Microphone Basics • Native Instruments Spektral Delay, Yamaha DX200, and 8 more reviews

ECCONIC MSGRAPHICAL PROCESSION APPROCATION OF THE PROCESSION APPROCATION OF THE PROCESSION OF THE PROC

www.emusician.com

December 2001

Stocking Stuffers

OUR ANNUAL HOLIDAY GIFT GUIDE

The Musical Palm Computer

EVERYTHING YOU NEED TO GO MOBILE



RUSS

LANDAU

COMPOSING FOR

GEORGE LANGBERG 25

616 EAGLE VALLEY RD TUXEDO PARK NY 10987-4740



NEW! 24-TRACK 24-BIT HARD

For a limited time, get Mackie's non-



- Plug-and-play recording
- 20Gb internal recording drive plus pull-out bay for removable M90 hard disks and Mackie Media Project ORB™ drives
- 24 Tracks and I92 Virtual Tracks for up to I00 minutes of continuous recording @ 48kHz
- 24 channels of 24-bit, 48kHz analog I/O included!
- Full Meter Bridge
- Transport Controls, Track Arm buttons, Locate and Loop
- 100 BaseT Ethernet port
- 3.5 inch drive bay for importing tempo maps and software upgrades
- Sync to SMPTE, MIDI, Word Clock and NTSC/PAL video blackburst
- Non-destructive cut, copy and paste editing with 999 levels of Un-Do
- Perfect ADAT® or DA-88 replacement for home or project recording

LINEAR vs NON-LINEAR RECORDING.

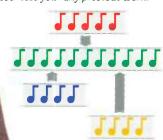
Tape-based recorders (and even some hard disk recorders), record in a linear manner. They record data in a continuous "stream" (the green stream of notes in our drawing).

11111111111

If you want to change something on a track, the recorder permanently erases the old data and records new data over it (red notes in the drawing below).

11111111111

The non-linear MDR24% records any number of alternate segments on separate parts of the hard disk and automatically "punches them in" during playback. You never lose your any previous work.



DISK RECORDING FOR \$1999*

linear MDR24/96 at a special intro



Greg Mackie's goal has always been to deliver professional creative tools at reasonable prices.

The new MDR24/96 is our pricebusting commitment to nonlinear hard disk recording. Read about its rich feature-set and you'll see we didn't skimp anywhere.

PLUG AND PLAY RIGHT OUT OF THE BOX.

Now you can retire those tapebased digital recorders and enjoy the convenience and enhanced creativity that comes with instantaccess hard disk recording.

Ready to go with twenty-four

The state of the s

channels of analog I/O already installed, the MDR24/96's familiar tape recorder style controls and simple operation will have you tracking and mixing down in no time.

TWO REMOTES. TWO REMOVABLE MEDIA OPTIONS.

Our new recorder uses the same affordable, removable recording and backup drives as our landmark HDR24/96 Recorder/Editor. Mackie Media Project M90 pull-out drives and 2.2GB ORB™ disks make saving and storing projects a breeze. (And of course the MDR24/96 ships with a 20Gb inter-

It also uses the same compact Remote 24 and ultramondo Remote 48 controllers.

nal hard disk to get you

started).

NON-LINEAR MEANS NEVER HAVING TO SAY YOU'RE SORRY.

The MDR24/96 is a non-linear, non-destructive recorder.

That means you can punch-in "over" a section of a song as many times as you want without erasing it — and then choose the take you like best later (see explanation on the lefthand page). Non-linear recorders also use drive space more efficiently than linear or "tape mode" hard disk recorders.

You can do basic cut, copy and paste editing



Removable ORB™ drive

ital nn.
to the HDR24750
Recorder/Editor
and Remote 48
controller and

scrub tracks

right down to the waveform level for ultra-precise editing. Or install MDR24/96's in your 'B' and 'C' rooms and edit projects on an HDR24/96 in the 'A' room.

*GOTCHA-FREE FINEPRINT!

No, you don't have to buy six MDR24/96s to get this price. But we *do* have to point out that \$1999 is suggested U.S. street

price and that your price may vary. This is a limited time, introductory price and it will go up after our

bean counters come to their senses and make us stop practically giving MDR24/96s away.
So don't tary, Harry.
Don't wait, Kate.

Check out the no-compromise MDR24/96 24-track hard disk recorder at your Mackie dealer today.



800.898.3211 • www.mackie.com

Mackie Media 20Gb M90s (*Hardiskus removabalis*). 24-track **recording c**apacity @48kHz is typically 90 to 100 minutes.

CONGRATULATIONS.



Imagine walking down a beautiful red carpet filled with paparazzi and fans to accept your "just-turned" multi-platinum album. Nice dream, isn't it? Well, good news has arrived. Introducing the new VF-160 all-in-one digital power tool. It records, edits, mixes with DFX, masters, and now burns your music to a CD so you can get those hot tracks off to the record companies quicker. And forget about spending upwards of \$2000! The VF-160 finally brings you everything you need at a price you can afford. So, while you may not sell sixty million records, at least you won't go bankrupt trying. The VF-160: your road to success.

Introducing the VF-160 Digital Power Tool



Record. Mix. Burn



Fostex America, 15431 Blackburn Avenue, Norwalk, CA 90650, Tel: 582-921-1112 Fax: 562-802-1964

I N S

FEATURES

42 MUSIC IN THE PALM OF YOUR HAND

Here's more proof that good things come in small packages. We checked out all the music-related hardware and software products for Palm OS-based computers that we could get our palms on—you'll be amazed at what we found.

By Cat Taylor

60 COVER STORY: STOCKING STUFFERS

As the man said when he put his foot in his stocking, "I think there's something in this!" EM's 2001 gift guide focuses on cool music gear that costs less than \$700 and can fit into a stocking—though admittedly, some items would barely fit into Shaquille O'Neal's stocking. We're confident that you'll get a real kick out of these 23 gift ideas.

By Gino Robair

72 PRODUCTION VALUES: REALITY CHECK

Russ Landau's scoring work for the CBS series Survivor takes him from his Topanga Canyon, California, project studio to the bush in Kenya and back again. Learn how Landau's years with the Paul Winter Consort helped prepare him for the task of fusing sounds from different cultures and centuries with modern sensibilities.

By Larry the O





DEPARTMENTS

- 8 FRONT PAGE
- 12 LETTERS
- 14 FIFTEEN YEARS AGO IN EM
- 20 WHAT'S NEW
- 30 WEB PAGE
- 36 VINTAGE PAGE
- 158 AD INDEX
- 160 2001 ARTICLE INDEX
- 163 MARKETPLACE
- 168 CLASSIFIEDS

Electronic Musician (Auto-Carlo)

DE

Electronic Musician®

DECEMBER 2001 VOL.17, NO. 12 www.emgsician.com

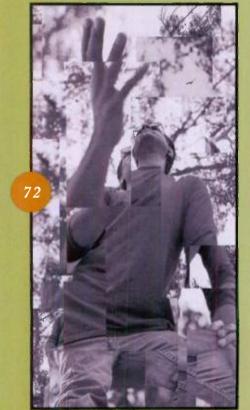


COLUMNS

- 28 TECH PAGE: Legends of the Small Single-molecule computer circuits are on the horizon.
- 40 PRO/FILE: Forbidden Planet
 Guitarist Neil Haverstick explores the mysteries of microtonality.
- 86 DESKTOP MUSICIAN: Musical Protocols
 Audio and MIDI protocols help hardware and software communicate.
- 96 SQUARE ONE: Microphonic Machinations
 This primer sets you straight about microphone terminology.
- 178 FINAL MIX: Box of Rain

 After a national tragedy, music can help people regain balance.





REVIEWS

- 106 NATIVE INSTRUMENTS Spektral Delay 1.0 (Mac/Win) multiband delay
- 114 YAMAHA DX200 FM groove box
- 122 TC ELECTRONIC Triple-C rackmount digital compressor
- 128 NEUMANN KM 183 small-diaphragm condenser mic
- 134 ALGORITHMIC ARTS SoftStep Pro 2.06a (Win) algorithmic software
- 144 GRACE DESIGN Model 101 microphone preamp and DI
- 150 QUICK PICKS: NemeSys Music Technology Christian and Lane Ultimate Timpani Library (GigaSampler) sample library; F7 Sound and Vision Concept:FX3 sample CD-ROM; Prosound Communications Robotalk effects pedal; MIT Press Machine Musicianship

A Clear Message

Back in the '60s and '70s, the federal government strictly regulated the cross-ownership of radio, television stations, and newspapers. The regulations were aimed at preventing a small number of corporations and individuals from owning multiple media outlets in the same market, thus dominating news dissemination.

In recent years, the government has loosened those laws considerably; the result is an everincreasing consolidation of major media. It affects not only the news we get from commercial radio



and TV stations but also the music we hear—and the music we aren't allowed to hear. For an example of what could happen, we need look no further than the recent flap caused by Clear Channel Communications' ill-considered music blacklist. The list turned out to be a tempest in a teapot, but only because the company chose to weasel out of it, more or less. In case you've been living in a cave—perhaps not a bad idea nowadays-allow me to explain.

Clear Channel is the corporate owner of more than 1,170 radio stations across the United States (and 240 elsewhere), representing 110 million listeners and 20 percent of industry revenue. That makes it easily the largest owner of radio stations in the country. In the San Francisco Bay Area, where EM is based, the company owns two AM and five FM stations. Obviously, Clear Channel has a lot to say about what music gets played in a multitude of markets.

On September 13, some manager at Clear Channel-exactly who is not clear as of this writing—issued a list of 162 songs that the company urged its program directors not to play, on the grounds that the songs' lyrics or titles could be offensive in the current political climate. It is important to note that the program directors were advised but not ordered to respect the blacklist, and indeed, some openly disregarded it.

The list was absurd: banned were Louis Armstrong's reflective "What a Wonderful World," Simon and Garfunkel's angelic "Bridge Over Troubled Water," and John Lennon's pacifist "Imagine." But the real problem was that one megacorporation could make decisions for a large part of the U.S. radio audience.

Confronted with bad publicity, Clear Channel's top management hemmed and hawed and veered from excuse to excuse. Corporate spokespeople said that upper management had nothing to do with the list, that it was the work of a middle manager. At no time was the list retracted—at least, not publicly—but the company stated that individual program directors would be free to make their own choices.

At press time, the Clear Channel fiasco is fading. But as Grandfather said in Peter and the Wolf, "What if Peter had not caught the wolf?" Given the current social climate, had Clear Channel taken a subtler hard line and stayed with its "recommended" blacklist, it might have suffered only minor PR damage. Because its reach is so great, that policy would have had a huge impact on the music heard on commercial radio.

We have all had much to think about and do in recent weeks and months. I suggest that we keep the prevention of media consolidation high on our to-do list.

Electronic Musician

Editor in Chief Steve Oppenheimer

Managing Editor Patricia Hammond Associate Editors Brian Knave, Dennis Miller, Gino Robair, David M. Rubin, Geary Yelton Assistant Editors Marty Cutler, Matt Gallagher Copy Editors Erin Hutton, Jennifer Moline, Anne Smith, Mark Smith

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

Web Editor Paul Lehrman

Senior Art Director Dmitry Panich Art Director Laura Williams **Associate Art Director** Karyn Kraft Graphic Artist Mike Cruz Informational Graphics Chuck Dahmer

Publisher John Pledger

Associate Publisher Erika Lopez Advertising Director/Eastern Advertising Joe Perry Northwest/Midwest Advertising Associate Stacey Moran Southwest Advertising Associate Mari Deetz Sales Assistants Kathya Fuentes, Joe Madison

Classifieds/Marketplace Advertising Director Robin Boyce-Trubitt

West Coast Sales Associate Kevin Blackford East Coast Sales Associate Jason Smith Classifieds Assistants Monica Cromarty, Diane Williamson-Suber

Marketing Director Christen Pocock Marketing Manager Angela Muller Rehm Marketing Events Coordinator Alison Eigel Marketing Coordinator Starla Estrada Marketing Art Director Wendy Shiraki

Senior Production Manager Curtis M. Pordes Group Production Manager Melissa Langstaff Senior Advertising Production Coordinator Julie Gilpin Computer Systems Coordinator Stanley Faulkner

Group Circulation Director Philip Sémler Circulation Marketing Manager Austin Malcomb Circulation Fulfillment Coordinator Jef Linson

Human Resources/Office Manager Julie Nave-Taylor Receptionist Lara Duchnick

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

Subscriptions, Customer Service PO Box 1929, Marion, OH 43306 rel. (800) 245-2737 or (740) 382-3322 For fastest service, visit our Web site at www.emusician.com.

Back Issues

tel. (800) 441-0294 or (913) 967-1707

PRIMEDIA Business Magazines & Media 9800 Metcalf Ave., Overland Park, KS 66212

PRIMEDIA Business Magazines & Media Timothy M. Andrews, Chief Executive Officer Jack Condon, Chief Operating Officer Ron Wall, President Pete May, Vice President, Entertainment Division Stephanie Hanaway, Division Director of Marketing

PRIMEDIA Business-to-Business Group David G. Ferm, President and CEO Andrea Goldschlager, Vice President and Group CEO Craig Reiss, Chief Creative Officer

PRIMEDIA Inc. Tom Rogers, Chairman and CEO Charles McCurdy, President Beverly C. Chell, Vice Chairman

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 1929, Marion, OH 43305 Canadian 6ST #129597951 Canada Post International Publications Mell Product (Canadian Distribution) Sales Agreement No. 40567023.

(Canadam Osstráusbon) Sales Agreement No. 40997923.

PHOTOCOEM RIBET & Audervation to photocopy dens for internal or personal use of apacific charts a granted by PRIMEDIA Businesse Magazines & Madea Inc., provided that the base fee of U.S. \$22.5 per copy, past U.S. \$20.00 per page, a past derivently to Copyright Celerance Centers. 222. Reserved Driver, Danviers, NA 61923 U.S.A. The fee code for users of that Transactional Reporting Services U.S.S. \$25.5 per code of the Transactional Reporting Services U.S.S. \$25.5 per code or granterstone than the have been granted a photocopying lacense by U.C.C., a separate system of payment has been arranged. Before photocopying dams for decide control clears comuse, Disclause contact CCC at 1973 T9-5400. Organizations or individuals with large-quinting photocopying dams contact CCC at 1973 T9-5400. Organizations or endividuals with large-quinting photocopying dams clearce of the CCC at 1973 T9-5400. Organizations or endividuals with large-quinting photocopy or reprint requirements should contact. Plagrant Managiament Services (CCC 1775 1970) McCroff large contact CCC at Allicardon are available by calling Bell & Howell Information and Laerning (800) \$21-800 or C113 781 -4700.

Electronic Aflancian makas its subscriber list available to carefully screened companies that offer products and services that may interest you. Any subscriber who does not went to receive making any from that-d-party companies and contact the subscriber service department of 100 245-2737 (U.S.), (740) 382-3322 (ontacte U.S.), and we will be pleased to respect your veshes.





Also publishers of Mix®, Onstage™, and Re



ABM

The Mothership has Landed!

Announcing the arrival of the new Proteus® 2500



Proteus 2500 – the most powerful, versatile and tweakable sound module ever created for studio and stage.

- New processor three times faster than the Proteus 2000 for even tighter MIDI timing
- 24-bit analog and digital outputs deliver the most pristine sound quality ever
- USB port effortless uploading/downloading of sequences and updating OS
- 16 Track Sequencer record in real-time, step and grid modes (Plays/Exports SMF's)
- Over 100 syncable synth parameters per preset total control of your sounds
- Over 30 programmable knobs and buttons immediate, hands-on control over all synth/mixing parameters and all of your external MIDI gear
- 128 Voice Polyphony plays back your most massive sequences with ease
- Expandable to 128 MB of internal sounds using any Proteus expansion ROMs



Check out the Mother of all Sound Modules at your local E-MU Bealer today!



1600 Green Hills Rd., Scotts Valley, CA 95067 Tel: 831.438.1921 Fax: 831.438.8612 www.emu.com



Appendix A: Specs 9

...INSPIRATION

Technical Specifications:

- 61-key synth action keyboard with velocity and aftertouch sensitivity
- · 62-note polyphony
- 32 Mbyte wave ROM, expandable to 64 Mbytes with 2 EXB-PCM
- 640 Programs (including GM Level 2)/384 Combis expandable to 896 Programs/640 Combis
- Support for EXB-MOSS (adds 128 new Programs/64 new Combis)
- 102 Insert/90 Master effects (up to 5 Insert, 2 Master effects plus
- 16-track 200,000 note sequencer, 200 Songs, 20 Cue Lists, 100 patterns per Song, 150 preset drum patterns, 72 RPPR patterns per Song, 16 preset/16 user Template Songs
- Joystick, 4 assignable knobs, 2 assignable switches and 1 assignable slider

- 1190 Generated Effects (1 GE per Program, 4 GEs per Combi or Song). A GE contains over 400 parameters to generate notes, control synth and effects parameters, and provide randomization of these events
- 8 knobs, 2 switches and 2 scene memories, plus joystick, slider and pedals for real-time control over GE parameters
- 4 programmable Chord Memory buttons for triggering chord voicings easily

Korg USA 316 South Service Road Melville, NY 11747

Dear Korg.

Korg products have always been terrific, but my new Karma Music Workstation is simply amazing. I continue to be blown away every time I play it. I already own a Triton, so I'm familiar with the sounds, effects and sequencer, which are great, and I like that it's compatible with all my Triton sounds.

What makes this instrument truly revolutionary is KARMA. It's brilliant! This technology is versatile, innovative and always inspires me to come up with new ideas. I'm amazed by the control that it gives me and the way I can turn a few knobs to create a completely new part. KARMA certainly is the most unique system I've seen in a long time. I produce a lot of dance music, and this keyboard continues to breathe new life into my tracks. Plus, it saves me tons of time! But I'm afraid to bring it to a live gig because someone might figure out my tricks. (ha ha)

Karma is truly the most inspiring workstation I've ever played. Thank







EXCELLENT, SMITHERS

would like to thank Brian Smithers for his excellent review of the Tascam US-428 digital-audio interface and control surface (September 2001). However, I'll add one more thing to the stew: the US-428's six audio channels (four in, two out) are always streaming when the unit is on; as a result, the US-428 uses up 72 percent of my PC's USB bandwidth. For those who rely heavily on USB for peripherals, that means having to turn off the US-428 to use other USB-hungry devices.

I use the US-428 as a controller and MIDI interface with Steinberg's *Nuendo* and would love it if Tascam could provide a control-panel switch that would turn the audio I/O ports on and off. For people who don't use the device as an audio interface, that feature would make it a lean, mean USB machine.

David Miles Huber via e-mail

OURS GOTO 11

hanks for the great magazine. I've had a subscription for only three years but have worn out most of my issues. I'm a gigging guitarist turned chemist; I'm also a home recordist because I can't give up the music bug. I

recently bought a SeaSound Solo PCI audio card and interface, which I totally dig, only to have the company go belly-up before it could release a Windows ME/2000 WDM driver [see the March 2000 issue for a review of the SeaSound Solo]. I took it upon myself to spearhead a user movement to gather up enough money to hire an independent firm to do it for us. Pretty grand yet stupid, eh? As Nigel Tufnel and David St. Hubbins of Spinal Tap once said, "There's a fine line between clever and stupid."

As I collected users to serve the cause, I came across Scott Mason, who has devoted a Web site (www.scottamason.com) to a SeaSound user forum for us to share ideas and opinions as well as to recruit people to accomplish our goals. We're trying to reach more users. We've posted to many newsgroups and bulletin boards about our fledgling site. Are there other avenues we have overlooked?

Rocky Gipson via e-mail

Rocky—Check out the company Web sites of your favorite audio-editing software. Some have forums about sound cards, including the Solo.—Steve O.

HISTORY IN THE MAKING

hank you for the September 2001 issue and the two wonderful articles about Web music by Frank Jones and Eric and Karen Bell. I have never seen the process of launching a music-related Web site so concisely and effectively presented.

I wanted to create a Web site for some time but was daunted by the amount of time it would take me to understand the process. However, using those articles as models, I further researched the subtopics I didn't fully understand and, during the past three weeks, built

my first Web site—26 pages and MP3s! I credit the authors with making the process efficient and effective. This is a significant moment in my personal music history.

Rick Toone

CHOCK-FULL O' GOODIES

The September issue floored me. It was full of useful information from cover to cover. I loved the section about getting your music online ("Special Delivery") and building Web sites ("Construction Site").

Also, if any one had asked me what a Foley artist was before that issue, I would not have had a clue ("Recording Musician: Sounds in the Key of Life"). What an interesting and useful field!

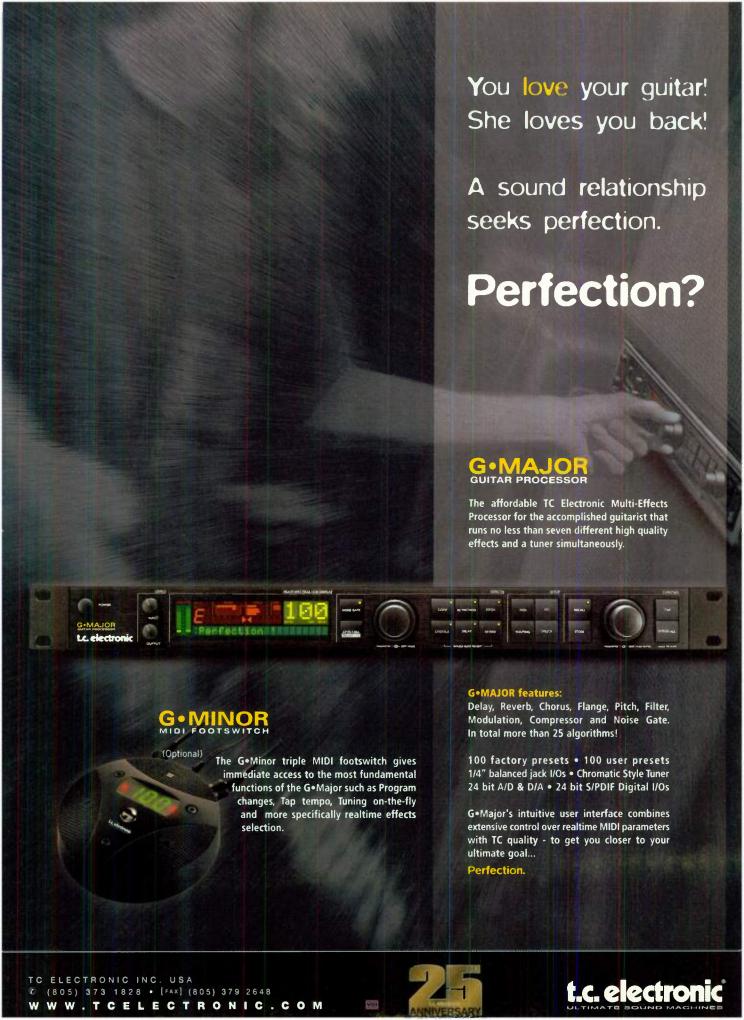
As for those who keep asking EM to tone down the technical talk: it's hard work, but they need to understand and relate new terms to their fields. One day they may find themselves talking with someone who deals exclusively in those terms; lack of knowledge on their part could prevent them from getting the help they need to accomplish their goals.

