in the compressor section. The de-esser controls are also scaled down: you only have to select the amount of de-essing and a male/female setting, and the MX60 does the rest with a continually readjusting threshold level.

The equalization section provides high- and low-shelving filters and a fully parametric mid band with 18 dB cut/boost. A Tubesound section, with 3-band control, simulates a tube-microphone sound.

A master fader is provided for output, along with an 8-step LED level meter. Output passes through a prefade limiter with a preset +16 dB threshold and selectable soft- or hard-knee limiting. Transamerica Audio Group (distributor); tel. (805) 241-4443; fax (805) 241-7839; e-mail sales@transaudiogroup.com; Web www.transaudiogroup.com.

Circle #416 on Reader Service Card

digital audio:

SONICport™
Analog 20-bit DACs, 1/8 inch stereo
S/PDIF coaxial 16/24-bit 44.1/48kHz

SONICport Optical™
Analog 20-bit DACs, 1/8 inch stereo
S/PDIF Toslink16/24-bit 44.1/48kHz

DATport™
S/PDIF coaxial 16/24-bit 44.1/48kHz

MIDI Interfaces:

MIDIport 32™
2 IN 2 OUT 32 MIDI Channels

MIDIport 64™
4 IN 6 OUT 64 MIDI Channels

MIDIport 128™
8 IN 9 OUT 128 MIDI Channels

Coming Soon!

STUDIOport AMX™
All-in-One USB rackmount digital audio & MIDI 2 x 4 analog audio, s/pdif, 20-bit Philips DACs, 64 MIDI channels, SMPTE

www.opcode.com

Now Shipping!
Call for exact models

Plug in Opcode's USB Audio & MIDI Hardware And Like Other Modern Miracles — it Works

It's amazing how some things just work when you plug them in. For example, it used to be a pain to set up a computer for music, but Opcode engineers have changed all that with our new line of USB* audio and MIDI interfaces. Simply plug one in. Don't open your computer, you can even leave it turned on.

And with professional specs like bit-for-bit digital audio transfers and high-speed MIDI for super-accurate timing, your computer music system will be the best on the block.

Plug in a phone and contact your local dealer today or visit www.opcode.com and browse our complete line of integrated hardware and software (and freebies too!).

The Universal Music Connection™

circle #513 on reader service card

Opcode Systems, Inc. 650.429.2400 fax 650.429.2401 All trademarks are the property of their respective holders. All specifications subject to change without notice.
* The Universal Serial Bus is a new high-speed standard on Mac and Windows for easily connecting devices: no IRQs, no DMAs, no I/O addresses. yeah!

WRH

KEY CHANGES

The first-ever **IMX Interactive Music Expo** will be held at New York City's Jacob Javits Center on August 9 and 10, 1999. The expo will feature conferences on such topics as digital distribution, issues relating to music on the Web, video games, and the latest in studio production techniques. Panelists will include Todd Rundgren, Tony Visconti, Deep Dish, RIAA president and CEO Hilary Rosen, and others. For more information, call (203) 256-0561 or visit the expo's Web site at www.imusicxpo.com...**Ramco Distribution Services** offers repair services for most products from now-defunct removable-media manufacturer SyQuest. Ramco Distribution also has refurbished drives for sale; visit the company's Web site at www.ramco-lcs.com for more info...**Power Technology** will directly distribute its DSP-FX Virtual Pack plug-in bundle. You can get more information on the package at www.dspfx.com...**Digidesign** has announced the release of the Toolbox ($549), a hardware and software package for use on the Windows platform. The package includes a Digidesign Audiomedia III card, *Session* recording software, Emagic *Logic Audio AV*, and Sonic Foundry *Sound Forge XP* v. 4.5 and *Acid Rock*...**Waves, Ltd.**, announced three new software bundles: Gold Native ($1,200), Power Pack II ($500), and TDM II ($1,000). Gold Native and Native Power Pack II are each available in Premiere, AudioSuite, VST, and DirectX formats. Gold Native comes with new *Pro FX* plug-ins, as well as *Renaissance EQ* and *Compressor*, *L1 Ultramaximizer*, and many other Waves plug-ins. Native Power Pack II contains *Renaissance EQ* and *Compressor*, *DeEsser*, and *MaxxBass*. Finally, the TDM II bundle features TDM versions of *Renaissance EQ* and *Compressor*, *MaxxBass*, *PS22 Stereomaker*, and *MultiRack*.

—Rick Weldon

BUTTON PRODUCTION ZERO-X

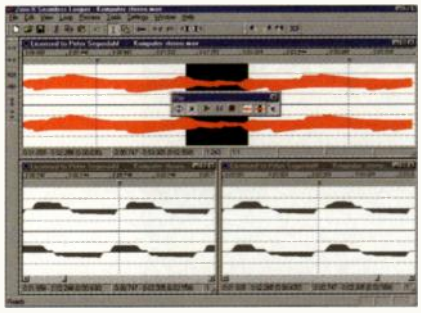
Making audio loops with the click of a mouse is the idea behind the *Zero-X Seamless Looper*, a sample editor from Button Production (Win; $40). This program is equipped with automatic and manual loop-searching functions and sample-editing and DSP tools. It handles SCSI sample-dumps via SMDI, which is supported by a variety of samplers, including the E-mu ESI-4000 and E4 series, Kurzweil K2000 and K2500, Yamaha A3000, and Peavey DPM SP.

Loop-searching tools include AutoSearch, which automatically searches for the best possible loop pair in the selected sample region, and AutoSearch Batch, which lets you select any number of audio files to be loaded and searched simultaneously by AutoSearch. AutoSearch is multitasking, so the program can examine a sample in the background while you work on another sample. You can smooth clicks by applying a crossfade and EQ between loops.

Batch Transfer is one of *Zero-X Seamless Looper*'s SMDI sample-dump features. It allows you to select and transfer any number of files, and owners of E-mu samplers have the option of keymapping sample files. The Catalogue feature allows you to refer to sample files by their original names, which are stored in a list box created by the software. Standard sample-editing tools, such as Cut, Copy, Paste, and Stereo-to-Mono are provided. *Zero-X Seamless Looper*'s DSP tools include Normalize and Fade In/Out, among others.

Zero-X Seamless Looper works with any 16-bit sound card and Pentium processor running Windows 95, 98, or NT 4.0. Button Production; tel. 46-31-701-72-22; e-mail peter@button.se; Web http://surf.to/zero-x.

Circle #417 on Reader Service Card



QUASIMIDI POLYMORPH

Quasimidi's Polymorph synthesizer ($1,199) offers a wealth of analog-synth emulation options, as well as four separate, 16-step, analog-style sequencers. There are four independent synthesizers: each synth has its own level knob a ¼-inch output, and four simultaneously available effects, including distortion, delay, flange, and multitap delay.

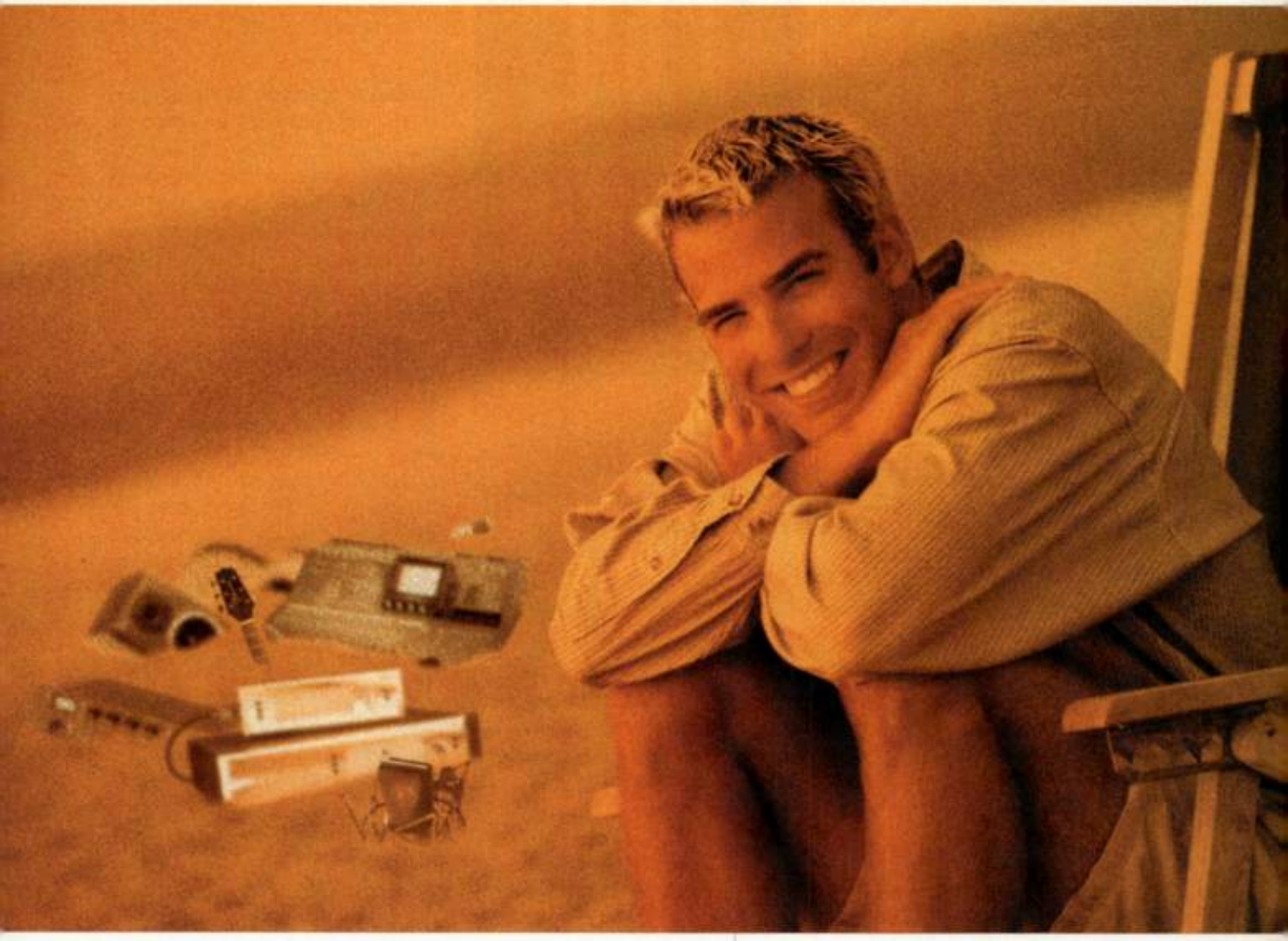
You can use the Polymorph with 16-note polyphony, which allows for up to two oscillators per voice, or with 8-note polyphony and three oscillators per voice. Oscillator types include rectangle, sine, sawtooth (up and down), and random; you can synchronize each to MIDI Clock or to the onboard sequencers. The Polymorph's filter section includes lowpass and highpass filters, which can be linked to produce bandpass and notch filters. For each voice, three ADSR envelope generators control the highpass and lowpass filters and VCA, and an attack-release EG modulates the oscillators.

In addition to analog emulation, the synth features Mellotron and Moog samples. Two ¼-inch audio inputs allow you to process external signals with the synth's effects and filters.

The Polymorph features the ability to save synthesis, effects, and sequencer settings as Memories. All synth parameters can also be controlled through MIDI. MIDI In, Out, and Thru connectors are included on the rear panel, and a headphone jack is on the front. Quasimidi Corporation; tel. (941) 945-8672; fax (941) 945-8673; e-mail usamidi@peganet.com; Web www.quasimidi.com.

Circle #418 on Reader Service Card

www.sweetwater.com



Your complete satisfaction is ***our business.***

great gear
honest opinions
fair prices
expert support
door to door delivery
excellent service

Your direct source for:
recording equipment
guitars, basses & amps
sound reinforcement
keyboards
monitors
and more
800.222.4700

Sweetwater SOUND INC.

sales@sweetwater.com
5335 Bass Road • Fort Wayne, IN 46808
(219) 432-8176 • FAX (219) 432-1758

Music Technology Direct and ***the Best Value Guaranteed!***

circle #514 on reader service card

WRH

PRO FILE

Straight, No Reverb

Add N to (X) like their synths big and brawny.

By Rick Weldon

Don't let the synths of Add N to (X) fool you; although the group lacks guitars, its a rock band first and foremost. With their new album, *Avant Hard,* band members Steve Claydon, Ann Shenton, and Barry Smith have made a raw, intense CD that reflects Add N to (X)'s work ethic of writing between concerts, going into the studio in fits, and often working three days straight without sleep.

According to Smith, "On this album, we tried to find more emotional depth in electronics. We used a ton of stuff: a Moog we found at a flea market; a Korg MS20 I recovered from a rubbish bin; an EMS Synthi; and a little instrument made by Suzuki called the Omnichord, which has a lot of chord buttons on it, like an accordion." Shenton elaborates, "You strap it on and play it like a guitar. It has a touch-sensitive strip on it, and it's great for sprinkly sorts of sounds."

"We got a Mellotron and used it for the first time on this album," explains Smith. "This particular instrument once belonged to Procol Harum. It's this totally smashed up thing, but the inner workings are perfect. It's beautiful. The seven-second tapes really make you play differently, and, of course, there's something not quite right about the sounds themselves." Shenton says they preferred the boys' choir, women's choir, and cello tapes. "The Mellotron acts as the scaffolding of the music, and we can add our noisier sounds on top of it."

She admits, however, that there is a dark side to using the instrument. "Changing the tapes is like surgery; I can't bear to watch, in case there's a horrible accident." Smith has a lighter take on the subject. "It's very satisfying," he says. "It's a great piece of engineering. I've never owned a car, but I can totally see why people take their cars apart and stick them back together again. I could never see butchering a beautiful analog instrument with MIDI inputs, though. We don't own anything that's lost its virginity to MIDI." Shenton agrees: "If I ever leave our gear around the house, my boyfriend and his friends try to 'fix' it. I always have to say to him, 'Don't you dare MIDI that up!'"

Although the band usually adds two drummers in concert, drums on *Avant Hard* were played alternately by Rob Allum of the High Llamas and Andy Ramsay of Stereolab. Shenton recalls that, during recording, "we used a toy mic that cost 35 pence and swung it around near the cymbals, getting this sound that phases in and out." The band members are quick to point out that, although they occasionally used Steinberg's *Cubase,* all the drums were tracked live. "We're not interested in sequences," says Claydon. "Drum machines are too reliable."

"Overall, we don't really process things, except with the occasional foot pedal," Smith says. "It's very important to us that we don't process the electronic sounds. That way, what you hear is fresh from the synthesizer, as it were. We don't even like any reverbs or delays to get in the way."

"When we write something," Claydon adds, "it's obvious and immediate. It doesn't need any embellishment. The way we work is visceral. It's an engagement of meat against mechanism." Yet, when the mechanisms involved are irreplaceable analog synths, some people get nervous. "Yeah," says Shenton, "Barry's always throwing the bloody Synthi up in the air during shows."

"Of course, I haven't really done that," responds Smith in defense. "I would never toss around a Synthi. You must be thinking of the Korg."

For more information, contact Mute Records: tel. (212) 255-7670; e-mail info@mutelibtech.com; Web www.mutelibtech.com or www.addntox.com.

Add N to (X) equals proof that you don't need guitars to rock.

SOUND POSSIBILITIES.

Wherever your musical journey leads you, Korg has an instrument to help you get there. Synthesizers, music workstations, stage pianos, accompaniment keyboards, sound modules, digital pianos...all with the common element of an uncommon dedication to sound quality that can only come from a Korg. When it sounds this good, anything's possible.

KORG

Super sonic.

SEE US AT NAMM BOOTH #102

circle #515 on reader service card

©1999 KORG USA, FOR THE KORG DEALER NEAREST YOU: (800) 335-0800. TO RECEIVE A COMPLETE CATALOG WRITE TO KORG PROVIEW, DEPT. BEM, 316 SOUTH SERVICE ROAD, MELVILLE, NY 11747 • www.korg.com

SEQUEN

CING Games

By Dennis Miller, Brian Smithers, and Jeff Casey

Explore the far reaches of the musical universe with modern digital audio sequencers.

Choosing a digital audio sequencer is one of the most important decisions any desktop musician will make. Not only will your sequencer command your MIDI rig, but today's programs offer powerful audio functions, sophisticated scoring features, patch editing, and, in some cases, the ability to create your own functions. With so many sequencers available, it's difficult to know which product will best serve your needs. **EM** has commissioned Associate Editor Jeff Casey, **EM** contributor Brian Smithers, and yours truly to review the fleet and report on the features shared within each group of programs, as well as the unique options each sequencer offers.

For some people, of course, an all-in-one sequencer might not be the best choice. You may find, for example, that one program has the perfect set of MIDI and audio features but that its scoring functions don't match the capabilities of the dedicated notation software you're already using. As we reported in our March 1999 cover story, "Shaping Better Waveforms," there are still many reasons to keep a good stereo or multitrack audio editor on hand. You might be surprised to learn, however, that some of the sequencers covered here provide enough features to serve as the one and only music program in a desktop environment. Read on and see what power lurks inside these programs.

WHO, WHAT, WHERE

Our roundup will start with the two crossplatform programs in the bunch: Steinberg's *Cubase VST/24* (4.0 for Mac and 3.65 for Windows) and Emagic's *Logic Audio Platinum* 4.0. Then we'll turn to a slightly more varied set of Windows applications: Cakewalk's *Pro Audio* 8.0, Musicator A/S's *Musicator Win* 3.0, PG Music's *PowerTracks Pro Audio* 5.0, and Voyetra Turtle Beach's *Digital Orchestrator Pro* 3.01.05. Finally, we'll look at three Mac powerhouses: Cakewalk's *Metro* 4.0, MOTU's *Digital Performer* 2.5, and Opcode's *Studio Vision Pro* 4.2.

Keep in mind that we haven't covered every sequencer available; there are dozens of excellent shareware programs that we are unable to explore here due to lack of space. And although we're focusing on the top-of-the-line programs from each developer, you'll find other offerings from most of these companies listed in the sidebar "Sibling Rivalry" on page 66. The table "Digital Sequencers in Review," on page 46, lists recent reviews that provide even more details about these powerful programs.

The in-depth coverage in the following pages will give you a good sense of the features offered by each program, and a feel for the way each handles its tasks. After reading through our analyses, and perhaps trying out some of the demos that are available for most of these programs, you'll be able to make a good decision about which one will fit you best.

—Dennis M.

Across the Universe

By Dennis Miller

SEQUENCING GAMES

Two programs that run on Mac and Windows computers are Steinberg's *Cubase VST/24* ($799) and Emagic's *Logic Audio Platinum* ($799). These products, both from German companies, have been playing feature catch-up for as long as anyone can remember. They have much in common; in some cases, the similarities are uncanny. They both offer deep music notation features, awesome audio processing tools, extensive configuration options, and more.

Whereas *Cubase VST/24* has an enormous number of MIDI processing functions, such as the unheralded Interactive Phrase Synthesizer and MIDI Effects Processor, *Logic Audio Platinum* has the infinitely customizable Environments feature, which lets you build your own MIDI processors. *Cubase*'s VST plug-in format has now become an industry standard on the Mac, and it provides *Cubase VST/24* with access to a great many powerful processing options. But *Logic Audio Platinum* also supports VST (and several other formats), and the program includes a large number of internal audio effects that rival many third-party offerings. What's a desktop musician to do?

I'll attempt to make your choice easier by giving an overview of the features common to both programs and then looking at how the two differ. Like the other authors in this roundup, my focus will be on the top-of-the-line versions of each program: *Cubase VST/24* (version 4.0 for Mac and 3.65 for Windows) and *Logic Audio Platinum* (4.0 for Windows and Mac). I should mention that the Windows version of *Cubase VST/24* has fallen behind the Mac version, although new features do occasionally arrive in the Windows version first. *Cubase VST/24* version 4.0 on the Mac has several hundred new features that are not yet available in the most current Windows version. Nonetheless, Windows users can rest assured that *Cubase VST/24* 3.65's massive set of features will keep them quite busy. And Windows version 3.7, which should be available by the time you read this, will change the situation.

Emagic has created and released *Logic Audio Platinum* 4.0 for both platforms simultaneously, and with few exceptions, they are identical. As someone who has been a Windows user historically, I am pleased by Emagic's attempts to "equalize" the platforms (although I'll be the first to admit that all other things are *not* equal on both platforms).

Finally, I should add that, despite doing extensive work with both programs over the past eight weeks, I feel as though I've hardly scratched the surface of either of these powerhouses; they have layers and layers of additional features that would take months to master. That doesn't mean these programs are difficult to use; in fact, I was surprised at how intuitive both of them are. However, they are so deep and offer so many functions that you'll continue to discover new ways to use them for a long time to come.

THE BIG PICTURE

Following the standard model for sequencers today, *Cubase VST/24* and *Logic Audio Platinum* offer a main work screen that contains a track parameter area and a data display. (*Cubase VST/24* calls the individual clips of MIDI and audio data "Parts," while *Logic Audio Platinum* uses the terms "Sequence" and "audio regions.") Here you'll perform many editing and arranging tasks on both large and small scales, although you'll often jump to the numerous other windows for specific functions.

Cubase VST/24 provides a fairly direct path for your audio and MIDI signals, which means you'll set up all your MIDI and audio routings in its main Arrangement screen. It includes numerous shortcuts to help you configure your working environment. For example, if you hold down the Control key (Option on the Mac) while assigning a MIDI output destination, all tracks will be assigned to the same output as the track you initially selected.

Cubase VST/24's Inspector window, which you can toggle on and off, lets you adjust playback parameters for all selected Parts, regardless of which tracks they are on (see **Fig. 1.1**). This is more versatile than the track options found in some programs, because it lets you simultaneously adjust multiple Parts that appear anywhere in the Arrangement window. If no Parts are selected, the Inspector modifies all Parts on the selected track. On the Mac, you can configure the Track List columns to include Volume, Pan, Program Change settings, or any other parameters the Inspector offers. You can also choose whether to have sliders appear when you're entering parameter values.

Logic Audio Platinum has extensive setup shortcuts of its own, many of which you access from the Environment. The Environment is a "layer" of the program in which you create "objects" that manage the routing of your data. These objects can perform functions as simple as routing audio tracks to physical audio outputs, or they can be far more complex. For example, you can route separate MIDI tracks through objects that will delay, arpeggiate, or otherwise transform data before it arrives at its intended MIDI output. (I'll cover some other options later.) Environment objects are a key element of *Logic Audio Platinum*, although you can avoid them almost entirely if you stick with the default configuration that is automatically set up when you first start the program.

Logic Audio Platinum provides a Sequence Parameter window for modifying one or more Sequences (see **Fig. 1.2**).

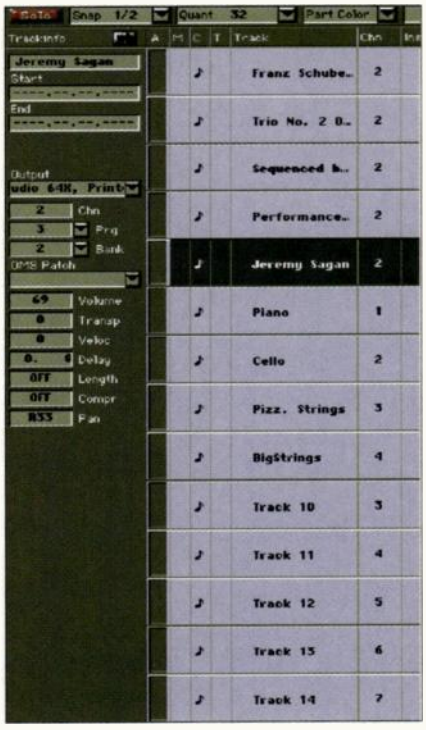
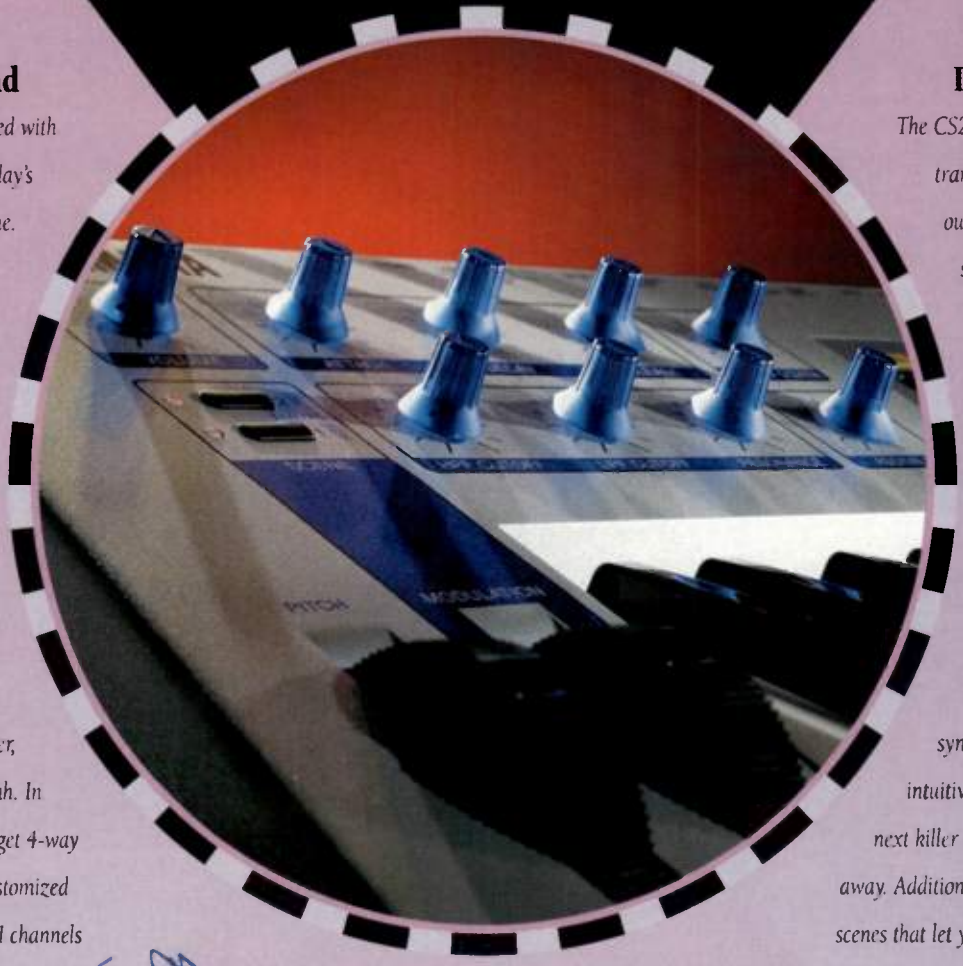


FIG. 1.1: *Cubase VST/24* provides an Inspector panel on the left side of its main screen. It can be used to alter one or more Parts simultaneously. Users can enter parameter values by typing text, scrolling with the mouse, or using pop-up sliders.

sound design.



Incredible Sound

The Yamaha CS2X is filled with phat, fresh sounds for today's contemporary music scene. It boasts 64-note poly, a huge 16MB wave ROM, and true 24 dB resonant filters per voice. Its multi-effects go way beyond the typical, with 12 reverbs, 14 chorus/delays and 62 variation effects like Rotary Speaker, Distortion and Touch Wah. In performance mode, you get 4-way splits and layers with customized effects sets, plus 12 MIDI channels of additional sound for backup. In multimode, CS2X is a full 16-part multitimbral powerhouse.

Dynamic Design

The CS2X's slick silver finish and translucent blue knobs stand out in a crowd of look-alike synths. But design is more than just a pretty face: Yamaha created the CS2X to make it especially easy for you to create great music. The eight analog-style knobs – for direct editing of the most important synth parameters – give you intuitive, real-time control; your next killer sound is just a knob twist away. Additional design features include scenes that let you easily store and recall variations of a voice in realtime. And a MIDI-syncable arpeggiator adds style to your music.

The John Lennon® SONGWRITING CONTEST
Call 1-888-884-JLSC

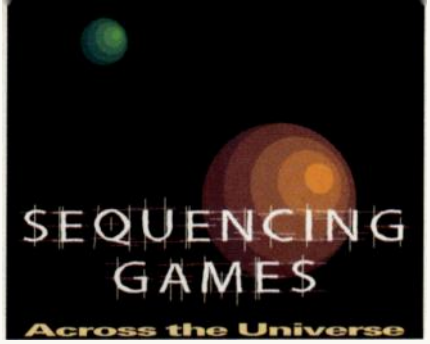
See and hear the brand new, cool looking, great sounding CS2X at a Yamaha dealer near you. And for just $899.99 MSRP, take it to a home near you.

Visit www.yamaha.com or call (800)932-0061 ext. 664 for product literature.

YAMAHA

©1996 Yamaha Corporation of America, Digital Musical Instruments, P.O. Box 6600, Buena Park, CA 90622-6600
John Lennon is a trademark owned by Yoko Ono Lennon, Artwork Copyright 1996 Yoko Ono Lennon/
Licensed exclusively through Bag One Arts, Ltd., NYC

circle #516 on reader service card



This window appears on the main Arrange screen and includes many of the functions found in *Cubase VST/24*'s Inspector. It also adds a number of options, including the ability to loop individual Sequences or nondestructively adjust quantize settings, such as swing ratio and quantize strength percentage, as the Sequence plays back. (*Cubase VST/24* 4.0 on the Mac also has tools for adjusting a Part's feel as it plays.) One option missing from the Sequence Parameter window is the ability to force multiple Sequences onto a set MIDI channel, which the Inspector does allow.

Logic Audio Platinum offers a second window on the main screen, called the Instrument Parameter window, where you enable various MIDI options that you've set up in the Environment. The Instrument Parameter window is also used to adjust various real-time playback parameters, such as limiting the note and Velocity ranges of a particular track.

The main screens of both programs let you perform many basic functions for which other programs require dedicated work areas. For example, you can adjust the length of a Part or Sequence by dragging its start or end point in either program. This nondestructive edit will alter the number of notes or the range of audio that plays back. *Logic Audio Platinum* and *Cubase VST/24* (Mac only) let you change the actual timing of the MIDI events in a sequence. Just click and drag with the Control (PC) or Option (Mac) key held down, and the events are stretched or compressed to fit the segment's new length. *Cubase VST/24* on the Mac even lets you time-stretch audio Parts in real time using this method.

You can perform various types of track automation directly in *Logic Audio Platinum*'s Arrange window. For example, to automate a track's volume, simply highlight the track, click on the Volume control in the Instrument Parameter box, press Record, and move the values up or down by scrolling with your mouse. You can automate a series of Program Changes, pan movements, or other parameters the same way. The Track Mixer in *Cubase VST/24* on the Mac offers similar options.

To facilitate working with large amounts of data, *Cubase VST/24* lets you "group" entire tracks. The grouped tracks show up as a Part on a special Group track in the Arrangement window. Changes made to one track are reflected in all the others. Like *Logic Audio Platinum, Cubase VST/24* also lets you group tracks by placing them into special Folder tracks. In both programs, you can continue to work on individual tracks while they're in a Folder, and you can even nest Folders inside Folders. You can view many other types of data (such as a series of fader movements that you've captured in *Cubase VST/24*'s MIDI Mixer or *Logic Audio Platinum*'s Track Mixer) in the programs' main screens, and manipulating them is as easy as moving a single icon.

Both programs offer an unlimited number of MIDI tracks and a hard limit on audio tracks that you'll probably never reach. In theory, *Logic Audio Platinum* supports up to 128 tracks of audio, as opposed to *Cubase VST/24*'s 96, but please call me if you get anywhere near that number! *Logic Audio Platinum* offers 960 ppqn resolution at an astounding maximum tempo of 9,999.9999 bpm, while *Cubase VST/24* supports MIDI event resolutions of 384 ppqn on the PC and 1,920 ppqn on the Mac, with a top tempo of 350 bpm. The two programs also let you create customized auto-loading files that contain the default settings you specify for your typical working session.

Support for nondestructive plug-ins that transform audio data in real time is available in both programs, and additional editing and processing features abound. I'll cover many of these options in the paragraphs that follow.

SET TO EDIT

Because you'll often need more detailed editing than the programs' main screens provide, *Cubase VST/24* and *Logic Audio Platinum* offer a number of dedicated work areas for specific tasks. The programs include a MIDI data editor, complete with a note display and an area for entering controller and Program Change data, and they have the familiar event list for viewing MIDI events as text. *Cubase VST/24*'s event list, called the List Editor, includes a graphic display of MIDI events, as well as a separate area for controller data (see **Fig. 1.3**). This gives you a quick visual summary of events in your project and an easy way to enter or adjust the details of your music. *Logic Audio Platinum*'s Event List doesn't offer a graphic display but does provide a hierarchical view of your data. (You could easily create a Screenset in *Logic,* however, that would show you multiple linked views of your data simultaneously. More on Screensets later.)

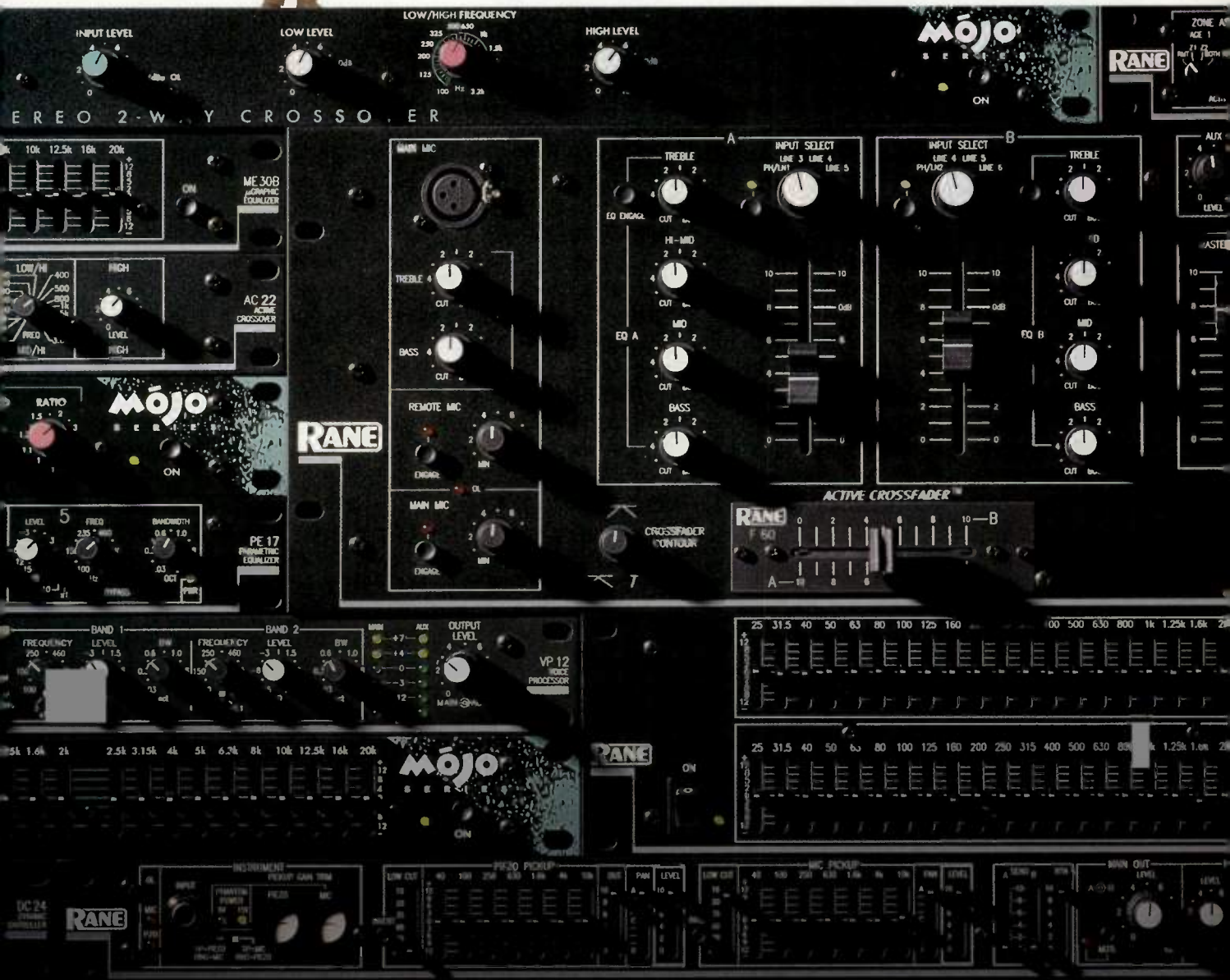
Using *Logic Audio Platinum*'s Event List, you can look at individual events, such as notes and controller information, or you can move out to an overview of all the Sequences that your file contains. This overview is similar to a playlist in an audio editor and lets you

FIG. 1.2: *Logic Audio Platinum*'s opening screen includes several parameter windows. Along the far left of the screen are two windows for modifying instruments and sequences. A tool set for editing data is also available.

For manufacturer information, please see Contact Sheet, p. 195.

GEORGE SHEPPARD - CEO

60 PRODUCTS, ONE PROMISE.

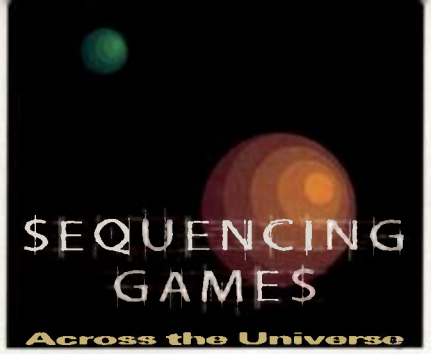


You've probably heard that Rane makes the best EQs and crossovers around. You heard right. But you've really only heard the beginning. Rane actually makes more than 60 different innovative audio products, from tiny low-noise mic preamps to sophisticated multi-function Digital Signal Processing stations. Rane products serve a wide variety of applications from sound stage to nightclub, recording studio to teleconferencing system, courtroom to cinema. But they all have one thing in common—the Rane philosophy. A dedication to quality we promised in our very first brochure. And a promise that is stronger than ever today. We vowed that each and every model we make will carry that distinctive set of Rane characteristics: top of the line performance, refreshingly easy to operate, remarkably cost-effective, extremely reliable, and thoroughly backed by the best technical and customer support in the industry. We've made good on this promise for nearly two decades, with legions of satisfied Rane owners to show for it. Whatever your sound needs might be, be sure to ask about Rane. You'll be very glad you did. We promise.

RANE

Rane Corporation TEL 425.355.6000 FAX 425.347.7757 URL www.rane.com
In Canada: Omnimedia Corporation TEL 514.636.9971 FAX 514.636.5347

SEE US AT NAMM BOOTH #



make quick changes to large chunks of material. You can also toggle easily between MIDI time representation (which shows bars, beats, ticks, *and* beat divisions) and SMPTE time. Both programs have extensive view filters that let you see only those types of events that you're interested in. You can also modify data in the two event screens using many of each program's major editing functions.

Graphic Note editing ("piano roll" style) is done in *Logic Audio Platinum*'s Matrix window and *Cubase VST/24*'s Key Editor. Both programs offer menus for the dedicated editing functions needed here, as well as graphic tool sets for additional tasks. They also let you edit multiple Parts or Sequences simultaneously. *Cubase VST/24* offers its basic toolkit on the PC via the right mouse button; click anywhere and you have access to tools for entering, selecting, "nudging" notes, and other functions. (The same tools are available from a floating palette on the Mac.) My favorite tool in the Key Editor is the Brush tool, which lets you enter a string of notes very rapidly by simply holding down the mouse and sweeping vertically or horizontally across the screen. Notes are quantized according to the current Quantize and Snap To settings, which makes this tool especially useful for quickly creating drum parts or other repeated-note patterns.

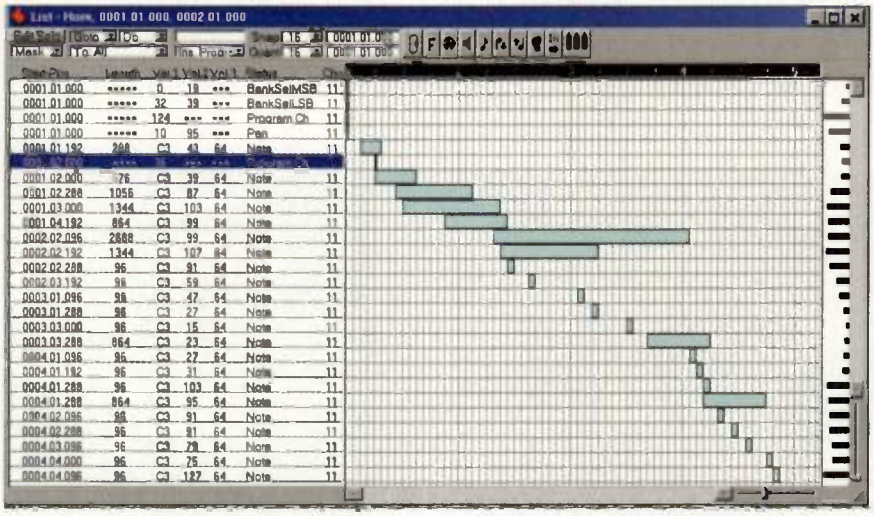


FIG. 1.3: The List Editor in *Cubase VST/24* displays MIDI events as text, along with a graphic representation of the same events. A mask option allows the user to display only desired events.

A NEW BURNING SENSATION

CD·5400

CD2CD Pro CD-R Duplicator

- Now Available with 8X Drives
- DVD Compatible
- Audio Importation
- Simple ONE-BUTTON Operation
- Upgradable to Future CD-R Technology
- Practical Audio Features
- Expandable Standalone Device

CD-5400 is a trademarks of MediaFORM, Inc. All other trademarks remain the property of their respective companies.

WORLD'S MOST ADVANCED CD DUPLICATORS

MediaFORM's award winning family of CD-R duplication products continues to provide a wide range of features and capabilities. Contact us today for more information on these products. MediaFORM products are sold through a world wide network of quality distributors.

MediaFORM

400 Eagleview Boulevard • Exton, PA 19341
Phone: 610-458-9200 • Fax: 610-458-9554
Toll Free in the USA 800-220-1215
email: info@mediaform.com
web: http://www.mediaform.com

circle #518 on reader service card

ACID™ IS THE BEST REVIEWED LOOP-BASED MUSIC PRODUCTION TOOL OF THE YEAR!

"very much like magic"
Paul Lau, Canadian Musician Magazine

"the coolest, easiest way to remix"
Doug Beck, Professional Remixer

"true innovation"
Craig Anderton, EQ Magazine

Electronic Musician 1999 EDITORS CHOICE

"ACID is an absolute godsend"
Jeff Mac, Audio Media Magazine

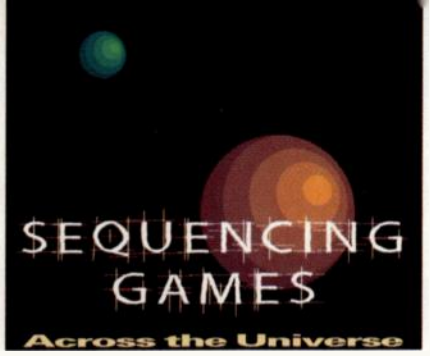
"the standard bearer for a new revolution"
David McCandless, The Daily Telegraph

ACID™ is a breakthrough music production tool from Sonic Foundry which brings unprecedented creative flexibility to loop arranging and editing. Combine any of the hundreds of included loops or import .WAV or .AIF loops to create custom music in minutes.

NOW AVAILABLE EVERYWHERE

Call 1 800 57 SONIC for a dealer near you or visit our Web site at www.sonicfoundry.com

Madison, WI 53703 Tel: (608) 256 3133, Fax: (608) 256 7300, CompuServe: 74774,1340 or GO SONIC, Internet: sales@sonicfoundry.com. Sonic Foundry and Sound Forge are registered trademarks of Sonic Foundry, Inc. Other products mentioned are trademarks or registered trademarks of their respective manufacturers.



Other editing functions appear in *Cubase VST/24*'s Status Bar at the top of the screen. The Do pop-up menu, for example, lets you fill the current Part with notes that match the Quantize and Snap To settings, or map the pitch of one note onto all the others in a range. Keep in mind that, although you can undo only the last event in the Key and other Editor windows, you can opt to discard all the changes you've made while working in any Editor: simply answer "No" to the Save prompt when you close the Editor screen.

Logic Audio Platinum's tools appear in a palette on the left of the Matrix screen, although you can force the toolbox to snap to your current cursor position by hitting the Escape key. (On the PC, you can assign the right mouse button to the toolbox using the Key Commands feature.) The icons for each tool aren't labeled, and there's no "flyover" help that indicates their functions, but the icons are very intuitive, so you'll be familiar with them after only a few sessions. The tools provide precise control over notes: pick the Quantize tool to quantize the start times of individual notes, or select the Velocity tool to change the Velocity of a note or group of notes by dragging the mouse. There's also a magnifying tool for zooming in and out on individual notes. I especially like the ability to select a range of notes by dragging vertically over the keyboard display that appears along the left of the screen.

AUDIO OPERATIONS

Of course, audio editing is the big ticket today, and these programs are as powerful as any on the market. You'll find support for up to 24-bit audio at 96 kHz in both programs, although you'll need compatible hardware to take advantage of those options. Both programs support DirectX plug-ins on the PC, and *Logic Audio Platinum* supports VST on the Mac. Naturally, *Cubase VST/24* supports the VST format on both platforms.

Cubase VST/24 and *Logic Audio Platinum* (Mac only) users can draw from both commercial and free VST plug-ins that are seemingly everywhere on the Net these days. (I found nearly two dozen in a quick search.) Like *Logic Audio Platinum, Cubase VST/24* provides access to its audio effects from its Audio Mixer. (More on the Mixer to follow.) Steinberg has gone to great lengths to make its audio interface familiar to users of outboard audio gear. This is apparent in the way audio flows through the program and in the stunning graphics themselves (see **Fig. 1.4**). *Logic Audio Platinum*'s workflow is also very intuitive, but its mixer graphics have a bit more of a "virtual" quality to them.

New in *Logic Audio Platinum* 4.0 are 31 audio plug-ins that might be all you'll ever need for editing and mastering. Among the plug-ins are various EQs, delays, compressors, filters, and reverbs. All of the plug-ins are editable from within attractive graphic panels, and you can automate effects parameters by recording fader and slider movements (see **Fig. 1.5**). I particularly like *Enverb* and *Bitcrusher*, which go well beyond the effects normally included with an audio editor, much less a sequencer. Because *Logic Audio Platinum* uses MIDI to automate the effects, it's easy to view and modify automation data after you record it.

To automate an effect parameter in *Logic Audio Platinum*, you record the slider movements using an A-Playback object or the Track Mixer. *Logic Audio Platinum* assigns a different controller number to the data for every slider or fader you move. (You can't assign your own arbitrary controller numbers to a specific effect parameter.) This method is simple, once you get used to it, though not as intuitive as using the Read and Write automation buttons in *Cubase VST/24*'s Audio Mixer. The end result, however, is identical in both programs. (*Cubase VST/24* versions 4.1 [Mac] and 3.7 [Win] will allow external MIDI controller data to automate VST parameters in real time.)

Both programs offer several dedicated windows for audio functions. *Logic Audio Platinum*'s Audio Window and *Cubase VST/24*'s Audio Pool are the starting points for adding prerecorded audio to a project. (On the Mac, you can drag files from the Desktop into the programs.) Here you'll load files off your hard drive, define regions in the files, and preview your audio. Each program supports AIFF and WAV formats on both platforms, and *Logic Audio Platinum* lets you mix files of different bit depths if the files are routed to different hardware devices. Double-clicking an audio file in either program takes you to a waveform editor, where you can see a larger view of your data and perform a number of destructive processes.

Cubase VST/24's processing tools include reverse, fade in and out, normalize, and pitch/time correction. Pitch increments are adjustable in semitones and cents, and the time increments are available as both SMPTE times and bpm. You can also quantize the start times of audio segments to any common musical duration. *Logic Audio Platinum* offers many of the same processing functions. Both programs have the ability to track amplitude peaks in an audio file and convert them into a MIDI quantize grid. They can also convert monophonic audio files into MIDI note data. The 4.0 Mac version of *Cubase VST/24* also lets you fill out a specified length of time with a repeating audio segment.

Time and pitch can be manipulated independently in both programs. *Logic Audio Platinum* offers a graphic-based processing toolkit, called the Digital Factory, in which you'll find a very slick,

FIG. 1.4: *Cubase VST/24*'s audio mixing and effects features are controlled from graphic screens that will be familiar to audio-hardware users. Complex audio routing schemes can be designed, and nearly all aspects of those routings can be automated.

For manufacturer information, please see Contact Sheet, p. 195.

TDK®

ISOPURE™

CD-R

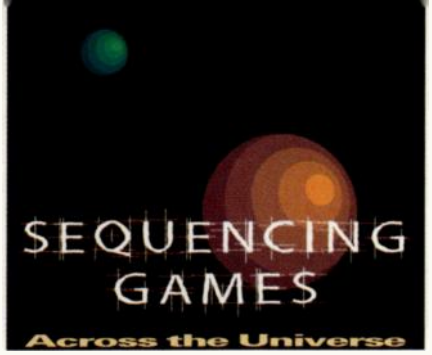
EMBRACE IsoPure RECORDING TECHNOLOGY

ENTER www.tdk.com FOR CLEAR CD-R UNDERSTANDING.

evolve your music self.

©1999 TDK ELECTRONICS CORPORATION

circle #520 on reader service card



3-D interface for adjusting the time, pitch, and timbre of your sample (see **Fig. 1.6**). The Digital Factory also provides access to the Audio Energizer—a maximizer-style processor for increasing the perceived loudness of a file—and the Groove Machine, which alters the rhythmic feel of a sample.

Another nifty feature is *Logic Audio Platinum*'s Adjust Tempo to Object's Length and Locators. This lets you match the tempo of the sequencer to any selected audio region. *Cubase VST/24* on the Mac offers a similar feature, but it requires a few additional steps. You can also easily crossfade adjacent audio regions in *Logic Audio Platinum*'s Arrange window.

Like a disk-based sampler, *Logic Audio Platinum*'s Wave Player (Windows only) lets you assign audio files to specific MIDI note triggers and adjust various playback parameters. You can tune the sample over a range of one octave up or down, map the sample to play back over a specific Velocity range, and change the segment of the file that will play back. When you open one or more files in the Wave Player, a new Wave track appears on the Arrange screen. Here you enter the MIDI notes used to trigger playback of the audio files. (MIDI notes cannot be used to pitch-shift the sample.) Though you can play only one file at a time, the Wave Player is far easier for repeatedly triggering an audio file than loading the file itself onto an audio track and positioning it numerous times.

FIG. 1.5: The new plug-in effects in *Logic Audio Platinum* are controlled from attractive panels that show the impact each parameter setting will have on the effect. The *Enverb* effect shown here has numerous parameters for fine-tuning your sounds.

FILE MAINTENANCE

Dealing with the numerous files and regions on your hard drive can be an enormous hassle, but these programs offer audio-file maintenance features. Both of them let you view all the audio files used in a project, as well as any segments or regions that you have defined. You can sort the files by name, date, and size in both programs, and also by bit rate and drive in *Logic Audio Platinum*. *Cubase VST/24* indicates how many times a segment has been used, which can be helpful when you're considering deleting some audio and can't recall whether the segment is still in use. It also lets you replace an existing file with a new one and retain all the segments that you've defined in the original (which should be of the same length).

Logic Audio Platinum offers additional options for working with the audio files on your system. Like *Cubase VST/24*, it will scan all the files you have loaded and delete any segments that are not used in the current project. It can also copy, delete, back up, or move the data on your drive, and it can analyze a file's fragmentation level. Both programs can strip out the silence in an audio file, though *Logic Audio Platinum* offers more parameters to fine-tune the process, and both let you save a segment to a new file on disk. Using either program, you can collect all the files in your project, or just the file segments you're using, and write them to a new folder on your drive. This feature is especially useful for backing up all active files, regardless of where they were stored when you first imported (or recorded) them into the program.

NETWORK AUDIO

When you start to move audio through either of these programs, you get to witness the state of the art in audio recording and playback. Both programs have massively powerful audio routing schemes that are the equivalent of tens of thousands of dollars worth of outboard gear.

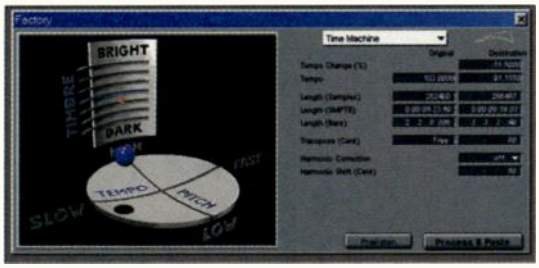


FIG. 1.6: Among the many tools in *Logic Audio Platinum*'s Digital Factory are a 3-D interface for time compression and expansion. The Length value can be set in sample, SMPTE, or bar increments.

But anyone who has used a moderately sophisticated outboard mixer will understand the workings of these programs in no time.

At the core of both programs are their Audio mixers, where you find track/channel strips for each audio track, complete with volume and pan faders, sends, returns, groupings, and busing options. *Cubase VST/24* offers eight sends per channel, along with four bands of EQ and four inserts. You can patch in four additional Master effects on top of that.

Logic Audio Platinum goes one better with 16 sends, four bands of EQ, eight inserts, and eight Master effects, but there are few computer systems around that can process even close to that number. I particularly like the way *Logic Audio Platinum*'s mixer "adapts" to the current configuration; you don't see all 16 sends, for example, unless you have assigned effects to them. As with other control surfaces in the program, you can pick which settings on the channel strips appear when you load the mixer. You can hide all the pan pots, if you're not using them, or put away any channel strips that you don't want on the screen. (*Cubase VST/24* will include this feature in its forthcoming 4.1/3.7 versions.)

Logic Audio Platinum offers 16 subs to *Cubase VST/24*'s 8, but after a while, you stop counting. In addition to automating effects settings, as mentioned earlier, you can perform complex volume and pan automation in either program. (*Logic Audio Platinum* and the Mac version of *Cubase VST/24* let you draw automation data directly on a waveform view.) Assuming that your system is up to the task, you can easily turn a complex mix into a new stereo file on disk from within either program. Neither program, by the way, offers built-in CD-burning capabilities.

Perhaps The Last Mastering Software *(Or Hardware)* You'll Ever Need.

If you record music with digital gear, you already know how challenging it can be to get that warm, broad, analog sound...

...yet, up until now, there's never been a way to achieve this without leaving the digital domain and piping your music through expensive analog gear. **T-RackS™** solves this digital dilemma with a revolutionary, **stand-alone software mastering suite for your Mac or PC, physically modeled after analog gear.**

With its three separate processors, astonishing warmth and ease-of-use, you'll be putting a polish on your tracks you may have never thought possible. No other single software processor sounds like **T-RackS™** and none makes mastering so easy. It can vastly enhance mix frequencies, broaden the stereo image as well as boost or precisely level the dynamic range. All this, while adding the beautiful warmth and space of the tube-devices it emulates. No other software or plug-in offers this kind of dedicated environment for such a crucial task.

- Mastering software with 3 dedicated analog processors •
- State-of-the-art six band parametric equalizer •
- Classic stereo tube compressor/leveler with stereo enhancer •
- Multiband master stereo limiter •
- Physical modeling with true tube emulation •
- High quality, real time preview and processing •
- 32 bit floating point resolution •
- Analog, easy to use interface •
- Fade-in/fade-out/song markers •
- Snapshots and presets •
- Mac/PC, supports WAV, AIFF, DII •
- Compatible with all popular audio cards •
- (Digital I/O suggested for even better quality) •

$299
for Mac and PC

Here's what the pros say...

"It's impressive to find a digital program that does such a good job of providing analog warmth and punch. A very well thought out product."
Ric Wilson - Grammy Winning Mastering Engineer.

"Not only the best digital compressor I've ever used but one of the best compressors period! The Stereo Enhancement is outstanding, with no phase problems in mono. The real strength of this product is how musical it is."
Eric Persing - Sound Designer, Spectrasonics

"It gives me a unique sound when it goes to radio. It's a mastering plant at your finger tips."
Dinky Bingham - Programmer, Producer

For more info, demo and on-line store go to
www.t-racks.com

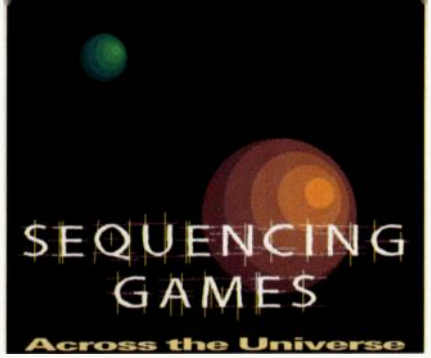
circle #521 on reader service card

T-RackS

MASTERING SOFTWARE
ANALOG
BY DESIGN

Distributed in North America by:
ILIO Entertainments
phone **800-747-4546,**
tel 818-707-7222, fax 818-707-8552,
www.ilio.com, ilioinfo@ilio.com

T-RackS™ is a trademark property of IK Multimedia Production.
©1999 IK Multimedia Production.
All other trademarks are property of their respective owners.



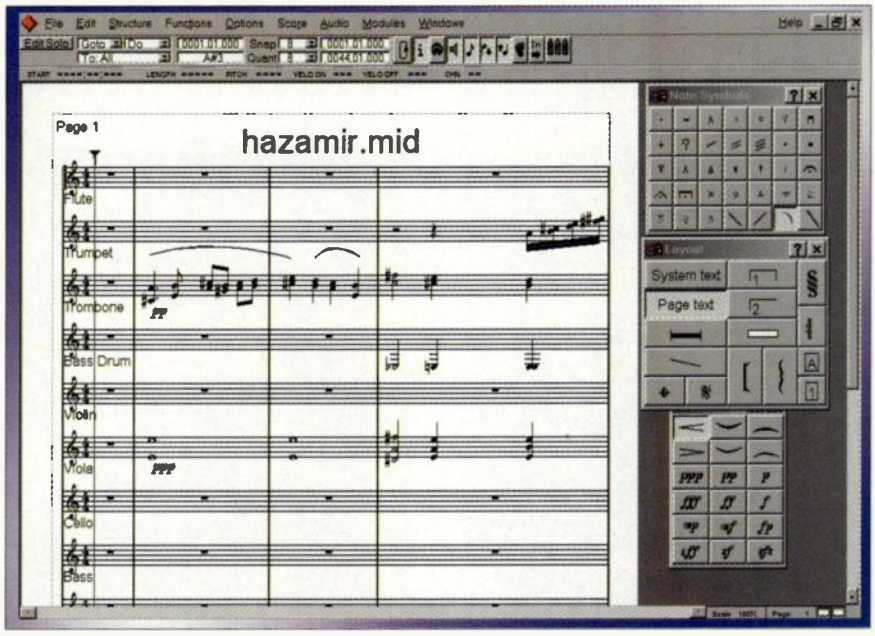


FIG. 1.7: The scoring capabilities in *Cubase VST/24* and *Logic Audio Platinum* are world class. This window shows several of the palettes available in *Cubase VST/24*'s notation screen.

HARDWARE ISSUES

Both programs are well on top of recent audio hardware innovations. For example, both provide full support for Yamaha's DSP Factory and offer dedicated DSP Factory mixers to take advantage of that system's features. *Cubase VST/24* also offers extensive support for the Lexicon Studio on both Mac and PC. A wide variety of other hardware can be accessed through ASIO drivers, using either program, and multichannel, ADAT lightpipe–compatible hardware, such as MOTU's 2408, also makes a good companion for either.

Cubase VST/24 offers only limited support for Digidesign hardware such as Pro Tools/24. You can access the card's multichannel I/O but not the more powerful TDM engine. *Logic Audio Platinum* is one step ahead with its support for Digidesign's latest option, Pro Tools/24 Mix, as well as full TDM support. *Logic Audio Platinum* is also able to support multiple sound cards at once, which can give you extra tracks of audio I/O. And *Logic Audio Platinum* integrates especially well with Emagic's line of hardware products, such as the Audiowerk8, AMT8, and Unitor8.

WHAT'S THE SCORE?

The number of scoring features in both programs is astounding, and I can't imagine that you'd have to go outside of either program for standard notation unless you're doing the highest level of professional work. Like most dedicated notation software, the two programs give you a palette of symbols that you select and then position on the screen. These include numerous note heads, drum symbols, articulation and phrasing markings, and bowings. *Cubase VST/24* tops out at 64th notes on the PC but offers 128th notes on the Mac. *Logic Audio Platinum* provides 128th notes on both platforms.

Many professional features are found in both programs, such as the ability to change the length of stems in *Cubase VST/24*, or add doits and bends to notes in *Logic Audio Platinum*. Text options are plentiful, and both programs provide a way to view transposed parts while hearing them played back at concert pitch. Numerous page-layout features are available to help you configure score pages to your liking, and *Cubase VST/24* offers auto-alignment features that are especially easy to use (see **Fig. 1.7**).

Logic Audio Platinum makes it simple to change MIDI channels for a small group of notes, or even a single note, directly in the Score window. It also offers an Export to BMP File option, in case you need to use your notation in another document. Both programs support complex tuplets, and both have a MIDI Meaning menu where specific MIDI values can be assigned to different types of musical symbols. Overall, the scoring features are more than adequate to produce high-quality printed output.

OTHER WINDOWS

Cubase VST/24 and *Logic Audio Platinum* have additional windows for various dedicated tasks. For example, the Drum Editor in *Cubase VST/24* is designed for efficient editing of drum parts and can be used to map MIDI notes to drum sounds. You can set up any number of maps, which is handy if, for example, you have more than one device that you use to play drum parts. Of course, you can also save your maps and use them with new sequences. (*Cubase VST/24* ships with

Digital Sequencers in Review

EM has previously covered all the programs discussed in this article. Listed below is our most recent review of each one.

Cakewalk *Metro* 4 (Mac)	September 1998
Cakewalk *Pro Audio* 8 (Win)	February 1999
Emagic *Logic Audio* 3.0 (Mac/Win)	July 1998
Mark of the Unicorn *Digital Performer* 2.0 (Mac)	July 1997
Musicator A/S *Musicator Audio* 1.0 (Win)	August 1996
Opcode *Studio Vision Pro* 3.5 (Mac)	March 1998
Opcode *Vision DSP* 4.5 (Mac)	June 1999
PG Music *PowerTracks* 1.0 (Win)	September 1993
Steinberg *Cubase VST/24* 4.0 (Mac)	April 1999
Voyetra *Digital Orchestrator Pro* 3.01 (Win)	November 1998

For manufacturer information, please see Contact Sheet, p. 195.

drum maps for many common devices.) The Drum Editor also lets you define four default Velocities for drum notes that you enter with your mouse, and you can switch between them easily. Tools for converting the appearance of notes that you record directly from a keyboard into more idiomatic percussion notation are also included.

Logic Audio Platinum's Hyper Editor is useful for creating drum parts and also provides an efficient way to work with controller data. Open the Editor and select Create GM Drum Set from the main menu line, and the screen changes to display a series of drum names (see **Fig. 1.8**). (Controller names appear by default.) One feature that makes drum editing easy is Hi-Hat mode, which links different drum parts and lets you manipulate them as a group.

In addition to the options mentioned above, both programs have work areas for interactively manipulating MIDI data. A full discussion of these features would require yet another article, but if you like tweaking and twisting MIDI information as much as working with audio, you'll find much to enjoy. The Interactive Phrase Synthesizer in *Cubase VST/24*, for example, feels as much like a real musical instrument as any software I've ever used. Load up a phrase by copying it from a MIDI track, then listen to it twist, turn, spin, and multiply as you move the sliders and knobs that affect how the phrase is played back. The best part is that you can record your transformations directly into a MIDI track and start all over again. You'll find other processing options in *Cubase VST/24*'s MIDI Input Transformer and MIDI Effects Processor.

Logic Audio Platinum offers similar capabilities through its Transform window. In addition to building your own MIDI arpeggiators and delay lines with just a few mouse-clicks, you can download any of the dozens of user-created transformers that are all over the Net. Among my favorites are Eduardo Armenteros's *Granulator*, which generates from a few to a massive number of note events for every MIDI note you send it, and Len Sasso's *Strummer* and *Harmonizer*, which process chords or single notes and produce the results that their names suggest. (See *Logic Audio Platinum* guru Len Sasso's Web site, www.swiftkick.com/logLUG.html, for other user contributions.) Each of these processors is actually a self-contained environment and offers numerous settings that you can adjust in real time.

Both programs offer sophisticated features for controlling the tempo of your music. *Cubase VST/24*'s Master Track is a window for entering and editing tempo and time-signature information, which you can view in list or graphic format. You can move the mouse along the vertical tempo display on the left of the screen to insert tempo changes at discrete points or continuously for any length of time. You can also use a number of functions to process the tempo changes you've entered or recorded, such as scaling or "smoothing." You can even export a Master Track for use in another project.

Logic Audio Platinum's Graphic Tempo Editor lets you choose from a number of preset tempo curves and assign them to all or just a range of measures. You can also use it to set a constant tempo for a section, scale an existing tempo, or modify an existing tempo curve. There's even a Tempo Randomizer, which can give just a bit of random offset to an existing tempo or make totally unpredictable

circle #522 on reader service card

Midi Quest v7.0
Universal Editor & Librarian software for Windows 95/98/NT4/3.1
SQ Midi Tools
"its like having a swiss army knife for MIDI"
for complete information, visit our web site
Sound Quest Inc.
1140 Liberty Dr., Victoria, BC, V9C 4H9
US: (800) 667-3998 Phone: (250) 478-9935
Email: sales@squest.com
Web. http://www.SQuest.com
Midi Quest v7.0 supports over 360 instruments including:
The ultimate SysX E/L for instruments from
Kurzweil, Korg, Roland, Emu, Kawai, Ensoniq, Alesis, Waldorf, Yamaha, Oberheim, Casio, Turtle Beach, Peavey, and many more...
The NEW Midi Quest v7.0 features
. 32&16-bit versions for Win 95, 98, NT4 & 3.1
. Integrated Cakewalk SysX and Name support
. Over 50,000 unique patches included free
. Unparalleled editing & organizational tools
. Powerful hierarchical Parent/Child tracking
circle #523 on reader service card

tempo changes. (Hey, you might just get lucky!) Both programs let you "reclock" the tempo of an existing composition. This is useful, for example, if you've improvised a performance without following a metronome and you want to fit the performance into some logical metric pattern.

SYNC AND MORE

If you plan to work with film or video, you'll be happy to know that both programs offer numerous sync options and support all the common frame rates. Both can auto-detect the format of any incoming sync signal and let you set a SMPTE offset (starting bar for a given SMPTE time). *Cubase VST/24* can slave to an incoming signal while generating time code for another device, and both programs can convert incoming time code to MTC and retransmit it on the fly.

Logic Audio Platinum's Synchronization menu offers a number of similar options for dealing with different types of sync. For diagnosing problems, or for monitoring the continuous resynching capabilities of Emagic's Audiowerk8 hardware, it can display any deviation from an incoming source signal (audio or MTC). Special options for working with Emagic's Unitor8 MIDI synchronizer are also included.

Both programs let you trigger an AVI or QuickTime Movie file from the start of a sequence and assign the movie an offset time. Using *Cubase VST/24* 4.0, you can scrub your audio while the Movie follows the current time position. This lets you scrub to any point in the movie, look at the exact SMPTE time, and then drag or move a MIDI or Audio event to that same point. You can also loop the video. *Logic Audio Platinum* can send video output to an external monitor on the Mac—a feature that multimedia musicians and video professionals will appreciate.

Cubase VST/24 and *Logic Audio Platinum* go a long way to help you manage the various sound modules in your studio. *Cubase VST/24* provides Mixer Maps for this purpose. Mixer Maps are panels with sliders and faders that control the various parameters of your external sound modules. Because these mixers are represented as Parts on a track, you can create a complex set of automated fader movements and then move the entire data set forward or backward by a few beats in your sequence. You can also save numerous snapshots of fader positions and insert or move them anywhere. On the Mac, *Cubase VST/24* provides a Track Mixer feature that you can use to view the controls for multiple hardware devices, and even some software synths, simultaneously. *Logic Audio Platinum* also has a Track Mixer that functions in much the same way.

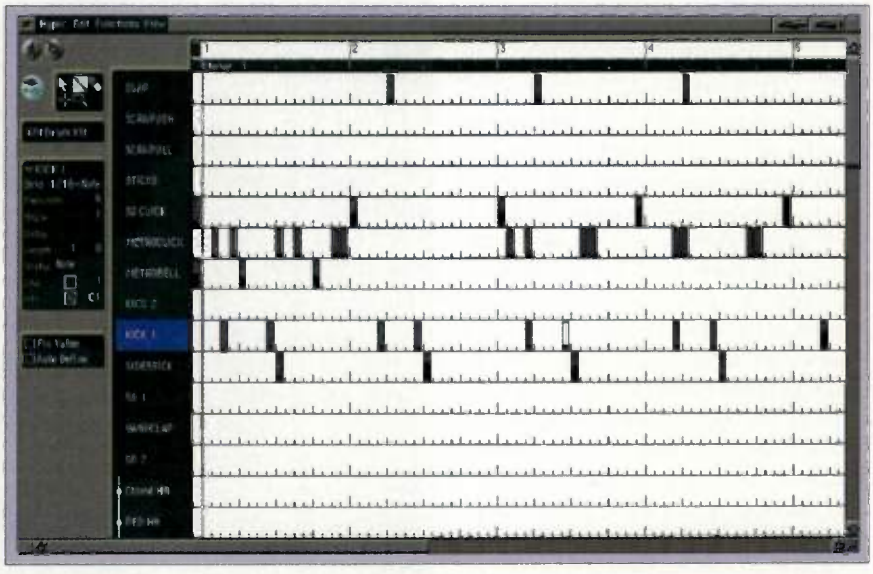


FIG. 1.8: The Hyper Edit window in *Logic Audio Platinum* is used to create drum parts or draw controller data. Presets are available for specific drum modules.

Logic Audio Platinum's Environment is the place for building similar hardware control surfaces, and there are many ways to customize the look and feel of the surfaces you design. I found Environments for controlling a number of hardware devices, as well as new software synths, such as BitHeadz' *Retro AS-1*. (See www.swiftkick.com.) Though clearly not the equal of Opcode's *Max* MIDI programming language, the Environments are very powerful for generating and processing data that is heading for your synths.

You'll find support for Steinberg's ASIO audio drivers in both programs, but neither is yet compliant with the new AudioX standard on the PC. (The standard has only recently been proposed.) Speaking of compatibility, *Cubase VST/24* runs under Windows 98 and NT, but *Logic Audio Platinum* cannot yet run under NT, though Emagic is expected to add NT support soon. (Note, however, that significant timing problems currently make NT an unacceptable platform for many sequencing tasks.)

FINAL BARS

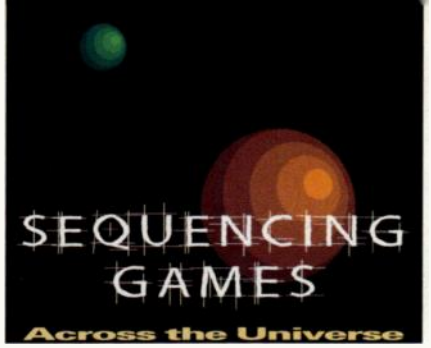
Kudos go to Steinberg and Emagic for outstanding documentation. Although I prefer the complete, printed documentation that accompanies *Logic Audio Platinum*, it's hard to complain about the more than 600 fully searchable pages of electronic documentation that *Cubase VST/24* provides. Neither manual includes specific tutorials that walk the user through the steps needed for a task, but the tutorial-style videos that accompany the programs explain many operations and are clear and well paced. Each program also offers thorough, context-sensitive, online help.

You can also find helpful information on both manufacturers' Web sites. Steinberg has a special section on the Web for music educators using *Cubase VST/24* in the classroom, and *Logic Audio Platinum* users will find tips and tricks not included in the manual at the Emagic site. Additional support for both programs is also available from dedicated and enthusiastic users. This support includes newsletters, such as the excellent *Club Cubase* ($20 per year) and the online *Logic Environments*. User-created Web sites also provide FAQs, suggestions, and even various types of utilities and patches for each program.

With the current changeover in Macintosh copy protection (brought about

circle #524 on reader service card

circle #525 on reader service card



in part by the lack of a floppy disk drive and serial port on the new Macs), hardware dongles have, fortunately, become a thing of the past. They've been replaced by a "challenge code," which is a painless and nearly foolproof option, although it may require waiting a day or two after buying the program before you can use it. On the PC, both programs still require a dongle that you attach to the parallel *(Cubase)* or serial *(Logic)* port. I can't argue with the manufacturers' position that some type of copy protection is required, because it is common to find people in online newsgroups requesting "donations" of commercial software.

PROGRAM SUMMARY

***Cubase VST/24* 4.0 and 3.65.** Anyone who hasn't looked at recent versions of *Cubase* might not recognize the program. *Cubase VST/24* has evolved into one of the most powerful audio editing machines around, and it's probably the first program that has ever made me consider packing up and selling off my stereo and multitrack audio editing software. The sophisticated and powerful busing scheme, countless free and commercial plug-ins, and support for all current audio resolutions and sampling rates make it a great environment for innumerable types of audio projects. You'll be in especially good shape if you use one of the many multichannel audio cards that the program supports.

FIG. 1.9: *Cubase VST/24* on the Mac offers a dedicated Groove Control window for controlling the feel of a Part in real time. These functions can also be accessed in the main Arrangement window using a dedicated tool set.

In addition to its internal features, *Cubase VST/24* can reach out to your desktop and serve as "command central" for various other audio applications. Specifically, *Cubase VST/24*'s ReWire technology lets you route the audio output of compatible programs directly into the *Cubase VST/24* Audio mixer. In the mixer, these "external" audio channels can be treated with the same automation and processing you'd use for *Cubase VST/24*'s own internal audio tracks. Currently, only Steinberg's *ReBirth* and BitHeadz' *Unity* and *Retro AS-1* programs support ReWire, but it seems likely that other software will soon jump on the ReWire bandwagon. (*Cubase VST/24* versions 4.1 and 3.7 will also provide direct access to software synths and samplers on your computer via the VST architecture.)

Speaking of "reaching out," when used with Rocket Networks' RocketPower technology, *Cubase VST/24* lets musicians connect live over the Internet and work on projects collectively. On a more local level, *Cubase VST/24* can employ Steinberg's *Time Bandit* audio-processing software and, not surprisingly, will load files created by Steinberg's *ReCycle* loop-editing software. Hundreds of *ReCycle* loops are readily available from various sources, and when you use *Cubase VST/24* to change their tempi without altering their pitch, or assign different effects plug-ins to individual drum beats, you'll see how powerful this feature is.

Like *Logic Audio Platinum*, *Cubase VST/24* can save your MIDI performances, even when the program isn't in Record mode. This is possible because the program begins to scan for incoming data the moment you load it, and writes any data it detects into a buffer. Just paste the data from the buffer onto a track, and that unplanned moment of inspiration can be captured and used as the starting point for your next grand opus. You can also record MIDI data on multiple tracks simultaneously and split incoming data onto separate tracks according to its MIDI channel.

Powerful MIDI features are available in *Cubase VST/24*'s Quantize menus and Logical Editor. The Quantize options include Over Quantize, which can keep the notes of a chord aligned even though the individual notes may fall into different quantize regions; Iterative and Groove Quantize, for applying different feels to selected notes; and Analytic groove, optimized for especially complex rhythmic patterns. The Mac version also has a Groove Control window, which is a unique graphic interface for applying grooves of various kinds (see **Fig. 1.9**). The Logical Editor lets you specify the "conditions" MIDI data must meet to be altered by the transformation you're planning. Its primary use is search-and-replace operations, such as finding all Cs below middle C and converting them to another pitch. Four independent arpeggiators are also on hand for your listening pleasure.

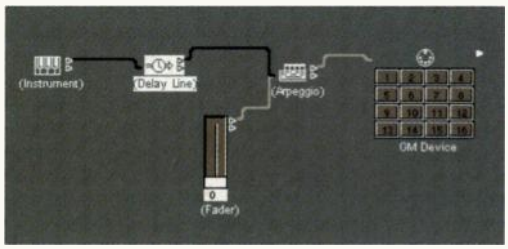


FIG. 1.10: Using *Logic Audio Platinum*'s Environment feature, you can build complex devices that process MIDI data in numerous ways. Here, MIDI data from one track is sent to a delay line, followed by an arpeggiator. The arpeggiator has a slider that is used to alter the range of notes it will span.

The *Cubase VST/24* electronic manual does an especially good job at helping you optimize your system for audio and MIDI production; it provides detailed information about how to get the most out of your hardware. You'll find instructions on overcoming latency, fine-tuning ASIO drivers, and performing system maintenance. It's a good resource for many general computing issues that relate to music and is well worth exploring.

***Logic Audio Platinum* 4.0.** For many years, I had thought that *Logic* had enormous power under the hood but was hard to master. Judging from my experience with the new 4.0 version, it seems that much attention has been devoted to improving ease of use. Sure, many of the features take time to learn, and some are buried deep within submenus of submenus. To my mind, however, the latter is an asset, rather than a problem. More important is the fact that the basic working mode of the software is clear and, as you've seen above, manageable for simple as well as advanced tasks.

If there's one word that summarizes

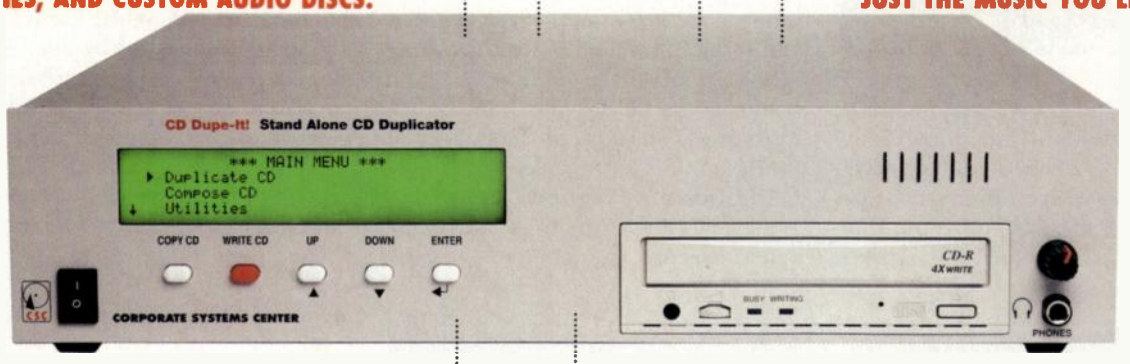
For manufacturer information, please see Contact Sheet, p. 195.

BOTH SINGLE AND DUAL DRIVE MODELS AVAILABLE.

INTERNAL A/V HARD DRIVE STORES DISC IMAGES FOR MULTIPLE COPIES, AND CUSTOM AUDIO DISCS.

EXTERNAL SCSI-II PORT WORKS LIKE A STANDARD CD WRITER FOR CREATING CUSTOM DISCS.

MAKE CUSTOM DISCS WITH JUST THE MUSIC YOU LIKE.



TOTALLY SELF CONTAINED, NO ADDITIONAL HARDWARE IS REQUIRED

ADVANCED FORMAT DETECTION PRODUCES PERFECT DUPLICATES ON STANDARD CD-R MEDIA.

COPY ANY CD NOW. NO PC REQUIRED.

DUPE-IT!

Instantly copy music and CD-ROM compact discs. Make backup copies of your favorite music and software on rugged, permanent CDs. Produce compact discs quickly and economically. No mastering or multimedia experience is required.

Insert your original CD and press "start." The multimedia processor quickly copies any disc to the internal A/V hard drive. Insert blank CDs and make as many copies as you like. You'll produce perfect duplicates. The system is totally self contained —no additional hardware is required.

BUY DIRECT: FROM $795!
100 BLANK CDs $169!
408 330-5522

Just plug in the power cord and press "start"—it's that easy.

You can even make your own custom music CD without a PC! Insert your original CD's, select the tracks you want, and Dupe-It will copy them to the internal hard drive. Then insert a blank CD, and you'll have a custom music CD with just the songs you want.

With the included CD mastering software, Dupe-It will work overtime as your personal CD design system. Just attach a SCSI cable to your PC or Mac, and you're ready to design and create your own original CD's. Similar systems used in duplication houses cost over $5,000. Now you can easily copy CDs yourself for a fraction of the price.

CSC

CORPORATE SYSTEMS CENTER
3310 WOODWARD AVE., SANTA CLARA, CA 95054
WWW.DUPEIT.COM

Musicians—ask about our pro-audio CD recorders. Software publishers—ask about our high-volume multi-drive duplication systems.
Dupe-It is sold and intended for backup and in-house design purposes only. Copyright laws must be observed.

my thoughts on *Logic Audio Platinum*, it's *extensible*. With its configuration options, this program gives you more control over its look, feel, and layout than any other I've seen, as well as the ability to add your own features. For starters, you can change every aspect of the interface, right down to the size of the Transport bar and the number of elements in the time display. You can change the zoom level for every track individually (for example, you can view audio tracks zoomed in while keeping MIDI tracks on the same screen at a smaller size) and even determine which settings will show up on each fader in the Track and Audio mixers.

Additional configuration power is available through Screensets, which represent specific arrangements of *Logic Audio Platinum*'s windows and editing screens. You might, for example, create a Screenset that shows the Arrange window at the top of your display and the Audio mixer at the bottom. Another Screenset might have the Event List and the Score window side by side. You can have up to 99 Screensets, and switching between them is a matter of only a few keystrokes. You can even automate a switch from one Screenset to another by inserting a "meta event" into your event list. That's a trick I haven't seen before!

The program's Environment feature also contributes to its extensibility. I've mentioned previously some of this powerful tool's features, but I've hardly exhausted the possibilities. Using the available MIDI transformers, you can build highly complex processing "devices," using intuitive graphics. For example, in less than a minute I created an object that took all the MIDI events coming off a track and sent them into a delay line, followed by an arpeggiator, then out to my MIDI interface. I also had a fader attached to the arpeggiator in order to control the range of the arpeggiation (see **Fig. 1.10**). You can patch the output of this processor into another object for even more alterations of your data and, if you want, send the whole process back into the Arrange window for viewing in the Score Editor.

Environment objects are great for orchestration tasks. Let's say you have two synths, each of which has a piano patch. You like the sound on synth 1 for low notes, but you prefer the patch on synth 2 for high notes. With the Environment, you can build a "virtual zone" that spans these two physical devices, routing a selected range of notes from a single MIDI track to one synth and the rest of the notes to the other. You'll need a multiport interface for this, of course, but the whole process involves simply dragging a few icons around on the screen and "wiring" them together.

Granted, the bulk of the Environment's resources are directed toward manipulating MIDI, but a new audio object in version 4.0 opens the door for audio, as well. That adds even more flexibility to this already highly customizable program.

Associate Editor **Dennis Miller***'s first show as a 3-D graphic artist opened in Boston in May of this year.*

Guitar Center DIGITAL MUSICIAN
MUSIC SOFTWARE • MIDI PERIPHERALS
MULTIMEDIA COMPONENTS
CD ROMS • HARD DISK RECORDING
AND MUCH MORE...
AT THE LOWEST PRICES GUARANTEED
JUST ARRIVED!
EMAGIC LOGIC AUDIO 4.0
NOMAD MD3 DIGITAL AUDIO PLAYER
MIDIMAN USB MIDISPORT
LEXICON CORE2
CALL TODAY & MAKE YOUR ORDER...
1•877•MUSICIAN
TOLL FREE Number (687-4242)
NATIVE POWER PACK FOR THE MAC OR PC
NOW ONLY $349.99
CUBASE VST 4.0 THE ULTIMATE DIGITAL STUDIO
NOW ONLY $289.99
SONIC FOUNDRY ACID FOR THE PC
NOW ONLY $279.99
...OR CALL NOW FOR YOUR FREE CATALOG WITH HUNDREDS OF DEALS
AND GET A FREE CD-ROM!
Visit any of our 52 locations nationwide to demo the latest in music software. Or, for your convenience, order by phone. Either way you'll get professional service and the lowest prices...guaranteed.
Guitar Center The Musician's Choice
www.guitarcenter.com
circle #527 on reader service card

The Lexicon Studio Family of Products

Mac OS

CLASSIC LEXICON SOUND — WITH MULTIPLE INTERFACE OPTIONS

Quality desktop audio production requires more than a powerful computer and good software. You need the right hardware – Lexicon Studio hardware. Desktop audio production takes enormous computing power and playing around with semi-pro cards not only sacrifices audio quality, it consumes the power your CPU needs for optimal performance. Lexicon Studio hardware lets you keep pace with the demands of professional recording by running the most CPU-intensive tasks, freeing up your computer to run more tracks and more plug-ins.

A **Core-32** Audio Card gives you 32 audio channels, and multiple interface options let you add I/O, Sycnchronization, DSP and Tracks as you need them. The **LDI-12T** gives you 8 channels of ADAT™ I/O, ADAT Sync, S/PDIF Digital I/O, 2 channels of balanced +4dB D/A, SMPTE Time Code In and RS-422 connections. The **LDI-10T** gives you 10 simultaneous audio channels: 8 analog (TRS balanced 1/4") and 2 digital S/PDIF (Coaxial), switchable input gain, 24-bit A/D and D/A conversion, and a 1/4" Time Code input. Connection to an **LX3** expansion box lets you link as many as three LDI-10Ts, to provide 24 analog and 6 S/PDIF channels. The **PC-90** Reverb Card gives you plug-in control of Lexicon's legendary reverb, *without* impacting computer performance.

Contact your authorized Lexicon dealer today to learn more about Lexicon Studio... intelligent hardware for your software.

All trademarks are the property of their respective manufacturers.

Lexicon

Heard In All The Right Places

www.lexicon.com

A Harman International Company

Lexicon, Inc. • 3 Oak Park, Bedford, MA 01730-1441 • Tel: 781/280-0300 • Fax: 781/280-0490 • Email: info@lexicon.com

circle #528 on reader service card

By Brian Smithers

SEQUENCING GAMES

As any history buff can tell you, the Mac had a huge head start as a musical instrument over the business-minded PC. Because of that, the Mac boasted many of the first high-end audio programs, including digital audio sequencers. But as Windows machines came to outnumber their arch rivals, major players such as Emagic and Steinberg elected to support both platforms. One early PC sequencer (in fact the only current upper-tier program originally written for the PC) has risen to the level of a world-class music-production tool: Cakewalk's *Pro Audio*.

Here, I'll take a close look at Cakewalk's *Pro Audio* and three other programs that fill different roles in the music-software market. My findings should allay any fears that you may have about the adequacy of the PC platform as a serious option for music production.

THE PLAYERS

Pro Audio 8.0 ($429; $529 deluxe edition) provides a well-designed, powerful, and full-featured package. In its latest incarnation, the program supports audio at up to 24-bit resolution and a 96 kHz sample rate. The program offers all the standard editing environments, as well as StudioWare, which lets you design graphic control interfaces for your MIDI-controllable external gear. Add to this list *Pro Audio*'s broad hardware support, DirectX plug-in capability, and proprietary macro language for programming complex scripts, and it's clear that Cakewalk is going for the professional-audio power-tool niche. I'd say the company has hit its target dead on.

Cakewalk's commitment to, and understanding of, the Windows platform is evident throughout the program. Since the initial release of Windows 95 in 1996, PC users have been wearing out their right mouse buttons, and *Pro Audio* makes exemplary use of this tool. No matter what editing screen you're in, right-clicking reveals a menu that holds most of the functions you might want in the current context. True to its DOS roots, *Pro Audio* also features editable keyboard shortcuts, giving you complete freedom to choose your working style.

PG Music's *PowerTracks Pro Audio* 5.0 is at the opposite extreme from Cakewalk *Pro Audio* in price; it's hard to believe that $29 can buy so many features. *PowerTracks* is aimed at the entry-level user, but most of its features are designed thoughtfully enough that they'll serve advanced users well. With up to 960 ppqn resolution, scroll-ahead notation view, a karaoke-style lyrics window, and an animated drum window, this program caters to those who just want to have fun making music as well as to those of a more serious bent.

PowerTracks' interface isn't the snappiest I've seen, but it's laid out sensibly. The program includes several innovative features, such as level meters that you can stretch to the full height of the screen (effectively increasing their resolution) and a Staff Roll view that combines the look of a staff view with the functionality of a piano-roll view.

Musicator Win 3.0 ($299), from Musicator A/S, approaches music production in a decidedly different way. In fact, I had to read the documentation to get anything done. Having read the manual, however, I found that *Musicator Win* has a few charms of its own, such as nondestructive audio editing, extensive support for Roland GS and Yamaha XG devices, and the ability to quantize notation separately from its underlying MIDI information. *Musicator Win* includes no audio effects, though, which is a serious limitation in a program of this price.

Voyetra's *Digital Orchestrator Pro* 3.01.05 ($199; $99 by direct download) remains reasonably priced because it avoids the "creeping featuritus." You won't find a MIDI arpeggiator, a custom macro programming language, or high-resolution audio support in this package. You *will* find an attractive and functional interface, standard MIDI manipulation tools, and essential audio-editing tools (see **Fig. 2.1**). MIDI resolution goes as high as 1,900 ppqn, and tempi can range from 16 to 500 bpm in increments of one hundredth of a beat.

Digital Orchestrator Pro really delivers, with its support for multiple sound cards and ability to sync to SMPTE or MIDI Time Code. The CD-ROM includes video tutorials, demo files, sound effects, audio clips, and MIDI drum files.

Because we're focusing on *integrated* digital audio sequencers, we're skipping programs that don't incorporate audio directly. One such program, *WinJammer Professional* 5.0 from WinJammer

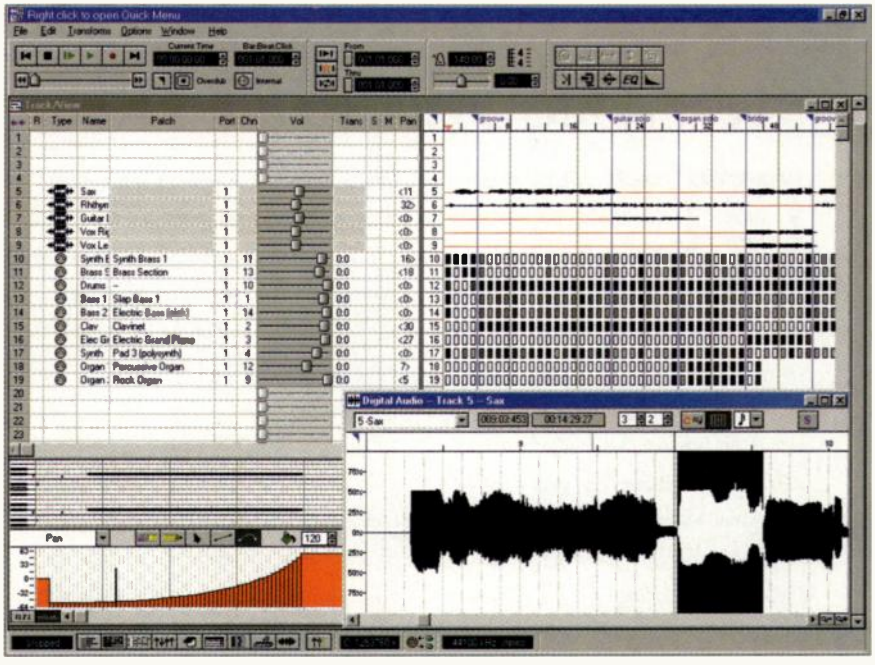


FIG. 2.1: *Digital Orchestrator Pro* provides the MIDI and audio tools you need most in a clear and functional layout. The Piano Roll view in the lower-left part of this screen shot features a parallel window for drawing controller curves.

The Core2 System*

CLASSIC LEXICON SOUND — AT $599

If you're getting into desktop recording, you can bet on Lexicon to make the game worthwhile. With more experience in digital audio than any other company, our processors are used at every level of audio recording, from live venues and project studios, to major film and soundstages.

Now, the Lexicon **Core2** Desktop Audio System offers you a complete, powerful and affordable audio interface for your computer, giving you connections for four channels of analog in, eight channels of analog out, eight channels of ADAT™ digital I/O and a stereo S/PDIF pair.

In addition to powerful I/O, you get audio performance of the highest quality, with ultra wide-range 24-bit A/D and D/A converters with a dbx **Type IV**™ Conversion system featuring on-board Tape Saturation Emulation (TSE™).

An **MP-100** daughterboard for the Core2 gives you classic Lexicon sound with all the effects found in the award-winning MPX 100 Dual Channel Processor: *Chorus, Flange, Pitch, Detune, Delay, Echo, Rotary, Tremolo* and *Lexicon Reverb* and *Ambience.*

Contact your authorized Lexicon dealer to learn more about **Core2**... intelligent hardware for your software.

*Shown with the MP-100 daughterboard option.

All trademarks are the property of their respective manufacturers.

Lexicon

Heard In All The Right Places

www.lexicon.com

H A Harman International Company

Lexicon, Inc. • 3 Oak Park, Bedford, MA 01730-1441 • Tel: 781/280-0300 • Fax: 781/280-0490 • Email: info@lexicon.com

circle #529 on reader service card

Software, is a MIDI-only sequencer that uses a software link to synchronize with IQS's *SAW32, SAWPlus32,* or *SAWPro.* These sophisticated multitrack audio editors must be purchased separately. Nor are we covering Magix's *Music Studio Professional,* a new entry into the fray, which was not released in time for this roundup. The program is slated to provide up to 64 tracks of 24-bit, 96 kHz audio with DirectX support and CD-burning capability.

HARDWARE SUPPORT

Like most modern Windows music software, all four programs support any device with a well-behaved WAV audio or MIDI driver. You'll also have access to multiple MIDI ports with any of the programs. *PowerTracks* supports only one audio device: the one selected as the "preferred device" in your Control Panel's Multimedia settings. When it comes to MIDI, though, *PowerTracks* really delivers with built-in editors for Roland Sound Canvas instruments and Creative Labs AWE32 and AWE64 sound cards.

Musicator Win offers extensive support for GS and XG MIDI devices, saving you from complex SysEx messaging. You can soften the attack of a string patch, remap a drum kit, or control effects from well-designed screens with virtual knobs to twist and numeric displays to edit. *Musicator Win* supports multiple audio cards, and for $79 you can purchase an add-on for Yamaha's DSP Factory. Musicator claims "full support of all DSP Factory features" including two-card systems, but I wasn't able to check this out.

Digital Orchestrator Pro and *Pro Audio* also support multiple audio cards. *Digital Orchestrator Pro* can automatically load banks for Voyetra's Pinnacle sound card and for Creative Labs' AWE64. *Pro Audio* supports numerous multichannel audio cards, including the Yamaha DSP Factory, Digital Audio Labs V8, Soundscape SSHDR-1, and Digidesign Session 8 and Audiomedia III. Its StudioWare feature provides buttons, knobs, sliders, and other such widgets that you can arrange and configure any way you want. Many StudioWare panels are included with the program, including two that emulate the Roland VS-880 and Yamaha ProMix 01. You'll also find user-created panels on the Internet.