Larry Tuck via e-mail

UP IN SMOKE

n October's "Recording Musician: Off-Kilter Vocals," the round black-and-gold "yard-sale gem" shown in Fig. 1 looks identical to a German-made Grundig I had in England in the early '60s. It came with a wonderful deco-style mono tape machine my parents bought me. Oh, if I had it now! It blew up when I tried some dastardly custom direct-wiring escapade. Keep up the good work.

Roger Swallow via e-mail





FIFTEEN YEARS AGO IN EM

Our December 1986 issue didn't have a cover story per se; the cover photos of a 19th-century serpent horn were supposed to visually represent sampling, showing that you could sample anything. You had to read the fine print on the table of contents to know that, but it was a cool cover.

Indeed, we ran six stories about sampling. Tim Tully (then a freelance author, later an EM editor) started the ball rolling with an overview of the market. The heart of the article was a table showing specs for 25 samplers, ranging from the \$130 Casio SK-1 sampling keyboard to New England Digital's \$72,000 Synclavier. Tully then explained the specs categories, giving readers a good basic understanding of how to shop for samplers. He also cre-



ated a template for product roundups that we used for many years.

Next was the master himself, Craig Anderton, with one of his classic collections of useful applications ideas, tips, and tricks for using a sampler to fix problems in a mix. Michael Levine (not the Mike Levine who is the *Onstage* editor) followed with additional tips for the E-mu Emulator II, after which Steven Cox delved into the Akai S900. Anderton then returned with an explanation of how to make a sampler that appears limited to equal temperament to produce alternate scales. John Diliberto put the whole sampling suite in historical perspective with a story about sampling pioneers Pierre Schaeffer and Pierre Henry.

But we covered a lot more than sampling in December 1986. Anderton supplied an article about the state of electronic guitar, including a breakdown of what he considered right and wrong with guitar synthesizers. Helmuth Lemme also addressed guitarists' interests with a primer about guitar pickups.

The early issues occasionally covered video-oriented subjects, and Don Slepian was the resident expert. In December 1986, Slepian discussed ways of using controlled random variations to quickly generate video. In other video coverage, Matthew Leeds reviewed Electronic Arts' Deluxe Video Construction Set videogeneration and animation software for the Commodore Amiga computer.

The December DIY section mostly focused on assorted small projects. In addition to showing you how to build a headphone monitor, continuity tester, and mono monitor (for checking mono compatibility), we offered plans for DIY security locks and other security devices for keyboards and other music gear.

That left room for just one other product review: Craig O'Donnell's evaluation of Western Automation's DASCH (Disk Acceleration/Storage Control Hardware) for the Mac. DASCH consisted of as much as 2 MB of dynamic RAM in a powered box that connected to a Mac serial port. Essentially, it provided an alternative to RAM disks, letting you run applications or the Mac OS in fast, relatively affordable D-RAM that (unlike a RAM disk) did not clear its memory when the computer was powered down. It wasn't long before RAM and hard drives increased dramatically in capacity and dropped in price, but in 1986, DASCH was cool.

-Steve Oppenheimer

LETTERS

HOW EMBARRASSING

tried to open a Web site (www.samplelibrary.net) that was in the July 2001 "Web Page." However, the address redirected me to a porn site! It was kind of embarrassing—I was on my parents' computer. Can you let me know if there was a mistake?

Ian Brunskill Queensland, Australia

Ian—There was no mistake. When I edited the July 2001 "Web Page" (during April 2001), the URL worked for the Sample Library Archive, but now it's a porn portal.

The biggest problem with doing a column about the Web is that sites come and go very quickly. This is the second time a site has disappeared shortly after making an appearance in "Web Page." We try hard to avoid that, but unfortunately, we can't predict how long a site will be around. It's frustrating when this happens.

The Sample Library Archive's new address is www.ampfea.org/sln.—Gino Robair

BACK AGAINST THE WALL

have been an EM subscriber for about six years now; I love the magazine. I have a question regarding studio reference monitors.

I have a rather small control room in my home studio, and I'm having a problem with the bass. Because of limited space, I am forced to position the speakers over my mixing console at ear level, but only about three to four feet from me when my hands are on the console. At this range, I can't hear the bass well, so I am constantly moving back (with my back against the opposite wall) to hear the bass, then forward to make fader moves. Against the opposite wall, I hear considerably more bass.

Will stuffing the ports in the back of the speakers help? I have two sets of monitors, and both are a problem. I am constantly switching between my Alesis Monitor Ones and my Event 20/20s.

> Jim Harris via e-mail

Jim—Although it's impossible to know for sure without analyzing your setup, my guess

Somany sounds. Solittle money. So.3.





Features

- 756 Total sounds with quick access to all
 - 64 Premium Yamaha digital effects
- Bundled Mac/PC sequencer, voice editor, and wave editor software
 - 64-Note polyphony

Over 750 extraordinary sounds (including the best of Yamaha's elite S80 synthesizer). Wild groove textures. High-end digital effects. And extensive software with hundreds of musical patterns and styles. All in one place for one oh-so-low price: just \$499.* This is the Yamaha S03. With its S-Series heritage, stunning voices, and powerful tools, the portable S03 is the perfect synth for composing and performing — no matter what your budget. So don't wait; check it out today at a

Yamaha DMI dealer near you.







CREATING 'KANDO' TOGETHER
WWW.YAMAHA.COM

is that the extra bass you hear when you move to the opposite wall is the result of a standing wave or other acoustical anomaly in your room-not an uncommon problem in home studios. Actually, three to four feet is the recommended distance for close-field monitoring, so I would trust the sound from that position more than I would from the back of the room. A helpful test would be to print two mixes, one with the bass levels adjusted according to what you hear from the near field and another based on what you hear from the back of the room, and then compare them on several other playback systems. From that you should be able to determine which is the more trustworthy monitoring position.—Brian Knave

A BIT ABOUT CONVERTERS

am grateful for the wealth of information I've gained from your magazine. I have a question about recording digital audio—I am really confused. I have a 20-bit recorder (Roland VS-880EX), and I would like to upgrade to a good-quality set of standalone A/D converters (possibly the Lucid AD96).

My question is this: can I record 24-bit audio into a 20-bit machine through the digital input, or is the word length of 20 bits set for the digital inputs as well as the analog inputs? I thought the word length depended only on the converters; a friend told me that it's more than the converters and that even with standalone 24-bit converters, 4 bits would be truncated when I connect to the S/PDIF input on my 20-bit machine. Is that true?

Jason Turetsky via e-mail

Jason—Actually, you have a 16-bit machine with 20-bit converters. The VS-880EX's converters can encode audio as a 20-bit datastream, and the S/PDIF input can accept 24-bit digital audio, but the recording device is only capable of recording and storing 16-bit files. So if you were to add a set of 24-bit converters, you would still end up with 16-bit recordings. The other bits would be truncated, with dither (a type of noise) added to eliminate the resulting artifacts (such as clicks and pops).

CAN'T GET ENOUGH OF EM?



ONLINE THIS MONTH:

- Current issue contents
 Get text files for every story.
- EM article archives

Download the text of past features, columns, and reviews—for free!

• EM links



The emlinks icon in various articles indicates that we have provided online audio or video examples for those stories. The example files will be posted on the first day of each month.

Visit us on the Web at www.emusician.com,

the online home of Electronic Musician.

SERVICES FOR EM READERS:

- Free reader service! Our reader-service card is now online. Get the product information
 you need directly from manufacturers. It's quick and easy—no more mailing and waiting.
- You can subscribe to Electronic Musician, Onstage, and Remix or get help with your existing subscription.
- . Want to work at EM? Check out our employment opportunities online.

That said, you still are likely to get better audio quality with good 20- or 24-bit converters than with equally good 16-bit converters, because you can run a hotter signal into the higher-bit-rate converters before digital clipping occurs. In other words, the dynamic range is greater for a 20-bit converter than for a 16-bit converter and still greater for a 24-bit converter.

To understand why a higher bit rate could help even when you ultimately record 16-bit files, keep in mind that a digital device does not record all signals equally; hotter signals use more bits, and softer signals use fewer bits. So a 16-bit recorder might record a soft passage using only, say, 12 or 13 bits, whereas a loud passage might use 15 or 16 bits. If you crank up the signal to compensate for the soft passages, louder passages will overload the converter, resulting in ugly digital clipping. By using a 20- or 24-bit converter, you can use a hotter signal before clipping, and you can afford to lose a few bits on the softer signals and still get a true 16-bit recording (that is, one that uses all 16 bits). That's why Roland put 20-bit converters on a 16-bit machine.

If you buy really good outboard 24-bit converters (they are not all equal), you could further improve the sound, not only because 24-bit converters have more dynamic range but also because the converters themselves might well be of better quality than the converters in the VS-880EX. Also, the outboard converters might have a better dithering

algorithm than that which Roland uses in the VS-880EX converters. If so, you can have the 24-bit converters deliver 16-bit audio via S/PDIF using the outboard unit's superior dithering.

Unless you actually try that yourself, you won't know whether the difference is significant enough to justify the cost of 24-bit converters. Either way, remember that the extra bits greater than 16 will not get recorded in the VS-880EX.—Steve O.

ERROR LOG

September 2001, "Web Page," p. 30: Wordlab's Web site was listed incorrectly. It is www.wordlab.com.

October 2001, "Production Values: Cellular Electronica," p. 95: Due to a change in Internet service providers, the Solid States Web page is now located at www.geocities.com/splattercell.

October 2001, "Quick Picks," p. 160: Dan Dean Solo Winds is distributed by Dan Dean Productions, Inc.; tel. (206) 232-6191; e-mail dandean@dandeanpromo.com; Web http://dandeanpro.com.

WE WELCOME YOUR FEEDBACK.

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



TASCAM GigaStudio:

NEW! GigaStudio V2.5

Now Compatible with Windows 2000/Windows XP!







GigaStudio, GigaSampler, QuickSound and NFX are trademarks of TASCAM. All specifications subject to change without notice.

www.tascam.com

All copyrights are the property of their respective holders



File View Help

Giga Sound Library Sampler



TASCAM/Conexant GM150/GM500 General MIDI Kits

You've never heard General MIDI like this! Two different collections (150MB and 500MB) of multimegabyte instruments, including a complete set of acoustic instruments and synthesizer textures.



TASCAM/Gary Garritan GigaHarp

📓 🊁 💄 - 🖹 🗯 🚾 📆 📝 k?

100

The sound of angels! Every string of a Salvi Pedal Harp sampled in stereo representing seven pedals, four attacks/velocities per string, two harmonics per string, glissando, hand-dampening and muffling.



TASCAM/Jim Corrigan Nashville High-Strung Guitars

One of the coolest, most playable acoustic guitar collections for Giga. Recorded with incredible quality, this totally authentic collection of up and down strums and dynamically playable single strings for solo parts represents the sound of Nashville at its finest.



TASCAM/Scarbee J-Fingered Bass

NEW! 1046 samples are dedicated to each of the 3 pick-up settings, providing a total of 3138 samples (1.15 GB)! The musicality of this handmade Celinder J Update 4 is expressed in every hammer-on, pull-off, grace-note, staccato-release and slide. Amazing!



TASCAM/Peter Ewers Symphonic Organ

The entire, historic, grand La Madeleine, Paris cathedral and the Cavaillé-Coll organ for GigaStudio! For the first time ever in any sampled pipe organ, the original cathedral ambiance is included via release triggered samples.



TASCAM/Larry Seyer Acoustic Bass

Over 500 MB in size, every note of every string sampled in stereo at 4 velocities with no loops. Features finger-damped staccato release resonance samples that will play on the note-up (release) and body resonance volume control, fast and slow up/down slides, riffs, special effects, and more.

The World's Biggest, Fastest,



e don't like to brag, but there's no question: TASCAM GigaStudio offers the very best sample playback of any sampler, hardware or software, ever made. The reason is simple: it's the only sampler that employs a patented technology allowing samples to stream from your PC's hard drive instead of being limited to RAM storage. The result is amazing: you can access up to 160 voices of HUGE samples (over four gigabytes in size), with detail, realism and sonic quality blows away any other sampler. Period.

As a performance tool, GigaStudio rules. Its incredibly low latency when accessed with any GSIF computer interface allows for fast, tight musical performances that are indistinguishable from playing a "real" instrument. Plus, GigaStudio's QuickSound' technology enables instant location and previewing of samples and instruments in real-time. Its zero-latency NFX' effects provide professional-quality signal processing for your samples. And if you need great sound libraries, the world's finest have been created expressly for GigaStudio. Also, your Akai samples will automatically be read, and you can easily convert other sample files into the Giga format.

So if you're into the very best that sampling technology has to offer, get into Giga. Visit your TASCAM dealer or check it out online at www.tascam.com, because when it comes to sampling, bigger and faster is always better. Period.

There are hundreds of sample libraries that have been developed specifically to take advantage of Giga's streaming technology. Here's a small selection of the best.



TASCAM/Matt Ragan Max Strength Acoustic Guitar

The beautiful, clear tone of a massively multi-sampled Martin 000-16. More than 1,200 discreet, unlooped samples are dedicated to the instrument, providing more than a gigabyte of incredible realism with hammer-ons, pull-offs, palm mutes, release-damps and more.



Bigga Giggas/ Post Harpsichords I

Two antique harpsichords captured in every detail using world-class microphones and mastered originally in 24-bit audio. This library is perfect for keyboard purists seeking to reproduce the great early keyboard compositions on the instruments for which they were written.



Q Up Arts/Symphonic Fields Forever

Beautifully evocative solo and small section orchestral instruments. Perfect for both Pop and Classical orchestration as well as acoustic textures. Features superbly recorded multisamples of celli, violins, choir, flute, bassoon, tuba, double basses, clarinet and more.



Bigga Giggas/ Harmonica Essentials

Turn your Giga system into a professional blues harmonica player! Acoustic and electric harp in 8 keys and 4 tempos, with over 1100 licks,with effect banks in each of the keys to help fill in between licks.



Q Up Arts/Psychic Horns by Jason Miles

The killer collection of brass sections of stereo trumpet, tenor sax and trombone. Includes long and short sustains, loops, riffs, swells, falls, and stabs. For Pop. R&B, Funk, Jazz...if a brass section can play it, you can too!



Sonic Implants/ Drum Series 1

From the real to the surreal, these drums sound amazing. All drums and cymbals are recorded in stereo, with no loops, and with heavily multi-velocity. Even the snares are sampled at multiple places on the drum. Includes 250 drumkits and instruments.



Bigga Giggas/Sune's L100 Hammond

Every note of this great-sounding organ's 9 drawbar settings, recorded in extremely long looped samples, with fully controllable virtual drawbars in GigaStudio.



Q Up Arts/ Heavy Guitars

A grungy, harsh, ruthless collection of guitar samples... leads, mutes, scrapes, scratches, power chords, slides, feedback, harmonics and more.

Bonus 60Hz hum sample included on CD-ROMs. Rock on!



Sonic Implants/ Amps & Pickups

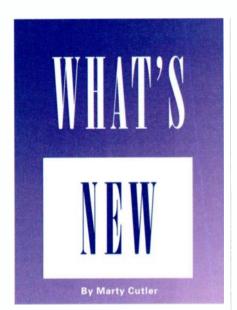
The guitar and bass collection you've been waiting for! Collection includes acoustic guitars, Les Paul power rock, vintage Guild, Paul Reed Smith Electric, 12-string Rickenbacker, Spector Slap Bass, Hofner Beatle Bass, Fender Jazz Bass and more.













SHURE KSM27

hure's KSM27 (\$575) cardioid condenser microphone offers low self-Onoise and a wide dynamic range. The manufacturer also claims a frequency response of 20 Hz to 20 kHz.

The KSM27 features a 1-inch ultrathin diaphragm and Class A transformerless preamp circuitry for eliminating crossover distortion. The package includes a rubber-isolated, external-locking shockmount and a velveteen carrying pouch. Shure, Inc.; tel. (800) 25-SHURE or (847) 866-2200: e-mail info@shure.com: Web www.shure.com.

BOSS BR-532

The Boss BR-532 (\$495) 4-track portable digital studio plays sampled rhythm patterns stored in ROM and lets you record two tracks at a time. However, all four tracks and a stereo drum track can play simultaneously. The BR-532 gives you 32 virtual tracks and allows you to bounce four tracks to a stereo virtual track or to a single track.

The BR-532 uses Smart-

Media cards for storage. The package includes a 32 MB card, but the BR-532 will accept cards as large as 128 MB. With a SmartMedia card reader, you can transfer your tracks to a computer for additional editing. Onboard editing features include Copy, Move, Cut, and Paste. You get one Locator point at a time and a single level of undo.

The recorder comes with two independent multi-effects processors. Effects include guitar-amp modeling, acoustic guitar

and bass simulators, delay, reverb, chorus, and EQ. You can apply effects while recording or during mixdown.

The BR-532 sports a built-in microphone, an XLR mic input, an unbalanced 1/4-inch high-impedance mic input, an unbalanced 1/4-inch high-impedance guitar or bass input, a pair of analog RCA inputs and outputs, a 1/4-inch stereo headphone iack, an optical S/PDIF output, and a MIDI Out port, Roland Corporation U.S.; tel. (323) 890-3700: Web www.bossus.com.

GODIN GUITARS MULTIAC JAZZ

ecause of its humbucking and piezoelectric pickups, the Godin Guitars Multiac Jazz (\$2,295) combines the classic hollow-body sound of an electric jazz guitar with the qualities of an acoustic instrument. At the same time, the guitar offers direct access to MIDI guitar converters and Roland virtual-quitar processors.

The Multiac Jazz supports hexaphonic string output and MIDI access from its 13-pin output jack. To attain a more traditional jazz-guitar sound, the instrument sports a humbucking pickup mounted at the neck position. You can blend the output of the hexaphonic pickups with the humbucker to add a bit of definition to the typically mellow jazz-guitar sound. The guitar's upper bout offers a set of faders for preamp and EQ adjustments.

In addition to the 13-pin jack for the hexaphonic pickup outputs, the Multiac Jazz has one unbalanced 14-inch output for each of the guitar's humbucking and piezoelectric pickups. La Si Do, Inc./Godin Guitars; tel. (514) 457-7977; e-mail sales@ lasido.com; Web www.lasido.com or www.godinguitars.com.



MAKE TRACKS

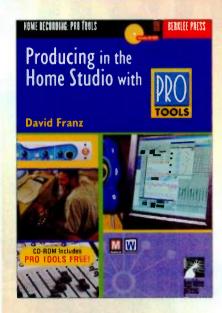


Echo's new LAYLA LapTop and MONA LapTop recording sytems easily connect to most Macintosh and Windows notebooks.



phone: 1.805.684.4593

GET SMART A A A



▲ BERKLEE PRESS

avid Franz's Producing in the Home Studio with Pro Tools (\$34.95) is a detailed, practical guide to recording in the personal studio. Although the book's focal point is Digidesign's suite of digital-audio recording tools, Franz covers important, related, nontechnical topics such as how to run a recording session, how to set up a studio, and recording budgets.

You also get application-specific instruction: the book provides a wealth of keystroke shortcuts and detailed technical information about Pro Tools' inner workings, including using the system's MIDI features for sequencing. Berklee Press; tel. (617) 266-2146; Web www.berkleepress.com.

SCARECROW PRESS

lizabeth C. Axford's Song Sheets to Software (\$36.95) is an eclectic sourcebook for using your computer as a music-education tool. The book begins with a history of song sheets, with discussions of early American folk and religious music as well as more contemporary forms.

Ensuing chapters cover copyright laws and music software. Song Sheets

to Software finishes with a listing of more than 6,000 Web sites for music. The book concludes with a glossary of technical terms. Scarecrow Press; tel. (800) 462-6420 or (301) 459-3366; e-mail slambert@scarecrowpress.com; Web www.scarecrowpress.com.

HAL LEONARD

he worlds of MIDI and digital-audio recording are inextricably woven together. As such, novice studio owners can find themselves awash in misinformation, misleading equipment specifications and requirements, and generally confusing advice.

Thankfully, How MIDI Works (\$29.99) isn't another dry exegesis of MIDI protocol. Author Peter Lawrence Alexander



guides beginners through the process of building a MIDI and digital-audio system by offering practical advice about important aspects of the modern personal studio. The book is peppered with wry observations, anecdotes, and object lessons, and it contains numerous illustrations, software screen shots, and diagrams.

Topics include audio cards and drivers, MIDI keyboards, sequencing and recording, multiport MIDI interfaces, and software synthesizers and sam-

plers. The book's chapter about understanding minimum system requirements covers everything from available audio tracks to video-card conflicts. Hal Leonard Corp.; tel. (414) 774-3630; Web www.musicdispatch.com.

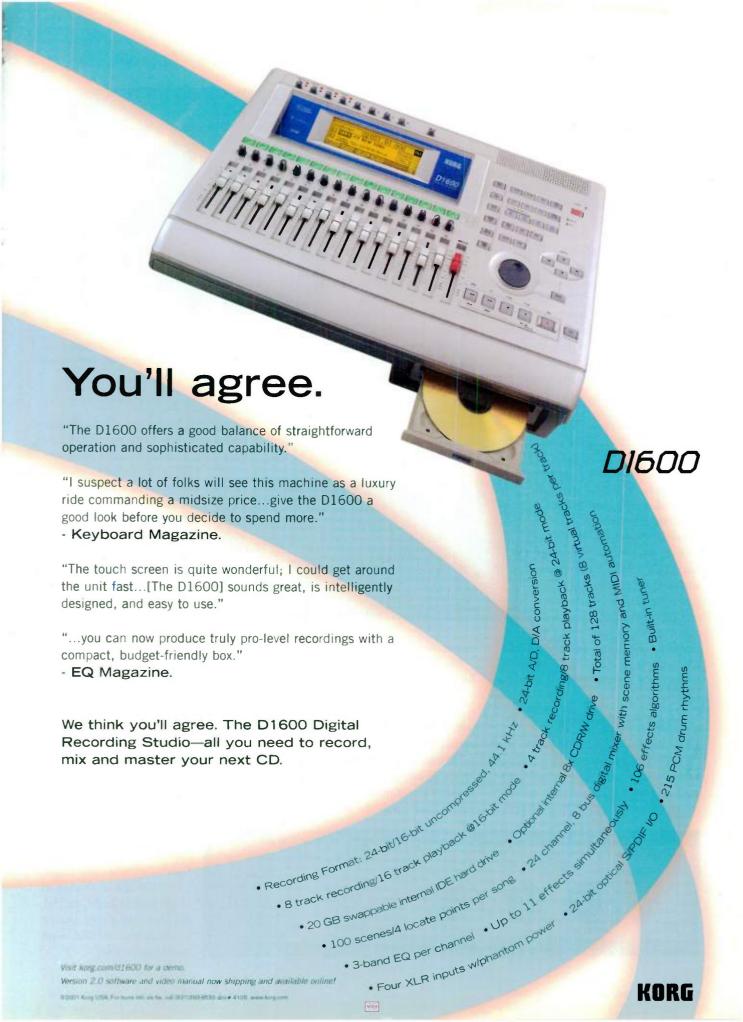
T EMEDIA

Bass Method, vol. 1 (\$59.95), provides more than 100 bass-guitar lessons on CD-ROM for Macintosh and Windows computers. You also get more than 200 songs and exercises, all of which feature full-motion video and audio tracks. An animated fretboard helps illustrate proper fingerings as the music plays back.

The skills covered in Bass Method, vol. 1, range from fundamentals, such as simple bass lines and tuning, to advanced topics, including triads, fills, syncopation, and reading (including tablature and standard notation). In addition to audio tracks, the CD-ROM provides MIDI versions of the performances, which lets students vary tempos to suit their pace. The audio portion offers a bass-only track for closer inspection and a band track without bass for playing along.

Windows requirements are any Pentium, 16 MB of RAM, and Windows 95 or 2000. For Mac users, any Power PC with 16 MB of RAM and OS 7.53 or later will suffice. EMedia; tel. (888) 363-3424; e-mail custserv@emediamusic.com; Web www.emediamusic.com.





► IZOTOPE OZONE

DirectX plug-in that provides a suite of mastering tools and models analog circuitry. Ozone's biggest draw is its multiband dynamics processing, which includes compression, expansion, and limiting (four bands in all). A real-time graphic display illustrates the effects of processing on each band.

The Multiband Harmonic Exciter is based on analog tube-saturation models and features adjustable crossover points. A multiband parametric EQ offers soft saturation modeling and a spectrum display. A separate spectrum analyzer, with real-time and averaging modes, is also included.

Ozone comes with a reverb that gives you control of room size, frequency cut-

off, and damping; a stereo phase meter; tools for adjusting the width of the stereo image (including multiband delays); a loudness maximizer; and an interface for determining the plug-in's signal flow and order of effects.

Ozone also keeps a list of all of your changes, so you can easily recall earlier adjustments. The plug-in uses 64-bit processing in its digital signal processing algorithms.

To use *Ozone*, you will need a Pentium II/ 450 MHz with 64 MB of RAM; Windows 95, 98, NT, 2000, ME, or XP; and a DirectX-

ANGLE MATINETS OFFICE OF STREET OF S

compatible host application. Izotope, Inc.; e-mail izotope@izotope.com; Web www .izotope.com.

EMAGIC EMI 2/8

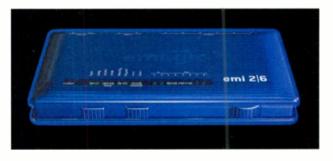
magic has released the emi 2/6 (\$499), a USB 24-bit digital-audio interface.

The interface delivers 44.1 or 48 kHz audio with six channels of playback and two simultaneous recording channels.

Housed in translucent blue plastic, the interface provides coaxial S/PDIF I/O. The unit's two analog inputs and six outputs are unbalanced RCA connectors. The emi 2/6 is powered from a USB port and is compatible with all

powered USB hubs. For situations in which you're using several USB-powered devices and running them all off of the

same hub, the emi 2/6 can be powered from an external power supply (available as an option from Emagic) so that the unit



can maintain maximum audio quality.

The unit has a %-inch stereo minijack for headphone monitoring and a wheel

for adjusting headphone volume. Emagic claims zero-latency hardware-assisted monitoring for the interface. Additionally,

Emagic offers low-latency ASIO drivers for both Mac and Windows platforms.

The emi 2/6 includes a switch for toggling between digital and analog input; another switch lets it act as the master word-clock source or as a slave to external word clock. An intelligent resampling feature allows the unit to lock to any incoming word-

clock signal. Emagic USA; tel. (530) 477-1051; e-mail emagic@emagicusa.com; Web www.emagic.de.

▼ SUMMIT AUDIO TD-100

ummit Audio's TD-100 (\$495) is a half-rackspace instrument preamp and direct box. An internal high-voltage power supply drives the unit, which integrates a 12AX7a/ECC83 tube

with a discrete transistor circuit at the output stage.

The input stage impedance knob is continuously variable from 10 k Ω to 2 M Ω . That lets you precisely tailor your instrument's input level. You can also plug in

a set of headphones and use the TD-100 for private practice. Front-panel signal and peak LEDs allow you to monitor the input.

The TD-100 has an XLR mic-level input, an unbalanced ¼-inch input, a balanced

%-inch line-level output, a polarity switch, and a ground-lift switch for eliminating noise from your signal. The output gain control has a range of 24 dB. Summit Audio, Inc.; tel. (831) 464-2448; e-mail sound@summitaudio.com; Web www.summitaudio.com.



Yeah, the \$500 looks like a lot of other 15-inch 2-way SR loudspeakers but it sure doesn't sound like other 15-inch 2-way speakers. This one kicks so much butt you'd swear it was wearing army boots and is so accurate you can hear the tiny piece of roast beef stuck between the singer's teeth.



A alk into a music store and you'll encounter a whole wall of 15-inch, 2-way speakers - including our \$500. Check out the price tags and your reaction may be, "Where does Mackie get off charging 20-25% more?"

Well, Greg Mackie figured the world didn't need yet another OK-sounding commodity-grade speaker. So instead of starting with a pricepoint, we started with a goal: make the best-sounding, widest-dispersion, highestaccuracy 15-inch 2-way loudspeaker yet.

Of course, owning RCF", one of the world's most advan-

ced transducer design and manufacturing facilities didn't hurt either.

We used their latest damped titanium compression driver and a new ultra-efficient LF transducer with heat-resistant Inside/Outside voice coil. Then we combined it with a lowimpedance, low-distortion crossover and tossed in some sophisticated electronic protection circuits.

The result is 500-watt RMS power handling and I27dB SPL output with smooth frequency response and superb horizontal and vertical dispersion — so all of your audience hears the same great sound.

If you want to sound as good as

you possibly can — and if you're willing to pay a bit more to get unparalled accuracy, you're ready for the S500.

The S500 uses a new

RCF Precision™ titanium

compression driver with a

3-slot optimized geometry

phase plug that significantly smooths high-end

frequency response and

provides exceptional cou-

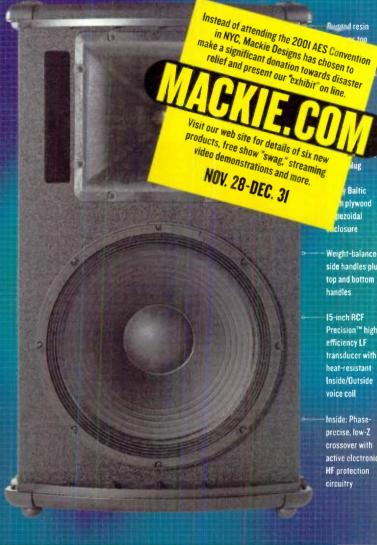
pling with the 75'x65'

exponential horn.

Get your ears pressure-washed at a Mackie dealer soon.

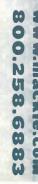
PERFECT MATCH: THE M-2600 POWER AMPLIFIER

- 2600W 4-ohms bridged I300+I300W 2-ohm load 850+850W 4-ohm load • 500+500W 8-ohm load • Fast Recovery™ circuitry
- Front-to-side T-Tunnel fan cooling via mirror-polished heat sinks
- Variable low-cut filters
 Switchable limiter circuit
 60Hz/90Hz/ 120Hz electronic subwoofer crossover • 5-way and Speakon® outputs . Signal present, OL, status, temp & short circuit LED displays



Inside: Phaseprecise, low-Z crossover with active electronic HF protection

MACKIE.



SOUND ADVICE A A A

VEBERSCHALL

n spite of the emergence of 24-bit, 96 kHz audio, some electronic musicians never get over their fondness for the grungy, raw sound of low-fidelity samples. Ueberschall's 8 Bit Stylez (\$99.95) offers a collection of grooves, drum loops, and effects created with the Commodore C-64's notorious SID MOS 6581 chip. With the package, you get an Akai-format CD-ROM and an audio CD.

The collection offers 40 construction kits, licks, music, game effects, machine



voices, and more than 1,000 single drum and instrument sounds. Ueberschall targets the sounds for house, hip-hop, drum 'n' bass, two-step garage, and other contemporary electronic dance-music styles. East West (distributor); tel. (310) 271-6969; e-mail sales@eastwestsounds.com; Webwww.soundsonline.com.

SONIC IMPLANTS

ore than 14 MB of fuzz-toned guitars constitute Sonic Implants'
Creamy Fuzz Guitar 1—Smooth
Leads (SoundFont; \$19.95). The assortment includes a range of guitaristic effects, such as muted notes, harmonics, hammer-ons, and feedback.
Also available are multiple-Velocity patches that switch between the sampled articulations. Sonic Implants used

a custom-designed Fender Stratocaster, a Mesa/Boogie amp, and a Fulltone Soul-Bender fuzz box to produce the samples.

One problem with creating convincing sampled distorted-guitar parts is the interaction between the strings. To that end, Sonic Implants provides Creamy Fuzz Guitar 2 (SoundFont; \$19.95). That collection includes major, minor, and suspended chords strummed up and down, as well as V7, V9, and power chords strummed downward. Sonic Implants Network; tel. (781) 641-0063; e-mail studio@sonicimplants.com; Web www.sonicimplants.com.

MEDIA

or its GForce M-Tron VST sample-playback instrument, Gmedia brings you a new compilation of sounds, Tape Banks (\$49). The company tracked down, prepared, and recorded a number of mellotron-type instruments, including the Birotron and the Chamberlin. Each sound in a mellotron instrument uses 35 individual tapes, and each tape contains three sounds. In many cases, the tapes had to be prepared by hand for sampling.

Tape Banks includes the sound of wine glasses, clarinet, double bass, steel-string guitar, various choirs, Chamberlin harp, and Birotron organs. Q Up Arts (distributor); tel. (800) 454-4563



or (801) 486-8225; e-mail gforce@gmedia.com; Web www.gmedia.com/gforce.



EASTWEST

he guitar work of studio ace Jeff "Skunk" Baxter, a veteran of Steely Dan and the Doobie Brothers, is presented on *Skunkworks* (audio and WAV, \$99.95; Akai, \$199.95). Baxter dishes up licks and rhythm parts on a number of guitars in the two-CD set. The styles range from acoustic-based music to jazz to heavy metal. East West; tel. (310) 271-6969; e-mail sales @eastwestsounds.com; Web www.soundsonline.com.

BIG FISH AUDIO

Big Fish Audio's Guitar Studio (\$99.95) is a two-CD set of guitar licks, riffs, intros, and endings that covers various styles, including alternative rock, jazz, blues, metal, and funk music. Performance Loops Drums 2 (\$99.95) is a two-CD collection of drum loops that were culled from complete performances. Included are hits, fills, and variations that will help you to generate realistic drum parts.

Both collections include a CD of audio tracks and a CD-ROM of *Acid*-compatible WAV files for your looping enjoyment. Big Fish Audio; tel. (800) 717-FISH or (818) 768-6115; e-mail info@bigfishaudio.com; Web www.bigfishaudio.com. **⊕**



THE STUDIO OF HOURS FOR 20 MINUTES*



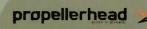
In case you didn't already know: Propellerhead Reason is a beast of a music system. A self-contained, all-in-one software studio in the shape of a classic studio rack, filled to the brim with all the gear you could ever dream of: Analog synths, Samplers, Step-time drum machines, ReCycle-loop players, Mixers, Effects and a lightning fast multi-track sequencer. You want even more machines? No problem. Reason lets you create as many of each instrument or effect as your computer can take, so you can build yourself a serious monster rack. If you ever wished you had eleven samplers and eight compressors, Reason is for you.

Reason lets you make more music. More often. Reason looks great, sounds even better, and has more knobs and controls than a nuclear power plant. But it's Reason's simplicity that makes all the difference. Just start it up, get friendly with the machines, and you will find yourself making music within three minutes. Getting started is that simple. And so is getting hooked. Once you get bitten by Reason you'll find it hard to quit, but when you have to, just save your song and all your sounds and settings will be saved along with it, so you can pick up exactly where you left off, whenever you want to.

Reason makes sense. Reason is a fast, flexible power-pack that acts on your every command. In fact, it's so flexible it can be tailored to suit your specific needs. Reason easily adapts to you and your working methods, use it as an all-in-one midi studio in which you create and mix your own tracks, or sync it to an audio sequencer and process the outputs with plug-in effects. You can even play Reason's instruments from another MIDI sequencer. And we're still just scraping the surface. With patching powers rivaling modular synthesizers, full graphical automation, and millions of other features you didn't even know existed, you'll never run out of options. With Reason, you make the rules. And the music.

*How to obtain your 20 minutes of free Propellerhead Reason studio time: Point your browser to www.propellerheads.se/reasondemo, download the Reason 1.0 demo, install it, and you're rolling! The demo is just as powerful as the full version, but it only works for 20 minutes at a time. It is a sweet 20 minutes, though.

THE REASON RACK OT MIDI IN DEVICE 64 CHANNEL AUDIO INTERFACE OF MIXER DE EFFECTS OF SUBTRACTOR POLYPHONIC SYNTHESIZER 65 NN19 DIGITAL SAMPLER OF EFFECTS OF DRIEK LOOP PLAYER OF DEVICES CAN BE FOLDED IN 00 EFFECTS OF MATRIX PATTERN SEQUENCER 15 PEDRUM DRUM MACHINE 1/2 EFFECTS 16 REBIRTH INPUT MACHINE 1/4 THE REASON SEQUENCER 15 TRANSPORT



www.propellerneads.se

TECH PAGE

Legends of the Small

HI HILL INT CO

he adage that technology develops at an ac- Carbon nanotubes celerated rate seems all too true in the realm of microelectronics-soon to be called nanoelectronics. As I discussed in "Tech Page: Faster, Smaller, Better," in the October 2001 issue, IBM and Intel recently announced breakthroughs in shrinking transistors, breakthroughs that will lead to processors and communications chips far more powerful than those available today. Amazingly, the day that issue went to press, I learned of further developments that will lead to even smaller, faster, and more powerful electronic components.

Those developments are based on carbon nanotubes, in which individual carbon atoms are arranged to form hollow tubes. Scientists at Delft University of Technology in the Netherlands have succeeded in building a transistor from a single nanotube, which measures one nanometer (one billionth of a meter) in diameter—about 10,000 times thinner than a human hair. Using an atomic-force microscope, which can move individual atoms, the Delft team pushed on the nanotube, causing it to buckle in two places. Such deformi-

ties restrict the flow of electrons, letting a single electron pass through the tube at a time. That electron can be used to turn the device on or off. Conventional transistors require hundreds to millions of electrons to perform the same task.

IBM researchers also have been working to develop useful carbonnanotube transistors. One hurdle to practical application of that technology has been reliable replication. Depending on their size and shape, nanotubes can behave as if they are metallic (conducting) or semiconducting. Previous methods of forming large numbers of nanotubes created a mixture of metallic and semiconducting types that stuck together to form ropes or bundles. Those bundles had to be separated manually to isolate the semiconducting nanotubes required to make transistors. That's fine for experimentation but far too slow and tedious for mass production.

promise

single-molecule

electronics.

To solve the problem, the IBM team developed a method of constructive destruction that selectively destroys the metallic nanotubes in a bundle. Mixed metallic and semiconducting bundles are deposited on a silicon-oxide wafer, and metal electrodes are formed over the nanotubes. Those electrodes "turn off" the semiconducting nanotubes, preventing any electrons from flowing through them. The metallic nanotubes are left unprotected, and applying an appropriate voltage to the wafer destroys them,

leaving the semiconducting variety untouched.

IBM's ultimate goal is to create a useful electronic device out of nanotubes, and that goal is close at hand. The company recently announced that it has built a voltage inverter from a single carbon nanotube—the world's first singlemolecule logic circuit. Also known as a NOT gate, a voltage inverter is one of the fundamental logic circuits that form the basis of all computers. (The others are AND and OR gates.)

To achieve that monumental feat, the IBM team created an n-type nanotube transistor, in which electrons carry the elec-

> trical current. Until now all nanotube transistors have been p-type, in which electron-deficient areas called holes carry the current. Voltage inverters consist of both types of transistors, and IBM found a way to convert a segment of a single nanotube from p-type to n-type, leading directly to the voltage inverter (see Fig. 1). More important, the inverter's gain (the ratio of output to input amplitude) is greater than one, which is essential for assembling gates into useful electronic circuits that will find their way into smaller and more powerful tools for electronic musicians.

> For more information on nanotechnology, see "Tech Page: Quantum Mirage" in the May 2000 issue and "Tech Page: Nanocomputers" in the June 1996 issue. @

We welcome your feedback, E-mail us at emeditorial@

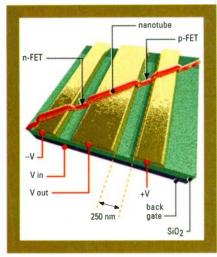
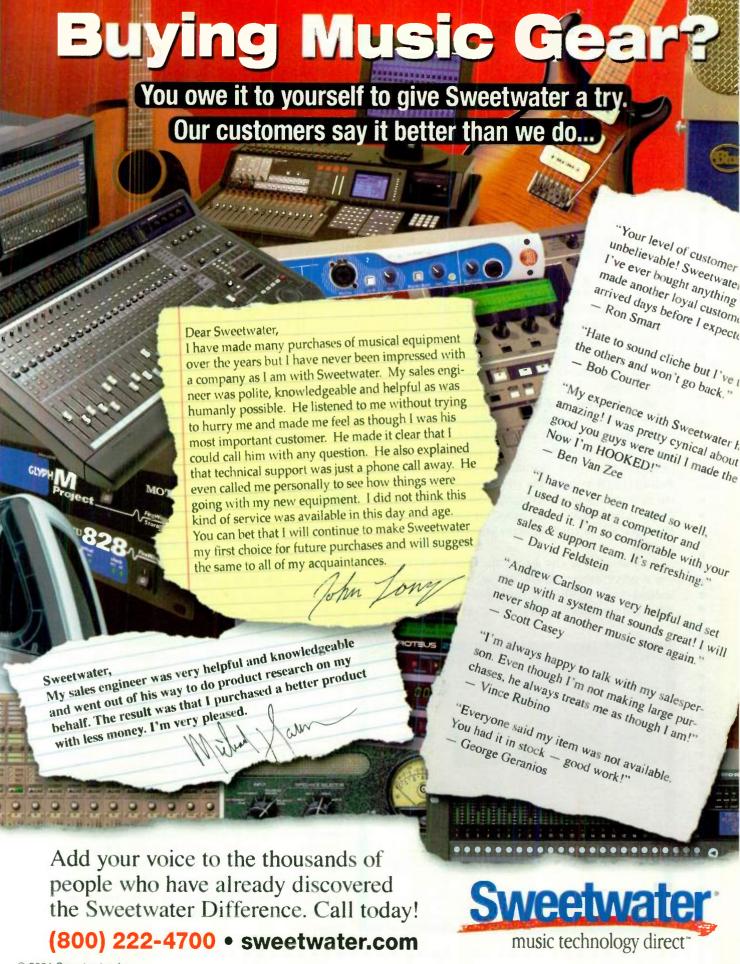


FIG. 1: In IBM's single-molecule voltage inverter, part of a carbon nanotube (in red across gold electrical contacts) is converted to an n-type transistor; the other section remains a p-type transistor. The output voltage is greater than the input voltage, which is essential for constructing useful computer circuits.



WBB PAGE

By Gino Robair



WEB SITE OF THE MONTH

f you're looking for information about American composers and musicians, check out NewMusicBox (www newmusicbox.org). Serving as the Web magazine of the American Music Center (www.amc.net), which composer Lou Harrison once described as a "central information booth" for American music, NewMusicBox is well designed and easy to navigate—a helpful feature, because the site is rich in content.

Although NewMusicBox's topics pertain to new contemporary American music (which includes the work of deceased composers such as John Cage and Harry Partch as well as the music of living composers such as Steve Reich and the Kronos Quartet), it is far more inclusive than you might imagine. The artists covered range from the conservative to the extreme, from composer John Adams to vocalist Diamanda Galas. The curators of New-MusicBox aim to cover as many styles and genres as possible.

NewMusicBox is also a good model for a sticky site, one in which visitors will stay awhile. To begin with, it's updated regularly. The site hosts streaming audio and video, and links abound. The interview section, In the First

Itanue 29 - Vol. 3, No. 5

New Music EBox

Tournel sy, September 18, 2981

Tournel sy, September 18, 2981

Tournel sy Septem

Person, provides a text transcript (also available as an Adobe Acrobat PDF file) and a QuickTime movie of the interview. Audio examples of contemporary recordings in the SoundTracks sections are presented in RealAudio format. Contributing artists can bring up interesting (and sometimes controversial) topics in the section called In the Second Person, which also features a forum for visitor feedback. Recent topics include "Your Career or Your Life" by John Luther Adams, "Finding Your Voice" by Keith Corbin, and "The World Trade Center Tragedy and New Music" by NewMusicBox editor Frank J. Oteri.