USER INTERFACES

All of these programs feature the common editing views, such as a track view, an audio waveform view, an event list, and a mixer. Each also has a fairly standard Windows menu bar at the top of its screen with basic shortcut buttons (New, Open, Save) and transport controls. There is quite a wide variation, however, in how these views are implemented.

In matters of form and function, *Pro Audio* is head and shoulders above the rest. Its interface is attractive, well laid out, and completely configurable. Your custom arrangement of the various editing views is saved as a screen layout with the project file, and you can add the setup to a global set of layouts that can be recalled and applied to any project. You can even configure the toolbar, choosing exactly which parts you want to display and how they're arranged. *Musicator Win* has six definable screen setups, which are basically subsets of tracks, and six definable window views that are activated by hotkeys. *PowerTracks* also lets you save your window setups and apply them to an open project.

Each program provides zoom controls that let you see more detail or get an overview in a given editing screen. *PowerTracks* lets you zoom horizontally and vertically, but only in the Audio view, and you can't zoom in far enough to do precision editing. *Musicator Win* has horizontal zoom in its Wave view, and two-axis zoom in its Wave Edit view and Overview (track view). *Digital Orchestrator Pro* has horizontal zoom in its Piano Roll view and Wave view. *Pro Audio* provides two-axis zoom in its Piano Roll, Audio, and Track views. In addition to the "+" and "–" buttons the other programs use, *Pro Audio* has hotkeys and a zoom bar for quick, easy, and precise zooming. It also offers "lasso" zooming, via icon or hotkey, that lets you select a portion of a wave and have it snap to fill the screen.

Track views typically present track-specific parameters in the left window and graphically display MIDI and audio data in the right window. Both *Pro Audio* and *Musicator Win* let you define and name "clips" in the right window, giving you a great bird's-eye view of your music's large-scale structure. *Digital Orchestrator Pro* and *PowerTracks* limit you to a bar-by-bar display (see **Fig. 2.2**), with darker blocks for bars that contain data.

The spectacle of your art reduced to a list of numbers and event types is not pretty, but when you need the unvarnished truth, all four programs can present it in an event list. Here you'll find a list of every MIDI event in your file, complete with their defining characteristics. *Digital Orchestrator Pro* is the only program that doesn't let you type values directly into the event list. Instead, you must double-click on an event and edit its parameters in a dialog box. This method is also available in *PowerTracks* and *Musicator Win. PowerTracks* is the only program that doesn't provide a data filter for viewing only selected events. *Pro Audio* offers additional filtering methods, including data-type buttons at the top of the Event List window and an event manager that you can call up with a button or a right-click.

All of the programs except *PowerTracks* have a Piano Roll view that includes various tools for drawing,

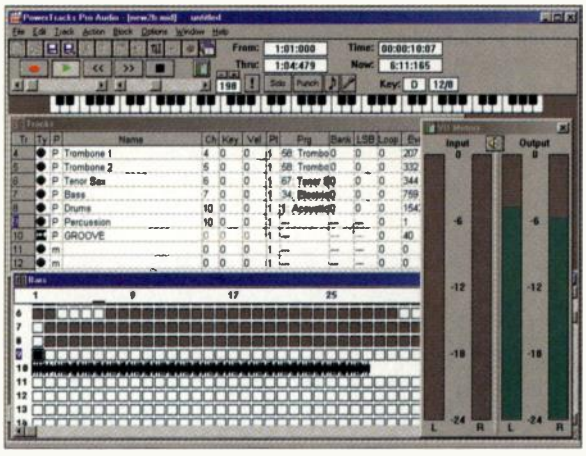


FIG. 2.2: *PowerTracks Pro Audio*'s interface is plain but informative. Dark blocks indicate bars with MIDI data present, and audio tracks provide an overview of the waveform. Notice the simple but easy-to-read level meters.

For manufacturer information, please see Contact Sheet, p. 195.

dragging, and editing notes. *Pro Audio, Digital Orchestrator Pro,* and *Musicator Win* also include a second window in this view for editing controllers such as Volume or Pitch Bend in parallel with the notes. *Digital Orchestrator Pro* includes a standard notation display in this lower window, which can make sorting out the roll view much easier. In place of a piano roll, *PowerTracks* offers an interesting variation on standard notation. Its view shows note heads on a standard staff with green lines representing duration extending from the notes. The idea is that you can edit these lines graphically, as in the other programs' piano-roll views, but I couldn't get comfortable with this method.

In the lower part of the Piano Roll views in *Musicator Win, Pro Audio,* and *Digital Orchestrator Pro* is an area where you can graphically edit controllers such as Volume, Pitch Bend, and many others. All three offer a pencil tool for free-form drawing of controller parameters; *Pro Audio* and *Digital Orchestrator Pro* have straight-line tools; and *Digital Orchestrator Pro* has a Bezier curve tool. *PowerTracks* has no such graphic editing function, but it gives you a useful Real-Time Control slider that acts as a virtual Pitch or Mod wheel.

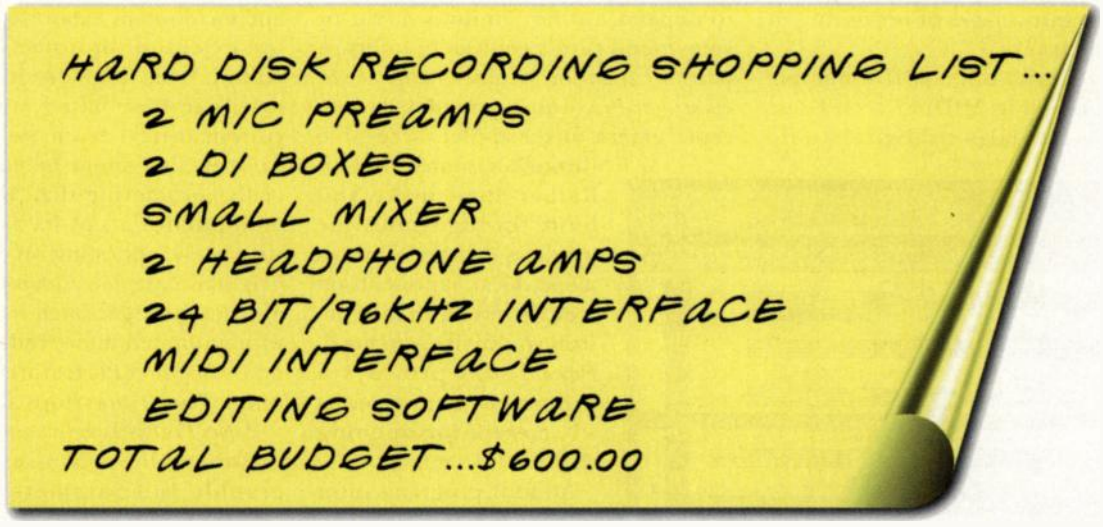
Each program has staff or notation views that range from the basic lead-sheet functions of *PowerTracks* to the more sophisticated tools of *Musicator Win* (see **Fig. 2.3**). *Musicator Win* and *Pro Audio* allow you to quantize your notation without disturbing the underlying MIDI data. This is a great way to clean up the notation of music that you may not have performed in tempo. *Musicator Win* provides fine layout tools and a variety of symbols, including some jazz markings that even fancier notation programs tend to ignore. *Pro Audio* offers symbols and basic layout tools, and its lyric feature is particularly easy to use.

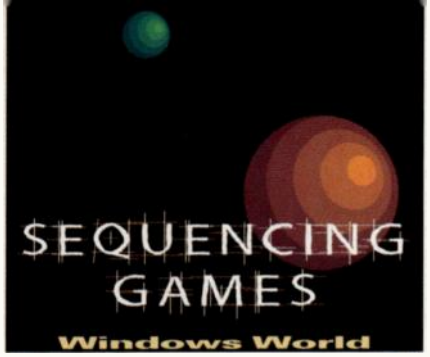
Pro Audio's Audio View lets you view and edit any combination of audio tracks at any resolution down to the sample level. In *Musicator Win*'s Multi-View, you can operate on multiple audio (or MIDI) tracks, but that view's editing resolution is limited to MIDI resolution. *Musicator Win*'s Wave Edit screen does let you edit at the sample level, but it won't show multiple tracks. *Digital Orchestrator Pro* and *PowerTracks* let you open multiple instances of their audio edit windows to mix and match material from many audio tracks.

MIDI SEQUENCING

All four programs let you record MIDI data in real time or enter it manually in step time or through the event list. Once you've entered data, you can rearrange and otherwise manipulate the data in various ways, including transposition and quantization. Instead of covering all of the basic features, I'll identify those features that differ from one program to the next.

All but *Digital Orchestrator Pro* include logical-selection filters for picking precisely the data that you wish to mutilate. (*Digital Orchestrator Pro*'s Event List filter is used for that function.) *PowerTracks* offers two data filters to whittle down a selection before applying any process. Used together, the filters let you specify two separate sets of criteria and perform the selected action





on both sets, such as "all notes above C5 and all notes below C3." *Musicator Win* and *Cakewalk Pro Audio* filter by almost any data type you can imagine and hold the filtered selection while you apply any number of processes (see **Fig. 2.4**). They even let you define filter presets for common selection criteria.

Quantizing is a straightforward task in any of these programs, and they all let you select just how perfect you want the results to be. For hip-hop and jazz-style eighth notes, *Musicator Win* and *Digital Orchestrator Pro* allow "swing" quantization, with settings that range from a slight lilt to a full-fledged triplet feel. *Pro Audio* does swing quantization as well, but goes one step further by offering a Groove Quantize feature.

Musicator Win and *Pro Audio* offer loop recording of MIDI data. You can merge the new material with the old as you loop or send each pass to a separate track, generating multiple takes. Loop recording this way enables you to let your creativity flow freely without having to worry about the mechanical tasks of rewinding or switching tracks.

Pro Audio also offers MIDI manipulation through its MIDI Effects. These function similarly to digital audio plug-ins and can be applied offline or as real-time nondestructive effects in the Console view. In addition to Quantization, MIDI Effects include Transpose, Echo, Delay, and Arpeggiator.

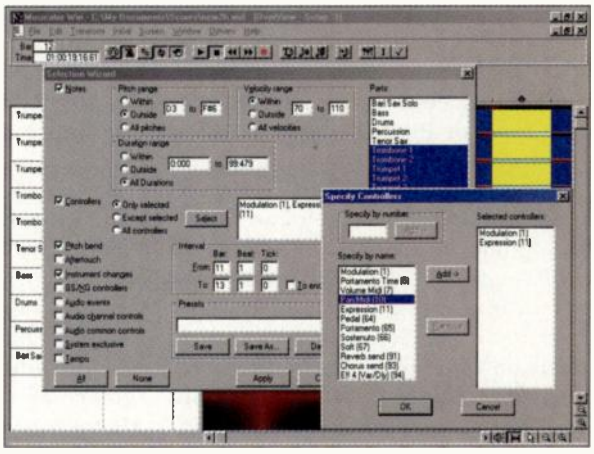


FIG. 2.4: *Musicator Win*'s Selection Wizard is a powerful tool for filtering MIDI data. It lets you include or exclude any range of values for almost any data type imaginable, including Velocity, duration, and controllers.

AUDIO TOOLS

Recording audio works in much the same manner as recording MIDI tracks. In *Pro Audio* and *Digital Orchestrator Pro*, you arm a track (or tracks) for recording in the Track View (or the Console view in *Pro Audio*). In *Musicator Win*, you arm the tracks for recording in the MultiView, and in *PowerTracks* the current track is the target for recording. Each program lets you set precise punch points for replacing the occasional clam. As in MIDI recording, *Pro Audio* and *Musicator Win* support loop audio recording, enabling you to record several passes in a row. *Pro Audio* offers the choice of stacking the passes for a layered effect, and both programs send each pass to a new track so that you can pick the best take or compile a "perfect" version.

None of these programs lets you set recording levels directly, so you have to depend on the Windows mixer or your sound card's equivalent utility. A partial exception to this is *Digital Orchestrator Pro*, which provides its own replacement mixer applet, accessible through a toolbar button. Rather than make you hunt through multiple windows (as the Windows mixer does), it presents on a single screen all the controls you're likely to need. *PowerTracks* provides a convenient button on its VU meters for opening the Windows mixer.

All four programs offer input metering; *PowerTracks* gets bonus points for a simple pair of level meters that can be stretched vertically to make the display more readable. *Pro Audio* again takes highest honors for allowing you to choose from four display ranges for the input meters. By zooming all the way in to a 24 dB range, you can look at the top quarter of the meter through a magnifying glass. This makes setting hot levels a lot easier. *Digital Orchestrator Pro*'s meters are on its sound-card mixer applet, which is the sensible place for them because you set recording levels from that screen.

When it's time to start editing your recorded tracks, you really find out what your sequencer's made of. All four programs provide basic cut, copy, and paste operations, and each includes gain change/normalize, fade/crossfade, and mixdown or export to WAV. This is the extent of *Musicator Win*'s audio-editing tools. If you're interested primarily in loop-based music and get your material from well-produced sources, this might be enough, especially considering that *Musicator Win* manipulates all of its audio nondestructively, operating on copies of the original material. *Cakewalk Pro Audio* also lets you get back to square one with unlimited undo/redo, while *Digital Orchestrator Pro* features 12 levels of undo. *PowerTracks* stops at one.

PowerTracks features a number of offline audio processes, including graphic and parametric EQ, compressor, gate, chorus, echo, reverb, and more. Each of these processes provides the essential controls that you would expect, such as threshold, ratio, attack time, and release time for the compressor and predelay, reverb time, density, high-frequency decay, and mix for the reverb. The

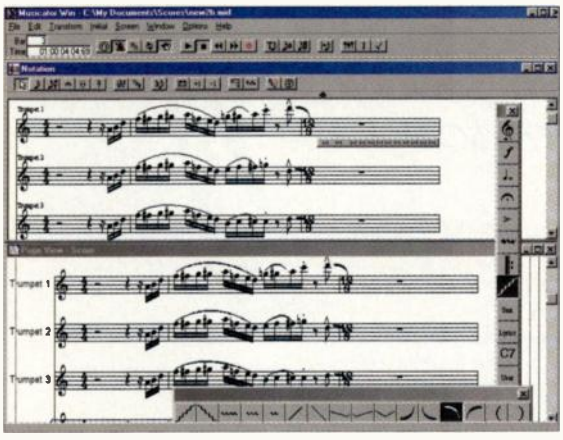


FIG. 2.3: *Musicator Win*'s Notation view (top) contains tools for adding articulations, clefs, lyrics, and other important markings. Note the two-tiered palette at the right. The Page view (bottom) shows the printable results.

effects support up to 32 presets each, and sound quality is generally fine—downright amazing, actually, when you consider the price.

Digital Orchestrator Pro's offline processes pop up in windows that resemble rack-mount devices (see **Fig. 2.5**). Included are a compressor/gate and graphic equalizer, along with reverse audio, pitch shift, and time compress/expand. The delay offers chorus, echo, and quasi-reverb effects. As with *PowerTracks*, you can use the provided presets or save your own. The quality of the processes is pretty good, but the lack of a convincing reverb is a significant shortcoming.

Pro Audio gives you so much control over your audio that it's almost scary. You can easily zoom in to the sample level and fill your whole screen with a few milliseconds of audio. From there you can do precision crossfades, use EQ to remove the brief thud of a kicked mic stand, and even paste a single cycle (or less) of a waveform over a glitch. You can automatically remove silence, extract the timing of an audio event for use as a groove template or as a tempo map for accompanying MIDI tracks, and even convert monophonic audio to MIDI.

Another cool function in *Pro Audio* is the ability to define an anchor point in an audio clip. This lets you snap an audio clip to a beat accurately when there is sound prior to the beat, such as with a pickup note. Additionally, you can draw pan and volume envelopes directly on the waveform for pinpoint control of these parameters (see **Fig. 2.6**).

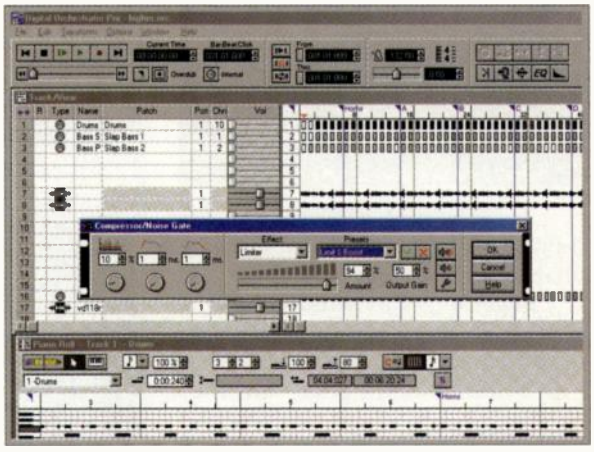


FIG. 2.5: *Digital Orchestrator Pro*'s audio effects offer user presets and ample control of important parameters. Though they are offline processes, not real-time effects, they are of good quality and easy to use.

PLUG-INS

The only program I tested that supports real-time DSP effects plug-ins is *Pro Audio*. It comes with a number of its own plug-ins and supports any DirectX third-party effect. These effects can be patched into the Console view as track inserts, or used on one of the aux buses or on a master output. Alternatively, any of the effects can be applied offline from the Audio View.

Pro Audio's plug-in effects come in two flavors: *CFX* mono effects and *Cakewalk FX* stereo effects. *CFX* effects are a holdover from an earlier version of *Pro Audio;* the current versions feature

. . . Finally, a computer recording interface you can get your hands on!

- Two custom mic pre-amps
- Two high-Z instrument pre-amps
- Channel inserts
- Built-in mixer
- Signal activity/clip indicators
- Two headphone amps
- S/PDIF IN and OUT
- Sample rates: 8kHz to 96kHz @ 24-bit
- MIDI IN, OUT and THRU
- Footswitch transport control interface
- Mac or PC compatible via supplied PCI card
- ASIO, Sound Manager & WAVE drivers

SeaSound
www.seasound.com

List price... $599.95
TAKE a SOLO

32-bit processing. Although their interfaces are less refined than more recent plug-ins, they have the redeeming attribute of being easy on the processor. Of course, that wouldn't matter if they didn't sound good, but they do. The program comes with a 2-band equalizer, a chorus, a delay/echo, a flanger, and a reverb. Each comes with several usable presets, and you can save your own.

Cakewalk FX are stereo effects with well-crafted graphic interfaces. The parametric equalizer, for example, displays the EQ curve as you adjust its parameters with knobs for gain, center frequency, and bandwidth (Q). Its three bands can be designated as high-shelf, low-shelf, or peak filters. The time/pitch stretch effect features a display of pitch versus time on which you can map changes to either or both. Among this effect's options is a formant-preserving algorithm. Other *Cakewalk FX* include delay, chorus, flanger, reverb, and dedicated pitch shifter. All sound excellent and support presets.

FIG. 2.7: Cakewalk *Pro Audio*'s Console view shows the program's power and flexibility. Colored dots on faders indicate groupings, which can be absolute, relative, or custom. Real-time DirectX plug-in effects can be used as per-track inserts, on the aux buses, or on any master output. The Module Manager even lets you control which parts of the console to display.

SPECIAL FEATURES

Each program has a host of features above and beyond those I've mentioned. *PowerTracks* can import chord symbols from PG Music's *Band-in-a-Box* MIDI files, and it supports jukebox-style playback of multiple song files. The program includes a unique guitar view that can display chord fingerings in any position. This would be more useful if it remapped close keyboard voicings into authentic guitar voicings, but instead it sometimes ends up with two notes on the same string. Also included with *PowerTracks* is the *PowerGuide* instructional CD-ROM, which contains a series of helpful tutorials to guide you through the program's features.

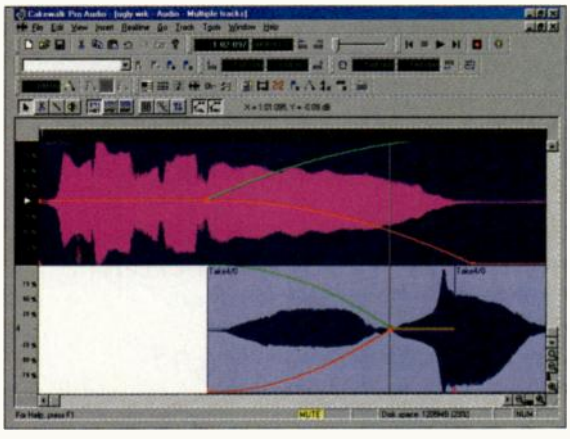


FIG. 2.6: Cakewalk *Pro Audio*'s Audio view shows volume envelopes in red and pan envelopes in green. Here, one track is fading in and panning left as the next track sneaks in from the same position.

The *Digital Orchestrator Pro* CD comes with a variety of extras, including several demo songs with and without audio. It also holds a collection of MIDI drum tracks and audio clips for you to use as creative fodder. The complete manual is online, which makes searching for a particular subject quick and easy. Six excellent tutorials get you off on the right foot.

Pro Audio includes a powerful macro programming language known as Cakewalk Application Language (CAL). A number of CAL scripts are included with the program, and more are available for download from Cakewalk's Web site. These make quick work of such complex tasks as splitting a drum track into separate tracks for each instrument, randomizing timing or Velocity, or thinning dense controller data. Even if you aren't a programmer, you can use CAL to record a series of keystrokes to automate a repetitive task. Also, *Pro Audio* can now import video files in AVI, MOV, or MPG formats and save them as AVI files.

PROGRAM SUMMARY

***PowerTracks Pro Audio* 5.0.** *PowerTracks* manages to pack a lot of creative tools into a $29 program. The program runs at a higher MIDI resolution (960 ppqn) than all but one of the other Windows-only programs, and it provides all the major MIDI manipulation tools, complete with a logical filter. Although *PowerTracks*' interface won't win any beauty awards, it's well laid out and functional.

For detailed audio editing, *PowerTracks* doesn't measure up, but it does record mono or stereo tracks with auto punch-in. You can rearrange the audio any way you like and add decent-sounding effects offline. PG Music also has several CD collections of multitrack

For manufacturer information, please see Contact Sheet, p. 195.

Encompassing the heritage of more than 20 years of delivering professional tools to the professional industry, TC Electronic proudly introduces a high-end vocal processing tool aimed at reducing tedious engineering time spent on doing vocal re-takes - dedicated to the professional vocal recording engineer.

The Intonator not only provides the ultimate solution to vocal pitch correction, but offers various highly useful tools as well, including adjustable De-esser and Adaptive Lo-Cut (ALC™) filtering techniques.

Vocal Integrity

Preserving integrity is a must when dealing with delicate human vocals. By dramatically reducing the amount of re-takes needed, you minimize the risk of fragmenting and potentially destroying the emotional integrity and concistency of the artist's expression.

The Intonator provides you with an ultra-transparent signal path thanks to industry-leading hardware specifications, incorporating TC's world-renowned DARC™-chip technology, 96 kHz internal processing and real 24 bit resolution. Utmost care has been taken in the software development as well, ensuring that all adjustments applied to the incoming signal are being processed in a subtle, yet highly effective manner!

The Human Touch

Preserve the Artist's personal touch by allowing vibrato, initial intonation and limited correction individually. Use the custom scale feature to achieve a unique "Do-not-process-anything-but-this-note" setting. Specify when a specific note must be considered out of tune with the Pitch Window and limit the amount of Pitch correction added to these notes by using the Amount control.

Features:

- Unique Pitch Intonation Processing
- Vocal specific De-essing
- Vocal Specific Adaptive Lo-cut filter
- 96 kHz, 88.2 kHz, 48 kHz and 44.1 kHz compatible on digital and analog I/O's
- Wordclock Input for external clock synchronization
- Fully integrated industry standard connectivity: AES/EBU, S/PDIF & ADAT digital I/O's
- ADIOS™ (Analog Dual I/O's) configuration enables simultaneous recording of processed and un-processed vocal
- Full MIDI automation makes correlation to external reference-signal a breeze
- Audio-to-MIDI conversion allows tracking of correction history
- Easy Edit user interface with dedicated chromatic front panel controls and Alpha dial control
- High resolution display provides instant visual feedback of intonation and corrective action

SEE US AT NAMM BOOTH #1243

t.c. electronic®
ULTIMATE SOUND MACHINES

circle #532 on reader service card

TC ELECTRONIC A/S ▸ SINDALSVEJ 34 ▸ 8240 RISSKOV ▸ DENMARK ▸ PHONE: + 45 8621 7599 ▸ FAX:+ 45 8621 7598
TC ELECTRONIC INC ▸ 790-H HAMPSHIRE ROAD ▸ WESTLAKE VILLAGE ▸ CA 91361 ▸ USA ▸ PHONE: (805) 373 1828 ▸ FAX: (805) 379 2648
E-MAIL: INFO@TCELECTRONIC.COM ▸ WEBSITE: WWW.TCELECTRONIC.COM

audio available, at a modest additional cost, for you to use in your projects.

While testing *PowerTracks*, I repeatedly had to fight the urge to judge this book by its cover. This became easier as I found feature after feature that was more powerful and efficient than I had expected. Although it won't make megatools such as *Pro Audio* tremble with fear, it may keep many musicians from throwing up their hands in despair at the cost of making music on a computer. If you're looking for a dirt-cheap entry into digital audio sequencing, consider *PowerTracks*.

***Musicator Win* 3.0.** First, kudos to Musicator A/S for writing an application that, apart from the fonts it uses, installs completely into its own directory. This program won't leave your hard drive cluttered and your Registry trashed, and its nondestructive approach to audio editing is likewise commendable.

Nevertheless, I found *Musicator* to be rather awkward. It's the only program I am aware of that refers to a MIDI port/channel combination as a "line," and the otherwise well-written manual includes no glossary of unusual terminology of that kind. For some reason, initial tempo and key are found under a different menu than the commands for changing them are, and the functioning of the Audio List view is not intuitive.

Of course, you might discover that *Musicator*'s interface works fine for you. If it does, you'll find plenty of power for manipulating audio loops in the Wave view and for arranging your ideas in the Overview. The program's notation tools could also make it the right fit for your needs.

If you use a lot of XG and GS gear and deal mostly with prerecorded audio loops, *Musicator Win* could be just the ticket. But for my purposes, the lack of audio effects is fatal in a $299 program. DSP Factory users must spend an additional $79 for support of their hardware, but the omission of internal effects would then be inconsequential.

***Digital Orchestrator Pro* 3.01.05.** *Digital Orchestrator Pro* is a solid, sensible program that incorporates all the essential features of a digital audio sequencer in an accessible way. Using its 12 audio output ports, you can take advantage of multichannel audio hardware such as the Event Gina and Layla cards. The ability to use up to 16 MIDI ports should serve all of your MIDI I/O needs, as well. A number of nice touches, such as the volume sliders in the Track view, the audio system mixer, and Quick View buttons for switching between the main work areas, make using the program easy and intuitive.

I like the way *Digital Orchestrator Pro*'s various editing views are just a click away (thanks to a toolbar at the bottom of the screen) and buttons for the most common audio and MIDI transforms are at the top. The presence of a track solo button in the Piano Roll and Audio views is tremendously helpful for auditioning your edits. When you're recording tricky MIDI parts, you can adjust the tempo by clicking on the Tempo Offset slider and return to your original tempo just as easily.

Digital Studio Essentials

Nobody ever thought that improving the recording process could worsen the sound. But that's exactly what direct digital recording does - it leaves your sound brittle and harsh. Introducing three solutions from Bellari - the MP110 DIRECT DRIVE Tube Microphone Preamp, the LA120 Tube Compressor/Limiter, and the new ADB3b Stereo Tube Direct Box. These boxes round out the digital edges, and restore the natural warmth to your sound.

If you're recording digitally, a Bellari tube product is simply essential. Bellari, oh oh!

5143 South Main Street
Salt Lake City, UT 84107
(801) 263-9053 • FAX (801) 263-9068
email: bellari@rolls.com
web: www.rolls.com

Bellari

SEE US AT NAMM BOOTH #548

circle #533 on reader service card

When you want to insert a marker, you simply drag one from the Marker icon to any spot on the time line; a window then pops up asking you to confirm the marker's placement and assign it a name. Clearly, you won't wear out the manual when things work this sensibly, but when you need to look something up, you'll appreciate *Digital Orchestrator Pro*'s helpful, well-written documentation.

The program's notation features are unnecessarily clunky, but its MIDI editing features make up for it. Though limited to one track at a time, its Audio View is clear and efficient. The addition of real-time DirectX effects would be a significant improvement, but the palette of offline audio effects is well designed, except for the lack of a reverb. Overall, *Digital Orchestrator Pro* is a good choice for beginning and intermediate users who want to expand their compositional resources.

***Pro Audio* 8.0.** The 500-pound gorilla of this bunch, *Pro Audio* deserves its reputation as a world-class digital audio sequencer. It works with simple sound cards as well as with the latest high-end audio gear, and its StudioWare panels add another dimension of control over all kinds of external devices.

Pro Audio's Console view integrates MIDI and audio tracks into a single mixer and lets you manage all busing, routing, and inserts track by track. You can select input and output devices for any track or aux bus with a click (see **Fig. 2.7**). Right-click on any fader or mute, solo, or record button, and a window pops up for grouping such objects. You can edit the Console View, for example, by hiding or revealing meters, aux buses, and input modules, and automate your mixes by taking snapshots of settings or by recording fader movements. This automation data can then be edited graphically elsewhere in the program. Other editing screens in *Pro Audio* exhibit the same level of integration and depth of features.

For complex MIDI setups, *Pro Audio*'s Instrument Definitions let you assign patch names, available controller names, Bank Select method, and more for each MIDI port and channel. *Pro Audio* includes many such definitions, and you can download more or create your own. A patch browser is even provided to help you sift through all those sounds (across banks, if necessary) by text string.

Pro Audio's user interface is impressively configurable. For the rodent-shy among us, keystroke commands are always available. Better yet, *Pro Audio* provides "key bindings," which let you assign any of 62 key combinations or MIDI notes to menu commands, CAL programs, screen layouts, or StudioWare panels. In addition to using right-click context menus, mouse lovers can open a clip in a user-selectable edit window by double-clicking on the clip. Double-click on a fader, and it snaps to a user-definable default position.

Cakewalk's entire product line has long been recognized for its stability and ease of use. Fortunately, *Pro Audio* 8.0 continues this tradition and is an excellent choice for users at any level.

Brian Smithers *is a woodwind musician, arranger, and conductor at Walt Disney World. His Web site (members.aol.com/notebooks1) covers making music using notebook computers.*

Fully supported for MAC and PC operating systems by these and many more:

CAKEWALK MUSIC SOFTWARE
DECK II
MACROMEDIA
CUBASE
Steinberg
bias
MOTU
SEK'D Samplitude Studio
JAM FOR MACINTOSH
TOAST
adaptec
emagic

NEW LOWER PRICE!

1212 I/O
PCI Multi-Channel Audio Interface

Choose your platform. Choose your software.

- ***1212 I/O is fully supported by every major third party software developer***
- ***ADAT I/O seamlessly integrates digital audio with digital mixers, multi-tracks & synths***
- ***ADAT Timecode Sync—tighter sync than any ADAT-to-MTC converter***
- ***Word Clock I/O allows S/PDIF to ADAT conversion, even while using the BRC***
- ***12 in and 12 out, simultaneously—analog stereo S/PDIF, and ADAT Optical I/O***
- ***8-channel analog I/O expansion options***

For complete info, check out www.korg.com

KORG

©1999 Korg USA, 316 South Service Rd., Melville, NY 11747. For the SoundLink DRS dealer nearest you: (800) 335-0800. For more info about the 1212 I/O via faxback call: (516) 393-8530 doc # 4102.
ADAT and BRC are registered trademarks of Alesis, Inc.; MacOS is a registered trademark of Apple Computer, Inc.; Windows 95 is a trademark of Microsoft Corp. All other brand and product names are the property of their respective holders.

SEE US AT NAMM BOOTH #102

circle #534 on reader service card

By Jeff Casey

SEQUENCING GAMES

The three Mac-only programs I'll cover are Opcode's *Studio Vision Pro* 4.2 ($399), MOTU's *Digital Performer* 2.5 ($795), and Cakewalk's *Metro* 4.0 ($249). *Studio Vision Pro* and *Digital Performer* have been industry mainstays since the inception of the digital audio sequencer. In fact, *Studio Vision,* introduced in 1991, was the first program to offer an integrated audio recording/MIDI sequencing environment. Shortly thereafter, MOTU released *Digital Performer,* and both programs quickly became favorites of many professional and personal recordists (especially those working with Digidesign's Pro Tools hardware).

Metro's lineage is a little more convoluted. It started life as *Beyond,* from Dr. T's Music Software. OSC licensed the software and renamed it *Metro,* shortly before the company was acquired by Macromedia. Finally, Cakewalk bought the program as part of the company's foray into the Macintosh world.

Digital Performer was recently upgraded to version 2.6, and I was able to check out a beta version before writing this article. I have therefore outlined many of its new features in the text. Opcode tells me that *Studio Vision Pro* is also about to undergo another upgrade, but unfortunately, it won't be available until late summer. *Metro,* too, is slated for upgrade soon—a major overhaul that Cakewalk says will address many of the criticisms mentioned in this article.

It would be impossible to touch on every aspect of each program, but I've covered several of the major factors you should consider when purchasing a Mac-based digital audio sequencer. Also note that additional offerings from Opcode and MOTU are included in the sidebar "Sibling Rivalry" on page 66.

HARDWARE AND TEAR

All three programs can use the Mac's native audio hardware with Apple Sound Manager. Depending on RAM configuration and CPU speed, program performance will vary (specifically, the amount of DSP and the number of audio tracks that you get). To get the most out of each program, your computer must meet the outlined minimum system requirements. To run *Digital Performer* with Sound Manager, MOTU suggests that you have Mac OS 7.6.1 or later and at least 40 MB of RAM. Opcode recommends at least a Power Mac 603 running Mac OS 7.6, with 32 MB RAM and a Level II cache for *Studio Vision Pro.* And for *Metro,* Cakewalk suggests a Power Mac running Mac OS 7.0 or higher, with 8 MB of RAM and Sound Manager 3.2.

I tested the programs on a SuperMac S900 (a Umax Mac clone), running System 7.6.1 and outfitted with a 233 MHz G3 processor, 128 MB of RAM, 5 MB of backside cache, and a 9 GB internal SCSI-2 drive. I experimented with both native audio and card-based I/O. Though I will discuss specific audio recording results in detail later, overall I experienced no major computer crashes during the review period. (A few minor incidents could be attributed to my impatience.)

In addition to using Sound Manager, each program supports various audio cards. For professional applications, the TDM architecture is by far the most popular standard, and *Digital Performer* and *Studio Vision Pro* support it. This means that you can use either program as controlling software for a Digidesign Pro Tools system. All three programs are also compatible with other Digidesign PCI-based hardware, such as the Audiomedia III card.

Studio Vision Pro and *Digital Performer* support Steinberg's ASIO format, which is quickly becoming an industry standard. Quite a few audio cards and digital audio workstations have acquired ASIO support (for example, the Event Layla, Korg 1212 I/O, and MOTU 2408). I tested both programs using Ensoniq PARIS hardware, for which ASIO drivers have recently been introduced.

Unfortunately, the current version of *Metro* does not support ASIO (although the imminent upgrade should change that), so I couldn't use it with PARIS. However, the program offers direct support for several other audio cards, including Korg's 1212 I/O and Sonorus's StudI/O. Although a comparative look at the audio card/DAW market is a bit much to tackle here, all three programs offer options for adding I/O or enhancing audio recording or DSP functionality. But if you need a more professional solution, you'll want to look to Opcode, MOTU, Steinberg, or Emagic.

WINDOWS ON THE WORLD

Digital audio sequencers were invented to provide an integrated working environment for audio recording and MIDI sequencing, with a single set of controls for performing both tasks. Therefore, intelligent and intuitive user interfaces should be a priority. I'm happy to report that our contestants all win big in this department.

Each of the programs offers preset keyboard shortcuts for opening various windows and performing basic functions. (*Metro* even makes use of the Mac's Function keys, which take you directly to setup pages.) Each provides options for assigning operating functions to MIDI Note On messages (for example, MIDI note 60 = Stop), and both *Studio Vision Pro* and *Digital Performer* let you assign commands to the Mac keyboard. One level of Undo/Redo is available across the board (though each program has a "revert to saved" command), and the programs all offer "floating" windows that you can resize and reposition as needed.

Digital Performer's interface is easily the most advanced of the three programs I examined—I could devote this entire article to it and still not have enough space to cover every window and function. Because of this, I'm glad *Digital Performer* provides various "Window Sets." Each set opens just the windows needed for a specific task. For example,

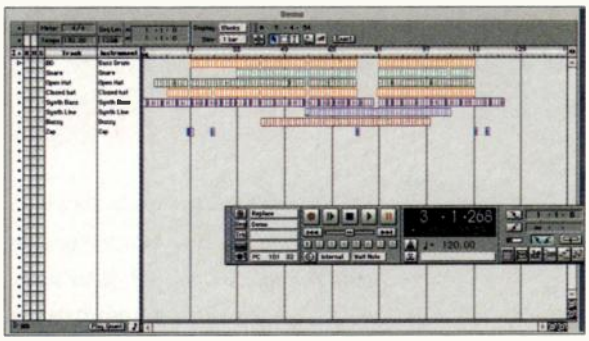


FIG. 3.1: The Tracks window serves as the main work area for *Studio Vision Pro.* Here you can manipulate audio and MIDI data and manage each project.

Now Shipping

8 ins + 8 outs + 24 bit Recording x True Balanced I/O = Great Value!

It All Adds Up... the Wave/824

Professional 24-bit Digital Recording Interface

Let's face it...when it comes to PC and Mac-based recording hardware, there are many confusing alternatives. But now, there's clearly a better choice from Gadget Labs. For recording 24-bit multichannel audio, there is no better value than the Wave/824. Designed by experts from both the PC and pro audio worlds, it sets a new standard for quality and performance. We invite you to do the math — we think you'll find the Wave/824 is the winning equation!

- ☐ PCI bus adapter and external patch bay
- ☐ 8 input channels, 8 output channels
- ☐ 24-bit converters with 105 dB dynamic range
- ☐ Professional Balanced inputs and outputs via 1/4" TRS phone jacks with XLR jacks for 2 stereo pairs
- ☐ Professional +4 dBu levels or consumer -10 dBv selectable via software
- ☐ MIDI interface with in and out connections
- ☐ Optional 24-bit S/P DIF digital interface
- ☐ Clock Sync 2 cards for 16 channels
- ☐ Drivers for Windows® 95/98, Windows NT, Windows ASIO, (Mac ASIO coming soon).
- ☐ Compatible with popular software such as Cakewalk, Cubase, Sound Forge, Acid, Cool Edit Pro, SAW, Samplitude, Quartz and more

Gadget Labs™

Order Direct

1.800.660.5710

Order Online

www.gadgetlabs.com

Pricing is suggested retail price for United States. Gadget Labs and Wave/824 are trademarks of Gadget Labs, Inc. Other names mentioned are trademarks or registered trademarks of their respective companies. Prices, specifications & availability subject to change without notice.

circle #535 on reader service card

the "Mixer" set opens the Mixer window, the Transport, and the Audio Monitor, and the "Editing and Mixing Small" set opens the Mixer window, Audio Edit window, Tracks window, Transport, Audio Monitor, and Soundbite window. You also can create as many custom Window Sets as you wish, a great feature that is similar to the Screensets in Emagic's *Logic Audio*.

Studio Vision Pro and *Digital Performer* offer drop-down menus in the upper-left corner of each window that provide access to the major functions for that window. This is very cool because you don't have to search through menus at the top of the screen to find the function that you're looking for. Although the feature sets of the programs vary, they have several basic windows in common.

Tracks window. The main work area for each program is the Tracks window, which is divided in half, with vertically resizable information columns on the left and a graphic display of the tracks on the right (see **Fig. 3.1**). In this window, you manage the project by naming tracks, assigning Instruments and Patches, selecting tempo and meter, editing tracks, and so on. All three programs let you reposition tracks vertically within the window, and you can horizontally zoom in and out of each track's edit field.

With *Digital Performer*, the Tracks window is also where you designate input and output routings. In addition, *Digital Performer* lets you create multiple takes per track. This feature, which is familiar to users of MOTU's *FreeStyle* sequencer, means that instead of having to create 13 separate bass tracks, you can have one bass track with 13 takes, which you can play back one at a time.

Studio Vision Pro lets you display the graphic information as tracks, blocks, or phrases. Audio tracks in *Digital Performer* and *Metro* are represented as miniature waveforms, and both audio and MIDI tracks are color coded. *Metro* and *Digital Performer* provide independent track level meters; *Metro*'s

SIBLING RIVALRY

Most of the software covered in this article is available in less expensive versions. We've listed the programs that are available in scaled-back versions below, along with their prices and a few (but not all) of the differences from the top-of-the-line products. Be sure to check each manufacturer's Web site to get the latest information on the pricing and specifications for each of these programs.

EMAGIC

Logic Audio Gold ($499): Maximum of 48 physical audio tracks. No Soundscape SSHDR-1 support.

Logic Audio Silver ($299): No nondestructive crossfades. No Audio-to-MIDI Groove Template, Audio-to-Score Streamer, or Groove Machine. Maximum of four effects buses, two sends per track, three EQs per track. No DSP Factory support. Maximum of 16 physical audio tracks. No Marker support. No advanced notation symbol set. Cannot link events to SMPTE time. No real-time tempo fader.

Micro Logic AV ($99): No Digital Factory processing options except sample-rate conversion. Cannot drag audio regions from Audio window to Arrange window. No multiple audio hardware support (single card only). Two effects buses, two sends per track. Maximum of 12 physical audio tracks.

STEINBERG

Cubase Score VST 4.0 ($549): Same as *Cubase* 4.0, but adds professional scoring and printing features. Up to 32 staves per page. (Check Web page for slight differences in Windows version 3.65.)

Cubase VST 4.0 ($399): Maximum of 64 physical audio tracks. Maximum of four bands of EQ per channel, four insert effects per channel, eight send effects, eight master effects. No professional scoring and printing options. (Check Web page for slight differences in Windows version 3.65.)

Cubasis AV ($99): Maximum of eight physical audio tracks. Maximum of two bands of EQ and six real-time effects.

CAKEWALK

Professional 8 ($269): No 24-bit/96 kHz support. Maximum of eight active audio tracks. No pitch detection, time stretch, or remove silence. Doesn't support multichannel sound cards, multiple sound cards, or other high-end hardware, such as Yamaha DSP Factory.

Home Studio 8 ($129): Same limitations as *Professional*, in addition to a maximum of four active audio tracks. Limited sync capabilities. No hotkeys. Only two included audio plug-ins. No StudioWare design mode. No SysEx editing.

VOYETRA

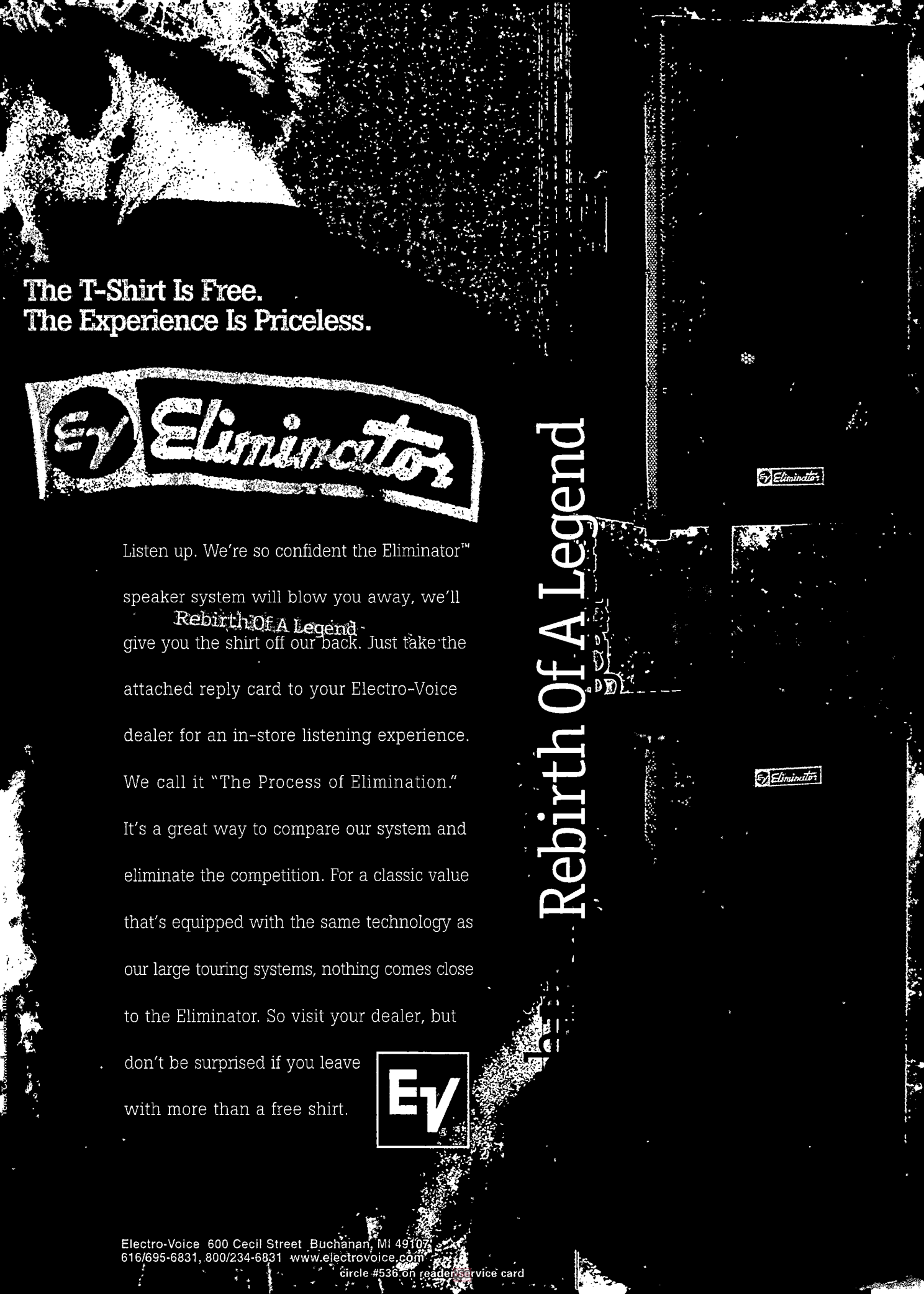
Digital Orchestrator Plus ($129; $49 by download): Maximum of four tracks of audio.

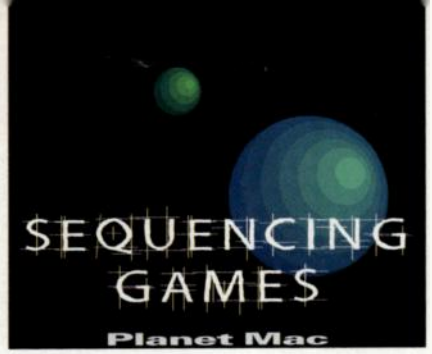
OPCODE

Vision DSP ($199): No TDM support. No Audio-to-MIDI features.

MOTU

Performer 6.0 ($495): Maximum of eight physical audio tracks. No MOTU Audio System. No TDM support. No ASIO support. No busing. No "bounce to disk" feature.


The T-Shirt Is Free.
The Experience Is Priceless.
Eliminator
Listen up. We're so confident the Eliminator™ speaker system will blow you away, we'll give you the shirt off our back. Just take the attached reply card to your Electro-Voice dealer for an in-store listening experience. We call it "The Process of Elimination." It's a great way to compare our system and eliminate the competition. For a classic value that's equipped with the same technology as our large touring systems, nothing comes close to the Eliminator. So visit your dealer, but don't be surprised if you leave with more than a free shirt.
Rebirth Of A Legend
Rebirth Of A Legend
Eliminator
Eliminator
EV
Electro-Voice 600 Cecil Street Buchanan, MI 49107
616/695-6831, 800/234-6831 www.electrovoice.com
circle #536 on readerservice card



can be custom colored using the provided Apple RGB or HFS palettes.

Edit window. With each of the programs, clicking on an object in the graphic section of a Tracks window opens the Graphic window for that track; either a "piano roll" for MIDI tracks or an audio editor for audio tracks. In all cases, the Graphic window can be zoomed horizontally and vertically.

With *Digital Performer*, you can set a preference for which type of Edit window (for example, the Event List, Graphic Editor, or Notation window) opens when you double-click. You can open the other types of Edit windows with modifier key clicks, such as Command + double-click.

Metro's Graphic Editor (see **Fig. 3.2**) can display several types of data besides a piano roll and audio waveforms, including graphs for various types of data (Modulation, tempo, or average Velocity, for example) and a drum grid for rhythm tracks. You can view multiple tracks side by side in the same window, even if they each contain different types of data. For example, you could have three audio tracks, two MIDI note tracks, a tempo graph, and a Velocity graph open simultaneously. A total of 16 tracks can appear in the Graphic Editor window at once. Similarly, *Studio Vision Pro* offers a vertically resizable "strip chart" (see **Fig. 3.3**), available in both the Tracks and Graphic windows, which allows for precise editing of a wealth of data types, such as Pitch Bend and Aftertouch.

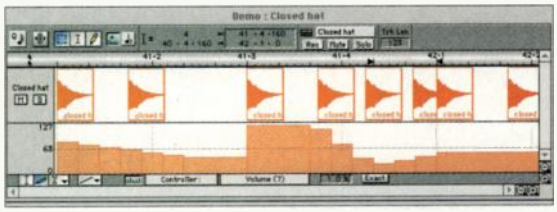


FIG. 3.3: *Studio Vision Pro*'s strip chart lets you edit a wealth of controller data alongside MIDI or audio data.

The *Digital Performer* Graphic Editing window's Continuous Data Grid serves a similar function. In addition, *Digital Performer* lets you zoom in on any portion of the vertical ruler by simply dragging the cursor over a portion of the ruler. This allows you to edit controller data with great precision.

Mixing window. The three programs' mixing functions are vastly different from one another, as is reflected in the design of their respective mixing windows. For example, it's apparent that *Metro*'s mixer is geared more for MIDI recording—each channel offers Port, Channel, Bank, Data, and Program selections (see **Fig. 3.4**).

The only functions you see initially on *Studio Vision Pro*'s Consoles are vertical sliders (volume), horizontal sliders (pan), and mute and solo buttons. You add various components, such as audio sends, EQ, and insert effects, from a pull-down menu. On the other hand, *Digital Performer*'s Mixer window resembles a traditional mixer right off the bat: the pan control is a round pot rather than a slider, and the channel inserts are visible above each fader. Each track includes four sends with level knobs and mute buttons.

Studio Vision Pro's Consoles and *Digital Performer*'s Mixer can be set to either "Narrow" or "Wide" views; the latter displays half the number of channel faders. *Metro*'s mixer, which is called the Instruments window, doesn't support this feature, so you can never get all of the channels on the screen at once. In addition, *Digital Performer* has buttons on the left side of the window that let you decide which channels are visible. Channel strips can be moved left and right within the display, just as tracks can be moved up and down in the Tracks window, and mixer sections (such as the insert section) can be shown or hidden. Likewise, in *Studio Vision Pro*, various segments of the channel strips can be shown or hidden as desired.

Studio Vision Pro offers a neat option that displays each fader in its respective instrument's color; for example, if track 1 appears red in the Tracks window, its corresponding fader will also be red. In *Digital Performer* 2.6, a color-coded panel below the fader displays the track name.

Another handy feature in *Metro* permits you to make changes to the mixer while the window is in the background. This lets you tweak a mix while another window is open.

Transport window. *Studio Vision Pro*'s Control Bar is comprehensive, offering standard transport controls (Play, Record, Rewind, and more) in addition to eight locate points, looping functions, and clock selection. It also has several buttons for calling up various windows, such as the Tracks or Pulse Edit windows, and you'll find a global Solo indicator here, as well. In addition to the traditional controls, *Metro*'s Transport window provides four locate

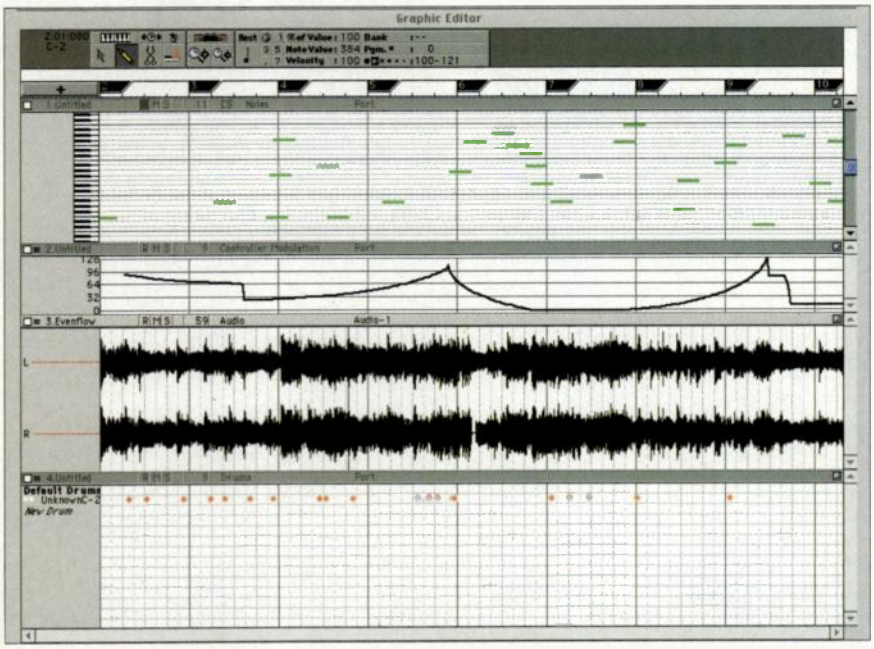


FIG. 3.2: *Metro*'s Graphic Editor window is one of the program's strengths; it lets you view multiple data types side by side.

For manufacturer information, please see Contact Sheet, p. 195.

points and tempo and loop controls.

Digital Performer's Transport window is the most comprehensive in all these programs. My only complaint is that MOTU chose to save real estate onscreen by making the title bar extremely small.

Other windows. Each program has an array of windows for managing project files, cataloging events, setting various global preferences, and so on. For example, in *Studio Vision Pro*'s Audio Instrument window, you select colors to represent audio waveforms (and possibly channel faders) using a very cool color palette.

Select and Modify, a window new to *Studio Vision Pro* 4.2, combines the data-select and data-modify functions into a single area. This window is divided horizontally: the top half handles data selection, and the bottom half displays data-modifying functions—including Transpose, Quantize, and Change Velocity, and their associated parameters. Also new is the Pulse Edit window, which is used strictly for editing drum tracks (more on this later).

Digital Performer's small, innovative Clipping windows can be either global or specific to one file. You can use a Clipping window to stash just about anything: MIDI data, an audio clip, aliases to other applications, word-processor documents (perhaps containing lyrics), or even a Web URL. To my knowledge, no other sequencer has an equivalent feature.

All three programs provide some sort of memory meter for keeping tabs on RAM usage, and they offer notation windows with varying features. In addition, *Metro* has an associated Lyrics window that is great for composing on the fly. A handy Notepad window is also available for jotting down ideas.

A step above *Studio Vision Pro*'s Faders window (where horizontal faders can be assigned to MIDI controllers) are *Digital Performer*'s customizable Consoles, which let you build controllers from scratch by defining the function and parameters of each component. Anyone who has constructed a database with *FileMaker Pro* will feel right at home in this environment.

SEQUENCE OF EVENTS

Because Opcode and MOTU pioneered the two MIDI configuration standards (OMS and FreeMIDI, respectively), it should come as no surprise that *Studio Vision Pro* supports OMS and *Digital Performer* works with FreeMIDI. However, that *Digital Performer* can now also be used with OMS *is* surprising!

When you first boot up *Digital Performer* on a computer that already has OMS installed, a dialog box appears asking whether you want to stick with the OMS configuration or switch to a FreeMIDI setup. *Metro* uses OMS, though it also offers direct support for the MOTU MIDI Timepiece II.

All of the sequencers are professional MIDI tools. (When it comes to audio features, *Metro* is not in the same class as *Digital Performer* and *Studio Vision Pro.*) *Metro* boasts an impressive number of available MIDI tracks: 99 tracks per Section, with up to 32 Sections per project, and the ability to insert 64 Subsections (basically, complete Sections) into each Section. Likewise, *Studio Vision Pro* can handle up to 99 MIDI tracks per segment, and literally hundreds of segments can be in a file; you're limited only by RAM. *Digital Performer* can accommodate any number of tracks, limited only by available RAM.

Roll with it. Sequencing with MIDI means spending a lot of time in graphic

circle #537 on reader service card

editing windows. All three of these sequencers offer superb designs that allow easy MIDI data editing using the familiar piano-roll and pencil-tool combination.

Metro's editing window provides a couple of cool features that make working with the sequencer easy. In addition to displaying MIDI note data in its Piano Roll window as horizontal strips across the pitch/time graph, *Metro* offers a function called Velocity Stems, which draws a vertical line upward from the beginning of each note. This line is a graphic representation of the Velocity of the note; you can shorten or elongate the stem to change the value. A similar feature is found in *Studio Vision Pro*'s Pulse Edit window. In *Digital Performer*'s Graphic window, MIDI notes are color coded to reflect their Velocities, and you can directly alter the values there.

Metro's Piano Roll window also responds to and draws accurate representations of Pitch Bend information. In other words, when you bend a note up or down on your controller, the resultant graphic note on the piano roll also curves up or down over time. *Digital Performer* offers this feature and more; it is the only one of the three sequencers I tested that lets you see any number of controllers (including Pitch Bend) together on the same grid.

Studio Vision Pro's Compress tool is another great feature. It lets you compress and expand strip-chart data while maintaining a proportional relationship between existing events. *Digital Performer* offers a similar feature, and it's more easily accessible, requiring only Command + drag.

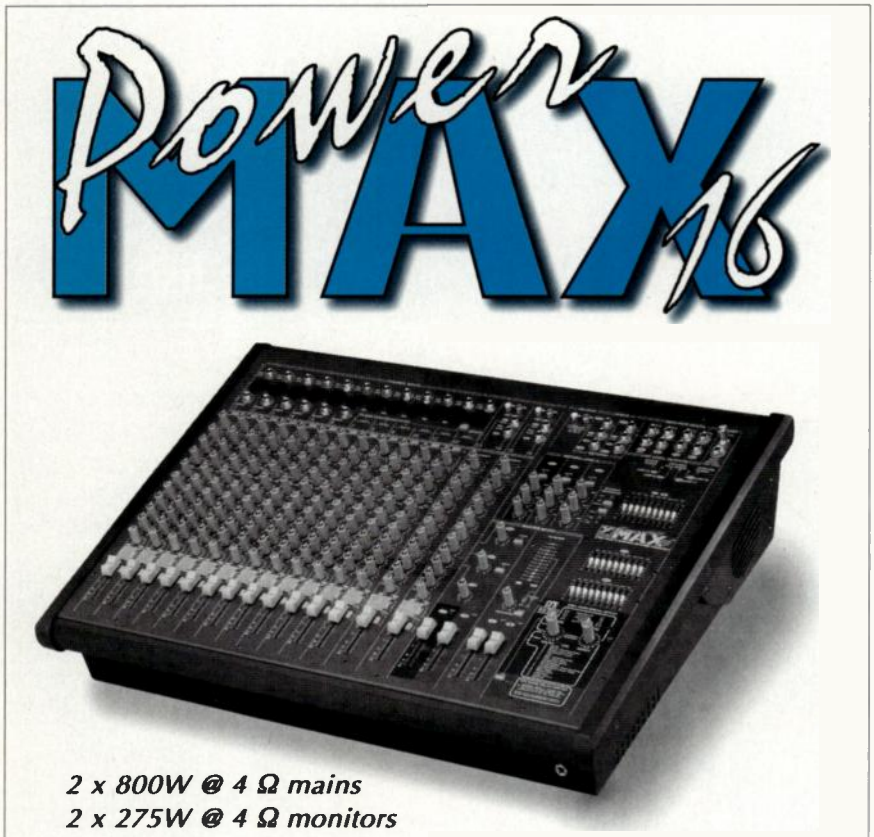
The right stuff. All three programs provide standard MIDI effects. *Metro* offers quantize, groove quantize, and "Human Feel" effects for adjusting the rhythm, as well as transpose and harmonize functions for playing with pitch. (The latter adds a harmony to a note instead of transposing it.) *Studio Vision Pro* recently added nondestructive playback quantize and harmonize functions to its list of effects (which already includes groove quantize and humanize functions). It also has templates for saving quantize settings. *Digital Performer* offers transpose, quantize, groove quantize, humanize, and deflam functions.

Each program has an arpeggiator. *Metro*'s arpeggiator provides three preset patterns and one user-defined pattern. *Studio Vision Pro*'s arpeggiator offers up, down, up-and-down, and random patterns. *Digital Performer*'s arpeggiator is the deepest of the bunch. It offers 13 preset patterns, including up and down, staircase, spiral, and random. You can create customized patterns or make changes to the preset patterns and save them as variations. You can even make customized rhythms for the arpeggiator based on a selection of existing MIDI data.

Digital Performer also has a great Echo effect, which simulates the traditional MIDI echo effect of copying and merging notes. In addition, *Digital Performer*'s Echo effect works in real time, so you can hear the "decay" of the effect even after the transport has been stopped.

All three programs offer tap-tempo features for manually entering tempi from either a Mac or a MIDI keyboard.

For manufacturer information, please see Contact Sheet, p. 195.



Get the power...built in!

4 Internal Amplifiers
Mid freq. sweep on each channel
Channel inserts on channels 1 thru 6
On-board speaker processor
Mute and solo switching
AFL/ PFL select
Dual mode digital effects (stereo /mono)
Defeatable channel overload protection

Stereo graphic EQ on mains
Two monitor graphic EQ's
3 aux & 2 effects sends / channel
2 stereo line level channels
Sophisticated headphone monitoring
Switchable high pass filtering
Silentfan™ w/variable speed DC fans
2-year worry-free transferable warranty*

Canada
Yorkville Sound
550 Granite Court
Pickering, Ontario L1W 3Y8
905-837-8481 Fax: 905-839-5776

Yorkville
www.yorkville.com

United States
Yorkville Sound Inc.
4625 Witmer Industrial Estate
Niagara Falls, NY 14305
716-297-2920 Fax: 716-297-3689

circle #637 on reader service card

They also offer selection filters for applying MIDI commands only to certain notes based on user-defined criteria such as Velocity and duration ranges. I really like *Studio Vision Pro*'s new Select and Modify window, which provides a centralized location for processing MIDI data. Similarly, I like *Digital Performer*'s powerful Search and Select window, which has the additional ability to let you select a section of data and search within the selection.

One of my favorite things about *Digital Performer* is the fact that it has nondestructive, real-time processing and permanent editing for all of its MIDI processing operations (quantize, groove quantize, humanize, transpose, harmonize, time-shift, and so on). The program also allows you to print real-time effects at any time over any specified region. Furthermore, all of *Digital Performer*'s real-time MIDI effects processing can be applied to live MIDI input.

Finally, let's not forget *Studio Vision Pro*'s Audio-to-MIDI technology, which converts audio signals into MIDI data and vice versa. Pretty cool stuff, especially for composers.

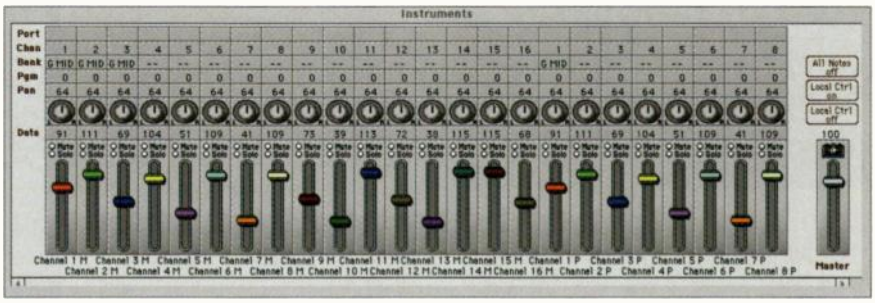


FIG. 3.4: *Metro*'s mixing window is unadorned and geared more toward managing MIDI tracks.

Rhythm is gonna get you. Each of the programs offers some great rhythmic composition tools, especially helpful if you're producing dance, hip-hop, or techno music. All support loop recording for creating grooves by layering performances (or for simply recording multiple takes of, say, a solo). *Digital Performer* also supports loop recording of audio (as well as MIDI) tracks.

Studio Vision Pro provides a Pulse Edit window for constructing and editing drum patterns. Here, drum patterns are displayed on a grid, with each line representing a different Instrument. You can edit note Velocities, and you can nudge and slip notes using the computer keyboard. This window offers a versatile strip chart as well.

In addition to *Metro*'s drum-grid editing, the program offers an algorithmic composition tool called the Rhythm Explorer (see **Fig. 3.5**). This unique function lets you take preexisting MIDI material and generate variations on it by applying arpeggios and rhythmic patterns, creating trills and flams, quantizing randomly, and so on. A Variability control determines how far from the original material the variations will stray. This feature is a blast to play with.

A very cool feature new to *Digital*

"At last, the first notation program I can actually use."

Lalo Schifrin, Film and TV Composer

now for PC and Mac!

Europe's biggest selling new scorewriter, the fastest around, is here. Used by many established composers like Lalo Schifrin, creator of the 'Mission Impossible' and 'Dirty Harry' themes, Sibelius is easy to learn and fast to use. It scores, plays back and prints every kind of music, from basic parts to complex orchestration. Sibelius is available at better music stores. For a free information pack and demo CD-ROM, either call us today at 888-474-2354 or visit our web site, www.sibelius.com.*

- Instant graphics and formatting.
- Easy to learn and use.
- Professional print quality.
- Espressivo™ - amazing playback.
- Scanning included as standard.
- Internet publishing.

*FREE TRIAL! Download a demo version of Sibelius from www.sibelius.com

SIBELIUS®
THE MUSIC NOTATION SOFTWARE

circle #638 on reader service card

Performer 2.6 is POLAR (see **Fig. 3.6**), a RAM-based audio loop recording tool. POLAR (Performance Oriented Loop Audio Recording) lets you loop-record audio interactively in real time, creating and layering as many separate passes as available RAM permits. POLAR can also act as a polyrhythmic generator by letting you layer multiple passes of different lengths. When finished, you can print the entire session as hard-disk audio tracks within *Digital Performer*. I played with this feature for hours.

FOR THE RECORD

The audio systems of *Studio Vision Pro* and *Digital Performer* have recently undergone major upgrades; *Metro* is behind in this department. However, *Metro* is not trying to compete directly with the other two programs, and its price point proves that.

Print it. *Studio Vision Pro* allows up to 256 audio channels; *Metro* can handle up to 64. *Digital Performer* accommodates up to 224 channels: 96 mono and 64 stereo.

All three programs support 8- and 16-bit recording, and *Digital Performer* and *Studio Vision Pro* can also handle 24-bit recording. Similarly, each program offers variable sampling rates including 44.1 and 48 kHz, but only the two more expensive programs support 96 kHz recording.

WAV, AIFF, and AU files are the standards today, and each program supports them. *Digital Performer* and *Studio Vision Pro* also support Sound Designer II (SDII) files. (*Digital Performer* automatically converts files to and from the SDII format when necessary.) All of the programs can import and export stereo interleaved files (a very useful feature for post-production or sound design), and each offers the ability to extract audio from QuickTime movies. *Digital Performer* supports MOTU's *AudioDesk* file format, and all three programs can import Red Book audio directly from a CD.

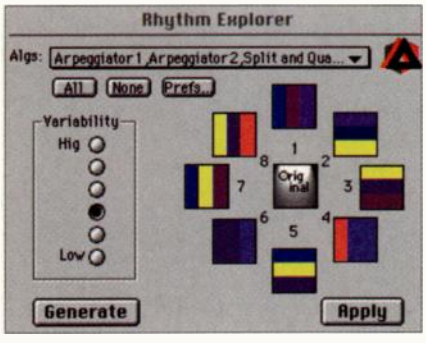


FIG. 3.5: *Metro*'s Rhythm Explorer lets you experiment with all sorts of wacky variations on MIDI data.

FIG. 3.6: *Digital Performer*'s new POLAR feature provides RAM-based digital audio loop recording.

Digital Performer offers a useful sampling system that lets you connect a hardware sampler to a SCSI port and import audio files from the sampler onto your hard drive and vice versa. Audio files then appear in the Sampler window and can be dragged onto any window that supports audio. A very cool drag-and-drop function is also provided for importing audio files from your hard drive into *Digital Performer*.

Making the cut. *Digital Performer* and *Metro* get bonus points in my book for offering onboard waveform editing. *Digital Performer* even provides a Pencil tool for redrawing waveforms. *Studio Vision Pro* offers only block-editing capabilities, but the program ships with the BIAS *Peak LE* audio editor.

Each program has the usual set of editing commands, including Cut, Copy, Paste, Clear, and Insert/Delete Time. *Studio Vision Pro* and *Digital Performer* support audio scrubbing; *Metro* offers only MIDI scrubbing. (Cakewalk says the next upgrade will add audio scrubbing.) All include drag-and-drop editing, so you can drag audio segments between tracks or from one window to another. This is a useful feature for anyone doing video-post or any other production that requires experimental editing.

All of the programs let you drop markers on the fly (in either SMPTE or bar/beat time), and each keeps tabs on them in a dedicated window, where you can edit them.

A new feature for *Studio Vision Pro* allows audio and MIDI segments to be muted on a segment-by-segment basis, which is great for creating alternate mixes. I also like the fact that, with *Digital Performer*, when you select data in one window, the selection is highlighted in all related windows throughout the program. For example, highlighting an audio section in the Graphic window also highlights that section in the Tracks window.

Overall, I preferred *Digital Performer* for editing audio. It is generally more powerful than *Metro*'s editor and provides more detailed zoom views (see **Fig. 3.7**). Besides, exporting files to *Peak LE* can be a drag when you're working with *Studio Vision Pro* (although I do like *Peak LE* as an editor).

A long process. Each program has file-based DSP processing. All are constructive processes, meaning that a new file is created and the original is left intact. I've always felt that a decent set of tools should include normalize, gain-change, pitch-shift, and reverse functions. Each program succeeds to varying degrees in meeting this criteria (although *Metro* lacks a pitch-shifting function).

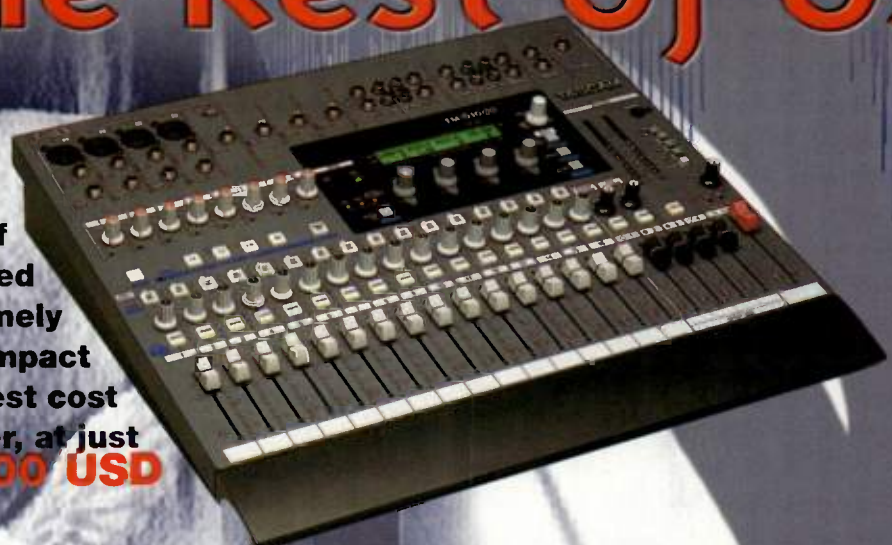
It's worth noting that *Studio Vision Pro* provides constructive, file-based EQ, and any real-time *Digital Performer* plug-in can be applied as file-based processing. Perhaps even more important is *Digital Performer*'s background processing; you can even edit (cut, copy, paste, snip, and so on) the file that's being processed.

Each program offers a fade/crossfade command, but *Metro* has only equal-power fading (that is, standard "X style"). *Digital Performer* and *Studio Vision Pro* include comprehensive fade windows that let you specify the length and curve of a fade. With *Studio Vision Pro*, fades can be separate events in a track or combined into a new file along with the audio. *Digital Performer* accomplishes essentially the same thing using

Take Advantage of our Experience

TASCAM

The Digital Mixer for the Rest of Us



At last the promise of digital mixing is fulfilled with TASCAM's extremely powerful, compact TM-D1000 – the lowest cost digital mixer ever, at just $1299.00 USD

- 8 ch integral TASCAM (TDIF) digital I/O
- 8 ch Alesis digital I/O (with optional interface unit)
- 8 mic / line analogue ins; inc. 4 balanced XLR
- optional rack mount kit
- AES / EBU and SPDIF stereo digital I/O
- stereo analogue and separate monitor outs
- 4 configurable aux / group outs
- assignable on-board digital effects and dynamics
- optional additional FX board doubles effects DSP
- 128 snapshot memories
- MIDI sequencer automation of console
- MIDI I/O, MMC and MTC slave and Word sync. I/O

TASCAM TM-D1000

TEAC America, Inc., 7733 Telegraph Road, Montebello, CA 90640 (323) 726-0303
TEAC Canada LTD., 5939 Wallace St., Mississauga, Ontario L4Z 1Z8 Canada. (905) 890-8088

circle #539 on reader service card

a bounce-to-disk feature. The latter is easier to manage, although it creates a larger file. You can also perform fades simultaneously across multiple tracks.

AN EFFECTIVE MIX-UP

All three programs offer integrated MIDI/audio mixing consoles. The consoles in *Studio Vision Pro* and *Digital Performer* have similar features for mixing audio and MIDI tracks (see **Figs. 3.8** and **3.9**). *Metro*'s mixer, as mentioned earlier, is geared more toward working with MIDI instruments. It does not provide busing of any kind (including aux sends), so all effects must be insert-style.

Studio Vision Pro has four aux sends, four insert effects, and four bands of real-time EQ on every channel. *Digital Performer* has four aux sends and six inserts and up to 40 bands of EQ per track. *Digital Performer*'s inserts can be audio effects or real-time MIDI effects. For example, you could elect to insert a compressor or EQ on an audio track, while you might patch in an arpeggiator or transposition tool on a MIDI track. This is a powerful feature that encourages experimentation. Furthermore, plug-ins are treated as objects in the Mixing Board and can be manipulated with the mouse: you can remove a plug-in by clicking on it and hitting the delete key, duplicate it by Option-dragging to another insert, and so on.

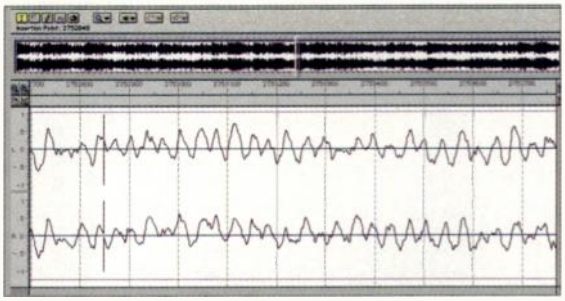


FIG. 3.7: *Digital Performer*'s audio-editing screen lets you home in on single waveforms.

Each mixer has channel volume, pan, mute, and solo functions, and *Digital Performer* and *Studio Vision Pro* both offer channel level meters with peak LEDs. The two faders on each of *Studio Vision Pro*'s channel strips (volume and pan) can be assigned to control any number of sources: audio and MIDI instruments, audio hardware I/O channels, or any audio bus. You could, for example, have the horizontal fader assigned to a MIDI instrument and the vertical fader controlling bus 1.

All of these programs support fader grouping, and each permits you to save and recall your mixer configurations to use as templates. Each program allows faders to be controlled by any MIDI controller, allowing you to use the sliders on your synth as a cost-effective hardware control surface.

The three programs all offer a "bounce-to-disk" feature for recording mixes in real time to your hard drive. This is especially great if you plan to burn a CD

Trouble mounting?

MacOpener® opens Macintosh disks and files in Windows. Instantly.

Need to open Mac audio files on your Windows PC but can't read the Macintosh disk they're on? Then fix the problem with MacOpener. It's the easiest way to share graphics, publishing, audio, video or other files between Macintosh and Windows PCs. MacOpener lets you copy files to and from all Macintosh media including Iomega Zip and Jaz, SyQuest, optical disks and more. It even lets you read Mac CD-ROMs on your PC. No wonder MacOpener is the #1 selling solution for cross-platform disk and file access!

For handling even more file formats, check out Conversions Plus®, the leading file conversion program. Conversions Plus has all the features of MacOpener, plus it translates hundreds of different file formats.

We're DataViz and we've been solving Mac to PC compatibility problems for over 15 years. So come to us next time you have trouble mounting. And we'll solve your problem. Instantly.

Available at COMPUSA MICRO CENTER Fry's

Runs on Windows 3.1, Windows 95 & 98, Windows NT.

DATAVIZ®
Compatibility. Instantly.

All product names are trademarks of their respective holders.

Call 1-800-270-0030 Ext 188 or visit our web site at
http://www.dataviz.com/elecmu

circle #540 on reader service card

EDIROL Introduces USB Audio & MIDI Products for Great Music Production

NEW TO NORTH AMERICA!

from Roland®

USB

UNIVERSAL SERIAL BUS

One Cable, Pure Sound!

USB is a next-generation interface for connecting peripheral devices to a personal computer. Roland's USB audio & MIDI products allow for clean, high speed transfer of data.

USB Audio & MIDI Processing Unit

AUDIO Canvas™

UA-100

- *20 Bit External Digital Audio Converter*
- *Clean Digital Audio with No CPU "Noise"*

Powered USB Speakers

MA-150U

- *15 Watts*
- *Plug & Play*
- *20 Bit External Digital Audio Converter*

64 Channel USB MIDI Interface

Super MPU64

- *Connect Four MIDI Devices to Your Computer*

Large Selection of Desk Top Media Production Systems, Software & MIDI Files!

AUDIO Canvas™
VIDEO Canvas™
SOUND Canvas™

Contact us for our FREE 76-page, full color catalog.

Distributed by

EDIROL

Member of the Roland Group

1-800-380-2580

www.edirol.com

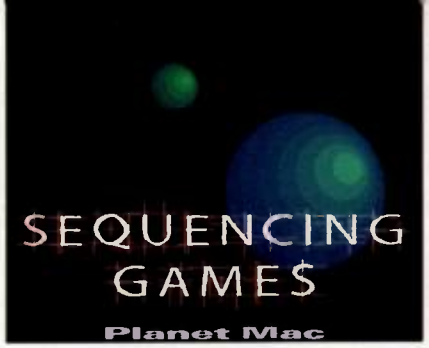
Dealer inquiries welcome

circle #541 on reader service card

www.ReliableMusic.com
The Fastest Way to the Gear You Need

File Edit View Go Favorites Help
Back Forward Stop Refresh Home
Address http://www.ReliableMusic.com/
Audio | Drums | Guitars | Keyboards | Recording | Software | Lighting
Call Toll Free 1-888-888-4515
circle #542 on reader service card

circle #543 on reader service card



directly from your computer. *Digital Performer* and *Studio Vision Pro* provide snapshot and dynamic automation of volume and pan data, which can be recorded on the fly and then edited from the track's graphic editing window. You can make multiple copies of any given mix, so variations are endless. On the other hand, *Metro* supports only snapshot automation, though it does provide a handy button above the master fader for taking a snapshot of all the mixer settings.

Although I prefer *Digital Performer*'s Mixing window aesthetically, *Studio Vision Pro*'s Consoles are more flexible. Really, you won't go wrong with either.

PROCESS THIS!

Digital Performer and *Studio Vision Pro* support TDM plug-ins, *Studio Vision Pro* and *Metro* support the VST plug-in format, and all three support Adobe Premiere format. *Metro* also uses the proprietary Cakewalk Audio Effects format, and *Digital Performer* uses the MOTU Audio System format. *Digital Performer*'s DSP and *Metro*'s VST plug-ins operate at 32-bit resolution; *Metro*'s Cakewalk Audio Effects and *Studio Vision Pro*'s processing are at 24-bit. Each program comes with an array of effects.

Digital Performer ships with numerous insert effects: reverb, dynamics (compressor, limiter, expander, gate), 8-band parametric EQ, DC Notch (for removing DC offset), autopanner, flanger, phaser, chorus, and more. The parametric EQ is quite powerful, providing eight bands of high-shelf, high-cut, low-shelf, low-cut, or bell attenuation, with the ability to bypass each band individually. You also get several other plug-ins, including *e-verb*, *Sonic Modulator* (for effects such as a triggered-flange or Leslie simulation), *Preamp1* (a tube simulator with a built-in compressor and EQ), and the 64-bit *MasterWorks Limiter* and *MasterWorks Multiband Compressor*. Virtually all of the provided *Digital Performer* effects are MOTU Audio System plug-ins. Including mono-to-stereo and stereo versions, you get a total of 47 plug-ins.

For manufacturer information, please see Contact Sheet, p. 195.

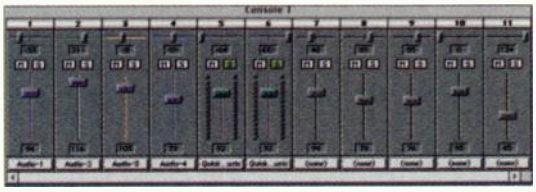


FIG. 3.8: *Studio Vision Pro*'s Consoles are extremely flexible, allowing you to assign both large and small faders to a number of sources.

Studio Vision Pro comes with 12 VST plug-ins, including chorus, flanger, ring modulator, multitap delay, resonator, plate reverb, and a bunch of compressor/gates. The dynamics processors are particularly outstanding—very, very smooth. *Studio Vision Pro*'s EQ section (technically part of the Consoles) offers four identical, adjustable bands per channel (high/low shelf, high/low cut, or parametric). Bands can be enabled individually, and a very cool graphic editing window is provided for the EQ. Each channel also has a phase inverse button and channel level meters.

Metro comes with about a dozen effects, all in the Cakewalk Audio Effects format. These include a 2-band parametric EQ, which sounds fine (although it's definitely not on a par with heavy-hitting professional plug-ins). Also included are delay, flanger, chorus, and reverb effects, and all are track-insert effects. *Metro* has a great interactive Effects window, which lets you reposition effects in the signal chain by simply dragging them around the window.

If I weren't using TDM hardware, I'd rather have access to the VST world than to the Adobe Premiere format. However, the MAS effects that *Digital Performer* includes are solid; I particularly like the EQ and the *Sonic Modulator*. On the other hand, I did like *Studio Vision Pro*'s compressors a lot—and keep in mind that *Metro* comes with BIAS *SFX Machine Lite*, which is always fun to play with. There are plenty of third-party plug-ins for both MAS and VST, but as of this writing, the selection for VST appears to be considerably greater.

ICING ON THE CAKE

As mentioned earlier, all three programs offer notation capabilities. I found *Digital Performer*'s notation to be very powerful: it's really well integrated with the program's MIDI functions, it has a wide array of features, and it's one of the most accurate notation engines I've seen.

Each of the programs accepts SMPTE and MIDI Time Code (MTC) and provides MMC control for synching to a Tascam DA-88, Alesis ADAT, or external hard-disk recorder. All three offer QuickTime movie windows for editing audio along with video.

Metro can run in sync with BIAS' *Deck II* multitrack hard-disk recording software, if you need a more elaborate audio environment. *Digital Performer* allows direct audio input from BitHeadz's *Retro AS-1* software synth and *Unity DS-1* software sampler, so you can incorporate them into your mixes and route their audio through whatever hardware you're using. Finally, Opcode informed me that, as part of the upgrade later this year, Steinberg's ReWire technology will be incorporated into *Studio Vision Pro*. ReWire will allow audio to be streamed directly from a software synth's outputs to VST channels in *Studio Vision Pro*.

Each program comes on CD-ROM with additional software. *Metro* comes packaged with BIAS *SFX Machine Lite* and a bunch of demo projects. *Studio Vision Pro* comes with the BIAS *Peak LE* 2-track waveform editor and the *Galaxy Plus Editors* patch librarian, in addition to several demo files. Opcode also ships a host of demo software from companies such as Arboretum and East/West.

Digital Performer comes with MOTU's *Unisyn* librarian; a demo project; an audio calibration tool; 175 MB of drum loops and other sounds from Universal Sound Bank; more than 100 groove-quantize grooves, including DNA and Linn 9000 grooves; and dozens of Keyfax Twiddly Bits. Again, you get a variety of third-party product demos.

FIG. 3.9: *Digital Performer*'s Mixing window is aesthetically pleasing and resembles a traditional hardware mixer.

Remember REAL ANALOG Synthesizers?

The Expressionist controls them all!

8 high resolution (16 bit) control voltage outputs for excellent pitch control.
Each CV programmable for V/Oct or Hz/V.
Any CV can be used for "auxiliary" function such as filter or envelope control.
Dual polyphonic note assigners with 5 modes used for multivoice synthesizers.

8 programmable polarity gates for triggering Moog, ARP, Yamaha, Korg, Roland, and others.
DIN SYNC output with variable rate for controlling Roland drum machines.

3 built-in LFOs with 6 wave shapes, separate modulation sources and MIDI channels.
Two modes of portamento.
4 modulations per channel.
Software tuning for each channel.
Selectable note range per channel.

only $599
Now shipping Version 1.11!

We also have MIDI retrofits for the following:
Roland JP8 - $275
Oberheim OB8 - $175
Oberheim OBX - $250
Moog Source - $250

Encore Electronics
611 LAIRD LANE • LAFAYETTE, CA 94549
(925) 229-8875 voice/fax
Visit our web site at: www.encoreelectronics.com or send email to: sales@encoreelectronics.com

VISA MasterCard

circle #544 on reader service card

The World's Largest Music Store In Your Mailbox...

3 ways to get your FREE subscription:

1. Call 1.800.776.5173
2. Subscribe online @ www.musiciansfriend.com
3. Send in the coupon below

the Best Music Store on the Web!

www.musiciansfriend.com

- Secure Online Shopping
- More than 7,000 Products
- Exclusive Web Specials
- New Gear Reviews and More!

Musician's Friend

Mail this coupon to:
Musician's Friend, Dept. 36-007
P.O. Box 4520 • Medford, OR 97501

NAME _____

ADDRESS _____

CITY _____

STATE _____ ZIP _____

circle #545 on reader service card

BUYER BEWARE

Installation of all programs went painlessly, even though I had to update my FreeMIDI and OMS drivers—a process that usually causes grief. *Metro* uses an interesting copy-protection scheme that prompts you for a certain name from the acknowledgments list in the manual, rather than for a serial number. *Digital Performer* uses a simple code entry, and *Studio Vision Pro* relies on Pace Software's Challenge Response system, which also asks you for a code.

Metro's documentation is thorough enough, with the manual weighing in at 608 pages. I received an early copy, and it suffered from indexing flaws, which Cakewalk says have now been corrected. The full manual is also available for free in Adobe PDF format on the company's Web site.

Studio Vision Pro provides comprehensive documentation. Upon opening the box, you're greeted with no fewer than seven books: a MIDI manual, an audio recording manual, an addendum to the manual for version 4.1, a *Galaxy Plus Editors* manual, and a guide to OMS, as well as a "Quick Start" guide and a separate pamphlet on *Peak LE*. All told, there are about 1,400 pages. There are also electronic help and Read Me files. The only thing that annoyed me was the omission of an index in the addendum to the manual. But most people probably won't need to refer to it as much as I did for this article.

Digital Performer's documentation is solid all around. It is extremely well organized—even the rough-draft copy of the "What's New in 2.6?" literature was comprehensive. *Digital Performer*'s demo project is also quite helpful. Kudos to MOTU.

PROGRAM SUMMARY

***Studio Vision Pro* 4.2.1.** *Studio Vision Pro* is one of the most intuitive programs on the market. With the new native-audio features, powerful mixing consoles, access to VST and TDM formats, and an intuitive sequencer, this is a smart choice for anyone who wants to have complete control over production and would like to spend more time making music and less time learning how to use software.

You might have noticed that the retail price of *Studio Vision Pro* has dropped by about $400. That is not a misprint. Opcode recently announced major price decreases for its two flagship products, *Studio Vision Pro* and *Vision DSP* (see the sidebar "Sibling Rivalry" on p. 66). The company is also providing a free 30-day trial of *Vision DSP*, which can be downloaded from its Web site.

***Metro* 4.5.** Up until a few days before press time, we could say that *Metro* was a horse of a different color simply because it was much less expensive than its closest competitors. However, Opcode's surprise price reductions change this picture. Cakewalk's program will now have to compete head-on with the suddenly less expensive *Vision DSP*.

Although it offers multitrack audio recording, *Metro* is clearly aimed at MIDI musicians who have only an occasional need to record audio tracks. On the other hand, its MIDI functions are outstanding—make no mistake, this is a veteran sequencer. In fact, it's one of my all-time favorites.

If you need extensive audio capabilities or hardware support, you'll have to look elsewhere (unless you want to use *Metro* with BIAS *Deck II*). But if you are just getting started with computer-based production, *Metro*'s powerful editing capabilities and intuitive interface make it a fine choice.

***Digital Performer* 2.5.** This program is a workhorse. With powerful audio and sequencing features, it's a great choice for the professional musician or producer. *Digital Performer* is stable and powerful, and it gets the job done. The program's only drawback is lack of support for VST. (MAS is fine, but the variety of plug-ins is greater for VST.) However, if I were opening up a commercial studio, it would probably be TDM based, in which case you could bet that *Digital Performer* would be at the top of my list.

As a final note, MOTU informs me that *Digital Performer* 2.6—including all of the enhancements discussed here—is being shipped free of charge to all *Digital Performer* 2.5 users.

EM *Associate Editor* **Jeff Casey** *is taking the rest of the year off.*

Radically Accurate

It took over half a century of experience to create the revolutionary transducer design. Carefully tuned to preserve the integrity of the source. At the heart of the C 4000 B is the world's first true 1 inch dual - diaphragm backplate condenser capsule. Radically accurate highs and smooth uncompromising lows make the C 4000 B a revolution in price and performance. The C 4000 B can capture your virtual reality.

C4000 B

virtual reality

AKG

©1999 AKG ACOUSTICS, U.S. 1449 Donelson Pike Nashville, TN 37217, USA Tel (615) 360-0499 Fax (615) 360-0275

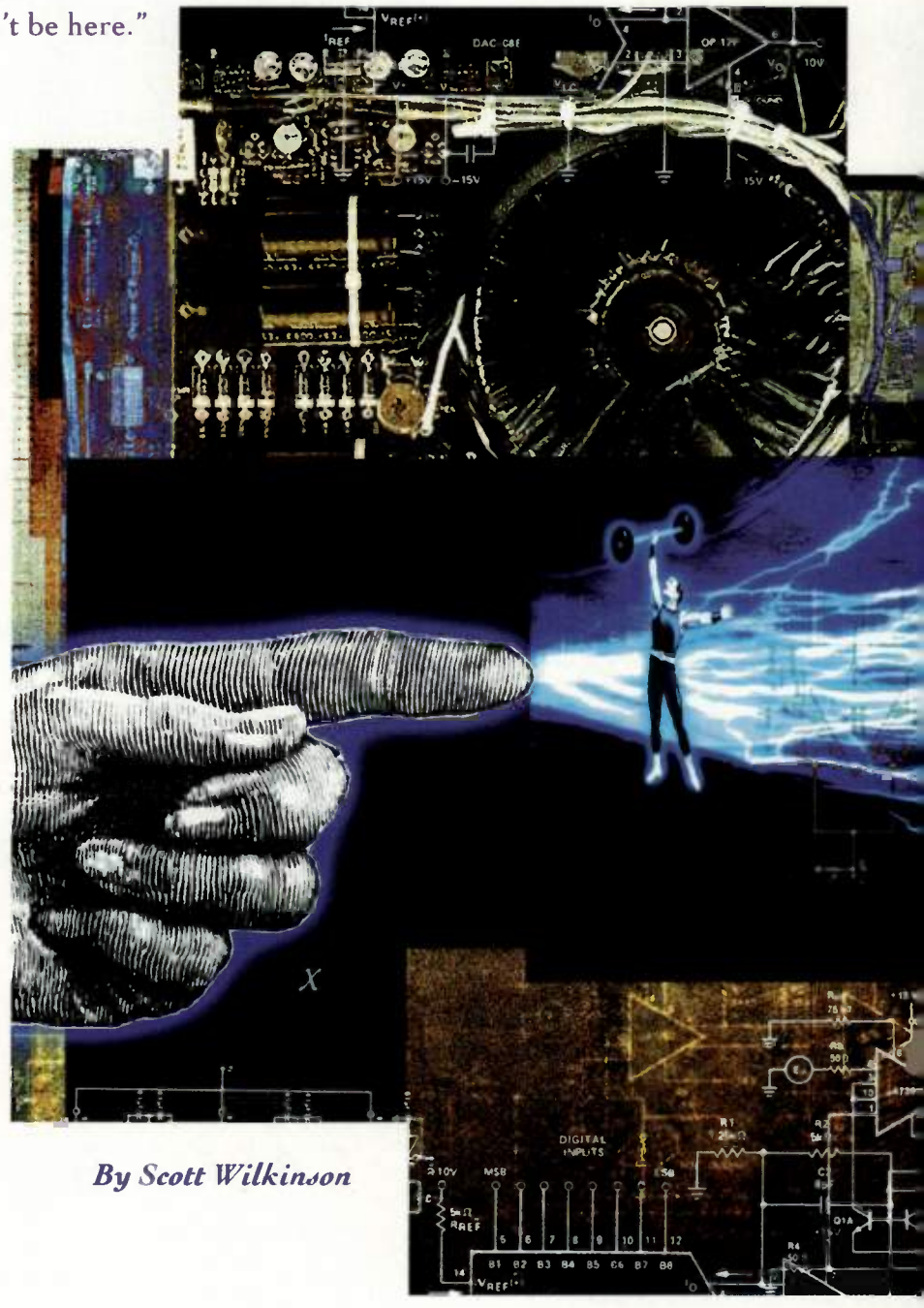
A Harman International Company

circle #546 on reader service card

POWER

"Half a watt goes in here . . ."
". . . must come out there!"
"I'm talking about *power*, Chucko."
"I know *you* are, or you wouldn't be here."
(Mechanical noises)
"Look! It heard the word *power* and responded, just like we do!"

~Firesign Theatre



By Scott Wilkinson

Those of you who are old enough might remember this routine from Firesign Theatre's classic comedy album *I Think We're All Bozos on This Bus*. Those merry jokesters were talking about a mechanical model of the government, but I'm talking about *sonic* power, Chucko—raw, unadulterated audio wattage.