You also get current events in the News section, composer and performer perspectives from In the Third Person, a concert calendar of American works in Hear and Now, and Hymn and Fuguing Tune, in which a group of artists are asked to respond to a question. Rather than serving as a source of jingoistic pride, NewMusicBox provides a resource for information about creative music emanating from around the country.



DOTDOTDOT.COM

The **Freesound** mailing list focuses on freeware, shareware, and topics related to unusual sound-design software and techniques. Some of the programs discussed are Tom Erbe's *SoundHack* (see the July 2000 "Web Page"), Audio Ease's *Thonk*, and Phil Burk's Java-based application program interface, JSyn (see the June 2000 "Web

Page"). You can join the Freesound list by sending an e-mail to majordomo@shoko.calarts.edu with "subscribe freesound" or "subscribe freesound-digest" in the body of the message. . . . Owners of vintage Korg MS- and PS-series analog synthesizers should take a look at Benjamin Ward's Korg Kornukopia (www.benward.net/korg). The site offers transcriptions of the user and service manuals (complete with typographic and technical mistakes), user tips and techniques, and fan-related items such as brochures and photos of the wonderful late '70s instruments. . . . An interesting and reliable source for older electronic instruments is the Vintage Electric Musical Instrument Auctions (VEMIA; www .vemia.co.uk). Located in the United Kingdom and administered by Peter Forrest, author of the A-Z of Analogue Synthesizers, VEMIA's auction list typically includes synthesizers, amplifiers, microphones, effects, and drum machines as well as odd and unusual items. Well-known customers of the site include Brian Eno and members of Oasis.



Certainly, one of the most outstanding sites for classicalmusic fans is Andante (www.andante.com). The site's creators hope that Andante will become *the* online source of information for classical-music enthusiasts, and so far they are headed in the right direction.

Andante provides eight general areas to explore: Musicroom, Magazine, Calendar, Directories, Reference, Profiles, Learning, and Boutique. To hear music, head directly to the Musicroom, where you can link into Andante radio for streaming audio or view exclusive Webcasts of important performances. For news and information, Magazine and Calendar offer up-to-date listings and links. The Magazine area includes relevant news, interviews, and concert and CD reviews. The Calendar section covers hundreds of concert listings worldwide and includes a search engine for searching by date, key word, country, and venue.

Directories offers links to no less than 12,000 Web sites dedicated to classical music. The links are grouped by categories such as Composers, Ensembles, Festivals, and New Music Links. That section alone is worth bookmarking.

From the Reference section, you have access to the Concise Grove Dictionary of Music, the New York Review of Books, and New Kobbé's Opera Book, among other resources. Included under the Profiles heading are previews of upcoming projects, such as Andante's planned partnership with IRCAM, the renowned research center in the Centre Georges-Pompidou in Paris, France.





Boutique features Andante's reissues of rare and historically important recordings. Although still in the works, the Learning section will eventually include online educational resources.

Unlike other venues for classical music, Andante is not afraid to cover contemporary composers and performers. For example, Pierre Boulez, known as much for his interpretations of major symphonic works as for his own challenging compositions, was the featured artist on the site at the time of this writing. Whether you're a classical-music buff or just getting your feet wet in the genre, Andante is an important destination for your browser.



DOWNLOAD OF THE MONTH

More than just a source of free samples, AnalogueSamples .com (www.analoguesamples.com) is a community of synthesizer enthusiasts willing to share its sonic discoveries with others. Launched in 1999 by Stefan Walter and Björn Fogelberg, both of Sweden, AnalogueSamples.com contains thousands of interesting sounds.

The samples are grouped into 14 categories, including drums, leads, keys, pads, brass, and bass. Once you choose a category, the sounds are presented in a list, with useful information about each sample: name, rating (based on votes from site visitors), number of files available, type of synth used, description of the sound, and file size. A RealAudio version of each sample is provided, so you can preview the sound before you download it.

On AnalogueSamples.com, you can just as easily view samples by synth type. If you have ever wondered what kind of sounds a Serge modular can make, this site will let you hear one. Simply scroll down the long menu of synthesizers until you find one you want. The list includes common instruments (such as the ARP Odyssey

WEB PAGE

and Oberheim Xpander) and rare ones (Buchła 200-series and E-mu modulars). Besides a link to related samples, each synth page includes a photo, a brief description of the instrument, and a link to a related site if available. The site also lets you rate the samples for the synth you chose.

Rounding out AnalogueSamples.com are a few other notable pages. Documentation for older synths (including Akai, Korg, Moog, Roland, and Yamaha) and popular chips (CEM 3340 and SSM 2044, for example) can be located among the Manuals pages. At the Store, you can purchase a CD-ROM of Akai-format samples called *Killer Tweaks—Analog FX*, made using Roland System-100 and SH-09 synths.

To use AnalogueSamples.com, you must register, but registration is free. If you're interested in checking out even more sounds, for a \$10 monthly fee, AnalogueSamples.com gives you FTP access to additional samples as well as its entire site.



BAND ON THE WEB

Arriving from the frog planet Kero Kero are the three musicians who form eX-Girl (http://0505.net/ex-girl). Their mission: to save the human race with Kero Kero music, which features unearthly vocals and odd, unpredictable songs. (The word kero is the Japanese equivalent of the frog utterance ribbit.) Back to the Mono Kero is the band's fourth CD and its U.S.-label debut on Ipecac Recordings (www.ipecac.com).

Beyond the sci-fi trappings, eX-Girl, at first blush, comes off as a Japanese neo-power-pop trio. But underlying eX-Girl's overt cuteness are staggering vocal parts, clever writing, intricate arrangements, and inspiring musicianship worthy of heavyweights such as Frank Zappa, the Art Bears, and Captain Beefheart's Magic Band.

The trio demonstrates considerable vocal prowess with complex and demanding parts that exploit the dynamic range of the members' voices. For example, eX-Girl may begin a song singing standard rock vocal parts, dissolve into Bulgarian-inspired close harmonies, and then drop into an overdubbed operatic chorus reminiscent of Queen's "Bohemian Rhapsody." Collaborations with progressive-rock legends Gong, Magma,



Hugh Hopper, and Chris Cutler are a testimony of eX-Girls' musicianship.

It is surprising, then, to hear that the members of eX-Girl picked up their instruments for the first time four years ago, when they first formed the band. "They were just singers before forming eX-Girl," says the band's producer and chief collaborator, Hoppy Kamiyama (www22.cds.ne.jp/~inochi/kamiyamania/findex.html). "Kirilo, the leader of eX-Girl, chose the instruments for each member using her sixth sense."

Kirilo's sense was spot on. EX-Girl's guitarist, Chihiro, is as agile at playing rhythmic power chords as she is at twisted melodic lines. Fuzuki has the strength and focus of a Taiko drummer while standing and playing only a floor tom, snare drum, and some cymbals. Kirilo—whose label, Kiki Poo Records (www.kikipoorecords.com), is the home of previous eX-Girl releases—gave herself bass duties. Live, she also plays a small Casio with her foot.

Kamiyama, an internationally renowned musician and producer who has worked with notables such as John Zorn and Marc Ribot, has produced and shared songwriting credits with the band since the beginning. In eX-Girl mythology, he is known as the Frog King. "Outer space is the Utopia where eX-Girl has forever lived with Frog King," Kamiyama says. "I tell them anytime I get a great idea from the Frog God of the entire universe. Then, we realize that we are creating these great songs by means of a fantastic telepathy from planet Kero Kero."

Often the messages come in the form of English lyrics that are delivered in a manner that playfully confuses their meaning. In "Cucumber Surrender," Kirilo delivers her lyrics in a quasi-operatic style that gives its surreal innocence a bit of overt sensuality: "Before you slice him up and make him a meal / Stroke your cucumber / Let him know how you feel / Lettuce bed him with Princess Jalepino / He saved the world of vegetables we know."

Another item that stands out on *Back to the Mono Kero* is eX-Girl's cover of Robin Scott's dance hit, "Pop Musik." The pedestrian four-on-the-floor beat is pushed along by the tight chorus punctuations and dozens of intricate interjections by the vocalists.

The songs on Back to the Mono Kero are rife with so many melodic twists and turns that you may think they result from hours of studio manipulation. However, eX-Girl is adept at delivering its focused performances live and in the studio. "I never edit the songs," Kamiyama says. "It was kind of like making a live recording. I only spent seven days recording and mixing Back to the Mono Kero."

When asked which digital audio workstation he uses to make records, Kamiyama revealed his preference for older technology. "I've never used a computer system to record eX-Girl," he says. "I use a 16-track analog recorder with ½-inch tape. I just sprinkle eX-Girl's sound with strawberry magic called gram pot. That's true, indeed!"

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

This is the only thing missing from your home studio.



- Capture/record digital or analog audio
- Edit tracks/mix/master
- Add dynamic effects (delay, reverb, etc.)
 - Publish to tape, CD or web based delivery

From the people who built the first digital audio interface & MIDI tone module – comes the SD-90 Studio Canvas. Connect this compact unit to your computer via USB and you have a professional quality digital audio workstation. Works with a variety of popular recording/sequencing software. Occupies a very small space. Makes huge amounts of music. Just add your imagination.

AD TO TO TO TO TO TO

Create original music with MIDI tone module

- 1,049 instruments
 - 30 drum sets
- 128 note polyphony
 32 part multi-timbral
 - Use your favorite MIDI controller

Edirol is your complete DeskTop Media Production resource. Check our selection of: MIDI Controllers • USB MIDI Interfaces • USB Digital Audio Interfaces • Digital Audio Software • Amplified Audio Monitors • Digital Video editing and more... Specifications: USB interface to computer • 24bit/48kHz AD/DA converters • Coaxial/optical S/P DIF I/O • 1/4" guitar/mic input • Stereo RCA I/O • 2 mono RCA out • 2 MIDI I/O • GM2/GS compatible • Rich Sound Source selections • ASIO 2.0 (WIN/MAC), MME (WIN), (MAC)

DESKTOP MEDIA PRODUCTION

100100101001100100100 10100011101100101000111



TOOLS FOR SINGERS, SONGWRITERS AND STORYTELLERS

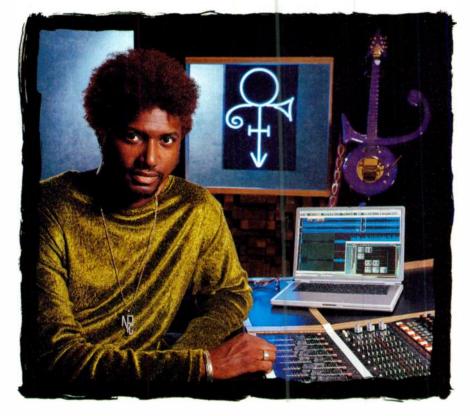
For more info: www.edirol.com

Email: sales@edirol.com

Dealer inquiries welcome.

Toll-Free: 800 380-2580 Voice: 360 594-4273

I'M BIASED



Morris Hayes

Programmer & Keyboardist with Prince & The New Power Generation Producer for Prince's New Power sampling library

Photographed by Mike Woodside at Paisley Park Studios, Minneapolis

There is an intersection between technology and art. It's where things happen.

It's a proving ground. It's where sonic creativity flows on a path of least resistance.

At BIAS, it's where we put our energy. Chances are, it's where you put yours.

Morris Hayes knows that intersection well. As a veteran band member for Prince, and now as the producer for Prince's New Power sampling library, Morris depends upon BIAS audio software products to keep his own sonic creativity flowing: "BIAS gives me what I need — to do what I do. Anything I can hear in my head, BIAS software lets me turn into reality. Simple as that."



Peak™3.0

Edit and process audio faster, more powerfully than any competing software — now for OS X and OS 9.

The world's most popular two-track digital audio editing/processing application for the Macintosh is available with extensive plug-in support [including VST] and unique tools such as LoopSurfer. 32-bit processing delivers pristine audio quality. Integrated Vbox support. Supports Sound Manager plus Apple's powerful new CoreAudio standard, with performance beyond 24-bit / 96kHz.

Versions start at just \$99 [with valuable extra software]



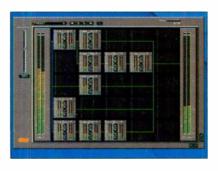
The BIAS family of professional audio tools:

Deck[™] 3.5

The best value in an audio workstation — available soon with OS X and OMF compatibility.

BIAS Deck delivers advanced multitrack editing, mixing, and signal processing — with support for 64 simultaneous tracks, 999 virtual tracks, realtime automated mixing, CoreAudio or ASIO, and VST plug-ins. Timecode support, OMF, and frame-accurate QuickTime sync make Deck VST an ideal audio-post solution for Final Cut Pro, iDVD, Media 100, Avid, Premiere, and other video/DVD editing systems.

Versions start at just \$99 [with valuable extra software]



Vbox[™]1.0

The ultimate multi-effects control environment - millions of sonic combinations, quickly and easily.

On its own — or with Peak, Deck, or any other VST host application — Vbox combines up to dozens or even hundreds of plug-ins per channel, in series, parallel, or series-parallel. Hot-swap plug-ins or instantly mute, solo, mix, and edit parameters in realtime. An amazingly creative tool for music, DJ'ing, audio-post, sound design, and radio. Includes lots of free plug-ins and more.

Just \$129 { Vbox SE is free with Peak VST/TDM & Deck}



BIAS Studio™ bundles

Complete desktop and PowerBook audio solutions.

Now you can get BIAS' advanced professional audio tools — including Peak, Deck, Vbox, and valuable third-party products like Roxio Toast 5 Lite and Waves AudioTrack — bundled together at huge savings. Several BIAS Studio PowerBook Editions are also available, featuring the Digigram VX Pocket PCMCIA card, the ultimate portable audio I/O solution.

BIAS Studio bundles start at just \$179



Thank you, Morris; that's, well, music to our ears. It also pretty much describes our own goals. See, giving you the tools you need to hear what's in your head (and yeah, maybe some stuff you never thought you'd hear) is not our marketing strategy. It's our irrepressible passion. And we do it better than anyone.

Admittedly, we're biased.

But then again, aren't you?

Win Cool Free Stuff!

We're giving away tons of free stuff — an Apple Titanium G4/500MHz PowerBook, plus free BIAS Studio bundles!

See **www.bias-inc.com** for details. Enter by Jan. 31, 2002. No purchase necessary!

Moog Music Prodigy

Produced: 1979-1984 Made in: United States

Designed by: Rich Walborn and Tony Marchese

Number produced: 11,000

Synthesis system: analog, subtractive

Price new: \$645

\$700 Today's prices: Like new

Like, it's okay for its age \$500 \$300 Like hell

ecause Moog Music created the Prodigy without any assistance from the company's namesake and founder, Robert Moog, the Prodigy inspires heated debate about the legitimacy of its pedigree. Is the Prodigy as authentic a Moog as the classic Minimoog, or is it an imposter?

Today the Prodigy is in such demand that prices for models in great condition actually top the original price (inflation notwithstanding). Nonetheless, some claim that it's an insipid shadow of a "real" Moog. A quick dive into its history might reveal just how authentic and valuable the Prodigy really is.

The Prodigy was conceived as a cut-down instrument;

its creators never intended it to rival its elder siblings. A team of Moog employees, including designers Rich Walborn and Tony Marchese and project manager Tom Rhea, brought the Prodigy to life in an attempt to build a dualoscillator synthesizer for about \$500. Their success was, in part, a result of design innovations such as potentiometers mounted on the circuit board rather than bolted to the front panel as they had been on the Minimoog. Placing the final loudness and filter-cutoff controls in the middle of the front panel was another inventive departure from previous Moog instruments.

The Prodigy looks quite striking, with real wooden end panels and an unfettered control panel. Its informative front-panel graphics make the Prodigy a perfect setting for learning about subtractive synthesis. Aside from the occasional missing knob or switch, it's not altogether uncommon to find one in nearly perfect condition.

Either of the two voltage-controlled oscillators (VCOs) has a switch to select sawtooth, triangle, or pulse waveforms; Osc 1's pulse wave is narrow, and Osc 2's is square. The oscillators can be tuned within a two-octave range; Osc 1 is calibrated from 32 feet to 8 feet, and Osc 2 from 16 feet to 4 feet. An interval knob can split the voices as much as a fifth apart. A sync switch lashes them back together for those searing, forced tones that remain de rigueur in the Jan Hammer school of lead synth playing. A small mixing panel offers a master volume control and independent control of each oscillator's level.

The Prodigy doesn't implement the "heated chip" technology of some other Moogs, so its pitch stability can sometimes be less than reliable. If you're thinking of buying a Prodigy, you'd be wise to leave it turned on for a few minutes to reveal whether its oscillators are subject to drift.

The 24 dB-per-octave lowpass filter features the usual cutoff frequency and resonance (which Moog persisted in calling *emphasis*) controls. Like the amplifier, the filter is

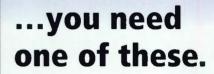


One of the most sought-after monosynths on the market, the Prodigy isn't quite in the same league as the Minimoog. With the right name and some of the right circuitry, though, it's clearly an acceptable alternative.

If you have







hy is the TASCAM MX-2424 the perfect companion to your Pro Tools or other DAW system? One word: compatibility. The MX-2424 offers your choice of two native audio file formats: Sound Designer II on Macintosh-formatted drives, and Broadcast Wave on PC formatted drives. These files support time stamping, giving you a fast, convenient way of transferring audio into your Pro Tools or other DAW system that supports time stamped audio files. Instead of spending hours aligning each track to its approximate original location, your recordings will be where they belong with sample accuracy.

MX-2424 24-TRACK 24-BIT HARD DISK RECORDER/EDITOR

Other reasons to get an MX-2424 for your Pro Tools rig? Since the MX-2424 records to SCSI drives, you can hot-swap them between systems without powering down your computer and recorder. You can record remote performances conveniently, leaving your computer in the studio. You can enjoy a familiar interface with the classic feel of a tape recorder. And perhaps most important, you can bet that the MX-2424 will satisfy your highest expectations in audio quality. If your editing/mixing system is based around Pro Tools or any other DAW, check out the ultimate companion piece - the MX-2424 - at your TASCAM dealer today.



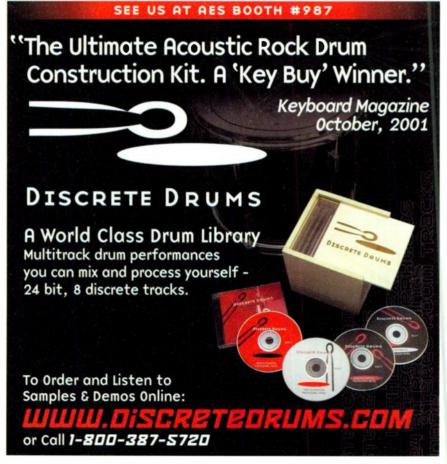


If you don't have a DAW system, TASCAM's MX-View waveform editing software runs in native Mac and Windows versions and connects via a fast 100Mb Ethernet interface. With MX-View, you get sophisticated, sample-level waveform editing, drag-anddrop editing on the fly, click and pop repair with the pencil tool, onscreen metering for up to six MX-2424s, editing across multiple machines, easy management of virtual tracks and much more.

For all the details on the MX-2424 go to www.mx2424.com

a whole world of recording





VINTAGE PAGE

modulated by a slightly limiting attack-decay-sustain (ADS) envelope generator (which Moog called a *contour generator*). The filter can also track the 32-note keyboard with three settings—off, half, and full—which is good for playing self-oscillating whistles. The low-frequency oscillator (LFO) offers only square and sine waves to modulate the voltage-controlled filter (VCF), VCOs, or both.

Performance controls include portamento and rather stiff Pitch and Mod wheels (though much less stiff than they once were). The designers could have included many additional features, but only by increasing the Prodigy's cost. The spin-off benefit to such a no-frills approach is that nobody is ever intimidated with bells and whistles such as sample and hold or a multitude of modulation sources and destinations.

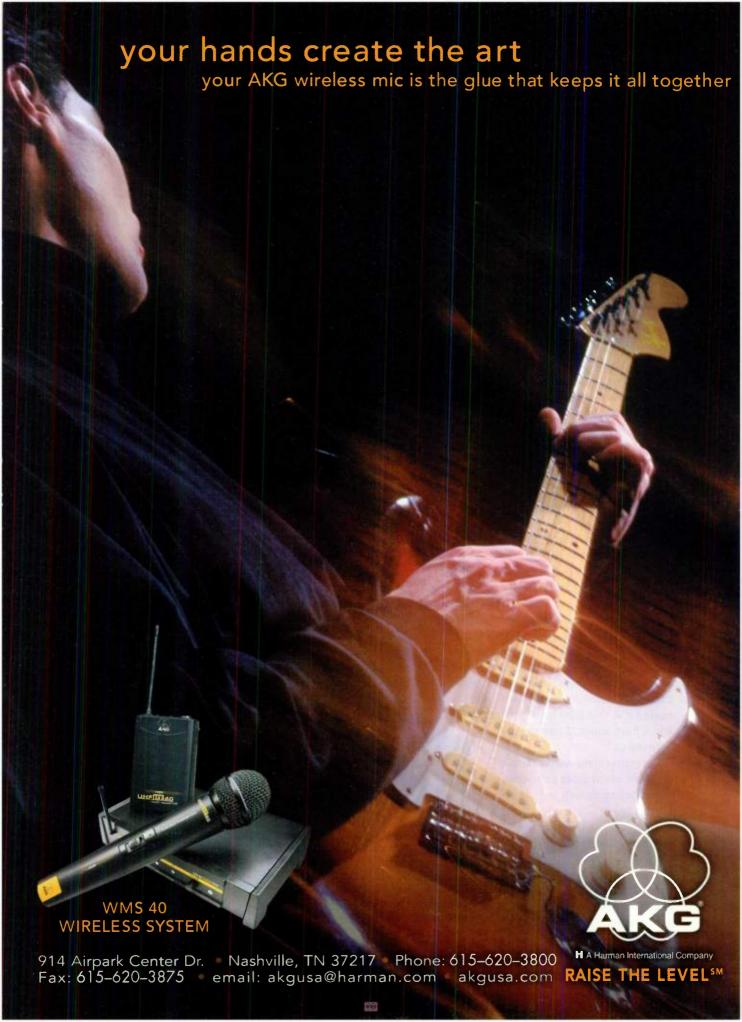
The Prodigy isn't particularly flexible, but it does conjure the basic sound of a Moog synthesizer. Limitations can be a good thing. It is extremely easy to coax all manner of sounds, from screaming leads to fat bass, from the Prodigy. Its hard-sync oscillator timbres are especially good and have contributed greatly to its popularity.

The Web offers plenty of fairly useless sites on the Prodigy. One useful page (www.teknospace.com/prodigyout.jpg) offers an image of the Prodigy's control panel, which you can print out and use to record your patches.

The affordable-yet-powerful Prodigy is a child of the 1980s. It was snapped up by performers such as Howard Jones, 808 State, and Depeche Mode. The Prodigy's initial success was greater in bargain-conscious Europe (where it effectively obliterated England's Wasp monosynth). But in the end, it became Moog's biggest seller next to the Minimoog.

Julian Colbeck has toured everywhere from Tokyo to São Paulo with artists as varied as Yes, Steve Hackett, John Miles, and Charlie. Special thanks to Tom Rhea of Berklee College of Music.

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



PRO FILE

Forbidden Planet

Ithough guitarist Neil Haverstick lives in the shadow of the snow-covered Rocky Mountains, he might as well be from another planet. A devotee of microtonal music—essentially, sounds that incorporate more semitones than the standard Western scale of 12 tones per octave—Haverstick uses modified guitars to conjure unsettling waves of color that wouldn't sound out of place in a science-fiction movie.

"Once people understand that there's something called microtonal music, that's half the battle," says Haverstick, who resides in Lakewood, Colorado. "When I explain it to people, they say, 'Far out.'"

Haverstick used custom guitars—a 19-tone Starr, a 34-tone Fender Telecaster, a fretless

Roland GR-303, and a Korg X911 guitar synth—to record his third album, *Other Worlds*. Recorded mainly in bare-bones studios, *Other Worlds* captures the tones common to gamelan and Indonesian music but with textures that sound positively extraterrestrial. "That's what I enjoy the most: not doing the same thing over and over again," Haverstick says.

Friend and instrument maker John Starrett introduced Haverstick to the strange hybrids, which proved to be an eye-opening experience. "He handed [a microtonal guitar] to me and said, 'Mess with this,'" Haverstick says. "At the time, I was familiar with Ravi Shankar but hadn't really soaked it in. One thing led to another, and now [Starrett

and I] have about 20 instruments between us."

The guitars come with scales all their own, which poses a challenge for recording as well as for performing live. Trial and error taught Haverstick each instrument's unique abilities. "I tuned to the harmonics and simply tried to find the notes that sounded good," Haverstick says. "A lot of our guitars are refrets. For the most part, I tune them normally, but I'm not against tuning them differently."

Neil Haverstick
discovers other
worlds of sound
within a microtonal

universe.



Despite the science fiction references on Other Worlds, Haverstick takes a decidedly lo-fitack when it comes to recording. "I am about as low-tech as you can get on this planet," Haverstick says. "For me, that's part of the charm—not knowing what [technology] is being used. I'm only going to learn as much as I have to. As we age, our energies need to be judiciously allocated."

Other Worlds contains four tracks. The title track was recorded live at the Microstock 4 microtonal music festival in September 1998 on a rented DAT machine and edited in Sonic Foundry's Sound Forge. In 1999, at friend Jim Ratts's Raven Studios, Haverstick tracked "The Spider" and "Didgeridon't" from his Korg A1 effects processor straight into an 8-track

Fostex E-8, which uses ¼-inch tape. He recorded the album's final track, "Nebulae," in 1988 on his Fostex 260 4-track cassette recorder. Even the effects on his guitars border on minimal. Haverstick uses the A1, an Alesis MicroVerb, and Boss and DigiTech delays for some tracks and no effects at all for other songs. "The Korg A1 is a monster effects box," Haverstick says. "The parameters in this thing—you can adjust them until you're ill."

Haverstick is working on his fourth album, If the Earth Was a Woman, and is starting to use his computer for recording music. Although he believes microtonal music holds the possibility of rejuvenating the music world, he

admits Western ears may not be attuned to the sounds common in Indonesian and gamelan music.

"I want to kick my fellow musicians in the rear," Haverstick says.
"Let's do stuff that hasn't been done before."

For more information, contact Neil Haverstick; PO Box 150271, Lakewood, CO 80215; e-mail stick@ uswest.net.

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



Other Worlds/Neil Haverstick

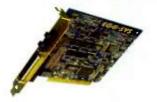
		VVDIVI	E-WDM
11	MIME DIE depen	tip to 16 pit	10/24 bit up to 52 bit
- 2	Total channel availability.	12 In / 10 Out	Uniformed I/O
8	Independent MME support		
16	GIGA X ready		
5		Randly	
-6	SONAR WITH 1,5ms	NO	

Are you XD Ready?

is "One for All"

Introducing..





WaMi Rack 192X - Premium 192kHz 8 channel Audio interface

	985E/ME/2000/XP	YES	YES
	Multi client	NO	YES
19	Multi-Streaming	YES	YES
	GICA WIRE Enabled	NO	YES
33	Multiple MIDI ports	NO	YES
112	Multiple Direct Sound	NO	YES
	-6 dB Problem fixed	NO	YES

EGO-SYS

www.egosys.net
3350 Scott Blvd, Suite 33 Santa Clara, CA 95054 Tel :408.748-1070 Fax: 408.748-1470

those sorts of things. So it figures that, as an adult, I have become a Palm addict. Desktop computers simply aren't enough; I need a cool small device that fits in a purse or a pocket and does an amazing array of gadgety things. As you might expect, many people share my addiction.

Although many people know about the Palm handheld computer's prowess at storing and organizing phone numbers and appointments, they might be surprised by the variety of music-related hardware and software products for the

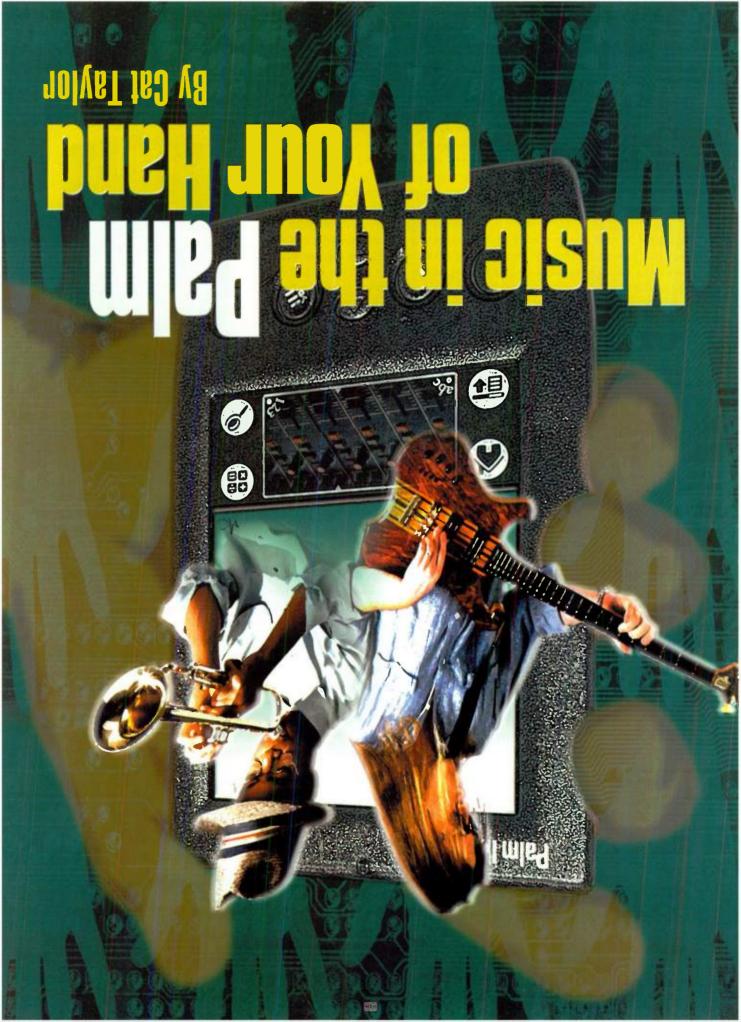
Palm OS platform. I will discuss some of the most interesting products, but for readers unfamiliar with the Palm computer, here's a brief introduction.

Explore the Palm handheld computer's amazing world of music-making hardware and software.

GETTING STARTED

Those who haven't used a Palm Personal Digital Assistant (PDA) need to know a few basics. You enter information into the Palm by writing and tapping on the screen with a *stylus*—also called a pen—using Graffiti, the Palm's slightly awkward alphabetical entry system. You install software and synchronize files between the Palm and a PC or a Mac by placing the Palm into a cradle that mates with its bottom-mounted serial port. A cable connects the cradle to the Mac or PC serial or USB port. The software that controls the synchronization process is called the *HotSync Manager*.

The Palm is a handy little contraption, but what can it offer musicians—especially considering that the Palm lacks a true speaker or amplifier? (Its rudimentary sound output is produced by a piezoelectric element.) Even when the software lets you reformat WAV files as Palm database (PDB) files, the speaker reproduces sounds inadequately. The Palm OS processes MIDI data, but only Format 0 Standard MIDI Files (SMFs) are supported, so you can't edit tracks separately.





None of those facts deter programmers, who continue to develop music-related programs at an amazing rate—I soon realized that I couldn't review all of the products on the market. I therefore focused on hardware and software that is compatible with the Palm III series of handheld devices and intended for real musical applications, as opposed to the many tools that let you catalog MP3 files, record thoughts using outside hardware, or play movies (see Fig. 1).

Many programs not intended strictly for musicians can prove to be valuable as well. For example, some programs let you convert Microsoft Word documents and PDF files into miniature versions that can be synced to the Palm. The files can include everything from documents about basic scale forms to orchestration databases created for TealPoint Software's TealInfo database program. Once you own a reader program, you can download a lot of free material from Web sites such as Memoware.com, which boasts more than 8,500 titles in various Palm formats. I wrote much of



FIG. 1: The Palm series of handheld devices has spawned a surprising number of music-related applications from studio-equipment controllers to notation programs.

my initial research for this article using the Palm Portable Keyboard and DataViz Documents to Go.

TEACHING TOOLS

I'll start with some relatively simple programs, such as Sam Trenholme's freeware *Ear Trainer* (see Fig. 2). The program plays a random interval; you

guess the interval, and it tells you if you're correct. That's all there is to it.

Wilson Cheng's MusicEar is a suite of ear-training programs that includes modules for learning intervals, chords, scales, rhythms, and melodies at increasing levels of difficulty. Once I figured out how to answer the questions, it was fun and challenging. MusicEar could be a great tool for music students and practicing musicians who want to brush up on their skills.

Mike McCollister's McChords lets you select more than 70 chord or scale names that are then illustrated on a keyboard and played back. It's helpful for understanding what an Am6(9) chord or what a pentatonic minor scale sounds like.

Programs designed to help guitarists determine chord fingerings are also available, but I had to draw the line somewhere.

KEEPING TIME

The Palm OS uses a 10 ms clock, and the timing of programs using an incompatible scheme could be uneven. Unless a program has a checkbox for "ignore system information" or some thing similar, it's possible that the timing can be thrown off by hacks, such as the one for the Palm keyboard that lets you type text into the Palm. Hacks are small programs that allow changes within the basic Palm system to enable everything from fancier interfaces, such as Synergy Solutions' Launch 'Em, to fun things, like Star Trek sounds. Managed by programs such as DaggerWare's HackMaster, hacks can be turned on and off. If you're having problems with irregular rhythms, especially with a program as labor intensive as miniMusic's BeatPad, try disabling your hacks.

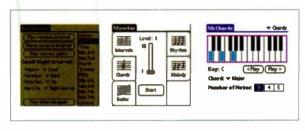


FIG. 2: Several Palm programs can help improve your music skills, including (left to right) Sam Trenholme's *Ear Trainer*, Wilson Cheng's *MusicEar*, and Mike McCollister's *McChords*.

Responsive Software's Responsive Metronome is a good basic metronome that uses visual cues (a note moves from side to side) or sound to provide a basic tempo (see Fig. 3). A slider along the left adjusts the tempo.

TS Tempo (included with notation program TS Noter), from Italian developer TobelStudio, is another decent metronome that features an old-fashioned wand moving from side to side. It includes a bpm setting and lets you choose sound and visual cues.

Eric Cheng's Metronome comes with PocketSynth. It also offers a bpm feature with a dot that beats on the left for downbeats and on the right for subsequent beats. If you tap the Scroll Up button repeatedly, the program measures the tempo you're tapping.

Gary Duke's *Pocket Beat* has an animated character sitting at a drum set. You can set up two tempos (each with a shuffle option) and switch quickly between them. When you hit the Go button, a little spot flashes on the kick and snare drums as the corresponding synthesized sound plays. You can also tap a count off to set the tempo. Although the program developers claim that it's the most accurate Palm metronome, the squeaky sound and size of the program (you must install *PocketC*) are drawbacks.

Calvin Gaisford's Musician Tools is a suite of nifty programs that includes a tuner, a metronome, and a circle-of-fifths program. The tuner lets you choose the base frequency, so you can tune to A-442 if you want. You can control the length of time that the note plays, and you can choose other pitches. The circle-of-fifths program lets you go pround a circle of notes, and as you tap

THE NEW DIGITAL WORKSTATION FOR PEOPLE WITH MORE SENSE THAN DOLLARS.



because the new Yamaha AW2816 strongly resembles its TEC Award-

nominated big brother, the AW4416. In terms of features and performance they're remarkably similar. So, the AW2816's price – just \$1,999* complete – makes excellent financial sense. Once again, Yamaha gives you more for less.

- 16+2 track, 24-bit recording with no data compression (44.1 or 48Khz)
- 28 Input channels (including digital stereo input and dual stereo effects returns)
- Dynamic automation of all mix settings, including fader movements, parameter changes and scenes
- 2 Assignable 32-bit effects processors
- Premium Yamaha CD recorder for data and audio

- I/O expansion slot for digital interface options or the new WAVES Y56K processor card
- Large, back-lit 320x640 display screen
- MIDI control of computer based recording systems
- 4-Band parametric EQ and dynamics on all channels,
 all the time**
- 18 Busses, plus comprehensive digital patch bay, with easy routing



CREATING KANDO TOGETHER

www.AW2816.com

© 2001 Yamaha Corporation of America. Pro Audio Products. P.O. Box 6600. Buena Park. CA 90622. For literature. call (800) 937-7171 ext. 615 or visit yamaha.com proaudio Yamaha is a registered trademark of Yamaha Corporation. All rights reserved. "Estimated street price ""Dual stereo returns feature EO but no dynamics



each one, it shows you the sharps or flats for that key. Musician Tools' metronome is the best of the bunch. The downbeat sounds a pitch different from the other beats, and a segmented vertical indicator shows the current beat, which helps if you want to turn the sound off. Moreover, you can choose meters with as many as eight beats to a measure.

TECHTOOLS

The Palm can serve as a valuable portable reference resource to help solve studio-related problems, wade through technical jargon, and make calculations. Palmetto Logic's *Sound Advice*, the most complete product in this category, rolls those capabilities into a single three-part package (see Fig. 4).

In Sound Advice's Q&A View section, a question field at the top lets you choose a general question, such as "How do I avoid feedback?" The program then offers a list of related topics, such as "feedback, notch filter," and provides specific information about them. Choosing All in the question field shows all the topics, and you can bookmark single entries for later reference. When you click on a topic, it puts you in Advice view; from there, the forward and back arrows take you to related subjects. Clicking on the Note button creates a dated attached note that you can beam to other Sound Advice users with the Palm's infrared port.

The terminology section contains an alphabetical list of more than 200 terms. You can access terms by scrolling down the entire list or by tapping in the Index pop-up box to jump to a letter; selecting a term displays its definition. The Reference Charts section includes a chart for combined speaker

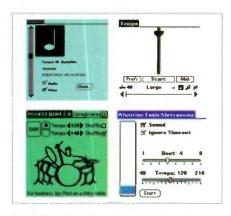


FIG. 3: With the right software, you can transform your Palm device into a full-featured metronome. Shown are (clockwise from top left) Responsive Software's Responsive Metronome, TobelStudio's TS Tempo, Calvin Gaisford's Musician Tools, and Gary Duke's Pocket Beat.

impedance, recommended cable lengths, common value multipliers, and musical-scale frequencies. It also provides two calculators, Volt/Ohm/Amp/Watt and RMS/Avg/Peak, that allow you to make



calculations relating to current and voltage, current and resistance, voltage and resistance, and power and voltage.

Sound Advice demands a lot of room for a Palm program—186 KB—but it has quite a bit to offer. At \$7.95, it's a great deal.

KNOW THE PLAYERS

Palm Tracker, from German developer Emperor Studios, is a tricky program that seems to play three music tracks at once by slightly delaying each track relative to the previous one (see Fig. 5). You create patterns using a small keyboard on the Patterns page and then arrange the patterns on the Song Editor page. Its rather simple note-entry capability only allows for short note values that are combined to sound like longer ones. You can't really change the basic 4/4 meter and feel, and the songs are not MIDI compatible.

Although you hear the songs through the Palm's speaker, they sound kind of cool. Palm Tracker has been used by game developers to create music for games such as Archon from Free Fall Associates. The full version lets you save files that you can export to your desktop computer and share with other users, although you can't open the files with desktop applications.

MiniMusic BeatPad is a pattern-based sequencer that allows you to create a repeating pattern of melody notes (and drum patterns if you're using MIDI). It allows you to make changes as the pattern plays and provides interactive and graphical control over pattern parameters, including the pitch, duration,

SOUND ADVICE

Sound Advice

Terminology

Reference Charts

Colculators

Volt · Ohm · Amp · Watt

RMS · Avg · Peak

FIG. 4: Palmetto Logic's *Sound Advice* packs a wealth of useful reference resources and studio tools into a single package.

and volume of each note as well as the pattern's length and tempo.

BeatPad provides two main Views: Melodic and Drum. Across the top of the Melodic View window are the controls for the 32 patterns you can create and use. Below that, the Pattern Overview acts as a viewer for the pattern creation process. Four tabs let you choose and edit pitch, duration, Velocity, and master, the last of which controls the master settings that don't

change when you switch patterns, such as the tempo and the MIDI instrument patches chosen for the melodic and drum lines.

You can switch to the Drum View as a sequence plays by tapping on a button in the lower left of the screen. Because the Palm cannot deal with multiple sounds, drum sounds are audible only when using a MIDI interface. The drum screen shows the percussion sounds, lets you solo or mute them, and allows



...and fill your tank with more plug-in power.





SOMEC SYNTH

Multi-disc set with over
2 Gigabytes of sounds
from Sonic Reality,
Planos, Pads, Strings,
Voices, Bells, Guitars,
Drums.a FULL synth
workstation!

\$249



VINTAGE VOLTAGE ST MALT TRANSPILES A great collection of analogue synth sounds. 180 rundy to play ST sound sets incl. Leads, Basses, Puls, SFX etc. taken from famous vintage Synthesizers, A33 MB



BRIT HORNS
multiple ampled
from sections and solo
instruments from the
legendary Thoms,
Barnacle & Brooks
brass section!

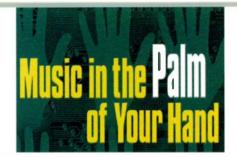
Au



To find the dealer nearest you or to order (TOLL FREE): 866-243-1718 - WWW.SAMPLETANK.COM

SAMPLETANKO is a negistered trademark property of IX MULTIMEDIA. All other trademarks are property of their respective owners.

December 2001 Electronic Musician 47



you to set up rhythm patterns. You can also set up accents or loops and enable MIDI Clock in the Preferences window.

MiniMusic solved the timing issue by using a special internal clock that looks for the nearest system clock during playback. That seems to work well—BeatPad is a fun metronome. Included with NotePad in miniMusic's Mobile Software Pack, BeatPad also comes with Swivel Systems' SG20 sound module.

MobileSoft-Labs *M.Play* has an attractive 3-D interface that includes basic tape-deck controls for playing single-line MIDI files (see Fig. 6). The software lets you pick tunes from a library of pre-recorded songs or create your own. Although *M.Play* is free, *M.PlayEdit* costs \$10. With *M.PlayEdit*, you can create Palm-compatible files from MIDI files and transfer them from your Windowsbased desktop computer to the Palm. A demo version is included with *M.Play*. I created a MIDI file of one of my fiddle tunes with ease.

Tom Zerucha's free *PlayMIDI* is available in two versions (see Fig. 7). With the older version, *PlayMIDI45A*, I could play the files that came with the program, but I couldn't figure out the instructions for converting regular MIDI files to files *PlayMIDI* could read. The color was also odd, because the program wasn't created for a color Palm.

The new version of *PlayMIDI* is part of a suite of programs called ZboxZ that includes compression utilities, fax software, and other small programs. Unfortunately, ZboxZ lacks a real installer,

so you must go through a rather arcane set of steps to install the software. In the new version, the files will not play without an external MIDI device, but you can actually hear the sounds as they were intended rather than be limited by the Palm's speaker. I still had problems creating files that would port properly to the Palm (probably be-

cause I use the relatively new *HotSync Manager* 4.0), and I had to manually rename some files before *PlayMIDI* would play them correctly.

If you use *PlayMIDI*, you will need plenty of memory: the program uses compressed files, and insufficient memory can cause a crash that requires a hard reset. I finally made the program work properly, and it should be **a**ble to play a variety of MIDI files as well as just music files. *PlayMIDI* is apparently the only program that lets you create multiline MIDI files on your desktop and port them to the Palm with an included utility applet.

If you're a fan of the theremin, you'll love *Theremini* from Pete Moss; it lets you create the effect of a theremin on your Palm handheld device. If you don't have a MIDI interface, use the Palm's internal speaker and make all sorts of weird and cool sounds by moving the stylus across the screen. The x-axis controls pitch; the y-axis controls volume. The left and right fields determine the frequency range (from 1 to 20,000 Hz); either field can be higher or lower than the other.

If you have a Palm MIDI adapter, you





FIG. 5: A number of Palm programs let you create and play back music. Palm Tracker from Emperor Studios (left) creates the illusion of multiple tracks; miniMusic's BeatPad is a pattern-based sequencer with an array of features.

can use the program to send out MIDI data through a MIDI interface. I used *Theremini* to play sounds directly from the Swivel Systems SG20 and ran the output into my computer, which opened up a new world of sounds.