In any sound system, this undeniable force is supplied by a power amplifier. The technology that underlies this indispensable device has remained essentially unchanged over the past 40 years, ever since transistors replaced vacuum tubes. But now, at the dawn of a new millennium, we also face a new era in power-amp technology. The industry is making quantum leaps as it pursues its goal of designing power amps that are smaller, lighter, less expensive, and more powerful than previous generations.

EM author Rudy Trubitt examined the design philosophies behind the

HUNGRY

A NEW GENERATION OF POWER AMPLIFIERS SATISFIES OUR VORACIOUS APPETITE FOR BIG SOUND.

Illustration by Terry Miura

power amps of several major manufacturers in his article "The Power and the Glory" (see the August 1993 issue). One might think that little has changed over the past half-dozen years; after all, power amps seem like the type of product that evolves at a glacial pace. Indeed, some designs have changed very little, but several companies have developed new or significantly revised designs since Trubitt visited the subject. Clearly, it's time to take a fresh look.

To this end, I interviewed representatives from five power-amp manufacturers: Mackie Designs, Hafler, QSC, Crown, and Velodyne Silicon Systems. Some of these companies have begun to manufacture power amps relatively recently, while others are well-established names in the field. Of course, their spokespeople agree on some points, but it's what they disagree about that can be especially enlightening.

Learn Your ABCs

Before we delve into the fine points of power-amp design, let's review a few basics. As its name implies, a power amplifier boosts the power of a signal. Typically, a power amp accepts a line-level signal and increases its voltage and/or current without changing the shape of the input waveform. The amplified signal is sent to a speaker, which converts the signal into acoustic sound waves. Power amps are used in three primary applications: studio monitoring, live sound reinforcement, and instrument amplification.

Unlike most studio gear, a power amp draws some serious current from the AC outlet. This current is converted to DC by the amp's *power supply*. In a traditional power supply, a *power transformer* decreases the incoming AC voltage, which is then converted to a DC voltage by a set of diodes and several large capacitors. One common type of power transformer is called *toroidal* because it looks like a doughnut (a shape known as a toroid in mathematical terms). This shape plays an important part in how the transformer functions because the toroid's magnetic field is confined more to its core, reducing leakage into the audio circuitry. Toroidal transformers are made of iron for its electromagnetic properties.

The DC voltage from the power supply is symmetrically arranged around the *ground point* (0V). For example, the output from the power supply might be ±50 VDC. These positive and negative voltages, which are called the *power-supply rails* (see **Fig. 1a**), operate the amp's internal circuitry.

In particular, these voltages provide power to a set of *output transistors*, which perform the actual amplification. The output transistors amplify the input signal by drawing power from a set of *capacitors* in direct proportion to the input signal's voltage as it varies over time. As the capacitors discharge in this process, they are replenished by the power supply.

The power-supply rails determine the maximum amplitude that the amp can produce. For example, if the rails are at +50V and -50V, the amp can produce signals of nearly 100 volts peak to peak. If the amp produces a signal that exceeds this limit, the tops and bottoms of the waveform are cut off; this is called *clipping* (see **Fig. 1b**).

One of the most important characteristics of any power amp is the *efficiency* with which it uses AC power to amplify the input signal. Unfortunately, most conventional designs are very inefficient, using less than 50 percent of the AC power they draw from the wall. The remainder of that power dissipates as heat within the amp. Most power amps therefore require large heat sinks, and many use fans to cool their components. In addition, many include thermal-protection circuitry, which shuts down the amp if things get too hot.

That Amp's Got Class

Power amps fall into several classes, the simplest being A, B, and AB. Class A power amps have output transistors that handle both the positive and negative swings of the waveform. Class B designs have one set of transistors that handles the positive swings, and another that handles the negative swings. Class AB amps also have separate sets of transistors to handle the positive and negative swings, but there is some overlap as the signal changes polarity; when the signal is near 0V, both sets of transistors are conducting.

Most of Mackie's current power amps, including the ones within the company's powered speakers, use a conventional Class AB design with conventional power supplies. According to Cal Perkins, Mackie's director of new technology (and self-described corporate cynic), the company's amps have the most efficient Class AB design in the marketplace because they use lightweight toroids, which reduce the transformer's weight by about 50 percent.

Hafler uses a variation of Class AB called trans-nova, designed by Jim Strickland in 1980. Jerry Cave, Hafler's managing director, explains: "It's a different way of using transistors in the circuit, requiring fewer gain stages and a much simpler signal path. This lets us get voltage and current gain out of both transistors instead of one or the other. Trans-nova combines the linearity of Class A with the efficiency of Class AB. Class A is typically only 25 percent efficient; trans-nova is typically 65 percent efficient."

Some amp designs use multiple power-supply rails (see **Fig. 1c**). When the peaks of the output signal are small to moderate, the low-voltage rails are used; most musical material falls within this range most of the time. When the output peaks are large (as in momentary, loud transients), the high-voltage rails are used. If the same set of output transistors is used with both sets of rails, this is called a Class H design; if different transistors are used with the different rails, it is called Class G.

The multirail approach is more efficient than single-rail designs. According to John Subbiondo, marketing manager for QSC, "Transistors are most efficient when they are all the way on; if they're only halfway on, half the power is lost to heat. With a multirail design, the transistors are closer to being fully on more of the time." Consequently, multirail designs can lower the AC current draw and cooling requirements by as much as to 40 percent.

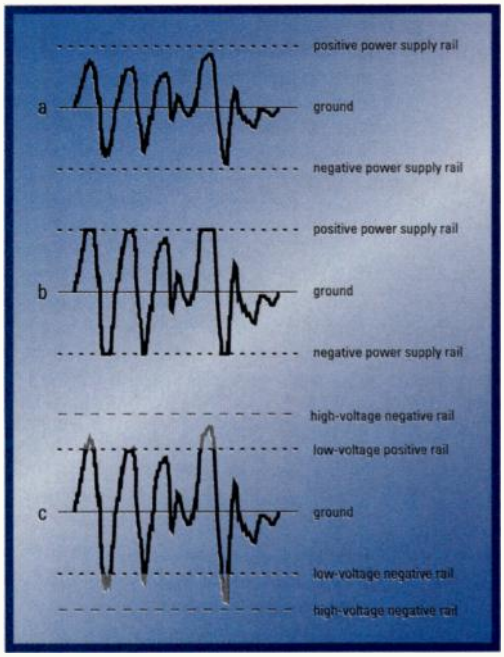


FIG. 1: As long as the swings in the output voltage don't exceed the power-supply rails, the shape of the input waveform is preserved (a). If the output voltage exceeds the rails, the peaks are clipped off (b). In multirail designs, the amplifier switches to higher-voltage rails as needed (c).

cakewalk

Pro Audio™

24-bit / 96 kHz

Still the leading multitrack digital audio and MIDI software

"A host of new high-end features add more flavor to an already delicious cake . . . The real-time MIDI effects are totally new and very cool."

—Electronic Musician

"Those who've used Cakewalk (Pro Audio) for years will appreciate the new tools and features and will wonder how they got along without them."

—Maximum PC

"This product deserves its status as an industry standard, and is highly recommended."

—The Tapeless Studio

"Suddenly, features that were the sole purview of companies like SADIE and Sonic Solutions have become standard issue for Cakewalk."

—AudioMedia

"Incredible price/performance ratio."

—Game Developer

"The addition of non-destructive gain and pan envelopes, non-destructive MIDI effects, flexible mixer console and 24-bit/96 kHz sampling rate make Cakewalk Pro Audio a bona fide production powerhouse."

—Pro Audio Review Magazine

Pro Audio 8 is available worldwide.

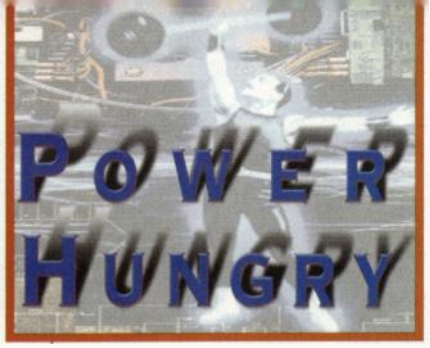
SEE US AT NAMM BOOTH #3060

Visit www.cakewalk.com
or call 888-CAKEWALK.

cakewalk

Cakewalk is a registered trademark, and Cakewalk Pro Audio and the Cakewalk logo are trademarks of Twelve Tone Systems, Inc. Other trademarks mentioned are held by their respective owners.

circle #620 on reader service card



QSC's most powerful amps use four rails on each side of ground.

The New Switcheroo

Another way to improve the efficiency of a power amp is to use a *switching power supply* (also known as a *switch-mode, active,* or *electronic* power supply). Long used in computers and other devices, a switching power supply converts the incoming 60 Hz AC power to a much higher frequency, often in the 200 to 500 kHz range. This improves the performance of the transformer (the behavior of which is frequency dependent), allowing smaller, lighter transformers to be used.

QSC uses switching power supplies in its PowerLight series of amps. Subbiondo cites several additional advantages to amps that use this approach: "You can make them very quiet; you don't have a big hum field from a large transformer, and the hum field you do have is outside the audio range. In addition, you can have a purer path from the audio circuitry to the speakers. And because the transformer is smaller, it tends to have lower impedance and fewer losses, which translates into less voltage sag and better performance under high demand."

However, Perkins points out that switching power supplies have their own set of problems. "True, a switching power supply eliminates most of the low-frequency magnetic fields, but it produces a lot of high-frequency noise. This noise can be eliminated, but in many cases it isn't."

Many people believe that using a switching power supply results in a more open sound with a clearer high end, but that it also inherently compromises bass response. Others say that this problem is related to poor design implementation: correct design provides better voltage regulation, which results in improved low-frequency performance over conventional power supplies.

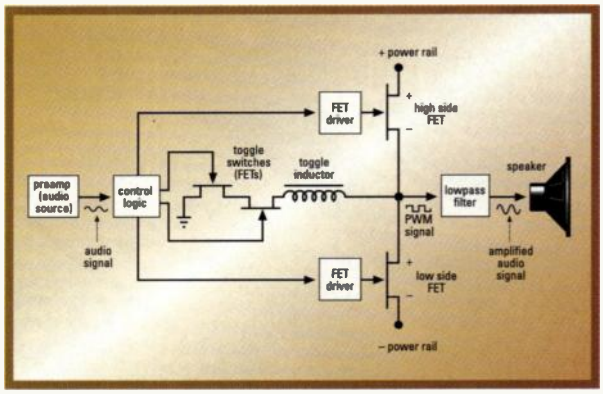


FIG. 3: In Velodyne Silicon Systems' Class D architecture, an inductor is placed between the output transistors to mitigate the potential difficulties with this design.

Mick Whelan, vice president of new product development at Crown, sees this debate as similar to the one about analog versus digital audio. "Some people love it and others hate it," he says. "A lot of people believe that you don't get good bottom end without a good chunk of iron."

Perkins believes that this debate is more smoke and mirrors than anything else. "A power supply is nothing more than an energy-conversion and energy-storage mechanism," he says. "It sucks AC from the wall, converts it to DC, then reconverts it to a modulated signal, which is the audio. This process is a function of the total enegy-storage capacitance and/or inductance of the system. If you have the same energy-storage capability, it doesn't matter if it's in a capacitor or an inductor; the number of joules is the same."

Perkins gives an example from his past experience working at JBL: "I designed an amp for JBL with a switching power supply that had more energy storage than the biggest iron supplies they had at the time. A competing product on the market at the time had roughly the same average power level but had one-twentieth the energy storage. When we connected the two products to a pair of speakers and cranked up the sound using material with a lot of bass, it was like listening to entirely different speakers. There was no bass in the competing product."

According to Subbiondo, switching power supplies offer another opportunity, called *power-factor correction.* "This is a way of drawing current from the wall more efficiently," he says. "Supplies that aren't power-factor corrected do something called *peak-voltage rectification,* in which the filter capacitors charge up only when the incoming AC voltage equals or exceeds their reservoir voltage. It draws current only at that time, so you get big current spikes. Power-factor correction lets you continuously draw current over the entire AC waveform. This lowers peak AC requirements by 40 percent, which might not mean much in a 200-watt amplifier, but it makes a big difference in a 9,000-watt amp."

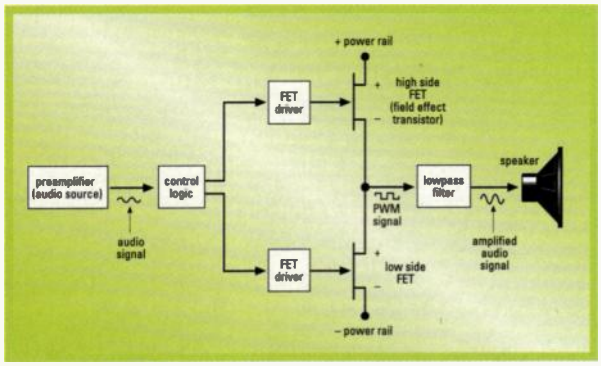


FIG. 2: A basic Class D topology converts the input signal to a pulse-width modulated (PWM) square wave by alternately switching two output transistors on and off. The PWM square wave is then lowpass-filtered to recover the original waveform at a higher amplitude.

Switcheroo, Part Deux

One of the most interesting recent developments in power-amp technology is the *switching power amp,* also known as Class D. In this design, the input signal is converted into a pulse-width modulated (PWM) square wave by alternately turning two output transistors on and off in the 100 kHz range. (Class D amps are therefore sometimes called *PWM amps.*) This square wave is then processed through a lowpass filter, which yields an amplified version of the input waveform (see **Fig. 2**).

Theoretically, Class D topology offers some significant advantages over more conventional designs, the most

D-108

THE NEXT DIGITAL MONSTER APPEARS

NOW PLAYING AT A FOSTEX DEALER NEAR YOU
RECORDING TIME: 2 HOURS/5.1GB

POWERFUL! SIMPLY STUNNING!

YOU'VE NEVER HEARD AFFORDABLE AUDIO THIS GREAT! 8 TRACKS OF UNCOMPROMISING "NO COMPRESSION" RECORDING, AN EASY, INTUITIVE INTERFACE, A BUILT-IN SCSI-2 PORT—AND THAT'S JUST THE BEGINNING*! IT CAN EVEN WRITE .WAV FILES FOR USE ON YOUR COMPUTER OR TO SEND OVER THE INTERNET! BRACE YOURSELF: THE D-108'S AN UNDENIABLE HIT!

NEED MORE TRACKS?

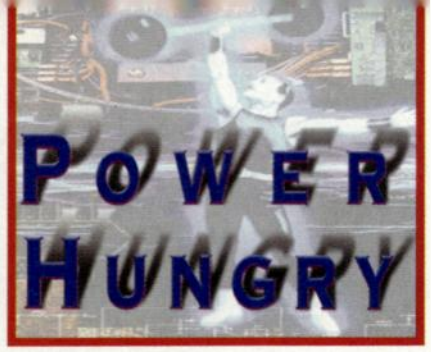
THE 16-TRACK D-160v2

An equally awesome audio experience with the features professional studios demand!

FOSTEX

Fostex Corp. of America • 15431 Blackburn Ave. • Norwalk, CA 90650
Tel: 562-921-1112 • Fax: 562-802-1964 • http://www.fostex.com

* SMPTE Timecode and Balanced I/O versions available. Shown with optional 8551 Cable



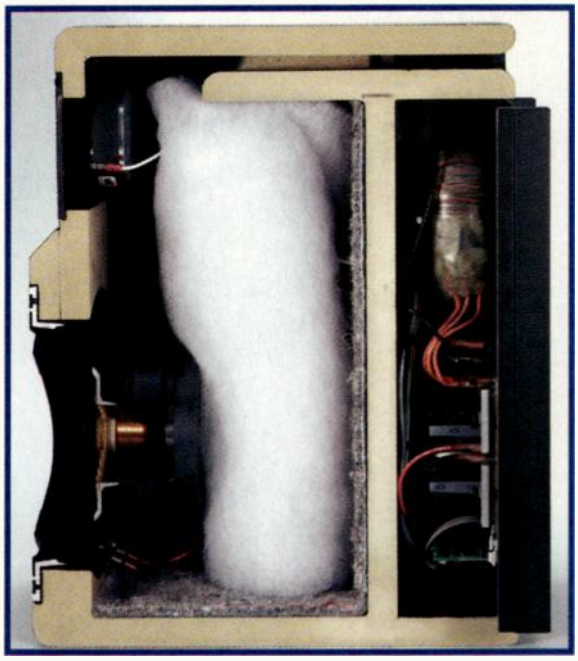
important of which is much higher efficiency. This means that you need less heat management—which translates into lighter weight, smaller size, and lower cost. Class D amps have been used in powered subwoofers for some time, partly because their distortion is less audible in the low range. One of the premier manufacturers of powered subs is Velodyne Acoustics, which recently started a new division, Velodyne Silicon Systems (VSS), to develop Class D amps for other manufacturers to use in their products.

However, this type of amp presents a number of significant obstacles to high-fidelity operation. According to Bill Ciullo, vice president of engineering at VSS, "Class D is very difficult to do well. In the real world, it tends to sound terrible unless you do some fancy design tricks. For example, if there is any overlap or gap between the transistors turning on or off, you get major distortion." This can even cause the amp to literally explode!

In addition, Cave says, "Class D amps have output inductors that act as filters. When you change the impedance of the speaker load, the frequency response of the amp changes. If you know the impedance of the driver you're using, it works fine."

Ciullo says that Tripath was the first company to make Class D amps sound good (although, in typical marketing fashion, Tripath calls its design "Class T"). "They solve the overlap/gap problem at the front end by adding broadband noise to the input signal," Ciullo says. "This tends to mask the switching errors, which are averaged in with the noise. This approach is somewhat similar to digital dithering. However, it requires DSP at the front end, which is expensive, and the transistors are switched in the megahertz range, which presents its own difficulties.

"Velodyne's founder, David Hall, solved the problem differently, on the back end of the process," Ciullo continues. "He put an inductor between the two transistors (see Fig. 3). When they are ready to switch, the energy is temporarily stored in the inductor until the switch is complete, at which time the energy is released to the transistor that's on. This process is controlled by two more transistors. There is no voltage drop across the transistors when they switch, so they are not stressed at all."



COURTESY HAFLER

FIG. 5: A powered speaker includes a power amp and associated electronics within the speaker enclosure.

Interestingly, Velodyne's design uses no power transformer. Rather, it rectifies the wall voltage and produces ±82 VDC rails. (Standard wall voltage is 120 VAC RMS; peak-to-peak is 164V.) Classes A and AB can't use rails at these extremes because they'd have too much heat to dissipate; the transformer steps the voltage down to reduce heat. According to Ciullo, Velodyne's design is more than 97 percent efficient; its 250-watt and 600-watt Class D amps need no heat sink or fan, and they are quite small compared with more conventional designs (see Fig. 4).

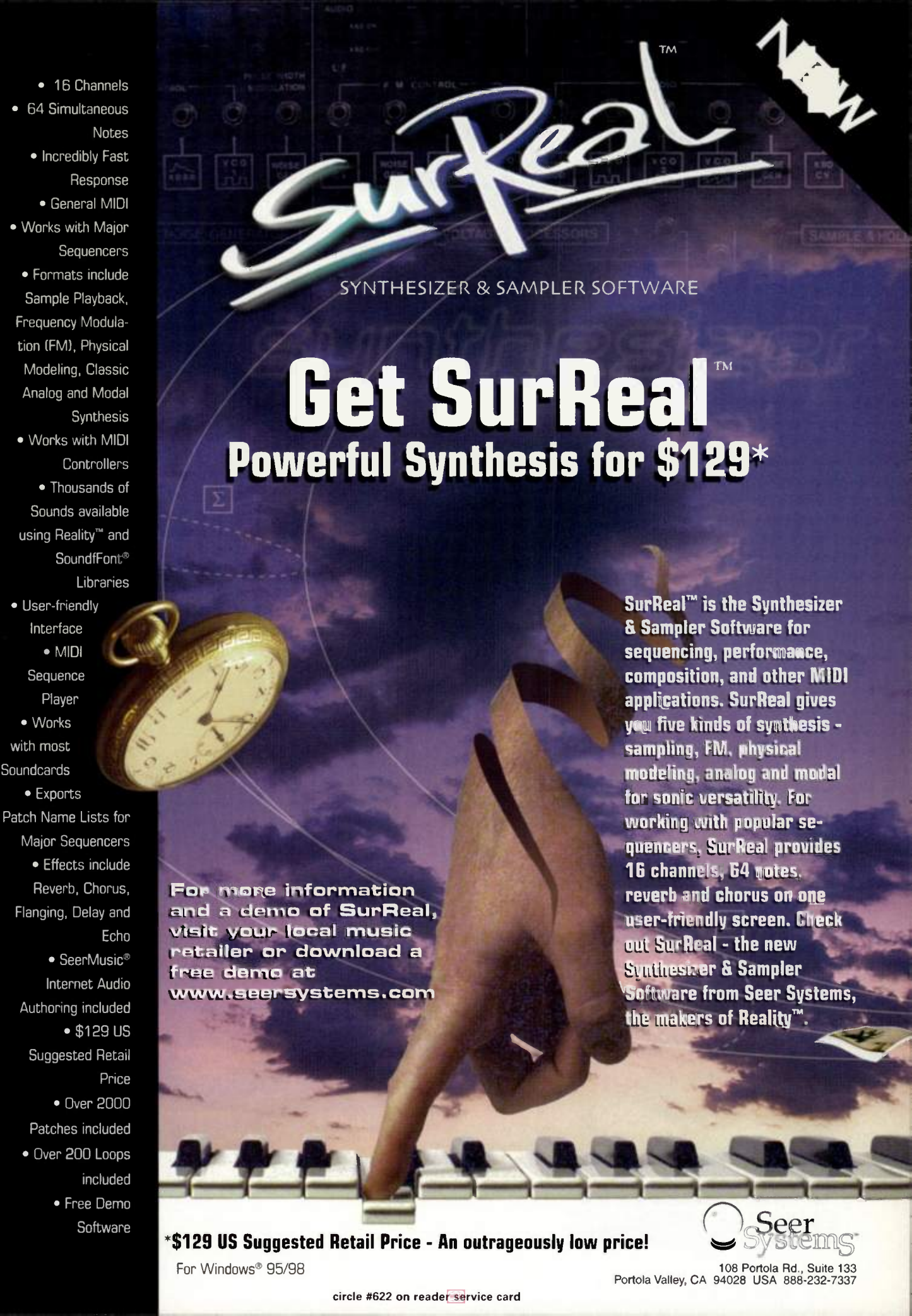
Crown's K series of full-range Class D amplifiers uses a strategy similar to Velodyne's (that is, an inductor between the output transistors); however, the two companies have separate patents on their designs. Crown's approach is called Balanced Current Amplifier (BCA). "This is an enhanced Class D topology," Whelan says, "that lets us make a 2,500-watt amp [1,250 watts per channel into 2 ohms] in a two-unit package with convection cooling. No other topology can do that and maintain a frequency response of 20 Hz to 20 kHz with low distortion.

"BCA efficiency is around 90 percent," Whelan continues. "However, measuring efficiency with sine waves is a waste of time. The energy density of a sine wave is very different from that of actual music; a sine wave has much more energy than most music signals. For example, an amp that's 90 percent efficient with sine waves might be only 40 percent efficient with music." Perkins agrees with this assessment, adding that the efficiency of an amp changes dramatically when you measure it at the typical average level of most music, which is only 20 to 30 percent of full output.

Class D amps have a potentially bright future as "digital" amplifiers. According to Ciullo, "Essentially, the output of the transistors is 'digital' in that it oscillates between the two rails. In the near future, we'll see Class D amps that accept a digital bitstream, decode it, and use it to determine when the transistors should be turning on and off. This would keep the signal in the digital domain all the way to the lowpass filter and would be a very noise-free design. You would have no chance to pick up analog noise anywhere along the way."

COURTESY VELODYNE SILICON SYSTEMS

FIG. 4: Velodyne Silicon Systems' Class D amps can be much smaller than more conventional designs.


SurReal™
SYNTHESIZER & SAMPLER SOFTWARE
Get SurReal™
Powerful Synthesis for $129*
• 16 Channels
• 64 Simultaneous Notes
• Incredibly Fast Response
• General MIDI
• Works with Major Sequencers
• Formats include Sample Playback, Frequency Modulation (FM), Physical Modeling, Classic Analog and Modal Synthesis
• Works with MIDI Controllers
• Thousands of Sounds available using Reality™ and SoundFont® Libraries
• User-friendly Interface
• MIDI Sequence Player
• Works with most Soundcards
• Exports Patch Name Lists for Major Sequencers
• Effects include Reverb, Chorus, Flanging, Delay and Echo
• SeerMusic® Internet Audio Authoring included
• $129 US Suggested Retail Price
• Over 2000 Patches included
• Over 200 Loops included
• Free Demo Software
SurReal™ is the Synthesizer & Sampler Software for sequencing, performance, composition, and other MIDI applications. SurReal gives you five kinds of synthesis - sampling, FM, physical modeling, analog and modal for sonic versatility. For working with popular sequencers, SurReal provides 16 channels, 64 notes, reverb and chorus on one user-friendly screen. Check out SurReal - the new Synthesizer & Sampler Software from Seer Systems, the makers of Reality™.
For more information and a demo of SurReal, visit your local music retailer or download a free demo at www.seersystems.com
*$129 US Suggested Retail Price - An outrageously low price!
For Windows® 95/98
Seer Systems
108 Portola Rd., Suite 133
Portola Valley, CA 94028 USA 888-232-7337
circle #622 on reader service card

EGO·SYS
http://www.egosys.net
Everything you'll ever need
Complete Desktop Audio/MIDI Solution
WaMi Rack
8 ch 20 Bit PCI Digital Audio Interface,
4 In 4 Out 64 ch MIDI Interface & SMPTE Synchronizer
Complete Notebook Audio/MIDI Solution
DSP Based
20 Bit 4 Channel
Integrated PCMCIA
Digital Audio System with
16 Ch Internal Hardware Mixing
& FX, 64 Voice Sampler/Synth, S/PDIF Digital I/O
WaMi Box
Signal Converting
Optical ⇆ Coaxial
Optical ⇆ AES/EBU
Coaxial ⇆ AES/EBU
Dr. D
Universal Signal Converter
WAVETERMINAL™
+4 dBu Unbalanced /Balanced Analog I/o
24-Bit Digital I/o
32-Bit PCI Bus Mastering
Windows 2000 Ready!
4 Ch 20 Bit PCI Digital Audio Card
20 Bit 64 Voice GS Sound Module,
MIDI Interface For Mac & PC
Dr. G/GM
Windows
20 Bit A/D, D/A
Mac OS
Mic Preamp
Echo
Headphone Amp
Miditerminal64™
Windows
2 In 4 Out 64 ch MIDI Interface
SMPTE Synchronizer
incl 24,25, 29.97, 30drop & Non-drop
Compact size
No AC adaptor required
Mac OS
2 In / 4 Out, 32 Ch
Mac MIDI Interface
with SMPTE
32midiworks™
THINKWARE
webmaster@egosys.net
circle #547 on reader service card

POWER TO THE SPEAKERS

Another hot topic in the world of power amps is the concept of *powered speakers*, in which a power amp is mounted within a speaker cabinet (see **Fig. 5**). This subject sparks lively debate in the audio community.

Cave points out some of the advantages to this approach. "The speaker's drivers and enclosure act as a system with impedances, pressures, and so on. If you drive it with an external amp, you don't know what kind of performance you're going to get if the amp is not matched to that speaker. With a powered speaker, you can match the amp to the speaker in terms of power, impedance, and crossover points, which optimizes everything."

Theoretically, Class D topology offers some significant advantages over more conventional designs.

Perkins agrees. "The main advantage of powered speakers is that you can optimize their performance with the internal electronics," he says. "You can dramatically change the sound of any speaker. For example, the Mackie HR824 uses basically the same midrange and tweeter as another popular powered speaker. The bass driver is similar, too, and the enclosure is the same size. But they sound totally different from each other because of the electronics package."

On the other hand, some people point out the disadvantages of powered speakers. Subbiondo offers an example: "Instead of running one cable to your speakers, you have to run a signal cable and a power cable, which can introduce EMI into the signal cable. Also, if you're flying the speaker in a live venue and it fails, you're stuck. Powered speakers are well suited for monitoring, which is why they've seen so much success there. But when you're powering many speakers with the same signal, it can be more cost-efficient to use a single, large amplifier."

Whelan sees an emotional factor, as well. "One of the beauties of having a separate amp is that people have their favorite speakers and amps. Separating them gives you the flexibility to assemble your own system and get the sound you're looking for. When you put an amp in a speaker, you remove some of that flexibility."

THERMAL SHUTDOWN

Power amps are essential to any sound system, and their basic function is unlikely to change in the future. However, the relative merits of the different ways they perform their function will be debated as long as engineers devise new methods of amplifying an audio signal.

With 30 years of experience in this field, Perkins recognizes two schools of belief when it comes to power amps: "One school says they're all the same; there are no differences. The other school says that each design sounds different—and manufacturers use this to tout their own products as better than the next company's."

To which school does Perkins subscribe? "The reactive load of a speaker is totally different from the resistive load on a test bench," he says. "Because of that, you do have sonic signatures and differences between products and manufacturers. Some of these differences are subtle, and others can easily be discerned even by someone who doesn't care a whole lot."

Of course, the readers of **EM** *do* care. So if you're in the market for a power amp, listen critically to several models in your price range and take along recordings that you know well. Audition amplifiers that use different topologies so that you can become familiar with their sonic signatures. In addition, keep your purpose firmly in mind. As Cave says, "There are a lot of different designs, and you have to choose the one that is best suited to your application."

Scott Wilkinson, *a contributing editor to* **EM**, *knows that what goes in must come out.*

For manufacturer information, please see Contact Sheet, p. 195.

Hit record?

Hit "record."

The D8 Digital Recording Studio includes everything you need to record and mix your music. An 8-track recorder, a 12-channel mixer, onboard effects, a built-in 1.4GB hard drive and a whole lot more.

Because the D8 is easy to operate and uses the familiar concepts of analog tape recording, you can record and mixdown your songs in high quality digital audio without going through a long, frustrating learning curve.

And because it's digital and uses no signal-robbing data compression, it delivers consistently great sound quality—no matter how many times you bounce tracks.

State-of-the-art features like programmable snapshot memory make mixing a snap—the fader, EQ and pan settings can be memorized as a scene, up to 20 scenes per song. And with 130 digital effects programs (50 different types) you can add just the right studio polish to your all-digital final product.

With superior sound, simple operation and a low $1250 list price, the Korg D8 delivers everything you need to make your dream of making it big a reality. See your authorized Korg dealer today, and we just might see you on the charts in no time.

circle #623 on reader service card

SEE US AT NAMM BOOTH #102

KORG *D8 Digital Recording Studio*

© 1998 Korg USA. 316 South Service Road, Melville, NY 11747. Prices and specifications subject to change without notice. For the Korg dealer nearest you: (800) 335-0801

PHOTOGRAPHY BY PARKER PETERS

Swimming in the A·I·R

Lydia Kavina's Fundamentals of Theremin Technique.

The theremin is currently enjoying a resurgence in popularity. However, it is one of the most difficult instruments to play, let alone master. To play it well requires dedication, practice, and patience.

Besides being one of the first electronic musical instruments invented, the theremin was the first instrument in the world that could be played without being touched. Russian inventor Leon (or Lev) Theremin created his namesake instrument in 1919, at the age of 23. By 1928, the inventor had relocated to the United States, where he continued improving the theremin, developed new instruments, and trained a generation of thereminists until his forced return to the Soviet Union in 1937.

Lydia Kavina was Theremin's last protégé and is now the world's leading theremin virtuoso. Kavina began studying the theremin at the tender age of nine, after Theremin recognized her remarkable musical ability.

Born in 1967, she began performing publicly at age 14. She studied composition at the Tchaikovsky State Conservatory in Moscow, where she finished her postgraduate degree in 1997. She has been on the lecture staff of the Glinka Museum and is now affiliated with the Theremin Center, both located in Moscow. Recently, she was the featured soloist on Howard Shore's soundtracks for *Ed Wood* and *eXistenZ*, and has performed in productions of *Alice* (Hamburg) and *Black Rider* (Cologne), directed by Robert Wilson with music by Tom Waits. Kavina herself has composed over a dozen pieces for the theremin with ensembles, orchestras, and electronics, and continues to concertize internationally.

By Olivia Mattis

THE THEREMIN SUMMER INSTITUTE

The 1999 Theremin Summer Institute, sponsored by New Music Alliance and directed by Olivia Mattis, will take place in August 1999 in Portland, Maine.

The week-long seminar will include lessons, master classes, workshops, a symposium, concerts, film screenings, and an instrument display. Lydia Kavina will attend and perform with thereminists Charlie Lester and Peter Pringle. No experience is necessary, but experienced musicians are welcome. Registration is limited. Contact Olivia Mattis (new-music@webtv.net; Web www.137.com/wooo) for more information.

I conducted this conversation with Kavina by e-mail over a period of several weeks. A few of the questions were contributed by members of Levnet, an online group of theremin enthusiasts. The topics and techniques Kavina discusses will give beginning theremin players the tools they need to confidently step up to the antenna.

Does the playing technique differ on the various kinds of theremins (such as the RCA, Etherwave, Big Briar 91 series, Wavefront, Theremax, or your Henk instrument)?

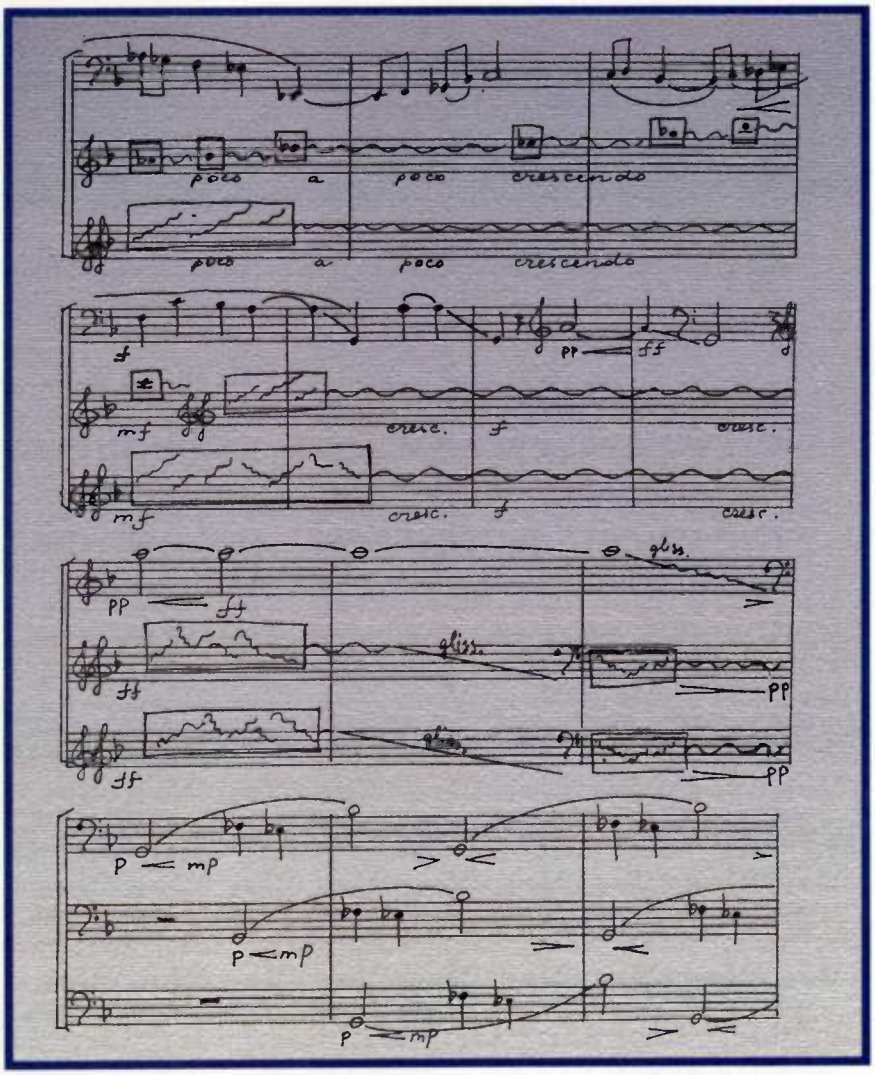
The technique is very much the same. What is quite different is the distance between the notes. The intervals can be as different from one type of theremin to another as cello intervals are from those on a violin. The distances depend upon the range of the instrument as well as the linearity, or how even the distances are between the same intervals in different registers.

For example, the RCA and some Etherwave theremins have a small range and uneven distances. Theremin's late instruments, made in the 1970s and 1980s, have even distances and a six-octave pitch range. The Big Briar 91 series and the Ethervox have very even distances, and the player has a choice of ranges. For example, if you set the range at two octaves, all of the distances are equally large. If you set it for six octaves, they are all equally small.

Every player gets accustomed to the distances on his own theremin, and this makes it difficult to adjust to a different instrument. But it doesn't take too long to relearn the technique, because the main point of theremin technique is not the mechanical memory of movements. It is the ability to *approximate* the position of the note and then quickly correct the hand position upon hearing the pitch.

The left antenna also behaves differently on the various models. For example, the RCA has a very long delay in the volume reaction to the movements of the hand. The first Etherwave instruments had an on-off type of volume control.

On Theremin's late instruments, volume changes would cause a change in pitch when playing in the bass register. Theremin might not have heard this effect, or maybe it was a technical problem that he did not manage to solve. This was not a problem with his early instruments because they didn't even have such low bass notes.



COURTESY LYDIA KAVINA

FIG. 1: This is a page from Lydia Kavina's composition *Field Sound* (1997) for three theremins. In this passage, the composer uses the full dynamic and melodic ranges of the theremin. Rhythmic articulation and phrasing present further challenges for the beginning or intermediate player.

Could you describe your instrument and how it's different from other theremins? Why do you play on a special instrument?

FULL COMPASS HAS A SHURE® THING FOR YOU!

Legendary Microphones

SHURE | 1999

BUY $50 WORTH OF SHURE EQUIPMENT FROM FULL COMPASS AND WE'LL SEND ALONG THIS SNAZZY RETRO LOGO TEE!*

Full Compass is one of the largest dealers of mics in the country. Ask around—we have a reputation for quality, reliability and affordability, which is why we're proud to feature Shure mics. Talk to our knowledgeable sales reps about your miking needs!

Call for our FREE Catalog!

800.356.5844

and visit our website at
www.fullcompass.com

PRO AUDIO | VIDEO | LIGHTS

FULL COMPASS

circle #624 on reader service card

*One free T-shirt per customer. For a limited time only. Please ask your Full Compass sales rep for details.

Swimming in the A·I·R

The instrument I currently play is a prototype that Anthony Henk made for me in 1994. Since then, he has changed it quite a bit by working with me to develop the musical characteristics of the instrument for professional use. It looks like no other theremin. It is not as reliable as I would like, but it has very good musical qualities. It has two beautiful sounds to choose from, a comfortable sensitivity in the volume antenna, and an evenness of pitch throughout its range.

Henk's instrument has a seven-octave pitch range, and it has a comfortable linearity. I call it comfortable because the distances between the notes are not perfectly even from octave to octave. In the bass register, they are a bit bigger, which feels natural. In the higher register, they are shorter, which is also comfortable because smaller movements of the arm and fingers are easier far away from the body.

How close should the player stand to the instrument?

It depends on the range of the instrument. If the range is four octaves or less, the player's distance from the instrument is about 12 to 16 inches, with the body equidistant from each antenna. If the range is larger, such as six or seven octaves, the player uses the full range by both extending the right arm (about 24 to 28 inches) and moving the body closer to the instrument or farther away, depending on the register they're playing in. So, it's not unusual to change the body's position in a pause during a piece if the register changes. The full range of the theremin is used in contemporary music such as Jorge Antunes's *Mixolydia*, my own *Suite for Theremin and Piano*, and so on (see **Fig. 1**).

FIG. 3: Three fingers are completely extended and the arm is outstretched. This position, with the thumb and forefinger held together, is the "open" position of the hand and is used to reach the upper notes of a musical phrase.

How far apart should the feet be positioned?

About 10 to 12 inches.

Should the instrument be on or off while the player is getting into position? In other words, does finding the position depend upon hearing the note that is being played, or does the player first establish the position and then turn on the instrument?

The volume should be off. The player establishes the position first and then "tunes" the instrument, making the notes sit comfortably in this position.

FIG. 2: Here, the right hand is close to the shoulder and the fingers are retracted. This is the position for the lowest note on the instrument.

Once you have found the right position in front of the theremin, how do you begin?

The player begins by tuning the instrument. The principle of tuning is to set the lowest note of the instrument while the player's right hand is at the shoulder. Then, before she begins a piece, the performer has to find the first note, with a very soft volume level if possible. The player should have the melody in her mind, even if she knows how to read music.

Tell me about the playing technique of the right hand, which controls the pitch. What is the shape of the arm, hand, and fingers as the player moves from a low note to a high note? Do the hand and arm always play as a unit, or are there times when the arm stays still, and only the hand itself moves?

The most effective way to control pitch on the theremin is to move the right hand from the shoulder (see **Fig. 2**) to the antenna while opening the fingers. To reduce the movements of the whole arm, the player uses a fingering technique that is based on the opening and closing of the hand (see **Fig. 3**).

For passages within small intervals, such as a fourth, the arm stays still and the player just uses a couple of finger positions. For larger intervals, the arm moves along with the fingers. Legato (smooth) passages are played more with the fingers. Staccato (discrete pitch) and glissando (continuous pitch) passages are played more by moving the arm.

What are some techniques that can help the beginner acquire control of the right hand and arm?

Begin by listening to the glissando as you move the hand from the shoulder (with a closed fist) to the antenna (with fingers extended). Next, play a glissando through two octaves with the same movement, and then play a one-octave glissando. Next, play an arpeggio, stop on each note, and learn the finger positions. Finally, play a one-octave scale and learn the finger positions of each note in the scale.

Cool Edit PRO

Been there, done that...first!

Cool Edit Pro was the first open-architecture multitrack digital audio editor to support 24-bit resolution and 96-kHz sample rates. Now let's talk some real numbers...

Cool Edit Pro 1.2 supports bit depths up to 32 bits and up to 10MHz sampling – now that's Cool!

When you're ready to go there, we'll be here waiting.

www.syntrillium.com

Request a free demo CD

SEE US AT NAMM BOOTH #3101

circle #548 on reader service card

Syntrillium

PO Box 62255
Phoenix, AZ 85082-2255 USA
cepro@syntrillium.com
+1-480-941-4327
+1-480-941-8170 (fax)
1-888-941-7100 (toll-free sales, USA and Canada)

You described the different positions for the right hand as moving from a closed fist (low notes) to an open hand (high notes). In the open position, is the hand completely open? I noticed in your video *Mastering the Theremin* that even in the open position you keep your thumb and forefinger together, opening only the other three fingers. Is this what the beginning player should do?

This is a good question. It is not necessary to keep the thumb and forefinger together, but for some reason, all thereminists arrive at this position. Or, if they try to open the forefinger, the other fingers tend to stay in a fist, as in Clara Rockmore's playing. I think this is a psychological device, as well as a physical one. The completely open hand would not feel firm. However, in keeping the thumb and forefinger together, it's as if the player is holding the sound. This is just one psychological support for swimming in the air.

How many finger positions are there in the right hand? Can you describe them?

Between the closed fist and the open hand there are as many positions as you want. We can refer to the fist and the first three positions of the scale as the zero, first, second, and third positions.

You mentioned that a small interval such as a fourth does not require the arm to move. Does this mean that, for a one-octave scale, the player shifts position as on a violin? How many times?

Yes, the player changes the arm position after several notes. For example, Clara Rockmore would change the arm

TIPS FROM HISTORY'S THEREMIN MASTERS

The following are several pointers from Clara Rockmore and Lucie Bigelow Rosen—first-generation thereminists who, with no precedents to guide them, worked out their own foundations for a technique on the instrument. Their advice, of course, is based on the technical parameters of the instruments they were working with at the time.

CLARA ROCKMORE

From her New York debut at Town Hall in 1934 to her last public appearance in 1989, Clara Rockmore (1911–1998) was universally regarded as the consummate theremin virtuoso of all time. On the custom-made instrument built for her by Leon Theremin, she developed and perfected a space-control technique that has since become the benchmark for every player of the instrument. Rockmore's distinguished career was marked by solo appearances with major orchestras, three tours with Paul Robeson in the 1940s, the commissioning of a landmark theremin concerto, and a classic recording issued in 1977 on the Delos label.

Proper poise while playing. "Don't forget that your whole body is an electro-conductor in the electromagnetic field. It is, therefore, necessary to control the slightest motion, not only of your hands and fingers; you cannot register any of your internal emotion at all. You cannot shake your head, for instance, or sway back and forth on your feet. Any involuntary motion can interfere with pitch and volume."

On vibrato. "Vibrato is very important in producing the desired tone quality—forefinger of the right hand resting on the thumb and please, please not a wide vibrato, but as fast and as much in place as possible, not to be mistaken for a trill.

"A trill should not be a wide vibrato, but a very exact distance—either a half tone or whole tone. Avoid constant vibrato, allowing areas without it as the music dictates."

LUCIE BIGELOW ROSEN

Rosen (1890–1968) was a pupil of Leon Theremin and became his most ardent advocate for the instrument. Following her 1935 Town Hall debut, Rosen made three European tours, lectured frequently in schools, appeared often in recital, and commissioned a small repertoire of new theremin works from a handful of composers, including Bohuslav Martinu. Between 1930 and 1938, she and her husband, international banker Walter Tower Rosen, were Leon Theremin's primary sponsors in America. Lucie Rosen worked closely with the inventor in his laboratory and advised him on the specifications of two instruments he designed for her.

On tuning the theremin. "The theremin, like other instruments, must be tuned carefully before playing. The theremin player must do this conscientiously or he will be in the same position as a violinist whose strings are too loose. The more he has practiced, the more important it is for his fingering that the intervals he expects are not changed.

"These intervals are measured when the player takes his position before the instrument and lightly plays the gamut, from highest to lowest note, by stretching out his right hand to the rod and bringing it back to the shoulder for the lowest note.

"It is also part of the tuning to make sure the intervals are correct for reasons other than pitch. If they are too long, the playing is 'sticky' and the dreaded portamento is unavoidable: there is no lightness, detached note, or speed possible. On the other hand, if the intervals are too short, the player is tied tight to his instrument, and all freedom is taken from him. The hand can scarcely move in the shortened intervals and the vibrato sounds fast and nervous beyond bearing."

Locating a note from silence. "There is no helpless waving in the air in order to 'find a note.' The note is always first a definite thought in the mind, like that of a singer. It can be heard before it is played in the speaker behind the player. The speaker is like a third ear, as well as the mouth of the sound, and it is that which the player must rely on for the right position to begin on the beat with the note he means to play. He hears the note before he plays it in his speaker, which must be always placed where he can hear it before anybody else. The note is the same as his thought, and a small movement of his hand brings the attack of the sound when he wants it."

—Albert V. Glinsky

WHAT'S ALL THIS ABOUT HAFLER?

9505

P7000

P4000

P3000

P1500

***There's a buzz on the street...* Hafler's the one to use.**

It's no secret that Hafler amplifiers are the professional's choice in studio amplifiers. Innovative technology and forward thinking have been the difference between Hafler and everything else for over **25 years.** These differences are the result of technologies like trans•*nova* and trans•*ana*. Most other amplifier designs must choose between voltage or current gain at every stage of amplification. That results in more noise and distortion. Hafler's trans•nova and trans•ana circuits provide "power gain" that amplifies both voltage **and** current. The result is fewer gain stages in the amplifier front end. Remember the rule of mathematics: *"The shortest distance between two points is... Hafler!"* The benefit is more dynamic, spacious music. Short, Simple, Better.

In Hafler's P4000, our patented DIAMOND circuitry provides up to +14dB additional dynamic range, and being an industry professional you know that's a bunch!

It's innovative thinking and technologies like these that have made Hafler **the standard** in studio amplifiers. Technological advantages aren't always apparent in specifications but are obvious to the ears. So do something nice for your monitors - feed them with Hafler.

It's the buzz.

USE HAFLER.
GET IT RIGHT.

Hafler®
the standard

Comecy@hafler.com
546 South Rockford Drive • Tempe, AZ 85281

position after playing two notes up the scale, and every four notes down the scale. I change after every fourth note up the scale, and I might play eight notes down without any changes. This can be different for each player. It also depends upon the musical passage and the particular instrument.

Do you think it would be helpful for a player to practice the same musical passage three different ways: legato, staccato, and glissando?
It's a good idea to practice *exercises* in both staccato and legato. But when it comes to musical phrases, the player should only do this if he is trying to change the expression of a passage.

How is vibrato done, and when is it used?
Vibrato is a type of expression and should not be played in an automatic way. It is often combined with a crescendo or diminuendo and played on long, important notes, as on the violin. The width or speed of the vibrato varies, depending on the style of the music: it should be broader in dramatic pieces for a rich, violinlike sound, and more subtle for flutelike passages. Normally the width of the vibrato changes while playing long notes. For example, it might go from no vibrato through slow vibrato to fast.

The correct way to play vibrato is with small, left-to-right movements of the right hand. Some players play vibrato by shaking the hand forward and back. But this movement is difficult to control, and such vibrato sounds mechanical and too similar all the time.

The correct way to play vibrato is by moving the right hand from left to right.

How should the left hand be positioned in relation to the volume antenna? What are some techniques or exercises that the student should learn?
Volume antennae can have different sensitivities and space-control areas. Most instruments have a space-control area of about 8 to 12 inches, beginning about an inch above the volume antenna (see Fig. 4). The arm should feel free, like that of a conductor.

There are two functions and two basic movements of the left hand. First, movement of the wrist separates notes and phrases. This movement is quite sharp. To exercise the wrist, play repeated notes with a staccato (rapid up and down) action. At first, try this with a simple phrase, and then with a scale.

The other left-hand technique is moving the whole arm for crescendo and diminuendo. This movement is like the breath of the melody. To exercise the whole arm, play a two-note legato phrase with crescendo and diminuendo. Now try it with three notes, then four. This is quite difficult, as it requires sharp movements of the fingers of the right hand and a very smooth movement with the left arm.

What is your advice on preventing repetitive injuries in the left hand, such as carpal tunnel syndrome or tendonitis? Are there playing techniques that can help prevent such injuries?
Keep a straight back. Use every pause in the melody to energize your hand muscles, and do exercises to stretch them.

Is there ever a time when the player should touch any part of the instrument?
The player touches the instrument for special effects. For example, bird trills are made by touching the pitch antenna.

What about the volume antenna?
With some instruments, this would cause sound effects as well. For example, I would touch the volume antenna to create the effect of a groan in one of my earliest works, using one of Theremin's later instruments,.

When you play, do you have some kind of mental image in mind, some analogy? For example, some players imagine that they're playing invisible strings, or perhaps an air pressure field that increases in pressure as the player gets closer to the instrument. Do you have, and do you recommend, any image like that?
I like to use the analogy of singing. When I am learning a new melody,

FIG. 4: The control area around the volume antenna is about 8 to 12 inches, beginning about an inch above the antenna. Notice that the player's body is equidistant between the antennae, and that the instrument is at a comfortable height for the player.

Now you can stop asking "Does it do 96kHz?"

The PSX-100 features a full range of options on the A/D section. Sync to word clock, digital input, optional video or crystal at all the standard sample rates including 88.2 and 96 kHz. Output full 24-bit resolution, or create flawless 20/16 bit with UV22. Send to 2xAES, ADAT, TDIF, S/PDIF coax or optical.

Use Apogee's proprietary Soft Limit to get the max on tape without overs. Bit-split to your MDM for 24-bit mastering on the recorder you already own – 24-bit 44.1/48kHz or even stereo at 88.2/96! Meter either A/D or D/A section. Copy digitally between formats using the entire I/O capability of the unit. Totally independent A/D and D/A sections. Is this cool or what?

Return digital signals from your MDM, S/PDIF coax or optical, or either of two AES inputs. Select the channel pair coming back from your MDM in multiple PSX bit-splitting configurations. Lock to the input signal or to the A/D.

The full range of sample rates from 44.1 to 96 kHz!

96k

With the PSX-100, the answer is "yes."

APOGEE ELECTRONICS has a reputation for producing the very best sounding digital conversion products available. You might also think of us as being quick off the mark. But in fact, we think very carefully before we release a new product.

That's how it was when we came to design our first 24-bit, 96kHz converter system: the **PSX-100**.

Anyone can make 24 bits dance up and down 96,000 times a second. The question is, does it sound any better? *In many cases, the answer is no* – and to our engineers, there was no point if the sound wasn't significantly improved. So clock circuitry had to be even more rigorously designed to minimize jitter. Analog components required special characteristics to realize the performance we specified. And much more.

We wanted to give our first 96kHz system all the features needed to make it truly indispensable. AES, S/PDIF, ADAT and TDIF I/O for highest flexibility. Bit-splitting for 24-bit, 96kHz mastering to 16-bit, 48kHz MDMs. UV22® for flawless 16- and 20-bit output. Soft Limit® for maximum level without overs. Digital copy, confidence and monitoring modes. Sync to word clock and optional video.

The result: a total stereo conversion solution. ***Fully independent A/D and D/A converters in a single 1U package.***

People kept asking us, "Does it do 96kHz?" and we said, "When we're ready, it will." Now, with the **PSX-100**, we're ready. Are you?

APOGEE ELECTRONICS

www.apogeedigital.com

APOGEE ELECTRONICS CORPORATION,
3145 Donald Douglas Loop South,
Santa Monica, California 90405, USA.
Tel: +1 310/915-1000 Fax: +1 310/391-6262.
Email: info@apogeedigital.com.

Apogee, UV22 and Soft Limit are registered trademarks of Apogee Electronics Corporation.
Other trademarks are the property of their respective owners.

circle #550 on reader service card

particularly a contemporary one, I learn it in solfège. I recommend this method for other players, because it's good aural training for music.

What advice would you give a beginner on playing in tune?
The melody should be in your mind. You should be able to hear it very well in your head. Sing it first, and see what the intervals are between the notes. Play the phrase rather slowly, but in tune. Then repeat the phrase at a faster tempo. One should not always play with accompaniment. Rather, one should practice by playing solo, checking the notes occasionally against the piano.

What should a theremin player avoid doing?
A theremin player should never try to measure distances between the hand and pitch antenna as a means for finding the pitch. The player must always play by hearing the note, without relying on a visual orientation for obtaining the right pitch.

What's your advice on good practice habits? How much time per day should the new player practice the theremin? How much time is necessary for the adult beginner to become physically comfortable with the instrument?
This very much depends on the talent, character, and musical experience of the player. My advice would be to practice half an hour every day, and in a few weeks the new player will feel physically comfortable with the instrument. But to develop technique and become professional takes several years.

Should the student start each practice session with exercises before trying to play real music? If so, what percentage of each practice session should be exercises and what percentage music?
Exercises are necessary for learning and understanding new techniques, and also after a long interim of not playing. At other times, this is up to the player. I'd say that playing real pieces of music and working on separate phrases of the melody is quite enough. But some people feel very comfortable starting practice sessions with exercises. To these players, I suggest playing exercises for 10 to 20 minutes at the beginning of the practice session, but not longer than the amount of time devoted to actual music.

What is your vision for the future of the theremin? What kind of music would you like to see composers write for the instrument in the 21st century?
I would like the theremin to be used in every kind of music, particularly in serious and experimental music. This would open up possibilities for the instrument and keep it alive.

What else would you like to tell the beginning student?
Beginners should seek guidance from the playing styles of earlier players. They should try to play the repertoire and copy the expression of Clara Rockmore, or myself, or somebody else. This is good experience. But do not make it your only aim. You should find your own style and repertoire. You should not try to be like, or be better than, anyone else. You should be yourself.

THEREMIN SITES AND SOUNDS

The Art of the Theremin **by Clara Rockmore (Delos).** This CD features Rockmore performing transcriptions of classical works on the theremin, accompanied by pianist Nadia Reisenberg. (Web www.bigbriar.com)

Clara Rockmore: The Greatest Theremin Virtuosa **(Big Briar).** Culled from a mid-'70s documentary, this video includes performances by Rockmore and pianist Nadia Reisenberg, as well as conversations between Rockmore, Bob Moog, and Tom Rhea. The video also highlights Rockmore's exceptional technique. (Web www.bigbriar.com)

Levnet is an online theremin group open to anyone interested in the instrument. (Web www.geocities.com/BourbonStreet/Delta/5731/levnet.html)

Mastering the Theremin **(Big Briar & Little Big Films).** Lydia Kavina's theremin instructional video includes six lessons for the beginning thereminist, as well as a performance by Kavina of three of her compositions. (Web www.bigbriar.com)

Music from the Ether **by Lydia Kavina (Mode Records/New Music Alliance).** This first full-length release by Lydia Kavina is also the very first CD of works written expressly for the theremin. This disc includes compositions by Percy Grainger, Bohuslav Martinu, Joseph Schillinger, Friedrich Wilckens, Isidor Achron, Vladimir Komarov, Jorge Antunes, and Lydia Kavina herself, with program notes by Olivia Mattis. (Web www.mode.com)

Music Out of the Moon, Perfume Set to Music, **and** ***Music for Peace of Mind*** **by Dr. Samuel J. Hoffman (Basta).** Known primarily for his film work (*Spellbound, The Day the Earth Stood Still,* and *The Ten Commandments*), Dr. Hoffman recorded three albums of music by Harry Revel, conducted by Les Baxter and Billy May. This three-CD reissue demonstrates Hoffman's theremin mastery away from the usual sci-fi and psychological thrillers he's often associated with. The discs' program notes were written by Albert V. Glinsky. (Web www.basta.nl)

Out of Thin Air **by Albert V. Glinsky (University of Illinois Press).** This is the forthcoming, comprehensive biography of Leon Theremin, covering the fantastic story of his life and instruments. (Web www.press.uillinois.edu)

Theremin: An Electronic Odyssey **(Orion Classics/Orion Home Video).** Steven Martin's amazing documentary about the life of Leon Theremin, available on video, features performances by Clara Rockmore, as well as many interviews and cameo appearances. (Web www.bigbriar.com)

The **Theremin home page** contains a wealth of information as well as links to other theremin resources. (Web www.nashville.net/~theremin)

Musicologist **Olivia Mattis** *is the executive director of the New Music Alliance. She was the first Western author to interview Leon Theremin when he emerged from house arrest in the Soviet Union in 1989. She can be contacted by e-mail at omattis@webtv.net.*

NEW VLZ PRO™. THE FIRST COMPACT MIXERS WITH ESOTERIC MIC PREAMP SPECS AND SOUND QUALITY.

You won't find any other mixer manufacturer admitting this dirty little truth: For years, expensive outboard mic preamplifiers have yielded better sound than the preamps in any size mixing console including "status mega-consoles." In fact, if you happen to have numerous extra thousands in cash lying around, we urge you buy an esoteric mic preamp or two or three right now.

But if your equipment budget is slightly more down-to-earth, we'd like you to enjoy the benefits of the most extensive analog engineering project in Mackie's history: The new XDR™ Extended Dynamic Range mic preamplifier.

Now for the first time, you can realize the full potential of the world's finest condenser microphones with an affordable compact mixer: Room ambiance so detailed you can practically hear the carpet pattern...high frequency resolution that defines cymbals, triangles and bells down to the molecular level... midrange that's as gentle and fluid as a warm bath...and tight, authoritative bass with intoxicatingly rich harmonic texture. In short, you can now achieve an aural panorama that's breathtakingly realistic, excitingly vivid and truly 3-dimensional.

You probably think we're laying it on a little thick—until you hear the XDR™ mic preamplifier in person. It really does have...

- The **lowest harmonic distortion** of any compact mixer mic preamp in existence (for example, ten times less THD than our previous VLZ™ series).
- **Lower Equivalent Input Noise** in the critical +20-+30dB operating range than most $2000 preamps.
- Over **130dB of dynamic range** to handle hot 24-bit/196kHz outputs from digital audio workstations.
- **Astonishing bandwidth** without RFI side effects. Not only are XDR™ mic preamps flat within 1/10th of a dB across the bandwidth of any known microphone but they're only 3dB down at 1Hz and 192kHz!

Warm, natural sound
0.0007% THD
130dB dynamic range to handle 24-bit/196k digital input sources
Lowest E.I.N. at real world gain settings
Impedance independent
Near DC-to-light bandwidth
The best RFI rejection of any compact mixers in the world

- **Controlled Impedance Interface.** Use the XDR™ mic preamp with mic/cable impedance combinations anywhere from 50 to 600 ohms and get the same ruler-flat frequency response.

There are also XDR™ benefits you won't hear:

- **The best RFI** (radio frequency interference) **rejection** of any compact mixer... without attenuating high frequency response.
- Comprehensive **protection against "hot patching" and short circuit damage** — a critical feature even some high-end mic preamps lack.

The mixers are pretty cool, too. XDR™ mic preamps are the latest major enhancement to our industry-standard CR1604, MS1402 and MS1202. For more information, call toll-free, log onto our web site or visit your nearest Mackie Dealer and hear the new VLZ™ PRO Series. Think of them as $2000 mic preamps with superb mixers attached.

MS1402-VLZ™ PRO
6 XDR™ mic preamps
14x2 • 4 stereo line inputs • 6 mono mic/line inputs •
extra ALT 3-4 stereo bus

CR1604-VLZ™ PRO
16 XDR™ micpreamps
16x4x2 • 16 mono mic line inputs
• 4 sub groups
• rotatable I/O pod

MS1202-VLZ™ PRO
4 XDR™ mic preamps
12x2 • 4 stereo line inputs • 4 mono mic/line inputs •
extra ALT 3-4 stereo bus

CYNIC'S CORNER. Did we just slap a new buzzword on our "old" VLZ mixers? Emphatically NO! We spent two years and a quarter of a million dollars to produce the first no-compromise mixer microphone preamplifier design. XDR™ is a quantum leap ahead of anything but the most expensive outboard mic preamps. Plug a high-quality condenser mic into a VLZ Pro compact mixer and you'll hear the difference. Run a side-by-side comparison with a $1000-per-channel esoteric mic preamp and you'll be blown away.

999 Mackie Designs. All rights reserved. "Mackie" and the "Running Man" figure are registered trademarks of Mackie Designs Inc. "VLZ" and "XDR" are trademarks of Mackie Designs Inc.

MACKIE

www.mackie.com 888/226-9847

MADE IN WOODINVILLE WASHINGTON, USA BY GENUINE MACKOIDS

circle #551 on reader service card

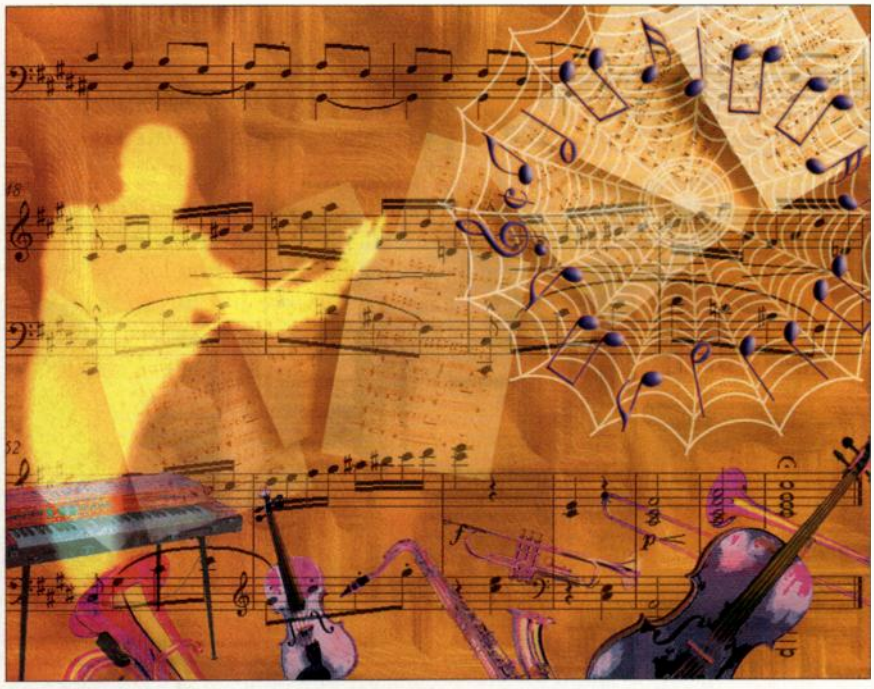
DESKTOP MUSICIAN

Scoring on the Web

Web music commerce may soon embrace the printed page.

By Scott R. Garrigus

For several years, the Internet has provided musicians with a wealth of opportunities for showcasing their artistic output. Through MIDI files, audio files, and streaming audio, you can now let the world hear your masterpieces in a variety of formats. You can even sell your music as CD-quality MP3 files. (For more on MP3, see "Desktop Musician: The MPEG Audio Craze" in the January 1999 issue of **EM**.) But when it comes to selling or even sharing music notation across the Internet, things are just getting started.



STEVE RAMIREZ

Although music notation software has been on the market for quite a few years, we still have no universally accepted notation file format. Consequently, the only way you can share notation files with other people is if they have the same notation software that you do. In addition, without a universal format, there's no easy way to display your scores on the Web. Fortunately, this situation is improving in several areas. Sibelius Software offers one high-end solution (see the sidebar "Sibelius on the Web").

MUSICAL TEXT

You can easily display notation on the Web by using an image file. If your notation software supports it, just save your score as a graphics file and post it on your Web site. You can also scan a printed score or use a graphics-editing program to clean up and prepare the image of a screen shot. Anyone with a Web browser can then view your score. The problem with this method is that graphics files on the Web need to be small and have a low resolution, otherwise they take a long time to download. Small, low-resolution image files print out poorly, and they can't be imported or edited in music notation programs.

But what about plain ASCII text files? That's what Chris Walshaw was

So you need a USB MIDI interface for your iMac, G3 or PC?

We've got a solution for you.

USB is the new wave in MIDI and MIDIMAN, the leader in MIDI interfaces, has created it's newest MIDI product the USB MIDISPORT™ 2x2. The cross platform MIDISPORT™ is a 2 in / 2 out USB MIDI interface with true Plug-n-Play for PCs or Macs and requires no external power supply. For more information or to get your hands on a MIDISPORT see your local dealer or call MIDIMAN at (800) 969-6434.

midiman

The First Name in MIDI.

USA: 800-969-6434 • www.midiman.net • info@midiman.net • UK: +44 1423 886692 • Germany: +49 7941 987000

circle #552 on reader service card

wondering in 1991 when he introduced ABC, a simple text-based language designed to notate tunes written on one staff in standard classical notation. A typical ABC tune might look like this:

```
X:1
T:Notes
M:C
L:1/4
K:C
C, D, E, F,|G, A, B, |C|D E F G|A B
c d|e f g a|b c' d' e'|f' g' a' b'|]
```

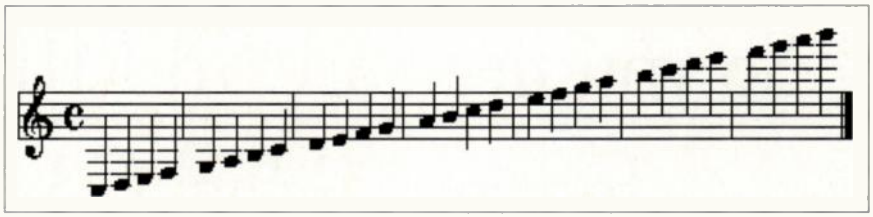


FIG. 1: The ABC language can be used to notate simple melodies or complex orchestral scores.

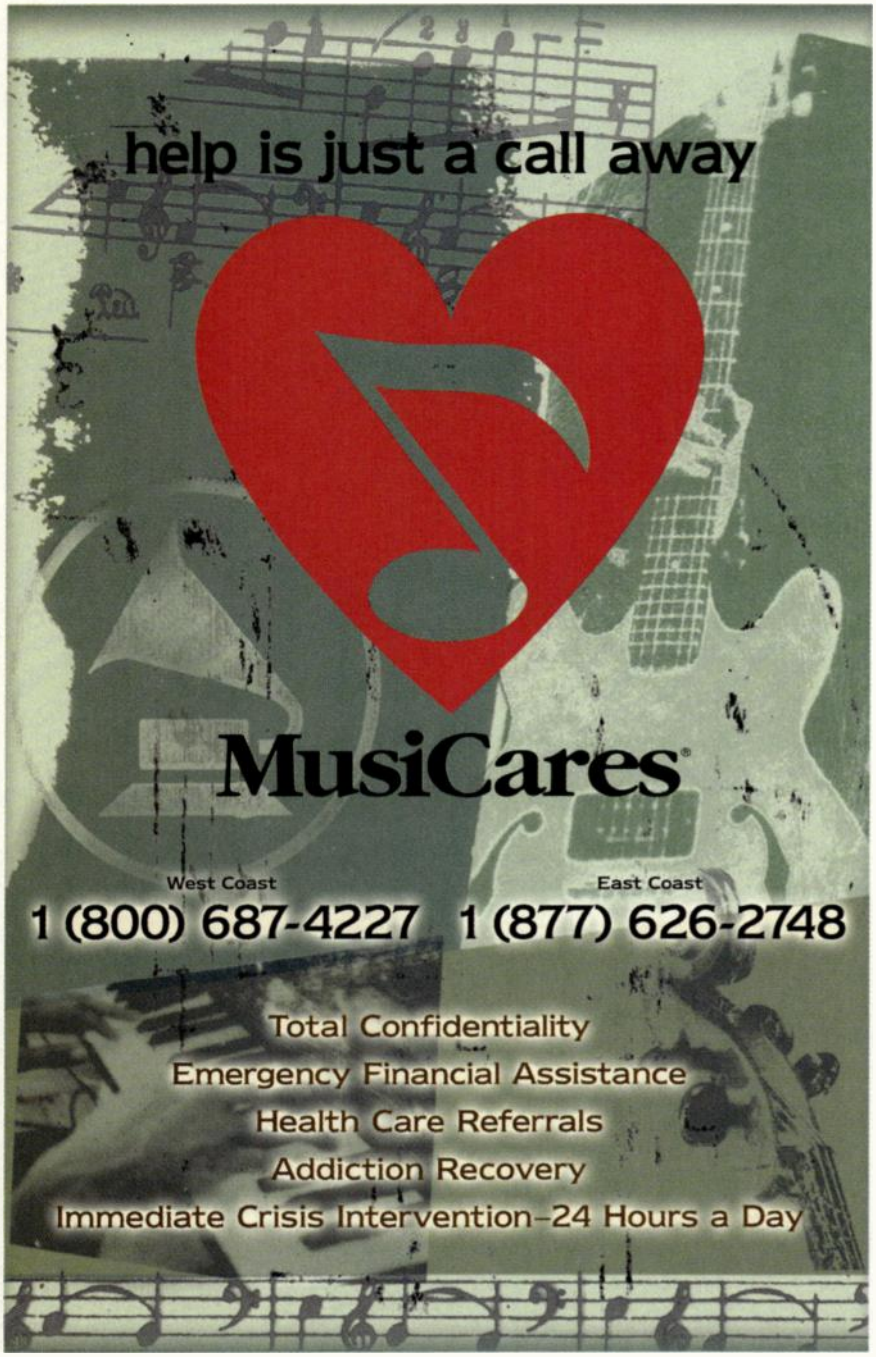
The *X* represents the song number; *T* denotes the title of the song; *M* stands for the meter (*C* being "common time"); *L* defines the default note length; and *K* designates the key. The rest of the letters are the actual notes that make up the melody. With the help of a translation program, this example looks like the standard music notation shown in **Figure 1.** Over the years, the ABC language has grown quite popular and more complicated. A number of free software tools now allow you to compose and translate music using ABC. One dedicated user named Steve Allen has even coded the second movement of Beethoven's Symphony No. 7 in the ABC language. (For a description of notation resources on the Web, see the Special Additions section of **EM**'s Web site, www.emusician.com.)

MusicTeX is another text-based language for notating music, but it is far more complex and difficult to use than ABC. MusicTeX was created by Daniel Taupin as an adjunct to an even more complicated language called TeX. TeX is a software system written by Donald Knuth for precision computer-assisted typesetting tasks.

With MusicTeX, you can create complex scores incorporating multiple instruments on multiple staves with different keys and time signatures throughout. MusicTeX scores rival some commercial notation programs. Because of its complexity, however, MusicTeX has never caught on with the general public and is used primarily as a tool in educational institutions.

Another language, called Mudela (Musical Definition Language), is similar to MusicTeX. Mudela was developed as part of the *LilyPond* project by Han-Wen Nienhuys and Jan Nieuwenhuizen. *LilyPond* is an application that outputs a Mudela file as a TeX file or a MIDI file. The system can handle multiple staves, meters, clefs, keys, lyrics, cadenzas, beams, slurs, triplets, and more. But like MusicTeX, Mudela is difficult to master.

ABC, MusicTeX, and Mudela all have the same basic objectives: to provide a freely available, extensible, music notation language for creating files that are as easy to transfer and manipulate



circle #553 on reader service card

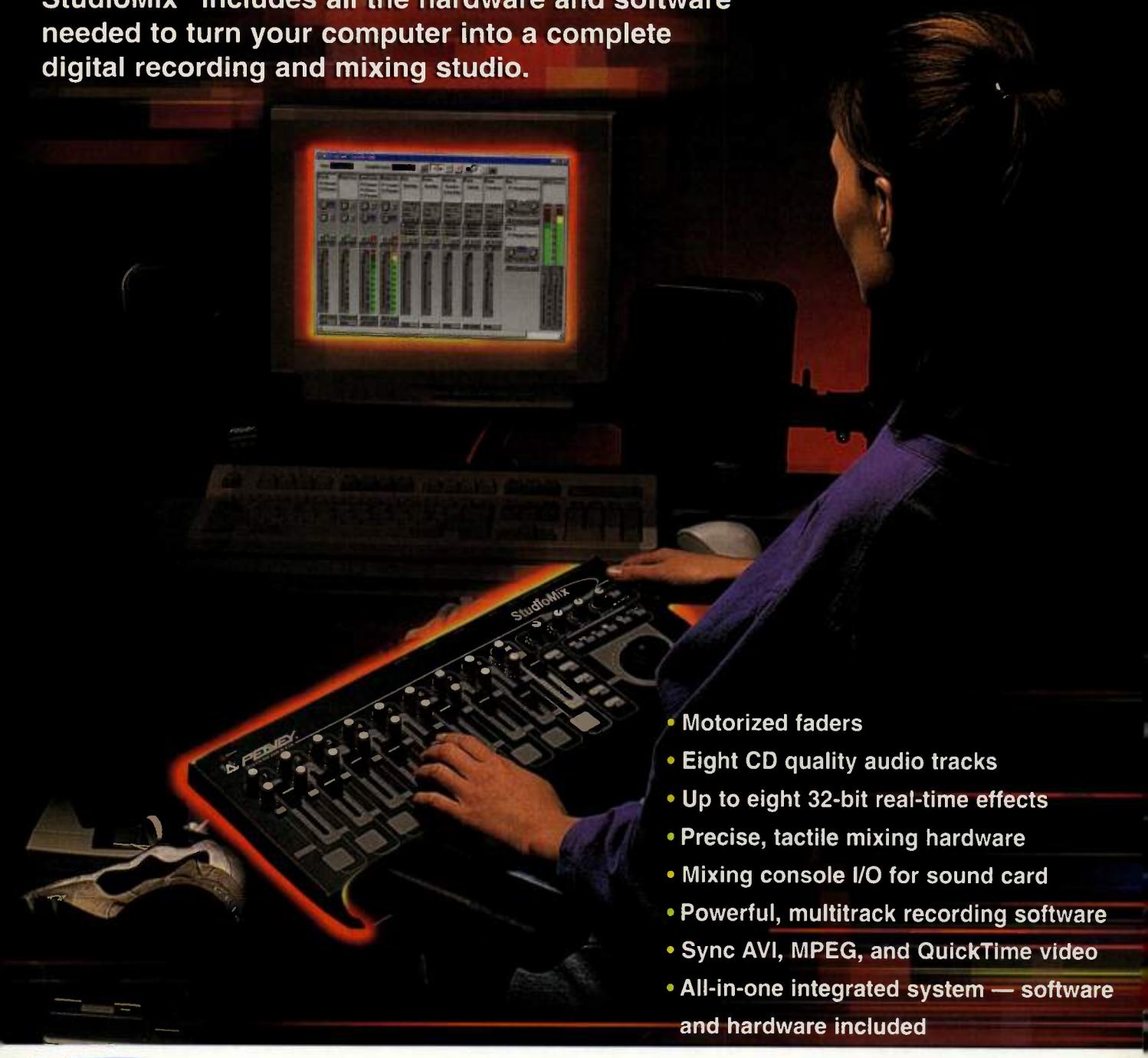
For manufacturer information, please see Contact Sheet, p. 195.

StudioMix™

DIGITAL RECORDING STATION

The hands-on way to digitally record and mix on a PC

StudioMix™ includes all the hardware and software needed to turn your computer into a complete digital recording and mixing studio.



- Motorized faders
- Eight CD quality audio tracks
- Up to eight 32-bit real-time effects
- Precise, tactile mixing hardware
- Mixing console I/O for sound card
- Powerful, multitrack recording software
- Sync AVI, MPEG, and QuickTime video
- All-in-one integrated system — software and hardware included

cakewalk

Cakewalk • 5 Cambridge Center • Cambridge, MA 02142
1-888-CAKEWALK • Fax 617-441-7887

Peavey Electronics Corporation • 711 A Street • Meridian, MS 39301
601-483-5365 • Fax (601) 486-1278 • © 1999

PEAVEY

circle #554 on reader service card

as text-based files. These systems offer a viable method for musicians to share their musical scores, and they bring us one step closer to solving the standard-notation file-format dilemma. Unfortunately, even though the scores can be displayed on the Web in their raw-text format, there are currently no browser plug-ins for displaying the languages in standard notation form.

THEN CAME JAVA

Billed as the "write once, run anywhere" computer language, Java allows programmers to create a piece of software that will (theoretically) run on any computer platform. Just as important, Java programs can be small in size and can run over the Web in a browser. Sounds like the perfect solution for displaying music notation on the Web, right?

That's what the people at the Connection Factory thought when they came up with MusicML. What started as an experiment to test the limits of XML (Extensible Markup Language; see www.xml.com for more information), MusicML has become a contender in the search for a standard file format for music notation on the Web. Like ABC, MusicTeX, and Mudela, MusicML is a text-based language. However, it is derived from today's standard language for the Web, HTML, rather than from TeX. In addition, its commands (called "tags," as in HTML) employ plain English words, which makes MusicML much easier to use. For example, to define an F major chord using MusicML, you would write:

```
<chord info="F">
 <note beat="quarter" name="c"></note>
 <note beat="quarter" name="a"></note>
 <note beat="quarter" name="f"></note>
</chord>
```

The <chord info="F"> tag means "this is the start of a chord" and "display *F* as the chord symbol." The next three tags define the notes in the chord along with their names and durations. Finally, the </chord> tag designates the end of the chord. Of course, even with MusicML's simpler structure, encoding an entire score still takes a lot of work.

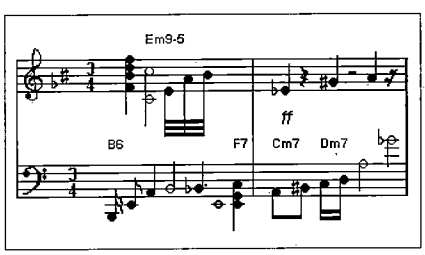


FIG. 2: MusicML is the most promising of all the text-based languages, because it is based on existing HTML and XML standards.

Unfortunately, none of today's music notation programs support the MusicML format, but because it's already based on the currently adopted Web language standards of HTML and XML, it may still have a bright future. Either way, the Connection Factory has provided support by making all of the specification code available for free downloading, so if you want to program your own editing software, you can. The Connection Factory has also created a Java applet for viewing MusicML scores within Web pages. Although this simple viewer provides no printing capabilities, the notation looks fairly good (see **Fig. 2**).

Another contender in the music-notation arena is MNML (Musical Notation Markup Language), developed by Peter Chiam Yih Wei of the Internet Research & Development Unit, National University of Singapore. In addition to being text based and offering a Java applet viewer, MNML includes a graphical notation editor called *Natural*. But *Natural* is far from being a full-featured application; it provides only a simple means of editing music notation. Furthermore, unlike MusicML, MNML is less likely to become a standard format, because MNML is not based on the existing HTML and XML standards. MNML is also more cryptic and difficult to code by hand, so working with the language almost requires use of a graphic editor.

Also worth mentioning is a product called JComposer, developed by Alu o'Neal Java Laboratories in Italy. JComposer differs slightly from the previously mentioned tools because, instead of being a new language, it is an all-in-one Java applet that lets you create as well as display scores. At the time of this writing, only a preview demo was available on the Web site. Although it appears to be less promising than MusicML, JComposer's potential remains to be seen.

THE SUNHAWK SOLUTION

None of the approaches we've talked about so far come close to solving the problem of how to sell your scores online in a secure manner. One company, however, may have the answer.

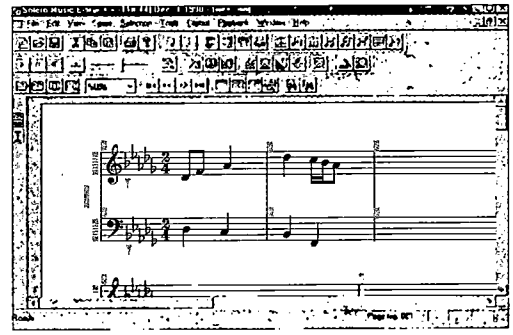


FIG. 3: *Solero Music Editor* lets you enter your score by hand or by importing a MIDI file.

Sunhawk.com has developed a unique notation file format called Solero. Solero files can accommodate complex notational requirements, and they also contain information for MIDI playback. (For more on Sunhawk, see "Tech Page: O Solero Mio" in the December 1997 issue of **EM**.) The current version of the format even provides a means for embedding MP3 audio within a file. Most importantly, however, Solero is a secure format, so notation files can easily be sold over the Web. At the moment, Sunhawk is working only with big-name companies, such as Warner Brothers. But according to Sunhawk CEO Brent Mills, the company plans to start accepting music from independent musicians later this year—as soon as several copyright issues are resolved.

Here's how the Sunhawk plan will work: Say you are an independent musician who wants to sell sheet music online in the Sunhawk format. You must first join the company's Music Lovers Club. For a one-time fee of $19.99, you'll get a club membership, a secure music purchasing account. You'll also get access to *Solero Music Editor*, which is the professional-quality music notation application that the staff at Sunhawk uses to prepare music for publication via the company's Web site (see **Fig. 3**). Using *Solero Music Editor*, you can input your music by hand or by importing a MIDI file. You can then edit the notation to your liking with the onscreen editor and save your score as an editable Rich Music Encrypted (RME) file. Next you will send the RME file to Sunhawk, where it will be converted into a secure Solero file and made available for sale on the company's Web site. Sunhawk

Upgrade

TO DTRS MASTER TAPE

No Matter which DTRS system you use.

BASF is introducing a completely new **DTRS *Master*** tape that is specifically designed to give you the ultimate performance from any DA-88 compatible digital audio system. **DTRS *Master*** delivers consistently lower block error rates (BLER) than other brands of tapes on the market — translating into fewer errors on your critical master recordings. **BASF's** specially formulated metal powder tape and super smooth surface prolong head life and stand up to the repeated shuttling and playback required in professional audio applications. A specially constructed ABS shell provides precision tracking and reduces risk of dropouts caused by static or dirt. Available in 30, 60 and 113 minute lengths.

EMTEC Magnetics

BASF by EMTEC

Distributed in North America by EMTEC Pro Media, Inc. ✆ US 1-888-295-5551 Canada 1-800-817-4478 or visit our web site at www.emtec-usa.com

SEE US AT NAMM BOOTH #528

circle #555 on reader service card

maintains a special page on its site where you will be able to track downloads and sales, and the company will also provide you with publishing royalties for each sale.

In fact, the Sunhawk Music Lovers Club is already open for business. You can sign up and gain access to the *Solero Music Editor* beta version. Even though you can't yet sell your music online through Sunhawk, you can use its editor to notate your scores and print them out. What's more, you can use the $19.99 fee toward purchases of sheet music available on Sunhawk's site, so it's almost like getting *Solero Music Editor* for free.

</FINE>

The key to simplifying music notation on the Web is the adoption of a standard-notation file format—a format for all music notation purposes, not just for the Web. As soon as everyone in the music community agrees on a single format, everything else will fall into place. Companies would simply add an export function for the new format to their notation applications. And it wouldn't be too difficult for someone to create a browser plug-in or Java applet to allow viewing the format on the Web.

Of all the possibilities, Sunhawk's Solero format is the only complete solution so far, but with a little work, MusicML could also be successful. In the meantime, if you're curious about selling your scores online, check out the Sunhawk Web site. One thing is certain: music notation on the Web offers many new creative avenues and holds the promise of a viable income opportunity.

Scott R. Garrigus *loves working with new music technology. He can't wait for the day when direct brainwave-to-notation translation becomes possible. You can contact him at www.garrigus.com.*

SIBELIUS ON THE WEB

Although it's not exactly a universal solution to the problem of adding music notation to Web sites, Sibelius Software's newly released *Sibelius for Windows* 1.1 ($599) does include a plug-in that lets you view Sibelius scores on the Internet. You simply save your score as a Web page and upload the resulting HTML file and corresponding Sibelius file to your site. You can edit the HTML document, add contact information and program notes about the piece, and modify the document to fit your Web-site layout.

Web surfers can then view and play your score (without needing *Sibelius for Windows*) as long as they have the free Sibelius browser plug-in. You can provide a link to the Sibelius Software Web site so that, if they don't already have the plug-in, they can go to the site and download it. If you need to add complex scores to your Web pages, this high-end solution may be the answer. It hasn't yet been widely accepted, but it's a step in the right direction. (For a full review of *Sibelius for Windows*, see the May 1999 issue of **EM.**)

circle #556 on reader service card

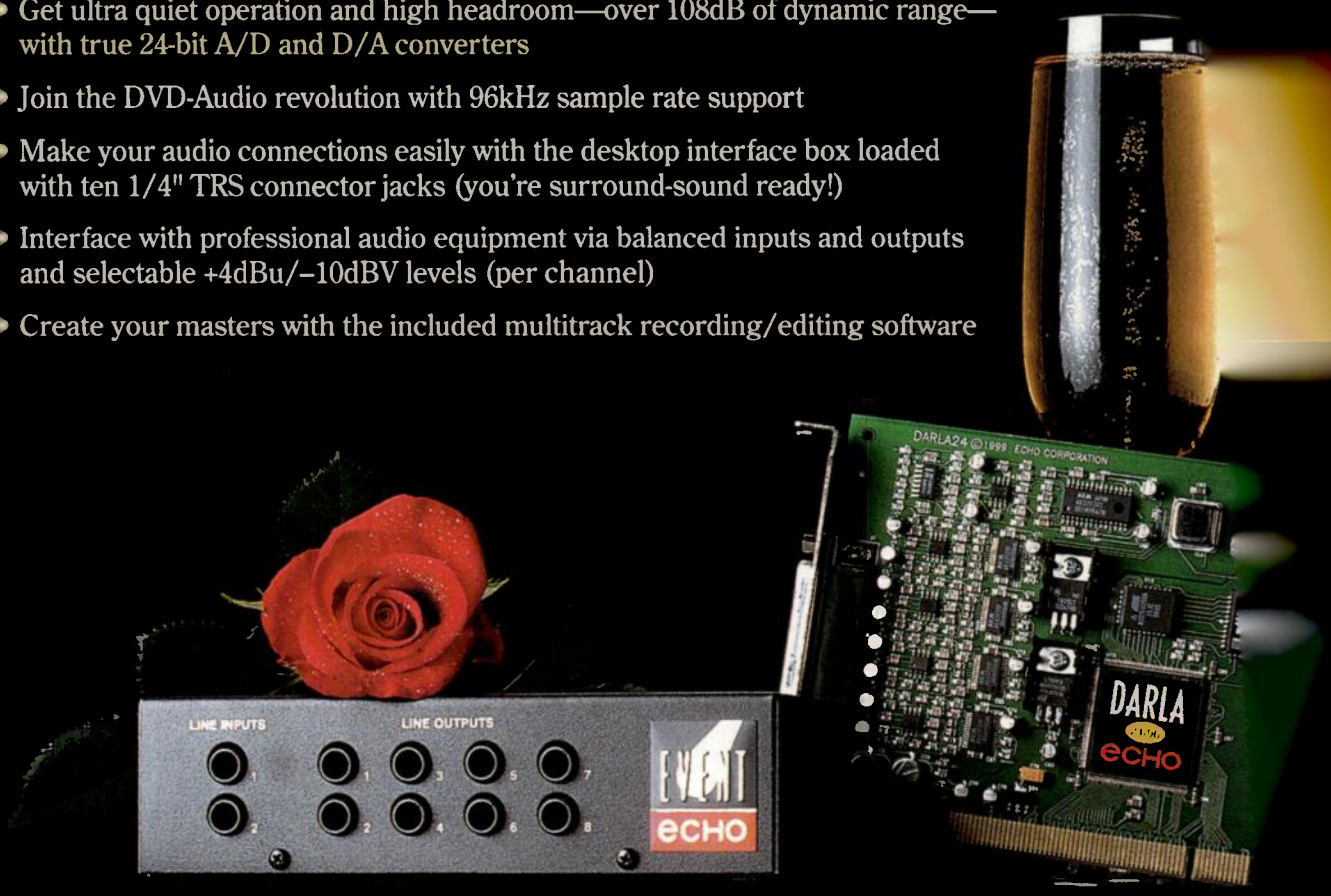
Darla just turned 24
Champagne, anyone?

Darla, along with big sisters Gina™ and Layla™, set the standards for excellence in computer-based multitrack audio. The best specs. The most flexible features. The widest compatibility. The easiest.

And now the baby of the family has really matured.

Meet Darla 24. Not just a simple evolution of a product, but a major leap forward in performance and value.

- Get ultra quiet operation and high headroom—over 108dB of dynamic range—with true 24-bit A/D and D/A converters
- Join the DVD-Audio revolution with 96kHz sample rate support
- Make your audio connections easily with the desktop interface box loaded with ten 1/4" TRS connector jacks (you're surround-sound ready!)
- Interface with professional audio equipment via balanced inputs and outputs and selectable +4dBu/–10dBV levels (per channel)
- Create your masters with the included multitrack recording/editing software



EVENT ELECTRONICS
Post Office Box 4189
ara, CA 93140-4189
oice: 805-566-7777
Fax: 805-566-7771
ail: info@event1.com
eb: www.event1.com

Darla 24™

24-bit/96kHz Professional Digital Multitrack

The little one from the world's most trusted family of affordable digital audio recorders has grown up—*big time.*

For PC and Macintosh computers. Available now at finer music stores.

Darla 24 is designed and manufactured in the U.S. by Echo Corporation. ©1999 Echo Corporation. All rights reserved.

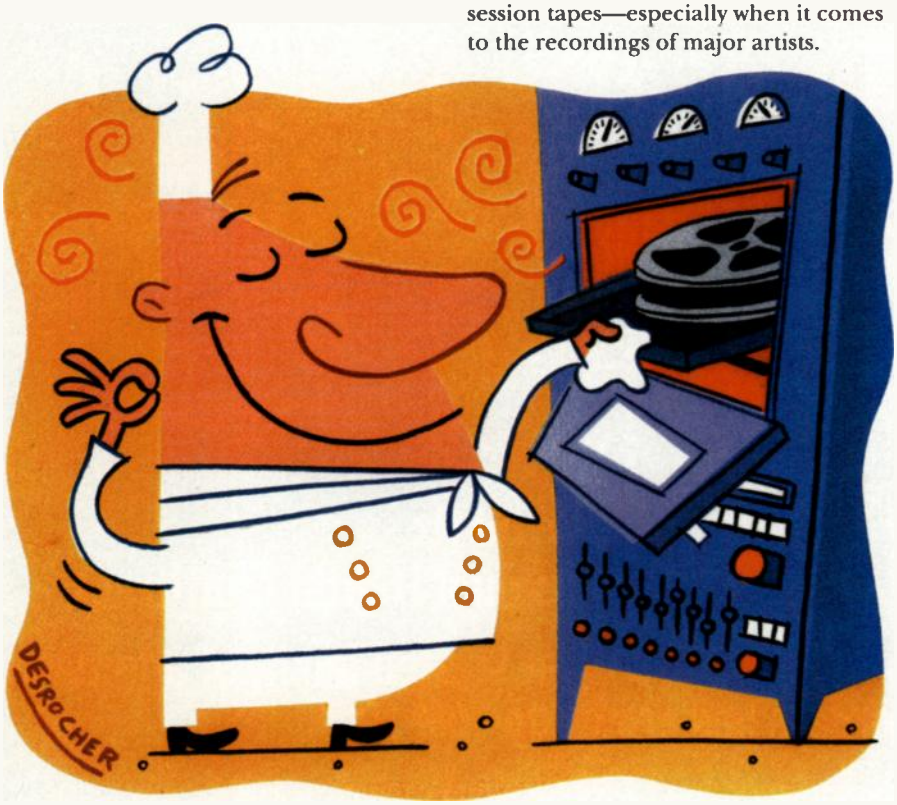
RECORDING MUSICIAN

The Twice-Baked Mix

How to cook up a slammin' remix from a 2-track master.

By Erik Hawkins

Most of the remixes that you hear on the radio are created using copies of original multitrack tapes, or *session tapes*. This is the preferred way of making a remix because having individual tracks enables you to draw from all of the raw material and gives you complete freedom to remix the parts as you desire. But one doesn't always have the luxury of working from session tapes—especially when it comes to the recordings of major artists.



JACK DESROCHER

Let's assume that you have to create a remix working only from a stereo master. This could be the case for several reasons. For example, a record company could refuse to release session tapes to you until you have submitted a rough draft of your idea (a possible scenario, especially if your work is unknown). Or maybe the original multitrack tapes and all existing copies were lost in a fire, and only the 2-track master survived. Then again, perhaps you're remixing solely for your own pleasure, in which case it doesn't make sense to petition the record company for copies of the session tapes and possibly have to pay to use them.

Whatever the reason, all is not lost. You *can* create an original, professional-quality remix working from only a 2-track master. All you need are the right tools, tricks, and attitude, and a healthy dose of creativity.

COOKING UTENSILS

You'll need the following equipment to serve up this remix morsel: a multitrack recorder such as an Alesis ADAT or a Tascam DA-38; a sampler and/or sound module; a MIDI-controllable multi-effects unit; a trigger-to-MIDI device (such as an Alesis DM5); a computer running a MIDI sequencing program that is locked to your multitrack (such as a MOTU MIDI Timepiece AV with *Performer* or an Opcode Studio 5 with Emagic's *Logic Audio*);

YOU'LL NEVER WIN A GRAMMY® FOR CALLING TECH SUPPORT.