KEEPING SCORE

Among notation products for the Palm, Eric Cheng's simple *PocketSynth* (see Fig. 8) is probably the oldest in common use. You enter notes by tapping a note value on a palette (a Rest button is also provided) and then tapping a key on the four-octave keyboard. The notes play back and show up as text values on a line at the bottom of the page. A note is represented by a symbol such as "c02," which plays the note C in the bottom octave with a quarter-note value. Because the note information is just text, it can be entered or edited with a text editor such as Palm's *MemoPad*.

A slider sets the tempo, but the time and key signatures cannot be specified. You can export the notation information to Arkkra Enterprises' *Mup* desktopmusic typesetting program using an intermediary Palm freeware program called *ToMup* from RMIT University.

Music H	Hardware for Palm PDAs			
COMPANY	HARDWARE	WEB SITE	PRICE	
Handi-Q	HandiClip HC2	www.modularsound.com/handiq.htm	HandiClip \$149; other cables \$15	
Handi-Q	HandiClip HotSync-to-MIDI cable	www.modularsound.com/handiq.htm	\$30	
miniMusic	Palm-to-MIDI interface	http://minimusic.com/midi.html	included in Mobile Software Pack	
Swivel Systems	SG20 sound module	www.swivelsystems.com	\$200, including miniMusic software	



TC · POWERCORE

MIX - PROCESS - MASTER - PLAY



TC POWERCORE expands your PC or Mac-based native audio recording system with a stack of extremely powerful Hi-End Plug-Ins.

These tools won't drain your computer's performance, as the DSP-code is running on the board, not the CPU!

TC POWERCORE integrates seamlessly with your existing VST or MAS compatible recording environment such as Digital Performer, Logic, Nuendo or Cubase. Of course you can use your regular native Plug-Ins alongside

TC POWERCORE Plug-Ins without any limitations!

And thanks to the open 3rd Party Program there will always be new and exciting Tools available to expand the scope of TC POWERCORE!

The following Plug-Ins are included right out of the box:

TC MEGAREVERB — Reverbs from TC Electronic's M5000 Reverb Processor.

TC CHORUS/DELAY — advanced modulation FX of the TC1210 Spatial Expander.

TC EQSAT — The EQ module of the renowned Finalizer™.



TC POWERCORE CL



TC VOICE STRIP



TC POWERCORE 01



TC VINTAGE CL — Run up to six of these versatile Compressor/Limiter Plug-Ins on only one of the four available DSPs! And the vintage compression model brings back the sound of analog hi-end compressors.

TC VOICESTRIP — A complete channel strip specialized for pristine voice sound processing: tube compressor model, deesser, gate, LoCut EQ, Voice EQ and SoftSat for warm and crisp sounding results!

TC POWERCORE 01 — This synth Plug-In launches TC PowerCore as platform for virtual instruments! The 01 is modelled after one of the most popular mono-synthesizers and is available in grey, red and blue.

OPTIONS (AVAILABLE FROM DECEMBER 2001)

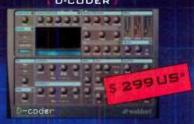
All options available for Mac and PC. SONY, Waldorf, Antares, TC Helicon and other renowned manufacturers are also in the process of creating products for this platform.



TC MASTER X5



D-CODER



TC MASTER X3 — The virtual version of the world-class Finalizer TM studio mastering processor for knock-out punch. MasterX3 includes a Multiband-Expander, -Compressor, -Limiter and uncorrelated Dithering. In short all you need to master your mix!

TC MASTER X5 — MasterX5 goes beyond MasterX3 with 5 bands, more dithering options, more processing curves and 48Bit double precision processing. The ultimate Mastering Processor!

WALDORF D-CODER — The first 3rd party Plug-In to become available on the platform is an integrated Vocoder and Synthesizer by German synth-legend WALDORF. The number of vocoder bands is adjustable beyond the usual 25 — and the included polyphonic synthesizer provides an integrated sound-source. Can be played like any other VST-instrument!

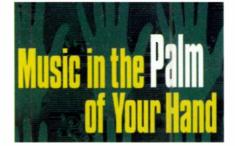
and include 2-6 tools again.

Version 1.5 available from December 2001.

Manufacturer's suggested retail price. MasterX3 available separately from 03/2002.
 The included Plug-Ins are highly integrated and include 2-6 tools each!

TC | WORKS





ToMup can combine as many as four melody lines and lets you enter time and key signatures, chords, lyrics, and other musical information. You can then export the files to Mup and print the music or export it as a MIDI file.

The two Palm software titles most like those common on regular computers are *NotePad* and TobelStudio's *TS Noter*. The programs let you store songs and work with one at a time, and they offer keyboard and staff entry. They also allow playback as the notes are entered or afterward through the Palm speaker or through MIDI to an external device.

Although less well known than NotePad, TS Noter has features that make it just as valuable as its competitor. It's an intuitive and straightforward program with a variety of useful features. In TS Noter's Edit View (similar to Score mode in NotePad), you enter notes on a two-staff score by selecting a note value from a palette. The palette includes values from a whole note to a 64th note and also provides triplets, rests, flats, sharps, natural signs, and an Eraser tool. Once a note is entered, you can select one of the note values and tap on the note head to change it. You can drag the note up or down to change the pitch, and you can tie or slur notes together. Bar lines are entered in the same way: by tapping on an icon and then placing the bar line in the score. Although you

can't specify a time signature, you can set the tempo in the metronome screen.

Additionally, the palette includes an arrow that allows you to insert numbered markers. You can later access those reference points with the Go To tool. Items in the File menu let you beam songs to another Palm and export files as alarms to be used in other applica-



FIG. 6: MobileSoft-Labs' *M.Play* offers a colorful set of 3-D tape-deck controls for playing MIDI files

tions. (Alarms are audio or visual alerts that you can set to occur at specific times within other programs.)

The Edit menu provides the usual cut and paste functions and allows as many as ten undo levels. You can transpose all or part of a song up or down by as much as an octave. A toolbar across the top of the window offers quick access to the tempo setting (using the metronome); playback, MIDI, and recording preferences; Play and Stop buttons; the Score view; and the List view. The Piano view has the same basic menus and toolbar and permits real-time recording of a melody on a keyboard. You can scroll to view and play almost four octaves. In the MIDI Preferences screen, you can choose the Palm's speaker or a MIDI interface for output. If you select General MIDI (GM), the program provides a list of patch names.

You can send files to your desktop computer with the optional *PalMusic Desktop* application for Windows. Just

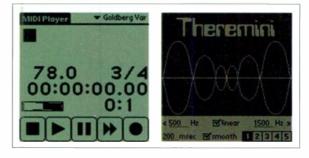


FIG. 7: Tom Zerucha's *PlayMIDI* (left) lets you create multiline MIDI files on a desktop computer and export them to the Palm. Pete Moss's *Theremini* produces the effect of a theremin on the Palm.

2001: THE YEAR WE MADE CONTACT



Infinity 2.0 - NOW SHIPPING!

The complete sound design and multimedia control studio:
Create synthesizers, samplers and effects devices on your PC.

The Ultimate Plug-II

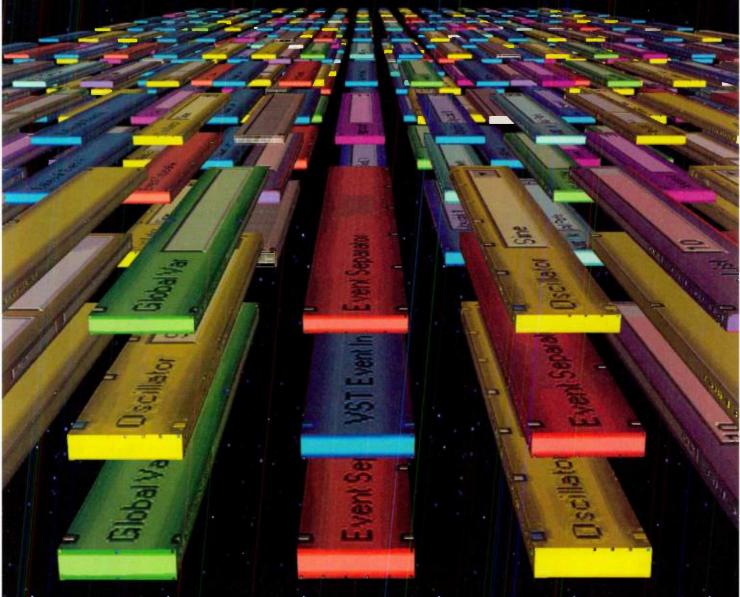
Plug your creations in anywhere: Cakewalk MFX, DXi Cubase VST, VSTi & Direct X 8.0 compliant.

A vast module library

Over 350 objects performing MIDI, Synthesis, Digital Audio processing and many other functions: Lay them out and connect them in infinite ways to create the instruments of your dreams.

Full instrument library

Including an army of premade instruments ready to use right out of the box: Additive, subtractive and FM synths. Drum Kits, Samplers and Effects units. MIDI processors too!



Drop by your local dealer or visit our Web Site to download free demos and check out the latest news.



Sound Quest Music Software Inc. - 1140 Liberty Drive, Victoria, BC, V9C 4H9

www.squest.com



open *PalMusic*, hit the Start button, put the Palm in its cradle, select Send to Desktop from the File menu, and then select Transmit. A dialog box asks where you want to save your MIDI file.

The Score View screen in *NotePad* looks similar to the one in *TS Noter*, with two staves for entering notation. With *NotePad*, however, you can enter as many as four voices, one a time; select them by tapping in the numbered box in the upper-right corner of the screen. You can even build chords within each voice. In the Voice Preferences screen, you can choose a voice's track, its MIDI channel, and an instrument (viewable by patch number, not GM name). Once back in the Score View screen, the Graffiti letter *V* toggles between "show four voices" and "show current voice." You

can also change voices by simply writing the number of the new voice in the Graffiti area.

Along the top of the screen, you can choose note and rest values ranging from a whole note to a 16th note. Enter notes by selecting a note value and placing it in the score. The note doesn't appear until you lift the stylus; however, you can hear where the note is as you move it around on the score. Unfortunately, once you lift the stylus, you can't use it to move a note, though a note can be moved by selecting it and using the Palm's Up-Down arrow button. You can also step-enter notes from a MIDI keyboard and shorten or lengthen a note in increments by drawing forward or backward strokes in the Graffiti area. Items in the Edit menu let you invert and reverse (retrograde) selected passages and convert notes to triplets. You can clear notes by selecting them and drawing an X in the Graffiti area.

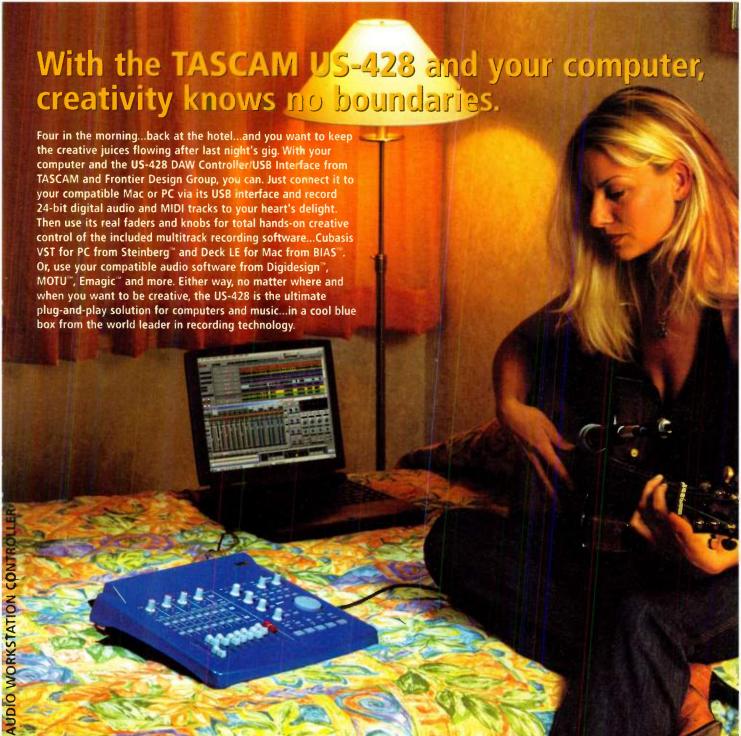
Using the Song Preference box, you can select the category, key, meter (3/4,



FIG. 8: Several programs let you turn the Palm into a handy musical sketch pad with basic notation capabilities. Shown here (clockwise from top left) are Eric Cheng's PocketSynth, TobelStudio's TS Noter, and miniMusic's NotePad.

4/4, 5/8, and 7/8), "play on entry," "show four voices," MIDI, and tempo. The time signature constrains how notes are entered, and placing a new note between existing notes might push them over to another measure to preserve the

COMPANY/DEVELOPER	SOFTWARE	WEB SITE	PRICE
Eric Cheng	PocketSynth 1.24 (w/ Metronome)	www.echeng.com/Pilot/pocketsynth.html	\$12.00
Wilson Cheng	MusicEar 1.0	www.musicear.com	\$ 9.90
Gary Duke	Pocket Beat 2.43	www.aurete.com/pbeat	\$ 8.00
Emperor Studios	Palm Tracker 1.1	www.emperor-studios.de	\$15.00
Calvin Gaisford	Musician Tools 1.1	www.gaisford.com/mtools	\$10.00
Handi-Q	HandiFX 0.8	www.modularsound.com/handiq.htm	\$99.00
Handi-Q	HandiMix VCA 0.1	www.modularsound.com/handiq.htm	\$99.00
Handi-Q	Ultra-Curve 0.43	www.modularsound.com/handiq.htm	\$99.00
J. T. Solutions	MiniMidi 3.0	www.tsol.fsnet.co.uk/jts/minimidi/minimidi.html	\$15.00
Mike McCollister	McChords 2.0	http://mikemccollister.com/palm	\$10.00
miniMusic	BeatPad 1.0	www.minimusic.com/software.html	\$29.95
miniMusic	NotePad 1.1	www.minimusic.com/software.html	\$29.95
MobileSoft-Labs	M.Play 1.0	www.mobilesoft-labs.com	free
MobileSoft-Labs	M.PlayEdit	www.mobilesoft-labs.com	\$10.00
Pete Moss	Theremini 3.2.1	http://users.ev1.net/~bantha/palm	\$10.00
Palmetto Logic	Sound Advice 2.01	www.palmettologic.com	\$ 7.95
Responsive Software	Responsive Metronome 1.0.1	www.responsivesoftware.com	\$ 8.00
Geoff Smith	MidiMonitor 1.0b	http://fargo.itp.tsoa.nyu.e du /~gsmith/ Pilot/PilotMidi.htm	\$15.00
TobelStudio	TS Noter 1.3	www.tobelstudio.com	\$28.95
TobelStudio	TS Tempo 1.3	www.tobelstudio.com	\$10.00
Sam Trenholme	Ear Trainer 1.0	http://palm.samiam.org	free
Tom Zerucha	PlayMIDI (ZboxZ 0.25rc5)	www.execpc.com/~tz	free



Want to make sure that your computer and software are compatible with the US-428?
Go to www.tascam.com and check out the "US-428 Compatibility Chart", or learn all about computer recording from our "PC Recording Guide".

TEAC America, Inc., 7733 Telegraph Road, Montebello, CA 90640

FRONTIER

TASCAM
a whole world of recording













323-726-0303 www.tascam.com



Here are a few of the innovative software developers who offer support for the US-428. Cakewalk, Sonar and more virtual synth support coming soon. See the TASCAM web site for the latest info.



meter. Play, Back, and Forward buttons are at the bottom of the screen along with icons to take you to the Piano and Grid views. The Piano view includes a condensed score at the top, so neither accidentals nor a written key signature appear. You can't enter notes directly on that condensed staff, but you can select notes from the palette and play them into the score from the piano keyboard. Switching to the Grid view displays a window much like a piano roll, with a keyboard along the left side as reference. You can still edit and play back the music in this view, and Grid view also lets you draw each voice in a different color.

One of the fun things about *NotePad* is that it includes 19 pieces of precomposed music that you can play back one line at a time using the Palm speaker, or you can play all the lines at once using an external MIDI device. *NotePad* is also part of the miniMusic Mobile Software Pack along with *BeatPad*, *Theremini*, and the Palm-to-MIDI interface. You save files to your desktop computer through a conduit added into the Palm Desktop software. *NotePad* also lets you beam songs to other Palm users.

Neither TS Noter nor NotePad imports MIDI files, though both export files that you can adapt with another program to replace Palm system alarms. But that's another hack.

PACKIN' HARDWARE

MiniMusic's Mobile Software pack includes the Palm-to-MIDI interface (see Fig. 9). To set it up, connect a serial cable, cradle, or travel adapter to the serial port at the bottom of the Palm and connect the other end to the Palm-to-MIDI interface. A MIDI cable connects the interface to your computer or the MIDI In

port of a MIDI device. You then open a MIDI-compatible program on the Palm, make sure MIDI is turned on, and hit Play. I hooked up the Palm-to-MIDI interface to the MIDI In port on my PC and played through Voyetra's MIDI Orchestrator Plus with no problem.

The Swivel Systems SG20 is a small battery-powered tone module that clips onto the Palm's base at the serial port. As wide and deep as the Palm, the SG20 measures less than 2.5 inches in length. The SG20 has two output ports: one for headphones and one for an RJ11 cable. You can play MIDI applications and listen through the headphone jack, but that's just the beginning. When you plug the provided RJ11 cable in to its port, you can connect a small device that has MIDI In and Out ports, a MIDI-activity indicator light, and two RCA output jacks. In my tests, both units worked admirably.

The SG20 boasts a complete GM sound set and all the polyphony and features needed to make it fully GM1 compatible. Its onboard sounds and versatile design make it suitable for serious Palm-based composition. Other small battery-powered tone modules, such as the Yamaha MU15 and Roland PMA-5, attach to the Palm through the serial port, but unlike the SG20, they weren't created specifically for the Palm.

Handi-Q's HandiClip is an ambitious hardware and software system for remotely controlling high-end effects, mixers, and equalizers from the comfort of the Palm (see Fig. 10). According to Handi-Q's Web site, the system works with several devices, including





FIG. 9: Hardware devices include miniMusic's Palm-to-MIDI interface (left) and Swivel Systems' SG20 General MIDI sound module.



mannanan mara

Purchase a new Korg music workstation between
September 15 and December 31, 2001 and receive
\$100 back from Korg. It's good for all new TRITON
(including the TRITON Rack), Karma and Trinity
workstations purchased from an authorized dealer.
It's just our way of making the season a little brighter.
After all, it is better to give than to receive.

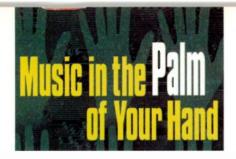
STORE SALESMAN'S SIGNATURE

THE STREET WELL STREET



#\$100 HOLIDAY GIFT FROM KORG Fill out this coupon. Send it, along with a copy of your store receipt and completed warranty card, to: KORG USA, Attn: Korg \$100 Offer, 316 South Service Road, Melville, NY 11747. Offer good on a new Trinity, TRITON or Karma workstation purchased between September 15, 2001 and December 31, 2001. KORG USA must receive all coupons, receipts and warranty cards by January 31, 2002. **RORG** NAME** ADDRESS** CITY** STATE ZIP** PHONE NUMBER* E-MAIL** PRODUCT PURCHASED SERIAL NUMBER* PURCHASE DATE STORE STATE STATE

HA 10 601 AO 641 80 941 80 MI



the TC Electronic TC 1128, M2000, M3000, M5000, M-One, and D-Two; the Ashly Protea and VCM-88; the Behringer Ultra-Curve; the Yamaha O1V, O3D, SPX 990, and ProR3; the Lexicon PCM 70, PCM 80, PCM 90, and MPX 1;

various MIDI synths and drum machines; and some intelligent lightingcontrol consoles.

The HandiClip attachment looks much like the SG20 (a standard shape for external Palm modems as well), except that it has a light that blinks red or green to show MIDI activity. It comes with an RJ11-to-KLR A3M adapter cable and an XLR-to-MIDI Y-cable. The RJ11 (telephone) cable plugs in to the port on the bottom of the HandiClip and

attaches to the XLR-to-MIDI Y-cable. You can then plug the MIDI connectors in to the unit you wish to control. I plugged the setup into my PC, and it functioned the same as the Palm-to-MIDI interface and the SG20. The adapters let you plug the HandiClip in to longer RJ11 cables or in to a snake for controlling your units from a distance. The XLR cable can be used with the Protea using the RS232 or MIDI protocol.

Handi-Q has also just released its new HotSync-to-MIDI cable, which costs considerably less than the HandiClip, It offers a direct connection from the Palm serial port to a MIDI-controllable device through a MIDI Y-cable. Green and red LEDs on the MIDI connectors indicate data presence; simultaneous in and out flow is supported. Because the interface lacks batteries, it drains the Palm's batteries quicker than the HandiClip does.

According to the documentation, the HotSync cable performs successfully when connected through XLR cables on a snake cable run of 750 feet, but for anything longer than 600 feet, Handi-Q recommends the HandiClip. The HotSync cable also lacks the HandiClip's protection for the Palm from "improper cabling mishaps." In my tests, the interface worked just fine, but unlike most of the other cables, the ends are



FIG. 10: Handi-Q's HandiClip (top) allows you to control external hardware devices from the Palm. Handi-Q's less expensive HotSync-to-MIDI cable lets you connect the Palm to a MIDI-controllable device.





alrFX

all synth

INTRODUCING THE 1ST MUSICAL INSTRUMENTS OF THE 21ST CENTURY



A Whole New Dimension in Sound.

Presenting airFX, the most extreme, performance oriented DSP ever made. Slide your hand through the invisible, 3-D infared orb, and modify the sound of any electronic signal, such as CD's, LP's or tape - even live performances, including instruments and vocals, 50 high quality filters and effects, including percussive sounds. Take any tune and build it up, then break it down. Or warp it straight into the sweight zone and back again.

Ineko **Quality Effects Anyone** Can Use and Afford.

Introducing Ineko. A table-top stereo effects processor that doesn't take an engineering degree to operate. A powerful, professionalquality tool for home or studio recording, as well as live DJ performances. Three simple knows control 48 dramatic effects, including reverb, filters and delays.

One Knob, No Keys, Infinite Possibilities.

Meet airSynth. The wildest, most agressive, high-performance sound effects generator to ever grace this planet. And the perfect companion to its radical cousin airFX. AirSynth can be used to layer sounds on any electronics sound source or on its own as a dramatic, freestanding performance instrument. A simple wave of the hand triggers any of 50 high quality sounds. Building rising, tweaking, and rouring the fat, succelent sound with every little shirt and quaver. Easy to use, a challenge to master - a bold new synth everyone can play.

PERFORMANCE FX TOOLS



female, so you need regular MIDI cables to connect it to your equipment.

IN CONTROL

To use the Handi-Q products, choose the apparatus you wish to control and then download the appropriate Handi Systems Controller Software (see Fig. 11). Within the software, select a MIDI channel for each device that you want to control and adjust the parameters using faders. In the EQ software, you can set the faders in real time. You can also run in unsynchronized mode in case the EQ settings on the unit get changed while you are away from it. Then, hit the Synchronize button to send the information to the unit. In Handi-Q Ultra-Curve, the software's EQ curve is added to or subtracted from curves already in place on the EQ device. The documentation for the HandiMix VCA control software states that you can use the program with any equipment that has insert capability.

Because I use effects devices with my electric violin, I tried *HandiFX*. It lets you choose and name the mechanism you wish to control, set the MIDI channel, assign the controller number, and specify the minimum, maximum, and default settings. You then switch to the main screen to operate the faders attached to the selected device. You can

save the settings to a Palm Memo file for retrieval later and back them up to your desktop computer when the Palm is synced. I tried that with an MPX 500 from Lexicon, and it worked great. It won't send Program Change messages, but that capability is coming in a free update. Although

the programs can be downloaded from the Handi-Q Web site, they only send out MIDI data after you enter the HandiKey (available after you pay for and register the product).

MiniMidi, from J. T. Solutions (see Fig. 12), simply sends messages to MIDI devices; it's more basic and less expensive than the Handi-Q products. Mini-Midi's first screen is the Main/Keyboard page, which has a keyboard at the top to test the selected MIDI channel settings. A small horizontal slider lets you choose the MIDI instrument for the selected channels in the line of boxes below. The vertical faders just below send continuous controller messages to the controller, which you choose from a pull-down menu that includes three presets and four user settings. You can save settings on four pages. All the settings can then be sent at once, on the appropriate MIDI channels, to a number of MIDI-controllable devices. The program also lets you send different controller data on the same MIDI channel. You can set the controller

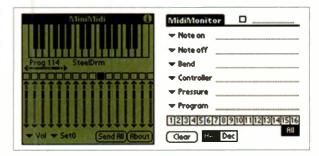


FIG. 12: J. T. Solutions' *MiniMidi* lets you send messages to MIDI devices; Geoff Smith's *MidiMonitor* displays incoming MIDI data.

number and the name for each field in the setup screen. As with the previous section, four banks of settings can be sent simultaneously. I tested *MiniMidi* on my PC, and it worked fine.

Geoff Smith's MidiMonitor lets you monitor incoming MIDI messages using a number of configurable fields. Data can be received in hex format, in decimal format, or as raw MIDI data. I tested MidiMonitor with the volume and wah pedals on a Line 6 Floorboard sending messages in to a Pod Pro and out the back as MIDI data. Although the program displayed continuous controller MIDI data, it did not seem to be consistently accurate. That was also the case with MIDI data from my PC. MidiMonitor may eventually be very cool, but at the moment, it's somewhat unreliable.

COOL TOOLS

If you'd like to learn more about music-related products for the Palm OS plat-form, I recommend the following Web sites: the Handheld Music Homepage (www.crudites.org/soundventures/handheld-music) and the Composing Music on the Palm page (www.cs.mu.oz.au/~winikoff/palm/music). Most programs mentioned in this article are available as shareware at PalmGear (www.palmgear.com) or Handango (www.handango.com).

Cat Taylor is an eclectic electric and acoustic violinist specializing in Celtic rock. Her current bands include Fiddler's Fancy, the Veil, and Avalon Rising. Special thanks to Larry the O for his technical assistance.

Hendel OI Rev BI

DESCRIPTION OF THE CONTROL OF THE





FIG. 11: Handi-Q's Handi Systems Controller Software provides a full complement of onecreen controls for several types of hardware devices.

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





Levery year disguising presents from the members of my household becomes increasingly difficult. Often a simple shake of a wrapped package is all it takes to reveal the contents, which has forced me to repackage presents in oddly shaped boxes to keep them a secret as long as possible. The perfect accomplice in discreet gift giving is the stocking.

It may seem that a stocking can hold only relatively small, inexpensive items. However, to crafty gift givers, stockings offer a great place to hide an expensive gift from a wily recipient.

For this year's EM holiday gift guide, I decided to focus on small but practical items that anyone with a personal studio would enjoy. But unlike previous years, I have increased the price range to include as many of the latest gizmos as possible.

Let the wish lists begin!

A Studio in Your Stocking

1. Every studio needs a multitrack recorder. For a pocket-size personal digital studio, look no further than the Korg ToneWorks PXR4 (S500). This miniature 4-track records directly to SmartMedia cards and offers 32 virtual tracks, a multi-effects processor, amp and mic modelers, and rhythm patterns. The editing features include track bouncing and time compression/expansion. The PXR4 also includes a built-in microphone and a %-inch input with a high- and low-impedance switch. Korg USA, Inc.; tel. (516) 333-9100; Web www.korg.com.

2. Soundman Microphones OKM If K Classic Studio (S325) is a pair of miniature omni mics you wear in your ears. The mics are light and fit comfortably in the ears, and the result you hear is a binaural stereo recording. Soundman offers seven models to cover a variety of recording situations, including rock, jazz, and classical music. Soundman Microphones/Independent Audio (distributor); tel. (207) 773-2424; e-mail info@independentaudio.com; Web www.independentaudio.com.

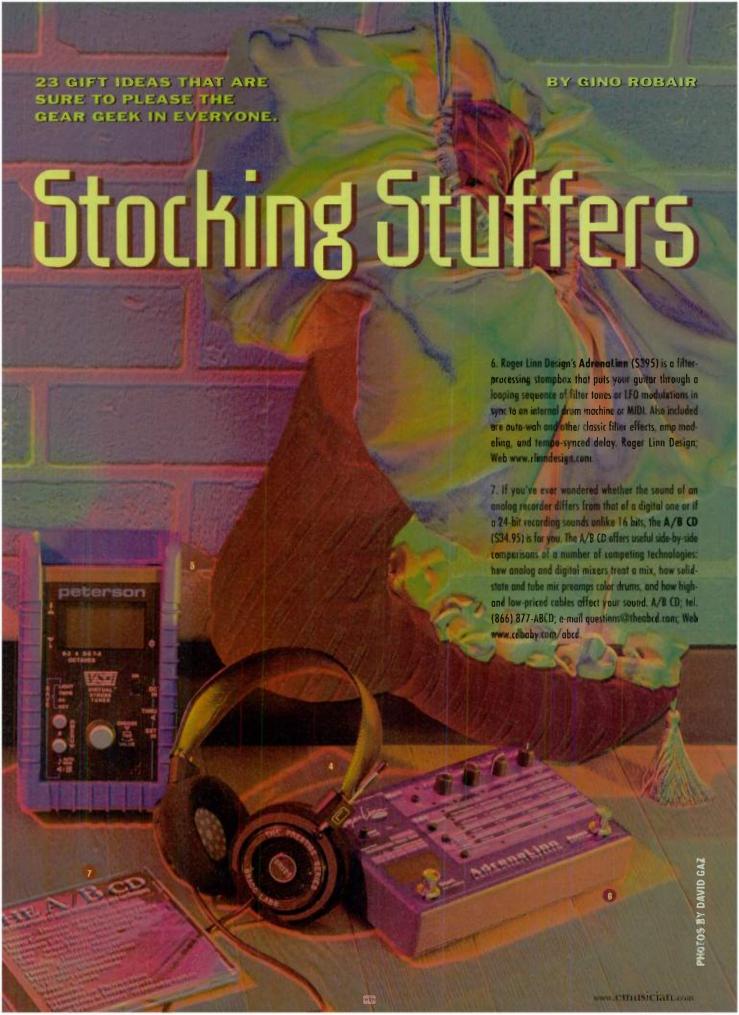
3. Whether you are practicing complex time signatures or laying down a quick click track, you can't top the Boss Dr. Beat DB-88 (\$195). The DB-88 is a programmable metronome that offers five divisions of the beat, a simple tuner, tap tempo, and two stereo headphone jacks. The unit runs on a 9V battery or a wall wart and can be attached to a cymbal stand. Roland Corporation U.S.; tel. (323) 890-3700; Web www.rolandus.com.

4. Every studio needs a pair of reference headphones. Grado's Prestige
Series SR125 headphones (S150) are
the choice of many professionals. They
offer excellent sound reproduction and a frequency range of 20 Hz to 20 kHz. Their lightweight
design makes them comfortable to wear, especially during long
sessions. Grado Labs; tel. (718) 435-5340; e-mail info@gradolabs.com;
Web www.gradolabs.com.

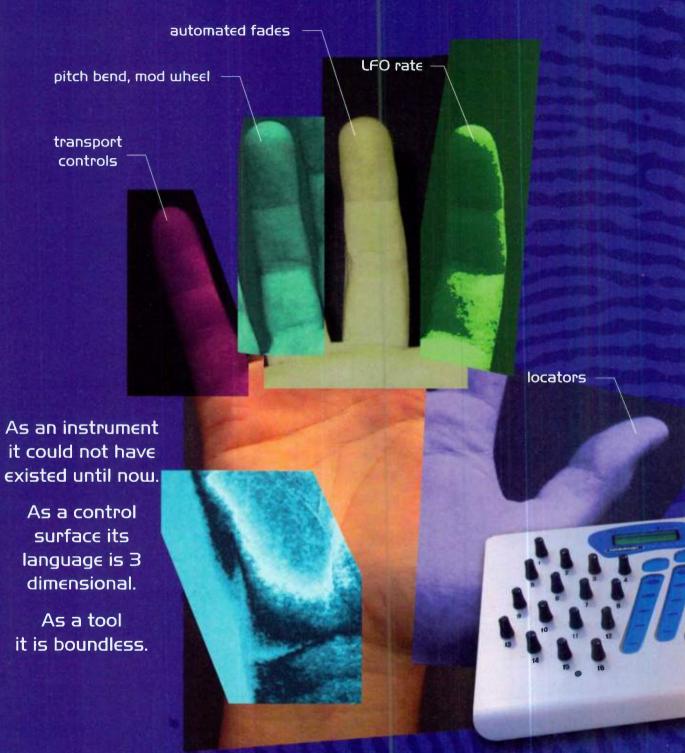
5 The Peterson VS-1 Virtual Strobe Tuner (\$329) can tune e erything in your studio. Accurate to 1/1,000 of a semitone, the VS-1 has a built-in mic, a X-inch input and output, nine octaves of reference tones, historical temperaments, and a reference A adjustable in 0.5 Hz increments. It runs on three AA batteries or a wall-wort power supply. Peterson Electro-Musical Products; tel. (708)



383-3311. e-mail email@



Push the envelope. Move in a new



Surface One is a completely unique virtual control surface that uses a fiber optic touch-sensitive material as its primary interface.

The user-configurable trigger objects can represent virtual faders, buttons, and knobs, and can be linked to multiple messages. All objects can be assigned to any MIDI commands.

Surface One introduces no latency to your MIDI messages, and is compatible with any MIDI-compatible software programs or hardware.

direction. Feel the future of technology.

mute, solo, pan modulation/filter/amplitude envelopes

surround orientation

patch change, lightboard cues

filterfrequency

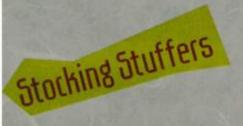
SURFACEONE

Features Include:

•8 virtual pads, which can be subdivided into 5 individual triggers, offering a total of 40 objects • Il virtual buttons • I6 knobs with 360 degree rotation • 2 in/2 out MIDI operation • USB compatibility • Functions with and without a computer



UBB MIDI



8. Whether you are tweaking the filters on a synth or adjusting parameters in a DAW, you will get better results using a real knob. Doepfer's Pocket Dial MIDI controller (\$229) has 16 "endless" rotary controls and four banks for a total of 64 virtual knobs. For the desktop musician who has little open desk space, Pocket Dial's size makes it a winner. Doepfer Musikelektronik GMBH/ Enport (distributor); tel. (402) 398-0198; e-mail enport@ home.com; Web www.doepfer.com.

9. From C-Mexx comes MIR (\$365), which stands for MIDI Interactive Remote. The space-age controller features a five-button touch pad, three control knobs, and a 2-by-16-character LCD for displaying the parameters you're working with. MIR fits easily in the palm of your hand or mounts conveniently on a stand. It is programmable and can import settings from other controllers. C-Mexx Software/X-Vision AudioUS (distributor); tel. (330) 747-3857; e-mail info@xvisionaudio.com; Web www.mircontrol.com.

10. Controlling virtual faders with a mouse is rarely satisfying. That's why Encore Electronics created the Slidemate MIDI control surface (\$249). Slidemate features eight faders, four Group buttons, a Scene button (which also serves as a panic button), and MIDI delay. The device is fully programmable and can send continuous controller and System Exclusive messages. Encore Electronics; tel. (925) 229-8875; e-mail sales@ encoreelectronics.com; Web www.encoreelectronics.com.



foliday for Laptops



11. The Sound Devices USBPre (Mac/Win; \$695) proves that great things do come in small packages. This 2-channel device includes a pair of balanced mic preamps with phantom power and a 15 dB pad; 1/4-inch and RCA inputs; \$\$/PDIF 1/0; and a pair of headphone jacks. The USBPre uses 24-bit converters and has a frequency range of 10 Hz to 22 kHz. Sound Devices, LLC; tel. (608) \$24-0625; e-mail info@sounddevices.com; Web www.sounddevices.com.

12. Building on the success of its low-latency Hammerfall PCI card, RME has created the Hammerfall DSP Digiface (Mac/Win; S650). This portable half-rack digital interface gives you 32 channels of MIDI I/O and 24 channels of 24-bit, 96 kHz digital-audio I/O. The connectors include front- and back-panel MIDI ports, three Lightpipe inputs and outputs, S/PDIF I/O, word-clock I/O, and an ADAT sync input. RME Intelligent Audio Solutions/X-Vision AudioUS (distributor); tel. (330) 747-3857; e-mail info@xvisionaudio.com; Web www.rme-audio.com.

13. No multichannel USB audio interface is smaller or sexier than Emagic's emi 2/6 (Mac/Win; S499). This translucent blue interface provides two analog inputs, six analog outputs, and S/PDIF I/O in a case the size of a VHS cassette tape. A host of top-panel status LEDs keep you in the know during a session, and the emi 2/6 can be operated at 44.1 or 48 kHz at a resolution of 16 or 24 bits. It comes with ASIO drivers for Mac and PC. Emagic USA; tel. (530) 477-1051; e-mail emagic@emagicusa.com; Web www.emagic.de.

The beast in a titanium cage.

THE NEW Fantom WORKSTATION

76 KEYS · OVER 1000 SOUNDS · D-BEAM CONTROLLER · SRX-EXPANSION · FLEXIBLE LINEAR AND PATTERN RECORDING · REALTIME PHRASE SEQUENCING ·



90 MULTI-EFFECTS · NEW VARIABLE ARPEGGIATOR
INTUITIVE DESIGN · OUR BEST EVER · NOW GO PLAY.

FAXBACK INFO: 323,890.3780 DOC#10563 · PHONE: 323.890.3700

"Frantom" is a required trademark of and is hoensed by Phantom Guitar Works.



WWW.ROLANDUS.COM

Stocking Stuffers

14. Griffin Technology's PowerMate (Mac/Win, S45) is a deceptively simple USB device for controlling nearly any function. The polished aluminum knob has a smooth and solid feel when turned or pressed. If measures roughly one and-a-half inches tall and two inches in diameter, so it can be placed just about anywhere. The skid-free base glows blue when your computer is on and pulses when your computer is sleeping. Griffin Technology, Inc., tel. (615) 399-7000, e-mail sales @griffintechnology.com. Web www.griffintechnology.com

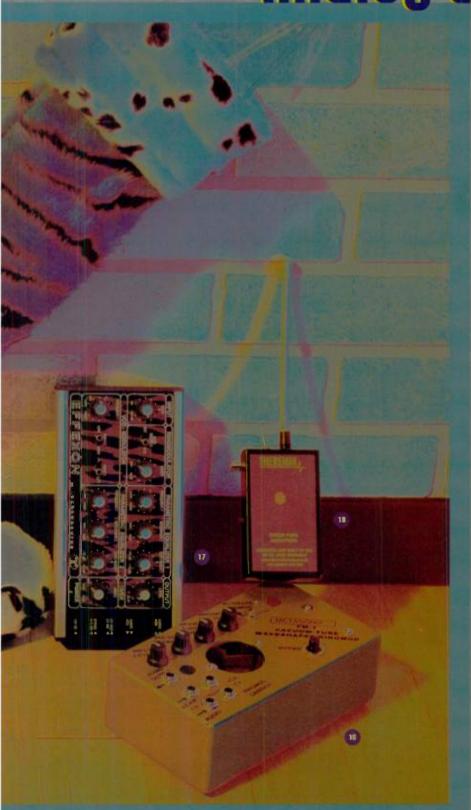
15. If you want to listen to ten hours of music from a player that fits in your hand, look no further than the Archos Jukebox HD-MP3 Recorder Player (Mac/Win, \$349). It has a 6 GB hard drive, connects to your computer with a USB cable, runs on four rechargeable AA batteries, and comes with a carrying case, headphones, Mini Stereo/RCA adapter, and MusicMatch MP3-encoding software. Archos Technology Inc.; tel. (949) 453-1121; e-mail us-sales@archos.com; Web www.archos.com.

16. The Computer Sound Morpher (Win S49) from Intel Play features a handheld recorder that can capture four minutes of sound with its built-in adjustable microphone. You can transfer the sounds to your computer using the supplied USE cable. The Computer Sound Morpher includes Windows 95/98—compatible software for editing and syncing your audio to animated onscreen images. You also get more than 90 sound effects to get you started. Intel Corporation, Web www.intelplay.com.



Toys for All Ages

Analog Christmas



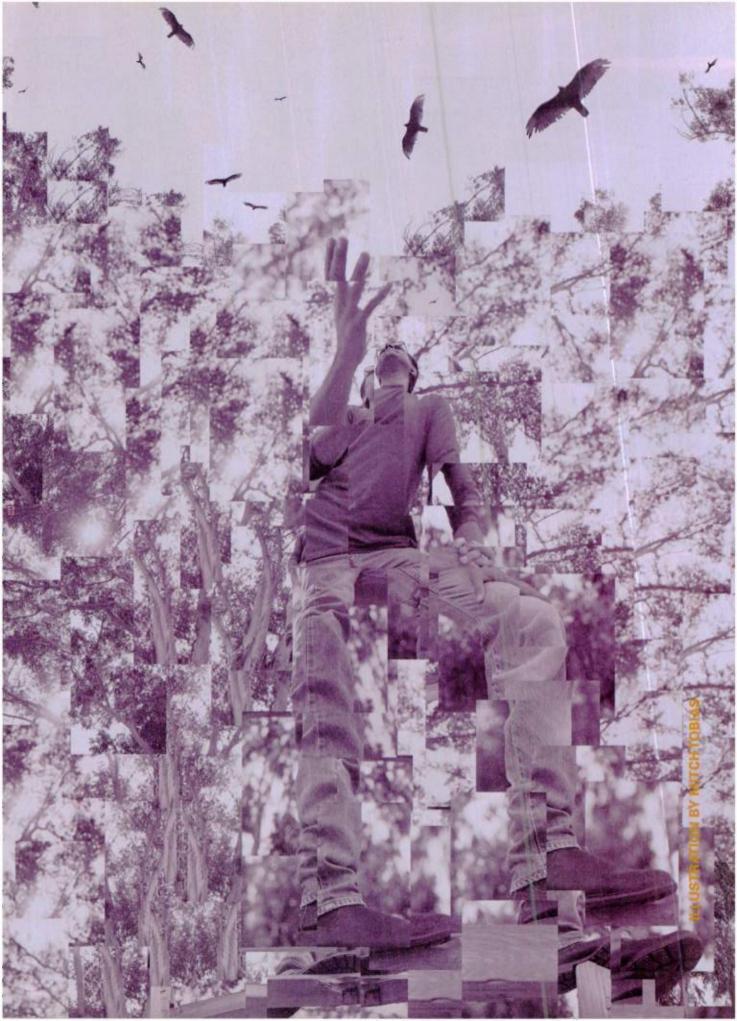
17. Effection (\$329), the latest in the Technosourus line of Small Monsters, is a single-channel effects processor that combines two bands of parametric EQ with a voltage controlled oscillator, ring modulator, and overdrive circuit. The overdrive circuit is normalized between the two EQs, so you can add severe squark to almost any source material. Technosourus/Drum Machine Museum (distributor), e-mail mickeyt@drummachine.com. Web www.drummachine.com.

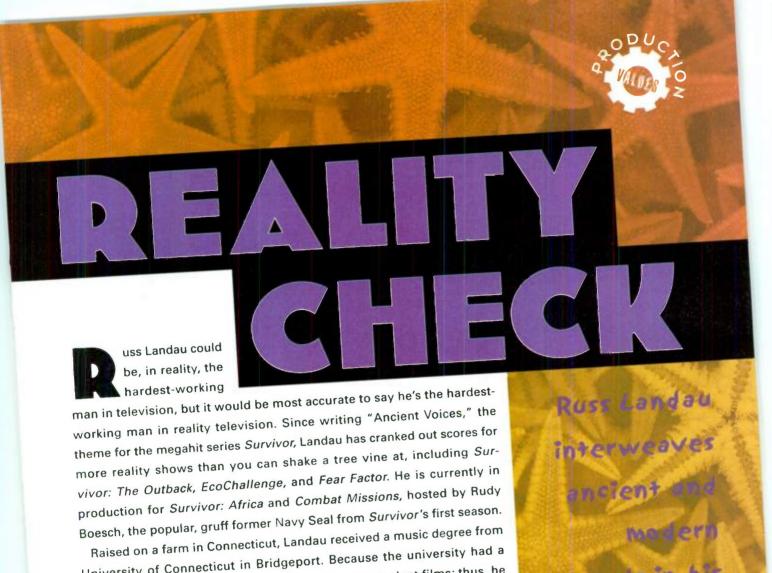
18. The Metusonix TM-1 (S399) processor is unique for its size and for its functions. It combines a vacuum tube ring modulator with the tube-based waveshaper from the TS-21 Hellfire Medulator, in a stompbox-size package. It's also designed to fit into the frame of a Synthesis Technology MOTM analog modular synth. Sounds processed through the TM-1 are just as distorted and unpredictable as you would expect. Metasonix; tel. (707) 263-5343, e-mail synth@metasonix.com, Web www.metasonix.com.