Award-winning productions require simple, foolproof gear. That's why studio pros worldwide trust Aardvark digital audio gear to always deliver natural, dynamic sound. Now we're simplifying PC recording with the Aark 20/20. Its straightforward operation will keep you from the tangle of tech-support, while shielded outboard converters and a low-jitter clock ensure breathtaking fidelity.

For more information on the Aark 20/20 and our other professional PC recording products, please call us at 734-665-8899 or visit us on the WEB:

www.aardvark-pro.com

Aark 20/20

- 10 Inputs/10 Outputs
- +4 dBu/-10 dBv Switchable
- 24-bit S/PDIF
- Eight 20-bit A/D D/A
- MIDI In/Out
- TOSLINK Optical
- ASIO & Win 95/98
- Virtual Monitor Mixer
- Word Clock In/Out
- Tone & Silence Generator
- ADAT® Optional
- $899

Aark TDIF

- Tascam™ TDIF I/O
- 8 In / 8 Out Digital
- Tascam™ DA-88/38
- Yamaha™ 02R/03D
- Any TDIF Device
- $599

Aark DIRECT

- 4 Mic/Line Inputs
- 6 Line Outputs
- 24-bit S/PDIF
- MIDI In/Out
- Real-Time DSP Effects
- $599

Aardvark

Superior sound. Simplified.

circle #557 on reader service card

and an audio waveform editor capable of 4-track simultaneous playback (such as Digidesign's *Pro Tools PowerMix* or BIAS's *Deck*). You'll need the multitrack to record fresh performances (say, a new bass line or additional drum tracks). The sampler lets you add new sound elements. The effects processor enables you to blend reverbs and to twist and contort audio. Drums or a click track can generate MIDI events hooked up to the trigger. Sequencing allows you to work on MIDI tracks while you are synchronized to the multitrack. And the sound-editing program lets you make the final cuts and assemble the mix.

Of course, if you have the right software and a powerful enough CPU, you can do all of the above using a computer. But in this article, for the sake of clarity, I'll refer to the individual components mentioned above.

A big advantage of using a dedicated multitrack recorder (and especially an MDM) rather than a desktop recording setup is increased data portability. ADAT users, for example, can easily use other ADAT studios to capture live performances of loud sources (drums, guitar amps, and the like) that would be all but impossible to track in the average bedroom studio due to such things as space restrictions and lack of soundproofing. Because so many other studios are ADAT equipped, all you need to do is carry a few S-VHS tapes between locations. You can work this way by mail, too.

I prefer using a sampler as my sound module when I remix. This is not to say that I don't also draw upon other sound modules, such as my trusty Korg 01R/W and Clavia Nord Lead. Nor should you hesitate to use whatever sound sources you have available. The point is that you need some sort of MIDI module for adding new timbres and musical parts to the remix. A sampler is cool because it is the most flexible, the most chameleonlike. For instance, if an individual snare hit or other sound is alone at some point in the stereo mix (in the intro or at a breakdown, for example), I sample it and mix it into the new orchestrations. This helps create continuity between the original song arrangement and the new parts that I come up with.

SETTING THE TABLE

First you'll need to create a count-off and click track for the stereo master. If the song you're working with has tracks that were sequenced and then recorded digitally, your job will be easier thanks to the steady timing generated by the sequencer and the lack of wow and flutter in digital media. In fact, sometimes all you need to do to complete the job is determine the tempo with your sequencer and lock up a start time. However, if the song's groove was laid down by live players without reference to a click track—or if an original analog source is sullied by wow and flutter, which is typical—you have your work cut out for you.

I've had the best luck generating a click for a recording by playing one live along with the stereo master. Start by recording the stereo mix onto two tracks of your multitrack. Next, set up a mic and record yourself onto a separate track tapping out a click along with the music. Or you can record from a sound module.

Simple quarter notes on the beat will usually suffice. Take your time and record several takes until you get one that stays with the beat about 90 percent of the time. Don't worry about getting it perfect, though; any errant hits can be fixed afterward. And don't stress about the first few beats: chances are, you won't be able to get them right anyway because you don't have a count-off yet. (We'll create that in a minute.) If all fails because your timing isn't up to snuff, ask your friendly neighborhood drummer to come by and lay down the click track for you.

The next steps are to fix any out-of-time clicks and to create a count-off. Dump the recorded click tracks, along with the stereo mix, into your digital editor. Decide which of the takes is the tightest (or create a "best-of" compilation from different takes), and use that as your main click track.

Now, using your ears while you watch the waveforms on the screen, mark any clicks that are out of time. (Most editors provide markers or locate points.) Once you've identified the errant clicks, zoom in on the waveform and move the clicks so that they are aligned with the downbeats in the music. The downbeats should be relatively easy to see in wave form—especially if the song uses drums, in which case they will appear as nearly instantaneous amplitude peaks (see **Fig. 1**). If the tune has no drums, copy an in-time section from another place in the track or from one of your alternate click tracks, and paste it into any out-of-time sections (assuming the sections have the same time signature).

STARTERS

With the entire click track locked into the groove, you now have plenty of sections to copy to the head of the song for a count-off. But wait—live players tend to speed up and slow down over the course of a song. Therefore, grab a count from the beginning of the song to increase the likelihood of getting a count-off tempo that is consistent with the intro tempo.

A cool trick for getting the count-off to line up is to take twice as many clicks as you need. That is, if you want a one-bar count, copy two bars. The first bar will be the actual click and the second bar can be used to align the click's timing with the intro. Align the first beat of the count-off track's second bar to the first beat of the intro's first bar. If the click track—and the band—is halfway decent, the second and third beats of the overlapping tracks should line up pretty closely. When the first bar of the click track and second bar of the count track are lined up, erase the count track's second bar and merge its first

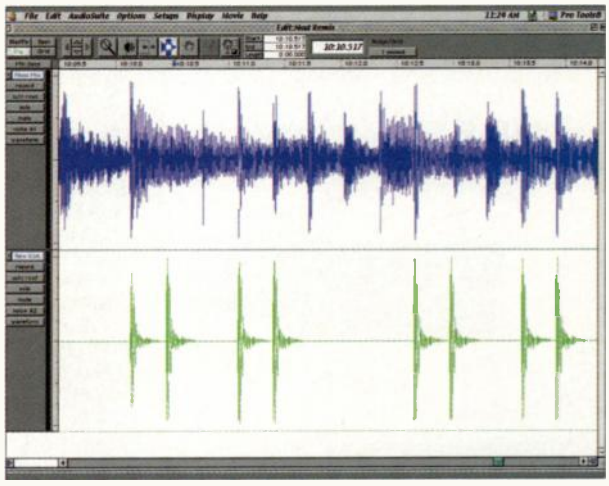


FIG. 1: Drum hits are usually easy to see in wave form. In this example, shown in Digidesign's *Pro Tools* 4, they're the largest of the amplitude peaks.

For manufacturer information, please see Contact Sheet, p. 195.

bar with the actual click track. You now have a count-off that leads accurately into the groove of the intro (see **Fig. 2**).

Now transfer the final click track and count-off back to your multitrack. Next, plug the click track into your trigger-to-MIDI converter and feed the MIDI output of the converter to your sequencer to create a tempo map. You'll need to turn on the sequencer's tap-tempo function to do this. Once the tempo map is generated, you can adjust the SMPTE offset forward by a few subframes to compensate for any MIDI delay. The end result is a perfectly locked sequence that follows all the tempo changes of the original recording.

▼

A hip variation of the beat can really "phatten" the song's feel.

circle #635 on reader service card

LES ENTREES

Now it's time to get creative. With the aid of the count-off and locked-in click track, you can begin making new tracks to go with the old orchestration. The object at this point is to generate as many ideas as possible. You could, for example, modify the original bass line, impose some new chord structures, develop countermelodies, or add percussion parts. I like to have a drummer come in—with real drums and percussion—and lay down some new grooves on top of the original beat. A hip variation of an original drum beat can really "phatten" a song's feel.

After generating a group of new tracks, print them all to the multitrack and then run them (one at a time, in stereo pairs and subgroups, or in whatever way works) back through your multi-effects processor. Experiment by trying different delays, choruses, flanges, distortions, and so on. One helpful trick is to drive the multi-effects processor's tempo from your sequencer's tempo map. That way, you can dial in cool subdivisions of the beat for multitap delays, have filters sweep in time to the music, or time-sync any other effect in interesting ways. As you come up with sounds you

circle #636 on reader service card

like, simply record and save them for mixdown.

CARVING THE TURKEY

Once everything is printed to tape, mixing is a breeze: there's no trying to recall that sound you forgot to save, or hassling with a MIDI SysEx dump that won't cooperate, or having a whole stack of outboard gear up and running (all you need is one effects unit with this method). Simply pull up—on your mixer—all the tracks you've created, and choose "sets" that go well together (for example, this bass and that percussion delay, those filter sweeps and that sample loop, the stereo master and a new pad along with a drum-machine kick). Not all the tracks you've made will mesh with each other, so find the ones that do and start mixing them to DAT. The idea is to generate as many of these remix sets as possible. Don't worry about doing fades and mutes at this point; just find your set, add EQ and reverb to taste, and let it ride.

Armed with a number of different remix sets (I usually create eight to ten), you're ready for the final step: splicing them together. Begin by loading all the sets from DAT into your editor. Having these sets lets you loop finished arrangements and blend together sections that have totally disparate effects, while they are all locked to a common tempo (and the song's original groove). Using the technique I described earlier for lining up the count-off (copying extra bars in addition to the desired section), you can crossfade and butt-splice sections together without upsetting the ebb and flow of the song's groove.

This alignment method is key to making your transitions smooth. Don't just "earball" where a beat should come in. Rather, let the amplitude peaks on the waveforms guide you as to how the groove moves and changes. By splicing your favorite remix parts together and using loops and repeating sections as refrains, you can create an extended remix (say, six to eight minutes long) from a song that was originally only three or four minutes.

DIGITAL INDIGESTION

A word to the wise: watch the number of digital transfers you make. Although everyone knows that analog transfers cause sound degradation, few people realize that digital transfers can, too. During any transfer, data can be lost and distortion introduced. This is especially true when using phono and XLR connections. (The situation is not nearly as bad with optical connections.) Therefore, try to keep your digital transfers to a minimum—say, three at most.

The following tip will help reduce your number of transfers: when you copy the stereo master over to your editor to line up the click and the count, leave the song on tape rather than erasing it from the multitrack. After all, you'll need it at mixdown. Later, you can transfer back the click and count along with any new tracks, and everything will line up perfectly. (Of course, if you have the software, computing power, and hard-drive space, you can also mix directly from the computer.)

VARIETY AND SPICE

Often, store-bought CD singles provide alternate mixes of the song (for example, instrumental and a cappella versions) in addition to the radio mix. These extra versions open up whole new worlds of possibilities (you could, for instance, have the a cappella version float over the top of an entirely new music arrangement), so be sure to make use of them if they're available. Fly the alternate mixes directly into your editor and align them to the main mix. This will sync them to the click track you created earlier. Then, transfer the alternate mixes to your multitrack and draw upon them as you create your remix sets.

If you want to take your remix to the stage, you should have no shortage of raw loop material to draw from. Knock yourself out and loop everything and anything you like. I suggest working in one- to four-bar phrases. Load all of the loops into your sampler or convert them to a recognizable format for a groove-based software program, such as Steinberg's *Cubase VST* used with *ReCycle* and *ReBirth*, or IK Multimedia's *GrooveMaker*. (*GrooveMaker*, though less flexible than *Cubase VST*, is great for working with loops on the fly.)

So have fun, get crazy, and remix like mad. With these tricks up your sleeve, you'll never have to let a little thing like not having copies of original session tapes get in the way of making a great remix.

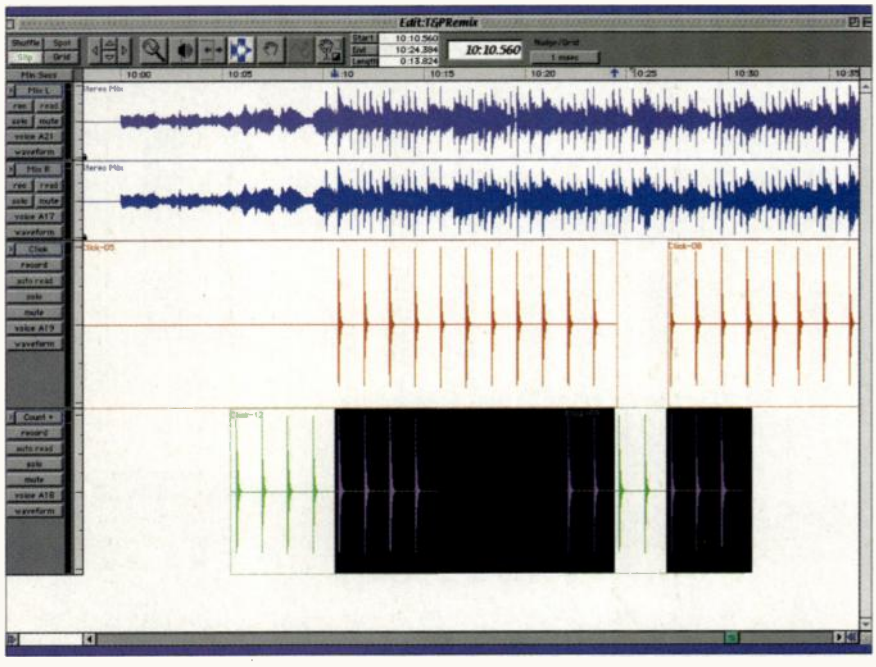


FIG. 2: This screen shot shows how an accurate count-off is created once the click track is finalized. The highlighted areas indicate the overlapping clicks that will be erased after the grooves are lined up. As long as the first few beats on either side of the section you're pasting lock in, you can be assured of a smooth transition from the count-off to the downbeat.

Erik Hawkins *is a musician/producer working in Los Angeles County and the San Francisco Bay Area. Watch for a remix album of hard-core beats and crazy grooves later this year on his indie label, MuziCali Intertainment (www.muzicali.com).*

The John Lennon®

SONGWRITING CONTEST

Categories

Rock Country
Jazz Pop World
Gospel/Inspirational
Rhythm & Blues
Hip-Hop Latin Dance
Folk Children's

Awards and Prizes

Grand Prize Winners in Each Category
$20,000 for "Song of the Year" courtesy of Maxell
$60,000 in EMI Music Publishing Contracts
$60,000 in Yamaha Project Studio Equipment
Over $200,000 in Cash Awards and Prizes
A Total of 120 Winners!

Sponsored by: Guitar Center The Musician's Choice · maxell · YAMAHA

To enter your original song(s) fill out this application and... *just imagine*

Name _____

Address _____

Apt. _____

City _____ State _____ Zip _____

Phone ( ) _____ Age _____

Song Title _____

Check one: ❑ Lyrics included ❑ Instrumental composition

Circle one (if paying by credit card): VISA MasterCard

Card # _____

Exp. _____ Signature _____

Make your check or money order for $30.00 per song payable to: **John Lennon Songwriting Contest**

Check one category only

❑ rock ❑ country ❑ jazz ❑ pop
❑ world ❑ gospel/inspirational ❑ rhythm & blues
❑ hip-hop ❑ latin ❑ dance ❑ folk ❑ children's

For more information: **www.jlsc.com**

Mail your entry to: **John Lennon Songwriting Contest**
One Haynes Avenue, Suite 105
Newark, NJ 07114

Please read all rules carefully, and then sign your name in the space provided. If entrant is under 18 years old, the signature of a parent or guardian is required.

Each entry must consist of:

- Completed and signed entry form (or photocopy). All signatures must be original.
- Audio cassette(s) containing one song only, five (5) minutes or less in length.
- Lyric sheet typed or printed legibly (please include English translation if applicable). Sheets not required for instrumental compositions.
- Check or money order for $30.00 per song (U.S. currency only) payable to John Lennon Songwriting Contest. If paying by credit card, $30.00 per song will be charged to your account.

Entries must be postmarked no later than August 31, 1999.

1. Each song submitted must be contestant's original work. Songs may not exceed five (5) minutes in length. No song previously recorded and released through national distribution in any country will be eligible. Songs may have multiple co-writers, but please designate one name only on the application. **Contestant may submit as many songs in as many categories as he/she wishes, but each entry requires a separate cassette, entry form, lyric sheet, and entrance fee. One check or money order for multiple entries/categories is permitted.** (Entrance fee is non-refundable. JLSC is not responsible for late, lost, damaged, misdirected, postage due, stolen, or misappropriated entries.)
2. Prizes: Twelve (12) Grand Prize Winners will receive $2,000 in cash, $5,000 in Yamaha project studio equipment, and a $5,000 advance from EMI Music Publishing. One (1) Grand Prize Winner will receive $20,000 for the "Song of the Year" courtesy of Maxell. Thirty-six (36) Finalists will receive $1,000. Seventy-two (72) Runners-Up will receive portable CD players.
3. Contest is open to amateur and professional songwriters. Employees of JLSC, their families, subsidiaries, and affiliates are not eligible.
4. Winners will be chosen by a select panel of judges comprised of noted songwriters, producers and music industry professionals. Songs will be judged based upon melody, composition and lyrics (when applicable). **The quality of performance and production will not be considered.** Prizes will be awarded jointly to all authors of any song; division of prizes is responsibility of winners. Void where prohibited. All federal, state, and local laws and regulations apply.
5. Winners will be notified by mail and must sign and return an affidavit of eligibility/recording rights/publicity release within 14 days of notification date. The affidavit will state that winner's song is original work and he/she holds all rights to song. Failure to sign and return such affidavit within 14 days or provision of false/inaccurate information therein will result in immediate disqualification and an alternate winner will be selected. Affidavits of winners under 18 years of age at time of award must be countersigned by parent or legal guardian. Affidavits subject to verification by JLSC and its agents. Entry constitutes permission to use winners names, likenesses, and voices for future advertising and publicity purposes without additional compensation.
6. Winners will be determined by January 15, 2000, after which each entrant will receive a list of winners in the mail. Cassettes and lyrics will not be returned.

I have read and understand the rules of the John Lennon Songwriting Contest and I accept the terms and conditions of participation. (If entrant is under 18 years old, the signature of a parent or guardian is required.)

Signature _____ Date _____

John Lennon is a trademark owned by Yoko Ono Lennon. Artwork Copyright 1996 Yoko Ono Lennon / Licensed exclusively through Bag One Arts, Ltd., NYC

circle #559 on reader service card

DOWNLOAD IT NOW !!!

NEW! UPGRADE TODAY!

Windows 98•95•NT•3.1 Friendly!

ELECTRONIC MUSICIAN 1995 EDITORS' CHOICE

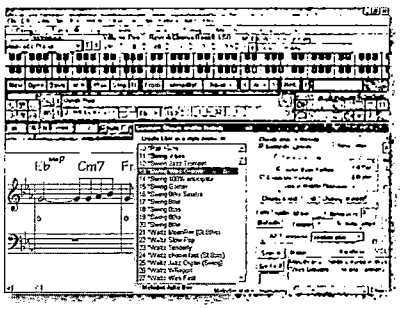
BAND-IN-A-BOX 8.0™

INTELLIGENT MUSIC SOFTWARE FOR WINDOWS IS HERE!*

(* NOTE: Macintosh Band-in-a-Box is currently available at Version 7)

Version 8 for Windows is here—Automatic Accompaniment has arrived!

The award-winning Band-in-a-Box is so easy to use! Just type in the chords for any song using standard chord symbols (like C, Fm7 or C13b9), choose the style you'd like, and Band-in-a-Box does the rest... automatically generating a complete professional quality five instrument arrangement of piano, bass, drums, guitar and strings in a wide variety of popular styles.



100 STYLES INCLUDED WITH PRO VERSION. *Jazz Swing • Bossa • Country • Ethnic • Blues Shuffle • Blues Straight • Waltz • Pop Ballad • Reggae • Shuffle Rock • Light Rock • Medium Rock • Heavy Rock • Miami Sound • Milly Pop • Funk • Jazz Waltz • Rhumba • Cha Cha • Bouncy 12/8 • Irish • Pop Ballad 12/8 • Country (triplet) • and 75 more!*

BUILT-IN SEQUENCER ALLOWS YOU TO RECORD OR EDIT MELODIES.

BUILT-IN STYLEMAKER™. *You can create your own 5 instrument styles using the* ***StyleMaker*** *section of the program.*

SUPPORT FOR OVER 70 SYNTHS BUILT-IN. *Drum & patch maps included for over 70 popular synths. General MIDI, Roland GS & SoundBlaster soundcard support included.*

STANDARD MUSIC NOTATION *and leadsheet printout of chords, melody and lyrics. Enter your songs in standard notation & print out a standard lead sheet of chords, melody and lyrics.*

AUTOMATIC HARMONIZATION. *You can select from over 100 harmonies to harmonize the melody track, or harmonize what you play along in real time. Play along in "SuperSax" harmony, or harmonize the melody with "Shearing Quintet". Create your own harmonies or edit our harmonies.*

AUTOMATIC SOLOING. *Simply select the soloist you'd like to hear and play with (from over 100 available) and Band-in-a-Box 8.0 will create & play a solo in that style, along to any song! This is hot! These solos are of the highest professional quality, rivaling ones played by great musicians, and best of all, they are different every time!*

NEW! ADDITIONAL FEATURES IN VERSION 8.0

Band-in-a-Box 8.0 for Windows breaks new ground with over 80 additional features!

BAND-IN-A-BOX 8.0 IS HERE! This major new upgrade to Band-in-a-Box includes over **eighty new features**! Among them, the most amazing new feature is called "Automatic Songs". Simply select the style of song you'd like to create, and Band-in-a-Box 8.0 will automatically generate a complete song in that style, in the key and tempo that you want, complete with intro, chords, melody, arrangement and solo improvisations. It will even help you out by auto-generating an original title for your newly created song! This is HOT! The songs created using BB are of professional quality, and best of all they're different every time! And there's much more in version 8.0... a new full-screen "leadsheet notation" window, on-screen guitar fretboard, animated drum kit display, long filename support, "undo" option and much more!

OUR CUSTOMERS LOVE VERSION 8.0! ***"I'm in awe... it truly writes great songs!... Thanks for the full-screen notation, it's just what I was hoping for.... The Drum Screen is fun!... Hey, you guys actually read my Wishlist!... You've done it again, the Melodist is unreal!"***

NEW! ADD-ONS FOR BAND-IN-A-BOX 8.0!

Euro-Tek & Jazz Fusion Styles Disk Sets PLUS 'most requested' styles... "Killer" Jazz Waltz/Older Waltz/Jazz Fusion Soloist Disk Set

- **Styles Disk 12: 20 varied new styles 'by request' (included with Ver. 8 upgrade)**
- **Styles Disk 13: Euro-Tek – 20 great new 'Euro-Tek' dance/pop/Techno styles**
- **Styles Disk 14: Jazz/Fusion – 21 hot new Jazz-Rock Fusion styles**

GET THE LATEST BAND-IN-A-BOX STYLES! Euro-Techno/Pop dance grooves, hot Jazz/Fusion styles, and a variety of the popular country, swing, rock, waltz and boogie styles you've been asking for - all utilizing the newest Band-in-a-Box features!

• Soloist Disk Set 8: 3 new soloist KnowledgeBases ("Killer" Jazz Waltz, Older Waltz, Jazz Fusion) An exciting aspect of the Soloist feature in Band-in-a-Box is that the program is able to increase its musical intelligence with new Soloist Disk Sets – it learns by "ear" and constantly gets better and better! This stunning new Soloist Disk Set includes new KnowledgeBase files as well as new Soloist definitions to extend and improve Band-in-a-Box Version 7.0 or higher. When it is installed in your bb directory you'll see new Soloists available and the existing Soloists will be automatically enhanced with dramatic results!

SPECIAL! Styles PAK – all Styles Disk add-ons 4-14... $129
NEW! Styles PAK Upgrade – Styles Disk add-ons 12, 13 & 14... $49
SPECIAL! Soloist PAK – all Soloist Disk Sets 2-8 + Bluegrass MIDI Fakebook... $99
Available on CD-ROM or floppy disks

NOTE: Soloist Disk 1 is included with Band-in-a-Box 8.0 and upgrade, so it is not offered as an upgrade. Styles Disk 12 is included with the upgrade to Band-in-a-Box Version 8.0 from an earlier version.

PG MUSIC INC. *Maker of PowerTracks and The Pianist series*
29 Cadillac Avenue, Victoria, BC, CANADA V8Z 1T3
PHONE ORDERS 1-888-PG MUSIC
1-800-268-6272 *or* **250-475-2874**
Fax 250-475-2937 *or* **Toll-Free Fax 1-877-475-1444**
SALES ORDERS & INFO FROM OUR INTERNET WEB PAGE
http://www.pgmusic.com ***VISA/MC/AMEX/cheque/MO/PO#***

Order Anytime 24 HOURS 7 Days

BAND-IN-A-BOX PRICES

FIRST-TIME PURCHASE

- Band-in-a-Box **Pro** Version 8 for Windows... $88
  Ver. 8, Styles Disks 1-3, Harmonies Disk 1, Soloist Disk Set 1 + Melodist Disk Set 1.
- Band-in-a-Box **MegaPAK** Version 8 for Windows... $249
  The MegaPAK contains "the works"—Version 8 and ALL of the Styles (1-14), Soloist (1-8), Melodist (1), Fakebook and Video add-ons.

BAND-IN-A-BOX VERSION 8 FOR WINDOWS UPGRADES

- Regular Upgrade to Version 8 from Version 7 *(requires Version 7)*... $49
  Ver. 8, Styles Disk 12 + Melodist Disk Set 1. Available on floppy disks or CD-ROM.
- Regular Upgrade to Version 8 from Version 6 or earlier or crossgrade from Mac... $59
  Includes regular Version 8 update above and Soloists Disk Set 1.

VERSION 8 FOR WINDOWS MegaPAK UPGRADES

Contains "the works"—Version 8, ALL add-on Styles Disks, ALL add-on Soloists Disk Sets, The MIDI Fakebook, & PowerGuide CD-ROM video instruction.

GREAT DEAL!

- MegaPAK upgrade from Version 7 *(requires Version 7)*... $149
- MegaPAK upgrade from Version 6 or earlier or crossgrade from Mac... $159

ADD-ONS FOR BAND-IN-A-BOX :

- Styles Disks 4-11... each $29
- **NEW!** Styles Disk #12 (included with Version 8 upgrade)... $29
- **NEW!** Styles Disk #13 – Euro-Tek dance/pop/Techno styles... $29
- **NEW!** Styles Disk #14 – Jazz/Fusion jazz rock fusion styles... $29
- **SPECIAL!** Styles PAK – Styles Disk add-ons 4-14... $129
- **NEW!** Styles PAK Upgrade – Styles Disk add-ons 12, 13 &14... $49
- Soloist Disk Sets 1-7 each $29
- **NEW!** Soloist Disk Set #8 – Killer Jazz Waltz, Older Waltz, Jazz Fusion... $29
- **SPECIAL!** Soloist PAK – all Soloist Disks 2-8 + Bluegrass MIDI Fakebook... $99
- The MIDI Fakebook for Band-in-a-Box... $29
  Includes 300 songs in a variety of styles: Traditional/Original Jazz & Pop – 50 songs; Classical (Mozart, Beethoven, etc.) – 200 songs; Bluegrass – 50 songs.

COMPREHENSIVE VIDEO INSTRUCTION FOR BAND-IN-A-BOX

- Band-in-a-Box PowerGuide CD-ROM Video... $49
  Includes Volume 1 (Basics) and Volume 2 (Advanced) of "Inside Band-in-a-Box"

SYSTEM REQUIREMENTS: Windows 98, 95, NT, 3.1; 8MB available RAM; fast 486 or better; 15 MB available disk space (Pro version); any sound card (e.g. Sound Blaster) or MIDI module (e.g. Roland Sound Canvas).
HELP! I forgot to send in the Registration Card, but I want to upgrade now!! No problem. Since the upgrade checks for any previous version of Band-in-a-Box, you can order the upgrade even if you forgot to register!

SEE US AT THINKWARE'S NAMM BOOTH #3058

HOT NEW SOFTWARE PROGRAMS CREATED BY PG MUSIC!

NEW! Multimedia Performance Series CD-ROMs! each only $49

THE BLUES GUITARIST
Multimedia Guitar Program

Professional fully featured music program containing studio-recordings of great electric blues guitar music. Listen to hot session players perform great sounding blues music, while you learn the riffs, licks and tricks! This interactive program has great "chops"—nearly an hour of hot blues plus tips and techniques.

THE ROCK GUITARIST
Multimedia Guitar Program

Listen to hot session players perform great sounding rock music while you learn the riffs, licks and tricks! Multimedia features give you the ability to mute or solo any audio track independently and study or play the part yourself. On-screen notation, tablature and chord progressions scrolls by with the band.

THE BARBERSHOP QUARTET
Volumes 1 & 2
Multimedia Vocal Program

All-time favorite Barbershop songs and an interactive multimedia history of barbershop singing in America. Made with the assistance of **SPEBSQSA** (Society for the Preservation and Encouragement of Barbershop Quartet Singing in America).

THE BACH CHORALES
Volumes 1 & 2
Multimedia Vocal Program

Inspiring performances of J.S. Bach's famous four-part Chorales by a professional choral ensemble, complete with a detailed multimedia history of the composer's life and times. On-screen notation, lyrics and chord progressions in perfect time with the singers.

THE JAZZ SAXOPHONIST
Multimedia Instrumental Program

Listen to hot session players perform great sounding jazz music, while you learn the riffs and tricks! This interactive program has great "chops" —nearly an hour of hot jazz plus tips and techniques. Seamlessly integrated MultiTrack audio, MIDI, chord symbols, and music notation for your sound card equipped PC.

ALL MULTIMEDIA/MIDI PERFORMANCE SOFTWARE TITLES FEATURE...

✔ Separate audio tracks for each part ✔ Solo, mute, combine and mix the tracks independently ✔ Transpose the music to the key of your choice ✔ Focus on any section with the versatile loop feature ✔ Slow parts down for further study with the 1/2 time feature ✔ Choose audio and/or MIDI playback ✔ Print the parts ✔ Control audio playback with the mini-mixer window ✔ Transpose or change tempo 'on-the-fly' ✔ Jump to any position in the song ✔ Jukebox mode for continuous play ✔ Mark and play your favorite songs ✔ Adjust volume, panning settings for individual parts ✔ Split the piano into right and left hand parts automatically ✔ Play along with the performance in real-time on any instrument ✔ Much more!

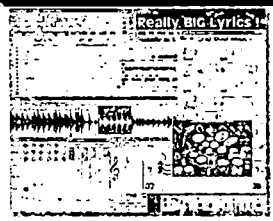
THE ROCK SAXOPHONIST
Multimedia Instrumental Program

Fully featured professional music program containing studio-recordings of great rock n' roll saxophone music. Hot session players perform great sounding rock music, while you learn the riffs and tricks! Seamlessly integrated MultiTrack audio, MIDI, chord symbols, and music notation and chord progressions.

THE SOR STUDIES FOR CLASSICAL GUITAR
Multimedia Guitar Program

Superb professional classical guitar performances of all 121 of Fernando Sor's celebrated studies for guitar (Opus 6, 29, 31, 35, 44, and 60 complete). This interactive program contains hours of music on 3 CD-ROMs PLUS complete Sor bio, historical timeline, and more powerful multimedia features.

NEW! PowerTracks Pro Audio 5 only $29



New Version. Cool Features. Same Low Price!

There are over 20 new features in PowerTracks Pro Audio 5.0... Stereo recording, VU meters for recording/playback levels, Leadsheet Notation window, Drum window with animated display of drum instruments for playback and recording, long file names and more (over 20 new features in all). PowerTracks Pro Audio is a professional, fully featured digital audio & MIDI workstation, packed with features for musicians, students & songwriters. With seamlessly integrated digital audio/MIDI recording, and built-in music notation, PowerTracks turns a typical soundcard equipped Windows PC into a music production powerhouse!

"Solid sequencing at an unbelievable price" **Electronic Musician**

- PowerTracks Pro Audio 5.0 for Windows... $29
  includes PowerTracks 5.0 + PowerGuide CD-ROM video; 2 CD-ROMs
- Upgrade to PowerTracks Pro Audio 5.0... $19
- Upgrade to PowerTracks Pro Audio 5.0 PLUS Volume 2 MultiTracks... $29
- Upgrade to PowerTracks PowerPAK Plus... $39
  includes PowerTracks 5.0 & both Volumes 1 & 2 MultiTracks CD-ROMs

DIGITAL AUDIO

WE ALSO HAVE A NEW SET OF MULTITRACKS CD'S FOR POWERTRACKS... VOLUME 2: JAZZ/BLUES/ROCK

Roland Virtual Sound Canvas VSC-88 "...sounds spectacular!" $20*

The VSC-88 software synthesizer dramatically enhances the sound quality of all your MIDI programs.

** with purchase of another PG Music product $29 or more.*

THE NEW ORLEANS PIANIST
Piano Performance Program

Over 50 "New Orleans Style" piano music standards, played on MIDI keyboard by top New Orleans pianists Henry Butler, Jon Cleary, Doc Fingers, Tom McDermott, Joel Simpson and David Torkanowsky. This is the wonderful 'rolling', 'bluesy' New Orleans piano style made famous by Professor Longhair and Dr. John. This program makes it "too easy" to be a great New Orleans pianist!

THE JAZZ SOLOIST
Instrumental Performance Program

The Jazz Soloist is a music program with professional jazz quartet arrangements of over 50 songs (per volume). Each song features a great jazz solo played by top jazz musicians, as well as piano comping, bass and drums. Includes a standalone "Jazz Soloist" program with MIDI files (files also included in Band-in-a-Box format). Vol.1: Swing (50 pieces); Vol.2: Swing (50 pieces); Vol.3: Latin/blues/waltzes (60 pieces)

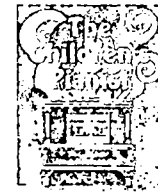
Pianist Performance Series each volume only $49

THE MODERN JAZZ PIANIST
Piano Performance Program

The Modern Jazz Pianist is the software that makes it "too easy" to learn how to be a great jazz pianist. Top studio musicians Renee Rosnes, Miles Black, Ron Johnston, and Brad Turner perform over 50 tunes in a wide variety of modern jazz styles, such as those by Herbie Hancock, Fred Hersch, Cedar Walton, Mulgrew Miller and many others. PLUS... Song memos, biographies, and information on important modern jazz pianists.

THE PIANIST
Piano Performance Program

The Pianist is a music program containing an amazingly comprehensive collection of nearly 900 of the world's greatest classical piano masterpieces, performed by world-class concert pianists! PLUS... Music Trivia questions, Guess the Song game, program notes, biographies (all on disk) & much more! Vol.1: 215 selections; Vol.2: 200 selections; Vol.3: 170 selections (incl. arrangements & duets); Vol.4: 200 selections; Vol.5: The Complete 32 Beethoven Sonatas.



THE CHILDREN'S PIANIST
Piano Performance Program

The Children's Pianist includes over 70 great piano performances of the worlds best-loved children's songs – ideal for listening or singalong! The words are displayed in a large "Karaoke" style display while the song plays so you can sing along! (Windows only) These pieces are presented with the care, artistry, and craftsmanship that will spark the interest of young and old alike. Includes piano arrangement tutorials.

THE GOSPEL PIANIST
Piano Performance Program

The Gospel Pianist is a powerful program for playing and studying a piano style that is both universally appealing and which underlies much of the blues, jazz and popular music played today. Over 50 "Gospel Style" piano standards played on MIDI keyboard by top Gospel pianists. Includes Music Trivia questions, Guess the Song game, program notes, pianist biographies (all on disk) and much more. Powerful gospel piano performances with that "old-time" feeling!

THE LATIN PIANIST
Piano Performance Program

The Latin Pianist features popular Latin pianist Rebeca Mauleón-Santana (editor of Sher Music's Latin Real Book) playing over 50 tunes in a wide variety of Latin piano styles. Includes authentic Latin and Salsa piano songs and styles such as Conga, Cumbia, Merengue, Son, Mambo, Cha-cha-cha, Guaracha, Samba, Partido Alto, and much more. This program is hot, hot, hot!

THE NEW AGE PIANIST
Piano Performance Program

Over 70 "New Age" and "New Age-Jazz" style piano pieces, performed by top New Age artists. This is a beautiful collection of solo piano compositions inspired by the natural world. Full range of piano techniques, from the style of George Winston to Chick Corea and Keith Jarret. Song memos, biographies and information on important New Age musicians. Includes photo album of stirring nature scenes and real time piano score. Over 4 hours of music!

THE BLUEGRASS BAND
Instrumental Performance Program

Our most "feel good all over" program so far, with more than 50 virtuoso performances of Bluegrass standards played live on MIDI equipped bluegrass instruments (banjo, fiddle, bass, guitar and mandolin). We've recorded top Bluegrass musicians, these MIDI files are hot! PLUS... Lots of Bluegrass pictures, biographies, and trivia (all on disk) and much more. Dazzling performances to make you "feel good all over"!

THE BLUES PIANIST
Piano Performance Program

The Blues Pianist comes in two volumes, each with over 50 great down-home blues piano stylings by top professionals playing a wide variety of blues piano styles – Boogie Woogie, slow & fast boogies, jazz blues, New Orleans style, Chicago blues and more. These are the styles made famous by Pete Johnson, Albert Ammons, Jelly Roll Morton, Meade Lux Lewis, etc. Full of info and trivia on the great piano blues masters.

THE CHRISTMAS PIANIST
Piano Performance Program

The Christmas Pianist contains great piano performances of over 50 all-time favorite Christmas songs and carols – ideal for listening or singalong. The words are displayed in a large "Karaoke" style display while the song plays so you can sing along (Windows version only)! The onscreen piano keyboard lets you see the music as it's played. Fill your home with wonderful piano music this Christmas!

30 DAY UNCONDITIONAL MONEY BACK GUARANTEE • PHONE ORDERS 1-888-PG MUSIC • WWW.PGMUSIC.COM

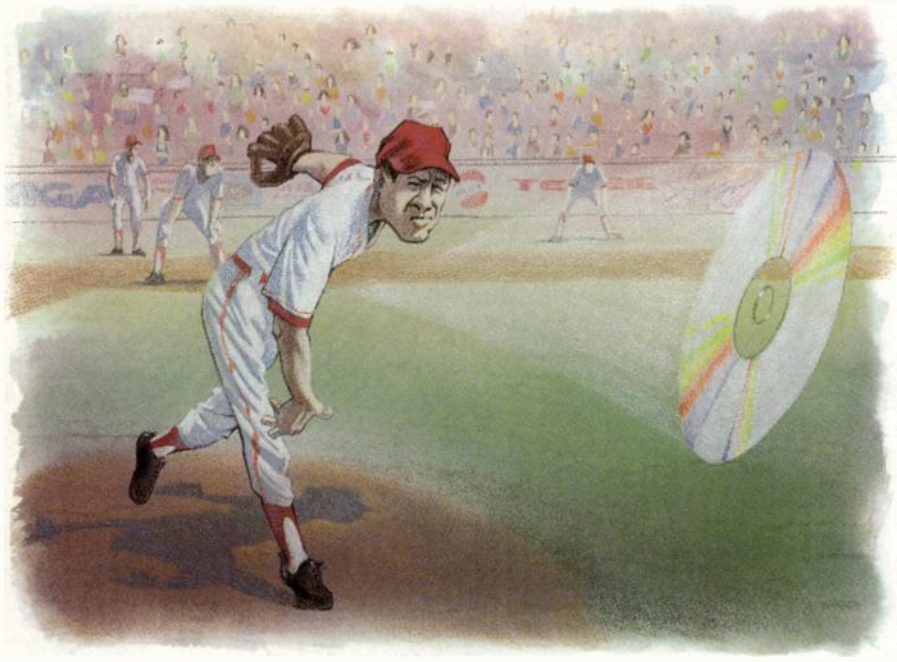
circle #560 on reader service card

Playing the Game

Pick an independent distribution strategy that will pay off.

By Erik Hawkins

Finishing your album is a monumental achievement. Congratulations, you're now the proud owner of a few thousand units, be they CDs, cassettes, or records; now, the real work begins. As if recording your album weren't hard enough, now you have to tackle the often overwhelming task of getting your product out to the public. This article covers the basics of independent distribution, explaining the four main real-world (that is, not on the Internet) methods: national independent distributors, or "national indies"; subdistributors, or "label groups"; "one-stops"; and direct distributors. To that end, I've drawn on my own experience as an independent artist, along with the sage advice of a group of folks who know the ins and outs of the distribution game firsthand (see the sidebar "Dealing Your Own Hand").



DENNIS F. AUTH

ABOUT PROMOTION

Talking about distribution without discussing promotion, or marketing, is impossible. The two go hand in hand. Getting music stores to stock your album won't do any good unless the music-buying public knows it's there. Thousands of other albums are out there, so it's up to you to make yours conspicuous.

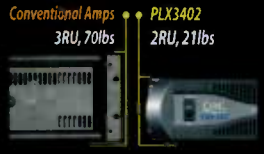
I'll discuss independent promotion next month and provide a series of tips on how you can promote your product creatively and inexpensively. For now, keep in mind that you need to provide distributors with reasons to push your product.

IN THE BEGINNING

Before you begin the distribution process, you'll need a few items: your product, a one-sheet, and a UPC (Universal Product Code, also called a bar code). It might seem obvious, but it's best to avoid promising delivery of units until you receive them from the manufacturer. Delays due to botched printing jobs and bad mastering are common

Introducing PLX3402,

because Big Power is cool, Big amps aren't.



At 3400 watts total power, 2RU and only 21 lbs, the PLX3402 delivers big power in a small, light-weight package. No more large racks and aching backs caused by lugging around old-fashioned, conventional amplifiers. Using our exclusive PowerWave™ high-frequency switching technology, this 21-pound amplifier pumps out more power in less space than a 70-pound conventional amplifier. The stiffer PowerWave™ power supply also delivers chest-pounding bass and crystal-clear highs. And with 30 years of experience building amplifiers for the worlds most demanding professionals, you can count on PLX3402 to perform all night, every night. So check out a PLX3402 and see for yourself why big power is cool and big amps aren't. For more information call (800) 854-4079 or visit www.qscaudio.com.

- *5 models from 200 to 1700 watts/ch.*
- *All models 2RU, 21lbs.*

Model	Watts per channel		
PLX	2Ω	4Ω	8Ω
1202	600	325	200
1602	800	500	300
2402	1200	700	425
3002	1500	900	550
3402	1700	1100	700

8Ω: 20 Hz–20 kHz, 0.05% THD
4Ω: 20 Hz–20 kHz, 0.05% THD
2Ω: 1 kHz, 1% THD

PLX. High Impact Power.

circle #561 on reader service card

QSC™ AUDIO

HEAR THE POWER OF TECHNOLOGY.

"PowerWave" and "Hear the Power of Technology" are trademarks of QSC Audio Products, Inc. "QSC" and the QSC logo are registered with the U.S. Patent and Trademark Office. Powerlight Patents Pending. © QSC Audio Products, Inc. 1675 MacArthur Blvd., Costa Mesa, CA 92626 USA

in the manufacturing process, and that can set your street date (the official public release date) back by several months. Money invested in print, radio, and TV ads could be wasted if you jump the gun and promote CDs that aren't in stores yet.

Every music attorney and record executive will prompt you to get a bar code; however, not everybody needs one. Plenty of underground releases have done just fine without bar codes. The UPC, the underlying bar code, and the associated "product selection number" are there essentially to help you and the store keep track of what's been sold. They also provide SoundScan with the sales numbers necessary for a release to chart. If record keeping and charting aren't important to you (as is the case with some underground labels), don't bother with a code. If these things are valuable to you, by all means get one. If you plan on selling your release in major chain stores, you must get a bar code. You can call the Uniform Code Council at (937) 435-3870 for a bar-code application, or visit its Web site (www.uc-council.org) to apply online.

Before you approach a distributor or a store, you'll need a *one-sheet*. This is a one-page description of your product that includes the artist's name; the album title; the label's name; the street date; the UPC; the product selection number; the SRP (suggested retail price); a picture of the album cover; a brief description of the project; and a list of promotional activities such as gigs, radio interviews, and print ads (see **Fig. 1**). Basically, this piece of paper sells your product. You should make it easy to read and concise—distributors and record stores receive a mountain of these and have neither the time nor the patience to read your life story, so save that for your press kit.

NATIONAL INDIES & ONE-STOPS

National independents and one-stops are alike in that they both distribute to stores. This, however, is where the similarity ends. National indies, such as the Navarre Corporation, handle national distribution and work almost exclusively with large, independent labels. They don't want to hear from you if you're a little guy. One-stops, such as Valley Media, handle regional distribution, providing product to small, independent stores and to large chains such as Tower Records. These distributors provide "one-stop shopping," as they carry a wide selection of music from unknown labels to more established, nationally recognized record companies. This service is invaluable, especially for the mom-and-pop stores. (For names and addresses of distributors, check out the *Recording Industry Sourcebook*, published annually by Intertec Publishing; tel. 800/543-7771 or 913/967-1719.)

Although national independents provide the best overall coverage, getting a deal with them is nearly impossible unless you have a proven track record. They want to see that you've had previous releases that sold well, or that you have multiple annual releases and a large promotional budget. They expect you to have the savvy and the money to launch a well-planned marketing campaign. If you don't, a national indie deal may well backfire, and you could be charged for returned merchandise while coping with an unhappy distributor who wasted time and energy pushing a product that didn't sell.

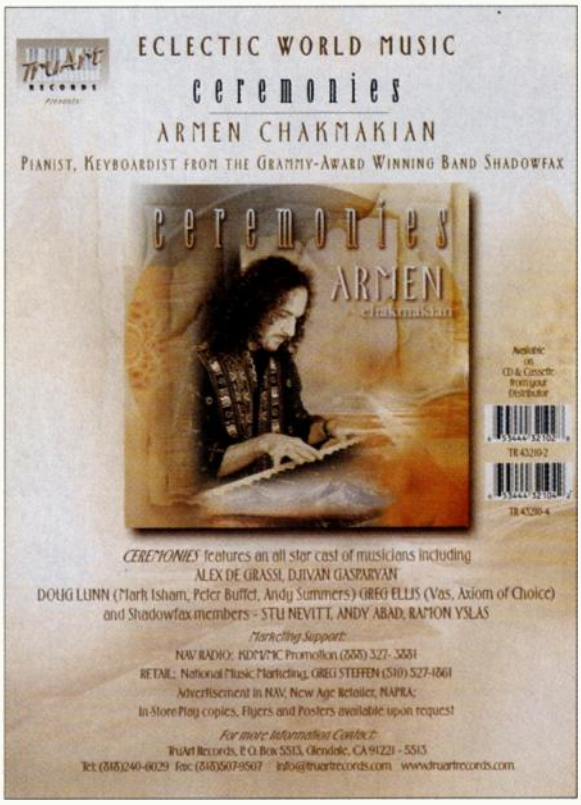


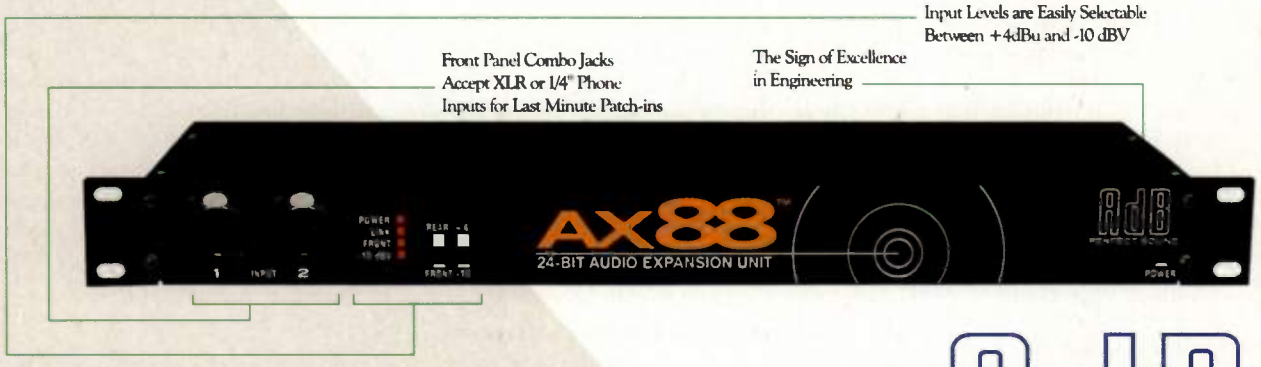
FIG. 1: Armen Chakmakian uses this one-sheet for direct distribution to smaller music stores, bookstores, and the like. Here, he gets right to the facts: he describes the current release, gives information on promotional support, and tells the retailer how to contact TruArt for copies.

Chances are that this release is your first or second official one and you're operating on a shoestring. If this is the case, forget national indies; think of them as a goal to shoot for once you've gained the marketing experience and garnered enough regional sales to tackle things on a national level.

One-stops are less picky than national indies about who they work with and will always take the time to consider your project (that is, if you present it properly). Armen Chakmakian, keyboard player for Shadowfax, remarks, "It's a lot easier to call up a one-stop than a national indie when you're an artist releasing your own album—and it's not a big deal if they don't know who you are." Because of their more liberal acceptance policies, one-stops are an excellent testing ground for new acts. They provide a great way of getting total coverage within a given region. If you want to branch out but still haven't caught the eye of a national indie, work with multiple one-stops to cover several regions simultaneously. Like national indies, one-stops expect you to support your product with a comprehensive marketing campaign, but they are generally more understanding of budget restraints and lower sales figures.

When working with a distributor, expect a 60- to 90-day waiting period before you get paid. Plan on having money in the bank while you're waiting for your first check. If the album sells well, this waiting period becomes less painful as checks start arriving regularly. National indies and one-stops both take a percentage of every unit sold; this is how they make their money. Everything is calculated according to the SRP, so be sure to have this nailed down. While every deal varies, your cut is usually about 75 percent of the store's wholesale price, which is typically 60 percent of the SRP. For example, if a CD retails for $12.99,

Unlock the Power of DSP Factory with AX88™!



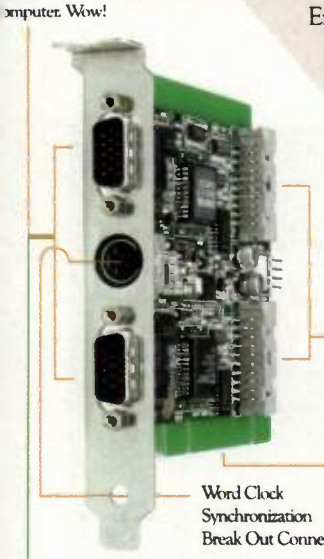
Inside the Yamaha® DSP Factory™ is the heart of a powerful recording and mixing workstation: 16 tracks of recording, 24 channels of mix-down into 16 busses, 26 totally parametric 4 band EQs, 26 dynamics units (compressor/expander/gate/compander/ etc), 2 professional stereo multi-effects units (REV500s, essentially), and many more incredible features too numerous to list.

AdB
PERFECT SOUND

But up until now this power was locked away behind too few channels of home quality I/O. Not Anymore.

Designed Exclusively for the YAMAHA DSP FACTORY

Enter AX88™. Eight channels of input, eight channels of output, pristine sound, 24-Bit, PRO +4 levels, fully balanced, Word Clock, and more. Designed by AdB, in cooperation with Yamaha, as the analog front-end to DSP Factory.



DSP Factory provides the same 32-Bit audio quality and digital processing power of the 02R mixing console used by thousands of professionals around the world to produce chart topping hits and film scores. AX88 gives you access to this power with the most transparent audio available.

The AX88, together with the DSP Factory and your choice of software interface, will turn your PC or Mac into a powerhouse professional, automated, random access recording and mixing environment, all for less than the cost of one ADAT®.

AX88 is available now. Visit our web site or give us a call today.

For ADAT equipped studios, check out LX88™.

LX88
24-BIT AUDIO EXPANSION UNIT

AdB Digital
www.adbdigital.com
ax88@adbdigital.com
770-623-1410
770-623-1629/FAX

Power, Fidelity, Flexibility.
Unlock the possibilities of your next production today.

B and AX88 are trademarks of AdB International Corporation. Yamaha, DSP Factory, & O2R are trademarks of Yamaha Corporation. Copyright 1999. All rights reserved. Specifications may change without notice.

circle #562 on reader service card

the distributor charges the stores $7.80 per unit and pays you $5.85. You could make more money if you sold to stores directly, but direct distribution is a tough job (as I'll explain shortly). Working with a distributor reaps less gross profit, but if you view it as a service you're buying, it makes sense.

SUBDISTRIBUTORS

Subdistributors come in many different shapes and sizes but always have the same underlying purpose: to act as a liaison between national indies and independent artists or small labels. These companies aim to get you the kind of distribution that large independent labels such as Interscope have. Jay Warsinske, CEO of Solid Discs Label and Distribution Group, describes subdistribution best: "Smaller entrepreneurs and labels band together to become an umbrella organization that, as a collective, can gain more respect from the national distributors and chain stores, as well as from the media." Because subdistributors represent a group of independent artists and labels, they are often called *label groups*.

Subdistributors usually offer promotional services and sometimes even have in-house record labels. If you desire national distribution and require assistance with your marketing campaign, a subdistributor may be your ticket. But beware: going this route will cost you anywhere from $20,000 to $60,000, just for starters. Aldy Damian, owner of Damian Music, explains, "You have to have a project that moves so well from the get-go that all your basic costs are covered." This is the only way you'll be able to recoup the money you paid—or were advanced—to start promotion. There will be less gross profit per unit because the pie is split in three ways: national indie, subdistributor, and your label. With a subdistributor in the loop, tag another 30 days onto your waiting time to receive checks. On the bright side, if you've found a competent label group, you can count on spending more time making music and less time marketing, distributing, and bookkeeping.

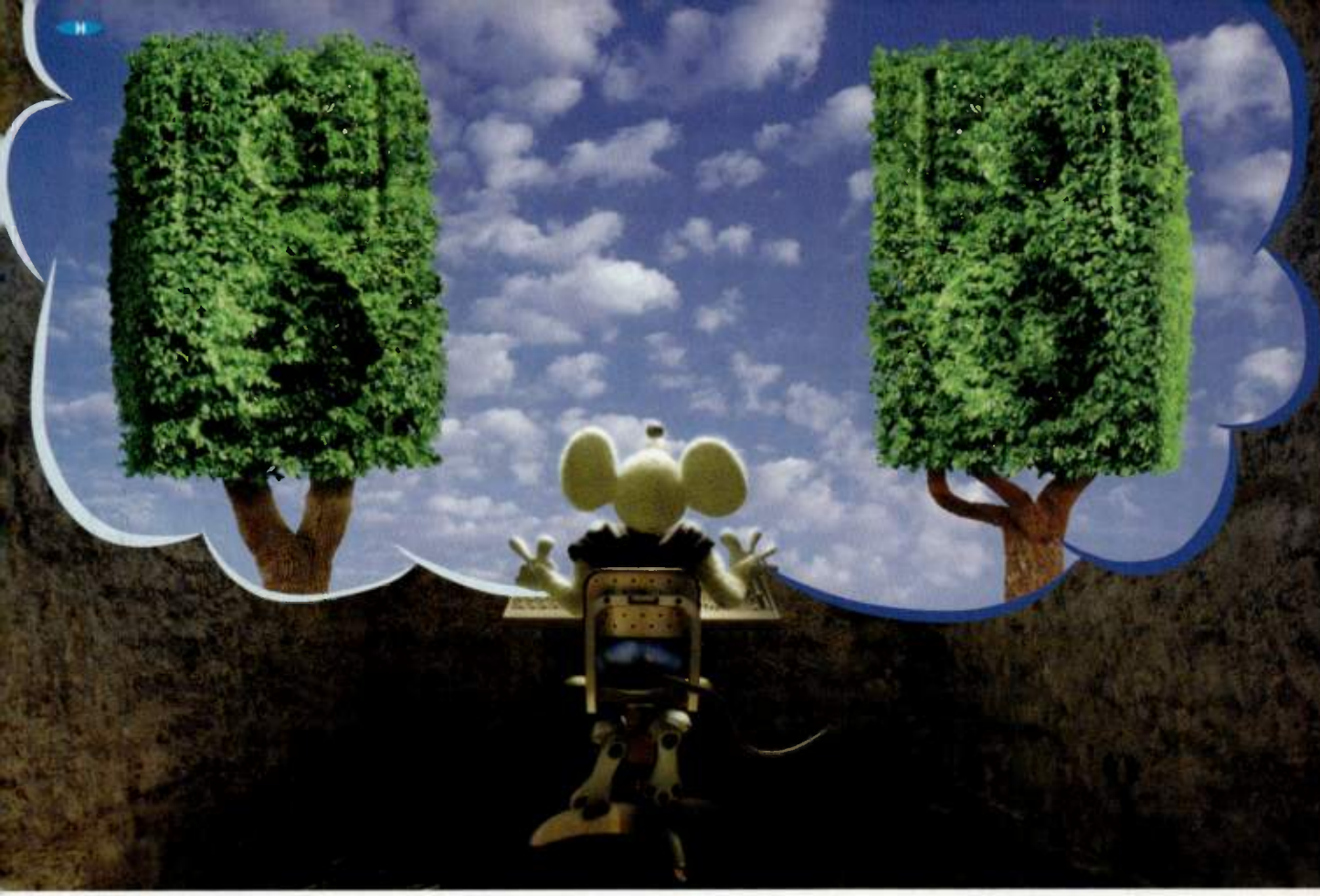
▼

Thousands of other albums are out there, so it's up to you to make yours conspicuous.

DIRECT DISTRIBUTION

With direct distribution, you hit the pavement and do things yourself. Mom-and-pop stores are generally amenable to carrying local artists' material as a service to the local music scene. Chain stores, such as Tower and Blockbuster, are harder to get into, but if local buyers feel that your product will sell, they'll probably take a few units. ABB Records' founder Beni B emphasizes that it's important to establish a relationship with buyers, no matter what size the store. "Develop, nurture, and treasure those relationships; that's how you are going to do well," he says. But regardless of what connections you

COMPUTERS & MUSIC™
SERVING PERFORMERS, EDUCATORS, COMPOSERS, PROGRAMMERS, SOUND DESIGNERS, and ALL ELECTRONIC MUSICIANS since 1982
www.computersandmusic.com
Shop our information-packed, secure online catalog for your complete home studio and professional needs.
Or call us at 800-767-6161 or fax us at 415-344-0433
or email us at compmus@well.com or stop by our store at 649 Mission Street, 2nd floor, San Francisco CA 94105
circle #563 on reader service card



GENELEC IS A REGISTERED TRADEMARK OF GENELEC OY

ACTIVATE
YOUR SPACE

Introducing the new model 1029A. It's our latest active nearfield monitoring system that has all the integrity and performance you'd expect from a Genelec. It's accurate, features amazing dynamics, and can deliver big SPL's from a plug n' play, rugged aluminum enclosure. Best of all, the 1029A is *surprisingly affordable.* Then, there's our new 1091A, a matching, active subwoofer specifically designed to be the 1029's perfect bottom-end sonic companion.

And because Genelec has 20 years of active monitor design and manufacturing, you can be sure what you hear represents the audio truth. So, regardless of your Space, large or small – or your professional persuasion – broadcaster or rock n' roll, this Genelec active monitor system will let you hear the trees – even if you're not in the forest.

GENELEC®
ACTIVE MONITORING

The Whole Truth And Nothing But The Truth.

In the U.S. please contact: Genelec Inc., 7 Tech Circle, Natick, MA 01760 Phone: 508/652-0900 Fax: 508/652-0909
International enquiries: Genelec, Olvitie 5,FIN-74100 Iisalmi, Finland, Phone +358-17-813311, Fax +358-17-812267 Web: http://www.genelec.com

circle #564 on reader service card

have, the bottom line is that stores are in business to make money. If your marketing campaign isn't generating enough interest, expect to have your merchandise returned.

To call direct distribution a lot of work would be an understatement. Of the four distribution methods mentioned here, it takes the longest hours, requires the highest level of organizational and people skills, and ultimately takes the most time away from working on your music. On the other hand, it yields the most gross profit per unit because you're not splitting the revenue with a distributor or subdistributor. Once a store decides to stock your release, it will probably do so on a consignment basis. You set the SRP, and then for each unit sold, 40 percent of the revenue goes to the store and 60 percent to you. Most stores will start by taking four or five units. If those sell, they'll order more and may even prepay if you're generating a lot of interest.

Chakmakian often gives stores an extra copy, free of charge, when they agree to consign ten or more units or when they allow him to put up promotional posters. The store may sell the extra copy, or they might offer to put it in a listening station for customers. Whatever they do with it, "free goods" provide incentive for a store to continue doing business with you.

When you work with a distributor, they take care of tracking sales, making sure the stores are stocked, and billing. When you self-distribute, all that is completely up to you. You'll need to check back with stores every few weeks, in person, and look at the stock to see if it's moving. Record stores are notoriously bad about keeping track of consignment stock. It's your job to have consignment contracts ready for the store to sign whenever you drop your product off (see **Fig. 2**). That way you and the store have a record of the units delivered and their delivery date.

REGIONAL AND INTERNATIONAL ADVICE

Pick a small but influential area (for instance, southern California or New York City) and begin by distributing

DEALING YOUR OWN HAND

The following six people, from whom valuable information was culled for this article, have all faced the same distribution questions that you may be dealing with now. With their various music-related backgrounds, they have each found independent success by creating their own solutions.

Beni B has for years been a staple on one of the nation's premier college radio stations, KALX of Berkeley, California. Intimately involved in the San Francisco Bay Area hip-hop scene, he saw the need for a label that could produce solid urban music without the fluff and immaturity that plagues hip-hop and rap. His solution was to form ABB Records, a company that has already shown its muscle by selling more than 30,000 records in just two years (specializing in vinyl) and getting one of its acts, Defari, signed to Tommy Boy. (Defari's *Focused Daily* is in stores now.) To get its product out, ABB employs a combination of one-stops—specifically, Fat Beats Distribution and TRC—and direct distribution. ABB Records; tel. (510) 419-0396; Web www.fatbeats.com/abb.

Armen Chakmakian, who is the keyboard player for the Grammy Award–winning group Shadowfax, is not content simply to rest on his laurels. His current album, *Ceremonies,* is being promoted and marketed through his own label, TruArt Records. Since the album's release last year, Chakmakian has successfully moved more than 6,500 units internationally using a combination of one-stops and larger independent distributors specializing in new-age and world music. His album debuted at No. 1 on the NAV New Age/World Radio Top 50 chart. TruArt Records; tel. (818) 240-6029; fax (818) 507-9507; Web www.truartrecords.com.

Aldy Damian worked for many years as a session drummer, touring with such luminaries as Bad Company, John Waite, and Billy Idol. Over time, he realized that running his own label could be personally fulfilling, fiscally feasible, and financially rewarding. Today he is the proud owner and president of Damian Music, an up-and-coming independent label with distribution through BMG (a distribution deal that, Aldy emphasizes, "took me nine years to get"). While the label does handle individual artists and groups, it is best known for its slick, well-produced compilation releases. These include *Downtown Julie Brown's Hip Hop Box, Best of the Dance Box,* and *The Pepsi World Album.* Damian Music; tel. (310) 373-3323; fax (310) 373-3697.

Ground Level Distribution provides promotion, marketing, and distribution services—both directly and as a subdistributor. The company occasionally signs artists or independent labels to promotion and distribution (P&D) deals. **Jeffrey High** is the company's CFO and **Mark Gordon** its president. High worked for years as a financial officer for Independent National Distributors, which used to be the nation's largest independent distributor. Gordon takes care of Ground Level Distribution's A&R and P&D deals, having had extensive experience with artists ranging from Coolio to Quincy Jones. Although Ground Level uses one-stops to cover the southern region of the United States, they mostly sell direct to chain stores such as Tower Records, Virgin, and Blockbuster. Ground Level Distribution; tel. (310) 417-8713; fax (310) 417-8712.

Jay Warsinske is the CEO of Solid Discs Label and Distribution Group, a marketing and subdistribution company. It acts as a co-op, bringing together unsigned artists and independent labels in order to have more clout with major distributors, including Navarre, the company's main distribution conduit. Warsinske has more than 25 years of experience in marketing and artist development and more than 10 years in setting up major distribution deals. He served as president and CEO of the AVC label (distributed by Capitol/EMI), held the position of national marketing director for *Cashbox* magazine, and worked on hundreds of album launches ranging from Cypress Hill to the Fugees. Solid Discs Label and Distribution; tel. (818) 763-3535; fax (818) 508-1101.

its balance of stunning design, light weight and ease of use

will remind you it's **PURE EON.**

Its performance, quality, and reliability

will remind you it's **PURE JBL.**

IF YOU THINK YOU'VE SEEN THIS EON BEFORE, THINK AGAIN.

INTRODUCING EON 1500

EON Powered Series speakers are recognized by Musicians and DJs worldwide as knockout performers. Now, the same combination of light weight, portability and great sound is also available if you already own a powered mixer or amplifier. Introducing EON 1500, featuring the technology, performance and style of the EON powered series in a new speaker designed for external amplification.

EON 1500 is heavy on the stuff that lets you sound great, but sweat less. In fact, at just 38 pounds, EON 1500 could set the sound-per-pound world record. But, what about performance? EON 1500 features proven JBL components like our liquid cooled compression driver and SonicGuard™ protection that keeps your EON 1500 working even if someone turns all the knobs to 11! Because form follows function, the rugged good looks of EON 1500's advanced copolymer materials will shrug off the damage caused by the bumps and knocks of life on the road. And, when it comes to flexibility, EON 1500's unique design allows you to use them as a main speaker, tripod mounted or a dual-angle floor monitor.

So, if speakers with great sound, portability and stunning design are an appealing thought, think no further than the new JBL EON 1500. Visit JBL Professional at www.jblpro.com or your JBL Professional dealer.

EON® 1500

JBL

A Harman International Company

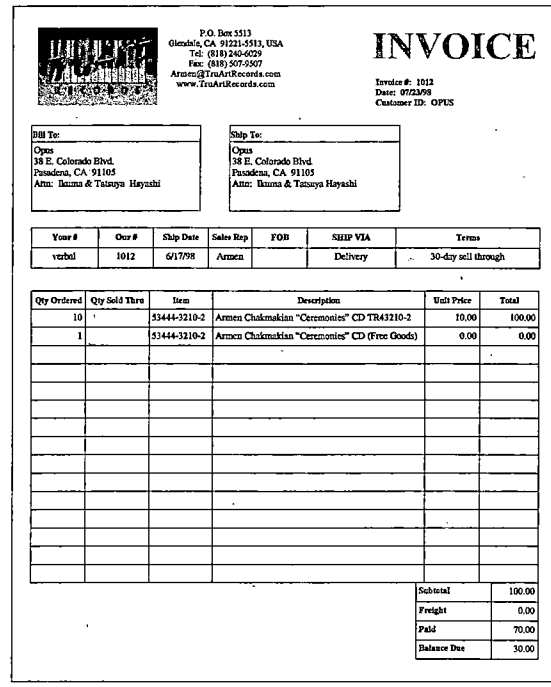
© 1999 JBL Professional

SEE US AT NAMM BOOTH #1518

circle #565 on reader service card

and promoting in that region alone. This allows you to concentrate your efforts and resources instead of spreading yourself so thin that your distribution is scattered and your promotion haphazard. "If it's working well regionally," Damian says, "you can then expand to more major distribution."

Beni B stresses the importance of including international markets. "A lot of independent distributors do the bulk of their business overseas," he says. "Some distributors get 60 percent to 70 percent of their business from the overseas market." An excellent place to meet European distributors is at the Midem conference held annually in southern France. (For more information, check the Web at www.midem.com.)



P.O. Box 5513
Glendale, CA 91221-5513, USA
Tel: (818) 240-6029
Fax: (818) 507-5507
Armen@TruArtRecords.com
www.TruArtRecords.com

INVOICE

Invoice #: 1012
Date: 07/23/98
Customer ID: OPUS

Bill To:
Opus
38 E. Colorado Blvd.
Pasadena, CA 91105
Attn: Ikuma & Tatsuya Hayashi

Ship To:
Opus
38 E. Colorado Blvd.
Pasadena, CA 91105
Attn: Ikuma & Tatsuya Hayashi

Your #	Our #	Ship Date	Sales Rep	FOB	SHIP VIA	Terms
verbal	1012	6/17/98	Armen		Delivery	30-day sell through

Qty Ordered	Qty Sold Thru	Item	Description	Unit Price	Total
10		53444-3210-2	Armen Chakmakian "Ceremonies" CD TR43210-2	10.00	100.00
1		53444-3210-2	Armen Chakmakian "Ceremonies" CD (Free Goods)	0.00	0.00

Subtotal	100.00
Freight	0.00
Paid	70.00
Balance Due	30.00

FIG. 2: The terms of Chakmakian's consignment contract states that after 30 days the store will be billed for any CDs sold. This invoice includes free goods: an extra CD at no charge.

The great thing about international sales is that your merchandise is sold in bulk; that's where the money is made. A single transaction might consist of 1,000 units sold to a German distributor servicing that entire country. Giving the overseas distributor a bulk-rate discount of $5 apiece for CDs nets you a quick $5,000. Chakmakian advises obtaining prepayment for international distribution. Get your money up front, before you ship your product out of the country, because that may be the last time you ever hear from that distributor. The last thing you want is to have to track down revenue from another country.

THE ROAD TO RICHES

In choosing your distribution method, consider what is important to you and what your financial resources are. It's crucial that you be realistic about what you can and cannot accomplish independently. Mark Gordon, president of Ground Level Distribution, advises, "The hardest thing to do is to get an artist to realize that he or she isn't really a label, but rather just an artist." If you have neither the experience, fortitude, nor money to handle promotions and distribution, don't try to. Concentrating on performing and making music may be more advantageous for you than overwhelming yourself with the distribution game. Find a good label group, enlist its services, and resign yourself to making less money per unit. If you think that you have what it takes to handle marketing, go the one-stop route. If you have superhuman powers and don't need to sleep, self-distribute.

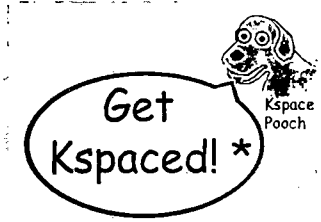
If the prospect of releasing and distributing your own project still entices you, I highly recommend *Tim Sweeney's Guide to Releasing Independent Records* from TSA Books (21213-B Hawthorne Blvd. #5255, Torrance, CA 90503; tel. 310/542-6430; fax 310/542-1300). This informative, straightforward book covers the topics in this article in more detail, with step-by-step explanations of what you need to do every step of the way.

Ground Records CFO Jeffrey High points out, "As an independent label, you don't always have to have a hit. If you can release enough product on a consistent basis, you can make a nice amount of money." Selling a few thousand units per month generates enough revenue, for most of us, to live comfortably—that's all it really takes to qualify as a successful independent. It gets even better when you consider that you don't owe an overbearing major label money, and you're more in control of your own destiny. ☯

Tired of being pimped by the music industry?

. . .Kspace gives you the tools you need to do it yourself

- Complete "one-stop" website
- Online credit card processing and toll-free phone ordering
- RealAudio/Video/MP3
- Access to customer list
- Free online calendar listings
- Automatic postings to over 700 search engines
- Inclusion in our music library for film/television licensing



* and get a custom web site with secure online ordering on Soundspace.com

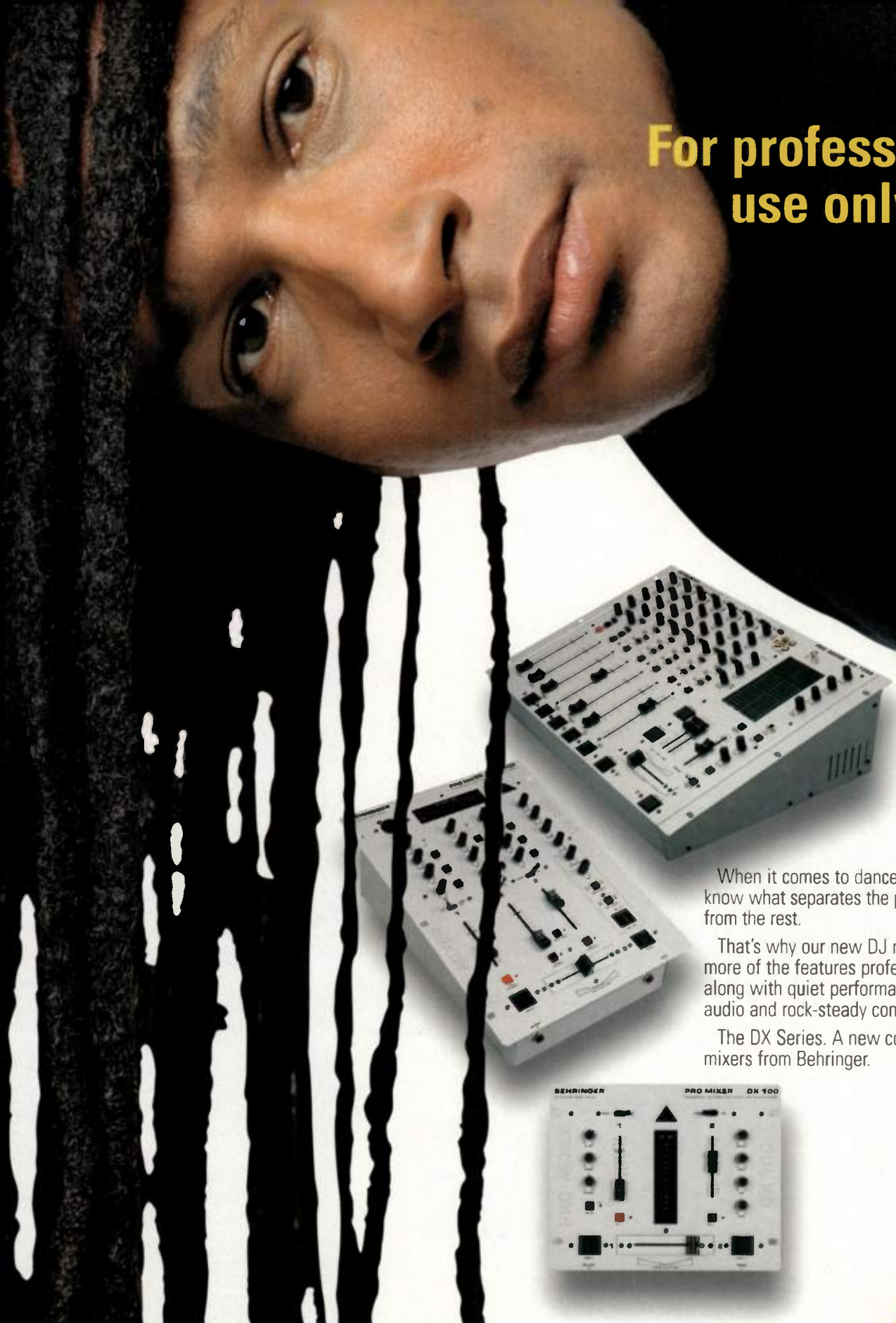
Featured in "Spinning Through Kaleidospace" by Michael Brown (Electronic Musician, March 1995)

Established January 1994
Artist owned & operated

Kaleidospace®
Independent Internet Artists
http://kspace.com
1-888-KSPACED
signup@kspace.com

circle #566 on reader service card

For professional use only.



When it comes to dance mixing, we know what separates the professionals from the rest.

That's why our new DJ mixers have more of the features professionals expect, along with quiet performance, superior audio and rock-steady construction.

The DX Series. A new concept in dance mixers from Behringer.

For more about Behringer, please call 516-364-2244, fax 516-364-3888 or visit us on the internet at www.samsontech.com

SEE US AT NAMM BOOTH #619

BEHRINGER

Your Ear Is Our Judge

circle #567 on reader service card

©1999 Samson

remix

High End Users. Low End Prices.

[L] DJ Swamp - on tour and in the studio with Beck

[R] Mario Caldato
Beastie Boys Producer
Used Vox 11 on "Intergalactic"
has also worked with: Beck, Tone-Loc, Young MC & more...

SpaceBass 3.3 - Analog Bass Synthesizer

The classic sound of the 303 is back in the house! Get the rich analog sound of the original with improved controls such as Cutoff, Resonance, and Envelope Modulation

SuperBass 4.4 - Analog Bass Synthesizer

All the features of the SpaceBass 3.3 plus Accent, Distortion, MIDI, In, Out, and Thru Connections

Vox 11 - 11 Band Vocoder

This is a great tool for creating new sounds or the classic robot voices like on the Beastie Boys' single "Intergalactic". Try modulating drumloops, voices, or giving boring old sounds a new life. The Filterbank has an infinite number of possible settings to create Vibrato, Phaser, and many different effects.

Rez 30 - Resonator

This stereo resonator effect sounds great on any sound source from drum machines to synthesizers to any audio decks (CD, turntable). Get the sounds of the 70's with 90's technology!

Bass Action Pack

next! SpaceBass 3.3 and SuperBass 4.4 are also available in packages which include a 37 keys MIDI Keyboard with Connecting Cable and Cakewalk Express 3.0 MIDI sequencing software. Sorry, computer not included :-(

Be sure to check out more DJ gear from next! at www.nextDJ.com

3 YEAR LIMITED WARRANTY ON ALL NEXT! PRODUCTS

Available exclusively in the USA from
Tracoman, Inc. 2821 Evans Street, Hollywood, FL, 33020 954.929.8999
Fax 954.929.0333 e-mail: info@tracoman.com web: www.tracoman.com

In Canada from Erikson Pro Audio, 620 McCaffery, St-Laurent, QC, H4T 1N1 800.667.3745
Fax 888.918.2244 e-mail: eriksonpro@jam-ind.com web: www.jam-ind.com/eriksonpro

next! is a trademark and copyright of Group Direct, LC. Licensed by Group Direct, LC. All rights reserved. ©1999 Tracoman, Inc.

next!

circle #568 on reader service card

Electronic Musician Presents

REMIX

THE FUTURE OF REMIX

1 THE ULTIMATE VOCODER

Finally, effects processors designed to be played like electronic instruments.

2 ANALOG HIGH ORDER FILTER

Electrix introduces performance oriented, signal processing that's tailored to the needs of Remixers, DJs, Electronic Musicians and Producers.

Featuring: • Road worthy, all-metal chassis • Intuitive user interface with large durable buttons • Analog feel, smooth parameter control with custom non-slip knobs • Built-in phono pre-amp with RCA and ¼" input and output jacks • Real-time front panel adjustments recordable as MIDI events into a sequencer.

"No presets. No menus. Just spin a knob or two and you've got monster sounds."
George Petersen - *Mix Magazine, U.S.A.*

"The fattest, funkiest Vocoder, Resonant Filter Bank and Multi-Effects units for both DJ and studio to hit planet earth for generations."
Daniel Duffell - *DJ Magazine, U.K.*

3 TIME SYNCHRONIZED FX

ELECTRIX™ HANDS ON

circle #629 on reader service card

www.electrixpro.com

Electrix is a division of IVL Technologies Limited, 6710 Bertram Place, Victoria, BC, Canada, V8M 1Z6
Tel: 250.544.4091 • Fax: 250.544.4102 • Email: electrixinfo@ivl.com

REMIX

editor's note

The Dance Dialectic

As each new issue of EM rolls off the presses and injects itself into the asphalt, fiber-optic, and synaptic passageways that make up the colossal consciousness of our society, it lodges in the brains and on the bookshelves of a slightly different set of readers. There are new readers every month, and longtime readers are constantly developing their musical interests. They're all living with another month's worth of discoveries, and they have another month's worth of music buzzing around in their minds.

Even the words *electronic musician* have a slightly different meaning as they appear on the banner of every issue. Not only do the products change at an unbelievably fast pace these days, but the cultural software that runs it—which includes everything from painstakingly developed studio techniques to the wild and elusive visions of ecstatic musicians—drives endlessly on.

It's no surprise that these relentless advances have given birth to a genre of music that doesn't conceive of itself as rooted in a particular place and time, a genre that considers the whole of music history—from a day, a decade, a century ago—as a box of brightly patterned puzzle pieces to fit into tonight's or tomorrow's mix. This is the new meaning of music synthesis, a synergistic rush of sound braided together from any song, every song, that ever meant or could mean something to the person behind the mixing board. As remixer James Lumb says, a synth uses sounds, in the form of prerecorded waveforms, as music software; a DJ is a synth that uses songs as music software. If music is about patterns, DJs who create electronic dance music have discovered that you can take a step back from the music, and a new pattern emerges. As with a fractal diagram, though, the pattern is eerily similar no matter how far you zoom in or out.

It has been suggested that we've entered a period of artistic retrenchment, in which exploring our artistic past has become more important than breaking new ground. Evidence to support this proposition is all around us, from the wave of new movies based on old novels to the return of bell-bottom pants to the neo-swing craze. I have no idea what this all means, or where it may lead us. But even if today's culture is more blatant about recycling its past, that doesn't mean that our desire to create is less strong. That much is clear from the enthusiasm of today's musicians.

By the time you read this, half a dozen new subgenres of electronic dance music will be coalescing in the minds and mixers of DJs around the world. Half a dozen more will go out of style, and thus become fodder for another revival, another recombination. It doesn't matter. People don't go to a party and count the number of tracks that get played. All they care about is that the beat goes on.

Joe Humphreys

Contents

4 This Is Remix
Light-controlled grooveboxes and dual-CD decks may seem futuristic, but remix DJs are actually carrying on the long tradition of folk musicians. Find out what all the buzz is about and how you can start remixing.
By James Lumb

6 So You Want to Be a DJ
DJs are today's rock stars. Maybe you're ready to take your shot at fame and fortune behind the turntables, or maybe you want to produce original electronic dance music. Either way, we'll show you what equipment you need to get started, and where to go from there.
By Troy Wolfe

8 Remix Roundtable
Five giants of electronica talk about making the music that makes people dance, from their first experiences with house music to their visions of electronica's future. Along the way, they reveal the equipment that they use and how they implement it.
By James Fry

14 Sponsor Product Spotlight
Our advertisers discuss the hottest new wares for remixers.

staff list

EDITOR: Joe Humphreys
EDITORIAL DIRECTOR: Steve Oppenheimer
COPY CHIEF: Patty Hammond
COPY EDITORS: Lori Fry, Gail Nelson
ART DIRECTOR: Dmitry Panich
COVER ILLUSTRATION: DKartoon
PHOTOGRAPHY: Trent Warlow

PUBLISHER: John Pledger

ADVERTISING MANAGERS:
Joanne Zola
joanne_zola@intertec.com

Joe Perry
joe_perry@intertec.com

Erika Lopez
erika_lopez@intertec.com

Julie Clark
julie_clark@intertec.com

OUR SPONSORS

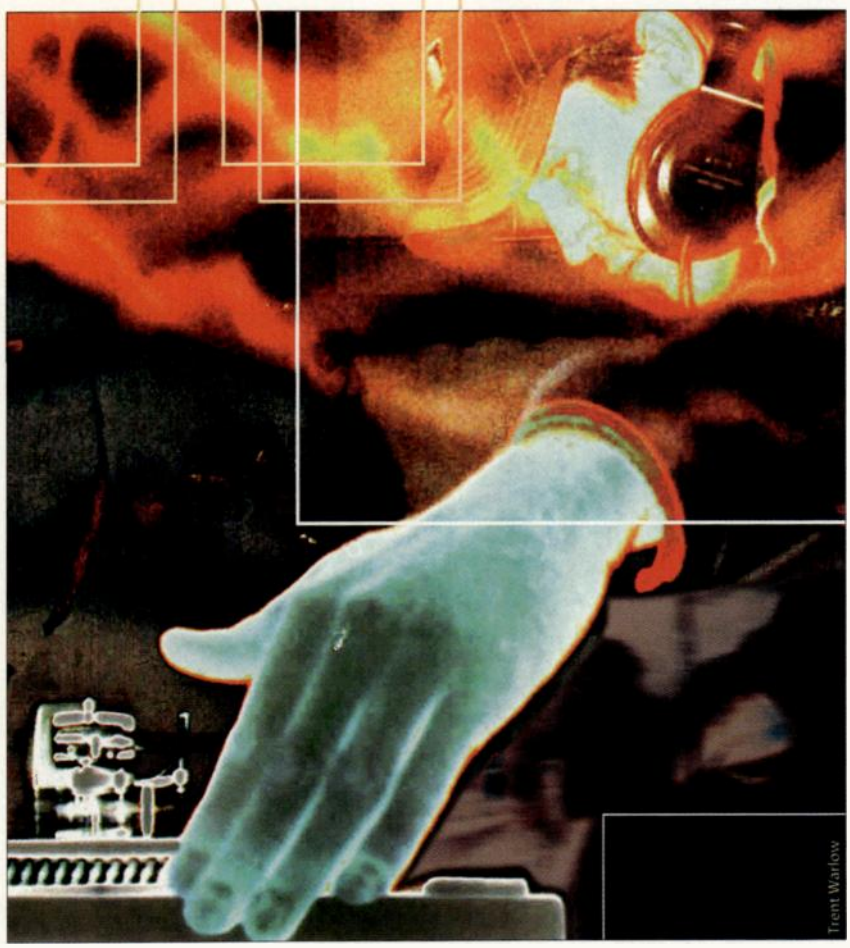
Electrix · Roland Corp. U.S. · E-mu Systems · Mixman · IK Multimedia · BitHeadz · Yamaha Corp. of America · Korg USA · Keyfax

THIS IS

REMIX

By James Lumb

If DJs are destined to be the rock stars of the 21st century, then remix is the folk music of the information age, and remixers are the garage bands of tomorrow. Remixing is a musical participation sport—anybody can do it. In the acoustic folk-music tradition, artists trade licks and melodies. In the emerging trend of electronic folk music, artists sample each other. Old tracks get recycled into new tracks, and a new art form is born: sonic collage.



Trent Warlow

How DJs and remixers are saving music.

Remix has become a broad slang term in the music industry; it applies to anything from obscure experimental electronica to Cher's latest hit. The most basic form of remixing is deejaying for yourself and your friends, making use of that huge collection of records, tapes, and CDs you've invested in over the years. Remixing is a way to explore your own musical history and present it to someone else. And it's easy to do: just hook up all your old stereo components to a mixer and start crossfading between tracks. Tape what comes out, and you have a remix. Chop it up and trick it out with effects using a computer, and you still have a remix.

RISE OF THE DJ

Although deejaying has been around since radio stations first went on the air, it blossomed during the late '60s, when discotheques became popular. With the introduction of cheap drum machines and samplers in the '80s, the deejaying scene exploded. Suddenly it was possible to create music with a machine-steady tempo that was easy to match to other beats. The art of deejaying evolved alongside machine-based music—like hip-hop, industrial, and synth pop—for a simple reason: live performance of electronic music was an expensive pain in the rear. Producers became DJs out of necessity, as a way to present their studio tracks to an audience.

Over the years, putting a DJ set together out of other people's music has earned recognition as a narrative art form. A good DJ set is often referred to as a "journey" because it takes the listener to another place, like a movie made of nothing but sound. Electronic artists depend on DJs to bring their music to the masses. A remix is an alternative version of an original piece that usually, but not always, was created as a musical tool for DJs. Remixes differ from covers in that they incorporate sampled bits of audio from the original song.

Remix DJs normally use two turntables or CD players and a small mixer to "crossfade" seamlessly between records. The DJs can speed up or slow down the tempo of a record so that the "beats" within the music played on one turntable match the beats from a very different recording on another turntable. This is called *beat matching*. In dance music, beat matching allows the DJ to produce endlessly flowing music. DJ-oriented dance tracks rarely contain tempo changes that would make beat matching more difficult to achieve. Timing changes within the music are executed live by the DJ during the performance, or "mix."

New tools for DJs are constantly appearing, and electronic music equipment is getting more affordable by the minute. Manufacturers are building hybrid musical instruments that blur the lines between remixing and live performance. DJs are no longer limited to turntables and mixers; their turntables feed compressors, performance effects, phrase samplers, and a host of other high-tech goodies that make live DJ performances unique. More and more, live instruments are making their way into the mix.

GETTING INTO THE GAME

If you already produce electronic music but want to start remixing your songs for DJs, remember that DJs are looking for tracks that work on the dance floor and can be mixed, remixed, twisted, and morphed. Remixes are often so far removed from the original recording that they become new pieces of music. A simple track that may seem "unfinished" to you can sound great when mixed with other tracks by a good DJ.

If you already own some keyboards and a drum machine, you can start remixing right away. Some of the most successful remixes in the world were created on a sampler with built-in sequencing and effects.

Typical commercial remix sessions go something like this: Starting with either a source DAT that contains portions of music or with songs from vinyl or CD, you pick a few bits you like and discard the rest. After loading these audio samples into a computer or keyboard workstation, you chop up, rearrange, and loop them to form grooves, changing the pitch, tempo, and dynamics of the original samples to fit your ideas.

There are no rules in remixing, but often a producer will start building the groove one layer at a time by adding drums, then bass, synthesizer, and sound effects. Once you have grooves you like, you use a sequencer—either computer-based or a dedicated machine—to zoom out and arrange them into a song.

How do you keep your remixed tracks from sounding like every other song out there? Drum grooves can all seem obnoxiously alike, so adding some good filtering and effects will help with the texture of the piece. Performance effects (such as the new effects boxes from Electrix) can really liven up repetitive beats. Hook them up between your turntables or CD players and your DAT machine, and resample the music while twiddling the performance knobs on the effects boxes. By using filters on drumbeats—or morphing beats through a vocoder—you can produce amazingly original results from sampled material. With performance effects you can quickly create a new groove from an old song, without spending hours chopping up beats.

On the other hand, creating a solid groove from scratch takes time and patience. In the past, producers would cut up samples individually and correct the tempo by hand—a painstaking process that could leave you hunched over a small keyboard display for days. Fortunately, computer software is now available that simplifies the process. Steinberg *ReCycle* automatically chops samples into individual notes that you can load into your sampler to play back through MIDI. Once you've dissected your samples this way, you can change the timing of individual notes or beats, making it easy to hit a steady groove. For instance, you can take a sample of a live drummer and change the groove from straight up to shuffled and back again. *ReCycle* has revolutionized drum sequencing; the drum 'n' bass dance genre is a testament to its power.

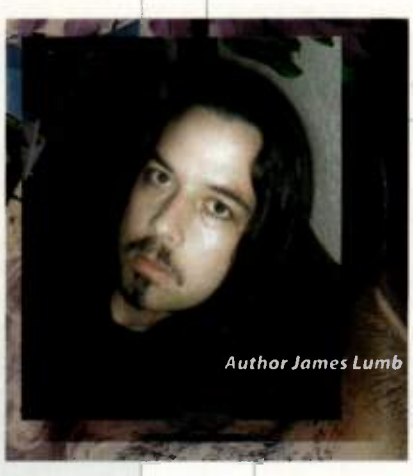
Other sample-editing programs, such as BIAS *Peak* and Sonic Foundry *Acid*, give you more tools for time stretching, beat matching, and morphing loops. Your beats become flexible in time and pitch—and with enough processing, they begin to sound rubbery. Stretching out a sample without changing its pitch creates a sound all its own.

Software-based groove synthesizers can also simplify groove building. Steinberg *ReBirth* looks like a video game and sounds like an expensive vintage acid-house rig. It contains two virtual Roland TB-303 bass-line synths alongside virtual TR-808 and TR-909 drum machines. If you want to learn about drum machines without paying the high price for hardware, *ReBirth* is a good place to start.

If you already own a personal studio and like working with other people, however, you might consider adding a DJ rig as an instrument, just as many studios have a guitar rig or a drum set. Invite some DJs over, and your studio will be churning out tracks in no time. DJs like to hang out where the gear is—getting them to go home is your problem. A simple DJ rig can cost anywhere from $400 to $1,500.

New Listening Skills

Electronic dance music is not just about creating new sounds; it is also about learning to listen to music in a different way. Popular music has long been dedicated to the song form, in which the listener remembers and recognizes a familiar musical structure of verse and chorus. The lyrics tell us what the song is about, conveying the point of view of the singer, while the music sets the mood and suggests how we should react to the content. Popular songs are very much an extension of human storytelling traditions, designed to give information, share experiences, teach lessons, and entertain. Like stories, popular songs have a structure with a beginning, middle, and end—a structure that also helps the material impart its meaning. Songs are neatly formatted into three- or four-minute packages that make them easy to listen to and, more important, easy to showcase and sell in commercial venues such as radio and television.



Author James Lumb has been creating electronic dance music since 1989.

Electronic dance music challenges us to develop new listening skills. The music is cyclic and continuous; it is designed to make you move your body, whether by swaying back and forth to your own internal groove or by thrashing around like a demented gymnast. Through electronic dance music, listening becomes less passive; the listener comes closer to being a part of the musical process.

When we hear conventional popular music, we identify with the singer or musician. Electronic dance music, by contrast, is not focused on the personalities of the performers. Rather, it fosters an approach that is egoless—in fact, it is often impossible to find out who all the various performers are. Even if you are equipped with infrared night goggles and can read the label of a spinning record in the dark, the track may be full of samples taken from several other recordings.

The repetitive nature of electronic dance music is deceptively simple. Like the shaman's drum, it represents a symbolic beating heart, the first sound we hear from inside the womb. The continual beat forces us to attune to our own rhythm and mood, acting as a bridge that connects us to ourselves and to each other. At high volumes, the music demands our whole attention, becoming an audio environment that overwhelms other stimuli. It provides a context for a personal journey.

That context brings together sounds from our past, present, and future, creating a universal perspective that crosses cultural and social borders. Whether you come from New York City or Nambia, drive a Daimler or a donkey, pay homage to Kali the Destroyer or the Great White Rabbit, you will hear something you can relate to in the wide world of electronica.

—James Fry

PERFORMANCE EFFECTS, such as THE ELECTRIX TOOLS, CAN REALLY LIVEN UP repetitive beats.

beats
beats
beats
beats
beats

If you plan to play out live, you may want to leave your computer at home. For now, computers tend to crash under poor onstage conditions—for example, when someone plugs the lights into your power strip—and taking your 1,500-pound studio out every night can be a drag. (I know this from personal experience.)

Luckily, an easier way is emerging. Every major synth manufacturer makes some sort of "groovebox," which usually incorporates sampling, looping, time stretching, and drum and synth sequencing in one device, with some performance controls thrown in. You can knock out a remix at home and play it live the same day, tailoring the individual sounds to fit the room and crowd. Grooveboxes let you get a lot closer to your audience than you can with just records.

A one-person live remix rig might contain a set of DJ turntables, CD players, and a sampling mixer. Add a microphone, a groovebox, and a couple of effects, and the level of originality soars.

THE FUTURE IS NOW

Remixing is not limited to dance music. A remix can be sampled from any piece of music: electronic music, jazz, rock, funk, classical, or world music. Whatever you like is fair game. If it can be sampled, looped, twisted, and spit back out as something new, go for it!

If you fear that the remixing trend will destroy music as we know it, think again. Remix is actually saving music. As DJs and producers sample bits and pieces of the past into their new tracks, they are acting as archivists who present our recorded musical history to a new audience. As the remix genre becomes more sophisticated, musical bibliographies have begun springing up in liner notes of new releases. Electronic-music fans often seek out the source of a sample and then buy the original. Miles Davis's records are being sold to kids who discovered his music through a sample on the dance floor.

So take that record you carefully created and release it—but remix it as well. Then show up at a party with some decks and play it for your friends. Let your friends get up on the decks and play their favorite records for you. Good tracks are hard to find, but everyone has a favorite song that no one else knows about. Share! Dance! Play! Remix is a party participation sport.

Veteran producer and remixer **James Lumb** *is generally credited with coining the term* electronica.

SO YOU WANT TO BE A DJ

By Troy Wolfe

Get the right gear no matter what you can afford to spend.

The electronic music craze has spawned one of the fastest-growing markets in the North American music industry. In Europe, where the genre is already well established, electronic music is responsible for the conception of countless bedroom studios and such an explosive proliferation of DJs that you can't swing a record bag without hitting a few. The fame of DJs in Europe is pretty much on par with that of pop stars in North America.

Dual CD decks like this Numark CDN-34, which includes a built-in mixer, are increasingly popular substitutes for turntables.

One result of this interest in making and playing electronic music is that DJs—whether in Europe or in North America—have more choices than ever when it comes to gear. The purpose of this article is to help musicians choose the right gear at the right price for the kind of work they want to do.

The first decision you'll need to make is whether you want to mix records and CDs or whether you want to create the music yourself, taking it from your initial creative impulses to performing the tracks live or seeing them preserved on vinyl or CD. A lot of music producers, especially in the dance genre, begin their careers as DJs, buying music produced by others and learning firsthand what makes people dance and what sends them off the floor to get a drink or visit the restroom. By contrast, other producers desire from the start to get involved in every stage of the creative process, making their own music from scratch. Either path you take will involve spending significant sums of money on the gear you'll need to express yourself musically.

THE ENTRY-LEVEL DJ

When it comes to DJ gear, the beginner's choices are pretty simple. The basic requirements are two turntables or CD players and a mixer with at least two channels. You'll also need a sound system and a pair of headphones so that you can hear what you're playing. (If you want to save money, you can use a pair of home-stereo headphones.)

A range of good, inexpensive turntables is out there. The ones to look for have direct drive and pitch control. Beyond that, just find a model that you like and can afford. You might want to check out the Numark TT1910 ($299), the Gemini XL-500 ($299.95) or the PT-1000 ($499.95), and American DJ TTD-2500 ($319).

To mix CDs, you'll need two variable-pitch CD players; models to look at include the American DJ DCD-PRO200 ($699), the Gemini CD-9500 ($789.95), and the Next NCD-5000 ($549). Also, Numark offers the CDN-34 ($1,150), which consists of two CD players and a mixer in one compact unit.

The other essential piece of DJ gear is the mixer. You'll need one that lets you crossfade one track seamlessly into another to create a sensation on the dance floor (of course). The bare-bones requirement is two phonograph channels, each with a level control—but even many inexpensive mixers come with three channels. Most also offer 2- or 3-band equalizers on each channel for more control over the sound. Different mixer models have different feels to them, and each has its own sound. Some less expensive mixers are the Vestax PMC-03A ($160) and PMC-005A MKII ($250), the Next PDJ-22 ($125) and CMX-460 ($290), and the Numark DM2000-X ($240).

THE ENTRY-LEVEL PRODUCER/REMIXER

Novices who have no equipment and little or no musical experience will want gear that is easy to use, versatile, and inexpensive. If you aren't familiar with electronic instruments, you may have a difficult time with even the simplest operations. Flipping through the user manuals of some synths, samplers, or effects processors, you'll quickly realize that you might have an easier time reading the complete works of Shakespeare in Sanskrit. Fortunately, some manufacturers do provide user-friendly interfaces that make life easy for the beginning producer/remixer. The Roland Groove Boxes and the new Electrix products are machines that you can use intuitively with satisfying results. They provide a wide array of preset patterns and sounds that can be quickly spliced together into tracks. The WarpFactory ($499), FilterFactory ($479), and MO-FX ($499) from newcomer Electrix offer knobs and switches that you can use to manipulate sounds on the fly for instant results. The Roland MC-303 and MC-505 Groove Boxes ($695 and $1,495, respectively) will make you feel like a pro in no time flat.

If you happen to own a computer with decent speed and adequate memory, then you have one of the most versatile and powerful tools available to an aspiring producer. A wide assortment of software can take the place of hardware-based samplers, synthesizers, mixing boards, sequencers, and effects processors. One affordable example is Cakewalk *Pro Audio* 8 for Windows. For $319 you get a sequencer, a virtual mixing console, hard-disk recording, and 32-bit effects processing. Steinberg *Cubase VST* (Mac/Win; $399) is another powerful tool that can turn your computer into a digital music workstation. Keep in mind that you may need to upgrade your PC's sound card to make the most of any music software you install.

If you don't already own a computer, however, buying one might be prohibitively expensive—especially after you factor in the cost of all the software and accessories you'll need. One of the most versatile stand-alone machines is the sampler. Armed with a good sound library (or with a desire to invent or capture your own sounds), a sampler can replace many of the functions of a synth,

The Electrix *WarpFactory* vocoder is part of a new line of effects aimed at DJs.

a drum machine, a sequencer, and an effects unit. Not all samplers will be able to perform all of these duties, but most can tackle at least a couple of them. Two great all-around samplers that provide a multitude of tools are the Yamaha A3000 ($1,999) and the Akai MPC2000 ($1,599 base model). For a no-frills unit, check out the Akai U40 Riff-O-Matic ($239.95) or the Boss SP-202 ($395). For a sampler loaded with features, check out the Roland SP-808. It costs $1,695 but includes an analog synth simulator, an 8-track hard-disk recorder, a built-in Iomega Zip drive, and effects.

Some affordable units, such as Yamaha's RM1X MIDI sequence remixer ($899) and Korg's Electribe•A and Electribe•R modeling synthesizers ($499 each), provide remix-oriented, real-time controls. Such devices might include an analog-style digital synthesizer, drum kits, a sequencer, effects, and more.

If you're using more than one piece of gear, you'll need some kind of mixing board to control the level, pan, and EQ of each sound. The Mackie MS1202-VLZ PRO ($459) is a 12-channel board with a 3-band EQ and stereo bus on each channel; it should suffice for a small personal studio.

You must also consider what you will use to record your tracks. As everyone knows, cassette tapes are pretty noisy and lose a little bit of their fidelity every time you play them. You want *digital recording*. Again, if you own a computer you can take advantage of some excellent software that allows you to digitally record onto your hard drive. You may have to pick up a second hard drive to hold your recordings—digital audio takes up a lot of space. You may also want to investigate a DAT recorder or a CD burner.

THE NEXT STEP

When you're ready to spend more money on your DJ rig, you'll probably want to buy components that have better construction and superior sound. For the last couple of decades, the industry-standard turntable has been the Technics 1200 ($699.95). This extremely rugged, high-quality deck is found in the vast majority of clubs and party venues. A recent entry that is challenging the 1200's dominance, however, is the new Numark TT-1 ($549) turntable, which offers similar quality and adds some new features, such as increased range in pitch control via a joystick controller. If you're interested in mixing CDs, look for a professional-quality dual CD player, such as the Denon DN-2000F Mk3 ($999) or DN-2500F ($1,600). The DN-2500F even offers limited sampling capabilities.

When the time comes to upgrade your mixer, two top-of-the-line models are the Pioneer DJM-500 ($1,199) and the Roland DJ-2000 ($1,495). Both have four channels and allow the DJ to apply real-time effects such as delay, flanger, and filter.

Whether you're just getting started in deejaying or personal music production or you're expanding an already successful setup, it's important to lay out your goals and then look for affordable equipment that will help you fulfill them.

Mixers like the American DJ Q-2221 Q-Deck—which features two phono, two line, two aux, and one mic input—are made especially for remix DJs.

Don't be afraid to talk to DJs, musicians, and equipment dealers, or to post questions on Internet forums. You won't find any DJs who don't want to talk about what gear they like and don't like. Advice from other DJs can be invaluable. After all, even the biggest names on the charts were beginners once.

Troy Wolfe *is a writer and DJ living in Victoria, British Columbia. Recently he became one of the first North American DJs to play in Seoul, South Korea.*

CONTACT SHEET

Akai Musical Instrument Corporation
tel. (800) 433-5627 or (817) 831-9203; fax (817) 222-1490;
e-mail akaiusa@ix.netcom.com; Web www.akai.com/akaipro

American DJ tel. (323) 582-2650; fax (323) 582-2610 ;
e-mail info@americandj.com; Web www.americandj.com

Cakewalk Music Software tel. (888) CAKEWALK or (617) 441-7870;
fax (617) 441-7887; e-mail sales@cakewalk.com;
Web www.cakewalk.com

Denon Electronics tel. (973) 575-7810; fax (973) 575-2532;
Web www.denon.com

Electrix tel. (250) 544-4120; fax (250) 544-4102; e-mail electrixinfo@ivl.com;
Web www.electrixpro.com

Gemini Sound Products Corporation tel. (800) 476-8633 or (732) 969-9000;
fax (732) 969-9090; Web www.geminidj.com

Korg USA, Inc. tel. (800) 645-3188 or (516) 333-9100; fax (516) 333-9108;
e-mail product_support@korgusa.com; Web www.korg.com

Mackie Designs tel. (800) 898-3211 or (425) 487-4333; fax (425) 487-4337;
e-mail mackie@mackie.com; Web www.mackie.com

Next/Tracoman, Inc. (distributor) tel. (954) 929-8999; fax (954) 929-0333;
e-mail info@tracoman.com; Web www.tracoman.com

Numark Industries tel. (401) 295-9000; fax (401) 295-5200;
e-mail domesticsales@numark.com or internationalsales@numark.com;
Web www.numark.com

Pioneer New Media Technologies, Inc. tel. (800) 872-4159; fax (310) 952-2309;
Web www.pioneerusa.com

Roland Corporation U.S. tel. (323) 890-3700; fax (323) 890-3701;
Web www.rolandus.com

Steinberg North America tel. (818) 993-4161; fax (818) 701-7452;
e-mail info@steinberg-na.com; Web www.us.steinberg.net

Technics tel. (201) 348-7000; fax (201) 348-7954;
Web www.panasonic.com/consumer_electronics/technics_audio/index.htm

Vestax Musical Electronics *At press time, Vestax had broken off its distribution agreement with Tracoman. Tracoman (see Next) will continue to sell the Vestax products it has in stock but cannot offer service.*

Yamaha Corporation of America tel. (714) 522-9011; fax (714) 739-2680;
e-mail info@yamaha.com; Web www.yamaha.com

REMIX

roundtable

Meet five star DJs and producers in this dance-musician summit.

by James Fry

Every genre of music creates new roles for musicians to fill—from the symphonic composer, to the opera diva, to the rock-and-roll star. As electronic dance music surges to new heights of popularity, DJs and remixers are defining the parts they play in the movement. These roles continue to shift, split, and recombine, just as the beats in a DJ's set merge and flow from one to the next. I talked to five top producers and DJs about the role they play in electronic dance music and the methods and equipment they use.

Los Angeles veteran electronica producer James Lumb of Electric Skychurch has been churning out tracks since 1989. Lumb began as a bass player for the underground psychedelic funk band the Groove Trolls in 1987 and started writing acid house tracks in 1989, armed with a drum machine and a 4-track. In the spring of 1992, working alone, he released the first Electric Skychurch single on cassette. A year later, a party in the desert—Skychurch's first live show—led to the full-blown Moontribe movement. In 1998, Lumb hit the road with DJ John Kelley and played 80 shows around the world. With a full band including drummer Alex Spurkel and singer Roxanne Morganstern, a light show, and a DJ entourage, they played to more than a quarter million people, proving themselves one of America's few big electronic acts.

Original recordings such as "Creation," "Deus," "Knowoneness," and the popular *Together* CD have earned James Lumb a reputation as one of the leading producers of electronic musicians in the world today, and after ten years of creating electronica, Electric Skychurch is still going strong. The group will release its long-awaited new material—preceded by a slew of new remixes—in the summer of 1999.

Chris Cowie produces electronic dance music under many pseudonyms but is best known for his trance act, X Cabs. Six years ago, he founded Hook Recordings, an independent dance label.

John Digweed has become one of the most respected and revered figures of the international dance scene. *DJ* magazine's prestigious list of top 100 DJs recently voted him number 7. Since founding Bedrock Records ten years ago in Hastings, England, Digweed has sold hundreds of thousands of mix CDs worldwide. Famous for his extended sets and his residency at New York's Twilo Club with long-time DJ partner Sasha, Digweed is one of the most sought-after DJs and remixers in dance music.

Paul Oakenfold is a true giant in the world of electronic dance music. From the start of his career as a hip-hop promoter and agent for the Beastie Boys and Run DMC, he has always been on the cutting edge of new music. Oakenfold was there at the very beginning—on the Spanish island of Ibiza, where itinerant Brits first began staging all-night electronic dance parties. He was one of the first people to bring this cultural phenomenon back to England. In 1985, he opened the first rave club in the United Kingdom, called the Fun House, and later he added the Project Club and the Future. All of these introduced emerging electronic dance forms to English music fans eager for a new and exciting form. This in turn led to the birth of the acid house movement in the United Kingdom., and eventually to the global rave movement.

Almost two decades later, Oakenfold continues to break new ground as a producer, remixer, and DJ. Three times he has been voted *DJ* magazine's DJ of the year, and this year the readers of *DJ* magazine voted him the world's number one DJ. Although he's one of the world's most sought-after DJs, Paul still finds time to run his U.K.-based record label, Perfecto. Over the past few years, he has remixed every group from the Rolling Stones and Snoop Dogg, to the Smashing Pumpkins and U2.

Dave Ralph, known for his energetic and uplifting sets, has been deejaying and rocking dance floors for more than two decades. A native of Manchester, England, he recently embarked on an intensive North American tour with Paul Oakenfold.

WHAT ARE YOU WORKING ON AT THE MOMENT?

[redacted]: I'm working on a new single for myself, and I just finished off two remixes. One is the Led Zeppelin song "Whole Lotta Love," which I produced for the band Quiet Riot. I ended up using the WarpFactory by Electrix and made the whole thing into a kind of dirty sex song. And I've just finished a remix of a Bob Marley song called "Mr. Brown." I've been asked to remix a lot of rock bands lately.

[redacted]: My current project is under the pseudonym Scan Carriers, and it's basically an album's worth of material. I primarily do dance music, but for this I'll be using guitars and real drummers. I'll end up sampling everything, but I'll start out with real people so it's more organic music, like a proper band. That's how I started off years ago. I'm not doing the album full time; I'll do a track here and there in between other stuff for the Hook and Bellboy labels.

[redacted]: I'm doing a remix for Fire Island. We started work on a couple of tracks about eight months ago, but I haven't had a chance to finish. It's not that I'm doing loads of gigs, but I'm traveling and trying to do some remix work as well.

[redacted]: We did a party in Panama City last night. We're doing Tallahassee tonight and New York tomorrow night; then we're off to Toronto and Cuba.

WHEN AND WHERE DID YOU FIRST HEAR ELECTRONIC DANCE MUSIC?

[redacted]: Probably at the Paradise Garage in New York in '84. Larry Levan was there at the time, and the tracks were coming out of Chicago and Detroit.

[redacted]: The first time I heard house music was on a radio station called Q103 in Manchester, played by Stu Allen. The track was "Mr. Finger's Washing Machine." This was very early stuff, around '86 or '87. They used to scratch and cut things up all over. I loved it immediately, thought it was amazing, and had to go all the way to London to about four shops to find the records. An old woman at Groove Records—she must have been around 70—totally understood house music. She had Traxx records, pressed on secondhand vinyl. They used to take old K-Tel LPs and re-press right on top of them. They always sounded bloody terrible, but you had the music.

[redacted]: I was really into New Order and alternative stuff like Bauhaus, but at the same time I was into soul and funk and then later hip-hop. As new stuff came along, I was reading magazines and always trying to stay on top of things. I can remember when the early DJ International stuff and the Chicago tracks started coming to the U.K. Things were really stepping up a peg or two. The kick drums were just so in-your-face, and that's when house music really grabbed a hold of me.

[redacted]: When I first got into electronic music, I was still playing in guitar bands. A lot of people will say they heard Kraftwerk first or Jean Michelle Jarre or whatever, but those artists were never really an influence on me. It was listening to people like New Order and Yellow and Shriekback in '82 or '83. I was always drawn to music that sounded electronic. Even "Can You Feel It?" by the Jackson Five from the '70s had a synthesizer sound.

WHAT ARE THE QUALITIES IN THIS MUSIC THAT AFFECT PEOPLE SO DEEPLY?

[redacted]: Before dance music came along, people would dance to bands like Duran Duran and get up and dance to one or two songs and sit down again. When dance music came along, people got up and danced all night. On some kind of tribal level, people just like to dance and jump about. You can basically put on a drum machine in a nightclub, and people will dance to that all night.

[redacted]: There is lots of emotion in the tracks, and it brings lots of people together. This music has made a lot of friendships, and people have shared great nights and fond memories from going out and listening to it. Electronic music is very powerful. It's playing a massive part in many films made today. You'll be watching a scene in a film, and an Underworld track will come on and send shivers up your spine.

[redacted]: If you listen to trance music, you'll hear a lot of emotion and feeling in it. If you are on a dance floor with 600 or 700 other people hearing those lush strings and beautiful melodies, it has a euphoric effect, and there's nothing wrong with a bit of euphoria. That's what it does for me. These tracks really take you somewhere, and a good DJ puts these elements together and creates a journey.

[redacted]: The energy, the melody—it's uplifting and spiritual. There's a lot of soul in it, and it really is about the feeling. It's like soul music; you listen to it from an emotional standpoint.

SOME PEOPLE VIEW THE DJ AS A KIND OF SHAMAN OR SPIRITUAL GUIDE WHO LEADS THE LISTENERS FROM ONE LEVEL OF CONSCIOUSNESS TO ANOTHER.

[redacted]: Absolutely. That's what I mean to do: take you on a spiritual journey.

WHAT ARE THE RESPONSIBILITIES THAT COME WITH SUCH A POSITION OF POWER?

[redacted]: It's no different from being a lead singer in a band. You're there to entertain and educate, and there's a fine line between the two. People pay money to come and see you, so they expect you to deliver. As a professional, I take that very seriously and do my best. Not everyone is going to like everything you do, but at least you can take them somewhere they've never been. You just have to be open-minded and go with it.

[redacted]: The DJ's responsibility is to give listeners a good time, as well as to educate them. There's a lot of new music out there, and for me it's far more rewarding to play a track that no one's heard before, programming it at the right time so the place goes absolutely mad, rather than playing an obvious record that you know will get a big reaction.

DO YOU PLAN YOUR SETS OR JUST GO WITH THE FLOW?

[redacted]: Just go with the flow. I think it's a mistake to plan a set because you don't know what the night's going to be like. You could plan a set that's totally wrong for the crowd.

[redacted]: I look at the crowd. At the end of the day, those kids are paying my wages, and I have a responsibility to entertain them. I'm not into the idea of putting your head down to concentrate on what you're doing and ignoring the crowd. I look at the people, listen to the other DJs, and then choose records that will pull people into my sound. It might take me 20 minutes to get them there. If they're not dancing, I move on. A lot of DJs don't do that.

[redacted]: The two most important records of the night are the first and the last. Then there's getting from one point to the other and building an arrangement and structure. A minor key makes you feel solemn, and a major key makes you feel happy. I need to find my rhythm in the journey; sometimes it comes right away, and sometimes it takes time to get the crowd where you want them. I can usually get there in a half hour. A three-hour mix is really one record with an intro, a middle, and an outro. I approach it the same way I would approach mixing a record.

IS THERE A TYPICAL METHOD YOU USE FOR A REMIX?

[redacted]: You always start with a kernel or seed from the original piece of music. For the Bob Marley track I'm working on, they sent me vocals extracted from the original master tapes. I find one loop I like; in this case it's the lines "Mr. Brown is a clown/that rides through town in a coffin." I load that loop into a sampler and find a tempo I like, or I might use the sampler to change the tempo and the pitch. Then I use it to write drum grooves, maybe along with a drum machine. I might work on that loop an entire day to find the right groove. Then I zoom out and use a computer to start arranging the groove, and change the original vocal sample with some effects units to give it a certain tone. Finally, I glue it all together with a synthesizer, and you have a remix.

[redacted]: It takes maybe a day or two of pre-production, then two days to mix it down. The method varies each time. If it's a song, we try and work stuff around it. If it's an instrumental, we work on rhythms and moods.

WHERE DO YOU START WHEN CREATING AN ORIGINAL TRACK?

[redacted]: I could just be sitting in my house listening to something that sounds good, and I'll get a wee surge of energy and pop into the studio. It's not like you copy it—you just get influenced, driving down the road. Generally I start with a bass line or a bass drum, but there's no set pattern. It can start with a sample. Some people have a method of working, but I think everyone is creative in their own individual way.

WHAT EQUIPMENT ARE YOU USING THESE DAYS?

[redacted]: I believe in not having too much equipment. A lot of people must buy the latest bit of equipment, and I don't do that. I use a Roland S-750 sampler, an Atari 1040ST computer, a Mackie SR32-4 mixer, an Ensoniq DP/4 effects unit, a couple of Behringer compressors, and a Roland JP-8000 synth. I don't have racks of modules and mountains of cables, and I'm still using the Atari 1040 with *Cubase*. When I play live, I have a Yamaha 02R, which is a much more expensive desk than the one I use in the studio, but it has the recall functions I need for live performance. I also use an Akai MPC2000 and a Roland S-760 for live gigs.

[redacted]: I've been doing this for about ten years, so I have 20 synthesizers and a full-blown recording studio with a Soundcraft console, a 24-track digital audio workstation, Tascam DA-88s, and a bunch of different samplers. For my live show I run two samplers, three sequencers, two drum machines, effects, and vintage analog keyboards. I also have a live drummer and a bunch of Roland digital synthesizers. I have so much equipment that I sometimes get lost—maintaining that much equipment is a pain.

WHAT COMPUTER PROGRAMS DO YOU USE REGULARLY?

[redacted]: I use Steinberg *Cubase VST/24* and Bias *Peak*. I also use Opcode *Galaxy*—a synthesizer librarian—and Steinberg *ReCycle*. What I usually do is load stuff into *Peak* from DAT, chop it up, *ReCycle* it, load it into my samplers, and then sequence it with *Cubase*.

[redacted]: I use Emagic *Notator* on an Atari. Nick Muir, who I work with, knows the Atari inside out, and he does all the programming.

I THOUGHT THE ATARI WAS OBSOLETE.

[redacted]: *[Laughs]* Yes, it is. It's not very fast, but Nick's very fast. William Orbit did most of his mixes on Atari. It all comes down to knowing your equipment. You can have the fastest computer in the world, but it's no good unless you know how to use it. When I did the Northern Exposure records with Sasha, we used Pro Tools for edits and filtering, but when we do remixes, we use the Atari.

DOES THE TECHNOLOGY SOMETIMES GET IN THE WAY OF MAKING MUSIC?

[redacted]: Yes, that definitely happened to me a couple of years ago. It was great learning the technology down to the microprocessor level, but once you've mastered it, you are left with pure expression. What's happened for me is that these electronic gizmos started out as musical instruments, then became pure technology, and now it's coming back around to pure expression.

[redacted]: It can do. You can spend a lot of time trying out new equipment and wind up forgetting about making music. When I was younger, I went through a period of buying everything, and a lot of the time it let me down. I've trimmed the studio to the bare necessities. Too much equipment can slow you down. I know my equipment inside out now, but if you are constantly buying new equipment, you are constantly learning how to use it.

WHAT PIECES OF EQUIPMENT WOULD YOU RECOMMEND TO SOMEONE WHO WANTS TO START MAKING TRACKS?

[redacted]: The first thing I tell people is to look around at what you've got, because you may have what you need already. If you have a computer, you can get freeware or shareware demo software and play with it. A computer may not be the most hi-fi way to go, but it's a good beginning. I started out with an old Ensoniq sampler with a built-in sequencer, and I did loads of mixes and remixes on that alone. A good pair of headphones, a master keyboard that samples, and a desire to do it is all you really need. I did a mix last year for a movie called *Pi*, a track called "Full Moon Generator." I was on tour and I did it in a hotel room with a Kurzweil K2000, a Mackie 1202, and a set of headphones. It turned out to be the best work I did that year.

[redacted]: The absolute essentials would be a sampler, a computer—if you are just starting out, you could pick up an Atari 1040 running *Cubase*—a mixing desk, and an effects unit that can do more than one effect at the same time, like an Ensoniq DP/4. You need a drum machine like the Novation DrumStation so you can free up the sampler. The last thing would be a sound module that you can get strings out of easily. I worked out the cost to buy a setup like this in the States, and it came to about $4,000. You don't need to spend $20,000 and get a Mac and a hard-disk recorder and all that to start.

[redacted]: I would recommend a sampler, a fairly decent keyboard, and a computer. But you could probably start out with an Akai MPC3000, which is a drum machine, sequencer, and sampler in one. You can do amazing stuff on that.

[redacted]: It all comes down to how much money you have. There are so many innovative ideas out there now, but they cost a lot. The two pieces of essential equipment would be a mixing desk and a computer fast enough to do what you want it to do. You can find software these days that will do anything. If someone gave me £10,000 [approximately $16,140], which is not a lot of money to spend on a small studio, I would spend the majority on a mixing desk, a computer with software, and a keyboard of some sort.

COMPANIES SUCH AS ELECTRIX ARE NOW MOVING TOWARD RETRO DESIGNS AND EASY INTERFACES. HAVE YOU HAD A CHANCE TO USE THE ELECTRIX GEAR YET?

[redacted]: Yes, I tried out the FilterFactory, and I liked it very much. I didn't have that much time to use it, but I could definitely see it has scope. Personally, that's more my cup of tea. Software companies will take any effects unit or EQ unit and make it a plug-in for *VST*. Some guys love that. If you can buy a brilliant reverb unit as a plug-in rather than spending a thousand pounds on the hardware, a lot of people will buy the plug-in. But then you are tied to the computer, and you still have to put the sounds into it to get the reverb unit to work. I'm more of a hands-on person. I prefer to press buttons, but I'm up for using both.

[redacted]: I used the FilterFactory on the drum machines for the Bob Marley remix. It was great because it twisted everything inside out and made it sound really good. The Electrix gear is different because of the sound quality. Most digitally controlled analog gear doesn't sound right. Any knob you turn on a MIDI system has only 128 notches on it, and you can hear a MIDI-controlled filter jump between step 50 and step 51. What I really like about the Electrix stuff is that although it's MIDI controlled, it's smooth, so it sounds more like a vintage analog unit. That's why people search out vintage filters, because they're smooth and not gritty. When I look for gear, I'm looking for smooth. You can always make it jagged if you want, but you can't make it smoother.

[redacted]: A unit showed up on my doorstep the night before I went to Miami, so I didn't have a chance to get my head around it before I left. I was planning to spark it up tonight and have a go. I'm pretty excited about getting my teeth into it. I spoke to Bruce at Twilo and suggested that he let Sasha and me loose on it, so he is having all three Electrix units installed at the club. By the time they are installed, we'll both be up to speed on them. That should take it to the next level.

[redacted]: I tried one at my studio in Liverpool recently and it looked really fine. I didn't have time to hook it up to a pair of decks, but I patched it into my mixing deck. It was really interesting, and I would like to see where it can go. You can do a really big filter sweep with very little effort. I haven't tried it in a working environment, but it worked really well in a studio in the short time I had to play around with it. I like the MIDI features that let you record the sweeps as you go.

dave ralph/nick mc

Trent Warlow

WHAT ARE THE MOST EXCITING NEW DEVELOPMENTS IN ELECTRONIC MUSIC TECHNOLOGY?

[redacted]: Cheap hard-disk recording. If you are using samplers, one of the big limitations is memory. Samplers really lend themselves to drums because a drum hit takes up a small portion of memory. But with a hard-disk recorder, you can record, say, a four-minute passage of music, like a slowly evolving synthesizer passage that's never the same twice. All of a sudden, a producer with an $899 iMac has the ability to record a studio-quality vocal track, a bass track, or even a sound-effects track. So it can take electronic music one step away from the loop and help you focus on arrangement and composition. Cheap hard-disk recorders bridge the gap between electronic music and so-called real music. The successful hybrid artists are the ones with access to high-end technology—like the stuff from New York, where they put minimal beats behind a full orchestra. Everyone will be able to do that soon.

[redacted]: In the next few years, digital desks and mixing consoles like the Yamaha O2R will get better. They are a bit cold sounding right now, but they will improve and have more knobs. Some people say mixing consoles will be obsolete because you can do it all with a computer, but I don't think computers are powerful enough to do everything. Even if they could, you'd lose a lot of the human element. There will always be hands-on people who like to turn knobs and push buttons.

Of course the biggest developments are with computers. Look at *Cubase VST* and all the plug-ins you can get for that. The companies that make effects units must be getting a bit worried because you can buy loads of effects plug-ins quite cheaply. I've tried some, and they are very good. But you still can't plug an XLR microphone into the back of a computer. All these things will come, but not every producer wants to sit there looking at a screen all day. I'm not against computers, but I don't think people want to do everything with a computer.

WHAT ARE THE CONSIDERATIONS WHEN CHOOSING SOFTWARE OVER HARDWARE?

[redacted]: The computer-based stuff isn't really there yet. Computers are a great interface with the gear you already have. When I remix, I use my computer as an interface with my samplers. I digitally load all the information I need. If someone gives me a DAT tape to remix—five minutes of audio and some disembodied voices—I'll load it into my computer and chop it up really fast, then shoot it down the wire into the samplers and start working on it in a more traditional way. The computer is supposed to do everything, but in reality it doesn't do any one thing really well.

I've also found that the more applications you use, the more time you spend making sure the computer is still running. One of the biggest complaints I hear is, "I'm a musician, not a computer technician." People are spending a lot of time keeping their computers running—cleaning off the hard drive, checking for viruses, updating and debugging software. There's a lot to be said for sitting down at a keyboard with a built-in sequencer that works the same way every day and doesn't crash.

I once did an entire recording session that completely failed because of a timing synchronization bug in the software—we lost a month's work! The song was so fast that the MIDI port couldn't keep up with the music, so we had to buy a Yamaha tabletop sequencer, which ran better than the computer. USB—a new interface standard for computers—will hopefully make it a little more solid in the future. At the moment, if you are doing a lot of really fast work, I recommend dumping it into a dedicated machine that doesn't have to worry about drawing a picture onscreen. You might also find that you like the sound a little better.

IS THERE A TREND TOWARD USING MORE ORGANIC SOUNDS IN ELECTRONIC MIXES?

[redacted]: We go out with field recorders and collect sounds. It's something that the computer is really good for. With electronic music, people use samples and make a track, then the track gets sampled, and so on, until this audio is five or six generations down the road and it gets flat and loses its dynamic range. If you go back and listen to [Pink Floyd's] *Dark Side of the Moon* or some classical music, the depth and detail in the recording will blow you away. You wonder how to get that depth back into your recordings. The answer is to get a microphone, record some stuff, and put it into the background of your electronic track. That will create a depth and ambience behind the beats and really open it up.

[redacted]: Smart producers use organic sounds. Vocals are organic, and dance music has used them since day one. I don't think there's a conscious trend, but smart producers know that a little organic feel helps the track, especially if it's a good track. In a record store, you'll probably find nothing organic in 80 percent of the records. Sometimes when you hear an acoustic guitar in a breakdown, you don't know if some guy came in to play the part or not. The samples are so good that you can barely tell the difference now. I can tell the difference, but the average club goer would think that it was a real guitar.

DO YOU THINK COMPUTER-BASED HOME-RECORDING STUDIOS WILL EVENTUALLY BECOME A THREAT TO EXISTING RECORD LABELS?

[redacted]: The biggest threat to major record companies is the Internet. One guy can basically set up his own label in his house, make music, and distribute it anywhere. That's a few years away, but it will definitely happen. As for the guy in his basement burning a few CDs, that's not going to bother the major record labels. But the Internet will be a problem for the record stores. If a label like ours could bypass distribution and sell direct to the public, it would make a lot more money.

DO YOU SEE A TREND TOWARD DJS USING MORE EQUIPMENT ONSTAGE?

[redacted]: Yes, definitely. I've had a Numark mixer for ten years now, and it has a little sampler and effects unit. It's been a great tool, but things like the FilterFactory from Electrix, which can really buck up the sounds, take it to the next level.

[redacted]: I don't see why they shouldn't. It's not the most difficult job in the world to put two records together, and if you can make that sound more interesting by adding more technology, then I'm all for it as long as it's not overdone. Some people with those Pioneer mixers just go on and on and on, flanging and phasing. Sometimes less is more. Ease of use is important, as well as whether you can understand the equipment quickly and put it into effect.

[redacted]: That's been developing for a long time. I've used live guitarists and live percussion. I've used vocalists and MCs and programmed drum machines. But it's a fine line because you can program all your own rhythms, and nobody really knows you're mixing them in.

WHAT ARE THE CURRENT TRENDS IN ELECTRONIC MUSIC, AND WHERE IS IT GOING?

[redacted]: I have no idea. It is changing at such a rapid rate that it would be really hard to predict, but I think it will just get bigger. In the past five or six years I've seen it become a huge worldwide scene. I play in countries all over the world and get pretty much the same reaction everywhere I go. In the future, we'll see more and more people making electronic music, taking elements from different cultures and just continuing to grow. The music is truly international. I can play in Russia and not speak a word of the language, but there are smiles on their faces, and they're enjoying the music as much as anywhere I go.

[redacted]: Right now, trance has become incredibly popular in the U.K. and all over Europe and America. A lot of DJs are really getting into that sound, and for me it's a way forward. I don't play breakbeat, but I know that people like the Chemical Brothers are incredibly popular. As for where the music is going next, new sounds keep coming in, and people keep pushing the boundaries.

[redacted]: In the U.K. and Europe, youth culture *is* dance culture now. You have 24-hour dance radio and the biggest rock bands in the world, who all want dance remixes. The majority of the pop charts are dance music. One of the biggest music publications recently reported that turntables are now outselling guitars three to one. So there's a big shift. Young people want to buy turntables and be DJs. You can make a dance record in your bedroom, and in the U.K. it can sell 2 million copies.

[redacted]: My father likes to ask me when this dance-music thing is going to stop, but it's not going to stop because it is the new rock and roll. I don't know where it will be in ten years, but I'm 99 percent certain that people will still want to dance.

James Fry *is a writer and filmmaker living in Victoria, British Columbia. He recently completed* The Rave Culture, *an in-depth look at dance culture.*

SPONSOR ADVERTISING SECTION

ELECTRIX HANDS ON

Electrix THE FUTURE OF REMIX

www.electrixpro.com

Electrix is proud to introduce a completely new line of live-performance-oriented signal processor products specifically tailored to the needs of the remix DJ/musician. Electrix is the first-ever line of effects processors designed to be played like electronic instruments. Featuring large knobs and buttons that offer real-time, 'hands-on' control, Electrix will open new doors of unbridled creative control for DJs, performance-oriented musicians, remixers, engineers, singers, and producers.

Designed to full MIDI specs, every knob, button action, and parameter control on an Electrix product is transmitted via MIDI as a Continuous Controller message. Each Electrix product allows the user to record real-time, front-panel adjustments (or performances), as MIDI events, into a sequencer and will also accept MIDI clock. Selectable phono preamp inputs enable Electrix processors to be inserted directly between a turntable and a mixer if desired. No auxiliary sends are required to cue effects. Electrix all have kick-ass, road-worthy aluminum chassis that are both rack-mountable and tabletop. Our products seamlessly cross the boundaries between the DJ, studio production and 'live' performance.

"No presets. No menus. Just spin a knob or two and you've got monster sounds."
George Petersen - Mix Magazine - U.S.A.

"The fattest, funkiest Vocoder, Resonant Filter Bank and Multi Effects units for both DJ and studio to hit planet Earth for generations."
Daniel Duffell - DJ Magazine - UK

FILTERFACTORY

FilterFactory is an Analog High Order Filter that is performance-oriented, MIDI controllable, and designed specifically for DJs and remixers. FilterFactory offers direct control over frequency, resonance, LFO rate, and LFO depth, with selectable waveforms and tap-tempo. Distortion level and drive are also included. FilterFactory can be used on vinyl, samplers, keyboards, or just about anything. Take the classic sounds of filtering to a whole new level of control and creativity!

FEATURES:

- Distortion block with drive and level control.
- Stereo Filter block with rotary controls for frequency and resonance, filter type, and 2-pole stereo or 4-pole mono operation.
- Filter Modulation block with control over rate, depth, waveform type (one-shot mode) with Tap Tempo.

- Phono input enables the product to be inserted directly between the turntable and the mixer. No auxiliary sends required to cue your effects!
- Simple user interface lets you perform real-time operations that send MIDI messages.
- Stereo processing.
- Desktop or rack-mountable Future-Retro design.
- Switching Microphone, Line, and Phono inputs.
- Internal power supply that accommodates international voltages.

WARPFACTORY

WarpFactory is the ultimate Vocoder for DJs, remixers, and producers. WarpFactory superimposes the Formant (the signal to shape the sound) on to the Source (the sound to be shaped) creating 'out-of-this-world' sounds. Morph or "Warp" any two signals together such as: vocals and synthesizers, samplers and turntables, drummachines and synths. The possibilities of WarpFactory are unlimited! Just add imagination!

FEATURES:

- Front-panel mic formant input with hard-wire microphone bypass.
- +4 -10 line (formant) input.
- Stereo source input: 1/4" TRS and RCA jacks.
- Switching line level / phono pre-amp.
- Stereo output: 1/4" TRS and RCA jacks.
- MIDI in/out/thru with channel select.
- Bypass foot-switch.
- Internal power supply that accommodates international voltages.

MO FX

Mo-FX is a time-synchronized, DJ- and remix-oriented multi-fx processor. Emphasis is placed on real-time control and "playability" of the effects. Engage or momentarily "blast" any or all the four modules: distortion, flange, auto-pan/tremolo, and delay. NO PRESETS or PROGRAMMING. Mo-FX is the ultimate live and studio remix signal processor!

FEATURES:

- Stereo processing.
- Desktop or rack-mountable Future-Retro design.
- Band filtering for each effect block.
- Stereo input: ¼" TRS and RCA jacks.
- Switchable line level / phono pre-amp.
- Stereo output: ¼" TRS and RCA jacks.
- MIDI in/out/thru with channel select.
- Bypass footswitch
- Internal power supply that accommodates international voltages.

Roland Corporation U.S. GROOVE LINE-UP

www.rolandus.com

As the art of remixing evolves, so do its tools. Roland realizes the need for evolution from the classic "X0X" drum machines and synths of the past—an esteemed lineage which includes the legendary Roland TR-808, TR-909 and TB-303—to modern-day wonders like the MC-505 Groovebox, SP-808 Groove Sampler and DJ-2000 Professional DJ Mixer. This evolution is a must because as the complexity of groove music rises, the gear must not only "keep up" but continue to inspire.

Remixers are essentially the hybrid of musicians and DJs. Using common musical instruments—like samplers, synthesizers and digital recorders—they produce completely new arrangements for already well-established songs. By using instruments like the MC-303 or MC-505 Grooveboxes, remixers can quickly experiment with different concepts and ideas, creating mixes they might not have come up with using records or samples alone.

Samplers and digital recorders are two of the major tools for remixers, and the SP-808 deftly combines the two into one power-packed box. SP-808 users can grab a sample from any audio source and then mutate it into something completely new using the onboard effects processing, realtime control knobs, and dual D-Beam* controller. The SP-808 also acts as a hard-disk recorder by sequencing the samples that are on its built-in Zip® disk.

The innovative new DJ-2000 and DJ-1000 mixers combine an effects processor and a synth with a DJ mixer. Instead of having to run the outputs of their mixers into several different processors to get an effect, remixers can now use the interfaces of their DJ mixer to sync to the tempo of the incoming audio and apply unique DJ-oriented effects to their music. The Roland DJ mixers also give users the ability to sync incoming audio to MIDI, giving remixers the "missing link" between vinyl and CD to MIDI-based gear like the Roland Groove products.

By incorporating Roland's line of Groove products into their studios, remixers can take groove music production to a whole new level. Which is exactly the way Roland would have it...

*D-Beam controller technology has been licensed from Interactive Light, Inc.

KORG® Korg USA ELECTRIBE & KAOSS PAD

www.korg.com

Imagine this. . . you're at the hottest club in town watching DJ Badass scratching and spinning up a storm. Suddenly, he starts creating fresh new electronic grooves and rhythm patterns on two "silver boxes," and the crowd goes wild! The intensity builds as he uses a different silver box to add new effects to the record he's spinning. Then, your buddy tells you he saw a remixer using those same silver boxes at the studio last week.

So what's going on here? No, you're not in the "Twilight Zone." What you've experienced is KORG's ticket to creating the most outrageous electronic/dance music: the Electribe(R rhythm synth, the Electribe A analog modeling synth, and the KAOSS PAD dynamic effect/controller.

The **Electribe R** is a four-part DSP-based synth containing four additional PCM sound sources (two hi-hat, one crash, one clap). The familiar interface allows you to create your own drum sounds by controlling pitch, modulation depth, waveform shape and more simply by tweaking a few knobs. The **Electribe A** is a two-part DSP-based synth offering two oscillators per voice (with modulation capabilities such as Ring Modulation, Sync, and Decimator), a resonant filter, and distortion, delay, tempo delay, or chorus/flanger effects. Both units have 256 patterns that can be assigned to sixteen step keys, for easy switching during use. The step-grid interface allows for real-time or step sequencing of your sounds. Additionally, external audio signals can be gated in time with your rhythm pattern (Electribe R), or processed to form a unique new sound (Electribe A). With so many great features, these units will inspire any performance or studio track.

The **KAOSS PAD** is a unique product that provides a new kind of real-time control over digital effect processing for any audio source (records, CDs, samplers, keyboards, etc.). The X-Y pad controls the way in which effects are applied by modifying separate parameters in the horizontal and vertical directions. Achieving powerful new effects is as simple as the tap (or scrape) of a finger. "Oh, sure," you say, "it probably has just a few standard, boring effects." Wrong! The KAOSS PAD provides 60 effect programs including resonant filter, reverb, phaser/chorus/flanger, pitch shifting, delays—even sampling. With the KAOSS PAD, DJ-mixing and sound-processing possibilities are endless!

So, for aggressive new sounds, check out the 'Tribe, and while you're at it, cause a little 'KAOSS.' Just plug 'em in and let 'em rip!!!

SPONSOR ADVERTISING SECTION

E-MU SYSTEMS

E4 ULTRA SAMPLER

www.emu.com

E-MU's new E4 Ultra samplers are incredibly powerful remixing tools, giving you everything you need to take the original audio that you are remixing and stretch it, compress it, manipulate rhythm and otherwise turn it on its head. With up to 128 MB of sample memory, you can easily sample the various tracks (or sections of tracks) of your original source material and assign them to separate voices within the E4 Ultra. Many of the E4's functions are automated (looping, crossfading, truncating), and are faster than ever with the E4 Ultra's new lightning-fast 32-bit processor.

Once you have sampled your material, you can use the E4 Ultra's arsenal of digital tools to remix your material in any way you want. You can time compress/expand your samples to change the BPM, with no change in pitch or audio quality. Transposing your samples up or down is no problem with the E4, allowing you to change the key of your remix with pristine fidelity. The E4 Ultra also provides you with a large palette of DSP tools like Doppler shift panning functions, sample reverse, transform multiply, digital resampling, and an Aphex Aural Exciter® algorithm to add clarity and brilliance to your sounds. Together with a dual 24-bit stereo effects processor with over 40 algorithms, the E4 Ultra gives you the tools to transform your original material into something from another world.

You can manipulate your samples further using the E4 Ultra's new Beat-Munging tool, which automatically analyzes and segments your samples into their separate beats, allowing you to take out beats, change the loop's time signature (i.e. from 4/4 to 7/8), and/or change the swing factor. You can now easily sample unrelated material and match tempo, time, and feel to fit your remix. Beat-Munging allows you to alter all parameters in real-time, encouraging you to experiment with your sounds—a tweaker's delight!

E-MU has a rich history that dates back to the days of analog modular synthesis, and we developed DMS (Digital Modular Synthesis) to allow you to recreate desirable analog synth features and effects entirely in the digital domain. You can use the E4 Ultra's virtual PatchCord architecture to easily target the 21 legendary Z-Plane filters, two LFOs, tuning functions, and three fully independent six-segment envelope generators (per sample!) to create any sound imaginable.

The E4 Ultra is available in three models, with an unsurpassed array of hardware options (polyphony upgrade, I/O configurations, soundROMs, etc.). E-MU virtually invented affordable, high-performance sampling, and we are committed to providing the quality and features you need and have come to expect from the leader in digital sampling— experience state-of-the-art sampling for yourself!

YAMAHA

RM1X SEQUENCER/REMIXER & SU700 SAMPLER/SEQUENCER LOOP FACTORY

www.yamaha.com

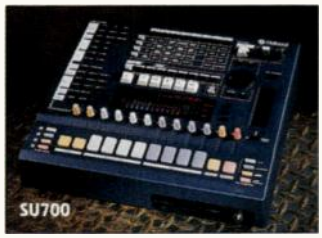
RM1X SEQUENCER REMIXER

The RM1X is the industry's first MIDI Sequence Remixer. With the popularity of remixing as a style and production technique, Yamaha introduces a new way of remixing MIDI sequence data. With a library of over 7000 of the phattest drum, bass, guitar, percussion and keyboard phrases ever, the ability to import standard MIDI files, a selection of 654 of the voices targeted to today's dance and hip-hop markets and 46 kickin' drum kits, the RM1X is instantly ready to create awesome grooves and cutting edge dance tracks.

RM1X SEQUENCER REMIXER: MAIN FEATURES

654 normal voices and 46 drum kits
50 preset styles, 960 preset patterns, 7726 preset phrases
8 Multi Function Real Time Control Knobs
Real-time play effects including harmonize, Beat stretch, clock shift, gate time and velocity offset
Powerful 16-track 110,000 note sequencer with 480/ppq resolution
3 On-Board Effect Processors

+ 24 dB 50 Hz to 2KHz digital low boost EQ
Built-in HDD Floppy Disk Drive
Large back-lit LCD display and four display knobs
The RM1X offers hip-hop and dance remix artists and producers a radical new tool to remix and create today's music for $899.
For More information contact your nearest Yamaha dealer or visit our web-site at www.yamaha.com



SU700 SAMPLER/SEQUENCER LOOP FACTORY

The SU700 was designed from the ground up for the new style of producers and remix artists who are creating many of today's hit tracks. It combines a professional-quality phrase sampler with effects and automated mixing features. Besides its impressive audio specs, the SU700 stands out because of the intuitive user interface, with direct access knobs for each track. The SU700 can take loops at different BPMs and automatically play them back at any tempo you want. Plus it has unique non-destructive algorithms for warping loops in exciting new ways. Add the three effect processors with synchronized effects to your automated remix, and you're ready to rock the house.

SU700 LOOP FACTORY: MAIN FEATURES

Professional 16-bit Phrase Sampler with 64-note polyphony
40 tracks of Digital Audio Remix Automation with 8 storable Scenes and 8 storable Markers
Automatically plays back different BPM loops at the same tempo
Syncs Audio Loops to MIDI
12 assignable control knobs for real-time control
4 outputs expandable to 10
4 MB RAM expandable to 68 MB via SIMMs
Optional SCSI interface
The SU700 sets a new standard for sampling workstations targeted to the dance market and is competitively priced at $1295.

SPONSOR ADVERTISING SECTION

Mixman STUDIO PRO

www.mixman.com

Mixman Technologies creates audio remixing products that work together seamlessly and with other digital audio applications. Whether you are under a deadline, budget, creative limits, or just want to have a good-time jam without calling the whole band over, the Mixman family of software, content, and online projects holds a solution to the situation. Beginning with Mixman basic remixing software, Mixman Studio, the world of digital audio mixing takes on a new aspect of real-time performance. This unique playability transforms a PC into a digital sampling performance instrument by mapping up to 16 simultaneous channels of audio to the keys of the computer's keyboard. Take, mute, solo, volume, panning, tempo, pitch, macro settings, and more are all controlled from the keyboard with zero latency response and full digital sound quality.

With Mixman Studio Pro, a graphic remix editing studio is added, enabling a more traditional sequencer style of song creation. Studio Pro also includes an FX studio with 15 DSP algorithms included in the box. An array of export options from stereo WAV, Real Audio, SoundFont 2, and other formats for use with other gear or applications, web audio distribution and Mixman's own high-performance TRK and MIX file formats are included with Studio Pro software.

Soundiscs, Mixman's triple-format sample CDs, contain sounds in WAV, TRK, and stereo audio formats. This combination of versatility and digital quality allows for maximum flexibility whatever the audio project requires. Soundisc audio material is crafted by world-renowned engineers, producers and artists to ensure that your mix is always massive and lays tight in the groove. Look for announcements from the world's leading audio software companies supporting Soundiscs, and the TRK high-performance audio format.

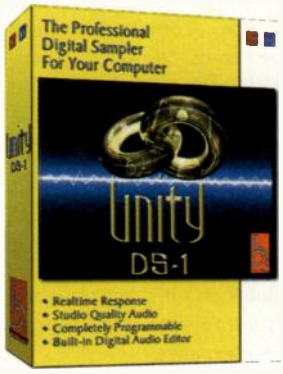
Online, Mixman's website is the home of Radio Mixman, where your web audio files can be posted, reviewed, and ranked, so your music can be discovered. Also, the latest Mixman D*Plates can be downloaded at HYPERLINK http://www.mixman.com. These remixable songs come from top artists that have put their latest songs in TRK format so that their work may be reinterpreted and remixed by their fans. If you've ever wanted to be in the studio with your favorite artists, D*Plates will put you there.

Mixman. When you need to get serious about remixing.

BitHeadz UNITY DS-1 & RETRO AS-1

www.BitHeadz.com

Turn your computer into a synthesizer with no additional hardware! Packed with the pro sound quality and features you want, **Unity DS-1** from BitHeadz uses your computer's built-in processor to play the 250 MB of included sampled sounds and loops. Or, you can import Akai and SampleCell samples, SoundFonts, or even audio from CDs. Drag and drop AIFFs and WAV files as well. Easy sample editing, built-in filters and FX, and 48-KHz sound quality (96 KHz on Macintosh) make Unity the perfect instrument for recording, remixing, sound design or live playing.



Retro AS-1 uses the same processor to recreate the fabulous analog synthesizer sounds of the '60s, '70s, and '80s as well as contemporary dance sounds. Electronic Musician Magazine says "Retro AS-1 is probably more powerful than any analog synthesizer around. Once you've had a taste, you'll love it." So why spend hundreds, even thousands of dollars on music equipment with tiny screens and confusing buttons when you can play Unity DS-1 and Retro AS-1 "live" directly from your computer? You can even use them at the same time!

Voodoo is easy-to-use software that transforms your computer into a programmable "beat box" that plays both audio samples and Standard MIDI files! Samples and drum patterns can be triggered from the computer keyboard, a MIDI controller, or a MIDI application running on the same CPU. Voodoo lets you assign samples to virtual "drum pads" with individual parameter controls for pitch, volume, filter, pan, velocity, envelope, and two built-in effects processors. Voodoo supports AIFF, Sound Designer II, WAV, CD Audio, and Unity DS-1 sample formats.

If you have a Power Mac or Pentium and have been looking for a way to make great music with it, look to BitHeadz, Inc. Professional Software Synthesizers for Today's Electronic Musician.

IK Multimedia GROOVEMAKER AND ADD-ON TITLES

www.groovemaker.com

"Intense!" That's the way most people describe working with IK Multimedia's *GrooveMaker* software. It's a fast and innovative way to create literally millions of groove combinations on your Mac or PC. It comes with *GrooveMaker* and two CD-ROMs full of hot loops.

When you first start *GrooveMaker*, you'll notice a couple of things right away. First, it has a totally alien look, which tips you off to the mind-warping sonic experience you're about to have. Second, it starts making music on its own! Once you've loaded the tracks you want to remix onto your hard drive, the Groove engine automatically selects a group of parts to start jamming on. Go to the Groove window and see what's playing. If you like what you hear, mark it on the fly. If not, pick out some grooves from the loop list and try out your own mixes. You can save up to 99 loop combinations in this window, without having to stop and start again. So it's easy to mark what you like and move on to the next groove.

What really makes it fly is the "Randomization" feature. If you don't want to hunt and peck for your tracks, just click the Random button, and *GrooveMaker* will instantly throw together a whole new set of loops to try out. If you like it, mark it! Or say you like the bass and drum parts but you want to change out the synth and effects. Just lock the "keeper" tracks and randomize the rest. You have a total of eight stereo tracks in this window to play with.

If you want to add a little rave to the mix, bring up the synth arpeggiator. Choose from up to a hundred sounds to arpeggiate, and then press the highlighted keys on the keyboard to add your own custom synth part. The arpeggios will automatically adjust if you want to slow down or speed up.

Now that you have a bunch of grooves, how do you make a whole remix? Easy. Just go to the green Sequence window. Here you can chain together all the grooves you marked in the Groove window, in any order you like, to make a full-length remix perfect for any dance floor. Then, you can bounce the whole song to your hard drive as a stereo WAV or AIFF file, or save up to eight stereo tracks to remix with the multitrack recorder of your choice.

And there's much more you can do with *GrooveMaker*, like adding your own loops, randomizing complete remixes, and playing it live on the dance floor. There's a slew of add-on titles for your license-free remixing pleasure, as well. Don't miss out! Distributed by ILIO Entertainments.

$69/Add-on titles $49

Keyfax PHAT•BOY MIDI CONTROLLER AND TWIDDLY BITS MIDI SAMPLE SERIES

www.keyfax.com

Your hands are probably the most valuable set of performance tools you've got, and Keyfax Hardware's Phat•Boy allows you to use them. For real-time control over MIDI sound modules, samplers, keyboards, and software synths Phat•Boy provides the knobs. By flipping its 3-position mode switch, Phat•Boy lets you access and control three types of instruments instantaneously:

•Any Yamaha XG– or Roland GS–compatible sound source, including Yamaha's new FS1R (mode #1).

•Any Creative Labs AWE card (mode #2).

•Any sound source that can respond to user-definable MIDI Continuous Controllers, such as Steinberg *ReBirth*, BitHeadz *Retro AS-1*, and E-Mu samplers (mode #3).

Even so, the power of Phat•Boy is not so much what it can do to one sound, or even one instrument, as what it does for your system and for your music. Completely remix a track, changing volumes, pans, and effects. Just switch to that track's MIDI channel and tweak. If a drum sample is a little too neat and clean, you can instantly apply some lo-fi grit by easing back the filter cutoff. Clip the sound by shortening the decay, or maybe just freak it out with some resonance or effects.

If MIDI plays a part in your setup, using Phat.Boy will unleash its full sonic potential quickly, and without the need for in-depth knowledge or great expense.

TWIDDLY•BITS MIDI SAMPLES

With new Standard MIDI File–compatible products such as the Yamaha RM1X and BitHeadz *Voodoo*, MIDI's position as the best-kept secret in dance music is changing fast. Twiddly•Bits is the world's number-one library of MIDI Samples: SMF recordings of drum loops, basslines, synth, guitar parts that you can load into you most any hardware or computer sequencer.

Twiddly•Bits grooves are played, not programmed, and they provide the feel of audio samples within the flexible environment of a MIDI sequencer (with its ability to instantly alter pitch, tempo, instrumentation, and so on).

With its collection of hip-hop beats, seductive Brazilian sambas, hardcore U.K. drum 'n' bass, and groovy guitar strums, Twiddly•Bits is the most direct and creative route to cut and paste MIDI programming in existence.

Available at many fine music stores, disks are priced at under $40.00, with 400 to 800 grooves per title.

Come to the party. Join us for an exclusive world premiere webcast. Find out more at www.sputnik7.com/electribe-live

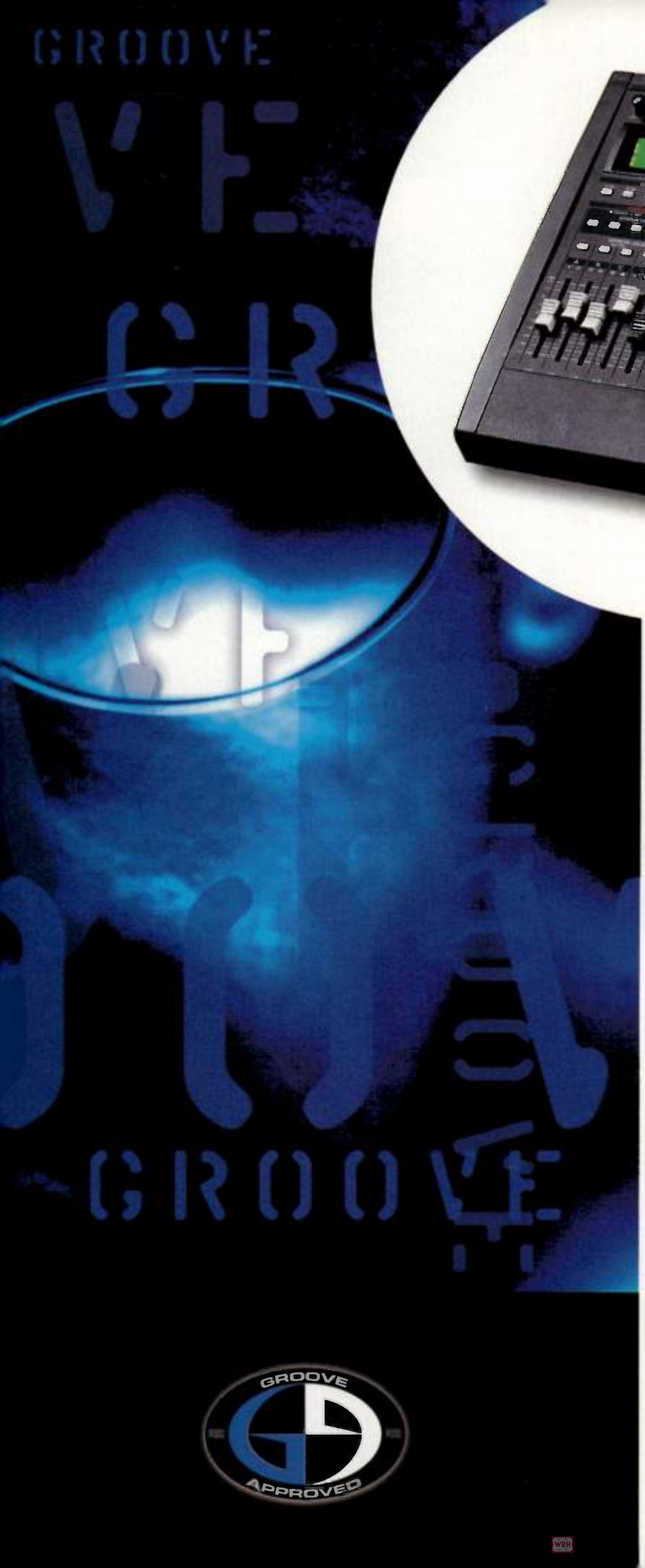
Check out the supernasty, super affordable Electribe•R Rhythm Synth, Electribe•A Analog Modeling Synth and KAOSS Dynamic Effects Pad at www.korg.com/electribe2.htm

ELECTRIBE

the cure for the common groove.

KORG ©1999 KORG USA, 316 SOUTH SERVICE RD., MELVILLE, NY 11747-3201 • FOR THE KORG DEALER NEAREST YOU (800) 335-0800 • FOR MORE INFO VIA FAXBACK CALL (516) 393-8530 DOCS # 3100 AND # 4201

circle #630 on reader service card



A new tool for a new generation. The SP-808 GrooveSampler is the first product of its kind: a sampling and recording workstation which is one part professional-quality phrase sampler; one part hard disk audio recorder. Built-in Zip® drive, massive remix effects processing, onboard analog modeling synth, and the revolutionary infrared D-Beam™ Controller combine for the ultimate sampling workstation. Developed to meet the needs of a growing "remix" and sampling-based music market, the Roland SP-808 provides everything remix artists, sampling musicians and DJ's need to lay down fat grooves and create professional-quality remixes.

Roland®

www.rolandgroove.com

D-Beam is a trademark of Interactive Light, Inc.

circle #631 on reader service card

REVIEWS

149 Tascam TM-D1000

160 Roland JP-8080

170 Quasimidi Sirius

176 Line 6 Pod

182 Sound Quest *Midi Quest* 7.0 (Win)

190 HHB Circle 5A

196 ADK A-51s

200 Quick Picks: Ilio Entertainments *TranceFusion;* Shane Etter Sound Subscriptions; Guitar Center *Synchroloops,* vol. 1; Arboretum Systems *Ray Gun* 1.2 (Mac/Win)

TASCAM

TM-D1000

Digital dreams are made of this.

By Erik Hawkins

Digital mixers are popping out of the woodwork. We see them advertised in music magazines, demonstrated at trade shows, and displayed prominently in retail stores. It's no wonder we're convinced that we need one—now. But there's more than just persuasive advertising behind our lust for these machines: digital mixers manifest the dream of being able to keep signals entirely in the digital domain.

Until recently, though, the cost of realizing that dream was higher than many of us could afford. Enter the Tascam TM-D1000. At the remarkable price of $1,299 for the base unit, this mixer looks to be the digital console that many personal-studio owners have been seeking.

The TM-D1000 as a basic unit is a 16-channel, 4-bus mixer with lots of internal and external routing choices, onboard effects, automation, and a TDIF port. Throw in the optional FX-D1000 effects expansion card ($170) and IF-TD1000 TDIF card ($220), and the deal keeps getting sweeter. And ADAT users aren't left in the cold, either: Tascam recently introduced the handy TDIF-to-ADAT optical converter, the IF-TAD (see the sidebar "The Little Box That Could").

The Tascam TM-D1000, one of the least expensive digital mixers on the market, provides 16 input channels, four buses, and a wealth of onboard effects. There are also several options for expanding I/O and adding DSP functionality.

DREAM DATE

The TM-D1000 is amazingly compact, measuring approximately 17 × 17 inches

and standing only four inches high. Its wedge shape positions the back of the mixer higher than the front, providing easy access to front-panel controls. The aluminum armrest beneath the faders is a bit cold to the touch, at least initially, but otherwise it's fairly comfortable. A lip on the underside of the armrest makes a convenient handle for carrying the unit around.

The TM-D1000 is ruggedly built with a solid-steel chassis. I rate it highly roadworthy. However, if you'd prefer the security of a rack-mount, rack ears are available for $57.

All of the unit's analog connections are on top, just above the control surface. Digital I/O, MIDI ports, word clock I/O, and a push-button power switch are located on the rear panel. (The word clock connections are RCA jacks, so you may need to pick up a BNC-to-RCA adapter.) Power is supplied by a 9V, 50W wall-wart adapter, which is available in both 120V and 230V versions. Although wall warts are generally a nuisance (especially when they get left behind), in this case they make it easy to use the TM-D1000 outside the United States—just bring along the right adapter and you're there.

A/D converters are 20-bit with 64× oversampling, and D/A converters are 20-bit with 128× oversampling. Internal processing is handled with 24-bit resolution, and the sampling frequency is selectable between 44.1 and 48 kHz. Also, TDIF word-length output is selectable between 16, 20, and 24 bit.

EVERY WHICH WAY IN

On the analog side, the TM-D1000 provides eight balanced ¼-inch inputs, hard-wired to mixer channels 1 through 8 (more on this in a moment). Each of these inputs has a peak LED and an associated trim control with 50 dB of gain. Channels 1 through 4 are also equipped with XLR microphone inputs. If you need more XLR inputs, the MA-AD8 20-bit digital mic preamp ($430) can be connected to the TDIF port to provide an additional eight channels. A global 48V phantom power switch resides just to the right of the XLR jacks. Insert points (¼-inch TRS) are available only on the first four channels. This isn't a serious limitation, though, considering that the unit offers onboard dynamics processing.

An external analog input is also available, post master fader, and is fed by a pair of ¼-inch TRS jacks and a pair of RCA jacks. Both pairs are summed together, allowing the external input to simultaneously receive two stereo sources (for example, a DAT recorder and a CD player).

The TM-D1000 comes standard with one digital AES/EBU input, referred to as "Digital In A." The IF-TD1000 TDIF expansion card provides four more channels of digital I/O (AES/EBU and S/PDIF). "Digital In B" is switchable between the IF-TD1000's AES/EBU and S/PDIF inputs. "Digital In C" is also switchable between AES/EBU and S/PDIF, and it can do sample-rate conversions on the fly—an excellent feature. Other stock connections include AES/EBU output on XLR connectors and S/PDIF I/O on RCA connectors.

The TM-D1000 provides one stereo effects return and one stereo aux return. These returns do not have physical input jacks on the face of the mixer; the feed is from the TM-D1000's internal routing system. Both can receive signals from an onboard effects processor, a digital input, or analog inputs 1/2, 3/4, 5/6, or 7/8.

The 16 mixer channels are split into two groups of 8. Channels 1 through 8 can handle signals from any of the following sources: the eight ¼-inch (or XLR) analog inputs, any combination of the 2-channel digital inputs, the internal effects returns, or "TDIF B" (the second group of eight TDIF channels available when the IF-TD1000 is installed). Channels 9 through 16 are fed by either "TDIF A" (the stock TDIF connection), the digital inputs, or the internal effects returns.

Digital In A and Digital In B can be routed to every input on the console (that is, not just to the input channels but also to the effects returns and the aux returns). For channels 1 through 16, the digital inputs are assignable in nonconsecutive stereo pairs. (For instance, a left input can be routed to channel 9 and a right input to channel 14.) However, left feeds can be assigned only to odd channels and right feeds only to even channels. Digital inputs can be split to multiple channels—Digital In A could, say, feed channels 9 through 16 simultaneously. Digital In C, however, is assignable only to input channels 7 and 8, the effects return, or the aux return.

TM-D1000 Features

Analog Channel Inputs	(8) ¼" TRS line-level; (4) XLR mic-level (bypasses the line inputs on those channels)
Other Analog Inputs	external: (2) RCA; (2) ¼" TRS
Channel Inserts	(4) ¼" TRS
Analog Subgroup Outputs	(4) ¼" TRS and RCA
Analog Main Outputs	(2) ¼" TRS
Other Analog Outputs	(2) ¼" TRS monitor outputs
Digital Channel I/O	(1) TDIF connection (8 channels)
Other Digital Inputs	(1) AES/EBU on XLR; (1) S/PDIF on RCA
Other Digital Outputs	(2) AES/EBU main output on XLR; (2) S/PDIF main output on RCA
Additional Ports	(1) ¼" TRS headphone; MIDI In, Out, Thru
Internal Effects Sends/Returns	(1) effects send; (1) aux send
EQ	3 bands per channel (low-shelf, high-shelf, mid-sweep)
EQ Parameters	Cut/boost (±15 dB); adjustable frequency (41 Hz–16 kHz); adjustable Q curve (8.65–0.27 octave)
Onboard Multi-Effects	(2) multi-effects processors; (1) dynamics processor
Effects Programs (factory/user)	75/175 (between all 3 engines)
Faders	60 mm
Display	3.75" x 0.75" backlit LCD
Automation	128 snapshots; dynamic automation via external MIDI sequencer
Phantom Power	48V (global)
Expansion Modules	MA-AD8 digital mic preamp; FX-D1000 effects expansion card; IF-TD1000 TDIF expansion card

For manufacturer information, please see Contact Sheet, p. 195.

START AT THE TOP

with the award winning sound, technology, and power, used by the world's most successful professionals, for as little as $49.00 per month.*

Kurzweil Synthesizers, Samplers, Pianos and Controllers:

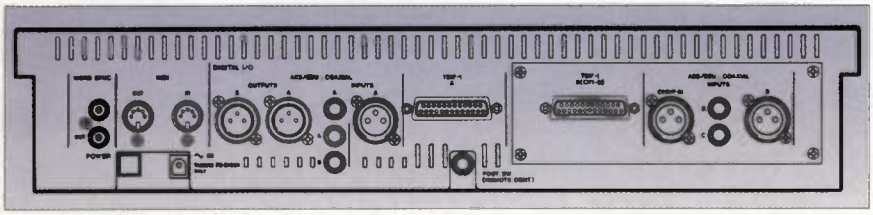
Designed with pride and passion. Dedicated to the proposition that all music producers are not created equal.

KURZWEIL®

...It's the sound

Box 99995, Lakewood, WA 98499 voice (253)589-3200 fax (253)984-0245 visit your authorized dealer or www.youngchang.com/kurzweil
*OAC. Details at participating dealers.

circle #570 on reader service card



COURTESY TASCAM

On the rear panel, the stock TM-D1000 provides word-clock sync I/O, MIDI In and Out connectors, AES/EBU and S/PDIF digital I/O, and a TDIF port.

EVERY WHICH WAY OUT

The TM-D1000's four buses deliver analog output on a pair of balanced ¼-inch jacks and a pair of RCA jacks. The buses are multed to the balanced and unbalanced outputs, so both are simultaneously active. In the digital domain, the buses can be internally routed to the TDIF outputs (both TDIF A and TDIF B) or assigned in stereo pairs to the console's stock 2-channel digital outputs (AES/EBU and S/PDIF). Master left and right channels can also be sent to both digital outputs simultaneously—a wonderful feature that allows you to mix a master and make a "backup" at the same time (using two mixdown decks). Master L/R analog outs are also provided on ¼-inch TRS and RCA jacks, again with the jacks transmitting the same signal in balanced and unbalanced form.

A Direct Out function lets you feed a signal to each TDIF output from a corresponding mixer channel (channel 1 to TDIF A output 1, channel 2 to TDIF A output 2, and so on). If you have the IF-TD1000 installed, the TDIF B outputs will receive signals from channels 9 through 16 in the same fashion. This allows direct-to-tape recording without having to configure busing assignments. However, considering that the board has only eight analog inputs, you'll need a TDIF-to-analog converter such as the MA-AD8 (connected to channels 9 through 16) if you want to do simultaneous 16-track recording. The Direct Out function can be switched to either pre- or post-fader. (Post-fader is post-EQ and post-dynamics as well.)

Balanced ¼-inch jacks are provided for monitor outputs, and there is an associated volume knob. You can select the source(s) you want to monitor by using a set of locking push buttons: master L/R, bus 1/2, bus 3/4, or external. There's also a button for checking mixes in mono. Near the monitor section is a headphone jack with a level control.

Two 12-segment LEDs handle stereo metering. The meters reflect the selected monitor source, not just master L/R. This is convenient in light of the fact that there are no individual channel meters—not even "signal present" LEDs. (Be aware of this when setting levels on your mastering deck; the levels might be confusing if you've selected something other than master L/R as your source.)

A LA MODES

For digital mixers to be cost effective and compact, they typically employ multifunction controls rather than the single-function knobs and buttons common to most analog consoles. Many of the TM-D1000's controls serve dual purposes, and its menus are usually several pages deep and many windows wide. This sometimes makes navigating your way around the unit a hassle—but hey, dedicated buttons cost money, and for $1,299 I'm not complaining.

The TM-D1000 operates in two distinct modes: Record and Mix. Each mode has its own routing setup, which optimizes the console's DSP power for the task at hand. (This concept also saves new users from having to figure out the TM-D1000's complex internal routing scheme.) In Mix mode, the four buses and their corresponding faders become aux sends, acting as master controls for the amount of signal sent to the internal effects. Mix gives you a variety of effects-routing configurations to choose from (discussed shortly). In Record mode, the aux sends are swapped for buses and the effects engines default to four channels of dynamics processing (or eight channels, with the FX-D1000 installed).

The Mix and Record modes work fine for many applications, but their limitations soon become apparent. For example, if you want to record a signal to tape using the TM-D1000's internal multi-effects (rather than dynamics) processing, you'll need to venture deeper into the its routing structure. For this particular task, a special busing configuration is available that allows you to use bus 1/2 as an aux send and bus 3/4 as an actual bus. While this feature is invaluable for printing signals to tape with effects, it reconfigures the board into a 2-bus mixer.

Furthermore, if you're using all four buses in Record mode, there are no aux sends available whatsoever. This can be a nuisance, especially if you like to have some reverb in the cans while you're recording. The only solution I can think of is to connect the master L/R outputs to an external effects unit and then return the processed signal to the console's external input. Of course, this trick doesn't give you individual channel control, but at least it's something. No matter how you cut it, the TM-D1000 is a 4-bus mixer with limited DSP functions—there's no getting around it. But again, what do you expect for the low price?

SHOW ME THE WAY

Accessing the TM-D1000's functions is handled the same way in both Record and Mix modes: you select the channel you want to work with by pressing the corresponding Channel Select button (pretty standard in the digital mixer world). The selected channel's functions are then governed by generic

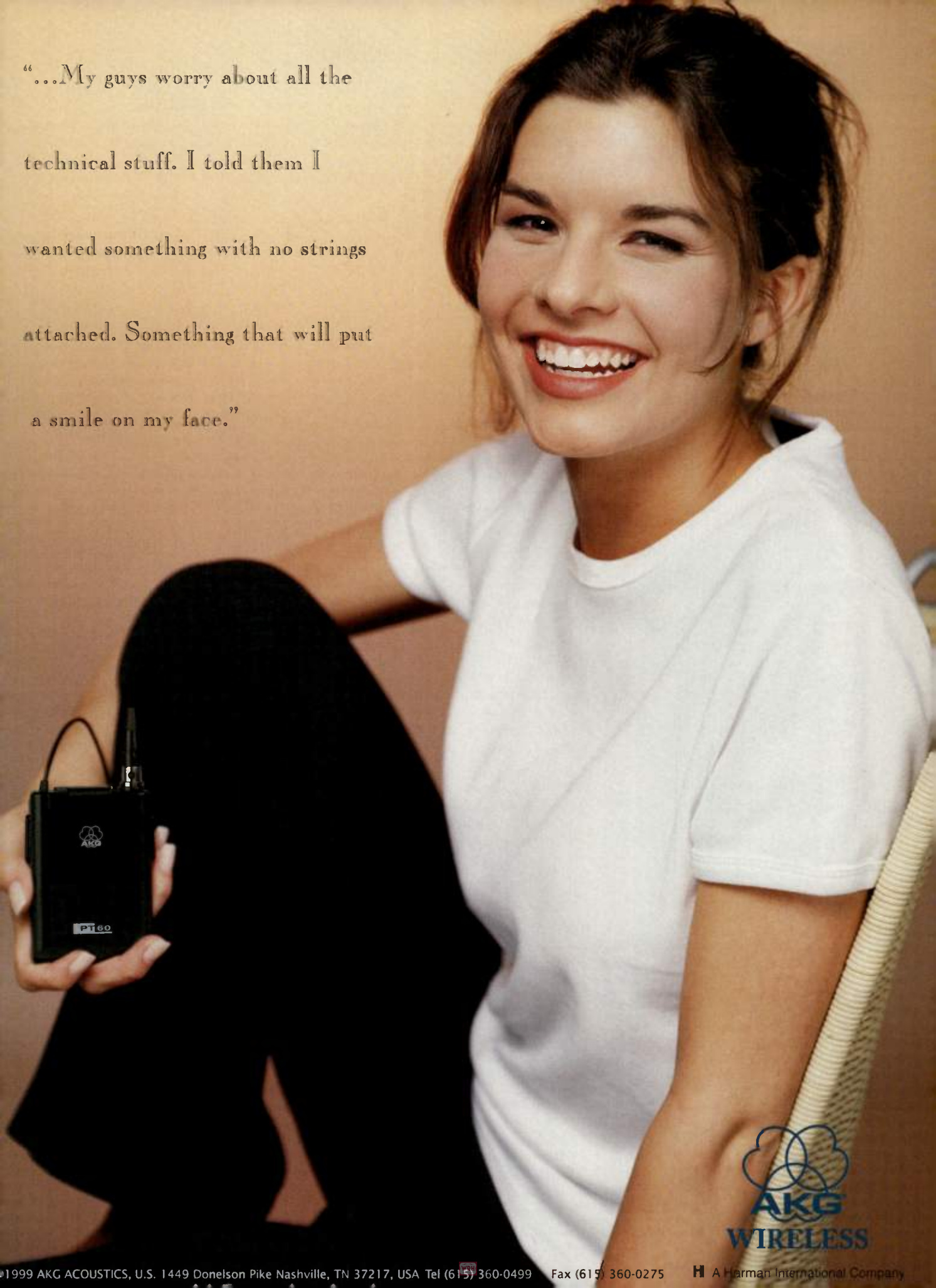
TASCAM
TM-D1000 digital mixer
$1,299

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

PROS: Snapshot automation. Great-sounding internal effects. Comprehensive MIDI control. Flexible internal digital routing. Excellent value.

CONS: Only four mic inputs on the base unit. Only two buses available when recording with internal effects. Only one band of parametric EQ. Could use more MIDI inputs. Difficult to learn.

CIRCLE #437 ON READER SERVICE CARD



©1999 AKG ACOUSTICS, U.S. 1449 Donelson Pike Nashville, TN 37217, USA Tel (615) 360-0499 Fax (615) 360-0275 H A Harman International Company

TAKE THE EM DESKTOP MUSIC PRODUCTION SURVEY!
EM MORE CORE
www.emusician.com
http://www.emusician.com/desktop.html
http://www.emusician.com/desktop.html

controls, consisting of four infinitely rotating data-entry knobs, a single push-button data-entry knob, and several dual-purpose buttons. Information is viewed on a two-line, backlit LCD. Although it's easy enough to read in low light, the screen is too small to present much information at once.

All the data-entry knobs are detented, making stepping through numbers a breeze. The push-button data-entry knob is used for opening windows and scrolling through pages. It takes a while to get used to, because you have to remember that pushing it advances you to the next window. Left/right and up/down arrow keys might have made for easier navigation, but they might also have taken up more surface space.

Every button on the TM-D1000 serves two purposes. For each, the primary function is written in white lettering above the button; the secondary function is printed in blue beneath and is accessed by holding down the Shift key and pressing the button.

There are a few data-entry shortcuts that make adjusting parameters a bit easier. For example, holding down the Shift key while turning a data-entry knob speeds through digits in increments of 10. Also, for certain windows, the group of Channel Select keys works as an elongated 10-key pad.

Each channel has a 60 mm fader and an associated pan pot. The mute buttons, which are located directly above the faders, double as solo buttons when the global-solo function is engaged. This function is activated with a dedicated front-panel button and can be used pre- or post-fader and in stereo (in place) or mono.

EQ TO THE RESCUE

On the TM-D1000, EQ is not considered an effect, per se, and thus can be applied to every channel without fear of running out of DSP. To activate EQ on a channel, you simply select the channel and press the dedicated EQ button. The button illuminates in green to let you know that equalization is inserted on the selected channel.

Three bands of EQ are available to each channel: low-shelf, high-shelf, and mid-sweep. You can cut or boost each band by 15 dB, and each can be adjusted between 41 Hz and 16 kHz. (I love the fact that the frequencies overlap.) Also, the bandwidth (Q) on the mid band is adjustable from 8.65 to 0.27 octave. A pre-EQ pad lets you cut the incoming signal's amplitude by up to 24 dB before you start boosting frequencies.

I found the TM-D1000's EQ to have that uniquely Tascam sound quality—not a bad thing, necessarily, just difficult to describe. If you've ever used any of Tascam's high-end PortaStudios, you probably know what I'm talking about. The sound quality is, for lack of a better word, somewhat "hollow."

The mid EQ, which is the only parametric band, is extremely powerful and can easily overshadow the high and low bands. Moreover, when you apply a dramatic boost or cut to a particular midrange frequency, the hollow sound often becomes more apparent. A second parametric mid band might be helpful to compensate for this, but there is none, so the inexperienced or EQ-happy engineer should proceed carefully. Aside from that, the TM-D1000's equalization sounds solid, and when used gingerly, it can be very effective.

TM-D1000 Specifications

Frequency Response	20 Hz–20 kHz
THD	<0.013%
Crosstalk	>80 dB
Sampling Frequency	44.1 or 48 kHz
A/D Converters	20-bit, 64x oversampling
D/A Converters	20-bit, 128x oversampling
Internal Processing	24-bit
Signal Delay	<1.1 ms
Digital Output Word Length	8-, 16-, or 24-bit
Signal-to-Noise Ratio	>80 dB
Dimensions	17.4" (W) x 3.9" (H) x 16.75" (D)
Weight	14 lbs.

32 Channels. Built-in MIDI. Solid sync. All together. Now.

Introducing
Dakota, Montana, Sierra & Tango24

The superintegrated digital audio, MIDI, and sync solution, now with 24-bit analog performance!

SIERRA
Dakota expansion box with 8x8 MIDI and SMPTE I/O

MONTANA
Dakota expansion card with 16 more audio channels, ADAT 9-pin sync output, and video/word clock sync

DAKOTA
Superintegrated PCI soundcard

- 16 channels of 24-bit ADAT lightpipe I/O
- 2 channels S/PDIF audio (coax or optical)
- 2x2 low-latency MIDI I/O
- ADAT 9-pin sync input
- Ultra-efficient bus-mastering PCI interface with scatter-gather DMA
- SoDA™ (SMPTE on Digital Audio)
- True hardware chaselock to timecode

adat SYNC
adat OPTICAL

TANGO 24
Professional multichannel A/D & D/A converter system

- 8 analog inputs and 8 analog outputs
- 24-bit resolution with 128x oversampling converters
- Frequency response ±0.05dB, 20Hz–20kHz
- S/N ratio (EIAJ) 105dB
- Dynamic range 105dB A-weighted
- +4dBu or -10dBV signal levels (selectable per channel)
- True differential balanced signals on professional ¼" TRS jacks
- ADAT optical in/thru/out and word clock in/out
- Connects to any soundcard with ADAT lightpipe I/O

30-day money-back GUARANTEE

VISA MasterCard

TO ORDER or FIND OUT MORE
800.928.3236
outside USA 603.448.6283
www.frontierdesign.com

circle #574 on reader service card

FRONTIER DESIGN GROUP

Dakota, Montana, Sierra, Tango24, Zulu and SoDA are trademarks of Frontier Design Group LLC. All other trademarks and registered trademarks are the property of their respective holders.

One especially nice touch is that every EQ parameter—including the EQ in/out button—can be controlled using MIDI CC messages. This is a mighty capability. Imagine: you could punch EQ in and out at different points in a mix, do weird EQ sweeps to mimic filters, or automate a frequency cut to get rid of a specific problem (such as mic thumps or guitar-fret squeaks). The possibilities are endless.

ENGINE, ENGINE

The TM-D1000 base unit comes with three DSP processors: two multi-effects engines and a dynamics engine. The first multi-effects engine provides a delay, chorus, pitch shifter, flanger, phaser, de-esser, and exciter. The second engine does everything that the first one does, as well as handling reverb and gated reverb.

The dynamics engine is dedicated to compression, limiting, and expanding/gating. Although the dynamics engine won't handle any of the effects, both multi-effects engines can do dynamics processing. Adding the FX-D1000 effects expansion card gives you two more multi-effects engines (one that mimics engine 1 and one that mimics engine 2) and doubles the dynamics engine's capabilities (from four to eight channels).

I highly recommend getting the FX-D1000 card right away so you're sure to have enough DSP power. However, I discourage you from installing it—or any other expansion card—by yourself. I tried to install the effects card and, in the process, killed my first review unit. It really is a tricky process, so be sure to take the unit to an authorized service agent for this upgrade.

There is a set group of parameters for each effect algorithm. For example, each dynamics algorithm affords you the following parameter control: input level, effect on/off, threshold, attack time, release time, and ratio; each reverb algorithm provides settings for input level, mix ratio, room type, reverb time, predelay, and diffusion. Adjusting these parameters yields everything from hard limiting to soft expansion, from cathedral reverb to bathroom ambience. Although there aren't as many parameters to tweak as are typically found on high-quality dedicated effects units (you can't notch-filter a chorus or change the pitch of a delay over time), you still have plenty to work with. It's worth noting that the phaser and flanger algorithms include a cool resonance parameter—a sort of wah-to-filter sweep effect—that is determined by the rate parameter. With the resonance turned up, a faster rate yields a wah sound while a slower one produces a filter sweep.

Once you've tweaked an effect's parameters to your liking, you can store the effect in one of the provided user slots. Multi-effects engines 1 and 2 and

THE LITTLE BOX THAT COULD

Tascam's new IF-TAD ($199) can convert any eight channels of TDIF to eight channels of ADAT optical. Transfers can be made in either direction or in both directions simultaneously. Equipped with one TDIF-1 25-pin connector and two Lightpipe connectors (in and out), the IF-TAD bridges the gap between the two most popular MDM digital formats.

Built into a robust metal housing, the IF-TAD measures 7.5 inches (W) by 1.5 inches (H) by 4.6 inches (D) and weighs 1.65 pounds. All connections are on the unit's front panel, and each has an associated LED that glows orange to indicate a lock on that channel. Power is provided by a 12V wall-wart adapter. There's no power switch—plugging in the unit turns it on; an LED next to the power input jack glows green to let you know you have juice. No cables come with the unit, so make sure you have TDIF, Lightpipe, and BNC cables handy.

A word clock output is provided on a BNC jack. The IF-TAD converts an incoming clock to outgoing word sync when the ADAT optical input is the master source. Sampling frequencies of 44.1 kHz and 48 kHz are supported, as are word lengths up to 24 bits. The IF-TAD doesn't truncate or dither word lengths; if you're transferring 24-bit data to a 16-bit machine, the 16-bit unit must determine how to handle the extra bits.

Making Money With Your Music May Be Easier Than You Think.

Find out how by calling this toll-free number for our FREE info kit.

1-800-458-2111

TAXI

The Leader in Independent A&R

circle #575 on reader service card

FATAR

STUDIOLOGIC

...it just makes sens

CSF™

CONTOURED STRIKE FORCE

At FATAR, we know that the driving force behind your music is your contro not someone else's pre-packaged sounds. And, we know that you don't want to buy a keyboard every time you want new sounds. That's why we've created STUDIOLOGIC M controllers. Since you can add sound engines and outboard samplers any time you w your MIDI controller ***never*** goes out of style . . . ***and that means you're alway control of your music and your money!*** So now that you know you don't have to slave to the keyboard marketing industry, you'll want to know more about FATAR. H how . . . For a full-color STUDIOLOGIC catalogue send your name, address and reque Music Industries, 99 Tulip Avenue, Suite 101 - Dept. SL, Floral Park, NY 11001, visit web site www.musicindustries.com or speak to one of our Sales Reps at 1-800-431-6

circle #576 on reader ser

the dynamics engine provide 58 user locations each. Effects created using the expansion card share these same slots. A total of 75 presets come stock and cannot be overwritten. They can be starting points for creating your own effects, or you can use them just as they are. (The reverb presets aren't bad—I especially liked the Instrument Booth.) Effects can be recalled from the unit's control surface or via a MIDI program change.

With the base TM-D1000, you can have either the dynamics processor or the two effects engines engaged at the same time. With the FX-D1000 card installed, you can get everything going simultaneously. There are several different sets of effects and dynamics routings available. Choosing one of these sets determines how your effects will be run (individually, parallel, or cascaded) and where they will be returned—aux 1/2, aux 3/4, or master L/R insert (beyond these configurations, you can always assign an effects return to an input channel). For example, with the expansion board installed, you can have four channels of dynamics processing, engine 2 on aux 1/2, and engine 5 (from the expansion card) on aux 3/4. You can insert the dynamics on any channel you want except the master L/R outputs (although you can use a multi-effect engine for this), as long as you don't exceed the number available as determined by the effects-routing set.

All the effects sound solid: the reverbs are fat, the delays are squeaky-clean, the dynamics aren't muddy or dark, and the chorus is smooth. But the astonishing thing is that all effects and dynamics parameters can be controlled by MIDI CC messages. Just think about all the cool automated effects processing you can do—for example, increasing and decreasing de-essing as you ride a vocal track, lengthening reverb tails at dramatic breaks, creating resonance sweeps in time with your music, and so on.

ALL TOGETHER NOW

Each of the TM-D1000's fader and pan controls responds to and sends MIDI messages. Plug the unit into a sequencer and you've got full-fledged, no-holds-barred automation. The faders work with Control Change 7, the pan knobs with CC 10, and the mute buttons with CC 11. Set up a custom console in your software sequencer, and you have an automation setup on a par with units costing ten times as much. Just make sure your MIDI patch bay can transmit all 16 MIDI channels on multiple cables: each TM-D1000 mixer channel requires its own MIDI channel for sending and receiving controllers.

My only gripe about all this MIDI power is that there aren't enough provisions to fully handle it. Although you can change the MIDI-channel assignments for the input channels (in a consecutive order, not randomly), the master L/R output is fixed at MIDI channel 16. Obviously, this creates a problem when volume commands are being sent to an input channel that is also receiving MIDI channel 16. Another MIDI In jack could solve the problem—or perhaps a future operating system could allow specific controllers to be internally remapped on certain channels. As it stands now, though, a mix using all 16 MIDI channels would definitely require some careful planning.

Every EQ parameter can be controlled using MIDI CC messages.

Don't have a computer? No problem. The TM-D1000 has onboard snapshot automation. This handy feature lets you take a picture of all the console settings—and I do mean *all*—at any point in time and save it to memory. The 128 memory locations can be recalled from the front panel, via MIDI program changes, or with a footswitch (through the ¼-inch footswitch jack on the rear of the unit).

Snapshots can also save transition times, ranging from 0 to 100 ms (adjustable in 10 ms increments). Transition time affects volume only; everything else changes as soon as a snapshot is recalled. Because recalling snapshots usually leaves your physical fader and pan settings mismatched with the internal settings, the TM-D1000 also provides a nulling function. Simply go to the null window and a graphical display shows you where the actual fader or pan pot should be relative to the new internal setting. Way cool.

The TM-D1000 also works with MIDI Machine Control (MMC) to handle fast-forward, rewind, play, stop, and record functions. Holding down the Shift key and pressing the channel mute/solo buttons allows you to arm your multitrack recorder from the mixer. You can send punch in/out MMC commands from the unit's face or with a footswitch, and the channel-select buttons double as memory locations. I hooked up the TM-D1000 to an E-mu Darwin that was controlling a few ADATs, and instantly I was in controller heaven.

SOUNDING OFF

The Tascam TM-D1000 is a fabulous unit and an incredible value. At just under $1,300, it offers snapshot automation, comprehensive MIDI control, great effects, flexible routing, and solid EQ—all from a reputable company. What more could you ask for? Even if you go for all the expansion cards and accessories, the whole package still comes in well under $2,500—thousands less than most other digital mixers. "Bang for the buck" may be a cliché, but it certainly applies here: the TM-D1000 offers the most—well, you know—that I've seen in some time.

Of course, that doesn't mean it will work for everyone. If you want to run, say, a 24-track studio, you'll need something bigger than the TM-D1000. But if small-scale 8- or 16-track productions are your focus, this mixer is the cat's meow. Novices may initially be boggled by its interface and slew of capabilities, but those who take the time to master the TM-D1000 will learn a great deal about signal paths, dynamics processing, MIDI control, and mixing in general. It's a great stepping stone to bigger, more complex consoles. And if you can get by with only 4 mic preamps (12 with the MA-AD8 expansion card), the TM-D1000 would also make a truly awesome and extremely portable live board. I wish I had had one when I was first getting into producing and mixing: I'd sure have slicker productions to show for it—not to mention a lot less debt.

Inspiration...

motor mix™

Creative control at your fingertips! Motor Mix™ by CM Automation is the world's first dedicated worksurface for mixing digital audio. It is capable of operating any DAW software on any computer platform. Slightly larger than a sheet of notebook paper, Motor Mix has controls that are laid out like a traditional mixing console channel strip. Operating this worksurface is quick, intuitive and easy. You are in complete control of your digital audio mixing software. When inspiration hits, let the music be first . . . not the mouse.

Use the 100mm motorized faders to make perfect mixes every time. View switches allow you to navigate any number of channels. 8 high resolution rotary knobs control panning, EQ, dynamics, effect send levels and more. When addressing DSP plug-ins, you can power through 8 parameters at a time. Backlit LCD panel displays the channel labels, rotary knob settings, routing and meters. So if the mouse is cramping your style or you are tired of searching for controls on your monitor - consider the power and simplicity of Motor Mix.

Creative Tools for New Technologies

CM™ Automation

20621 Plummer Street • Chatsworth, CA 91311 USA • (888) 588-6434 • CMAUTOMATION.com

Support Partners:

emagic

MOTU

SEK'D

Minnetonka AUDIO SOFTWARE, INC.

Be

Soundscape Version 2.0

circle #577 on reader service card

ROLAND

JP-8080

Innovation meets tradition in this modeled analog synth.

By Julian Colbeck

Roland's JP-8000 synthesizer, released in 1997, has proven to be a very good instrument, so when the company introduced a module version, expectations were high. Indeed, the JP-8080 delivers all the sonic capabilities of the keyboard synth, with one or two new features thrown in besides: some external sound processing possibilities, a Voice Modulator vocoding section, large-scale program storage using the Toshiba SmartMedia card, and two additional voices of polyphony.

Welcome though all of these goodies are, the JP-8080 will not stand or fall based on any particular processing feature. The JP-8080 is all about analog-style sounds and control. This is an instrument for producing sounds that go *shweeeeewoooarggggggfizzzzzzzbap!* You want a tinkling grand piano sound? Go buy something else.

Like its keyboard predecessor, the JP-8080 uses digital modeling technology to emulate analog synthesizers—and a darn good job it makes of it. The sounds here really are different from those fossilized sample-playback instruments. The filters are razor sharp, the sub-bass is stomach-churning, and the parameters are well chosen, nicely implemented, and understandable. To cap it off, the knobs and sliders feel expensive. They don't dare you—they *command* you to start tweaking.

One of the few negatives to this unit is the amount of memory it uses for preset sound storage. C'mon Roland, be brave: ditch the ROM presets altogether and put all the Patches in user memory.

The sacrifice you make with all current modeling technologies is polyphony. It takes more processing power than can affordably be delivered to generate these endless, minute shifts in tone over masses of voices. I recall a very interesting evening I spent with Roland president Ikutaro Kakehashi talking about the trade-off between polyphony and sonic richness. This was ten years ago; at the time, Roland was high on the 64-voice trail. If people really wanted Jupiter-8–type power, said Mr. K, they'd have to sacrifice polyphony. Fine, said our assembled group of pundits.

BASIC STRUCTURES

Sounds on the JP-8080 are organized into Patches and Performances. You construct a Patch from all the raw ingredients you see on the front panel: two oscillators, a filter, tone controls, a delay, three envelopes, an amplifier, effects, and two LFOs (see **Fig. 1**). Two Patches, each on its own MIDI channel, are always selected and are assigned as Upper and Lower Parts. The two Patches, along with the settings in the Panel Select, Key Mode, and Arpeggiator/RPS sections (which I'll discuss later) can be stored together in a Performance. You can store and recall Patches and Performances using dedicated buttons.

The JP-8080's program memory is divided between Performances (64 user programmable, 192 preset) and Patches (128 user programmable, 384 preset). The outlandishly accommodating 4 MB SmartMedia card can hold up to 8,000 Patches.

Maximum polyphony is ten voices. That's not a lot, but given the nature of the JP-8080 and the sounds at which it excels, that number is quite sufficient. In fact, I found the polyphony far less of a problem than the JP-8080's duo-timbrality (which I'll also discuss later).

There are myriad physical knobs and switches, and almost all of the front-panel editing controls can send and receive MIDI information so that real-time changes can be sequenced. Indeed, the JP-8080 is by no means shackled to keyboard control: you can access sounds by the built-in arpeggiator or by "playing" the Bank and Number programming keys in Preview mode. The Edit button accesses the different modes and lets you call up, tweak, and twist settings for almost every section of the instrument.

The Roland JP-8080 is absolutely loaded with sound- and phrase-creation features, audio-manipulation tools, and assorted bells and whistles. This is not your average analog-modeling synth; it's a fascinating instrument that requires no MIDI keyboard, although it can certainly be played conventionally.

IF LOOKS COULD THRILL

The JP-8080 wears the same sexy blue livery as does the JP-8000. It looks pro and it feels pro; the knobs and sliders move with a precision and ease that only Roland seems to bother with these days. The module can be rack-mounted (requiring six units of rackspace), or it can sit, cutely angled, on a tabletop. I'll confess that a lot of my time with the instrument has been spent with it just thus: no keyboard, just a pair of cans, the arpeggiator, and a big grin.

With its 38 knobs and sliders, the control panel is busy but not cluttered. It'll take you a little while to figure out, but there's a logic to it. The sound and effects parameters are controlled mainly within a black-shaded area on the

Electronic Musician®'s TC Electronic Product Giveaway!

Enter to win these exciting products from TC Electronic!

One Grand-Prize Winner will receive the Finalizer Express Mastering Processor valued at $1599!

Two First-Prize Winners will receive TC Works Native Bundle Software DirectX Plug-In Packages valued at $599 each!

Three additional winners will receive leather TC Electronic jackets valued at $300 each!

OFFICIAL RULES

1. NO PURCHASE NECESSARY.
2. Sweepstakes will be open to residents of the United States who are ages 21 and older. Employees of Intertec Publishing and the participating manufacturers, their respective subsidiaries, affiliates, advertising, and promotion agencies and their family/household members are not eligible to enter.
3. Enter by filling out an official entry form available in this issue or by providing your name and address on a 3x5 card. Send your entry form to Electronic Musician/TC Electronic Product Giveaway, 6400 Hollis Street, Suite 12, Emeryville, CA 94608. Entries must be received by August 13, 1999. Multiple entries are permitted. No more than one entry per envelope can be submitted. Intertec Publishing and the participating manufacturers shall not be responsible for lost, late, mutilated or misdirected mail. Entry forms or requests that are printed by machine, mechanically reproduced, tampered with, illegible or incomplete are not eligible.
4. The prize winners will be selected by random drawing from all entries on or about August 13, 1999. The drawing will take place under the supervision of Intertec Publishing. Participants agree to be bound by these rules and the decision of the judges, whose decisions are final. Odds of winning will be determined by the total number of entries received. The winner will be notified within 14 days after the drawing. To obtain a list of winners, send a self-addressed, stamped envelope after August 13, 1999 to Electronic Musician/TC Electronic Product Giveaway Winners List, 6400 Hollis Street, Suite 12, Emeryville, CA 94608.
5. One Grand-Prize Winner will receive a TC Electronic Finalizer Express mastering processor, $1,599 MSRP. Two First-prize Winners will each receive one TC Works Native Bundle Software Package, $599 MSRP each. Three additional winners will receive a Size XXL or XL TC Electronic leather jacket, $300 MSRP each. Total value of each prize is noted above. All prize values are based on manufacturer's suggested retail price. Intertec Publishing and participating manufacturers make no warranties with regard to the prizes. Prizes are not transferable. Winner may not substitute prizes, but Intertec Publishing and participating manufacturers reserve the right to substitute a prize of equal or greater value. Prizes are not redeemable by winner for cash value.
6. All entries and requests become the property of Intertec Publishing and participating manufacturers and will not be acknowledged or returned.
7. The winner will be required to execute an affidavit of eligibility, compliance with contest rules and release of liability. All taxes on prizes are solely the responsibility of the winners.
8. All entrants release Intertec Publishing and participating manufacturers, their respective affiliates, subsidiaries, directors, officers, employees, and agents, and all others associated with the development and execution of this sweepstakes from any and all liability from injury, loss or damage of any kind resulting from participation in this promotion or acceptance or use of any prize.
9. Prizes must be claimed within 21 days of notification. Failure to execute and return a requested document within 21 days of postmark or return of notification or prize as undeliverable will result in forfeiture of prize. An alternate winner will be selected. All reasonable effort will be made to contact the winner.
10. Void where prohibited or restricted by law. All federal, state, and local laws & regulations apply.

All entries must be received by August 13, 1999!
To enter, fill out and return the coupon below.

Enter me in *Electronic Musician*'s TC Electronic product giveaway!

Please print clearly.

Name: .....

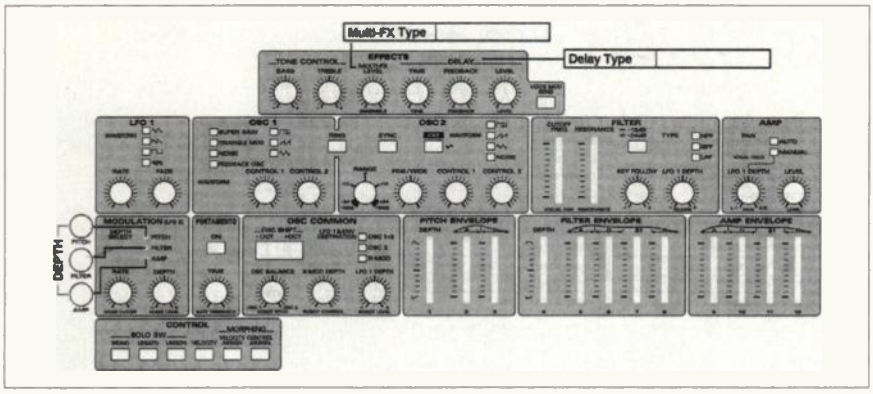
Address: .....

City, State, Zip: .....

E-mail Address: .....

Send to: **Electronic Musician/TC Electronic Product Giveaway**
6400 Hollis Street, Suite 12
Emeryville, CA 94608

WRH



COURTESY ROLAND CORPORATION U.S.

FIG. 1: This chart shows the components of a JP-8080 Patch, approximately as seen on the unit's front panel. Two Patches are always selected and assigned as Upper and Lower Parts.

panel; a handful of Voice Modulator inputs and controls are encased within a separate bright-blue section. (I'll explain the Voice Modulator later.) Arpeggiator controls lie in a cluster on the bottom right of the panel, while the program bank and patch selectors (16 white buttons) run along the center of the bottom edge. Two jacks have been placed on the front panel: the headphone output and a mic input for processing external signals. The latter is unbalanced and includes a mic preamp for use with dynamic mics.

The display is an almost insignificant 32-character LCD. Aside from naming a sound, this is not an instrument for which a screen is essential. Here, you need hands and ears.

On the rear panel (see **Fig. 2**), you'll find a pair of line-level audio input jacks, two MIDI Ins (to give you more flexibility over voices and processing when using the JP-8080 with a controller keyboard and a sequencer), and a MIDI Out. The line-level inputs and front-panel mic input are mutually exclusive: when one is on, the other is off.

In a thoughtful touch, Roland recessed the JP-8080's rear panel so that people who want to rack-mount the unit can do so without taking up an extra unit of space for cables. The audio outputs are on L/R phono jacks.

MAJOR FUN

At the heart of any analog synthesizer (or virtual-analog one, in this case) are its oscillators. If this raw material underperforms, then the sounds will under par, no matter what else you do. It's like having a lousy bass player. The JP-8080 oscillator panel is a powerful repository of analog-modeled waveforms as well as and a joy to use.

The editing system is a little different from that of a traditional analog synthesizer. By pressing the Waveform button and simply toggling through an LED-indicated list, you select from a number of basic waveforms. The selected waveforms for the two oscillators can then be tweaked using Control 1 and Control 2 knobs. How tweaked? That depends. For example, on Oscillator 1's Super Saw waveform, Control 1 determines the amount of detuning, and Control 2 adjusts the mix of detuned and original signals. On the Triangle Mod waveform, Control 1 governs Offset (effectively, the shape of the triangle wave, which increases or decreases the level of harmonic overtones), and Control 2 varies the waveform's LFO content—that is, less or more "wobble."

You cannot specify or alter what will be modified by the two Control knobs. Nevertheless, the range of fundamental sonic possibilities is almost inexhaustible. Seven individual waveforms are available on Oscillator 1, and there are four on Oscillator 2. Each waveform has certain tonal characteristics that are continuously modifiable, and you get the product of two oscillators running in tandem, with relative balances, perhaps synched, and so on. Oscillator 2 can even use an external audio input signal as a waveform.

This system is superb for creating exciting basic sounds that you can edit and to which you can judiciously apply effects; it is equally excellent for making instant, on-the-fly sound changes that won't destroy a sound's overall shape or style. For instance, if you want to use a Super Saw sound that needs a little beefing up, you can just tweak Oscillator 1, Control 2, to thicken it up slightly (as opposed to selecting a new waveform and then having to muck about with the filter and readjust other parameters).

The full tally of Oscillator 1 waveform options includes Super Saw, Triangle Mod, noise, Feedback Oscillator, square, sawtooth, and triangle waves. Oscillator 2 generates square, sawtooth, triangle, and noise waves.

We could easily languish here for the entire review; at the very least, there are one or two important options and features to cover before moving along. Not surprisingly, Controls 1 and 2 govern pulse width and pulse-width modulation on the square-wave settings, which is useful for producing anything from clarinets to Clavinets. When the oscillators are used as noise generators, Controls 1 and 2 affect the filter's cutoff frequency and resonance. This offers far more tonal range than simply white or pink noise, and you don't have to use the main filter controls further down the signal path. (You may want noise as an ingredient in the sound and therefore prefer separate filter control over the unified Patch.)

The Feedback Oscillator—as its name implies, a whistling "guitar feedback"

FIG. 2: The JP-8080's rear panel is recessed, so space is left for cables when you rack-mount the unit. In addition to the two audio inputs at the lower left, the JP-8080 has a front-panel mic input. When the front input is active, the rear inputs are off. Note the onboard power supply—no wall warts here!

Cast Your Own Music

CD ARCHITECT

Design and build audio CDs with speed and precision.

CD Architect allows you to visualize the songs on the playlist, and simply drop them to the appropriate place on the disk image. With precise control over the placement of crossfades, individual track markers, and track volume levels, the CD you burn will sound as good as you intend it to.

Master your own music with functions like EQ, dynamics compression, and the full complement of audio processing functions and effects available in the included Sound Forge® XP audio editor.

Produce pre-master CDs to Red Book spec in the Disk-at-Once (DAO) recording mode, with full PQ code editing, support for UPC/MCN and ISRC fields, and a PQ cue sheet ready for the duplicators.

"CD Architect has numerous Preference settings that make it highly customizable, and its interface puts most major commands within easy reach. It is a powerful and intuitive program and proved quite capable, no matter how complex the job we threw at it."

– Electronic Musician

Supports both SCSI and ATAPI/IDE CD drive formats.

MASTERING HOUSE

Master your own music with the audio tools the pros use.

Four essential products in one software suite!

Includes:

- Sound Forge 4.5, the award-winning audio editor for Windows PCs
- CD Architect, to design your audio CDs with speed and precision
- XFX 1 & 2, a full set of real-time, DirectX audio effects plug-ins

Includes the essential tools that professional mastering engineers use routinely, such as Noise Gate, Multi-band Dynamics, Compression/Expansion, Graphic EQ, Reverb, Time Compression, Pitch Shift, and Chorus Effects.

SONIC FOUNDRY®

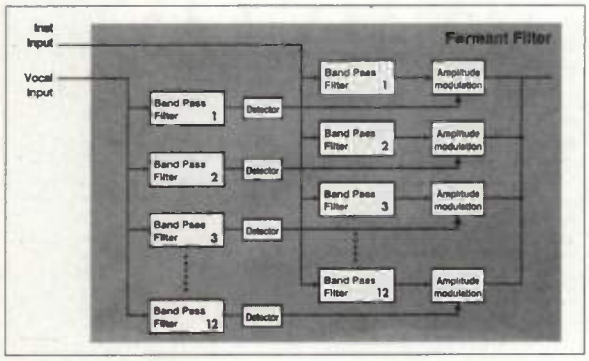
1 800 57 SONIC or www.sonicfoundry.com

754 Williamson St, Madison, WI 53703 Tel: (608) 256 3133, Fax: (608) 256 7300, Internet: sales@sonicfoundry.com.

Sonic Foundry and Sound Forge are registered trademarks of Sonic Foundry, Inc. Other products mentioned are trademarks or registered trademarks of their respective manufacturers.

circle #579 on reader service card

WRH



COURTESY ROLAND CORPORATION U.S.

FIG. 3: The JP-8080's Formant Filter is really a type of vocoder. A signal at the vocal input is analyzed by a bank of filters and an amplitude detector. These settings are duplicated by the second bank and an amplitude modulator, which superimpose the vocal signal's frequency and amplitude characteristics on the signal at the instrument input, yielding "talking" effects.

type of waveform—operates only monophonically. For that kind of sound, I can't see monophonic operation as a problem because a polyphonic guitar-feedback sound would be a complete mess. A sensible limitation, I'd call it.

You can run the oscillators in tandem (separate waveforms, balance, and so on), applying unified control within the Oscillator Common panel. In this control area, you can make global pitch changes in octaves, route and adjust the combined oscillator level going to the LFO or envelope generator, and balance the level of X-mod (cross modulation). During my time with the JP-8080, the X-mod control became my favorite performance feature; this classic analog technique uses the frequency of one oscillator to modulate the other, adding grunge and, in some cases, creating some wild sounds. Great stuff.

Oscillators 1 and 2 can be hard synched (useful if you want those guitar-feedback effects without the mono result of using the Feedback Oscillator), and there's even a ring modulator that multiplies the signals from the two oscillators; the resulting waveform is generated by Oscillator 2. Ring modulation is offered only as an on/off button, but for bell-like overtone sounds, it is a must-have.

For going full throttle, there's a Unison button that isn't even on the keyboard version. It harnesses all available oscillators for monster mono sounds.

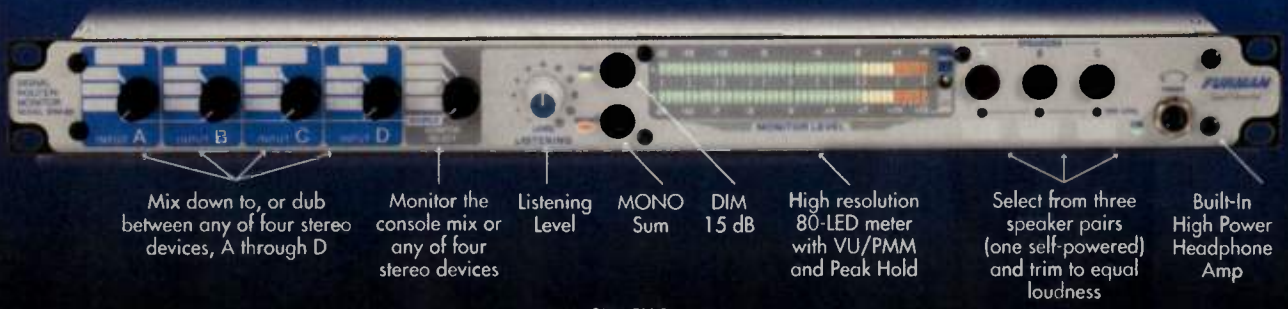
FILTERS AND AMPLIFIERS

If oscillators are the heart of a synthesizer, filters are its soul. The JP-8080 does not have real analog filters, but it does a most creditable job of replicating their sound. I'll say right off that the JP-8080 is far too precise and clean to be mistaken for an Oberheim 4-Voice or a Roland Jupiter-8. But I suspect that today's ears are attuned to the laserlike bite of digital filters, and there's no question that these babies will send a shiver down your spine.

Filter parameters include switchable slope (12 or 24 dB/octave) for softer or harder tonal changes, and switchable lowpass, highpass, or bandpass filter type. Cutoff frequency and resonance are slider controlled. (I can hear a few purists grumbling over Roland's choice

SRM-80 SIGNAL ROUTER/MONITOR

MONITORING, MIXDOWN, AND DUBBING HAVE NEVER BEEN THIS EASY...



SRM-RU Remote

The new SRM-80 Signal Router/Monitor makes mixdown and dubbing simple, professional and affordable.

It provides signal routing and monitoring for four stereo devices (such as DAT, cassette, Mini Disc, CD-R, etc.) — plus the main console output. Multiple copies can all be made simultaneously. And that's only the beginning.

Monitor using three different speaker pairs, *at the same loudness*, using our exclusive "set-once" level trims. Speaker button "A" switches line-level for driving self-powered monitors; B and C use a high power relay to redirect your power amp output to either of the two pairs.

There's even a built-in high-power headphone amp.

A high resolution 80-LED meter for precise level calibration of all stereo devices, MONO Sum to check for mix problems, a DIM button to reduce listening levels during interruptions, and more. All five pushbutton functions are also available remotely on the optional SRM-RU, which includes a 10-foot cable.

Contact us and we'll send you a free SRM-80 data sheet. Ask for our new color catalog too.

FURMAN

FURMAN SOUND, INC.
1997 South McDowell Blvd. • Petaluma, CA 94954
Tel: (707) 763-1010 • Fax: (707) 763-1310
e-mail: info@furmansound.com
Web: www.furmansound.com

circle #580 on reader service card

omebody's Been Thinking About You

n designing our new workstation we had to carefully consider many things, but above all, the most important onsideration was what you might actually want. So if you're about to settle for the usual mix of synth and sequencer ith a few extra frills thrown in. Wait ! Wouldn't you like to have a top of the line pro piano too ? What about a drawbar rgan ? Or how about a universal sample player ? Or a groove machine? The Equinox Pro is all of these things and much, uch more at an unbelievably low price that makes sweet dreams come true. Take a look....

UND LIBRARY- Nearly 1200 sounds t of the box", ranging from the ttest analog synth patches to crisp ustic and orchestral tones, and hout having to buy any additional M modules. These sounds, created by ne of the top programmers in the U.S, be quickly and easily edited and over 00 user sounds can be saved into the ndard on-board memory.

E REAL PIANO*-Generalmusic's PRO ies physical modeling pianos hardly d any introduction at all. An ablished favorite of many of the rld's most prominent recording and ring pianists, the Grand Piano, Rhodex, rli, CP and Clavinet sounds from the, p of the line" PRO2, are included as ndard on the Equinox PRO along with patented "Damper physical model" and tural string resonance" technologies.

RFORMANCE-Combine up to 16 nds together in any kind of multi-split layer configuration. The sliders and

DRUMS KITS - 43 on board drum kits from a brand new sample library ranging from hip-hop, dance and techno to fusion, rock, jazz and 70s. Editing is quick and easy and you can save as many user drum kits as you like*, (*up to 2048 kits).

USER PANEL - Each of the 16 sliders and 16 buttons, (8 physical buttons and sliders with a SHIFT key), can be individually programmed to control either the internal functions of the synth engine and sequencer or they can be set up to send any MIDI controller, system common or system real-time message of your choice to either of the two MIDI out ports. Up to 16 complete panel configurations can be saved and independently recalled.

4 INDEPENDENTLY ASSIGNABLE OUTPUTS - Each performance part, sequencer track or drumkit instrument can be individually assigned to any of these outputs either as a stereo pair or as a single mono out.

SINGLE INSTRUMENT GROOVES- Any musician will find our collection of "single instrument grooves" indispensable. These superb phrases, offering everything from drum loops and bass lines to clavinet riffs, organ licks, guitar grooves and a whole lot more, have been created by some of the worlds top session musicians. And they're yours to use as you please in any sequence or song creation of your own. We've already taken care of the royalty payments !

CONTROLLER/6 MIDI PORTS - With no less than 6 independent MIDI ports, the Equinox PRO offers full control over 32 channels of MIDI data. The keyboard can be used as a 16 zone controller with each zone having its own programmable upper and lower split points and velocity limits, (which may overlap with other zones - of course !)

3 PROGRAMMABLE PEDAL JACKS

DJ GROOVES
Having 1024 on-board grooves puts the Equinox PRO head and shoulders above any of those stand alone "Groove Stations". All grooves can be edited, filtered, remixed and even "scratched DJ style" in real time. Plus you can create your own grooves from any midi file or sequencer song.

HARD DISK* - The Equinox PRO comes as standard with a 2Gigabyte internal hard disk. Anything can be stored on the hard drive - Sounds, Performances, Drum Kits, Imported Samples, Grooves, Midi Files etc. The hard disk can also be accessed "invisibly" so that new songs can be loaded while the sequencer is already busy playing another song.

SCSI INTERFACE*

EQUINOX PRO

tons can instantly be used as mutes and ume controls for your 16 parts.

AWBARS- One innocent looking little tton transforms the Equinox PRO into a rsatile drawbar organ. While the sliders come a set of traditional organ drawbars, e front panel offers instant access to y Click, Percussion and Rotary speaker eed, (all user editable). There's even a oice of Drawbar voicings, (Smooth, Hard, zz and Rock) and the added flexibility to it each drawbar's pitch, and pan position lividually.

AL TIME CONTROLLERS
nether you're playing single sounds, formances, samples, grooves or quencer songs, grabbing a handful of lers will instantly transport you to log heaven, (and without the need for 040). Sliders are pre-assigned to ntrol envelope attack/ decay/ release, er cut-off / resonance and LFO depth d speed but any slider can easily be programmed to control the parameter your choice. In sequencer mode the lers can also be set to function as a track mixer with the press of a single tton.

POWERFUL SEQUENCER -The versatile 16 track sequencer offers a staggering 250,000 events of storage and allows you to store 16 songs in memory at once. Add to this the power of 1/192 resolution, Groove quantize, Event list editing and the ability to record ALL slider movements, (either real-time editing of filters, envelopes etc or multiple track mixdowns) plus the life saving UNDO function and you'll start to see why the Equinox PRO is really a composer's dream machine. The sequencer even has it's own 16 tracks, independent from the rest of the synthesizer so, while a 16 track song is playing, you can freely select any complex multi-split or layered performance to play along with it. Simply put, it's just like having two separate keyboards.

EFFECTS- Up to four independently assignable DSPs are available offering 85 crystal clear digital effects. Ranging from simple reverbs and choruses to complex composite algorithms like GUITAR FX, (Distortion, Gate, Delay and 4 Band EQ using only one DSP section !), 3D ENHANCER, AUDIO EXCITER, RING MODULATOR, 10 BAND EQ and 4 PART PITCH SHIFTER.

ARPEGGIATOR - With 16 factory presets and 16 user programmable patterns the Equinox PRO's Arpeggiator will send you soaring back to the 70's, (with a few little technological miracles thrown in for good measure). As well as the usual UP and DOWN directions there's also RANDOM and INPUT, (the order in which the notes were played). Velocity can be pre-set, disabled or controlled by your playing style and there's also a CRESCENDO feature to reduce or increase velocities as the pattern cycles around. There's even a HOLD button which lets your pattern do it's thing while giving you both hands free to tweak the arpeggiating sound with the real time controllers.

88 NOTE PIANO ACTION - Fully weighted 88 key hammer action gives you the authentic feel and response of a fine acoustic piano.

SAMPLE TRANSLATOR-The Equinox PRO comes standard with 8Mbytes of Sample RAM, (expandable to 40Mbytes), which can be used to load samples in Akai, Kurzweil, WAV and AIFF formats from CD-ROMS or floppy disks, (with other formats to be supported in future o.s releases). Loaded samples can be freely edited like any other sound and they even stay in memory after you switch off the power.

Breakthrough Price: $ 3,695.00

Also available: **Equinox 61 $ 1,995.00**
Equinox 76 $ 2,195.00
* Optional on Equinox 61 & 76. models.

Contact Generalmusic Corp. for the authorized dealer near you to get your FREE EQUINOX DEMO CD!

GENERALMUSIC®
1164 Tower Lane • Bensenville, IL. 60106
Tel.: (800) 323-0280 • Fax: (630) 766-8281
www.generalmusic.com

circle #581 on reader service card

of a slider, rather than a knob, for these controls—and I could be one of them.) You can tailor filtering over the keyboard range with the Key Follow knob and can similarly control the amount of LFO being applied to modulate the cutoff frequency.

THE MODS

The filter and amplifier each has its own attack-decay-sustain-release (ADSR) envelope generator, which can operate in positive or negative mode. It's interesting to see that Roland has abandoned its more elaborate "time-variant" envelope controls, both here and on the amplifier EG. Roland has been using multiparameter EGs for many years, even on the equally analog-style JD-800 synth. But I think this was a good time to jump ship. Complex envelopes can detract from an instrument if their complexity stops you from wanting to experiment. With an analog synth, the traditional ADSR type of EG is perfectly acceptable for all but the most protracted of sounds.

In addition to the filter and amplifier envelope generators, there's a separate two-stage (attack and decay) pitch EG, which can operate in positive or negative mode. The pitch envelope generator is a brilliantly useful device, capable of adding subtle but vitally important characteristics to a sound. The JP-8080's intuitive and hands-on styling should do a lot to introduce—or reintroduce—this feature.

The unit's two LFOs deliver a choice of four waveforms (triangle, sawtooth, square, and sample-and-hold), with rate (frequency) and fade controls. LFO depth—the amount of LFO modulation being applied to a section of the instrument—can be set separately for the filter, amplifier, and oscillator. You can apply the oscillator (pitch), filter, or amplifier to LFO 2. It is hard-wired to external control from, say, a mod wheel on your controller keyboard.

SOUNDS LIKE ADULT SPIRIT

Presets may be the curse of modern sound design, but they're here to stay. Out of the box, the JP-8080 offers some 256 Performances (2-Patch sounds) and 512 Patches to flip through.

Roland is the master when it comes to lusty, exciting Patches, and the JP-8080 has all manner of evolving, textural sounds that slowly twist and turn, flicker, and burble in time-honored analog fashion. How slowly? The envelope attack can fade in over more than 20 seconds, and the release time can stretch to almost a minute. I'm not going to pick out any favorite sounds, though, because I don't think that is what the JP-8080 is all about. Also, it is so easy to create and mutate sounds with the unit that presets would no doubt quickly lose their appeal.

As I mentioned earlier, you don't need a keyboard to operate the JP-8080. In fact, I can almost see a keyboard as an encumbrance. (Finally, I'm on the same wavelength as Don Buchla!) Arpeggiation is totally in keeping with this style of instrument, so it makes sense to set up a hip little arpeggiator pattern and start tweaking in context, as it were. For polyphonic auditioning, you can use the 16 white buttons along the bottom of the panel as keyboard-type triggers. Yep, you can even play chords. In this Preview mode, LEDs within 12 buttons light up in "keyboard" fashion so that you know which buttons to press.

For manufacturer information, please see Contact Sheet, p. 195.

Change the course of music history.

Hearing loss has altered many careers in the music industry. H.E.A.R. can help you save your hearing. A non-profit organization founded by musicians and physicians for musicians, music fans and other music professionals.

H.E.A.R.offers information about hearing loss, tinnitus, testing, and hearing protection. For an information packet, send $10.00 to: **H.E.A.R. P.O. Box 460847 San Francisco, CA 94146 or call the H.E.A.R. 24-hr hotline at (415) 773-9590.**

H.E.A.R.®

HEARING EDUCATION AND AWARENESS FOR ROCKERS

circle #571 on reader service card

Obviously these buttons still trigger conventional notes, but this system helps you uncouple your role as a player from your role as a sound designer. Your fingers won't fall into the same old riffs and runs as they would when playing the JP-8080 from a regular keyboard, which helps you focus very clearly on the sound.

EFFECTS

Two minutes into listening to some JP-8080 sounds, I suddenly got a cold, sinking feeling that a lot of the instrument's breadth and depth might be generated by the effects section. But no, not at all. At the very top of the panel are controls for delay (Time, Feedback, and Level knobs) and multi-effects (Level), as well as global treble and bass tone controls.

You get 13 types of multi-effects, mostly of the chorus/flanging/phasing variety. Aside from a depth parameter, they are preset. Delays have a degree of customization in terms of being able to specify mono (short or long) or panning delays.

I didn't use the effects a great deal, but some chorusing here and there can give a sound a more atmospheric, "produced" feel, and winding up the bass tone control is good for drum 'n' bass–style sub-bass rumbles.

ARPEGGIATOR

The JP-8080 doesn't have the be-all and end-all arpeggiator, but in addition to up/down/random patterns at your

ROLAND
JP-8080 synthesizer module
$1,595

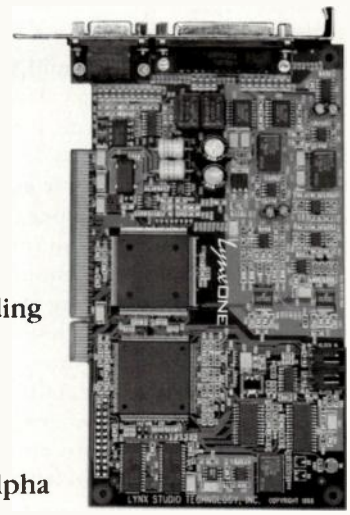
FEATURES ■■■■■
EASE OF USE ■■■■■
QUALITY OF SOUNDS ■■■■■
VALUE ■■■■■
1 2 3 4 5

PROS: Astounding audio quality and range. Excellent performance potential in its acceptance of external audio sources. Innovative Vocal Modulator section. Panel controls send MIDI data. A delight to operate.

CONS: Only 2-part multitimbral.

CIRCLE #438 ON READER SERVICE CARD

LynxONE



The ONE card with...

- ✓ Studio quality 24-bit analog audio
- ✓ 24-bit/96kHz AES/EBU or S/PDIF
- ✓ +4dBu or -10dBV balanced i/o
- ✓ Simultaneous four-channel recording and playback
- ✓ Dual, deeply buffered MIDI ports
- ✓ Flexible clock synchronization
- ✓ Drivers for Windows 95/98, Windows NT for Intel and DEC Alpha
- ✓ Complete, shielded cable set

If you have been waiting for a single PCI card solution for professional audio and MIDI that ships with rock-solid drivers, your wait is over ... LynxONE is here!

Lynx Studio Technology, Inc.
1048 Irvine Avenue, Suite 468, Newport Beach, CA 92660-4602
Tel: (949)515-8265 Fax: (949)645-8470
email: sales@lynxstudio.com www.lynxstudio.com

circle #582 on reader service card

circle #583 on reader service card

PROJECT STUDIO EXPERTS

WORLDWIDE DELIVERY
The Largest Selection Of The Best Products In The Business

▸ DIGITAL & ANALOG MULTITRACKS & CONSOLES ▸
▸ EFFECTS, MONITORS, MICS & PRE-AMPS ▸
▸ KEYBOARDS, GUITARS & ELECTRONIC PERCUSSION ▸

CALL NOW
800-264-6614
OUTSIDE U.S.- 860-442-9600
FAX: 860-442-0463

CARUSO MUSIC
94 State Street ▸ New London, CT 06320 USA ▸ E-mail: sales@caruso.net ▸ http://www.caruso.net

fingertips, you also have Roland's RPS (Realtime Phrase Sequencer). This feature is like a mini sequencer: you can record patterns or parts into 48 locations and then retrigger them from keys on your MIDI keyboard. Arpeggiator patterns are sent over MIDI, so you can save and edit them in your sequencer.

I very much enjoyed playing around with the Arpeggio Beat Pattern settings. You can impose these rhythmic templates on a selected arpeggiator pattern, turning what would otherwise be fairly static, gated parts into all manner of slurring, sliding, and accented (yes, Roland TB-303–style) patterns. At times, I almost thought I'd gotten Steinberg's *ReBirth* running.

YOU'VE GOT THE MOTION

The delightfully named Motion Control is a feature that lets you record—and even overdub—front-panel control movements. This is a powerful means by which you can explore the JP-8080's range of sonic possibilities if you don't have a sequencer in your setup. You can record a loop of up to eight bars or a longer continuous performance. Motions can be stored internally or on the memory card.

Cool though Motion Control can be, it pales into insignificance beside the ability to record sound changes into an external sequencer, where you have unlimited editing control. As noted earlier, the panel controls can send MIDI messages. MIDI knob-data transfer is turned off by default, so it'll take a quick dive into the Edit pages to turn the feature on.

Thus armed, you can record and tweak simultaneously or record now and tweak later (recording sound changes on a separate track); you can even begin to build up patterns and parts using different sounds on different channels. If you want to get really fancy, try synchronizing the LFO, chorus rate, arpeggiator, RPS patterns, Motion Controls, and delays to MIDI Clock. Being able to synchronize all of this is powerful stuff, whether you use it mostly with RPS patterns or with an external sequencer or drum machine. LFO sync will be a sure winner for dance music.

The JP-8080's range of sounds and level of real-time control are stellar, so it was very frustrating to run out of tracks, having recorded just two parts. That's right, the JP-8080 is only 2-part multitimbral. It must be said that even software synths like Koblo's *Vibra9000* (never mind hardware rivals like the Clavia Nord Lead 2 or Access Virus) offer a great deal more in this department.

Of the 38 front-panel controls that send MIDI messages, 11 use System Exclusive data. (Most of these are the buttons for filter type and the like.) The other controls send Control Change messages, mostly for altering effects, pan, volume, portamento, and so on. However, you can assign virtually any controller to the knobs and sliders.

VOCAL FOCAL

The JP-8080 may lack the cool ribbon controller of the JP-8000 keyboard, but its absence is more than compensated for by a new Voice Modulator section. The Voice Modulator is a catch-all label for a variety of voice- or external signal–based tricks and treats, ranging from vocoding to vocal morphing to the application of a 12-stage filter bank. Unlike the regular synthesis modes, in which the functions of the Control 1 and 2 sliders are preset, you can assign these sliders to any of a wide variety of parameters when using the Voice Modulator.

On the JP-8080, vocoding is called "formant filtering." The process uses

JP-8080 Specifications

Synthesis Engine	physical modeling
Maximum Polyphony	10 voices (Voice Modulator off); 8 voices (Voice Modulator on)
Multitimbral Parts	2
Patches (ROM/RAM)	384/128
Performances (ROM/RAM)	192/64
Oscillators (per voice)	2
Oscillator Waveforms	Osc. 1: Super Saw, Triangle Mod, noise, Feedback Oscillator, square (PWM), saw, triangle Osc. 2: square (PWM), saw, triangle, noise
Filters (per voice)	(1) selectable high/low/bandpass; 12 or 24 dB/octave; with resonance
Envelope Generators (per voice)	3 (pitch, filter, amplifier)
Number of LFOs (per voice)	2 (with Rate, Fade, and Depth)
LFO Waveforms	triangle, sawtooth, square, sample-and-hold
Arpeggiator	4 modes (Up, Down, Up & Down, Random); 90 beat patterns; 1- to 4-octave range
Number of Effects	13 multi-effects; 5 delays; tone control
Voice Modulator	(2) 12-band bandpass filters; noise generator; robot oscillator; dedicated ensemble and delay effects
RPS Pattern Data (internal memory)	Patterns: 48 max. loop length: 4 measures
RPS Recording Method	real-time loop
Resolution	24 ppqn
Motion Control Recording Method	real-time loop and 1-shot
Tempo (RPS and Motion Control)	20–250 bpm
Special Features	SmartMedia card slot (2 or 4 MB)
Motion Control Data (internal memory)	Motions: 2 x 2 sets max. loop length: 8 measures max. recording length: 99 measures
Inputs	(1) ¼" unbalanced, mic-level (-60 to -20 dBm); (2) ¼" unbalanced, line-level (-30 to +4 dBm)
Audio Outputs	(2) ¼" unbalanced line; (1) ¼" stereo TRS headphone
Other Ports	MIDI In, Remote Kbd In, Out
Display	2 line x 16 character, backlit LCD
Power Supply	117/230/240 VAC internal
Dimensions	19" (W) x 3.5" (D) x 10.44" (H)
Weight	9.94 lbs.

two matching banks of 12 bandpass filters each, in classic vocoding style. Using a mic plugged into the main panel or at the rear, you input a vocal or instrumental audio signal, which will be your modulator. An instrument sound from the JP-8080 (or an internal oscillator in the Voice Modulator) serves as a program signal. The audio signal is analyzed by a bank of filters and an amplitude detector; these settings are automatically duplicated by the second bank and an amplitude modulator, which superimpose the audio signal's frequency and amplitude characteristics on the JP-8080 instrument (see **Fig. 3**).

The vocal-morph function analyzes the audio input signal and isolates the frequencies around 1.2 kHz. You can use it to apply a variety of vocal gestures (most effectively an *ah* vowel sound, which is strong in the 1.2 kHz range) to make control changes to an instrument sound.

You also can use the filter bank as a 12-band graphic EQ to, say, weird up or emphasize drum loops, vocal screams, effects, and so on, that you've brought into the JP-8080's audio input. There's even a feature called Robot Voice. (I think you can probably figure out what that one is.) These are all excellent performance features that will greatly enhance the JP-8080's appeal to DJ/musicians.

HIGH-BRED HYBRID

The JP-8080 is a classic hybrid: part synthesizer, part effects machine. Its range of nonkeyboard controls and features is quite revolutionary, to the point where any keyboard manipulation at all seems almost to diminish its power by tying you down to chords and riffs. And Roland's implementation has turned the apparently humble audio inputs into a versatile feature that can be used as oscillator source, modulator, and general access point that allows the JP-8080 to be used as a creative signal processor.

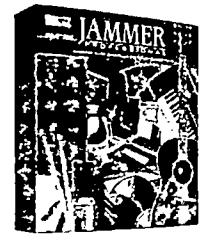
I still puzzle over one or two features; they work, although I'm not exactly sure why. But I have no hesitation in saying I'd buy the JP-8080 in a second. I'd possibly even trade in my JD-800—and that's really saying something.

When **Julian Colbeck** *starting reviewing synths more than 20 years ago, one of his first candidates was the Roland SH-1, of which the JP-8080 is strangely reminiscent.*

McCartney, Brubeck and Brooks aren't going to be able to make it . . .

to *your* session tonight (sorry about that). But there is another way to get some help turning your ideas into hits. All you need is a tool that sparks your creativity and lets you develop your musical ideas quickly. Of course it'd be nice if it also created great drums parts, innovative bass lines and rhythm parts to give you some ideas and help you get going.

That tool is **JAMMER Professional v4.0** for Windows. 256 tracks of graphic sequencing seamlessly integrated with the world's most advanced software studio musicians. Powerful software created by professional musicians who understand the composition process. This software is a MUST HAVE TOOL.



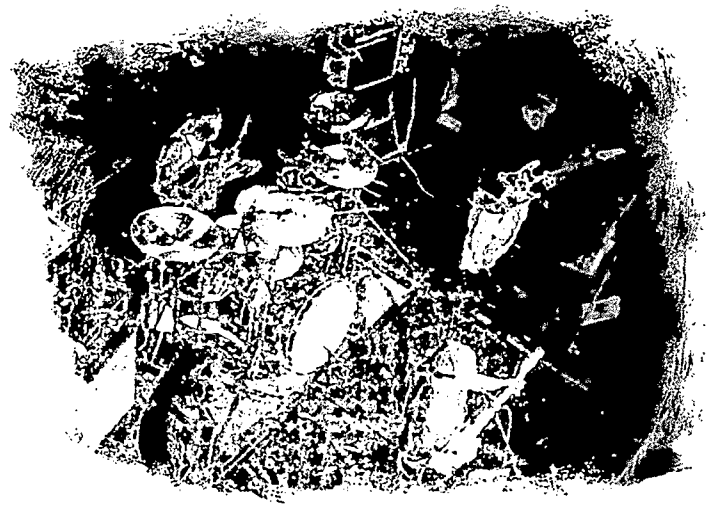
Do this. Take 5 minutes and see JAMMER for yourself in the interactive guided tour at **www.soundtrek.com**. Then see your local software dealer or call SoundTrek today at 800-778-6859 or email sales@soundtrek.com.

FREE DEMO and MIDI FILES at www.soundtrek.com
>> Ask about our Competitive Upgrade <<
tel 800-778-6859 770-623-1338 fax 770-623-3054
SoundTrek 3408 Howell St, Suite F, Duluth GA 30096

JAMMER®
The Power to Create

circle #584 on reader service card

circle #585 on reader service card



Interstate has everything you need to keep your band sounding great — a **HUGE** inventory, **LOWEST** prices guaranteed, and **EXPERT, FRIENDLY** customer service. What more can you ask for?

Contact us for your FREE Interstate Catalog now!
Call 1.800.462.2263 or visit www.interstatemusic.com

Interstate
A Division of Cascio Music®

QUASIMIDI

SIRIUS

A techno dynamo that talks the talk.

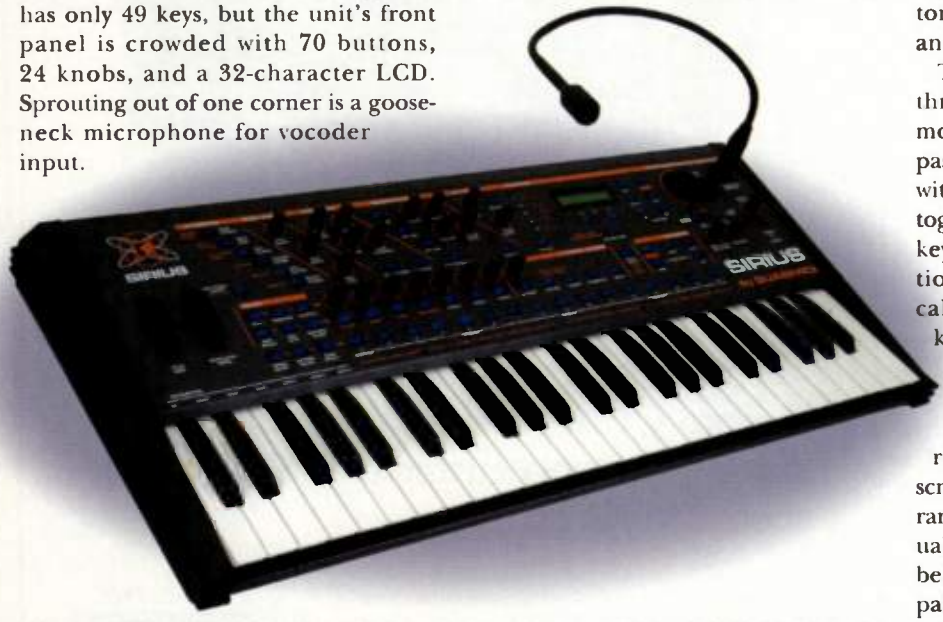
By Geary Yelton

"What a cute little synthesizer!" That's one comment I've heard about the Quasimidi Sirius. Despite its name, at first glance this German-made synthesizer might not look like an instrument you can take seriously. But what's inside it may win you over quickly.

Tucked behind its diminutive exterior is big-time music processing power, including fat techno sounds, a song and pattern sequencer, a programmable arpeggiator, a beat-recognition system that allows the synth to sync to external audio signals, and even a built-in vocoder. Quasimidi specializes in making groove-oriented production gear, and the Sirius is designed and marketed specifically for the techno crowd. So if urban or dance music is your thing, read on.

WHAT YOU SEE

The Sirius has a very accessible user interface, thanks in large part to the sheer number of dedicated knobs and buttons that constitute it. The keyboard has only 49 keys, but the unit's front panel is crowded with 70 buttons, 24 knobs, and a 32-character LCD. Sprouting out of one corner is a gooseneck microphone for vocoder input.



With its wealth of real-time controllers, its onboard vocoder, and its timbral selection, the Quasimidi Sirius is clearly a workstation designed for producing techno music.

The front panel is clearly divided into sections: Mixer, Vocoder, Sequencer, and sound editing features (which include the Modulator, Oscillator, Resonance Filter, and Amplifier). A row of 16 numbered buttons is used for selecting Sounds, Patterns, and Songs, as well as various other functions. All of the unit's translucent buttons light up red when they're on, so their status is apparent at a glance.

The LCD can display the selected Sound, Pattern, or Song and tempo. When you press the Edit button, the various editing menus pop up. Three function buttons below the display let you select items from these menus, and two Page/Bank buttons serve as left and right cursors for maneuvering within the display. An infinite data knob called the Value/Tempo dial changes parameter values and adjusts sequencer and arpeggiator tempi. Pitch-bend and mod wheels are included, along with an Overblast knob that cranks up the synth's low and high frequencies for that rave-club fave, the U-shaped EQ curve.

The back panel (see **Fig. 1**) is adorned with a single ¼-inch footpedal jack, ¼-inch stereo analog outputs, and MIDI In, Out, and Thru ports. It also provides ¼-inch jacks for the vocoder's modulator (labeled "Analyse-In") and carrier inputs.

SIRIUS SYNTHESIS

Unlike other Quasimidi instruments that offer only sampled-sound playback and limited editing options, the Sirius is a fully functional digital wavetable synthesizer, with editable resonant filters, ADSR envelope generators, and so on. Almost all of the sound-editing functions are available right from the front panel.

Synth and drum sounds are divided into six categories each. The drum-sound categories are Natural, Dirty Natural, Electronic, 909-type, 808-type, and Drums-SFX, and the synth sounds are classified as Bass, Dirty Bass, Pads, Plucked, Solo, or Effects. Categories are selected by pressing six dedicated buttons. In total, 384 drum sounds and 288 synth sounds are available in ROM.

Virtually none of the synth sounds are natural: most are very analog sounding, even retro. For instance, none of the Basses sound anything like an actual bass guitar. Likewise, the Plucked category contains no guitar or harp sounds, although the Solo category includes a lone flute. However, this timbral palette is appropriate for the Sirius's intended audience.

Each synth voice uses two oscillators. For waveform selection, the Oscillator section has a Wave-Macro knob that scrolls through 125 sampled waveforms. These waves have names like Moog-Deep, TB_Bass1, and VS_Bell. Because the Wave-Macro knob is so minute, it's difficult to get it to land on the waveform you want. Fortunately, you can use the infinite data dial to perform the same function. Also in the Oscillator section are knobs for Detune, Glide, and Filter Overdrive, as well as two buttons for pitch-shifting up and down by an octave or two.

The Resonance Filter section includes three buttons for selecting the filter's mode: lowpass with a 24 dB slope, lowpass with a 12 dB slope, and highpass with a 12 dB slope. Two more buttons toggle the filter's Velocity sensitivity and keyboard tracking on and off. In addition to Cutoff and Resonance (here called Q-Factor) knobs, you get one knob for controlling envelope depth and another called VCF-EG Macro, which takes the place of separate knobs for attack, decay, sustain, and release. The VCF-EG Macro knob scrolls through different envelope types, ranging from a percussive blip to a gradual attack and decay, with everything in between. A handy diagram on the front panel illustrates five envelope types to indicate the ranges. The VCA-EG Macro knob in the Amplifier section works the

Drums

Times Infinity

And then some...

The Alesis **DM Pro**™ holds 1,664 of the best acoustic and electronic kicks, snares, toms, cymbals, hi-hats, percussion, chromatic/tonal sounds, special effects and much more. For MIDI studios, pro recording facilities and performing percussionists, DM Pro has 64 programmable kits with up to 64 instruments in each. For triggering from pads and re-triggering from tape, you get 16 lightning-fast trigger inputs and 6 independent audio outputs.

There's more...64 voice polyphony and 20-bit digital resolution for superb realism, 24-bit onboard multieffects, including reverb, delay, pitch effects and more, plus a front-panel expansion card slot...add up to 8MB of user samples and sequences.

DM Pro. An infinite variety of the best drum sounds. Hear it today at your Alesis dealer, or call 800-5-ALESIS or visit www.alesis.com for more information on the world's most advanced drum and percussion tool: DM Pro.

DM PRO™
64 VOICE EXPANDABLE DRUM MODULE

© DM Pro is a trademark of Alesis Corporation.
Alesis Corporation 1633 26th Street Santa Monica CA 90404 800-5-ALESIS www.alesis.com

ALESIS

Alesis synthesize

WRH

FIG. 1: In addition to its analog outputs, a footpedal jack, and MIDI ports, the Sirius's rear panel has two analog vocoder inputs, one for the carrier and one for the modulator (marked "Analyse-In"). A small knob allows you to adjust the gain of the Analyse input.

same way. The amplifier also has a Release button that lets you instantly lengthen its release time.

The Modulator section has knobs for Mod-Macro, Mod-Depth, and Mod-Rate. The Mod-Macro knob scrolls through different LFO wave shapes and their destinations. These Macro knobs let you work quickly—something that's essential when you're performing on stage—but they don't provide the most precise means of creating original sounds.

The Sirius offers two independent effects processors that provide the basics. FX1 offers a half-dozen reverbs and slightly more than one second of delay, while FX2 provides chorus, flanging, and slightly less than one second of delay. The effects are an integral part of most preset sounds.

BUT SIRIUSLY, FOLKS

Successfully making music with the Sirius means mastering its sequencer, so let's take a detailed look at it. Quasimidi has developed a wonderful performance-oriented user interface for recording and playing back sequences.

As with other Quasimidi sequencers, Songs are created by stringing together Patterns. Patterns are composed of seven tracks, each of which records a Motif. In Quasimidi lingo, a Motif is simply a single musical part in a Pattern; however, Motifs are actually independent of Patterns, so Motifs from one Pattern can be used in other Patterns. This allows a kind of improvisational mix-and-match approach to composition that works very well for sequencing on the fly. A Motif can be up to eight measures long, which is also the maximum length of a Pattern. You'll find 142 preset Patterns in ROM, and the Sirius has enough room to store 100 user-created Patterns.

Of the seven sequencer tracks, the first four are reserved for percussion instruments: track 1 is Kick/BD, track 2 is Snare, track 3 is Hi-Hat, and track 4 is Percussion. If you're creating techno music, it's safe to assume you'll always want to have control over the kick, snare, and hi-hat tracks. The Percussion track is actually a complete drum kit stretched out across the keyboard with a single percussion sound assigned to each key. The last three tracks are reserved for synth sounds and may be assigned to any pitched voice. Typically, these tracks are used for bass, chords, and melody, but you can use them however you want. Tracks can be allocated to play an internal voice, a MIDI channel, or both, so it's possible to play external instruments with the Sirius's sequencer. Each track has separate volume, pan, and effects-send controls in the Mixer section. These settings are stored as part of the Pattern.

Up to 16 Songs can be stored in user memory, and each Song can contain up to 100 "Song-steps," Sirius-speak for a Pattern played once or repeated to a maximum length of 64 measures. In a Song-step, any track can be muted, and the three synth tracks can be transposed up or down. A Song may be up to 600 measures long, which should be enough to exhaust any denizen of the dance floor.

The Sirius provides three modes for recording sequences: step time, real time, and drum grid. When recording in step time, you can change a note's rhythmic value and adjust its staccato or legato value. Velocity isn't recorded; instead, you have four levels of Velocity to choose from.

In real-time mode, the sequencer records notes and Velocities, in addition to information from any knob turns or button presses. You can quantize or add a groove factor to recorded tracks. The sequencer's quantization is 100 percent on or off, hard quantization. Once a track has been quantized, you can't recall the unquantized recording, but you can undo the action if you're not happy with the results. The Sirius's groove isn't like groove quantize on most sequencers: it just adds swing to the rhythm. This isn't terribly versatile, but it suits the type of music for which the Sirius was designed.

Drum-grid recording can be performed only on tracks 1 to 4, which are the drum tracks. Programming a drum grid is a lot like programming a drum machine. The 16 numbered keys represent 16th notes in a single measure. When an instrument is selected, press-

Sirius Specifications

Sound Generation	digital subtractive synthesis
Polyphony	28 notes
Multitimbral Parts	7
Keyboard	49 keys, Velocity and Pressure sensitive
Left-Hand Controllers	(1) pitch-bend, (1) mod wheel
Other Controllers	(22) real-time controllers, (1) Value/Tempo dial
Display	2 x 16–character backlit LCD
Synth Sounds (RAM/ROM)	480/672 (384 drum sounds and 288 synth sounds)
Drum Kits	20
Sequencer Types	7-track pattern (step and real time), arpeggiator
Sequencer Patterns (RAM/ROM)	100/142
Arpeggiator Presets	7 patterns
Effects Processors	(2) multi-effects processors, (1) Overblast EQ, (1) vocoder
Vocoder Presets	16
Audio Inputs	(1) XLR mic input; (1) ¼" unbalanced vocoder Carrier; (1) ¼" unbalanced vocoder Analyse (modulator)
Audio Outputs	(2) ¼" unbalanced L/R; (1) ¼" stereo headphone
Other Ports	(1) ¼" footpedal jack; MIDI In, Out, and Thru
Dimensions	29" (W) x 14.75" (H) x 4.5" (D)
Weight	24.5 lbs.

For manufacturer information, please see Contact Sheet, p. 195.

ing a numbered button places a note in the grid, lighting that button. If a Motif is longer than one measure, pressing the cursor keys takes you from measure to measure. The Percussion track (track 4) allows you to record up to 12 sounds. When you select a sound by pressing a key, its name appears in the LCD. Once a sound is selected, you place it on the grid by pressing one of the numbered buttons.

SIRIUS LIVE MACHINE

The 16 numbered buttons can also be used to select Patterns when you're performing live. For this application, Quasimidi refers to the buttons as "Pads." Pads are used to store and recall musical phrases on the fly: pressing a Pad plays its associated Pattern. Each Song contains one set of 16 Pads, though the Patterns associated with the Pads don't necessarily have to be part of the Song; rather, they can be any of the 100 user Patterns in memory.

Pads 1 to 8 trigger user Patterns. A Pattern repeats until you press either another Pad or the Stop button. (The current measure finishes playing before the next Pattern kicks in on the following measure.) Pads 9 to 12 recall one-shot Patterns called Breaks, and Pads 13 to 16 store single Motifs called Special Loop Tracks.

A Break is a user Pattern, with a programmable length that begins playing the moment you touch the Pad (without losing rhythm) rather than waiting until the beginning of the next measure. When it finishes, the previous Pattern resumes playing. As every drummer knows, Breaks are good for transitions and for relieving the monotony of a repetitious phrase.

A Special Loop Track replaces a single Motif in a Pattern to create variations on one track of that Pattern. It plays as long as you hold down the button, and it stops the moment you release. The knob that controls metronome volume also controls the volume of Special Loop Tracks.

With the keyboard, you can transpose Patterns and mute individual tracks on the fly. When Track Mute is turned on, the white keys in the lowest octave toggle the seven tracks on and off. The keyboard's second octave transposes the three Synth tracks in the current Pattern.

Two minor problems arise when transposing Patterns this way. Unless all Patterns are in the key of C, you have to think in terms of intervals rather than pitch when transposing. For example, if a Pattern is playing in the key of D and you press the D key, the Pattern is transposed up a whole step, so pressing the D key actually plays it in E. Pressing the C key returns it to D, the original key. See the problem? Why not just devote the keyboard's top three octaves to transposition?

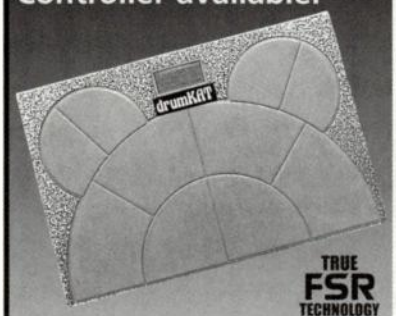
The other problem is that, because only one octave is allocated for transposing Patterns, it will have to stop transposing upward at some point and begin to transpose downward. This break point is the F♯ key. Instead of transposing up a fourth and then up a fifth by playing the F and G keys, you must transpose up a fourth and down a fourth—not too good for playing the blues.

BEAT UP

Three methods for synchronizing the sequencer to an external source are

When you're serious about your performance, nothing else compares!

drumKAT
The most advanced MIDI Controller available.



TRUE FSR TECHNOLOGY

10 Gum Rubber pads + 9 trigger ins, hi-hat controller, 2 MIDI ins, 4 MIDI outs & Breath Cntrl in. Up to 8 notes per pad, pad linking, Latch mode, sequencer... *THE* choice for artists, engineers and performers worldwide!

trapKAT
The ideal digital drumset for your MIDI studio, practice and live playing.

Capture every nuance of your performance incl. cymbal choking & Continuous Controller hi-hat.

24 True FSR, Gum Rubber pads.

Fast setup, 24 pads + kick & hi-hat in less than 5 minutes.

Size: 42x19x3

Always Upgradeable

DK10
Professional features at an entry level price.

TRUE FSR TECHNOLOGY

10 Gum Rubber pads + kick & hi-hat inputs.
Metal chassis with NEW scratch resistant powder coat finish.
GM compatible out of box.
NEW features... Prog. Changes, Gate Time & Latch mode.

Alternate Mode Inc. 53 First Ave., Chicopee, MA 01020 Tel. 413-594-5190
web: www.alternatemode.com ...the website for electronic percussion and more.

circle #586 on reader service card

available with the Sirius. You can slave its clock to another sequencer by turning on MIDI sync. Alternatively, you can use the Tap-Tempo button to manually enter the tempo in real time. (The Tap-Tempo button constantly flashes in time to the beat.) The third method is the Beat-Recognition System.

If you plug a line-level audio source into the Analyse-In or Carrier input jack, you can, in theory, synchronize the sequencer to an external audio signal—specifically a kick drum. Unfortunately, the Beat-Recognition System will not recognize the downbeat, so you have to hit the Start button on the first beat or use a count-in on the Tap-Tempo button to get things started. Even so, the Sirius needs about three measures to lock to the beat. This means it isn't practical to sync the unit to an audio signal unless the audio is already playing.

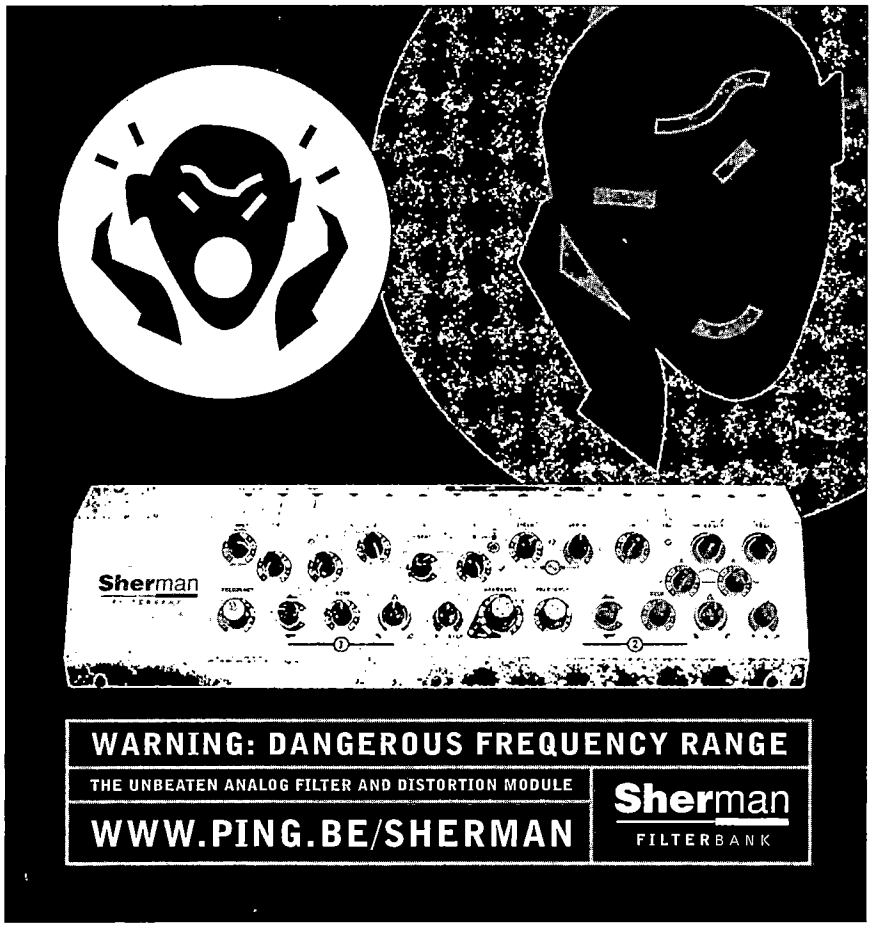
Furthermore, the kick-drum signal has to be solid—very solid. If any syncopation occurs, the Beat-Recognition System might not recognize the beat. The only time I got good results was when the kick-drum pattern was a steady "four on the floor" placed up front in the mix. Even with this scenario, though, the results weren't consistent. When it works, it works well; just don't expect it to work on every song.

ARPEGGIATION STATION

As you would expect from a techno-oriented synthesizer, the Sirius has a very capable arpeggiator. In addition to seven preset patterns (up, down, up and down, random, and so on), there are nine user-programmable arpeggios. You select a pattern using the 16 numbered buttons.

The arpeggiator's Resolution parameter determines whether 8th, 16th, or 32nd notes are played, and Gate Time determines their staccato or legato values. Note Velocity is always recorded unless you turn off dynamics, in which case all notes are played at full Velocity.

An arpeggio can be transposed to play over a range of up to four octaves. If the Double Note feature is activated, every note plays twice. Length Fit forces the arpeggio to conform to a 4/4 beat; even with an odd number of notes, the first note always occurs on the downbeat. Arpeggios can be applied to drum sounds as well as to synth sounds, so it's possible to create percussion loops this way.



circle #587 on reader service card

circle #588 on reader service card

America's Largest Volume Dealer is Now a Part of
America's Largest Musical Instrument Chain

Guitar Center's RHYTHM CITY

• MORE BUYING POWER!
• MORE GEAR!
• MORE SAVINGS!

GUITARS AMPS RECORDING EQUIP EFFECTS ACCESSORIES KEYBOARDS LIGHTING D.J. P.A. DRUMS PERCUSSION

• All Major Brands • New and Used
• All Major Credit Cards Accepted
• Easy Terms-Financing Available
• Professional Sales Staff • Speedy Shipping

Plus...We Do MAIL ORDER

NOBODY BEATS OUR PRICES!

(404) 320-SALE
7253
1485 Northeast Expressway
Atlanta, GA 30329
www.musician.com

1979

I particularly liked the arpeggiator's Hold function. When you play a note and hold the key down, any subsequent notes are added to the arpeggio. Play a note twice, and it appears twice in the pattern. The arpeggio continues until the first note is released, and another begins as soon as you play and hold another key. An arpeggio can also be "frozen" with a footpedal and then transposed by playing a single key in the transposition octave.

Two additional arpeggiator modes, Gater and Chord-trigger, are included, although they don't really arpeggiate. The Gater imposes a rhythmic gate on whatever you play: if you hold a note or a chord, it plays as if extreme tremolo were being applied. Chord-trigger is similar except that when you play a chord, the chord is retriggered with each division of the beat, relentlessly repeating its attack. This turns a legato chord into a jackhammer series of staccato chords.

SPEAK TO ME

Some people might buy a Sirius just for the built-in vocoder, a particularly cool feature.

For the uninitiated, vocoders are best known as a way of making a synthesizer "sing." When you vocalize into the microphone, the signal is split into 11 frequency bands by a bank of filters. Likewise, a synthesized sound is split into 11 frequency bands. The filters on the synthesized sound, called the "carrier," are modulated by the filters on the vocal signal, called the "modulator." When you talk, the complex filter characteristics of the synth sound follow the dynamic formants of your voice. The pitch of the modulator has no effect on the pitch of the carrier, so you control pitch by playing the keyboard.

An early example of this effect can be heard in the chorale to Beethoven's Ninth Symphony on Wendy Carlos's classic synthesizer soundtrack to the movie *A Clockwork Orange*. A more recent example is the hook on the song "Intergalactic" by the Beastie Boys.

A vocoder can accept input from any sound source, not just from a microphone and synth. To that end, the Sirius has audio inputs for both the carrier and the modulator. With these inputs, you can make any instrument follow the envelopes and spectrum shifts of a guitar, running water, or even the radio.

The built-in microphone and 16 vocoder presets make the vocoder immediately easy to use. You may have a problem using it on stage, though: when there are live speakers around, the mic is subject to feedback. You'll have better results with headphones.

LET'S GET SIRIUS

Despite its small size, the Sirius packs a wallop. It's a complete techno workstation with a user-programmable synthesizer, a sequencer, a vocoder, a mixer, and basic onboard effects. You can compose and record entire dance tracks with the Sirius alone; the tracks can even be improvised by a solo synthesist arranging sequenced Patterns in real time.

Understand, however, that the Sirius isn't for everyone. Its timbral palette is confined mostly to electronic sounds that are appropriate for techno music and not much more. With a shorter-than-usual keyboard and a sequencer limited to 8-bar phrases, this is more an instrument for DJs than for keyboard virtuosos. Still, if you're looking for something way beyond your basic techno groovebox, the Sirius may be an excellent choice.

QUASIMIDI
Sirius keyboard workstation
$1,299

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

PROS: Improvisational sequence playback in real time. Vocoder with onboard microphone. Lots of knobs and buttons for real-time control. Compact and lightweight. Ideal for creating dance music.

CONS: Small keyboard. Small LCD. Limited multitimbral capabilities. Poorly translated and edited manual. Not well suited for most styles of music.

CIRCLE #439 ON READER SERVICE CARD

Geary Yelton *has been playing synthesizers for over a quarter century and reviewing them for* **EM** *more than half that long.*

LINE 6

POD

Your direct line to classic guitar amps.

By Michael Ross

Within the past decade, numerous products have come to market that provide alternatives to the old-fashioned way of recording electric guitar tracks. These include everything from straightforward tube direct boxes with built-in amp simulators to products that digitally simulate every link of the signal chain—the guitar, amp, and cabinet, as well as the microphone and its positioning. But only in recent years has some of this equipment begun to yield impressive results.

Line 6 has been a force in the evolution of such products since the 1997 release of its AxSys 212 (reviewed in the September 1997 **EM**). The AxSys was followed by *Amp Farm,* a Pro Tools TDM plug-in with the same physical modeling.

The latest product from Line 6 is Pod (no "the"), an easy-to-use direct box that dispenses both with the hassle of carrying and miking an amp and cabinet and with the expense of running a full-blown Pro Tools system. The attractive, kidney-shaped Pod provides 28 amp simulations, 15 effects, and extensive editing capabilities—all for under $400.

AT FIRST GLANCE

A quick tour of Pod's top panel reveals ten rotary controls and eight buttons. Stepped controls are provided for Amp Models and Effects (see the sidebars "Pod Effects" and "Amp Modeling Guide"). The other knobs are for Output Level, Drive, Bass, Middle, Treble, Channel Volume, Reverb, and Effect Tweak. The buttons include Manual mode, Tuner, Noise Gate, MIDI, Save, Tap Tempo, and Up and Down arrows for scrolling through parameters. A single-character, multipurpose LED is used for everything from MIDI channel assignment to guitar-string pitch.

Connections form a ring around the sides of Pod and include a ¼-inch instrument-level input, a ¼-inch stereo headphone jack, MIDI In and Out ports, and a pair of balanced +4 dBu ¼-inch outputs. (The latter will also work with unbalanced -10 dBV equipment.) The Acoustically Integrated Response (A.I.R.) switch allows you to choose between modes that are optimized for direct recording and for use with an amp.

An RJ-45 jack lets you connect one of the optional Line 6 foot controllers. The Floor Board ($299) features a Vox-style wah-wah pedal, an Ernie Ball–style volume pedal, on/off buttons for effects, bank and channel selection, a digital tuner, tap tempo, and editing capabilities. (Note that wah-wah is inaccessible without the Floor Board.) A more economical foot controller is the FB4 ($79), which provides only four buttons for channel selection, as well as tap tempo.

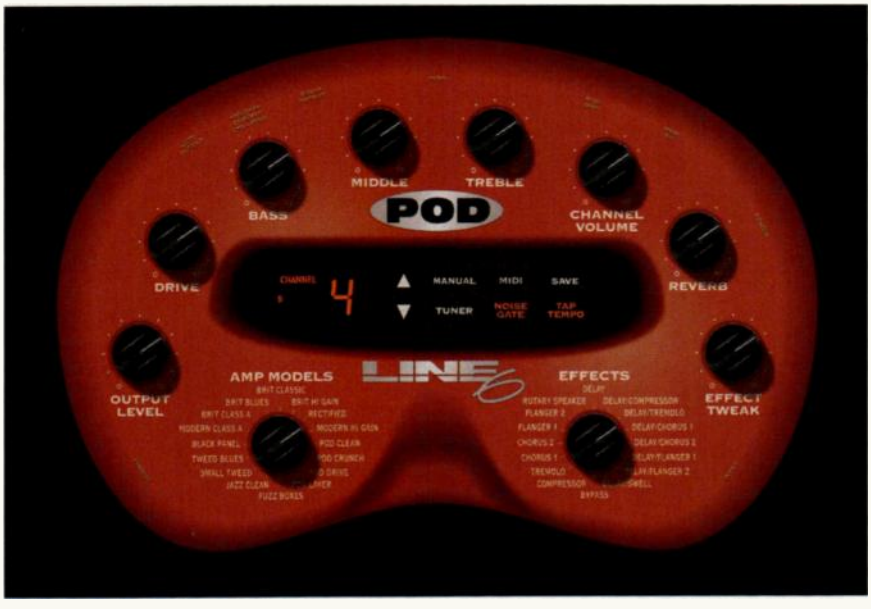
ART OF MODELING

Amp modeling is the process of digitally re-creating the tone of an amp as well as the way its components interact. Line 6 doesn't name specific amplifiers on the unit but does provide a handy comparison chart in the manual. For example, the company modeled its Small Tweed amp on the Fender Tweed Deluxe; Black Panel replicates a Fender Deluxe Reverb; Modern Class A copies the handmade Matchless Chieftain; and Brit Class A simulates a Vox AC30. Pod Clean is a hybrid of the high-end characteristics of a solid-state Roland JC-120 Jazz Chorus amp and the low-end characteristics of a Marshall JTM-45 tube head.

Fuzz Box (more of an effect than an amp) is based on the Dallas Arbiter Fuzz Face made famous by Jimi Hendrix. The Tube Preamp preset allows you to use Pod as if it were a tube direct box—handy for vocals or other instruments. In addition to the 16 amp settings on the front of the unit, 12 more are available through MIDI.

Line 6's modeling is so complete that Pod's tone controls are programmed to work like those on the original amplifiers. For example, if the original amp had only one tone control, it would typically be a treble cut. When Pod models such an amp, its mid and bass controls are used for postamp tone shaping, as if you were adjusting EQ on the mixing board. In addition, if the modeled amp had a spring reverb, Pod's Reverb knob will access a replica of that sound. (If the original had no reverb, the Reverb knob will provide a digital room sound.) Line 6's designers are real fans of tube-amp technology, and with Pod they have done their best to capture all the little idiosyncrasies of the original amps.

One thing that is conspicuously missing from Pod, however, is a bypass switch. Considering that the unit is meant to be a direct box, it's curious that there's no way to get a direct, unprocessed signal (short of manually unpatching from the unit). If you need



From Pod's front panel, you have instant access to 16 amps and 15 effects. Using Emagic's *SoundDiver* software, you can access 12 additional amps and edit the effects extensively.

Perfect Pitch in a Box

(and at $699,* Perfection's in Reach)

*Estimated street price based on an MSRP of $849. Your mileage may vary.

"[The ATR-1] is one of those few rare finds that I now find it hard to imagine making a record without."
William Whitman
Recording magazine

"The ATR-1 is one of those products that can save your butt. In fact, it saved my butt twice… it is indeed magical."
Rob Schrock
Electronic Musician magazine

"The ATR-1 saves us an unbelievable amount of time. It goes with me wherever I go."
Al Schmitt
Producer

OK, let's be honest. For most of you, "Perfect Pitch in a Box" is right up there on the credibility scale with Elvis sightings and miracle three-day weightloss. Unless, of course, you happen to be one of the thousands of audio professionals who already depend on Antares's amazing Auto-Tune™ pitch-correcting software for the Mac and PC. In fact, back when we introduced it, *Recording* magazine hailed Auto-Tune as a "Holy Grail of recording."

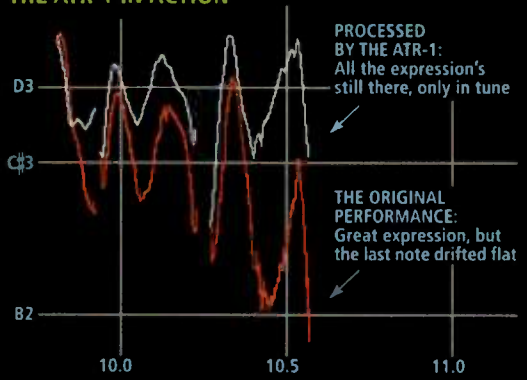
Now, with our new ATR-1™ Intonation Processor, you can get the power of Auto-Tune in a simple 1U box. Without the need for one of those pesky computers.

Simply stated, the ATR-1 corrects the pitch of a vocal or solo instrument, **in real time,** without distortion or artifacts, while preserving all of the expressive nuance of the original performance. Really. All the rest is just details.

Naturally, even those details are cool. Like the ability to eliminate vibrato from a performance. Or add it. Like being able to provide target pitches in real time via MIDI. Like a Song Mode that makes the ATR-1 as easy to use live as it is in the studio. Or a pristine data path with 56-bit internal processing, so the only difference between what goes in and what comes out is the intonation.

Of course, words are cheap (well, actually, when printed in a magazine ad like this they're fairly expensive). But hearing is believing. Try out the ATR-1 at your local Antares dealer or call us for a free demo CD. Either way, we're confident you'll be convinced. Really.

THE ATR-1 IN ACTION



Here's what some ATR-1 users have to say:

"With the ATR-1, vocal sessions can focus on attitude, not intonation."
~MADAME MARIE CURIE*

"Nothing helps your peace of mind on tour like an ATR-1 in the rack."
~FRANZ KAFKA*

*not their real names

ANTARES
REALLY COOL STUFF FOR MAKING MUSIC

ANTARES AUDIO TECHNOLOGIES 464 Monterey Avenue, 2nd floor, Los Gatos, CA 95030 | www.antarestech.com
US and Canada: 888 332 2636 | from Overseas: 408 399 0008 | info@antarestech.com
©1999 Antares Audio Technologies. All rights reserved. All trademarks are property of their respective companies.

POD EFFECTS (FRONT PANEL)

Compressor	Delay/Compressor
Tremolo	Delay/Tremolo
Chorus 1 (using a square-wave LFO)	Delay/Chorus 1
Chorus 2 (using a sine-wave LFO)	Delay/Chorus 2
Flanger 1 (light flanging)	Delay/Flanger 1
Flanger 2 (heavy flanging)	Delay/Flanger 2
Rotary Speaker	Delay/Swell
Delay	

a direct signal and you don't want to repatch your guitar every time, the easiest alternative would be to create a patch that approximates a direct sound and save it as a user preset.

STRONGLY EFFECTED

Pod's effects are also designed with classic tones in mind. Compressor is placed before the amp in the internal effects chain and replicates an MXR Dynacomp stompbox rather than a studio-style rack-mount compressor. The Tremolo effect models Fender amp–style tremolo. Tap Tempo and Effect Tweak often access the most useful parameters of an effect. With Compressor, for example, Effect Tweak controls the compression ratio.

For modulation effects such as Chorus, Flanger, and Rotary, the Tap Tempo button typically controls the speed, and Effect Tweak controls depth. For Delay, you can tap in the tempo of the repeats and use Effect Tweak to adjust the blend. "But what about the *number* of repeats?" I hear you asking. Those are accessible only through MIDI. With the preset delay effects, longer delay times automatically have more repeats programmed in, whereas short slapback delays have fewer repeats.

In the effect-combination settings, Tap Tempo is usually assigned to delay time, and Effect Tweak to delay blend. A sensible exception is Delay/Tremolo, for which Tap Tempo sets the tremolo rate.

DEEP TWEAKING

Pod makes personalizing the sounds as easy as can be, even without referring to the documentation: plug in your guitar, hit Manual, and start twisting knobs. Nevertheless, Pod's user manual will help you discover hidden tweaks, such as pressing Tap Tempo while turning the Drive knob for extra distortion or while turning the Treble knob for a presence boost. Depending on the amp model chosen, the latter matches the effect of the original's presence control.

Once you've tweaked the amp and effects to your liking, hit Save, pick a user location, and hit Save again. Pod has only 36 user memory locations: 9 for each of the four banks. Considering the amount of editing you can do with this unit, it probably won't take you long to come up with enough great patches to exceed the memory locations.

Speaking of tweaking, Pod is conveniently bundled with the *Pod Tools* CD-ROM (Mac/Win), which includes *Pro Tools* (version 3.4) as well as Emagic's *SoundDiver* software. *SoundDiver* has an intuitive, easy-to-use interface and gives you access to 12 additional amp simulations and a host of editable parameters, such as speaker-cabinet type; chorus predelay; reverb diffusion, density, and tone; and attack time of the auto swell.

To use Pod with *SoundDiver*, simply connect the unit to your computer using a MIDI interface and MIDI cables. *SoundDiver* uses SysEx to communicate with Pod. When you're finished customizing a patch, you can download it

Amp Modeling Guide

The table below lists Pod's patch names and the amp that each patch models. Patches marked with an asterisk (*) are not available from Pod's front panel; they must be downloaded to the unit via MIDI.

Patch Name	Modeled Amp
Tube Preamp	Tube instrument preamp
Pod Clean	'87 Roland JC-120/Marshall JTM-45 hybrid
Pod Crunch	Line 6 high-gain hybrid
Pod Drive	Layered amp hybrid
Pod Layer	Pod Clean/Pod Drive layered
Small Tweed	'52 Fender Tweed Deluxe
Small Tweed #2*	'60 Tweed Fender Champ
Tweed Blues	'59 Fender Bassman
Black Panel	'64 Fender Deluxe Reverb
Black Panel #2*	'65 Blackface Fender Twin
Modern Class A	'96 Matchless Chieftain
Brit Class A	'60 Vox AC30 with top boost
Brit Class A #2*	'60 Vox AC30 nontop boost
Brit Class A #3*	'60 Vox AC15
Brit Blues	'65 Marshall JTM-45
Brit Classic	'68 Marshall Plexi 50-watt
Brit Hi Gain	'90 Marshall JCM-800
Rectified	'94 Mesa Boogie Dual Rectifier Tremoverb combo
Rectified #2*	'95 Mesa Boogie Dual Rectifier head
Modern Hi Gain	'89 Soldano Modified X88R rack preamp
Modern Hi Gain #2*	'89 Soldano Super Lead Overdrive (SLO)
Fuzz Box	'60s Dallas Arbiter Fuzz Face
Jazz Clean*	'87 Roland JC-120
Boutique #1*	Dumble Overdrive Special clean channel
Boutique #2*	Dumble Overdrive Special drive channel
Boutique #3*	Budda Twinmaster head
California Crunch #1*	'85 Mesa Boogie Mark IIc+ clean channel
California Crunch #2*	'85 Mesa Boogie Mark IIc+ drive channel

For manufacturer information, please see Contact Sheet, p. 195.

THE POWER AND THE FURY...

WITHOUT THE SMOKE AND FLAMES

Studiomaster

VISION 700
8 & 12 Channel
700 Watts
350x350

Prices starting at $1595

HORIZON 1200
8 & 16 Channel
1200 Watts
600x600

Uncompromising sound quality, extraordinary professional features, durability and reliability are the solid foundation that the VISION 700 and HORIZON 1200 stereo powered mixers are built on. Both units are a combination of a full featured, studio grade Studiomaster mixing console perfectly matched up with Studiomaster's ultra high specification 700D and 1200D amplifier components. To complete the package, we've added an onboard 166 program, digital efffects processor with 19 user programs, 15 of which are controllable via MIDI.

SERIOUS POWER + SERIOUS PROTECTION

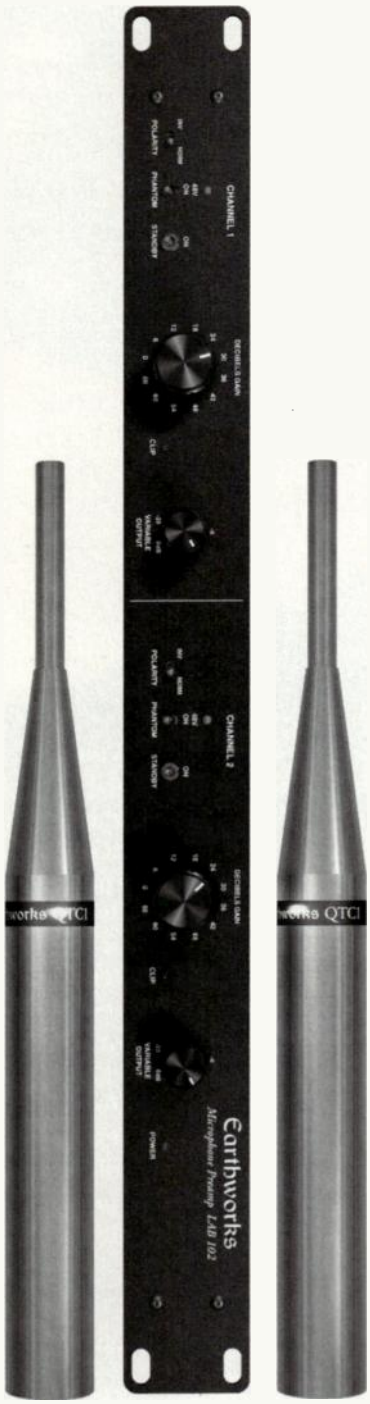
The VISION and HORIZON power amps employ STUDIOMASTERS' AMCS (Amplifier Management Control System) featuring –
SIGNAL LIMITING
Makes it virtually impossible to overdrive the amplifiers
THERMAL & LOAD SENSING FAN COOLING
The sensing circuitry anticipates heat build-up and applies cooling in advance
CROWBAR SPEAKER PROTECTION

FEATURES INCLUDE –

- 3 band 'British' EQ w/mid sweep
- Stereo sub-group
- Dual 7 band graphic equalizers
- Channel and main inserts
- Amp 'split' to monitor
- 48v phantom power
- Optional 'plug-in' crossover
- Headphone bus
- 60mm calibrated faders
- Stereo return w/send to monitor
- 166 memory - digital reverb/effects
- 19 user programs – 15 w/MIDI
- Alpha numeric display window
- Built-in electronic processor 'help' menu
- Programmable System mute, Auxillary mute, 4 point processor EQ, Reverb on/off & Delay on/off

STUDIOMASTER, INC.
2885-D Savi Ranch Parkway, Yorba Linda, CA 92887
PHONE (714) 998-2102 • FAX (714) 998-2086
WEBSITE http://www.studiomaster.com

Want Real?



Nobody Does It Better!

Earthworks

real: +1-603-654-6427 (fax: 6107)
virtual: www.earthwks.com
postal: box 517 Wilton NH 03086

circle #592 on reader service card

Pod Specifications

Inputs	(1) ¼" balanced instrument
Outputs	(2) ¼" balanced; (1) ¼" stereo headphone
Other Ports	MIDI In and Out; RJ-45 foot controller
Maximum Input Level	+2 dBV
Maximum Output Level	+20 dBu
Dynamic Range	>90 dB
Presets (RAM/ROM)	36/36
Effects	(8) single effects; (7) effect combinations
A/D Converters	24-bit; multistage hybrid; 64x oversampling
D/A Converters	20-bit; 128x oversampling
Power Supply	9 VAC; 1,200 mA minimum; "lump in the line"
Weight	3 lbs.
Dimensions	3" (H) x 10.5" (W) x 7" (D)

to Pod for use away from the computer. You can also transfer patches between Pods using a single MIDI cable.

Pod sends and responds to MIDI Program Change and Controller messages. This allows you to preprogram specific amplifier and effect changes into a sequence so that you can concentrate on the guitar performance when you begin tracking. On the other hand, you needn't commit to a particular amp model when you track your guitar parts. Play the guitar directly into the recorder using Pod for monitoring only, just as you might with any other effect. At mixdown, you can route the guitar track through Pod and choose the amp and effects that work best with the mix, using a MIDI sequencer to automate features as needed.

STUDIO SESSIONS

For critical listening, I took Pod to San Francisco's Studio 132, a hard-disk-based studio running Pro Tools III and *Studio Vision Pro*. The guitar, a Fernandes Strat with Rio Grande single-coil pickups, was plugged into Pod before going stereo into the Yamaha O2R board.

To evaluate how true a particular amp simulation is, one needs to be familiar with the original amp tone. I'm a Fender guy, and I can tell you that Pod's Small Tweed model was scary: think Neil Young. The Black Panel preset nails my amp of choice.

In addition to sounding like a specific amplifier, each Pod amp model sounds and feels like an exceptionally good example of that particular model. (Not all vintage equipment sounds good, after all.) BZ Lewis, the owner/engineer of Studio 132 and an avowed Marshall guy, deemed Pod's Brit Hi Gain setting a sterling representation of the Marshall JCM-800.

Pod's amps offer just what guitarists have coveted in fine amplifiers for years: the ability to set the amp for a good, crunchy lead tone at full throttle but have it clean up when you back off the guitar's volume. With Pod, you can actually play heavily attacked, clean funk chords and then turn up and get singing sustain—something only the best amps will do.

The clean tube-amp settings feature the kind of distortion-free give, or *sag*, that is normally associated with tubes.

LINE 6
Pod guitar direct box
$399

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

PROS: Easy to use. Versatile. Solid construction. Comprehensive set of amps. Accurate amp emulations. Comes bundled with editing and recording software.
CONS: No bypass switch. Not rack mountable. Zipper noise occurs when making large patch changes.
CIRCLE #440 ON READER SERVICE CARD

This adds to the realism of the amp being modeled and helps you forget that you're plugged directly into the board. When you're recording direct, Line 6's A.I.R. technology simulates a miked cabinet in a room, so what you hear through the studio monitors is what you get when you record.

PLUG 'N' PLAY

Setting Pod up with *SoundDiver* and MIDI was a piece of cake. Once we set the MIDI channel, we were immediately able to change programs, access the extra amp models, and modulate parameters on the fly. Radical changes in parameters or patches created zipper noise; fortunately Line 6 is aware of this. The manual suggests using gradual shifts to avoid audio artifacts.

Next, we plugged Pod into a MosValve power amp and two Peavey Black Widow speaker cabinets and, later, into a Fender Dual Showman with a 1 × 15-inch cabinet. The coloration introduced by the Showman tempered the realism of the modeling a bit too much for my taste, but the power-amp setup showed the potential of Pod in live situations: it was here that I noticed how quiet the unit is. Even with single-coil pickups in a high-gain situation, Pod's front-panel Noise Gate proved virtually unnecessary.

SEA CHANGE

Whether plugged into a power amp and speakers or sent directly into a console or P.A. system, Pod offers a variety of big tones in a small package. Line 6 sells a Pod Mounting Adapter ($24.95) that allows you to clip the unit to an amp handle or mount it on a mic stand. Although this offers some handy solutions for stage use, a rack version of Pod would be welcome to ease patching into other effects and to better accommodate studio ergonomics.

For the personal recordist, the session musician on the go, or anyone who wants instantaneous great tone for recording, Pod is an answer to your prayers. Between its 28 amp models and 15 effects, Pod gives you enough sounds to keep you busy for some time. And with its MIDI and editing possibilities, Pod has the potential to answer prayers you haven't even thought of yet.

Michael Ross *is a freelance musician, producer, and writer living in New York City. He is the author of* Getting Great Guitar Sounds *(Hal Leonard Publishing).*

circle #593 on reader service card

SOUND QUEST

MIDI QUEST 7.0 (WIN)

You've got the whole MIDI world in your hands.

By Tom Connell

Sound Quest's *Midi Quest* is one of the more successful members in the none-too-crowded group of MIDI editor/librarians, and with version 7.0, it aims to provide an even more complete solution to MIDI management problems. *Midi Quest* is a comprehensive and well-designed package that combines library and database functions with extensive yet convenient patch editing. For those who enjoy making new sounds out of old, the program even provides an assortment of tools for sound creation.

In essence, *Midi Quest* mirrors your entire MIDI setup on hard disk and provides two-way access to all the SysEx data contained in your studio devices, including instrument patches, combinations ("combis"), multitimbral setups ("multis"), drum setups, effects, and other parameters (see **Fig. 1**). It enables you to graphically edit the inner workings of all your instruments in a single convenient environment, and it lets you configure, store, and recall multiple versions of your studio setup—each with a unique combination of synths, sounds, and parameters. Once you get set up, you can save lots of time and effort, even if you're tweaking only one instrument.

Midi Quest's easy-to-use interface is one of its greatest strengths. It supports more than 365 popular instruments, so it's a safe bet that you can immediately put the program to good use. You can also easily back up to hard disk all the data for any of the instruments in your MIDI system, and *Midi Quest*'s programmable Auto-Save function ensures that edits are saved on a regular basis.

DRIVING MISS MIDI

Getting started with *Midi Quest* is no big deal. First, you set up your MIDI interface and assign the In and Out ports. Next, you build a driver database—a list of your MIDI instruments and devices. *Midi Quest* loads SysEx-related data from the program's CD for each instrument that you add. (More instrument definitions are available for download from Sound Quest's Web site.) After physically connecting your devices, you're ready to dump SysEx data from your instruments to your hard disk. The Fast Tips screen provides clues specific to each instrument, such as preferred "comm" channel (device ID), global settings, and other information for troubleshooting problems. Once the data is transferred from your various instruments, you're in business: you now have a highly adjustable portrait of your MIDI setup that is packed with data, all in one convenient place.

When you open *Midi Quest* after initial setup and data dumping, you're presented with a Driver List window detailing all the instruments and devices for which you have loaded drivers (see **Fig. 2**). This window provides information on the comm channels, MIDI Ins and Outs, and MIDI interfaces that are used by each device. Double-clicking on any instrument drops down a list of all the main components for that device (such as the combi banks, patch banks, and global parameters). If you double-click on a component, the corresponding SysEx data is dumped from the instrument to disk. This feature provides some nice flexibility—you can choose, for example, to selectively restore just the patch banks or global setup data without disturbing or resetting anything else. In addition, toolbar buttons enable you to dump all instrument SysEx data to the Bank Editor, to disk, or to a database.

TWEAK-O-RAMA

When you open a Group window for a given device, that instrument's architecture is displayed as a collection of icons. If you're using a Korg M1, for example, you'll see icons for its three editable areas: Combi Bank, Patch Bank, and Global. When you click on the Patch Bank icon, a complete list of your current M1 sounds appears onscreen. (This list consists of whatever you've tweaked and renamed over the years, not the factory presets.) You can audition a patch or multi with a single mouse-click or from the computer keyboard by hitting F9 (low note), F10 (chord), F11 (sequence), or F12 (last note played).

Within the Bank Editor window, the Edit button opens a detailed split screen where you can modify patch parameters such as filters, envelopes, and oscillator selections by dragging with the mouse in graphic displays, clicking on menu items, or changing numerical

FIG. 1: *Midi Quest* re-creates your entire MIDI studio onscreen. It provides easy access to patch lists, parameters, and driver information from a single main window.

For manufacturer information, please see Contact Sheet, p. 195.

"It didn't take long for the TLM 103 to emerge as our benchmark mic during the comparative tests. This is a premium microphone characterized by an open, articulate, very natural sound; super resolution; big, tight, detailed lows; and a distinctive presence boost that yields a delicious, intimate quality."
Brian Knave, Electronic Musician, September, 1998

"The TLM 103 is certainly worthy of the Neumann name. It sounds excellent and looks and feels like a quality instrument."
Steve La Cerra, EQ Magazine, May 1998

"I found applications where I preferred the TLM 103 over anything else in the mic cabinet. It was excellent on drums, harmonica and sax as well as certain singers who would also sound good on a U 87."
Barry Rudolf, Mix Magazine, February 1998

"On acoustic guitar, the overall tonal balance is excellent without any EQ."
Rick Chinn, Audio Media, April 1998

"I really like this mic. I'd recommend it to anyone who records with closely placed mics, essentially who does modern multitrack recording."
Monte McGuire, Recording Magazine, February 1998

"This is a no-hype microphone, and may be one of the most natural, flattest-sounding large-diaphragm designs I've heard."
Loren Alldrin, Pro Audio Review, January, 1998

"The TLM 103 is a real jewel in any mic collection."
Michael Delugg, Music Production Supervisor for The Late Show With David Letterman

Step Up To A Neumann

Everyone who tries the TLM 103 loves it. Why? Because it brings the classic sound and precision quality for which Neumann is famous to a price under $1000 US. That's also why it's won a host of prestigious awards, including the *Mix Foundation TEC Award*, the *EQ Blue Ribbon Award*, the *Radio World Cool Stuff Award* and the *Post Magazine Professional's Choice Award*.

Of course, our goal in designing the TLM 103 was not to win praise or awards for ourselves, but to provide YOU with the best tools so that you might win awards for yourself. Now, go out and bring home a Grammy...

Neumann|USA

The Choice of Those Who Can Hear The Difference

Tel: 860.434.5220 • FAX: 860.434.3148 • World Wide Web: http://www.neumannusa.com

circle #594 on reader service card

values. You can also edit other parameters such as effects, global functions, and bank configurations. All editing options are presented in one intuitive screen. Furthermore, *Midi Quest* offers unlimited undo capability for all patch and bank editing operations, so you can back out of an edit incrementally if you don't like the results.

When you're done editing, you can save your changes to disk as an alternative setup, or you can transmit them back to your instrument. *Midi Quest* allows you to store your initial settings as a default setup file. You can create any number of virtual versions of each instrument in your rig and store them under different names, making it possible to recall or replace any setup in seconds.

In addition, *Midi Quest* has greatly improved the flexibility of its editing environment by letting you create up to 30 customized mini-editors for each regular editor in the program. These floating editors appear outside *Midi Quest*'s main window and stay on top of other application windows. You can create specialized mini-editors that contain only the parameters you want for a given task: you can place a floating editor over your sequencer, for example, and easily switch between editing patches and creating music.

Midi Quest's improved flexibility also extends to its use of MIDI Continuous Controller messages for changing any synthesizer parameter in an editing window. The program converts incoming controller messages into appropriate parameter settings, updates parameter values, and sends the new values out as SysEx messages. That means you can embed editing commands in a MIDI sequence or send commands from a synthesizer or dedicated controller without dealing directly with SysEx messages.

▼

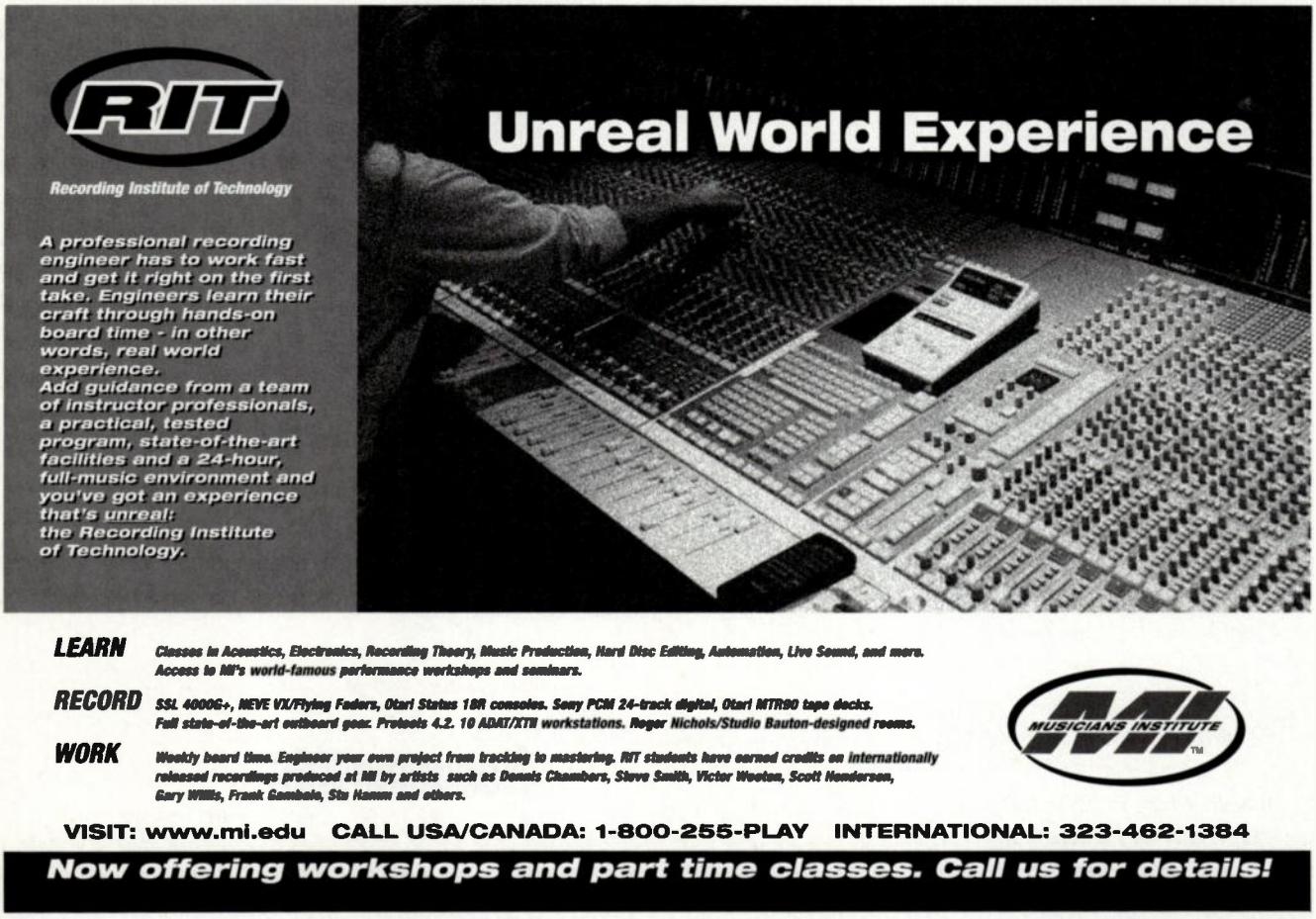
Midi Quest creates new sounds by combining and morphing patches.

INFORMATION MANAGEMENT

Midi Quest also tackles the other great headache of MIDI management: finding and sorting the thousands of sounds that you have accumulated over the years. The program enables you to catalog, organize, and access your sounds in a variety of useful ways to speed up your work flow and keep your vibe rolling.

Of course, most synths are already organized, to some extent, with separate banks for piano sounds, string sounds, brass sounds, and so on. But what if you have six different synths, each with its own collection of piano, string, and brass sounds, and each is organized in a different way? *Midi Quest* allows you to incorporate all of your MIDI devices into a single integrated library that you can organize any way you want.

In addition, *Midi Quest* offers help for customizing patch arrangements if you don't like the factory layout in any of your devices. On the Korg M1,



circle #595 on reader service card

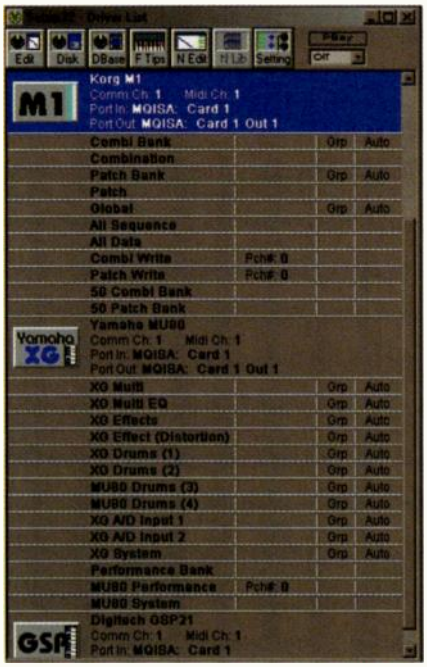


FIG. 2: *Midi Quest*'s Driver List window details all the instruments and devices for which you have loaded drivers.

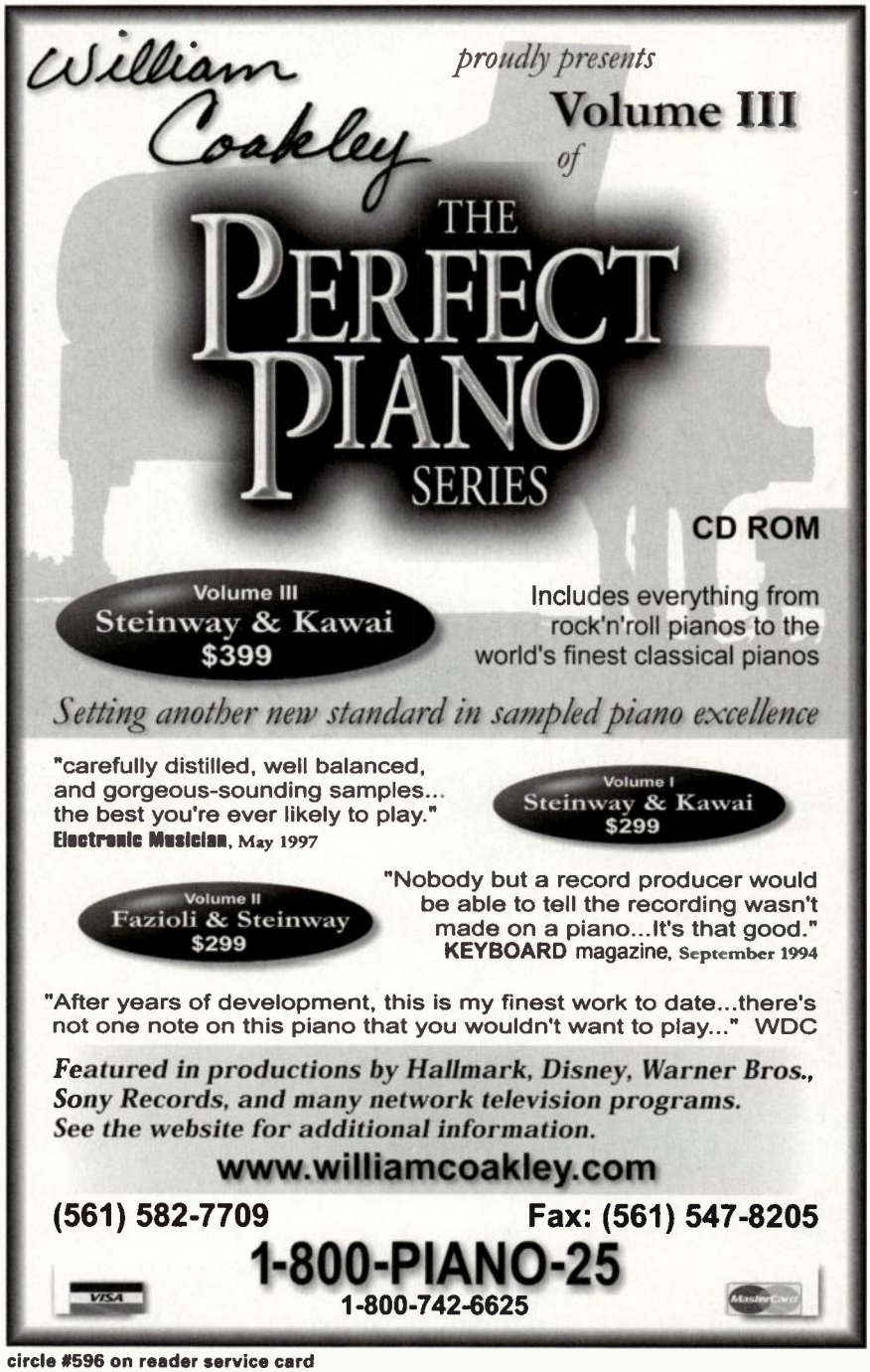
for example, similar instruments are grouped in a configuration that seems rather odd: keyboards are numbered 01, 11, 21, 31, and so on; brass are numbered 02, 12, 22, etc. You might prefer to, say, rearrange the patches to group all keyboards from 0 to 10, all brass from 11 to 20, and so on. *Midi Quest* makes it easy to do this: you simply select the individual patches or patch ranges and move them up or down in the list. You can also sort patches alphabetically if you prefer browsing by name.

Midi Quest's most powerful new feature, however, is its recognition of "parent-child" relationships in bank editing and organizing operations. The program automatically keeps track of the relationships among combis, multis, and performances, and the patches that they require to play properly. When a combi is copied from one bank to another, for example, *Midi Quest* ensures that the patches used by that combi are also copied. Conversely, when a patch is moved in a bank, *Midi Quest* locates all of the combis in the bank that use that patch. The program then automatically updates the combis so they don't lose track of the patch. By maintaining these parent-child relationships, *Midi Quest* makes it possible to organize and reorganize banks of sounds without worrying about losing essential links.

When working in the Group window, you can see these relationships in the Bank List's column view. If you look at a Combi Bank, for instance, you can see each of the program patches that make up the different combi patches (see **Fig. 3**); this can come in handy if you want to add a new program patch to a combi but are not sure whether there are any available slots.

As with any good library, *Midi Quest* offers several ways to tag and search through your instrument data. For instance, you might want to call up all the bass patches from your entire setup so you can view and audition them from a single screen. *Midi Quest* allows you to add keywords and comments to help retrieve appropriate sounds. As mentioned earlier, you can also create a cross-instrument database that assembles in one place any combination of patches, banks, and SysEx data from multiple instruments. That ability can save a lot of hassle if you need to reconstruct a complex arrangement of devices and patches for a specific project.

Midi Quest's file-linking feature enables



circle #596 on reader service card

you to use a single patch in as many Groups, databases, or libraries as you want. Instead of keeping multiple copies of a patch in four or five places, for example, you can store the patch once on hard disk and reference the patch as needed for various banks and libraries. The patch isn't actually stored within each bank; *Midi Quest* simply points to the data when it's needed, making it possible to edit a patch once and have it automatically updated in all the banks and libraries that use it.

And speaking of updates, *Midi Quest*'s new Library Auto Build/Update function searches through new banks of patches, compares them to your current inventory, and automatically adds any patches that are not in your libraries. That way, you don't have to pick out and load patches one at a time, as earlier versions required.

RANDOM BEHAVIOR

Midi Quest includes a set of five Randomization commands, which create new sounds from your old ones by combining and morphing patches. The process works best with patches that are truly synthesized rather than sample based. *Midi Quest* can't morph between actual samples; it can only change patch parameters over time, so its results with sample-playback modules are limited.

When you apply any of the Randomization commands, the program presents you with a new bank of randomly named patches. (These aren't just edited patches; they're actually blends of multiple patches.) You can choose to save the whole bank, individual patches, or any group of patches—and, of course, you can rename and further edit any patch.

The Morph command creates a bank of patches that changes incrementally from one selected patch to another. Morph changes all parameters, stepping gradually from the values in the first patch to the values in the second. It's a handy tool for finding a sound that lies somewhere between two patches.

Midi Quest's Mix command works similarly to Morph but picks parameters

Midi Quest
Minimum System Requirements
80386 CPU; 4 MB RAM (8 MB recommended); Windows 3.1/95/98/NT; MIDI interface

new
Platinum ComPounder™
from Focusrite delivers a
huge
array of sounds
This new dynamics processor brings you a rack full of high performance Focusrite CLASS A compression, limiting and Gating in one unit to take your sounds to the next level. Use when ever dynamic control is required for:-
recording, mixing & mastering
CLASS A CIRCUITRY
Unique Design delivers Focusrite preformance
COMPRESSOR
Highly specified sound tool. Make it sound clean, squashed, fat or make it pump. You choose!
INDUCTOR POWERED BASS EXPANDER™
Boost kick drums & Bass riffs!
HUGE! - GET EVEN MORE BASS
If you write, perform or produce dance music, this button alone makes the Compounder a must have unit.
WIDE RATIO CONTROL
Compression slopes from gentle to infinity and beyond!
SOFT OR HARD KNEE
Squeeze it or make it soft & open like a Classic Focusrite!
LIMITER
Fast and smooth – protects any A/D input when recording digitally.
GATE EXPANDER
Easy to use. Quiet operation.
$899
MSRP
Phone USA: Group 1 Ltd. 516 249 1399
Web: www.g1ltd.com
Canada: Sonotechnique (Trnt) 416 947 9112
(Mntrl) 514 332 6868
Focusrite UK: +44 (0)1494 462246
sales@focusrite.com
circle #598 on reader service card
PLATINUM
Focusrite
www.focusrite.com

audix cx-series

IT'S A QUESTION OF SOUND

TRUE CONDENSERS
Other microphones claim to be "large diaphragm condensers" when they are no more than 1/2" or 3/4" electrets. Their performance simply does not compare to the sound produced by the Audix CX Series which employs a full 1" gold vapor diaphragm requiring a minimum of 48 volts phantom power.

HEAR THE DIFFERENCE
A frequency response of 20Hz-20kHz, a low noise floor of 17dBA, and SPL levels up to 145dB ensure an incredibly rich, full and accurate sound with the CX-101 or CX-111. Use them to record vocals and other instruments such as piano, sax, drums and guitar the way they should be recorded.

WHY COMPROMISE?
The CX Series offer the type of sound you would expect from mics costing two, three or four times as much without compromising the quality and purity of your sound.

The only compromise we made was the price!

Vocals

Piano

Sax

Drum Overhead

Acoustic Guitar

CX SERIES

CALL: 503-682-6933 FAX: 503-682-7114
www.audixusa.com
Audix Corporation PO Box 4010, Wilsonville, OR 97070 In Canada, Cabletek Electronics LTD, 604-942-1001 fax 604-942-1010
Audix Corporation 2000. All rights reserved. Audix and the Audix logo are trademarks of Audix Corporation.

AUDIX
PERFORMANCE IS EVERYTHING

randomly from the two selected patches. The amount of emphasis toward one patch or another changes gradually throughout the new bank: the first patch is most like the first selected source, and the final patch in the bank sounds most like the second one, with variations in between reflecting a gradation from one to the other.

The Mix All command randomly picks parameters from two or more selected patches. The probability of any parameter coming from a particular patch is equal, so the effect is somewhat like rolling dice with as many faces as you have patches selected.

The Blend command works the same way as Mix, but it retains larger data chunks from each patch, thus retaining more of the original sonic characteristics.

Finally, the Gen 4 command presents a graphic dialog box in which you can mix components of four selected patches. You determine the resultant mix by clicking and dragging on a small grid.

When using the Randomization commands, my results ranged from interesting and useful to fairly dull and worthless. As you might expect, the process is a game of chance: once in a while you get lucky and discover a really cool-sounding patch that you'd never have come up with on your own. Most of the time, however, you get a bank with about 10 percent usable sounds and 90 percent duplicate or unusable sounds. Still, that's a decent ratio when you consider how little effort it takes. As an extra feature, therefore, these tools are nice to have and fun to use.

SOUND QUEST
Midi Quest 7.0 MIDI editor/librarian
$249

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

PROS: Easy access to parameters for editing. Excellent library and database management capabilities. Unlimited undo. Programmable Auto-Save function. File-linking ability.

CONS: Interface is a bit clunky in places.

CIRCLE #441 ON READER SERVICE CARD

AUX CONTROL

Midi Quest's Sound Checker is a plain but useful suite of utilities that help you develop, test, and audition patches. The MIDI Controller window provides a small onscreen keyboard, so you can audition individual notes over a two-octave range instead of using the defaults in the Group editor. You can also use this window to experiment with joystick, Aftertouch, and patch-change data, either in isolation or while a sequence is playing.

FIG. 3: When you view a Combi Bank list, *Midi Quest* shows all of the program patches used in each combi patch. That makes it easy to find a combi that uses a particular sound.

The Sequencer, a bare-bones yet functional Standard MIDI File player, holds up to ten MIDI files. It's quite useful for listening to patches in a real-world context; you might, for example, audition patches using a song that you're working on for a particular project. *Midi Quest*'s Sequencer saves you the trouble of opening a full-blown sequencer like *Cakewalk*—a real advantage if you're short on computer memory or onscreen real estate. (By the way, you can add *Midi Quest* to *Cakewalk*'s tool menu.)

The MIDI Monitor window helps troubleshoot MIDI transmission problems by graphically displaying data arriving at the MIDI In ports. It also includes a text mode for viewing SysEx dumps; if you want to get deeply into it, you can use this mode when creating custom drivers in the Driver Creation window.

Finally, the File Conversion window offers tools for converting other MIDI-librarian formats (such as old Dr. T's patches) into Sound Quest's file format. *Midi Quest* can now directly import SysEx data from many MidiX, SMF, and MOTU *Unisyn* files. Furthermore, it can search a file for SysEx data and, if it finds the data, create an automatic conversion macro. Some file conversion operations, however, require programming knowledge and an understanding of hexadecimal coding, so the File Conversion window is not really meant for the casual user.

BITS AND PIECES

Midi Quest 7.0 comes with a 100-page owner's manual that includes an index and a tutorial section. In addition, the CD-ROM contains more than six hours of video tutorials that highlight the main features of the program. And if you don't have quite enough patches of your own, the *Midi Quest* CD includes over 55,000 new patches for various instruments. Sound Quest also offers tech support by phone, e-mail, and fax.

In spite of a user interface that looks a bit clunky in places (such as the MIDI Monitor window), *Midi Quest* does a fine job of organizing and configuring MIDI systems, and it supports a wide variety of instruments and MIDI devices. Even if you have only one or two instruments, *Midi Quest* can make life easier for you, especially if you want to create a cross-instrument database. However, the program's $249 price tag may give you pause. For a minimal setup, you might consider *Solo Quest*, Sound Quest's single-instrument version, for $99. And if you're not interested in editing patches, consider *Midi Quest Jr.*, a librarian-only version that costs only $79.

Midi Quest 7.0's library and database functions are comprehensive and flexible enough to help you actually put that pile of patches you've accumulated to good use. So if you're looking for a good way to get a handle on your MIDI setup, this program will do a fine job. In terms of its editing and organizing capabilities, *Midi Quest* squarely hits the mark.

Tom Connell *is a composer, sound designer, and Web developer living in Baltimore. Contact him at tconnell@qis.net.*

Electronic Musician

Presents the

Digital Piano

BUYER'S GUIDE

2000 Edition

Discover the Benefits of Going Digital with *Electronic Musician's Digital Piano Buyer's Guide 2000*!

A Must-Have Resource for Digital Pianos!

The Eighth Annual Digital Piano Buyer's Guide *Features:*

- Comprehensive Charts Detailing the Digital Pianos and Performance Keyboards Available for the Year 2000
- Famous Musicians Reveal Their Secrets for Using Digital Pianos
- Acoustic Pianos with MIDI
- Home Keyboards
- Learning to Play...And the Latest Software to Help
- Computer Music Basics

The Digital Piano Buyer's Guide 2000 *will be available in September at participating piano and organ dealers and wherever* Electronic Musician *is sold.*

H H B

CIRCLE 5A

Affordable active monitors with a smooth sound.

By Erik Hawkins

It must be spring: the monitors are blossoming. At least, that's what came to mind when I first laid eyes on the striking purple woofers in HHB's new Circle 5A powered monitors. Although not unique in concept—a number of active, biamped monitors have come to market in recent years—the Circle 5As (the *A* denotes active) are definitely unique looking, thanks to those purple cones.

Most personal-studio denizens know HHB for its recordable media, such as DATs and CD-Rs. However, HHB has been distributing quality pro-audio gear from the United Kingdom since 1976 and has been taking an active role in designing gear since 1993. Current HHB products include everything from the renowned PortaDAT to a complete line of tube dynamics processors.

According to HHB, the company introduced the Circle line of monitors to meet professional demand for a flat reference monitor that could be used in a variety of applications—from close-field monitoring to 5.1 (surround) systems. HHB claims to have spent more than $250,000 on developing the low-frequency driver cone alone.

The complete line of Circle monitors includes active and passive models and a subwoofer. The Circle 5 series has 8-inch woofers and includes the Circle 5A active monitor ($1,399 per pair) and the Circle 5P passive monitor ($749 per pair; see the sidebar "The Passive Circle 5 Sounds Off"). The Circle 3 monitors have 4.5-inch woofers and include the Circle 3 active ($895 per pair) and Circle 3 passive ($449 per pair). The Circle 1 powered subwoofer ($1,399) can be configured to work with Circle 3s and 5s in both stereo and 5.1 surround applications.

BLOOMING NICE

Weighing less than 30 pounds each, the Circle 5As are just heavy enough to remain on their stands during a small earthquake (we recently had one here in Los Angeles) but not so heavy as to be a pain. The seamless speaker enclosure has a textured, black matte finish. Along with the 5As' purple cones, a raised construction on the front of the cabinets gives the monitors an impressive, art deco look. A green LED located beneath the tweeter indicates power, and an oval bass port beneath the woofer augments bass response. The Circle 5As have no protective face grilles, so the speakers are exposed. Although this is not a drawback in a studio monitor, it does mean you must be cautious when transporting the units.

The HHB Circle 5A active monitors are smooth and accurate in the vocal range (from 100 Hz to 10 kHz) and higher, and they have an exceptionally wide sweet spot, as well. However, the bass response is a bit weak.

The Circle 5A is a biamplified system that is powered by a 2-channel amplifier pack (the amps are made by Harbeth Acoustics of England) that delivers 140 watts RMS to the bass driver and 70 watts RMS to the tweeter. Twin-power ICs in a Push-Pull mode drive the low-frequency amp. An active crossover divides the frequency spectrum at 2.6 kHz using S & K filters. A large heat sink (about 12 inches long by 4 inches wide by 1½ inches thick) attached to the rear of the monitor provides cooling for the amps. These powered monitors operate at a cooler temperature than the majority of those I've encountered. Even after more than ten hours of use, the heat sink felt only slightly warm to the touch. These monitors will likely be quite long-lived, thanks to their low operating temperature.

All the Circle monitors are magnetically shielded on their high- and low-frequency drivers (some speakers shield only the woofer magnet), making them ideal for use near video monitors and computers. The 8-inch bass driver features a patented, injection-molded polymer cone with a long-throw rubber surround and is mounted on a 1-inch aluminum voice coil. According to the manufacturer, most other speakers in the Circle 5's price range use sheet-rolled polypropylene cones rather than injection-molded cones. But sheet-rolling, says HHB, leaves grains in the plastic, which in turn compromises audio quality by compressing certain frequencies. Injection-molded cones, on the other hand, are purportedly grain free. In addition, injection molding allows HHB to specify variations in thickness across the diameter of the cone—an approach that results in decreased resonance (and thus distortion) in the lower frequencies.

The high-frequency driver is made up of a 1.1-inch, ferro-fluid-cooled, soft-domed tweeter affixed to a 1.1-inch aluminum voice coil. Rather than attaching a perforated grate over the tweeters for protection, the Circle 5As provide only a single thin bar—sort of like a miniature roll bar. This leaves the tweeters exposed and open to damage. But the soft domes are actually extremely resilient. In fact, the monitors I received for review had their little bars completely flattened against the domes, squashing the domes in half. (This was apparently caused by the two monitors banging into each other during shipping.) I bent the bars back into place with a pair of pliers, and the

For manufacturer information, please see Contact Sheet, p. 195.

domes immediately popped out, resuming their former shape. Impressively, the tweeters worked fine. Just keep pointed objects away from them, and you shouldn't have a problem.

The active and passive Circle 5 tweeters feature HHB's solid-state Polyswitch fusing mechanism, which is designed to protect them from blowing. Instead of using a limiter or simple blow fuse, the Polyswitch works like a trip circuit, breaking the audio connection and disengaging the tweeter (but not the woofer) before it receives an overly hot input. A red light above the tweeter lights up to let you know that the tweeter is off line. The Polyswitch stays engaged until the connection has cooled sufficiently, and then it automatically reconnects the tweeter. Cooldown usually takes a few minutes. The Polyswitch is a nice addition because it doesn't color the audio as a limiting circuit can. Also, having it there is far more convenient than changing a fuse each time you overload a tweeter.

The Circle 5As proved to be dead quiet.

BEHIND THE SCENES

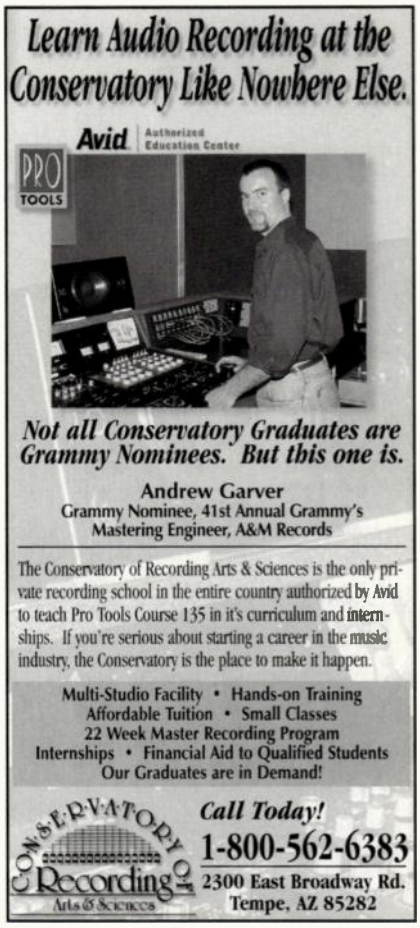
The back side of the Circle 5A monitors have balanced XLR and unbalanced RCA inputs, along with a button for selecting between the two types. A Master Volume control is located at the top, above the input jacks, and a rocker-type on/off switch and power-cable jack are located at the bottom. Although it isn't a big deal, I would prefer the convenience of a front-mounted power switch. It's annoying having to reach over the mixing console and behind the speakers to flip the switch each time you power-up your studio.

The Circle 5As each use a standard IEC Type II power cable. (Earlier versions of the monitors used a Type I power cable. You can identify these models because they have 2-prong rather than 3-prong jacks.) The monitors come set for either 110-volt (United States) or 220-volt (European) operation; the voltage is not user-switchable. A 2-amp, slow-blow, AC line fuse resides just above the IEC jack.

As for the volume controls, if you're using the monitors with a console, the controls are unnecessary because volume is typically adjusted at the console itself. But if you're using the monitors in a system for which you need complete control over gain structure to set an optimal signal-to-noise ratio—for example, when plugging a 16-bit sound

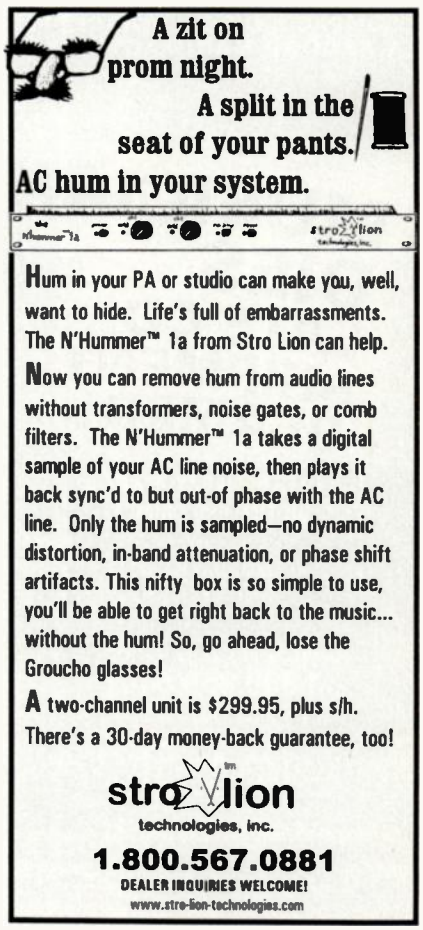
Circle 5A Specifications

AUDIO	
Frequency Response	48 Hz–20 kHz (± 3 dB)
Peak Output	>110 dB
Total Harmonic Distortion	not available
AMPLIFIER	
Power Rating	70W (tweeter); 140W (woofer)
Signal-to-Noise Ratio	not available
Input Impedance	80Ω
Input Sensitivity	18 dB/W/m
Connectors	switchable XLR (balanced)/RCA (unbalanced)
SPEAKERS	
High-Frequency Driver	1.1" ferro-fluid-cooled soft dome
Low-Frequency Driver	8" injection-molded polymer cone
CROSSOVER	
Crossover Frequency	2.6 kHz
Crossover Slope	18 dB/octave
ENCLOSURE	
Material	medium-density fiberboard (MDF)
Dimensions	16.5" (H) x 10" (W) x 11.8" (D)
Weight	27.7 lbs.



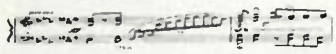
circle #632 on reader service card

circle #633 on reader service card



Midi Digital Audio Mail Order

P.O. Box 665
Ardmore Pa. 19003
(USA) 800-321-6434 (CAN)
Voice - (610-789-9897)
Email – sales@leighs.com
On Line Secure Shopping via WEB
WEb Page: http://www.leighs.com



We stock : Cakewalk, Cubase, Sound Forge, Smart Score, Voyetra, Sibelius, Sound Forge, Gigasampler, SEKD, Voyetra, LAYLA, Emu Midi Man ,Event - TC , Studio 64xtc, Finale Samplitude, Fast Edit, Band in a Box, Jammer, Turtle Beach, Frontier, Card D Deluxe, Jam Cool Edit Pro ,Lynx Studio, Ray Gun-Toast, Surreal , Reality-Acid- Dozens of Others!

SHOP ONLINE !!!
www.leighs.com
cakewalk

CD Rom Recorders and software to master are our specialty!

We sell hard disk recording cards.

Digital Audio
WAVE LAB
DSP-FX VIRTUAL RACK
Syntrillium

Call for free Midi Multimedia catalog!

We ship worldwide !!
FAX : 610-789-9895

circle #601 on reader service card

circle #602 on reader service card

COMPACT DISC • CASSETTE
& RECORD MANUFACTURING

MUSICIAN DIES
LATE CD SHIPMENT BLAMED!

A LATE DELIVERY IS NOT A VICTIMLESS CRIME!
QCA IS COMMITTED TO STAMPING OUT THESE SENSELESS ACTS!

CALL TOLL FREE
1.800.859.8401
For Your Free Catalog

qca

Serving the Music Industry for Over 45 Years.

2832 Spring Grove Ave., Cincinnati, OH 45225
Tel: 513.681.8400 • Fax: 513.681.3777
E-mail: qca@pol.com • web: www.pol.com/QCA

THE PASSIVE CIRCLE 5 SOUNDS OFF

When a monitor comes in an active and a passive model, the active one usually sounds noticeably better. So I was surprised to discover that the Circle 5P monitor sounds almost as good as the Circle 5A. Of course, making a conclusive judgment here is difficult, because the amp plays a significant role in the way the passive monitors sound. Using my trusty Hafler DH 200, I could definitely hear the coloration it imparted. It makes the Circle 5Ps sound warmer and less defined than the 5As, with a loss of punch in the high mids. Still, the 5Ps sound remarkably close to the 5As, reproducing the human voice exceptionally well, but sounding a bit bass-shy for my taste.

In some ways, I prefer the 5Ps to the 5As. The 5Ps sound flatter and less hyped than the active monitors and, overall, are more pleasant to listen to. Of course, this could have been due to the fact that I was using my own amp, which has a sound that I'm used to and that I find appealing.

The 5Ps are similar to the 5As in terms of features, too. Connections are made through binding posts rather than XLR and RCA jacks, and of course, the passive Circle 5s are lighter than the active ones, weighing 22 pounds each. But other than that, the speakers are identical. Even the patented Polyswitch tweeter protector and its associated LED are built into the passive units.

card directly into the speakers—the volume control is invaluable.

However, I found making precise adjustments with the Circle 5A volume knobs to be difficult because the value indicators—labeled 0 to 10 in 2-digit increments—are not detented. Call me a tweak-head, but I like to feel confident that the output of each speaker is identical. I solved this problem by turning both volume knobs all the way up. At first I was concerned that the speakers would emit residual amplifier noise at that level, but they were dead quiet—a testament to HHB's engineering.

BASHFUL BASS

The Circle 5As are great-sounding monitors, but they have a particular sound that might not appeal to everyone. They have wonderfully accurate highs and mids but are a bit shy in the low end.

According to designer Alan Shaw, the Circle monitors were tailored, above all, to accurately reproduce the human voice. I did side-by-side comparisons with Genelec 1031s, Yamaha NS-10Ms, and Hafler TRM8s, and true to Shaw's claims, the range between 100 Hz and 10 kHz (where most vocals reside) was incredibly smooth on the Circle 5As. In fact, in terms of voice reproduction, the Circle 5As put the others to shame. The difference was so dramatic that, after my ears grew accustomed to the Circle 5As, I found it difficult to listen to vocals on the other systems: they imparted a tubular, nasal quality to the human voice that the Circle 5As didn't.

I also liked the high end on the Circle 5As. Everything above 10 kHz was wonderfully transparent. I loved the way hi-hats and cymbals sounded; they rode over the mix without being harsh. On some monitors I've used, the response between 11 and 15 kHz is heavy-handed and leads quickly to ear fatigue. The Circle 5As, on the other hand, are very easy to listen to.

The only thing that bothered me about the Circle 5As was the range

HHB
Circle 5A powered close-field monitors
$1,399/pair

AUDIO QUALITY ■■■■
VALUE ■■■■
1 2 3 4 5

PROS: Extremely accurate human-voice reproduction. Exceptionally wide sweet spot. Magnetically shielded on both high- and low-frequency drivers.

CONS: Not very beefy on the low end. Rear-mounted volume control lacks the means for precise adjustment. Rear-mounted power switch.

CIRCLE #442 ON READER SERVICE CARD

below 100 Hz. The Circle 5As simply don't have enough low end for my taste. Although British pro-audio components are generally known for having a warm, full low end, these monitors don't fit that stereotype.

In defense of the Circle 5As, though, it should be pointed out that monitors with a lot of low end often suffer from boominess, and working on them can result in bass-shy mixes. (It's disturbing—and embarrassing—when a song that you mixed with loads of bass sounds wimpy when you hear it later in a friend's studio.) Likewise, it's easy to overdo the bass on monitors that are lacking in low end, resulting in mixes that are muddy or boomy. The solution to this dilemma is to know your monitors. After all, there's no such thing as a truly flat system.

The Circle 5As have one of the widest sweet spots I've ever heard.

WIDE LOAD

I regularly use close-field monitors, and I'm used to working within a very narrow sweet spot. Moving my head a foot to the right or left usually results in a noticeably different sound. The Circle 5As, though, have one of the widest sweet spots I've ever heard. I was able to move a good two feet beyond where I'm used to listening from, and they still sounded great. This is wonderful because it provides a much wider area of accurate sound to work in as you move about twisting knobs and pushing buttons.

HHB attributes this exceptionally wide sweet spot to the patented low-frequency cone and open tweeter design of the Circle 5A. Frankly, I'm amazed to hear this kind of response from a speaker that has no "wave guides" (those funny-looking, high-frequency horns, sported by many other powered monitors, that are said to enhance the sweet spot).

BLOWIN' OUT THE WIND

One of the design challenges for powered monitors is that so much machinery is packed inside the cabinets that finding enough space for proper bass porting is difficult. If the bass ports aren't properly engineered, they can make an incredible racket as air is pushed out of them. In the worst cases, this can cause a cacophonous flapping sound—like a Gortex jacket held from the window of a fast-moving car. Monitors that suffer from this problem are difficult to work on, especially if you deal with a lot of low-end signals (for example, explosions, TR-808 kicks, and drum 'n' bass tracks).

With powered monitors, I always test how well the bass ports handle high-volume, low-frequency audio. I tested the Circle 5As by pumping a 15 kHz sine wave through them at high volumes. Although their bass ports weren't the quietest I have heard, they handled excessive air movement admirably. The bass ports didn't start making a lot of noise until my mixer's output was cranked to a level that would be excessive for listening to full-bandwidth music. At a point just above normal listening levels, though, the 5A bass ports emanated only the slightest airflow noise.

CHEERS

The Circle 5A active, near-field reference monitors are distinguished by a smooth sound, a generously wide sweet spot, a cheery look, and affordability. Designed particularly for accurately reproducing the voice, they would be an excellent choice for anyone working primarily on dialogue or a cappella tracks.

I wouldn't recommend the Circle 5As to people who work with hip-hop, rap, or any type of bass-heavy dance music. On the other hand, if you really love the way these monitors sound but you need more bass, adding the Circle 1 Sub Woofer would probably solve the problem. This would, however, bring the overall system price up quite a bit.

Taste in monitors is largely a personal matter, and success with any monitor depends greatly on familiarity—that is, knowing where any frequency bumps or dips are and how to compensate for them. Therefore, rather than take my word as gospel, let your own ears be the judge. If you're in the market for a pair of powered monitors, be sure to give a listen to the HHB Circle 5A. ●

LONG BEACH CITY COLLEGE COMMERCIAL MUSIC PROGRAM

Our program offers hands-on training in all areas of the commercial music industry - Record Production, Multi-track Recording Performance, MIDI Synthesis, Hard Disk-based Recording, Film Scoring and Music Theory.

The Long Beach City College Commercial Music Program is the place to enroll if you are just starting out or need to upgrade your skills. We offer seven (7) certificates and associate degrees.

For more information call:
(562) 938-4618 or
(562) 938-4314

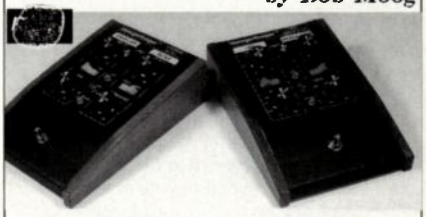
4901 E. Carson Street
Long Beach, CA 90808
Visit our college website:
www.lbcc.cc.ca.us

circle #603 on reader service card

circle #604 on reader service card

What do you get *when you* cross an
analog synth module
with an **effects pedal?**

moogerfooger™
Analog Effects Modules
by Bob Moog



Ring Modulator **$ 299**
Low Pass Filter **$ 299**

- Modular synth versatility+stompbox convenience
- Compatible with any instrument-level or line-level signal
- Total voltage control for ***totally new sounds***
- Use on tabletop or floor
- Control with knobs &/or up to four expression pedals
- Vintage synth look-hardwood frame, classic knobs & switches
- Professional quality, road-worthy and studio-ready

Get excited about stompboxes again!

Order direct or ask about a dealer near you.

800-948-1990
828-251-0090
www.bigbriar.com
Big Briar, Asheville, NC

SEE US AT NAMM BOOTH #2035

ADVERTISER INDEX

ADVERTISER	RS#	PAGE
Aardvark	557	111
AdB International	562	121
ADK	609	201
Akai	508	17
AKG (C4000B)	546	79
AKG (Wireless)	572	153
Alesis (QS Series)	512	27
Alesis (DM Pro)	634	171
Alternate Mode	586	173
Antares	590	177
Anthro	•	16
Apogee Electronics	550	99
Arboretum Systems	525	49
Audix	599	187
B & H Photo-Video	615	206–209
BASF	555	107
Bellari	533	62
Big Briar	604	193
Cakewalk Music Software	620	83
Caruso Music	583	167
Carvin	608	199
CM Automation	577	159
Computers & Music	563	122
Conservatory of Recording Arts & Sciences	632	191
Corporate Systems Center	526	51
DataViz	540	74
DigiBid	626	202
Digidesign	503	4–5
Digital Piano Buyer's Guide	•	189
Disc Makers	614	205
DSP•FX	589	175
Earthworks	592	180
Edirol	541	75
EGO-SYStems	547	88
Electrix	629	130
Electro-Voice	536	67
Emagic	507	14–15
E-mu Systems	504	9
Encore Electronics	544	77
Event Electronics (Darla 24)	611	109
Event Electronics (Rode NTV)	640	203
Fatar/Music Industries	576	157
Focusrite	598	186
Fostex	•	85
Frontier Design Group	574	155
Full Compass	624	93
Furman Sound	580	164
Gadget Labs	535	65
Genelec	564	123
Generalmusic	581	165
Guillemot	605	197
Guitar Center	527	52
Guitar Center's Rhythm City	588	174
Hafler	549	97
H.E.A.R.	571	166
Ilio Entertainments (T-RackS)	521	45
IMX - Interactive Music Expo	556	108
Interstate Musician Supply	585	169
JBL Professional	565	125
John Lennon Songwriting Contest	559	115
Kaleidospace	566	126
Korg (Triton)	505	10–11
Korg	515	33
Korg (1212 I/O)	534	63
Korg (D8)	623	89
Korg (Electribe)	630	147
Kurzweil Music Systems	570	151
Leigh's Computers	601	192
Lexicon (Studio)	528	53
Lexicon (Core2)	529	55
Long Beach City College	603	193
Lynx Studio Technology	582	167
Mackie (HR824)	502	2–3
Mackie (VLZ PRO Series)	551	101
Mark of the Unicorn	501	228
MediaFORM	518	40
Mediastore	524	49
Merrill's Music	593	181
MicroBoards Technology	543	76
Midiman	552	103
MusiCares	553	104
Musician's Friend	545	78
Musicians Institute	595	184
Musitek	522	47
Neumann/USA	594	183
Opcode	513	29
Panasonic	•	25
Peavey	554	105
PG Music	560	116–117
QCA	602	192
QSC Audio Products	561	119
Quasimidi	625	202
Rane	517	39
Reliable Music	542	76
Rok Sak/Music Industries	607	198
Roland (XP-30)	510	22–23
Roland (SP-808)	631	148
Samson Technologies	567	127
Santee Case Co.	606	198
SeaSound	•	57, 59
Seer Systems	622	87
Sherman	587	174
Sibelius Software	638	71
Sonic Foundry #1	519	41
Sonic Foundry #2	579	163
Sony	•	181
Sound Chaser	636	113
Sound Quest	523	48
SoundTrek	584	169
Speir Music	613	204
Spirit	509	18–19
Steinberg North America	506	13
Stro Lion Technologies	633	191
Studiomaster	591	179
Sweetwater Sound #1	514	31
Sweetwater Sound #2	616	220–221
Sweetwater Sound #3	617	222–225
Syntrillium Software	548	95
Tannoy	537	69
Tascam	539	73
Taxi	575	156
TC Electronic	532	61
TC Electronic Product Giveaway	•	161
TDK	520	43
TerraSonde	612	204
Tracoman	568	128
Wave Distribution	635	113
WD Coakley Sound Design	596	185
Yamaha (CS2x)	516	37
Yamaha (O1V)	619	227
Yorkville	637	70

RATE THE ARTICLES IN THIS ISSUE! July 1999

We want to know what you think of the articles in *Electronic Musician*! Now you can use your reader service card to give us feedback about EM's editorial coverage. We have assigned a rating number to each of the main articles in this issue. Please select a rating for each article and circle the appropriate number on your reader service card:

Please select ONE rating number per article

	Very Helpful	Somewhat Helpful	Not Helpful	Didn't Read
A. Cover Story: "Sequencing Games," p. 34	701	702	703	704
B. "Power Hungry," p. 80	705	706	707	708
C. Stage View: "Swimming in the Air," p. 99	709	710	711	712
D. Desktop Musician: "Scoring on the Web," p. 102	713	714	715	716
E. Recording Musician: "The Twice-Baked Mix," p. 110	717	718	719	720
F. Working Musician: "Playing the Game," p. 118	721	722	723	724

EM Advertiser Sales Regions and Representatives

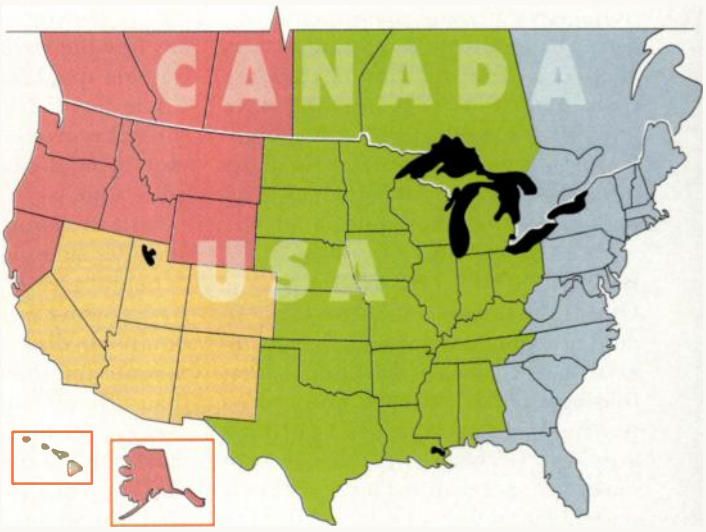
Joanne Zola
Northwest Sales Associate
(510) 653-3307
joanne_zola@intertec.com

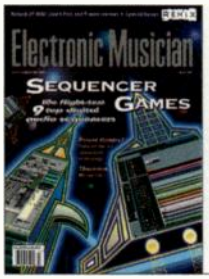
Erika Lopez
Southwest Sales Manager
(310) 207-8222
erika_lopez@intertec.com

Julie Clark
Midwest Sales Associate
(616) 687-8848
julie_clark@intertec.com

Joe Perry
East Coast Sales Manager
(770) 343-9978
joe_perry@intertec.com

Robin Boyce-Trubitt
Classifieds Sales Manager
(800) 544-5530
robin_boyce@intertec.com





CONTACT SHEET

A GUIDE TO THE COMPANIES AND ORGANIZATIONS MENTIONED IN THIS ISSUE OF ELECTRONIC MUSICIAN

Cover Story: Sequencing Games
pp. 34–78

Cakewalk Music Software tel. (888) CAKEWALK or (617) 441-7870; fax (617) 441-7887; e-mail sales@cakewalk.com; Web www.cakewalk.com

Emagic USA tel. (530) 477-1051; fax (530) 477-1052; e-mail info@emagic.de; Web www.emagic.de

Mark of the Unicorn, Inc. (MOTU) tel. (617) 576-2760; fax (617) 576-3609; e-mail info@motu.com; Web www.motu.com

Musicator USA tel. (530) 759-9424; fax (530) 759-8852; e-mail musicator@musicator.com; Web www.musicator.com

Opcode Systems tel. (650) 429-2400; fax (650) 856-0777; e-mail info@opcode.com; Web www.opcode.com

PG Music tel. (800) 268-6272, (888) PG-MUSIC, or (250) 475-2874; fax (250) 475-2937; e-mail info@pgmusic.com; Web www.pgmusic.com

Steinberg North America tel. (818) 993-4161; fax (818) 701-7452; e-mail info@steinberg-na.net; Web www.steinberg.net

Voyetra Turtle Beach, Inc. tel. (800) 233-9377 or (914) 966-0600; fax (914) 966-1102; e-mail sales@voyetra.com or sales@tbeach.com; Web www.voyetra-turtle-beach.com

Power Hungry
pp. 80–88

Crown International tel. (219) 294-8314; fax (219) 294-8250; Web www.crownintl.com

Hafler tel. (888) HAFLER1 or (602) 967-3565; fax (602) 894-1528; e-mail sales@hafler.com; Web www.hafler.com

Mackie Designs tel. (800) 898-3211 or (425) 487-4333; fax (425) 487-4337; e-mail mackie@mackie.com; Web www.mackie.com

QSC Audio Products tel. (714) 754-6175; fax (714) 754-6174; e-mail info@qscaudio.com; Web www.qscaudio.com

Velodyne Acoustics, Inc. tel. (800) VELODYNE or (408) 436-7270; Web www.velodyne.com

Desktop Musician: Scoring on the Web
pp. 102–108

ABC Home Page www.gre.ac.uk/~c.walshaw/abc

Alu o'Neal Java Laboratories www.alulabs.com

LilyPond Project www.cs.ruu.nl/people/hanwen/lilypond

MusicML Home Page www.tcf.nl/3.0/musicml/index.html

Music Notation Markup Language www.irdu.nus.edu.sg/music

MusicTeX Information ftp://ftp.gmd.de/music/musictex/

Sibelius Software tel. (888) 474-2354 or (310) 559-9996; fax (310) 559-9997; e-mail infoUSA@sibelius.com; Web www.sibelius.com

Sunhawk Corporation tel. (206) 528-0876; fax (206) 528-0942; Web www.sunhawk.com

Recording Musician: The Twice-Baked Mix
pp. 110–114

Alesis Corporation tel. (800) 525-3747 or (310) 255-3400; fax (310) 255-3401; e-mail alecorp@alesis1.usa.com; Web www.alesis.com

BIAS (Berkley Integrated Audio Software) tel. (800) 775-BIAS or (707) 782-1866; fax (707) 782-1874; e-mail sales@bias-inc.com; Web www.bias-inc.com

Digidesign tel. (800) 333-2137 or (650) 842-7900; fax (650) 842-7999; e-mail prodinfo@digidesign.com; Web www.digidesign.com

IK Multimedia/Ilio Entertainments (distributor) tel. (800) 747-4546 or (818) 707-7222; fax (818) 707-8552; e-mail ilioinfo@ilio.com; Web www.groovemaker.com or www.ilio.com

Mark of the Unicorn, Inc. (MOTU) tel. (617) 576-2760; fax (617) 576-3609; e-mail info@motu.com; Web www.motu.com

Opcode Systems tel. (650) 429-2400; fax (650) 856-0777; e-mail info@opcode.com; Web www.opcode.com

Steinberg North America tel. (818) 993-4161; fax (818) 701-7452; e-mail info@steinberg-na.com; Web www.us.steinberg.net

Reviews
pp. 150–205

Arboretum Systems tel. (800) 700-7390 or (650) 738-4750; fax (650) 738-5699; e-mail info@arboretum.com; Web www.arboretum.com

Audio DeutchKraft, Inc. (ADK) tel. (503) 772-3007; fax (503) 772-3097; e-mail info@audiodk.com; Web www.adk.cc

Guitar Center tel. (818) 735-8800; fax (818) 735-8844; Web www.guitarcenter.com

HHB Communications tel. (310) 319-1111; fax (310) 319-1311; e-mail sales@hhbusa.com; Web www.hhb.co.uk

Ilio Entertainments tel. (800) 747-4546 or (818) 707-7222; fax (818) 707-8552; e-mail ilioinfo@ilio.com; Web www.ilio.com

Line 6 tel. (805) 379-8900; fax (805) 381-4684; e-mail sales@line6.com; Web www.line6.com

Quasimidi Corporation tel. (941) 945-8672; fax (941) 945-8673; e-mail usamidi@peganet.com; Web www.quasimidi.com

Roland Corporation U.S. tel. (323) 890-3700; fax (323) 890-3701; Web www.rolandus.com

Sound Quest, Inc. tel. (800) 667-3998 or (250) 478-4337; fax (250) 478-5838; e-mail sales@squest.com; Web www.squest.com

Sound Subscriptions tel. (303) 604-9139; e-mail soundsubs@aol.com; Web members.aol.com/SoundSubs/SOUNDSUBS.html

Tascam/TEAC tel. (323) 726-0303; fax (323) 727-7635; Web www.tascam.com

AUDIO DEUTCHKRAFT

A-51S

A great-sounding studio condenser mic that won't zap your savings.

By Rob Shrock

I have often heard it said that microphones are like paintbrushes, and the analogy is a good one. A particular brush can help achieve brilliant results when properly employed, but it can also destroy an effect when used for the wrong application. The solution, of course, is to broaden the selection of brushes you use to increase the likelihood of getting the desired results.

This holds true for microphones, too. Experienced engineers will be the first to tell you that a prized vintage mic, no matter how exquisite sounding, is not the best choice for every situation. The remedy? Try a different mic.

Thankfully, we live in a time when great-sounding microphones are increasingly affordable. Not only that, but there are more mics available now than ever before, with no end in sight to new, less expensive models.

One of the latest companies to enter this growing market is Audio Deutch-Kraft (ADK). Manufactured in Asia, the ADK line offers mics that compare favorably to more familiar brands at a fraction of the cost. I recently tested the ADK A-51s, a large-diaphragm, true condenser mic—complete with attenuation pad and low-frequency rolloff—that lists for only $595. At that price, it's no wonder that so many engineers and musicians are adding ADK microphones to their collections.

AT THE HEART OF IT

The A-51s is a side-address microphone with a fixed cardioid polar pattern. It features a 10 dB pad and 100 Hz high-pass filter. Similar in shape and feel to a Neumann U 87, but with a black anodized finish, the mic is sturdy and well built.

All ADK mics come in a lockable aluminum travel case with a shock-mount harness clip (plus extra elastic band) and a padded zipper bag. Although less rugged than an Anvil case, the lightweight ADK case offers sufficient travel protection and provides an extra storage space for holding peripherals such as a mic cable, DAT tapes, and so on.

VINTAGE RESPONSE

ADK's published specs show the A-51s's frequency response as fairly flat with slight (2 dB) presence bumps at 3 kHz and between 5 and 10 kHz; the low end tapering off below 100 Hz to about 5 dB down at 50 Hz; and the high end rolling off around 16 kHz to 6 dB down at 20 kHz. Interestingly, certain vintage mics have similar frequency responses, including the venerable Neumann U 67. In fact, when recording acoustic guitar and female voice, I found the A-51s's sonic character very similar to a U 67's. The slight tapering off on the high end gives the microphone a smooth quality without resulting in a dull sound. Also, when the A-51s is positioned properly, its natural presence boosts eliminate the need for EQ in many cases.

In other words, if you want a ruler-flat frequency response, this is not the mic for the job. Rather, the A-51s provides a distinctive character or coloration, which means that it sounds really good on certain instruments and voices and not as good on others. Overall, though, the A-51s fared very well in several applications.

CORDS TO CHORDS

I got great results recording female lead vocals with the A-51s. The mic's response really lends itself to female vocals, thanks to the combination of tapered low end and upper presence rise.

As for the low-frequency rolloff, I found that engaging it removed too much bottom from a mic that is already a bit shy on the low end. Therefore, on female vocals and in most other applications, I preferred to leave the rolloff in the "flat" position.

In fact, the best use I found for the low-frequency rolloff was reducing the proximity effect when miking very closely. The A-51s is a bit noisier than many other condenser microphones available today (although no noisier than most vintage mics), and some of that noise can be reduced simply by getting in a little closer with the mic. It's the usual dance between proximity effect and self-noise level that is inherent to cardioid microphones: as you position the mic closer to the source, the noise decreases but the bass increases. Therefore, in those situations when you need to minimize noise but don't want to boost the bass, the low-frequency rolloff can be very helpful.

I also used a pair of A-51s's on a jingle date with four vocalists: two males and two females facing each other, with the mics about three feet apart. The studio where I was recording normally leaves a pair of Neumann U 87s set up in this same configuration for quick session turnaround, but I felt comfortable enough with the A-51s to switch them out.

I had recorded the same four singers many times in the past, and I immediately noticed the difference in sound

Yet another large-diaphragm, cardioid-only condenser mic, the ADK A-51s is affordable enough to bring quality sound to the most humble personal studio. It is particularly well suited to acoustic guitar and female vocals.

Intoxicating capabilities. Everything a factory soundcard has and more. At half the price or much less. Real time direct-to-disc editing and MIDI recording with up to 8 live performers. Onboard digital effects processing with RISC based DSP. Not to mention multi-level stereo sampling.

Tech Specs

PCI card
- DSP: 28-bit internal processing RISC based Dream processor
- 4MB RAM on board. Expandable to 36MB RAM

External rack
- 8 full-duplex inputs / 4 outputs (1/4" unbalanced)
- 20-bit Burrbrown™ DAC / ADC converters
- S/PDIF: Consumer mode master or slave 32 / 44.1 / 48 KHz
- MIDI interface = In / Out thru Din

An external rack with 8 full-duplex inputs, 4 outputs and a studio full of other pro connections. Includes S/PDIF (optical & coaxial) in and out that cards priced up to six times more lack. DirectSound3D, A3D, GM and Roland GS support. Bundled with unrivaled software. With the **Maxi Studio ISIS**, you'll be far out of your mind, and deep into pro music.

Console 8/4

Bundled full-version software: Logic Audio™ Pro ISIS, Cool Edit Pro SE™, Acid DJ™ + demos

Suggested retail price: $399 USD. Avalaible at Mars Music, Micro Center, Sam ASH, Long & McQuade & Tracer Technologies. (1-888-8TRACER)

www.guillemot.com
1-877-GUILLEMOT (484-5536)

©Guillemot Inc. All rights reserved. Maxi Sound™ and Maxi Studio ISIS™ are trademarks of Guillemot Corporation. GS™ and MPU-401™ are trademarks of Roland Corporation. Sound Blaster™ and Sound Blaster Pro™ are trademarks of Creative Technology, Singapore. Windows®, Windows®95 & 98. DirectSound™ and DirectSound™ 3D are trademarks of Microsoft® Corporation. CakeWalk Audio Pro™ is a trademark of Twelveoo Tone Systems, Inc. Wavelab™, Cubase™ and VST™ are trademarks of Steinberg. Logic Audio™ is a trademark of Emagic. Acid DJ™ is a trademark of Sonic Foundry. All other brandnames are trademarks of their respective owners. Photos not binding. Contents, designs and specifications are subject to change without prior notice and may vary from one country to another.

Guillemot

circle #605 on reader service card

A-51s Specifications

Capsule Type	1" pressure-gradient transducer with gold-sputtered diaphragm
Frequency Response	30 Hz–20 kHz
Polar Pattern	cardioid
Signal-to-Noise Ratio	73 dB
Self-Noise	<20 dB (A weighted)
Total Harmonic Distortion	<0.5%
Sensitivity	15 mV/pA
Maximum SPL	130 dB
Low-Frequency Rolloff	-6 dB @ 100 Hz (switchable)
Attenuation Pad	-10 dB (switchable)
Output Type	transformer coupled, balanced XLR
Operating Voltage	48V phantom power
Dimensions	6.1" (H) x 2" (D)
Weight	17 oz.

using the ADK mics. Although there was less low end on the male singers' tracks than the U 87s provided, overall I preferred the more natural sound of the ADKs to the slight honkiness of the U 87s. However, the session did confirm my sense that the A-51s wouldn't be my first choice for a bass or baritone vocalist.

The A-51s also shined on acoustic guitar. Its response seemed tailored for this application, too, and again I was reminded of a Neumann U 67 or KM 86 (one of my favorite mics for recording acoustic guitar). Using the ADK pair, I captured a gorgeous, wide-picked tone. I left the low-frequency rolloff switch in the flat setting, which gave me the sound I wanted; however, for a busy, strummed part, the rolloff would be helpful in achieving a thinner, less bassy sound.

WORTHY PAINTBRUSH

I liked the Audio DeutchKraft A-51s a lot. Like most other good microphones, this one sounds great when matched with the appropriate source. My favorite applications were female vocals and acoustic guitar. The A-51s is a bit shy in the sub lows, though, so a different mic would likely be preferable for applications requiring extended low-end response. Also, the A-51s's self-noise is a bit high (a problem that ADK is reportedly working on by improving the mic's FET electronics).

All around, though, the ADK A-51s is a great-sounding mic and one of the better values on the market, especially considering the extras that are thrown into the deal. For the price of one mid-level condenser microphone, you can own a *pair* of ADK A-51s's.

Of course, that's not to say that this is a mic for the budget recordist only. I would recommend that professionals add a pair to their collections, too. After all, sometimes you don't want to break out that prized $5,000 vintage mic. The bottom line is that these mics are just too good and affordable *not* to have a few on hand.

Producer and songwriter **Rob Shrock** *is the musical director for Burt Bacharach. He has also worked with Elvis Costello, Dionne Warwick, LeAnn Rimes, Wynonna, and a host of others. He can be contacted at avatarprod@aol.com.*

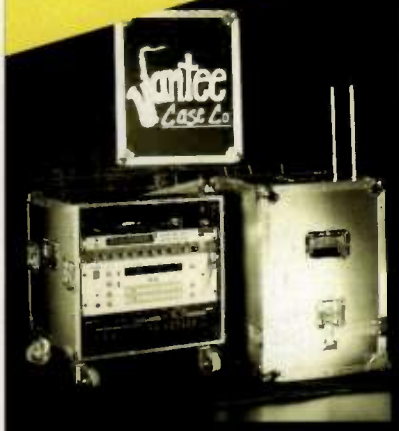
AUDIO DEUTCHKRAFT
A-51s large-diaphragm condenser mic
$595

AUDIO QUALITY ■■■
VALUE ■■■■■
1 2 3 4 5

PROS: Pleasing character. Appropriate for many instruments. Affordable. Durable. Comes with travel case and shock-mount clip.
CONS: Self-noise is a bit high. Shy bass response. Sounds thin when low-frequency rolloff is engaged.
CIRCLE #443 ON READER SERVICE CARD

For manufacturer information, please see Contact Sheet, p. 195.

Endorsed by
"NYC Recording Artist "
George Garzone



SANTEE CASE CO.
We Build The Finest, Toughest Custom Cases In The Industry!
Over 1,000 laminates to choose from...
Call For A Free Quote:
414-268-2036
www.santeecase.com

circle #606 on reader service card

circle #607 on reader service card

Heavy-duty, water-resistant Cordura shell, 10mm padding, reinforced shoulder straps and zippers, *Two* external accessory pouches and a plush Velour lining, all for less than $29.95! Professional quality gig-bags for every musical instrument and device imaginable, starting at only $21.95.
Who Makes This Case?
Rok Sak...
...of course!
RS-1213 Gizmo Bag for the Mackie 1202
Suggested List: $25.95
NEW from ROK SAK

GIZMO BAGS!
Available at Better Music Stores Everywhere.
For add'l info, contact Music Industries Corp.
99 Tulip Ave.,
Floral Park, NY 11001
Tel: 516-352-4110
fax: 516-352-0754

For a great sounding show, all you need is talent... We can supply the rest!

For over 52 years, Carvin has been delivering the highest quality gear at the most affordable prices. The **872-832** & **1272-832** systems are prime examples. These versatile mixer & speaker packages are ideal for both rehearsal & live performances. The heart of the system is the 700-watt **CX872** or **CX1272** stereo power mixer. They offer 8 or 12 channels with XLR mic & line inputs, 3 band ch EQ, effects & monitor sends with stereo pan & level controls. The master section features two 9 band graphic EQs which can be spilt with the dual 350 watt power amps to drive four 8 ohm main speakers & four 8 ohm monitor speakers. The onboard stereo 24bit DSP processor offers 16 premium effects from extended echos to lush reverbs. The **832** high power 15" speakers are made from lightweight poplar plywood covered in Duratuff II™. Deep bass punch with crystal clarity is what you'll get from these tuned ported enclosures! The system package also includes two quality **CM50** mics with 20' XLR & two 50' speaker cables.

The **7222** monitor package comes with two **722** 12" monitors featuring light-weight poplar plywood & two 50' cables that hook right into the mixer. Add a couple of **SS20** speaker & **MS12** mic stands & you're ready to tackle the big jobs with plenty of power and superb sound.

For delivery to your door, call **800-854-2235** & give the system a real workout under our money-back trial period or visit one of our California stores. As always, our product consultants are available to help with any questions.

872-832 System $1179.95
- CX872 700W 8 Ch mixer • Two 832 400W 15" 2-way speakers • Two CM50 mics with 20' XLR cables • Two 50' PH50 speaker cables

1272-832 System $1329.95
- CX1272 700W 12 Ch mixer • Two 832 400W 15" 2-way speakers • Two CM50 mics with 20' XLR cables • Two 50' PH50 speaker cables

7222 Monitor Sys $399.95
- Two 722 300 watt 12" 2-way monitors
- Two 50' PH50 speaker cables

SS20 Speaker Stands $59.95
MS12 Boom Mic Stands $29.95
16 & 24 channel systems also available!

GIG MAGAZINE'S ROAD TEST

The club held about 200 people...Set-up was very quick and easy. The system itself sounded great. We had more clean power and overall headroom than we would ever need for a gig this size or twice this size.

Jamie Rio
Gig Magazine, November 1998

700 watts!
24 bit stereo effects

Call 800-854-2235 for immediate delivery from our factory

MADE IN USA

CARVIN
The Professional's Choice
www.carvin.com
USA, Alaska, Hawaii, Canada
800-854-2235 M-F 6:30-6, SAT 9-4 PST

AVAILABLE FACTORY DIRECT or at the following Carvin store:
- San Diego, CA 619-487-8700 • Hollywood, CA 323-851-4200
- Santa Ana, CA 714-558-0655 • Covina, CA 626-815-8787

FREE Carvin catalog or visit www.carvin.com.

Name _____

Address _____ Apt _____

City _____ State _____ Zip _____

CARVIN, 12340 World Trade Dr., San Diego, CA 92128

QUICK PICKS

ILIO ENTERTAINMENTS

TranceFusion

By Dan Phillips

Here's the scenario: you're recording your new electronica/dance single, and the basic tracks are finished. Listening to the playback, you notice that a few things are still missing: a cool intro, a musical gesture that lifts into the choruses and another that falls back into the verses, and maybe something that adds more motion to the bridge.

If your electronic music mixes seem a little lackluster, Ilio's *TranceFusion* can provide some extra sparkle.

If this sounds familiar to you, then Ilio Entertainments' *TranceFusion* (CD-ROM with audio CD $199; audio CD only $99) may have just the material you're looking for. *TranceFusion*, available in audio, Akai/E-mu, and Roland formats (Kurzweil and SampleCell formats are expected to be available by late summer), is chock-full of sweeps, swirls, and other kinds of transitional sounds, along with a goodly selection of track-friendly arpeggios and texture beds.

Swells and Swoops

TranceFusion's swells are like reverse cymbal crashes on synthesized, psychedelic steroids. The disc has around 300 swells, which range from simple noise sweeps to complex, multiple-element mini-compositions in which pitch and noise are combined as they swerve and meander toward an inevitable climax.

The swells are divided into Swell Stops, most of which cut off abruptly at the end, and Carry-Overs, which fade out more gently. These two categories are further divided into long swells (up to 22.2 seconds) and short swells. Within these categories are mixtures of swells with different sonic characteristics—noise, pitch, swoop up, swoop down, and so on.

Arpeggios and Textures

The disc also offers 62 synthesizer arpeggios that vary in tempo from 77 to 183 bpm. Some are ear-catching in and of themselves, while others avoid overly idiosyncratic melodies. The less melodic arpeggios are great, because it is easy to merge them with an existing composition to add rhythmic interest without distracting from the main content.

The 61 Textures are a grab bag of distorted vocals to burbling techno blips to smooth pads. I could hear many of them working well as elements of intros or outros, as filler for a break, or as a means of adding extra interest in the background.

The documentation is fairly good; it lists the durations of all the sounds (which is helpful for accurate triggering), and keys and tempi where appropriate. I would have appreciated the inclusion of some descriptions of the sounds themselves, so that if I want, say, a swell with an upward pitch swoop, I would have some idea about where to find one. Fortunately, auditioning sounds is a breeze since all the CD-ROM versions come with an audio disc, as well.

Swell Out

Recently, I worked on a theme demo in a hard, techno style for an animated action series. Sure enough, I found *TranceFusion* to be extremely useful; the disc provided a build into the main groove, supplementary momentum for fills between sections, and a big burst of noise at the climax. I'd recommend it to anyone looking for, as Ilio puts it, a set of "flying carpets" to take your musical transitions over the top.

Overall EM Rating (1 through 5): 4

CIRCLE #444 ON READER SERVICE CARD

SHANE ETTER

Sound Subscriptions

By Jeff Obee

Shane Etter has presented Kurzweil K2000/K2500 users with an intriguing concept: once a month, he will e-mail his Sound Subscriptions, which are custom-programmed .krz or .k25 files, for only $50 per year. Etter, who has also helped produce CD-ROMs for Bolder Sounds, maintains a Web site at http://members.aol.com/SoundSubs/SOUNDSUBS.html. Here, you can grab a bank of 50 demo patches that downloads in seconds and provides a good overview of his wares.

The Programming

Etter's programming is very personalized and leans toward the experimental. Many of his patches would work well in loop-based music or as sound events in avante-garde or ambient compositions, and they would also fit nicely in hard-edged alternative rock music. No matter what end result you envision for these patches, getting new sounds every month from an experienced Kurzweil programmer like Etter can be educational and inspiring.

Every patch uses the onboard ROM in the Kurzweil, so all keymaps are in place, there are no samples to import, and everything loads in quickly. No other ROM blocks are used, but due to discrepancies between the K2000 and the K2500, I occasionally found a keymap unavailable on my machine.

Most patches come to you sans effects, a choice that I don't understand. Effects can be edited or changed easily in the Kurzweil synths; adding the standard K2000 effects while I auditioned patches brought many to life. Also, the patches offer little in the way of Continuous Controller assignments, aside from some standard Pitch Bend, Aftertouch, Mod Wheel, and occasional slider controls. I wanted to hear what someone who spends hours every month creating sounds would do with Continuous Controllers and effects.

The Sounds

The banks I reviewed contained only a few pads, although I did find some pleasing ambient textures. The emphasis of Sound Subscriptions is on partially to heavily distorted sounds, sample-and-hold-type ditties, outrageous reverse kits, pleasingly crunchy basses, twisted pianos, and other unusual programs.

For manufacturer information, please see Contact Sheet, p. 195.

Works of Art

...."These little gems compare very favorably to the U-87. They have the same warmth and a similar presence. Hey, at 1/6th the price, the choice is practically a no-brainer!..."

David Miles Huber, Author (Modern Recording Techniques, and Professional Microphone Techniques)

...."We tracked all the acoustic guitars on the new Victoria Shaw album with a stereo pair of A-51s because of the way the ADK microphone gave a true representation of the guitar: a well defined high end, and an accurate low end..."

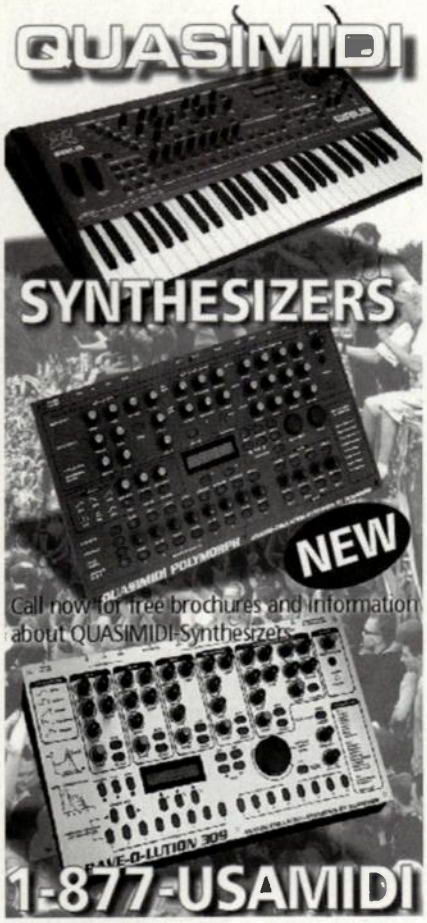
Mick Conley, (Engineer for Kathy Mattea), and Buzz Leffler

...."I've now used the A-51s on almost everything including vocals, guitars, and drums. They remind me of very expensive German mics I have tracked with before..."

Adam Kasper, Producer/Engineer

ADK
Audio DeutchKraft, Inc.
PO Box 82282 Portland, OR 97282-0282
Phone : 503-772-3007 FAX: 503-772-3097
Visit our website at: www.adk.cc

circle #609 on reader service card



circle #625 on reader service card

circle #626 on reader service card

QUICK PICKS

In the November 1996 batch is a cool sound event called "cy-fi" that whooshes and pans using a reversed Ambient Kit. "Ambient," from the same group, slowly moves a basic string waveform through a Parameter Shaper algorithm, eventually becoming semidistorted and then going back again. I especially liked January 1999's "ez" series, which consists of 13 4-layer variations of surreal scrunching, whirling, and panning expressions.

A patch named "0102," from July 1998, starts as a deep, muted pulsing and flowers into a springlike metallic sound. "Sneaks," one of the demo patches, is an otherworldly ditty that brings to mind the sound of a UFO. (Be aware that patches with the same names sometimes appear in different months and are actually variations on a theme.)

Final Thoughts

If you produce jingles or smooth jazz, these sounds aren't for you, but if you're an avid K2000/2500 user with a bent towards the experimental, you really can't go wrong for the equivalent of $4.17 a month. Back issues are also available for $50 per year. One hundred new sounds every month is quite an undertaking, especially for one person; I'd prefer to see fewer but more detailed patches, but each month you'll still find enough good material to feed your machine. Sound Subscriptions is definitely worthy of a listen.

Overall EM Rating (1 through 5): 3.5

CIRCLE #445 ON READER SERVICE CARD

GUITAR CENTER

Synchroloops, vol. 1

By Jeff Obee

I was initially surprised to see a sample CD from Guitar Center, but given the volume of talented musicians that walk through the store's doors and are employed there, it makes sense that the company is entering the fray with *Synchroloops,* vol. 1 ($99.99; audio CD/CD-ROM with WAV files). The disc is a mix-and-match "buffet," where the user can choose from loops of a variety of instruments and styles that are intended to work together in any combination.

Toolkit

The loops are recorded at 120 bpm, and most are presented in the key of E, although there is some variance in keys that isn't delineated in the track listings. Otherwise, the documentation is good—one nice touch is a relative tempo-to-tuning table, so you can specify tempi ranging from 71 to 203 bpm in your loops. Each loop is one bar long, with the exception of the SynchroMasters, which are 2-bar, full-band

The *Synchroloops* "Rhythmic Toolkit" from Guitar Center covers drums, percussion, and basses from swing to disco, with a few guitars, sitar, and effects for good measure.

loops that require permission for use on a recording. They are indexed in four-second increments, so the memory requirements are minimal.

Synchrosounds

Most of the disc consists of drum and percussion loops, although there are a few single hits and special effects to fly in over the grooves. All sorts of rhythmic terrain are explored here, including a plethora of rock styles, as well as funk, African, Latin/Brazilian, Indian, swing, shuffle, and disco. The drums were recorded in a couple of studios, and the live rooms have decidedly different room ambiences—some not to my liking.

Drum machines are given some showtime, which is a nice addition. These include some sequenced Roland JV-1080 sounds, a Baldwin Fun Machine, an Electro-Harmonix Rhythm 12, Steinberg *ReBirth* grooves, and a few more. The African percussion section is comprehensive, with djembes, jun-juns, shekeres, and more. The Brazilian and Latin sections give you a lot to choose from, and there are also a few tabla loops and percussion snippets, such as tea kettles and mouth slaps, which I especially liked.

Synchroloops gives you basses and guitars in a variety of styles; there's funk and ambient, blues and rock. Strangely, there

RØDE™ NTV

True Condenser Valve Microphone

The New Gold Standard

What gave the best vintage mics their unmistakable warmth and richness? On a select few, it was special technology that allowed the diaphragm to be suspended in the capsule by its edges. Without a center wire, the capsule moves more freely, resulting in super smooth extended low frequency response.

The NTV brings this special approach to capsule design out of the price stratosphere and into your studio. And with it you get audiophile-grade components, an extra low noise twin triode ECC81 tube, and a custom Jensen™ output transformer. Put it all together, and you have audio that is as clean and pure as it is rich.

Get the new RØDE NTV. And prepare to have your standards raised.

- 1.15" gold-sputtered edge-terminated diaphragm
- Gold-plated jacks and connectors
- Power supply with tube "ready" indicator
- 30' double-shielded oxygen free copper multicore cable
- Birdcage shockmount
- Custom aluminum flight case
- $1199 MSRP

DISTRIBUTED BY

EVENT ELECTRONICS

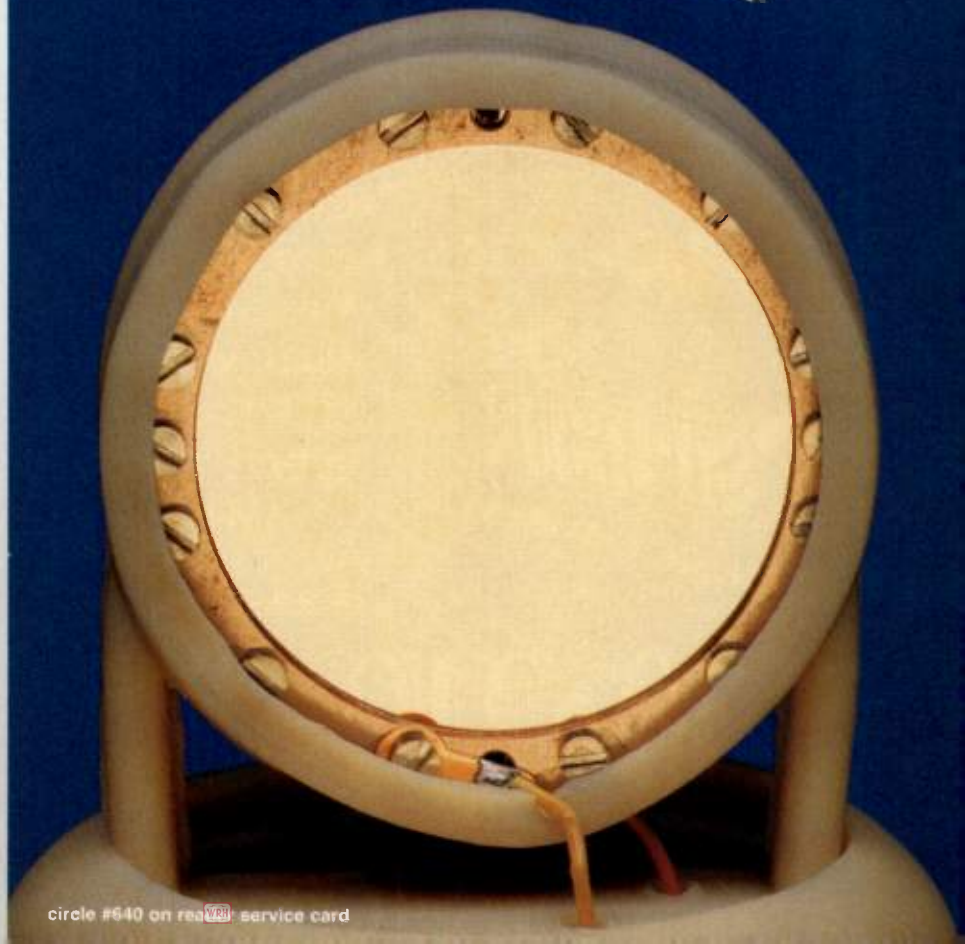
P.O. Box 4189,
Santa Barbara, CA 93140-4189

Voice: 805-566-7777

Fax: 805-566-7771

E-mail: info@event1.com

Web: www.event1.com



circle #640 on reader service card

The Audio Toolbox™

" The Audio Toolbox is a DSP-powered, *wunderbox* packing dozens of functions... At $899, every audio pro needs one."

- George Petersen, Mix Magazine

Inputs:
- Built-in microphone
- Stereo balanced XLR
- Stereo 1/4" TRS
- Stereo RCA phono
- MIDI

Plus:
- Graphical backlit LCD display
- Battery or AC power

Outputs:
- Built-in speaker
- Balanced XLR
- 1/4" TRS
- RCA phono
- 1/4" stereo headphone jack
- MIDI

Acoustic Analysis Tools: Real Time Analyzer, SPL, ETC, RT60, Speaker & Mic Polarity
Session Helpers: Tuner, Tempo Computer, MIDI Data Monitor, MIDI Transmit, SMPTE Read/gen/re-gen, Hum Cancellation
Test Functions: Signal Generator, dB/Frequency Meter, S/N, Phase Meter, Frequency Response, Sample Scope
Utilities: Headphone Amp w/guitar fx, Cable Tester, Phantom Power Checker, and more...

all for **$899.00** (MSRP)

TerraSonde
Makers of The Audio Toolbox™

1751 Redwood Ave, Boulder, CO 80304 USA
For a dealer near you call:
303 545 5848 or 888 433 2821 (U.S. toll free)
see us at www.terrasonde.com

circle #612 on reader service card

circle #613 on reader service card

SPEIR MUSIC CO.

•RECORDING
•PA GEAR/SPEAKERS
•KEYBOARDS/SAMPLERS
•MICROPHONES/WIRELESS
•MIXING/PROCESSORS
MUCH, MUCH MORE!

510 S Garland Ave
Garland, TX 75040
M-F 9-7
www.speirmusic.com
email:speir@dcx.net

800•219•3281

are only two Latin bass loops and no Latin guitars to accompany the extensive Latin and Brazilian percussion loops. Also, many of the bass samples have an annoying high-end noise that is very obvious—I'm surprised that the producers didn't fix this.

Synchrolooping

Using the audio CD, I laid out a keymap of a half-dozen drum and percussion loops alongside various bass and guitar patterns, and I had more success sequencing them than playing them manually. (The CD-ROM would probably work better for a concept such as this.) Some esoteric fun can be had here, though: playing R&B guitar and tabla loops together makes for an unusual musical experience, and an ambient guitar flown over drum machine, funk bass, agogo, and sitar loops was appealing to me.

Synchroresults

There is some creative work on this disc, but it could have been a bit more focused. It is a somewhat ambitious, perhaps overly confident first effort. Nonetheless, *Synchroloops* is a great idea—small, easy-to-sample chunks that are usable in sequencing environments as well as live. It's definitely worth checking out.

Overall EM Rating (1 through 5): 2.5

CIRCLE #446 ON READER SERVICE CARD

ARBORETUM SYSTEMS

Ray Gun 1.2 (Mac/Win)

By Mikail Graham

Arboretum's *Ray Gun* ($99) is a simple and effective tool for removing tape and turntable-related artifacts such as hiss, hum, rumble, clicks, and pops. *Ray Gun* is designed primarily for audio restoration and archiving and can be used either as a plug-in for applications that support DirectX, VST, Premiere, or AudioSuite formats, or as a stand-alone processor. For the Mac, *Ray Gun* comes bundled with Arboretum's *HyperEngine*, which gives you the added advantage of working directly with live audio.

Ray Gun supports WAV, SDII, and AIFF file formats. With the DirectX, AudioSuite, and Premiere versions, processing is file-based. The VST and *HyperEngine* versions allow you to process audio files in real time. *HyperEngine* also allows you to preview an entire audio file before processing. (Because the DirectX, AudioSuite, and

Premiere versions are RAM-based, the amount of audio you can preview depends on the limits of your computer.)

Speaking of computer requirements, to use *Ray Gun*, your Power Mac will need 16 MB of available RAM, 8 MB of hard disk space, and at least a 120 MHz processor running Mac OS 7.6 or higher. On the PC side, you'll want at least 4 MB of RAM and a Pentium processor running at 133 MHz or faster with Windows 95, 98, or NT 4.0. For my tests, I used the Premiere and AudioSuite versions and encountered no problems using *Ray Gun* with any of the host programs.

Hitting the Mark

Using *Ray Gun* is such a straightforward process that a first-time user will be up and running in no time. *Ray Gun* has three

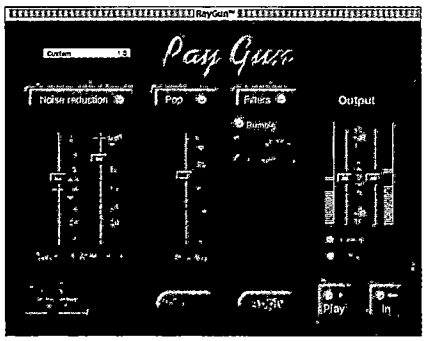


FIG. 1: The *Ray Gun* interface is intuitive and easy to understand. Pictured here is the Adobe Premiere version.

processors—Noise Reduction, Pop, and Filters—as well as an output section for making up any level lost during processing (see **Fig. 1**). The processors can be run separately or together.

Noise Reduction uses downward expansion to remove any wide-spectrum background noise that has a consistent "signature." For example, removing the hiss from an old 78 was a simple task. On the other hand, I found it more challenging to arrive at a perfect balance for some of the cassettes I worked on, where the noise signature varied.

Simply click the Noise Reduction button and adjust the Threshold and Attenuation values to suit your needs. Threshold has a range of -36 to +36 dB. Moving it in a negative direction helps reduce hiss, whereas going in a positive direction removes low-end noise. The Attenuation control has a range of 36 dB and determines the amount of cut that is applied. The cut frequency is dependent on the Threshold setting.

Snap, Crackle, Pop, and Rumble

Ray Gun's Pop filter removes a variety of transient, turntable-related noises such as crackles, pops, and clicks. It works beautifully in situations where such artifacts stand out. Like Noise Reduction, Pop is also simple to use. Begin with Sensitivity set at 0 percent, and move the slider until the pops, clicks, and crackles disappear.

Ray Gun includes three fixed notch filters for minimizing low-frequency problems; bear in mind, though, that you can use only one notch filter at a time. The Rumble filter removes the sound associated with turntable cartridge noise. Hum removes the noise created by AC ground loops: 60 Hz, for hum encountered in North America, and 50 Hz for hum typically found in Europe.

Mission Accomplished

Overall, *Ray Gun* is the best-sounding noise reduction plug-in in its price range. The interface is elegant, straightforward, and simple to navigate. *Ray Gun* would be a welcome addition to everyone's audio toolbox.

Overall EM Rating (1 through 5): 4.5

CIRCLE #447 ON READER SERVICE CARD

circle #614 on reader service card

B&H
PHOTO - VIDEO - PRO AUDIO

420 Ninth Avenue

Between 33rd & 34th Streets, New York, N.Y. 10001

Store and Mail Order Hours:
Sun. 10-5, Mon. thru Thurs. 9-7
Fri. 9-2, Sat. Closed

For Orders Call:
800-947-5509
212-444-6679

or FAX (24 Hours):
800-947-9003
212-444-5001

On the Web:
www.bhphotovideo.com
We Ship Worldwide

FOR A FREE MONTHLY CATALOG, CALL 800-947-6933, 212-444-6633 OR WRITE

B&H
PHOTO - VIDEO - PRO AUDIO

"THE PROFESSIONAL'S SOURCE"

FOR ORDERS CALL:
800-947-5009
212-444-6679

OR FAX (24 HOURS):
800-947-9003
212-444-9001

Store & Mail Order Hours:
Sunday 10-5
Monday thru Thursday 9-7
Friday 9-2 • Saturday Closed

On the Web: http://www.bhphotovideo.com

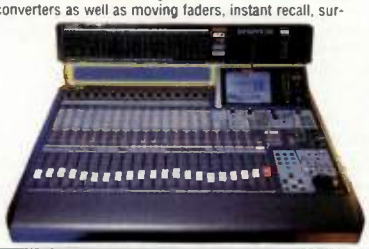
420 Ninth Ave. (Bet. 33rd & 34th St.) New York, N.Y. 10001

DIGITAL MIXERS

Panasonic

WR-DA7 Digital Mixing Console

Stop dreaming about your digital future, it's here! The Panasonic WR-DA7 digital mixer features 32-bit internal processing combined with 24-bit A/D and D/A converters as well as moving faders, instant recall, surround sound capabilities, and much more. Best of all, it's from Panasonic.



FEATURES-
- 32 Inputs/6 AUX send/returns • 24-bit converters
- Large backlit LCD screen displays EQ, bus and aux assignments, and dynamic/delay settings.
- 4-band parametric EQ
- Choice of Gate/Compressor/Limiter or Expander on each channel
- 5.1 channel surround sound in three modes on the bus outputs
- Output MMC • Optional MIDI joystick

TASCAM

TMD1000 Digital Mixing Console

You want to see what all the digital mixing buzz is about? The NEW TMD1000 from Tascam will have you smilin' & automatin' in no time. It features fully automated EQ, levels, muting, panning and more in an attractive digital board with an analog 'feel'. Your digital future never looked, or sounded, so clear.

FEATURES-
- 4 XLR mic inputs, 8 1/4" balanced TRS inputs.
- 20-bit A/D D/A conversion. 64x oversampling on input, 128x on output.
- Store all settings, fully MIDI compatible.
- Optional **IF-TD1000** adds another 8 channels of TDIF and a 2-channel sample rate converter.
- Optional **FX-1000** Fx board adds another 4 dynamic processors and another pair of stereo effects.

DIGITAL MULTI-TRACK RECORDERS

TASCAM

DA-88 Modular Digital Multitrack

The standard digital multitrack for post-production and winner of the Emmy award for technical excellence, the DA-88 delivers the best of Tascam's Hi-8 digital format. Its Shuttle/Jog wheel and track delay function allow for precise cueing and synchronization and the modular design allows for easy servicing and performance enhancements with third-party options.

FEATURES–
- 148 minutes record time on a single 120 min tape
- Expandable up to 128 Tracks using 16 machines
- User-definable track delay & crossfade
- Shuttle & Jog capability
- Auto punch with rehearsal
- SMPTE, MIDI and Sony 9-Pin sync capability
- Options include RC-828/898 Remote Controllers, IF-AE8/IF-88SD digital interfaces, MU-Series meter bridge, MMC-88 MIDI machine control interface, SY-88 Sync Card

DA-38 Digital Multitrack for Musicians

Designed especially for musicians, the DA-38 is an 8 track digital recorder that puts performance at an affordable price. It features an extremely fast transport. Hi-8 compatibility, rugged construction, ergonomic design and sync compatibllity with DA-88s.

ALESIS

ADAT XT20 Digital Audio Recorder

The New ADAT-XT20 provides a new standard in audio quality for affordable professional recorders while remaining completely compatible with over 100,000 ADATs in use worldwide. The XT20 uses the latest ultra-high fidelity 20-bit oversampling digital converters for sonic excellence, it could change the world.

FEATURES–
- 10-point autolocate system
- Dynamic Braking software lets the transport quickly wind to locate points while gently treating the tape.
- Remote control
- Servo-balanced 56-pin ELCO connector .
- Built-in electronic patchbay
- Copy/paste digital edits between machines.

ADAT LX20 Digital Audio Recorder

The most affordable ADAT ever made, the new LX20 features true 20-bit recording at a price you won't believe. Compatibility with all other ADATs and digital consoles, the LX20 provides the same sync options and digital inputs as the big brother XT20 at a lower price point.

ADAT OPTIONS–
- **BRC** for all Adat (except M20) w/ 460 locate pts, smpte/absolute time & bar and beat timing references, digital editing and transport control for up to 16 ADATs
- **AI3** 20-bit 8 channel analog - optical I/O interface
- **CADI** remote control/autolocator for M20 w/ jog/shuttle & rj-45 ethernet connector for long distance cable runs
- **Adat/Edit** integrated PCI digital audio card and software for recording and editing on Mac & Windows computers

MIC PREAMPS

JOE MEEK VC1 Studio Channel

got meek?

The Joe Meek Studio Channel offers three pieces of studio gear in one. It features an excellent transformer coupled mic preamp, a great compressor and an enhancer unit all in a 2U rackmount design. Find out why more and more studio owners can't live without one.

FEATURES-
- 48V phantom power, Fully balanced operation
- Mic/Line input switch
- Mono photo-optical compressor
- High pass filter for large diaphragm mics
- Extra XLR input on front makes for easy patching
- Compression In/Out and VU/compression meter switches
- Twin balanced XLR outputs with one DI XLR output for stage use
- Enhancer In/Out switch and enhance indicator
- Internal power supply 115/230V AC

dbx 586 Vacuum Tube Mic Pre

Hand selected and matched premium 12AU7 vacuum tubes ensure ideal characteristics for a warm, distortion free signal path. Versatile enough to use with virtually any input source.

FEATURES-
- Mic or line/instrument inputs on each channel.
- +4/-10 operation.
- Drive control for a wide variety of great tube effects
- Custom Analog Vu Metering
- 3-Band EQ with sweepable frequency
- Optional TYPE IV Conversion System outputs
- Separate 1/4" insert send/return on each channel

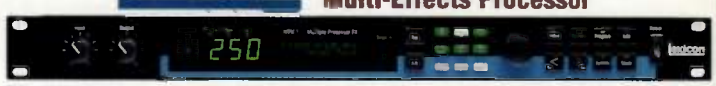
EFFECTS PROCESSING

t.c. electronic M3000 Professional Reverb

Incorporating TC Electronic's new VSS-3 technology, the M3000 is a great sounding, versatile reverb that is easy to use. Combining ultimate control of early reflections with a transparent reverb tail, the art of reverberation is brought to a new level. Whether it's a phone booth, cave or concert hall, the M3000 delivers high-quality ambience.

FEATURES–
- VSS-3, VSS-3 Gate, C.O.R.E. & REV-3 reverbs as well as Delay, Pitch, EQ, Chorus, Flanger, Tremolo, Phaser, Expander/Gate, Compressor and De-Esser
- 300 high-grade factory presets including Halls, Rooms, Plates, Ambience, Gated Reverbs, and more
- Up to 300 user presets in internal RAM and 300 more using an optional PCMCIA card.
- Dual engine configuration featuring 24-bit A/D/D/As.
- Connections include AES/EBU, Coaxial S/PDIF, Optical Tos-Link/ADAT & analog XLR I/Os, MIDI IN/OUT/THRU, Clock Sync and External Control.

Lexicon MPX1 Multi-Effects Processor



The MPX-1 is truly an outstanding multi-effects device. Using Lexicon's Lexchip, it offers outstanding reverb or ambience as well as a separate processor for effects for awesome power in the studio or on the road.

FEATURES–
- Intuitive user interface for easy editing, built-in help.
- Balanced Analog I/O (1/4" & XLR)
- 56 effect algorithms
- Digital Inputs & Outputs (S/PDIF @ 44.1KHz)
- 18 Bit A/D; 20 Bit D/A Conversion, 32-bit processing
- >90dB of Dynamic Range
- Intelligent Sorting by Name, Number, Application, etc.
- Parameter Morphing
- Dynamic MIDI® patching & MIDI automation

COMPRESSORS

PreSonus ACP88 8 Channel Compressor

The ACP88 comprises eight channels of compression, limiting and noise gating for a variety of studio applications. It features individual side chain for each channel and it's attractive blue anodized finished lets you show your true sonic colors.

FEATURES-
- 8 separate compressors/gates with individual controls. • Servo balanced or unbalanced inputs & floating balanced or unbalanced outputs. • Individual side chain jacks for spectral compression and a separate sidechain jack for gate processing. • Each channel boasts full gain reduction metering, compression threshold indication & gate open/close. • Front panel buttons include hard/soft knee compression, peak/auto compression, bypass, gate range and link. • Link feature uses a unique summing bus for multiple combinations of master/slave link setups.

dbx QUANTUM 24-bit Mastering Processor

FEATURES-
- 96kHZ/24-bit A/D-D/A 48-bit internal • 4-band compressor, gate, limiter • 5-band EQ w/ Hi & Lo shelving & 3 fully parametric bands • Normalize, Stereo width adjust • Dither • Sample Rate Conversion • 4 band crossover w/ variable slopes • proprietary sync chips for extremely low jitter • T.S.E. tape saturation emulation • Adds warmth, body and punch to your mix

SEVEN DAY CUSTOMER SATISFACTION GUARANTEE

circle #615 on reader service card

B&H PHOTO - VIDEO - PRO AUDIO

THE PROFESSIONAL'S SOURCE FOR PHOTO,

FOR ORDERS CALL: 800-947-5509 212-444-6679

OR FAX (24 HOURS): 800-947-9003 212-444-5001

MOST ORDERS SHIPPED WITHIN 24 HOURS
OVERNIGHT SERVICE AVAILABLE

On the Web: http://www.bhphotovideo.com

HARD DISK RECORDERS

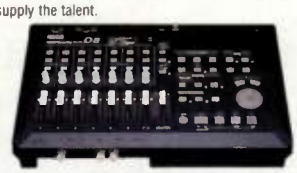
Roland VS1680 Digital Production Studio

The VS-1680 Digital Studio Workstation is a complete 16 track, 24-bit recording, editing, mixing and effects processing system in a compact tabletop workstation. The latest sytem upgrade for the VS1680 includes; Cosm speaker modelling and Master Toolkit effects and up to 18 tracks of recording and playback.

FEATURES–

- 16 tracks of hard disk recording, 256 virtual tracks.
- 24-bit MT Pro Recording Mode for massive headroom and dynamic range.
- Large 320 x 240 dot graphic LCD provides simultaneous level meters, playlist, EQ curves, EFX settings, waveforms and more.
- 20-bit A/D D/A converters
- 2 optional 24-bit stereo effects processors (VS8F-2) provide up to 8 channels of independent effects processing.
- 12 audio outs: 8x RCA, 2x stereo digital & phones.
- New EZ routing function allows users to create and save various recording, mixing, track bouncing, and other comprehensive mixer templates for instant recall.
- 10 audio inputs: 2 balanced XLR-type inputs w/ phantom power, 6 balanced 1/4" inputs, and 1 stereo digital input (optical/coaxial)
- Direct audio CD recording and data backup using optional VS-CDR CD recorder.

KORG D8 Digital Recording Studio



The new D8 Digital Recording Studio features an 8-track recorder, a 12-channel mixer, onboard effects, and basically everything else you'll need to record and mix your music, you supply the talent.

FEATURES–

- 8-track recorder, 12-channel mixer.
- 1.4GB hard disk for up to 4.5 hours of recording on a single track.
- High and low EQ on each channel.
- 130 high-quality stereo digital effects for complete recording in the digital domain.
- MIDI clock sync, SCSI port and S/PDIF digital interfaces all standard

Fostex FD8 8-track Hard Disk Recorder

8 tracks of Digital Audio from one of the leaders in the industry, at a killer price! Records to a variety of SCSI compatible drives.

FEATURES–

- ADAT Lightpipe I/O for exchanging up to 8-tracks directly to ADAT
- Random access editing features include Cut/Copy/Paste/Move plus undo and redo
- Uncompressed 44.1kHz, 16-bit sampling
- Dual XLR mic inputs complete with trim on channels 7 and 8 for low-Z mics.
- S/PDIF Optical I/O• 8 x 2 mixer with 3-band EQ.

DIGITAL SAMPLERS

AKAI S5000 & S6000 Studio Samplers

Akai is proud to announce its next generation of samplers with the introduction of the S6000 and the S5000. Building upon Akai's legendary strengths, both machines feature up-to 128-voice polyphony and up-to 256 MB of RAM. They use the DOS disk format and .WAV files as the native sample format allowing standard PC .WAV files to be loaded directly for instant playback - even samples downloaded from the Internet into your PC may be used.And of course, both the S6000 and S5000 will read sounds from the S3000 library.

FEATURES–

- OS runs on easily upgradeable flash ROM.
- 2x MIDI In/Out/Thru ports for 32 MIDI channels
- Stereo digital I/O and up to 16 analog outputs.
- 2x SCSI ports standard • Wordclock connection
- Optional ADAT interface provides 16 digital outs
- .WAV files as native sample format

S6000 ONLY FEATURES–

- Removable front panel display
- User Keys
- Audio inputs on both the front and rear panel allow you to wire the S6000 directly into a patchbay from the back and override this connection simply by plugging into the front.

E-mu Systems, Inc. E4XT ULTRA Professional Sampler

The Emulator legacy continues with the new ULTRA series from E-mu. Based on the EIV samplers the new 32-bit RISC processing of the E4XT guarantees faster MIDI response, SCSI, DSP and sampling.

FEATURES–

- 128 voice polyphony
- 64mb RAM (exp. to 128)
- 3.2GB Hard Drive • Dual MIDI (32 channels)
- 24-bit effects processor • 8 bal. outs (exp to 16)
- Word Clock & AES/EBU I/O
- EOS 4.0 software • 9 CD ROMS over 2GB snds
- Optional Adat card offers 8 ins/ 16 outs

CD RECORDERS & BURNERS

HHB CDR-850 CD Recorder

The new HHB CDR850 is one of the most comprehensive CD-R, CD-RW recorders available today. It delivers the outstanding sound quality that HHB is known at a lower price than previous models. Equipped with a complete range of analog and digital I/O and easy to use one touch recording modes make the CDR850 suitable for any audio environment no matter how sophisticated or demanding.

- CD-R, CD-RW compatible
- All functions accessible from front panel menu
- 4 one touch recording modes; 2 manual, 2 automatic
- Sample rate converter accepts any digital signal from 32kHz to 48kHz including varispeed
- Copies all CD, DAT, MD, DVD and DCC tarck starts
- Complete user control over SCMS
- Balanced XLR analog I/O, Unbalanced (RCA) phono analog I/O, AES/EBU digital input, coaxial & optical S/PDIF digital I/O

MICROBOARDS CopyWriter A2D CD Duplication System

The first CD to CD standalone duplicator with built-in Analog to Digital Conversion capability. Easy to use and powerful, the A2D has a 2.1GB internal hard drive and a SCSI port for direct connection to a Mac or PC. A perfect solution for audio, data and video applications.

Features–

- Interface includes Microphone in, Audio line in, Audio line out and external SCSI port
- Supported Formats: CD DA, CD ROM mode 1 & 2, XA, CD Bridge, Photo CD, CD Extra, Multi Session, Mixed Mode, Karaoke, (optional)
- Duplication Speed: 8X Read/ 4X Write
- Windows 95, NT, 3.1, Mac OS and Unix compatible
- Headphone output with level control

Jam Session PlayWrite 4080

The Jam Session PlayWrite 4080 from Microboards is an all-in-one SCSI CD recorder specifically packaged for audio CD pre-mastering on the Mac OS platform. Built around a 4X write 8X read Matsushita CD-R mechanism the Jam Session comes bundled with all of the pro level software nesseccary to edit, master and sequence audio files for CD burning.

Features–

- 4X write/8X read Matsushita CD-R mechanism
- Includes Red Book compliant Adaptec Jam software for editng PQ codes and crosstades for audio CD pre-mastering, will also break down Sound Designer II regions into seperate audio files for editing
- Includes Bias Peak Le for recording/editing and optimizing audio files before burning
- Also includes Adaptec Toast for Data backup, CD Rom CD I, and CD Video authoring
- Includes 2 Microboards CD-R's and SCSI cable
- Requires Power PC running Mac OS

STUDIO DAT RECORDERS

Panasonic SV-3800

The SV-3800 features a highly accurate and reliable transport mechanism with search speeds of up to 400X normal. It use 20-bit D/A converters to satisfy even the highest professional expectations. Panasonic DATs are found in studios throughout the world and are widely recognized as the most reliable DAT machines available on the market today.

FEATURES–

- 64x Oversampling A/D converter for outstanding phase characteristics
- Search by start ID or program number
- Single program play, handy for post.
- Adjustable analog input attenuation, +4/-10dBu
- L/R independent record levels
- Front panel hour meter display
- 8-pin parallel remote terminal
- 250x normal speed search

TASCAM DA-40

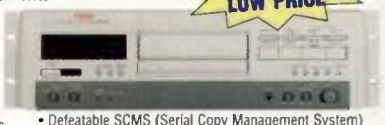
Upholding the standards of the world renowned DA-30 series DAT machines for durability and sonic excellence, the DA-40 adds some advanced features such as track names and digital input format sensing.

FEATURES–

- XLR balanced & RCA (phono) unbalanced analog I/O
- AES/EBU and S/PDIF digital I/O
- Play and record @ 32, 44.1 and 48kHz sample rates
- Jog/Shuttle wheel
- Alphanumeric data entry for naming programs
- Independent input level adjustment capability
- Output trim for XLR balanced outputs
- Selectable SCMS code function
- **Optional RC-D45 Remote Controller**

Fostex D-5

INCREDIBLE LOW PRICE



The Fostex D-5 is a full featured yet suprisingly affordable professional DAT machine. Balanced XLR I/O and AES/EBU are two of the unique features for a digital audio tape recorder at this price point.

FEATURES–

- 1-bit analog to digital and digital to analog converters
- Balanced XLR analog I/O switchable between +4 and -10 dBu • AES/EBU and S/PDIF optical digital I/O
- Standard and Long Play mode record and playback
- Defeatable SCMS (Serial Copy Management System)
- 48, 44.1 and 32kHZ sample rates are supported
- Jog/Shuttle capabilities

INCLUDES: Infra red remote control

CORPORATE ACCOUNTS WELCOME

VIDEO and PRO AUDIO

VISA · MasterCard · DISCOVER · AMERICAN EXPRESS Cards

TO INQUIRE ABOUT YOUR ORDER:
800 221-5743 • 212 239-7765
OR FAX 24 HOURS:
800 947-2215 • 212 239-7549

New Address:
420 Ninth Ave. (Bet. 33rd & 34th St.)
New York, N.Y. 10001

B&H PHOTO - VIDEO - PRO AUDIO

COMPUTER BASED DIGITAL AUDIO SYSTEMS

The recent proliferation of computer based digital audio worksatations (DAWs) is enough to make even the most seasoned audio professional's head spin. Is it compatible with my software? How will it interface with my current gear? Does it have the I/O I need. How about expandability? B&H has the answers. We have a wide selection of the most popular digital audio cards and systems available to fit your budget and needs no matter how big or small.

MOTU 2408 Hard Disk Recording System

The new Mark of the Unicorn 2408 is turning the industry upside down! No other system in it's price range gives you performance like this, with a full simultaneous 24 inputs and outputs on a custom designed VLSI chip that is dedicated to quality I/O. The 2408 is 24-bit compatible and you can link up to three units together for almost unlimited recording capabilities.

FEATURES–
- 7 banks of 8 channel I/O: 1 bank of analog, 3 banks of ADAT optical, 3 banks of Tascam TDIF, plus stereo S/PDIF.
- Custom VLSI chip for amazing I/O capabilities
- Connect up to three 2408 units to your computer for a total of 72 input and output connections.
- Format conversion between ADAT and DA-88
- 20-bit A/D and D/A converters on analog ins & outs
- 24-bit internal data bus for full 24-bit recording via digital inputs
- Standard S/PDIF I/O for digital plus an additional S/PDIF I/O for the main mix
- Sample-accurate synchronization with ADATs and DA88s via an ADAT SYNC IN and RS422
- Includes a complete waveform editing program for Power Macintosh.
- Will grow as your computer grows.

SPECIAL! **2408 system with Digital Performer competitive upgrade for $1199.00**

Digital Audio Labs Card Deluxe
24-bit/96kHz Audio Card

From the company that's been bringing sonic excellence to the Windows platform for nearly a decade comes the affordable Card Deluxe. It's a half length, no compromise, 24-bit/96kHz PCI card compatible with todays cutting edge production software. You can even chain multiple cards together for multiple sample accurate I/O's. Available now for Windows with support for the MacOS coming soon.

FEATURES–
- 8 to 24-bit resolution
- 22 to 96kHz sampling rate
- 2 channel 1/4" TRS balanced analog I/O
- Coaxial S/PDIF digital I/O • Full duplex
- +4/-10 balanced/unbalanced operation
- 4 channel operation using both analog and digital I/O
- Slave multiple Card Deluxes to single sample clock using DAL's WavSync drivers
- Windows 95, 98 and NT drivers
- DirectX support

KORG 12/12 I/O
Multi-channel PCI Audio Card

The 1212I/O card helps bring the price of full function multi-channel computer based recording to a point that just about anyone can afford. It features 12 inputs and outputs configured as 2 analog I/Os, a S/PDIF I/O and and 8-channel ADAT optical I/O. All I/Os can be used simultaneously for maximum flexibility. Compatiblity with most Digital Audio Software on the market and outstanding sonic quality make the 1212I/O a great choice for project studios and multimedia pros.

FEATURES–
- Total of 12 ins & outs, all can be used simultaneously.
- 44.1 and 48kHz sample rates
- 20-bit enhanced dual bit Inputs, 18-bit outputs.
- 20-20kHz frequency response
- Compatible with any PCI Macintosh or Windows computer

Lexicon Studio
Recording System

The Lexicon Studio System interfaces with your favorite digital audio software for a complete hard disk recording package. Supporting both PC and Mac, Lexicon Studio can be expanded up to 32 voices from a variety of I/O options. For recording, editing, mixing and DSP, Lexicon Studio is here.

FEATURES–
- The Core-32 System PCI-Card is capable of supporting 32 audio streams simultaneously. It can also be used as a time code or clock master or slave.
- The PC-90 Digital Reverb daughterboard attaches to the Core-32 providing 2 discrete stereo reverbs.
- The LDI-12T delivers up to 12 channels of simultaneous I/O supporting analog (+4 XLR and -10 RCA), s/pdif, and ADAT.
- Direct support of Steinberg Cubase VST and many other software programs.
- Optional LDI-10T 24-bit audio interface has 8 balanced Ins & outs using 1/4" TRS connectors a coaxial S/PDIF in and out as well as a 1/4" time code input

digidesign Project II Bundle

A Division of Avid Technology, Inc.

The new Project II Bundle incorporates Digidesign's legendary SampleCell II card w/32MB RAM, MasterList CD and Logic Audio AV software together with the popular Project II recording card for a price that you are not going to believe! Just add your choice of interface and you have a complete PCI studio at your fingertips.

FEATURES–
- Direct I/O for direct communication between your digital audio sequencer your Digidesign Audio Interface, without the intervention of the Macintosh Sound Manager
- 2 CD ROMS of ready to use sounds
- Complete mastering to Red book standards

882/20 20-bit interface

The new Digidesign 882I20 I/O is a high performance entry-level audio interface for Pro Tools. It features 20-bit D/A & A/D converters, 24-bit digital performance, and an extremely low noise floor. The 882I20 makes an excellent auxiliary audio interface for Pro Tools24 — ideal for connecting outboard signal processing gear, keyboards, or other external devices. It can even operate as a standalone, 2-channel, 20-bit A/D converter or D/A converter without Pro Tools (or any other) software.

ToolBox PCI Digital Audio Bundle For Mac or PC

When you need professional features at an affordable price, the Digidesign ToolBox delivers a great combination of software and hardware for Mac or PC. Based around Digidesign's AudioMedia III a 16-bit audio card with stereo RCA inputs, 1 bit 128x over sampling A/D and 18-bit D/A converters as well as coaxial S/PDIF digital I/O. This system is ideal for personal and project studios, radio broadcast applications, and multimedia audio production.

ToolBox For Mac Includes:–
- Includes **Audiomedia III** card
- **Pro Tools 4.x** recording/editing software with playback support for up to 8 tracks of audio
- **D-fx** AudioSuite Plug-Ins (Reverb, Delay & Modulation Effects)
- **D-fi** AudioSuite sound degeneration Plug-Ins
- **Bias Peak Le** 2 track editing software

ToolBox For PC Includes:–
- Includes **Audiomedia III** card
- **Session** Software recording/editng w/ support for playback of 8 tracks of audio • **Logic Audio AV** MIDI sequencing/ audio software
- **Sound Forge XP** 2 track editing software • **ACID Rock** loop based audio sequencer allowing you to dictate the pitch and tempo of any .wav file

SOFTWARE

MOTU Digital Performer 2.6
MIDI/AUDIO Software for Mac

Their second major update this year, with a relentless stream of new advanced features, like sample-accurate editing, sample-accurate sync and MOTU's innovative RAM-based loop recording tool called POLAR. DP is packed full of featues you won't find anywhere else:

FEATURES–
- Includes over 50 real-time MIDI and audio effects plug-ins • POLAR window - Interactive audio loop recording the way it should be • 24-bit recording and editing • 32-bit native effects processing - incredible sounding EQ and other FX • 64-bit MasterWorks™ Limiter and Multiband Compressor plug-ins included • Advanced waveform editor • Sample-accurate - the most reliable editing and tightest sync you can get • OMF export - transfer your entire session, crossfades and all, into Pro Tools • Samplers window - drag & drop samples between your Mac and your Sampler • PureDSP™ stereo pitch-shifting and time-stretching • Unlimited audio tracks, real-time editing, full automation and remote control • QuickTime digital video support, and much more • Compatible with Pro Tools|24, the MOTU 2408 and today's other popular systems • Digital Performer is an entire recording studio inside your computer

cakewalk Pro Audio 8
MIDI/Audio Software for PC

One of the industries leading MIDI/Audio software with a wide range of hardware support and realtime automation and editing for. Windows 95/98 and NT 4.0.

Features–
- 24-bit/96kHz compatible
- 128 audio tracks, 256 Audio/MIDI tracks
- 256 realtime effects w/ 32-bit processing
- Vector based volume/Pan automation
- MIDI effects- quantize, delay/echo, transpose, arpeggiator
- 24 stave notation w/lyrics, chord symbols, guitar chord diagrams and percussion notation
- SMPTE, MTC and MMC support
- Playback of .AVI, QT and MPEG video

ANTARES Auto Tune
Plug-In For Mac or PC

Intonation correcting multi-platform plug-in for Mac and PC considered to be the "Holy Grail of recording" by Recording magazine. Auto-Tune corrects pitch and intonation problems on voice and solo instruments without distortion or artifacts. Two modes of operation include Automatic where pitch is continously compared to a user selected scale and Graphical mode offering more precise control allows you to draw specific target pitches. Compatible with TDM, VST MAS and standalone on the Mac and DirectX or DAL V8 on the PC.

WAVES Native Power Pack

Uses the CPU of your Mac or PC to provide top quality effects processing for recording, mixing and multi-media applications. Compatible with many popular audio editing software programs, the NPP provides EQ, Reverb, Compression, Gating, Stereo Imaging and the incredible L1 Ultramaximizer mastering peak limiter. It also includes Wave Convert, a stand alone application that batch converts formats, bit-depths & sample rates for the loudest, cleanest multi-media files available. A must have for recording engineers & internet designers alike.

Native Power Pack II

The all new Native Power Pack II is an entirely different plug-in collection than the original Native Power Pack. Bass-enhancement, de-essing, vintage compression/expansion and EQ are all provided, and can be used with or without the original NPP. You can also upgrade from either NPP or NPPII to the Native Gold bundle for the complete Waves experience, and like the earlier NPP, the NPP II ***requires no extra DSP!***

Minimum Shipping USA (Except AK & HI) $6.95, up to 1 lb. Add 75¢ for each additional lb. For ins. add 50¢ per $100. © 1999 B&H Photo - Video. Not responsible for typographical errors. Prices valid subject to supplier prices.

circle #615 on reader service card

CLASSIFIEDS

ELECTRONIC MUSICIAN CLASSIFIED ADS are the easiest and most economical means of reaching a buyer for your product or service. The classified pages of **EM** supply our readers with a valuable shopping marketplace. We suggest you buy wisely; mail-order consumers have rights, and sellers must comply with the Federal Trade Commission as well as various state laws. **EM** shall not be liable for the contents of advertisements. For complete information on prices and deadlines, call (800) 544-5530.

ACOUSTIC PRODUCTS

Cloaking Device
acoustic conditioning systems
- Quick - Easy - Affordable -
modular systems start at 144.00
Start with a Good Sound
770-427-8761
fspace@mindspring.com
www.mindspring.com/~fspace
Folded Space Technologies

WhisperRoom INC.
SOUND ISOLATION ENCLOSURES
Vocal Booths
Practice Rooms
Broadcast Booths
etc...
PH: 423-585-5827
FAX: 423-585-5831
E-MAIL: whisper@lcs.net
WEB SITE:
www.whisperroom.com
116 S. Sugar Hollow Road
Morristown, Tennessee 37813

AcousticsFirst™
Toll Free: 888-765-2900
Full product line for sound control and noise elimination.
Web: http://www.acousticsfirst.com

SILENT SOURCE
58 Nonotuck St., Northampton, MA 01062
INFO (413) 584-7944 • FAX (413) 584-2377
ORDER (800) 583-7174
info@silentsource.com • www.silentsource.com
Acousticore Fabric Panels • Sound Barrier
Isolation Hangers • A.S.C. Tube Traps
Silence Wallcovering • WhisperWedge
Metaflex • S.D.G. Systems • Tecnifoam
R.P.G. Diffusors • Sonex • Sound Quilt

SALE! PLUS FREE ADHESIVE!

GIANT 54" x 54" MARKERFOAM™ ACOUSTIC FOAM

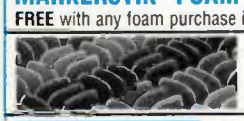
IMMEDIATE SHIPPING
2" Reg. $29.95 *Now $19.99*
3" Reg. $39.95 *Now $29.99*
KILL NOISE QUICK! High performance, full-size sheets of super high density Markerfoam. EZ mount. Blue or charcoal gray. Super-effective sound absorption for studios. Markerfoam offers the best value, looks professional & is proven in studios worldwide. Request Catalog, specs & free samples today.

MARKERTEK JUMBO SOUND ABSORB BLANKETS

Heavy-duty 76" x 68" padded blankets absorb sound wherever they're hung or draped. Fabulous for stage, studio or field use. Top professional quality at a super saver price! Weight: 6 lbs. $19.99

MARKERTEK 16" x 16" BLADE TILES™
HIGH PERFORMANCE – LOW, LOW COST!!!
America's best acoustic tile value only from Markertek!
2" Thick - $3.49 per tile, charcoal or blue; 3" Thick - $4.49 per tile, charcoal or blue; 4" Thick - $5.49 per tile, charcoal.

MARKERSTIK™ FOAM ADHESIVE
FREE with any foam purchase in this ad! Limited offer. A $4.00 per tube value.


SONEX
All the Colors, Styles and Sizes Plus Great Prices!

FREE! *America's most unique catalog featuring 328 pages of over 16,000 exclusive and hard-to-find supplies for Pro Audio, Broadcast Video, Audio Visual & Multimedia production.*

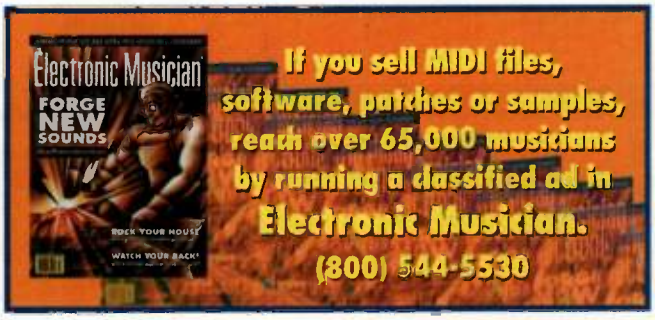
MARKERTEK VIDEO SUPPLY
4 High St., Box 397, Saugerties, NY (USA) 12477
Toll Free: 800-522-2025 • 914-246-3036 • Fax: 914-246-1757
Order On-Line Today: www.markertek.com • E-Mail: sales@markertek.com

COMPUTER SYSTEMS

CD R 8x Media:
Mitsui spindle...$1.27
Taiyo Yuden printable spindle..$1.67
Mitsui jewel case...$1.47
Mitsui printable spindle.....1.67
Ritek 80 min spindle...$1.59
Taiyo Yuden spindle $1.27
ALL PRICES BASED ON 100 PIECES
CD-RW...CALL
CD-R Silk Screening Available
CD-RECORDER BUNDLES
Plextor 8x20...$499
Also Available Yamaha,Teac and Panasonic
Rimage Printer Bndl...$3,199
AFFEX CD Color Printer 1440 dpi.....$1,399
CD LabelMaker...$29
CD-R BLANKS as low as 89¢

DUPLICATORS:
Replica SA1000 1CD-R $949
MediaFORM CD5900 w/ 8CD Recorder..... $5,299
CD3704 Autoloader w/ 4 CD Recorder.....$7,199
CD3706P Autoloader w/ 6 CD Recorder & Printer...$15,999
FOR CD DUPLICATION... CALL

Shimad
1-888-4-SHIMAD
toll free 888-474-4623 PH. 650-493-1234
www.shimad.com FAX: 650-493-1333



EMPLOYMENT OFFERED

LOOKING FOR A GREAT CAREER? THEN LOOK NO FURTHER!
Sweetwater Sound has positions available now in these exciting areas!
- *MUSIC SALES*
- *PRINT & WEB DESIGN*
- *SALES & ADMINISTRATIVE ASSISTANT*
- *TECHNICAL SUPPORT*

Sweetwater SOUND INC.
Call (800) 222-4700 or (219) 432-8176 & ask for *KRISTINE*. Fax (219) 432-1758. E-Mail us at: career@sweetwater.com

CLASSIFIEDS

CAREER CHANGE

$50k-plus potential. If you enjoy an energetic, goal-oriented approach to business, come join one of America's oldest and most respected music stores. **Caruso Music** is seeking individuals for sales and store management positions. Health benefits, paid vacations, and a professional work environment. Call Richard Caruso, **Caruso Music, Inc.**, 94 State St., New London, CT 06320. (800) 264-6614. All replies treated confidentially.

NEED GEAR? WE CAN HELP!

CALL US.

800-222-4700

thousands of products for studio and stage.

Sweetwater SOUND INC.

www.sweetwater.com
sales@sweetwater.com
5335 Bass Rd., Ft. Wayne, IN. 46808
(219) 432-8176 FAX (219) 432-1758

BAYVIEW PRO AUDIO

PRO AUDIO SOFTWARE & HARDWARE SALES

Please call or visit our website for free catalog
1.888.718.0300 http://www.bayviewproaudio.com

Authorized dealer for: Digidesign, Fostex, Spirit, Event, AKG, PreSonus, Waves, SEK'D, TC Electronic, Zefiro, Sony, Shure, Dynaudio, Lynx, Ensoniq, dbx, A.R.T, & many more.
NAMM Special! Waves NPP I & II: $285

EQUIPMENT FOR SALE

Don't Get Beat
When you need equipment call
8TH STREET MUSIC
(800) 878-8882
Philadelphia's Largest Musical Instrument Dealer!!!
www.8thstreet.com
8th Street Music, 1023 Arch St.
Philadelphia, PA 19107

Tascam M-3700 fully auto w/custom grnd buss &/meter exten., $7,995; Tascam M-3700 w/o meter exten., $7,495; 480 pts. 1/4" pbay, $995; Cables for above, $495; (2) Alesis ADATs, $995 ea.; pr. Urei 809A, $750; pr. Westlake BBSM-8, $1,195. Call Victor (305) 266-1961 to make an offer.

Make a MIDI Light Show

Light Master™

- Four channel MIDI controlled dimming system
- Great for Multimedia and Automation
- Delivers high quality performance
- Dimmer and Controller in one unit
- International model available

only $269!
order now!
303/252-4844
topaz@tpz.com
www.tpz.com
Dealer inquiries welcome
TOPAZ ENTERPRISES where light and sound are

FREE Stereo Catalog

Everyone needs a good stereo...
and you'll find yours here:
Over 140 pages bringing you virtually every major consumer brand. Complete coverage of features and specs. Great prices.
Call toll-free today for your **FREE** catalog!
1-888-806-6848 ask for "ext. EM4"
Online? Visit our website! www.crutchfield.com

CRUTCHFIELD Home Audio • Car Stereo • Video • Home Theater

Digital Recording
Factory Direct Discount Dealer
* Alesis * Yamaha * Sony *
* Tascam * Roland * Akai *
* Event Electronics * Digital Audio * Fostex * Korg *
Pro Audio Plus
(800) 336-0199
Division of Rolls Music Center
www.rolls.com

TESTING JUST GOT BETTER!

TEST ALL THOSE STRANGE CABLES AS WELL AS THE STANDARD TYPES
DON'T PUT A BAD CABLE INTO YOUR SYSTEM!
SPECIAL PRICE!
MUST MENTION OFFER #CT799
$153.00
REG. PRICE $219.00
VISA
PURCHASE A CT-7 CABLE TESTER BY DECEMBER 20, 1999 FOR $153.00 AND SAVE OVER 30% OFF THE RETAIL PRICE OF $219.00.
FREE GROUND FREIGHT ALSO INCLUDED.
ORDERS MUST BE PREPAID BY CREDIT CARD OR CHECK.
SESCOM
ORDERS 800-634-3457 • FAX 800-651-2749
OFFICE 702-565-3400 • FAX 702-565-4828
www.sescom.com • info@sescom.com
SESCOM, INC. 2100 WARD DR., HENDERSON, NV 89015
SESCOM INC. is not responsible for inadvertent typographical errors and prices and specifications are subject to change without notice.

Shopping for Equipment?
Before you pay too much...check www.digibid.com
digibid.com
Industry Auction Network
The Internet Auction Marketplace
Best Deals On the Planet!

Brand New
Technics SL-1200MK2 for $387!!!
Everything for DJs
& Recording Artists
www.gravitonium.com
(800) 475-9334 or (212) 941-4644

Gig Gear For Sale
in Mint Condition. Public Address system custom made 2 columns. Stands, brain & cases + 8 mics with stands. Entire pkg. Best offer.
(212) 375-1034 or (718) 418-5781

CLASSIFIEDS

EQUIPMENT FOR SALE

KAT DEMO UNITS
SOLD DIRECT
drumKATs, trapKATs, dk 10s & more! Here's your chance to get the ultimate controller at an unbelievable price. (413) 594-5190.

Sound Deals, Inc.
Specialists in ***Samplers, Synths, Pro Audio, Analog & Digital Recording, Effects, Drum Machines, Computer Software/Hardware, & more!***
(800) 822-6434/(205) 823-4888
Sound Deals, Inc.
230 Old Towne Rd.
Birmingham, AL 35216

Sound thinking
Digital Audio: It's What We Do!
digidesign ALESIS
...and more
new! website
541-386-2682
www.soundthinking.com

SINGERS! REMOVE VOCALS
Unlimited Backgrounds™
From Standard Tapes, Records, & CDs with the **Thompson Vocal Eliminator™**
Visit our Internet Site at http://www.ltsound.com
LT Sound, Dept EMT
7988 LT Parkway
Lithonia, GA 30058
24 Hour Demo/Info Line (770)482-2485 - Ext 16
Best Vocal Eliminator™, Key Changer, Voice Enhancer!

Hard Drives for Digital Audio
Audio Hard Drives - CD Recorders - Tape Backup - DVD - CDR Media
BIG DISC Computer & Audio
Your Digital Audio Storage Experts - Now in our 10th Year!
Software - Soundcards - Plug-ins - Converters - Mac & PC DAWs - Midi
toll free (877) big-disc - (877) 244-3472 - new site www.bigdisc.com

OMNIRAX
STUDIO FURNITURE
MixStation /O2R

Custom Design and Modifications Available
Available for All Mackie 8-Bus mixers, & Eurodesk
800.332.3393
FAX 415.332.2607
Outside U.S. 415.332.3382
WWW.OMNIRAX.COM P O Box 1792 Sausalito, CA 94966

Every major brand of everything. Millions of dollars of musical gear in stock. **ALTO MUSIC**. Guitars, recording, keyboards, amplifiers, drums, pro sound, new & used. One of the largest selections in the country. We ship everywhere! **(914) 692-6922** • 680 Rt. 211 East Middletown, NY 10940
Ask for Uncle Freddy—He loves ya!

MIDI-KIT CATALOG
30 kits, including Programmable Controllers, Relay Driver, Custom Instrument, CV-MIDI, Programmable Transmitter, Data Monitor, MIDI project book, and newsletter for Artistic Technologists. PAVO, Inc.
(800) 546-5461; www.pavo.com

EQUIPMENT INSURANCE

GREAT RATES ON INSURANCE!
EQUIPMENT ONLY:
(Worldwide Coverage)
$45,000 of Studio Gear for $500
$100,000 of Gear for $850
$250,000 of Gear for $1,875
OR ENTIRE PACKAGES:
(For Recording Studios)
$100,000 of Studio Gear
12 Months Unl. Loss of Income
$1,000,000 General Liability
$1,000,000 Non-Owned Auto
Plus Additional Coverages
for LESS THAN $1,099!
(800) 800-5880
UA YOUR LINK WITH SECURITY
UNITED AGENCIES INC. Insurance
Pasadena, California
CA. License # 0252636
www.UnitedAgencies.Com

Analog Modular Systems, Inc.
We buy, sell, and trade all analog synths—especially **Moog, ARP, Buchla, Serge, Roland** etc. Tel. USA: (323) 850-5216; fax USA: (323) 850-1059. Visit our **new online auction** for keyboards, guitars, DJ, pro-audio, drums & more.
www.analogsynths.com

CL6/1800 Midi Lighting Dimmer
- 6 Independent Channels of Dimming
- Responds to Midi Notes and Controllers
- Only $449.00 US List Price !

Ask about our other Midi products of control Valves, Relays, Servo's, Lighting, Analog Keyboards & more!!

MEDIA Motion
Show Control & Multi Media Systems
2461 West 205th St. B100 Torrance, CA 90501
Phone: (310) 320-0696 Fax: (310) 320-0699
Visa, MC, Discover & AmEx. "Dealer Inquires Welcome"

(800) 264-6614
We've got **tons** of super clean **used** as well as **new** products from **Tascam, Alesis, Kurzweil, Roland, Mackie, Genelec, Lexicon, Fostex, Yamaha, Korg,** and hundreds more. **Discount Pricing** and **Worldwide Delivery!** 69 years in business. Trade-ins welcome. Visit our new **22,500 sq. ft.** location. Call, fax, or e-mail us today. **carusomusi@aol.com OR sales@caruso.net.** Visit us at www.caruso.net. Start saving money today! Call **Caruso Music**, 94 State St., New London, CT 06320, USA. Outside of the U.S.: **(860) 442-9600**.
(860) 442-0468 FAX.

R44C
studio ribbon
www.wesdooley.com
626-798-9128

THE CASE SPECIALISTS
FREE CATALOGUE

(800) 346-4638
(516) 563-8326, NY
(516) 563-1390, Fax
Custom or stock sizes.
Our prices can't be beat!
Discount Distributors

Studio furnishings argosyconsole.com

800.427.5698, 573.346.8549

EQUIPMENT WANTED

USED ADATS WANTED
Easy exchange toward a newer or different format. Everything available. Save **THOUSANDS** when you deal with our 70-year-old company. **UPGRADE TODAY.** Call, fax, or e-mail for details. Worldwide delivery.
CARUSO MUSIC, New London, CT;
sales@caruso.net
(800) 264-6614 TOLL FREE
(860) 442-9600
(860) 442-0463 (FAX)
www.caruso.net

STICKY mess left on your Mixer/Patch bays/Cables by adhesive tape? Try *"NO MORE TAPE"™*
You owe it to yourself & your gear!
Recording Console Concepts
(612) 588-6430
email: nomoretape@uswest.net
Web site: www.nomoretape.com

Zentech Chordmaster
Interactive Chord Guitar Chord Dictionary.
CD-Rom for Mac or Windows.
Terrific Tool for beginners or pros.
"as reviewed in April '99 *Electronic Musician*" Only $29.95!
(425) 788-0766
www.zentech-chordmaster.com

TO SUBSCRIBE TO
Electronic Musician
CALL (800) 843-4086

CLASSIFIEDS

INSTRUCTION

Comprehensive Audio Engineering Program
AUDIO RECORDING TECHNOLOGY INSTITUTE
Music Prod. & Digital Recording
Extensive hands-on instruction.
Call (888) 543-ARTI

BE A RECORDING ENGINEER
★ TRAIN AT HOME
Easy Home-Study practical training in Multi-track Recording. Join our successful working graduates or build your own studio. Career guidance . . . Diploma . . . Licensed.
FREE INFORMATION:
Audio Institute of America
814 46th Ave, Suite F, San Francisco, CA 94121
Or visit us at www.audioinstitute.com

Recording Engineer Broadcasting
Multimedia/Digital/Video/Film
Radio/TV/Sports/News/DJ/Talk Show
No experience required!
On-the-job-training
in local major Recording Studios & Radio/TV Stations
Part-time, nights, weekends - Call recorded info line for FREE video
1-800/295-4433 www.radioconnection.com

LEARN the ART of RECORDING
• Small Classes / Hands-on facility
• On-Campus Housing
• Job Placement / Financial Assist
Call Today for a Free Brochure
800-848-9900
The Recording Workshop
455-L Massieville Rd Chillicothe OH 45601
ph:740-663-2544 fax: 740-663-2427
email: info@recordingworkshop.com

Classifieds Questions?
(800) 544-5530
emclass@interlec.com

INTERNET SERVICES

Add some pizzazz to your Web Site...
professional HTML, Web graphics, animation and sound (.mp3 or .rm file encoding). Streaming media .rm file storage for only $2 per meg/$25 setup fee.
Rocka.com. Call 1-800-96-ROCKA

Download your music
Promote your music
Sell your music
Spend less to set up
Make more money &
get your music to the
Internet Broadcasters
www.music-artists.com

To Place Your Classifieds in Color
call Robin Boyce-Trubitt
(800) 544-5530

PARTS & ACCESSORIES

Studio Dust Covers
Covers For Your:
Synths • Mixing Boards
Amps • Sound Systems
Custom Sizes Available
Call Larry LeCover at 1-800.228-3878
or Visit www.lecover.com
The La Cover Co.
1223 Kingston • Schaumburg, IL 60193

AUDIOGRAPHIC MASTERWORKS
Fast, Full Service CD Packages
Digital Mastering
Custom Graphic Design
Sonic Solutions No Noise™ Audio Restoration
901-821-9099
masterworks@earthlink.net
Every project is a masterpiece

PUBLICATIONS & BOOKS

Your Music = Money In Film & TV!
Music Supervisor Tells How.
ONLY $19.95
30-day Money-Back Guarantee.
CALL NOW
(877) 332-9555 ext. 42
Toll Free

****A great deal!****
Real-time cassettes—Nakamichi decks, chrome tapes—the best! Album length $1.50/100. On-cass. printing/inserts avail. Grenadier, 10 Parkwood Ave., Rochester, NY 14620. (716) 442-6209 eves.

RECORDING SERVICES & REPAIRS

Lonely Records

1 CD	$10
10 CDs	$39
25 CDs	$80
100 CDs	$245
1000 CDs	$620

WAVES SOFTWARE SALES
MitsuiSilver CD-R
GRAPHIC DESIGN
mastering as low as $30
800 409-8513
e-mail: lonelyrec@aol.com
http://members.aol.com/lonelyrec/homepage.html

1000 CDs $1099
with customer supplied printing & film
For musicians by musicians!
CD Replication
Cassettes
One-Offs
Mastering
Printing
Posters
Graphic Design
GROOVE HOUSE RECORDS
Groovehouse Records Media Group
1.888.GROOVE.8
1.888.476.6838
www.groovehouse.com

CDs and CASSETTES
Compact Disc Replication • Cassette Duplication
Complete Packages • Digital Mastering
Graphics and Printing
deal direct and SAVE
FREE CATALOG or CUSTOM QUOTE
800-289-9155
OUTSIDE THE U.S. CALL: 516-244-0800
visit our website! CandCMusic.com
You'll Hear and Feel the Difference
C&C MUSIC

Best Pick
DIGITAL FORCE®
Feel the Power of Excellence
(212) 252-9300
www.digitalforce.com
TOTAL CD, CD-ROM, E-CD,& CASSETTE PRODUCTION
149 MADISON AVENUE NY, NY 10016

CLASSIFIEDS

RECORDING SERVICES & REPAIRS

Best Price... Best Service... Period.

CD REPLICATION

- CDs in Retail-Ready Packages
- CDs in Bulk (minimum order only 100 CDs!)
- Vinyl Records, 7 & 12" - colors available!
- Cassette Duplication

Work directly with our factory and save! Call for Free Catalog or Quote: (800) 455-8555

http://www.europadisk.com Major Credit Cards Accepted

EUROPADISK, LTD.

HEY LOOK! WE'RE ON THE WEB!

Toll Free: 800-538-2336

NRS National Recording Supplies Inc.

All Formats! Best Prices!

www.nrstapes.com

AMERICA'S BEST CD PACKAGE HANDS DOWN

1000 CDs Only $1299 Includes:

1000 Bulk CDs With Printing $699

- full color inserts • design • film • reference CD • glass master
- 2 color on disk • shrink wrapped • priority proofs
- manufactured at a Major Manufacturing plant for the *Very Best Quality* • Ready in 3-4 weeks!! No Overruns!!
- ask about our short run CDs • 15 years in business

ELECTRIC Records

100 Cassettes Only $199

includes real-time duplication on chrome tape, full color inserts, design, shrink wrapped & free shipping!

800-367-1084

www.damall.com/holland/holl.html

In the Studio?

FREE Guide

Saves You Time and Money!

Contact Us Today:

1-800-468-9353

www.discmakers.com

info@discmakers.com

DISC MAKERS

RECORDS, TAPES & CDS

www.recordinglair.com

RECORDING LAIR MASTERING

Russ Berger Design

Free Mastering Information

888 881-LAIR

IT'S YOUR BABY AND WE DELIVER.

Services:
- Mastering
- Design
- Film & Printing
- Web Development
- Enhanced CDs

500 $825.00

1000 $1,100.00

3000 $2,850.00

Packages include: glass master, 2 color film, jewel box, packaging, printing

800-DIGIDOC

www.digidocpro.com

DIGIDOC PRODUCTIONS

COMPACT DISC

ALL SERVICES AVAILABLE

- Highest Quality • Low Prices
- Superior Service • Est. 1986
- Member Better Business Bureau

1 800-900 7995
1-802-453-3334
fax 1-802-453-3343

CD AUDIO • CD ROM
AUDIO & VIDEO CASSETTE
PRINTING / PACKAGING
MASTERING • GRAPHIC DESIGN

PROTOSOUND

MASTERCARD • VISA • AMERICAN EXPRESS

Fleetwood MultiMedia

1000 CDs from $799

500 Tapes Packaged $715 Includes Everything

Fast Turnaround

800-353-1830 (781) 599-2400

WE'LL BEAT ANY PRICE ON CD'S

- CD'S
- QUICK
- BEST QUALITY
- DIGITAL CASSETTES
- PERSONALIZED SERVICE
- TOTAL COMPLETE PACKAGES
- LOWEST PRICES, CALL US LAST!

(727) 446-8273

Total Tape Services

639 Cleveland St. / Clearwater FL 34615

ARE YOU GETTING YOUR MONEY'S WORTH?

CD • CASSETTE • VINYL • DVD

Full-service mastering and post-production
Revolutionary graphic services
Complete Internet development and hosting
Digital bin cassette replication
Direct to metal vinyl mastering (HQ130™ Vinyl)
Client graphic proofing on the Internet
Digital color prepress and service bureau
Complete custom retail-ready packages
Multi-media design services are available

VISIT US ON THE INTERNET AT:

WWW.GATEMUSIC.COM

The Gate

The Gate Music Services, Inc.

1-800-655-1625 • 510-558-9045 • F 510-558-9504

CD/CD-ROM SINGLE $895.00	500 CUSTOM CD's $1,195.00
1000 CUSTOM CD's $1895.00	COMBO PACKAGES $2195.00
100 130gr VINYL $895.00	300 CASSETTES $895.00

Packages include: packaging, mastering, glass mastering, full color insert, 2 color printing on CD or vinyl, bar code, custom graphic services, film, consultation and much more. No hidden costs or "miscellaneous expenses! Call about our DVD pricing!

EM CLASSIFIEDS ORDER-LINE (800) 544-5530

Artistic Noise Demo Services
CD Traycards & Inserts
Cassette J-Cards
Cassette to CD-R Mastering
(616) 456-6069 or (616) 281-0617
E-mail dholt96727@aol.com

CLASSIFIEDS

Healey disc manufacturing
www.healeydisc.com
1000 Bulk CD package $750.00
SINGLE SOURCE Manufacturing Solutions
MULTI-SOLUTIONS
1.800.835.1362
Call for your FREE CATALOGUE
• CD/CD-Rom
• VHS
• DVD
• Graphic Design
• Packaging Solutions
•Spinner World Wide Disc is pleased to announce its merger with Healey Disc Manufacturing to offer you even BETTER services at LOWER prices!!!•

ballistic.com YOUR LINK FOR ALL COMPACT DISC, CD ROM & CASSETTE MANUFACTURING
$999.00 1000 CD'S
2 color on disc insertion of your printed material standard jewel box & p hywrap MANUFACTURED BY EMI
1.800.401.8273

www.yourmusiconcd.com
10 cdrs - $70/$60
25 cdrs - $125/$100
50 cdrs - $200/$175
100 cdrs - $325/$275
Atlanta 678-442-0933
Toll Free 877-442-0933
Includes cdr, on cd print, & jewel case

DIGI-ROM Full Services For Electronic Media
CD-ROM • DVD • AUDIO CD
MASTERING REPLICATION PRINTING
• CD-ROM One-Offs: *Same Day - On Site* • 2000 CD-R Duplication: *Next Day - On Site*
• Video Compression: BetaSP & VHS to AVI, Quicktime, MPEG1 & MPEG2: *On-Site*
• Audio & DVD Mastering Suites: *On-Site* • DVD-R Disc Duplication: *On Site*
Audio Archival Restoration with CEDAR • *Personalized Service: Outta Sight!*
800-815-3444
In New York City: 212-730-2111 On the web: www.digirom.com

MEDIAWORKS INTERNATIONAL, INC.
PHONE: (615)323-9114 FAX: (615)327-3438
www.mediaworksint.qpg.com
Compact Discs • CD ROM
CD + /CD Enhanced
Digital Bin Cassette Duplication
Video & Vinyl
• Fast Turnaround
• Competitive Pricing
• Dependable Service
Complete Packages Including:
Graphic Design • Printing • Duplication
Packaging • Shrink Wrap
1-800-211-4689

CD'S ON TIME 10 - 14 DAYS
Oceans Of Life Records
• CD DUPLICATION
• MASTERING
WOW • FREE AIR PLAY
100 x $999
• EVALUATION WITH ORDER
• DISTRIBUTION AVAILABLE
TOLL FREE
877.262.6543
305.596.9786
www.oceansoflife.com
Retail Ready Packages
FROM CD READY MASTER AND FILM
1000 X $1,299

100 CD's $249 1000 CD's $699
CD's In 48 Hours
Complete CD Authoring Services
Direct from Digital Cassettes 79¢
69¢ CD'S?! & SEE WHAT ELSE THEM BOYS IS UP TO!
• Complete Graphic Design • Printing/Packaging
• COMPACT DISCS • VIDEOS • CASSETTES
1-800-365-8273
EASTCO PRO MEDIA CORPORATION
14 Years Serving The World
www.eastcopro.com

COMPLETE
CD and cassette packages!
CD package price $1,599 (1,000 order)
Cassette package price $1,299 (1,000 order)
Mention this ad and receive an additional 25 CD's or cassettes FREE! a $400 retail value!
Includes graphic design (4 hours), all film, mastering, 4/1-color printing, on product imprints, jewel box, polywrap. 4-week turn around on most jobs.
SMG MEDIA SERVICES
(800) 791-7464 • www.SmithMusicGroup.com/media.html

10 CD's • $65
20 CD's • $120
50 CD's • $250
Random Access Media
800 • 684 • 8071

Good Vibrations-RJR Digital
RJR DIGITAL Mastering and Graphic Design 1-800-828-6537
1000 CDs - $1245
Complete retail ready packages available.
Promo CDs $2.50 each / ROM or Audio
www.sandiegoweb.com/goodvibrations

IMPLOSION PUBLISHING INC.
1-888-323-5431
Call for our full price list & free samples. We also print postcards & posters! Graphic design also available.
1,000 bulk CDs: $670
w/ 2-color printing on disc
1,000 retail-ready CDs: $1,400
w/ 4-panel, 4/1 insert and traycard, ALL FILMS, jewelcase, shrinkwrap, barcode.
25 CDs: $99
50 CDs: $189
24-hr turn-around in most cases. Up to 74 mins., from your CD-R. Includes b/w label and jewelcase. Booklets/shrinkwrap and other-size runs available.

KLARITY MULTIMEDIA, INC.
Call: 1-888-387-8273
www.klarity.com
KLARITY QUALITY ... KLEARLY DIFFERENT ... KLEARLY BETTER
• Fair Prices • Great Quality
Call for Free Sample Log
Duplicators of CD's, Cassettes & Videos

CD-R Copies
12 years with the... BEST SERVICE & BEST QUALITY!
10 CD's - $48.00
50 CD's - $170.00
100 CD's - $290.00
ELS PRODUCTIONS
Price includes CD, jewel case, & color printing on CD, 2 day turn-a-round. (plus S&H)
1-800-927-DISC (3472)

CLASSIFIEDS

RECORDS, TAPES & CDS

"OUR 30TH YEAR OF FAST GUARANTEED SERVICE"

FREE CATALOG

ANDOL AUDIO PRODUCTS INC.

42 4TH AVEN BROOKLYN, NY 112

CUSTOM LENGTHS FROM 1-126 MINUTES

100 PIECE MINIMUM

CD-RS, HI-8, MINI DISKS, S-VHS MASTERING TAPE, R-DAT, R-DAT, BULK VHS PLASTIC REELS, BOXES NORELCO, SOFT POLY BOXES VIDEO BOXES & SLEEVES SINGLE & DOUBLE CD BOX DCC, MOD, DDS2 AND MORE

LENGTH - TYPE	C-10	C-20	C-30	C-40	C-50	C-60	C-70	C-80	C-90
BASF CHROME PLUS	.27	.32	.37	.41	.46	.51	.57	.63	.68
TDK SA	.25	.30	.35	.39	.44	.49	.53	.58	.63
MAXELL XLII	.27	.32	.38	.44	.47	.52	.67	.70	.76
BASF CHROME SUPER	.30	.38	.47	.56	.65	.69	.80	.87	.89

TELEX TDK BASF AMPEX maxell

IN HOUSE DIRECT ON CASSETTE PRINTING
• CUSTOM PRINTED LABELS & J-CARDS •

IN NYC 718-435-7322 • 800-221-6578 • 24 HOUR FAX 718-853-2589

www.andolaudio.com

FREE LABELS WITH EVERY CASSETTE ORDER

ROUND EDGE OR STANDARD NORELCO BOXES $0.12 EACH

andolaudio@aol.com

CD LABELING & PACKAGING FROM YOUR DESKTOP!

DESIGN • PRINT
APPLY • PACKAGE

NEW!

ONLY $29.95

KIT INCLUDES
- NEATO 2000 CD Label Applicator
- Assortment of Labels and Jewel Case Inserts
- MediaFACE
  - Design Software (PC), Templates (Mac)
  - Digital Background Art for Labels and Inserts
  - Label and Insert Templates for Popular Graphics Programs (PC/Mac)

AVAILABLE AT YOUR LOCAL COMPUTER ACCESSORY RESELLER

Also available...
Other Media Labeling Products for Audio, DAT, Mini-Disc & Zip

NEATO
Media Labeling Products

250 Dodge Ave. • East Haven, CT 06512 • 888-575-3873 • 203-466-5170 • Fax 203-466-5178

www.neato.com

CDs on Time and ON Budget!

Now get 1000 CDs, 4 page full-color folder and tray card, jewel case, assembly and poly wrap for

$1399.00

from CD-ready master and final film supplied

MUSIC MANUFACTURING SERVICES
Not just different, better.

• Fast, friendly, reliable service since 1988
• Promo CDs with NO MINIMUM ORDER
• FREE WEBSITE with min. 500 order

1-800-MMS-4-CDS

www.mmsdirect.com

Full Service including Mastering, Design and Packaging for all your CD, Cassette and Vinyl Record pressing needs

Duplication That You Can Afford!

CD • CD-ROM • CD-R's • Cassettes • Design • Film • Printing

Spring Special - 1000 CD's $769
Packaged raw on spindles with 3 colors on disc

Many packages available! Call or check us out online for latest pricing.

TGS www.tgsdisc.com 1-888-DISC-MFG

CD & CASSETTE MANUFACTURING

Serving the country with over 25 years of experience.
The Southwest's premiere full-service manufacturing facility!

PRINTING • GRAPHIC DESIGN • BLANK CASSETTES
DIGITAL MASTERING & EDITING • ONE-OFF CD-RS

RETAIL READY PACKAGES! CALL FOR FREE CATALOG!

CRYSTAL CLEAR SOUND
1-800-880-0073
mc/visa accepted
www.crystalclearsound.com

EARTH DISC

$986.00 500 CDs
package includes:
full color 2 page/4panel insert
3 color on cd printing/glass master,
jewel box, shrink wrap

$1299.00 500 CDs
we do it all
package includes:
graphic design/film
full color 2 page/4panel insert
3 color on cd printing/glass master,
jewel box, shrink wrap

1-800-876-5950

SUMMER SPECIALS

• GRAPHIC DESIGN
• INSERT PRINTING
• FILM SERVICES
• GREAT PRICES
• CD • CASSETTE • VIDEO • DVD

CALL RIGHT NOW FOR A BOTTOM LINE QUOTATION!

BASE Multimedia Inc.

USA 800-579-7010 CANADA

CLASSIFIEDS

PUNCH Media

Order 250 CDs for $545.00 and we'll add

50 CDs for free.

Hurry. We can't do this for long.

1-888-39PUNCH www.punchmedia.com/50free

THE WAREHOUSE Studio Sales & Services Since 1975

Cassette, CD, CDR duplication

RtoR · DATs · ADATs · HI8 · VHS · CDs

Blank Cassettes, any length

Warehouse prices

800-483-TAPE · fax: 904-398-9683

Visa · MasterCard · Discover

internet:warehouse@jax.jaxnet.com

2071-20em Emerson St., Jacksonville, FL 32207 · 904-399-0424

1000 CDs RETAIL READY In 10 Days

$1,099

- 1000 CD's in Jewel Case & Wrap
- 3 Color on Disc printing
- 1000 Color/Black 2PP Inserts
- 1000 Color/0 Tray Cards
- Glass Mastering Included

Toll Free 1-888-CD SONIC (237-6642)

CD SONIC

DRT Mastering

the Analog Specialist

Fat, Slammin' Radio-ready sound For You.

800-884-2576

www.drtmastering.com

Musicraft Media

Graphic Design • Printing

Duplication • Custom Packaging

CD's • Cassettes • CD-ROM • Video

Call the rest... Then call the Best

1-800-637-9493

www.musicraft.com

---

100 CDs for only **$410!**

manufactured in as little as TWO DAYS

Includes
- FREE design
- FREE b/w insert & tray
- On-disc printing
- Jewel case

Other packages available. Call for details and information packet.

(800) 249-1110 • (302) 999-1110

National Multimedia Services

Compact Discs • Real Time Cassettes

Digital Mastering

1000 CDS $850

Up to 3 color cd label jewel box and shrink wrapped you supply printing and cd film

FULL COLOR PRINTING SERVICES

COMPLETE GRAPHIC DESIGN SERVICES

THUNDERDOME MEDIA GROUP

909 944 2681

Castle Technology, Inc.

Cassette Duplication

C-10...$.74 C-20...$.84 C-30...$.94

Printing—Packaging—Labeling

Single CDs Starting at $6.95

(800) 636-4432 or Fax (615) 399-8855

http://members.aol.com/Castletch/castle

---

replication by disc rsb

- CD duplication
- mastering
- cassettes on digital bin
- printing

RSB

1 800 361-8153

www.rsbdisc.com

Expect the best!

On Line

We're there, right now!

www.trantracks.com

Get immediate e-mail delivery from our website.

Over 4,000 songs... from eight international libraries

TRAN TRACKS MIDI SEQUENCES

To Order by Phone (10am-6pm EST)

Call 1-800-473-0797 and speak with our friendly & knowledgeable staff

Free samples and catalog

TECH support 973-383-6691

SOFTWARE, SEQUENCES & SOUNDS

DANGEROUS SOUNDS!

The best patches and samples for **Ensoniq keyboards**, from the ASR and TS back to the Mirage.Free Catalog! Syntaur Productions, (800) 334-1288, (409) 234-2700. www.fatsnake.com/syntaur

---

THE BEST SOUNDS FOR ALL OF YOUR SAMPLERS

3.5" disks for: ASR, EPS, TS, MPC-60, MPC-2000, S-900, S-1000, S-2000, ESI-32.

800-301-6434

www.midimark.com

---

looneyzunimusic.com offers Pro-Audio, Digital Recording & Desktop Media Production Software & Hardware for sale online direct to you. Search our online store or call toll free (877) 756-6639. Web site: 0www.looneyzunimusic.com

---

ENSONIQ OWNERS: Convert Sequences to/from **Standard MIDI Files** on IBM/PCs. Each package TS-10/12, ASR-10, EPS/EPS-16, VFX-SD/SD-1, SQ-80, SQ-1/2, KS-32, or KT-76 costs $54.95. Convert SD-1 to TS-10 w/our SD1TS10 Conversion for $54.95. **Call for Alesis, Kawai, Korg, PianoDisc, Yamaha, Roland.** Visa/MC/Amex. **Giebler Enterprises**, 26 Crestview Drive, Phoenixville, PA 19460. **(610) 933-0332**; fax (610) 933-0395.

SOUND BURST

The world's biggest collection of sounds for your computer-based home studio is available on CD-ROM or by download. SoundFonts, SeerBankSets, .WAV and much more from accomplished European sound designers.

Visit us at:

WWW.SOUNDBURST.COM

ROM Card Blowout - $39 for Wavestation A/D 03R/W • M1Rx

DON'T FORGET YOUR ASR10 OR PEAVEY SP

Volume 1 CD ROM and Philip Wolfe's Rock Keyboards CD ROM

2 CD ROMs for your Ensoniq ASR10 or your Peavey SP Sampler just $199

VISA greytsounds

Check out our catalog of Audio CDs, CD ROMs & Synth Patches at:

www.greytsounds.com • 800-266-3475

CD ROMs for Akai, Digidesign, Emu, Ensoniq, Kurzweil, Peavey & Roland

---

TRYCHO TUNES

PERFORMANCE SEQUENCES™

MIDI MUSIC WITH THE HUMAN TOUCH!

The most widely used midi sequences in the world. First in customer satisfaction for over twelve years. Over 5,000 song titles available for any musical application. All programmed in sunny California by Stephen Kern, the most respected musician in the business.

From Pop to Rock. From Country to Standards to custom programming, we've got it all!

Trycho sequences are available for most popular computer and hardware based sequencer systems. We even have stereo audio cassette and DAT versions for non-sequencer users. Now in our 13th year, we continue to offer great selection, great prices, and full time tech support. Just a phone call away six days a week!

Whatever your musical needs, you can count on ***TRYCHO TUNES*** for the absolute best in midi sequences.

TRYCHO TUNES are available at many fine music & computer stores. Or order direct at:

1-800-543-8988

2166 W. Broadway St. • Suite 330

Anaheim, CA 92804

Technical Hotline (909) 696-5189 • Fax (909) 696-

http://www.trycho.com • email trycho@mindspring.

CLASSIFIEDS

SOFTWARE, SEQUENCES & SOUNDS

THE BEST MIDI SEQUENCES MONEY CAN BUY
Classic Rock, R&B, Blues, and Jazz standards programmed by Pete Solley.
LET US SEND YOU OUR FREE DEMO DISK AND SEE WHY WE SIMPLY ARE THE BEST.
Call (888) 211-0634
or fax (954) 570-9788 for song list.
CHECK OUT OUR NEW STYLE DISKS
All credit cards accepted.
Visit our Web site at
www.petersolleyproductions.com
Peter Solley Productions

Music Tools Blowout!
Great Deals & Service
5th Anniversary Sale
Software, Sound Cards, Interfaces, Cables, Controllers, Samples, Sequences, Books, Videos
Shop for over 12,000 products at
www.midi-classics.com
Call 800-787-6434 NOW!
MIDI Classics, Dept.E, Box 311, Weatogue, CT 06089

PLAY LIKE THE LEGENDS OF JAZZ, ROCK & BLUES.
Learn favorite riffs faster
GUARANTEED!
New SlowGold PC software lets you slow down recorded music for easiest-ever learning. Rave reviews from 3 leading music mags. FREE 30-day download at **WWW.SLOWGOLD.COM** or call toll free (888) 588-2499 today!

COMPUTER MUSIC PRODUCTS
Sound card MIDI adapter cables, MIDI & digital audio software, hardware & accessories. Online catalog:
www.musicmall.com/cmp
MIDI Tutorials: **www.jjonline.com/digital/miditutorial.asp**

Northstar
Productions
World Class Samples
E-mu™ Emulator IV/64
E-mu Emulator III/ESI
E-mu Emax I/II
E-mu SP12, SP1200
E-mu Emulator II
Akai™ S1000
Roland™ S770
Kurzweil™ K2000/2500
Digidesign™ SampleCell
Audio Sample CDs
➤Drumscapes™ Vol. 1
➤Son of Drumscapes 2
➤Latin Drumscapes 3
➤Dancescapes™
plus Hollywood Edge, Hanna-Barbera, Warner Bros., Valentino FX CD-ROMs
Northstar Productions ● 13716 S.E. Ramona● Portland, OR 97236 USA
503.760.7777, Fax: 503.760.4342
www.northstarsamples.com
VISA MasterCard American Express

WORLD CLASS MIDI FILES
the WORKS Music Productions
For **Free Catalog & Demo Disk** call **(800) 531-5868** or visit our Web site: **www.worksmidi.com**
Popular styles, General MIDI compatible, e-mail delivery avail.
Box 22681, Milwaukie, OR 97269.

Give Your Act A Good Kick In The Gas...!
Imagine what it would be like jamming with some of the best known musicians in the world. With Midi Hits you just step in and play along.
Over 5,000 Premium Backing Tracks
Pop, Country, Oldies, Top 40, Big Bands, Jazz, Standards, Gospel, Show Tunes, Latin, R&B, etc.
Free Catalog
Midi Hits
Now In our 7th Year
3 Shratton Ave.
San Carlos, CA 94070
1-(800) 593-1228
Fax (650) 637-9776
e-mail: midihits@pacbell.net
See us on the Web
www.midi-hits.com

Transcribe **MIDI files** to optimized tablature with **Tab Transcriber** for Windows 95/98/NT. Includes more than 25 predefined tunings and supports custom tunings from 1 to 19 strings.
www.cam.org/~mibra

MIDI HQ—Your High-Quality Head-Quarters for Standard MIDI Files & More! Over 2,500 Licensed hits! For a free catalog call: (800) 844-4785; outside US, (843) 293-3767.
www.midihq.com

"Perhaps the handiest piece of software a lyricist could own." — Electronic Musician, 3/99
Award winning songs have award winning lyrics. That's why more Grammy, Tony, Oscar and Pulitzer Prize winning songwriters use **A Zillion Kajillion Rhymes & Clichés.**
- Rhyming dictionary instantly finds single, double and triple rhymes on zillions of words — more than *any* book in print!
- Thesaurus of over 10,000 clichés, catch phrases and idioms!

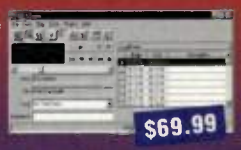
Now only $64.90! Call 800-436-6758
Free demo & secure ordering www.eccentricsoftware.com

Translator™!
Say goodbye to proprietary formats! Read most sample format CD-ROM or SCSI Drives from Emu®, Roland®, Kurzweil®, Akai®, or Ensoniq® samplers!

Translate most popular disk or file formats (pro samplers, .WAV, .AIF, more) with great results. Translate ALL parameters, keymaps, samples - absolutely EVERYTHING!
- Write native-format SCSI Drives
- Transfer via SCSI (SMDI; other)
- Edit most parameters onscreen

$149.95!
Chicken Systems®
www.chickensys.com/translator
800.877.6377 320.235.9798

Learn *AND* Play Your Favorite Songs Now!
CD Looper is the perfect music software for Windows that allows you to easily learn how to play any song directly from your computer's cd player. With CD Looper's ability to slow down any audio cd 2, 3 or 4 times without changing pitch, you can easily learn to play your favorite songs note for note!
- Set unlimited loops with 1/100th of a second resolution
- Loops can be any length
- Sped up loops in 10% increments
- Many other features



Version 2 Now Available!
New SlowDown engine produces the best sound quality available! Perfect for home or studio.
Stretch or compress wav files to ANY length with CD Looper Pro!
Automatically download CD information from the CDDB internet database!
Store, edit and print lyrics and sync display with playback!
Order your upgrade today!

CD Looper Pro Includes These PlugIns!
NoteGrabber: Extends CD Looper's capabilities beyond CDs. Record and slow down music from any input source or wav file. Graphically create loops down to a single note!
OverDubber: Record yourself playing over any loop or wav file in NoteGrabber. Record yourself playing over backing tracks.
PitchChanger: Change loop's pitch in half step increments.

CD Looper Pro is $99.99 or you can upgrade from CD Looper for only $39.99

DeComposer is an advanced filtering program for Windows that easily removes any instrument from digital audio files.
- Exclude note ranges and create your own backing band.
- Easily create LowPass, HighPass, BandPass, BandStop and Notch filters.
- Boost or cut the volume of any frequency range.

"We found both programs very useful for studying a specific artist or material in depth." Guitar World - 10/98

Order today! Call RePlay Technologies toll-free at (888) 3RePlay or place your order directly on our web site at www.replayinc.com. Next day delivery available.

CLASSIFIEDS

K2000/2500 Owners! Our top-selling 2000-Series K2000/2500 CD ROM contains 154 professional sound banks! 3000+ Programs! Now only $200. VISA/MC. **To order,** visit www.patchmanmusic.com, email:matteblack@aol.com, or call (216) 221-8282.

BAND-IN-A-BOX IMPROVEMENT PRODUCTS***You can put a Better-Band-In-Your-Box. Power-User Styles, Fake Disks & More! Gen-MIDI **SEQUENCE** & CD-ROMs, too! **FREE** info! Norton Music & Fun, Box 13149, Ft. Pierce, FL 34979. Voice mail/fax (561) 467-2420; http://members.aol.com/NortonMIDI/

Announcing the New **PRODUCTS AND SERVICES Section in this Electronic Musician Special Issue.**

The Products and Services section offers text and display color advertising at affordable prices in EM's popular Buyer's Guides!

EM's Desktop Music Production Guide 2000, 2nd Edition

The definitive technical resource for those interested in producing music on their computers. Desktop music production is revolutionizing home recording! The DMPG will give your products valuable new exposure to the RAM and ROM crowd with bonus distribution in computer stores and computer and multimedia trade shows!

Ad reservation deadline is August 10, 1999.

Electronic Musician

For Rates & Deadlines Call Jef Linson at (800) 544-5530

Phone: (510) 653-3307
Fax: (510) 653-8171
Email: emclass@intertec.com
Mailing Address:
6400 Hollis St. #12, Emeryville, CA 94608

SONIC REALITY
FREE DEMO CD!
CD ROM Sound Libraries For Samplers
Pianos, Strings, Drums, Vintage, Acoustic, Ethnic, Dance & More!
www.sonicreality.com
1-800-232-6186

RAREFACTION produces ground-breaking, non-traditional sound sample libraries. Home of the original sonic mind-breaker, **A Poke in the Ear with a Sharp Stick**. NEW titles guaranteed to get your own creative juices flowing. **www.rarefaction.com**; (415) 333-7653.

Check out the Electronic Musician Website!
e musician
www.emusician.com

EMPLOYMENT OFFERED

Hands On MIDI Software

www.hands-on-midi.com

Fast Delivery
Large Library
Easy To Use
Quality Assured
GM Compatible

Accurate, well-crafted reproduction of the hits.

Suppliers to Roland, Yamaha JVC, IBM and Microsoft

Free Demo's to EVERY song (direct from our web site)

Catalog / Sales: (888) 339-0311
Tech Line: (816) 347-9803
Fax: (818) 992-5087
E-mail: usa@hands-on-midi.com or HandsOnUS@aol.com

Software Studio, 19862 Friar St. Woodland Hills, CA 91367

Hip-Hop and Alternative DRUM LOOPS & SAMPLES on CD! Prices starting at $29.95
www.superloops.com
Phone order (719) 637-3319
"These CDs are ideal for Underground music production"
Some of the **phattest** loops ever!

KID NEPRO
"The Patch King"
Quality Sounds for over 100 Midi & Vintage Instruments from:
ROLAND · YAMAHA · ENSONIQ · KORG · EMU · AKAI · CASIO · KAWAI · KURZWEIL · OBERHEIM · SEQUENTIAL
View our catalog & soundlists at our websight
http://www.kidnepro.com
Call for more info • Send $3.00 for catalog
KID NEPRO PRODUCTIONS
PO BOX 360101 (DEPT E)
BROOKLYN, NY 11236
(718) 642-7802 • FAX: (718) 642-8385
e-mail:kidnepro@aol.com

The College of Santa Fe

Contemporary Music Performing Arts
Music Technology Faculty

The Contemporary Music Program of the Performing Arts Department at The College of Santa Fe, in Santa Fe, is accepting resumes for a faculty position in the area of Music Technology. This position is a full-time, 1-year position with benefits. Possibility of permanent tenure-track position. Teaching responsibilities include the following classes: Recording Techniques 1 (3 credits, fall semester); Recording Techniques 2 (3 credits, spring semester); Recording Techniques 3 (3 credits, spring semester); Introduction to Music Technology 1 (2 credits, fall semester); Introduction to Music Technology 2 (2 credits, spring semester); and Production Listening (3 credits, spring semester). Additional responsibilities include 4 credits per semester release time for technical support of student and departmental recording projects.

Applicants must have a Master's degree or equivalent in audio recording or related field and preferably three or more years of professional teaching experience (preferably in higher education); extensive experience in studio and live recording, live sound, multi-track audio production and computer-based audio systems is required. In addition to the requisite technical skills, strong preference will be shown for a practicing musician with experience in popular and jazz musical forms, particularly as experience relates to in-studio performance.

Contemporary Music-Performing Arts
Technical/Facilities Manager

The Contemporary Music Program of the Performing Arts Department at The College of Santa Fe, in Santa Fe, is accepting resumes for a technical staff position. This position is full-time, 11 months. The Technical/Facilities Manager oversees maintenance, repair and access to all classroom and studio audio/visual and computer equipment. This includes two recording studios, a computer music laboratory, faculty and staff computers (including networking), multiple classroom audio stations, and support technology for ongoing concerts, workshops and other public presentations. Live audio production for concerts, recitals, student performances, etc. will be a regular and integral part of the duties. Some teaching responsibilities may also be possible, depending on qualifications and program needs.

Applicants must have a Bachelor's degree in audio, music, or related field and minimum of three years experience working in an audio/technical production environment. Working knowledge of both Macintosh and PC operating systems and various applications. A basic understanding of a wide variety of audio/music technology hardware and software systems is essential. Audio & computer system troubleshooting, diagnosis and small-scale repair knowledge/experience is required. Experience in scheduling, accounting, technical work in an academic context and/or teaching experience are desirable, but not required.

An attractive package of benefits including free tuition for the employee and immediate dependents is offered by the college. The College of Santa Fe, operating within the Lasallian tradition, is New Mexico's oldest institution of higher education. The College offers a broad range of undergraduate and some graduate level courses in both a traditional day program and an evening and weekend program. The main campus, in Santa Fe, enrolls approximately 900 students and The College of Santa Fe at Albuquerque approximately 600 students.

These positions are open until filled. Review of resumes will begin June 15, 1999. Resume with cover letter, and the names and telephone numbers of three professional references (e-mail for references if available) may be faxed or mailed to:

Human Resources Department, T-45
The College of Santa Fe
1600 St. Michael's Drive
Santa Fe, NM 87505-7634
FAX: (505) 473-6251

The College of Santa Fe is an Equal Opportunity Employer.

Tower of Power.

Put your entire recording studio inside this powerful machine.

Imagine a day when you sit at an uncluttered desk with a computer on it. You begin to create music. And you do it all — sound design, sampling, synthesis, recording, editing, mixing, effects processing and mastering — entirely in the computer.

That day is here.

The computer is Apple's new "Blue" Power Macintosh, the fastest personal computer on the planet — fast enough to run all of the components of a "virtual" recording studio.

The software is Mark of the Unicorn's Digital Performer 2.6, your "command center" for MIDI sequencing, hard disk audio recording, editing, mixing, effects processing & mastering.

For your virtual sampler and synthesizer, there's Unity DS-1 and Retro AS-1, the powerful new software instruments from BitHeadz.

For effects processing, throw in dozens of world-class plug-ins from today's leading DSP developers, including Waves, Antares, DUY, Arboretum and more.

Need I/O? MOTU has a complete line of USB MIDI interfaces and the latest breakthrough in hard disk recording, the expandable 2408 audio interface.

If you've got to have the feel of real faders under your fingers, there's Mackie's brilliant HUI mixing interface with full automation. And it's now seamlessly integrated with the complete virtual mixing environment in Digital Performer 2.6.

Store and back up your projects with the most reliable name in storage: Glyph Technologies.

And to help you bring it all together, talk to the experts at Sweetwater Sound, who can get you going quickly and efficiently.

So call Sweetwater today and turn your daydream into a dream come true.

MOTU
Digital Performer 2.6
Your "command center" for sequencing and recording

BitHeadz
Unity and Retro
Software sampler and analog synth

Waves
Native Power Pack I/II
World-class effects processing

Antares
AutoTune plug-in
The 'holy grail' of perfect intonation

DUY
Native plug-in bundle
More world-class effects processing

Arboretum
Ionizer
"Frequency morphing" and other advanced FX

MOTU
MIDI interfaces
All the MIDI I/O you'll ever need

MOTU
2408 audio interface
All the audio I/O you'll ever need

Mackie Designs
HUI control surface
Touch senstive flying faders (if you've gotta have 'em)

Glyph Technologies
Storage solutions
Ultimate performance and support

Sweetwater Sound
Music Technology Direct
The Experts on all this stuff

Call (800) 222-4700

Music Technology Direct™ and the Best Value — Guaranteed!

sales@sweetwater.com • www.sweetwater.com

5335 Bass Rd. • Fort Wayne, IN 46808

All trademarks are property of their respective holders.

circle #616 on reader service card

What do you get when you combine a Windows computer with Mark of the Unicorn's 2408 hard disk recorder? You get an astounding, creative tool with a universe of powerful options for composing, editing, and recording.

Add hard drives, backup, and CD burning from *Glyph*, and software from *Steinberg*, *Sonic Foundry*, *BitHeadz*, *Waves*, and *Antares* for a comprehensive desktop studio!

We do Windows ...together

Steinberg

Producer Pac / 24
Want the world's hottest PC software for recording, producing, mixing, and mastering your music in stunning 24-bit/96kHz resolution? Steinberg's Producer Pac / 24 brings together all of these top programs at a tremendous discount—over 50% off! And if you purchase Producer Pac / 24 from Sweetwater by September 1, 1999, you get the Magneto analog tape emulator plug-in at no extra charge—an additional value of $199, available only from Sweetwater Sound!

WaveLab

WaveLab
Far more than a stereo audio editor, WaveLab's extraordinary accuracy and unmatched plug-in support give you tremendous mastering capabilities. One of our clients traded in their $70,000, dedicated mastering "solution" in favor of WaveLab. Why? The sound is silky smooth with up to 64-bit internal processing (that's 1024 times the resolution of a 16-bit editor), operation is lightning-fast, extensive plug-in support gives it more processing power, and it runs on the same PC as your sequencer. WaveLab also features advanced file analysis, an extensive audio database, and the ability to burn Red Book audio CDs that are ready for duplication.

CUBASE VST 24

Cubase VST / 24
VST is the hub of your MIDI/Audio world. Often copied but never duplicated, Cubase defines graphic arranging and realtime MIDI effects. VST / 24 is the latest advancement with full 24-bit capability and powerful VST audio processing—another Steinberg-created standard!

Steinberg

FreeFilter
Spectral Design's FreeFilter boasts 30 (that's thirty!) bands of graphic EQ in either linear or logarithmic modes. The really cool thing about FreeFilter is that it can actually lift the EQ characteristics from one piece of audio, and apply it to another! Don't try that trick with any hardware EQ!

WAVES

Wave's Renaissance Compressor is one of the most highly regarded audio processors ever. Use it on individual tracks or your entire mix—wherever you want amazing sound.

MOTU

Turn the page to discover more wonderful Windows opportunities!

The undisputed price/performance leader for multiple output Windows audio.

Why is the 2408 such a huge, world-wide hit? Its 24 channels of simultaneous input and output for under $1,000 is simply unmatched by any other device. You get analog I/O, digital I/O and tons of advanced features.

GLYPH TECHNOLOGIES, INC.

In Glyph We Trust!

We here at Sweetwater Sound can honestly say that we have enjoyed unrivaled performance from Glyph and give them our highest recommendation.

Put your drives and DigDAT™ backup in the same bay with Glyph's road-tested rackmounts.

It's essential to understand that not all hard drives are created equal! For the maximum number of playback tracks and plug-ins with error-free operation, you need a serious drive that has been specifically tested for digital audio with today's advanced audio software. While that "budget" drive in the PC catalog may be fine for word processing, your music demands bulletproof performance. You'd never trust the cheapest no-name tapes. A premium-quality hard drive is just as important. Glyph consistently combines top components, heavyweight construction, comprehensive testing, and stellar tech support to create the most trustworthy storage devices you can own. Plus, they are available in road-worthy rackmounts—perfect for your pro audio rig!

Want Fast, Painless Backup?

Nowhere is reliable backup more essential than with your original music. If you lose your files, they're gone forever! Don't like the hassles of backing up? That's why Glyph's DigDAT is such a fundamental foundation for your rig. Easily backup large sessions onto a single DAT tape. Confidently archive and retrieve your tracks quickly, without headaches or days of down time. Backup may not be "sexy," but nothing will win you more creative time than avoiding even a single devastating crash. Adding a Glyph DigDAT is perhaps the single best favor you can do for your music!

Which Glyph Drive is Right for You?

4 Gig? 9 Gig? 18 Gig? Fast & Wide? Ultra-Wide? The choices can be staggering. That's why your Sweetwater Sales Engineer will work with you to determine the best approach for your personal needs, rather than stick you with a cookie-cutter "solution."

...store in a cool place.

www.sweetwater.com • sales@sweetwater.com

Music Technology Direct & the Best Value Guaranteed!

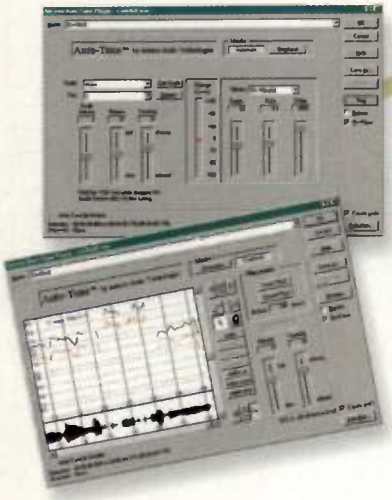
Sweetwater SOUND INC. (800) 222-4700

5335 Bass Road • Fort Wayne, IN 46808 • (219) 432-8176 • FAX (219) 432-1758

circle #617 on reader service card

Step 1: Start with a Windows computer.
Step 2: Add the MOTU 2408 recording system.
Step 3: Combine with software from Steinberg, Sonic Foundry, BitHeadz, Waves, and Antares.
Step 4: Complete with a robust Glyph hard drive, DAT backup, and CD-Burner.
Step 5: Serve hot and enjoy astonishing power!

We do Windows ...together



ANTARES

Auto-Tune Pitch Corrector—Now for Windows!

When Auto-Tune first hit the market as a TDM plug-in just a short while ago, the response was truly amazing. Delivering intelligent intonation correction without robotic side-effects, Auto-Tune was so good, folks were purchasing $8,000 systems just to run it! Now the full version of Auto-Tune is available as a DirectX plug-in to use with your Windows audio rig. Correct intonation problems in vocals or solo instruments in realtime, without distortion or artifacts, while preserving all of the expressive nuances of the original performance. Auto-Tune gives you both Automatic and Graphic Modes to fine-tune your fine-tuning! And the pros all love Auto-Tune because the only sonic difference between what goes in and what comes out is the intonation.

"Holy Grail of recording"—Recording Magazine

Sonic Foundry Mastering House

While Mastering House is an incredible collection of professional mastering tools, that's just the beginning. It also brings you brilliant creative capabilites you can use at every stage of the recording process. This new bundle saves you a bundle as well! Let's step inside:

Sound Forge 4.5—Your host? The award-winning Sound Forge Audio Editor of course! It slices! It dices! It sets the standard for editing Windows audio. Great with the 2408 or any Windows soundcard. MC Sound Forge also serves up steaming loops and DSP effects.

CD Architect—Who's spinning the tunes? Why it's CD Architect! Design and build your own audio CDs with speed and precision. You'll rave about the drag-and-drop playlists. Exacting control of crossfades, track markers, EQ, compression, and support for both SCSI and ATAPI/IDE burners help you perfect your master CD.

XFX 1 & 2—Take your sound out of bounds with the XFX 1 & 2 collections of amazing audio plug-ins. Noise Gate, Multi-band Dynamics, Compression/Expansion, EQ, Reverb, Time Compresssion, Pitch Shift and Chorus effects — whew! From tracking to mixing to mastering, you'll use these processors day in and day out.

More Sonic Foundry Software & Plug-ins

ACID—"The coolest, easiest way to remix," proclaims acclaimed remixer Doug Beck. "True innovation," says Craig Anderton in EQ magazine. Feeling the fervor even further is Jeff Mac of Audio Media magazine who writes, "ACID is an absolute godsend." But Jeff, how do you really feel? Electronic Musician magazine took the easy way out and simply awarded it a 1999 Editor's Choice Award. No matter how you try to describe it, ACID burns through your preconceptions about creating music with a battery of realtime tools. Seamlessly mix & match tempos and pitch from drastically different loops without dropping a beat!

Noise Reduction—Got 60-cycle nasties, annoying clicks & pops, or horrible hums & rumbles? You could spend the rest of your natural life redrawing waveforms by hand. Or you could simply reach for Noise Reduction. It works wonders restoring "damaged" audio. About the only thing Noise Reduction can't quiet down is our enthusiasm for it!

Acoustic Mirror—Tired of the same old Reverb? Acoustic Mirror adds the acoustical coloration of real environments and sound-altering devices to your recordings with uncanny realism and stereo imaging. Simulate everything from large concert halls to vintage tube mics, or generate new effects. It includes an extensive library of high-quality acoustics "signatures" from a wide variety of environments.

WRH

24 I/O, ADAT, TDIF, S/PDIF, Word Clock and more—under $1,000!
Sweetwater Sound has installed more 2408 systems than any other company in the world. Want to get the most out of your 2408? Take advantage of our experience with configuring and operating this amazing recorder for maximum performance, whatever software you choose.

Unity & Retro—Superb Sampler & Software Synth!
BitHeadz is storming the sound module world with unrivaled software sampling and synthesis. Using the power of your Windows computer, Unity and Retro simply blow away hardware approaches when it comes to both features and price performance. These are some of the most exciting products we've encountered in a long time. And with the multiple high-quality outputs of the MOTU 2408, you get everything you need to make Unity and Retro really sing! Both are ASIO and Direct Sound compatible.

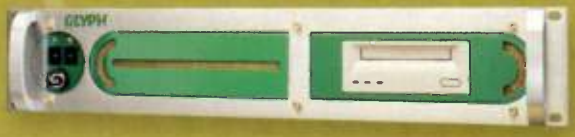
Unity—The power and convenience of a full-screen software environment combined with awesome 24-bit, phase-locked stereo sampling! Imports 16 or 24-bit .WAV, .AIF, Akai S-100, CD-Audio, SoundForge 2.0, Sound Designer I/II, Sample Cell I/II and more. Cross-switch up to 128 samples per note. Simultaneously loads from disk while playing. Built-in digital audio editor. Includes over 250MB of sounds with instruments, loops & GM bank.

Retro—Transform your computer into perhaps the most powerful analog synthesizer ever devised. You get three oscillators per voice (plus LFOs) with any of 9 continuously variable waveforms. That's simply unrivaled flexibility! Use the 2 filters with 13 filter types in series or parallel. Includes Frequency and Cutoff (Poly Mod) modulation. Enjoy realtime control of every parameter simultaneously with MIDI. You even get 1,000 classic analog patches to get you going right away.

Native Power Packs
Waves is the most respected name in audio processing plug-ins. Once available only to the fortunate few, they've brought their delicious line of processors to Windows native audio in two great Native Power Pack bundles. Get both for a comprehensive collection of extreme fidelity software processors. Compatible with all the top Windows audio programs including Cubase VST, Sound Forge and WaveLab.

Native Power Pack I—Legendary Waves processors:
- TrueVerb—virtual-space reverb and distance processor!
- Q10—Paragraphic Equalizer—the "Swiss-Army knife" EQ!
- C1—Compressor/Gate—frequency specific compression!
- S1—Stereo Imager—for "safe" stereo enhancement!
- L1—Ultramaximizer—industry standard mastering limiter!

Native Power Pack II—acclaimed Renaissance plug-ins:
- Renaissance Compressor—warm sound and simple operation!
- Renaissance Equalizer—an amazingly musical, transparent EQ!
- MaxxBass—the ultimate bass enhancer!
- De-esser—dedicated de-esser, high-frequency reducer!



Bulletproof Drives, DAT Backup and CD Burners from Glyph!
To get maximum results from your Windows MIDI/Audio system, you need a dedicated, reliable drive. Only Glyph has the dedication to audio necessary to earn our highest recommendations.

DigDAT™—A Better Backup!
Backup now, before it's too late. Yes, we know you'd probably rather go to the dentist. But once you use Glyph's DigDAT drive, you'll finally sleep better at night, knowing your recordings are safe!

...store in a cool place.

www.sweetwater.com • sales@sweetwater.com
Music Technology Direct & the Best Value Guaranteed!

Sweetwater SOUND INC. **(800) 222-4700**

5335 Bass Road • Fort Wayne, IN 46808 • (219) 432-8176 • FAX (219) 432-1758

circle #617 on reader service card

FINAL MIX

By Larry the O

Is Reality Overrated?

The other day I came across a fascinating debate about reality on a Zen Buddhist Web site. The discussion began by defining the difference between Foley recording and sound design, then moved to the broader topic of the role of realism in sound design. Okay, so it was a game-audio Web site, but the topics seemed pretty Zen to me.

One camp put forth that it is imperative to use the sound of the correct engine if you're making a racing game, while others pointed out that you can make engine sounds more dramatic and engaging (and therefore more effective) than the literal sound of the right engine.

This same debate could extend to other areas, such as using live players as opposed to sequencing samples. And yet the truth of the situation—yes, and its reality—seemed easy for me to see.

Those of us involved in sound and music are entertainers, in one sense or another. In most cases, the result of our work, as seen by an audience, is a constructed reality. If you do use the correct engine sound, you are still creating and placing that sound in a concocted context. Even makers of documentary films usually need to replace sounds they are unable to capture at the time they shoot their film.

Thus, in our creative world, reality is nearly always an artifice. Pretty deep. Once you accept that concept, it becomes clear that there is no sine qua non that says that using the actual sound of something is any better or carries any more credibility than a sound that you built for the purpose.

A few years ago, I went with violinist Cat Taylor to see the film *James and the Giant Peach*. She turned to me halfway through the show and insisted that the sound of the grasshopper handling a violin in the animation was, in fact, the sound of an actual violin—and no other object. It turns out that the violinist who played the grasshopper's parts allowed the movie's Foley artists to handle his Stradivarius and record the sounds. Cat's ears could tell, without question, the precise sound when she heard it. This says that when reality is artificial, it is critical that it be real.

Foley recording is the perfect example of when reality is the only way to go. Or is it? I've encountered many more female Foley artists than male. I'm told that this is because, in part, it's easier for a woman to walk heavily to simulate a male character's footsteps than it is for a man to walk lightly to simulate a female character's. This fact indicates that reality must be artificial to be real.

Now we're *really* in the sauce. However, like all Zen "puzzles," this one requires grasping only a simple insight to make cohesive unity out of a seemingly paradoxical duality.

Creative works stem from some vision or inspiration of the artist. The objective is to convey that vision in the most effective way possible. The bottom line is whether the audience buys into the world you are building for them. Sometimes an audience, like Cat, will be convinced only by the real thing. Other times, the real thing is woefully inadequate. Still other situations call for combining the two, as when real explosions are sweetened with other elements to make them beefier, or by modifying the real thing. If the director or project leader is happy and the audience entertained, the distinctions are purely academic.

Some years ago, audio pioneer Tomlinson Holman began a lecture on building film soundtracks by showing the opening scene of the first *Star Wars* movie without a soundtrack, declaring it "the real sound of a battle in space." What he said was absolutely true, but how well do you think that would play at the box office?

In the end, it rarely matters whether you use the "correct" sound or something you make up. What *does* matter is whether the engine of your race car draws the audience into your reality—and away from theirs.

Larry the O *is a traveler, dividing his time between the state of California, a state of confusion, and several states of altered consciousness.*

ILLUSTRATION BY STEVE CURL

RELIVE THE PAST REGULARLY.

With the Yamaha 01V, you can create the exact same mix every time, right down to the EQ settings on input 12. That's because the 01V digital mixer lets you save every detail of its 32 parametric EQs, 22 limiter/compressor/gates, two 32-bit effects processors and 15 motorized faders. Then, when the time is right, you hit one button and recall the mix precisely and instantly. And, with an external sequencer, you can even let the 01V perform the entire mix. So last night's performance sounds exactly like tomorrow's.

The 01V comes with 24 inputs, 6 busses, 6 aux sends and 12 mic preamps. If that's not enough for you, link 01Vs together to create a much larger digital console without paying the price. In fact, the 01V comes in at a paltry $1,999, far less than the cost of all the "external" digital gear it includes free.

With its advanced components and its ability to save past mixes, the Yamaha 01V should make your mixing future quite clear. Get one today at an authorized Yamaha Pro Audio dealer.

DIGITAL POWER TO THE PEOPLE

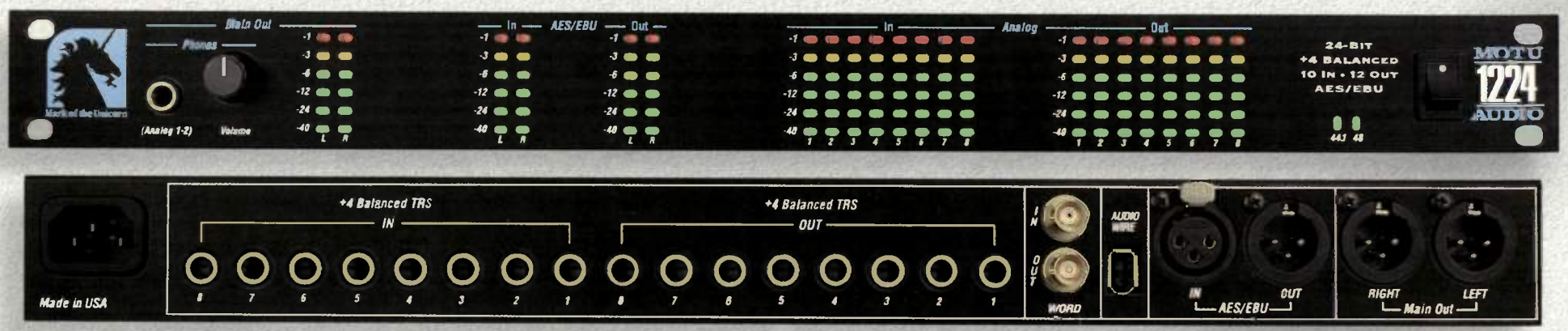
YAMAHA

For more information, visit www.yamaha.com/proaudio or call (800)937-7171 ext. 632 for literature.

©1999, Yamaha Corporation of America. Pro Audio Department, P.O. Box 6600, Buena Park, CA 90622-6600

circle #619 on reader service card

Introducing the 1224.



24-bit balanced +4 analog I/O - with 116 dB dynamic range - for your Mac or PC

- The 1224 is a 24-bit hard disk recording system for Mac OS and Windows 95/98.
- 10 independent inputs and 12 independent outputs.
- 24-bit A/D and D/A Converters for 24-bit recording and playback at 44.1 or 48 KHz.
- 116 dB dynamic range (A-weighted) on inputs and main outputs.
- 8 balanced +4 dB TRS analog inputs and outputs.
- Stereo balanced +4 dB XLR main outputs.
- Stereo AES/EBU digital I/O (24-bit).
- Word Clock In and Out.
- Available as a stand-alone system or as an expander for the 2408 system.
- Expandable — connect extra 1224 & 2408 expansion I/Os. Add up to 48 additional inputs and outputs to a core 1224 system.
- Includes AudioDesk™ sample-accurate workstation software for Macintosh with recording, editing, mixing, real-time 32-bit effects processing & sample-accurate sync.
- Compatible with all major Macintosh and Windows audio software applications.

1224 stand-alone core system: $1295

Everything you need for 12 channels of 24-bit audio, including the 1224 19-inch rack I/O shown above, PCI-324 audio card for Mac & PC, AudioDesk workstation software for Mac with plug-ins, and drivers for today's leading Mac and PC audio software.

1224 expansion I/O for the 2408 system: $995

The 1224 I/O shown above plugs right into your 2408 system and adds eight 24-bit balanced +4 analog inputs, ten balanced +4 analog outputs and 24-bit stereo AES/EBU digital I/O.

circle #501 on reader service card

Mark of the Unicorn, Inc. • 1280 Massachusetts Avenue • Cambridge MA 02138 • 617-576-2760 • 617-576-3609 fax • www.motu.com