19. From the United Kingdom comes Rosedene Audio's appropriately named Pocket Theremin (\$150). Although small, the battery-powered, space-controlled instrument includes a pitch antenna, a built-in speaker, an RCA octput jack, and a sensitivity knob. Run it through a few effects devices—the TM-1 and Effexon will do just fine—for some screaming new sounds. Rosedene Audio, tel. 44-174-782-0536; e-mail rene@fullerton demon co.uk.

The Virtual Stocking 20. Whether you want to back up a hard drive or make a demo, every studio needs to burn CDs. Ahead Software's Nero 5.5 (Win; \$69) supports 22. With Plasma (Win; \$69), Cakewalk offers musicians 74-, 80-, and 90-minute media, has drag-and-drop functionality, and comes bundled with an MPEG-1 encoder for creating VCDs; Cover/Designer. interested in loop-based composition and remixing a set of multitrack audio and MIDI tools taken from its flagship program, a program for creating inserts and labels; and Toolkit for testing and modifying the speed of your CD-ROM drive. Ahead Software AG; tel. 49-724-Sonar. Besides its beat- and pitch-matching features, Plasma accommodates DirectX Instruments software-synth plug-ins, 891-1800; e-mail sales@ahead.de; Web www.nero.com or www.ahead.de. such as DreamStation (bundled with the program), and includes FXPad, a plug-in that lets you use a joystick to control DirectX effects. Cakewalk; tel. (888) CAKEWALK or (617) 423-9004; e-mail sales@cakewalk.com; Web www.cakewalk.com. (TIAGIX) 20 21. MES iSynth (Mac; \$79) is a fun and easy-to-use software synth that includes a step sequencer, a mixer (with mute auto-23. Magix PlayR Jukebox XXL (Win: \$49.99) mation), an arpegaiator, and effects. The sounds are generated by a pair of samplers, a bass synth, a offers the budding remixer a chance to edit and commono synth, and a drum module. One-bar patbine audio and visual material in real time. You can set terns can be chained together to create songs, your music to a JPEG slide show or marry it to a live video and you can control iSynth in real time feed. PlayR Jukebox XXL includes an audio editor, audio and via MIDI using OMS. MES/Cycling '74 video effects, and much more. A CD of 1,100 sounds is also in-(distributor); tel. (415) 621-5743; cluded. Magix Entertainment Corp. USA; tel. (888) 866-2449 or e-mail info@cycling74.com; Web (310) 656-0644; e-mail info@magix.net; Web www.magix.net. @ www.cycling74.com. 70 Electronic Musician December 2001 www.emusician.com







Raised on a farm in Connecticut, Landau received a music degree from University of Connecticut in Bridgeport. Because the university had a strong film school, he spent a lot of time scoring student films; thus, he gained his first experience writing music for picture. After college Landau headed to New York City, where he became a session bassist as well as a member of the Folk Squad, a group of musicians that backed up artists such as Judy Collins and Mary Travers. He also became a longtime mainstay of the proto-new-age/world-music ensemble the Paul Winter Consort.

Landau migrated to Los Angeles in 1990 and picked up some work but found it tough going. When his father's health was failing, he decided to pack up his family and belongings to return to the East Coast. As fate would have it, no sooner was the moving van loaded than he received a phone call to try his hand scoring the Steven Spielberg–produced series SeaQuest: DSV. Landau received an Emmy Award nomination in 1996 for his work on that show, and he hasn't stopped since, progressing from session player to one of Los Angeles's first-call TV composers in the process.

For *Survivor*, Landau melds recordings of traditional instruments and themes with a mountain of samples, orchestral and otherwise, to achieve the ancient-futuristic blend that drives the show. He received an Emmy nomination this year for "Theme for *Survivor: The Australian Outback.*" He shares the series-scoring duties tag-team style with composer David Vanacore.

Survivor and BY LARRY THE O December 2001 Electronic Musician 73



In the studio of his bucolic Topanga Canyon home, the interview was highlighted by Landau's excited discussion of his then-upcoming trip to Kenya to do field recording and on-site composition for *Survivor*'s third season and was punctuated by appearances of his two sons. Clearly a happy musician, Landau has struggled, worked, and finally made it to a place where he can make his mark and live his dream.

Why did you begin doing music for picture?

Ever since I had the first opportunity to do music for visuals, I loved marrying music and picture. I love writing music, but it's much better to have it heard than have it just exist in a vacuum. I found that in writing for picture, even though music wasn't the primary focus, my music was heard: there was an audience, and I got to have some kind of response from people.

How did you hook up with Paul Winter?

Gordon Johnson, a friend of mine and an incredible musician, was Paul Win-



Most of Landau's television scoring work is done in the three studios attached to his house.

ter's bass player. He took another gig, so I subbed for him. He kept doing his gig, and I kept doing my gig, and it turned into a ten-year relationship where I went from bass player to bass player-writer-producer.

Gordon brought me into the band; then Paul Halley, Winter's keyboard player and "master composer," hired me. He was based at St. John's Cathedral in New York, and I started helping him with all his projects there. We became very close, and I produced his first album for Paul Winter's label. I coproduced [Winter cellist] Eugene Friesen's album, and then I started producing Paul Winter because I was good in the studio. It became very convenient for them because I played bass and manned the tape recorder.

What I'm doing now seems to be following in Winter's tradition. In Australia I went into a cave—a huge underground cathedral, if you will—recording on location in the homeland of the aboriginal musician David Hudson. It was inspiring to me in a similar way to what Paul did in the Grand Canyon and Lake Baikal.

You must have been introduced to many ethnic and world influences.

Yeah. We'd do a concert in Israel, and we'd jam with Israeli and Palestinian musicians. We did a concert in Brazil, and it was great to meet all those fantastic Brazilian musicians. I feel that music transcends boundaries, and the boundaries that are imposed on music are often demographic ones: a record label will ask, "Is it pop, dance, hip-hop, urban, rap?" It's commercial stuff. The most incredible thing for me is that with music for picture you don't get pigeonholed into any demographics; you can do whatever fits the scene.

How did you get Survivor?

I met Mark Burnett [one of Survivor's executive producers] through our wives, who got into a fight over a parking space at the Montessori school and then became best friends, as those things usually go. Mark was producing EcoChallenge at the time. I really



Just home from school, Landau's oldest son, Ryan, gets an opportunity to play at the piano with Dad

wanted to do his show, but that didn't happen then, because *EcoChallenge* was produced by another production company.

Then he got this show from England, Survivor, and he wanted to do his version of it in the United States. I started working with him on budgets a year before it ever got into production. As it got closer and closer, I started working on themes for it. Sixteen themes. Big orchestral themes. But they weren't really saying what the show was about. Eventually all were used, giving the show a big orchestral element.

Finally, we realized we needed to come up with a [common] musical language. Mark doesn't speak music in the same way I speak music. We decided to do a family vacation and drove on a ski trip to Mammoth [in California]. Our wives and kids all went in one car, and Mark and I went in another car and just listened to music and talked about music for six hours. We developed a way of speaking that made sense. After we came back from that weekend trip, I put "Ancient Voices" on his desk. Everybody flipped because it was the marriage of tribal with modern-Lord of the Flies meets MTV.

One of the noticeable things from the first season was the blend of traditional percussion with synthesized textures. Do you make a conscious

BAND-IN-A-BOX®



VERSION 10 FOR WINDOWS® IS HERE!

* NOTE: Band-in-a-Box for Macintosh® is currently available at version 8.0



INTELLIGENT MUSIC SOFTWARE FOR YOUR PC OR MAC* IS HERE!

Version 10 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.



NEW FEATURES IN BAND-IN-A-BOX VER. 10 FOR WINDOWS

THIS MAJOR NEW UPGRADE TO BAND-IN-A-BOX INCLUDES OVER 50 NEW FEATURES!

First off, you'll get "guitar styles" – styles that play and show strummed and picked guitar parts accurately on the guitar fretboard, using your choice of Pop, Jazz, Country or Folk guitar chording. These are the best sounding guitar styles ever. Then there's the "Guitar Tutor" which shows you real guitar chords on the guitar fretboard along to any song, and in any style. There's also a Chord Substitution Wizard which can provide you with a choice of applicable substitutions for any chord progression.

The Live Harmonies feature has been enhanced, so that when the program is stopped you can play harmonies that follow the chords you play. There's also a Chord Preview Builder. This feature allows you to hear how a chord sounds before you select it from the popular chord types offered. You'll also want to check out the new "Ear Training Window" which will provide you with endless hours of chord and interval recognition exercises.

The **Digital Audio Recording feature has been enhanced**; now you can harness the power of the popular **DirectX audio plug-in format with DirectX support**. There's also an **Audio Edit Window** to allow you to make easy edits and overdubs of your audio track, and when you're ready to let others hear your composition, you can "burn" it directly to an Audio-CD with your CD-RW drive. You can even save your composition in **Windows**

Media Format, leaving you with a file all ready to be uploaded to your web site and played over the Internet with great fidelity over a wide selection of streaming rates.

Band-in-a-Box Version 10 also includes notation printout enhancements such as **Print-Preview**, **Print-to-JPG** (viewable on your Web site) and a **Print Chords-only** fakebook-style leadsheet. **And much more...**

"...one of the few music products that sits in the 'must-have' category.
Sound On Sound, July 2000

MORE FEATURES IN VERSION 10...

OVER 150 STYLES INCLUDED: Jazz, Latin, Waltzes, Pop/Rock, Classical, Country, Folk, Ethnic, Euro-Tek, Fusion, Blues, Unplugged, Praise and Worship, and more!

AUTOMATIC SOLOING. Simply select the soloist you'd like to bear and play with (from over 100 available) and Band-in-a-Box will create & play a solo in that style, along to any song! This is bot!

AUTOMATIC SONGS. Compose a new song in the style of your choice, complete with intro, chords, melody, arrangement & improvisation. You can go from nothing to a completed song in one second!

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.

AUDIO TRACK. Add vocals or any instrument to your Band-in-a-Box song.

NEW IMPROVED GUITAR SUPPORT. Animated Guitar Fretboard Window—
displays any track; Guitar tablature—on-screen or print out notation
complete with Guitar TAB.

BIG LYRICS WINDOW. Great for singalongs and Karaoke!

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.

AUTOMATIC HARMONIZATION. You can select from over 100 barmonies to barmonize the melody track, or barmonize what you play along in real time. Play along in "SuperSax" barmony, or barmonize the melody with "Shearing Quintet". Create your own barmonies or edit our barmonies.

Burn your own Audio-CD!

Now you can convert ("burn") your Band-in-a-Box composition directly to an Audio-CD. The resulting CD will play in any standard Audio-CD player. NOTE: this feature requires a CD-R or CD-RW drive.



"Guitar Tutor" shows you real guitar chords on the guitar fretboard!

BAND-IN-A-BOX PRICES...

FIRST-TIME PURCHASE (Band-in-a-Box for Macintosh \otimes currently available at ver. 8.0)

✓ Band-in-a-Box Pro Version 10...\$88

Includes Version 10, Styles Disks 1-3, Harmonies Disk 1, Soloist Disk Set 1, Melodist Disk Set 1 and bonus software SlowBlast! (Windows® version only)

✓ Band-in-a-Box MegaPAK version 10...\$249

The MegaPAK contains "the works" – version 10 PLUS Styles Disks (1-26), all Soloist Disks (1-9), Melodists (1.2), The MIDI Fakebook & PowerGuide Instructional CD-ROM and bonus software SloveBlast! (Windows® version only)

UPGRADES

✓ Regular UPGRADE from version 9...\$49 From Ver. 8 or earlier or crossgrade...\$59

Includes Band-in-a-Box version 10 upgrade PLUS Styles Disk 24

✓ MegaPAK UPGRADE from version 9...\$149 From Ver. 8 or earlier or crossgrade...\$159

ADD-ONS FOR BAND-IN-A-BOX...each \$29

- ✓ NEW! Styles Disk 24 Guitar and More!
- ✓ NEW! Styles Disk 25 Vintage Jazz.
- ✓ NEW! Styles Disk 26 Classic Country
- ✓ MORE STYLES DISKS: Styles Disk 23 Contemporary Country Styles Disk 22

- 60's British Invasion • Styles Disk 21 - Top 40 • Styles Disk 20 - Southern Gospel • Styles Disk 19 - Requested • #18 - Praise & Worship • #17 - Unplugged

• #16 - All Blues • #15 - Nashville Country • #14 - Jazz/Fusion • #13 - EuroTek

• #12 - Country/Swing • #11 - Classical • Styles Disks #4-10

SOLOISTS DISKS: Soloist Disk Set #9 — Blues Guitar, Country Piano & More...\$29 • Disk Sets #2-8...each \$29 • Bluegrass MIDI Fakebook...\$99

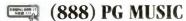
PLUS: The MIDI Fakebook for Band-in-a-Box... \$29

COMPREHENSIVE CD-ROM VIDEO INSTRUCTION FOR BAND-IN-A-BOX:

includes Vol. 1 (Basics) and Vol. 2 (Advanced) of "Inside Band-in-a-Box"...\$49

PG MUSIC INC.

29 Cadillac Ave., Victoria, BC V8Z 1T3 CANADA Phone (250) 475-2874 • (800) 268-6272



<u>www.pgmusic.com</u> • sales@pgmusic.com Fax (250) 475-2937 • (888) 475-1444





effort to do that, to juxtapose a modern context with the traditional context?

Sometimes. In the theme, for sure. I have electronic percussion going alongside traditional percussion; I have an ancient Russian folk song as the motor interwoven with a modern orchestral arrange-

ment. I just had the ancient Russian chant translated into Swahili and some lesser-known languages, and I'm weaving some little elements in and out [for *Survivor: Africa*]. For me it's tremendous. I love being able to explore and hear the Africans singing the chant. People

RUSS NEVER SLEEPS

In his 15 years of professional playing and recording, Russ Landau has crossed some diverse musical terrain. Here are the highlights of his career in producing, scoring, and playing.

Film Scores

Senior Week (Vestron, 1988)

Voices from the Attic (Siren, 1988)

Cat and Mousse (nominated Grand Prize, Cannes; HBO, 1989)

Project: Tin Men (movie cut; Orion, 1991)

Bonnie and Clyde (Fox Television, 1992)

Other People's Secrets (Rich Pix, 1992)

Viva Terra Viva (Modern Pictures International, 1992)

Sea Scapes (PowerSports Productions, 1994)

Visions of the Orient (Millennium International, 1995)

The Rock (additional music; Simpson, Bruckheimer/

Hollywood Pictures, 1996)

Telling You (Division I/Cinetel Productions, 1997-98)

Nowhere Land (Prosperity Pictures, 1998)

Love and Action in Chicago (Prosperity Pictures, 1999)

Totally Irresponsible (Prosperity Pictures, 1999)

Racehoss (Breezeway Entertainment, 2000)

Television Scores and Themes

Fortune Dane (pilot; ABC/Orion TV, 1987)

Down Delaware Road (pilot; NBC/Weintraub, 1989)

Bodyguard (pilot; NBC/Weintraub, 1990)

Project: Tin Men (pilot; ABC/Weintraub, 1990)

Ren and Stimpy (score; Games Productions/

Nickelodeon, 1993)

Carrier: Fortress at Sea (Discovery Channel, 1994)

SeaQuest: DSV (12 episodes; Amblin/NBC, 1994-95)

SeaQuest 2032 (Emmy Award-nominated score;

Amblin/NBC, 1995-96)

L.A. Firefighters (20th Century Fox, 1996-97)

Moloney (Tristar/CBS, 1996-97)

Baby Animal Tales (Stone House/Discovery Channel, 1997)

Four Corners (score; Tristar/CBS, 1997-98)

The Net (Winkler/Tristar/USA, 1998-99)

Combat Missions (NBC, 2001)

Fear Factor (NBC, 2001)

Survivor: The Australian Outback; Survivor: Africa

(CBS, 2001)

Survivor U.K. (British ITV, 2001)

Jingles, Commercial Score, Logos

Kirin Beer (with Paul Winter, 1990-91)

Coors/Zima (O & M, 1993)

"PowerSports Theme" (logo; PowerSports Productions

Syndicated, 1993)

Papazian Hirsch (logo; Papazian Hirsch, 1997)

Calgary Lane (logo; Calgary Lane, 1997)

Winkler (logo; Irwin Winkler, 1998)

Good Neighbor Pharmacy (Engle & Murphy, 1999–2000)

Make-a-Wish NASCAR (Make-a-Wish Foundation, 2000)

Survivor (lo 30; Burnett Productions, 2000)

Record Production

In Action, M ssing (Island/Tuxedo, 1986)

James Johnson, Never Enough (Island/Tuxedo, 1986)

Cheri Brandon, Sleeping with the Enemy (Geffen, 1987)

Ilene Kristen Give Away (Island/Tuxedo, 1987)

Paul Halley, Piano Song (Living Music/AG, 1989)

Paul Winter Consort, Wintersong (Living Music/AG, 1989)

South Side Johnny, Highway to Your Heart (Disney, 1989)

Guire Webb, New Frontier (Proxima/BMG, 1989)

Cheri Brandon, Too Late to Be Good (Geffen, 1990)

Paul Winter Consort, Earth: Voices of a Planet

(Living Music/AG, 1990)

Paul Winter Consort, The Man Who Planted Trees

(Living Music/AG, 1990)
Paul Halley, Angel on a Stone Wall (Living Music/

Paul Halley, Angel on a Stone Wall (Living Music/ AG, 1991)

Rise, Rise (Proxima/BMG, 1991)

Lui Collins, North of Mars (Molly Gamblin, 1992)

Eugene Friesen, New Friend (Living Music/AG, 1992)

Guire Webb, Leona (Proxima/BMG, 1992)

Paul Winter, Solstice (Living Music/AG, 1992)

Ol' Paint, Ol' Paint (Fresh Jazz/LMG, 1993)

Paul Winter Consort, Solstice Live (Living Music/AG, 1993)

Paul Winter, Frayer for the Wild Things (Grammy Award

winner; Living Music, 1994)
Noirin Ni Riain, *Celtic Soul* (Living Music, 1995)

Ancient Voices ("Survivor Theme" remixes; TVT

Records, 2000)

Dinosongs: Poems to Celebrate aT. Rex Named Sue

(Stone House/Scholastic, 2000)

Survivor (soundtrack; TVT Records, 2000)



5.1 REASONS ELLIOT SCHEINER PREFERS YAMAHA MSP10s.



"The MSP10s are the most accurate active monitors I've ever worked on."

Elliot Scheiner, DVD Audio authority

After 33 years as an engineer/producer, Elliot Scheiner has become the guru of DVD Audio. For his 5.1 surround sound mixes, Elliot uses Yamaha MSP10 monitor speakers exclusively. "They are perfectly powered speakers; you turn them up and they're still wonderful. My mixes sound great as they're going down and even better outside the studio."



The MSP10 also comes in highly polished Maple Sunburst

SW10 Subwoofer

The MSP10's dual amps drive 120 watts to lows/mids and 60 watts to the highs. Their frequency response carries out well past 40kHz, perfect for 24-bit, 96kHz masters. Plus, in Elliot's surround environment, "probably the most important aspect: the balances relate very well." Which, of course, makes them ideal for stereo mixes as well. Once again, Yamaha gives you more for less.



CREATING 'KANDO' TOGETHER

© 2001 Yamaha Corporation of America, Pro Audio Products, P.O. Box 6600, Buena Park, CA 90622, for literature call (800) 937-7171 ext. 614 or visit us at www.yamaha.com/proaudio. Yamaha is a registered trademark of Yamaha Corporation. All rights reserved.





often think it is an African chant and it isn't; it was Russian, but now it is African!

So you get the continuity yet at the same time \ldots

. . . a change in elements, and it's a major element to change.

Survivor is really fun because I get to do African music when I'm in Africa; I can do Australian-influenced music when I'm in Australia. So it's a palette with a framework. Obviously, I'm not doing traditional music; I'm doing my impressions from listening to the music, and then I take it back and use elements and try to do something that works well to picture.

Talk a little about how you work with David Vanacore on *Survivor*.

David and I are basically two independent composers that are working together on the series. There are two executive producers on the show: Mark Burnett, who created it, and Craig Piligian. Mark brought me in on it, and Craig asked me if I didn't mind sharing, seeing that there were 40 minutes of music to do on the show each week. He had a very talented composer that he wanted me to work with, and after I heard David's stuff, I thought he was great. So they put us together, and we've been having fun.

Do you guys coordinate at all?

Yeah, on some things. We spot the shows together and decide what [cues] we're [each] taking. We flip a coin sometimes.

What about on an aesthetic level, coordinating the sorts of orchestration and ideas you're going to use?

When we spot, we're both coming from a similar place in terms of our synth and orchestral scoring, but we bring different things to the table as far as that goes. We both like long-line melody; we both write cinematically. David came up with the cool tribal council music that's used all the time, and I wrote the theme, so we each bring an element to the show. In some ways, with two of us scoring, there's a little friendly competition between us to see who can write the next cool thing.

Did you go on-site at all for the first series?

No. I had no interest in going to Borneo. Last year, for Australia, it was not in the budget for the composers to go, but David and I decided that we both wanted to go. It worked out so well that [sending the composers on-site] is in the budget now. This year *Survivor* is flying me to Kenya.

It's great because I go on-site for five days in the middle of [production] and score a bunch of stuff for the editors. As soon as they start shooting, they're editing, and they like to edit to music, so I dump all the stuff that I'm doing right onto the Avid [video-editing systems].

When you go down there, what kind of rig are you going to take?

I'll be recording for five days in the field on a PowerBook G3/500 with a Sound Devices USB pre as well as an HHB PortaDisc recorder. We'll be documenting it on digital video, which will also be recording sound as a backup. Then, I'll have five days on the Survivor site where I'll be composing. I'll be using my PowerBook running Emagic Logic [Audio] with Logic Software Instruments and EXS24 as well as [BitHeadz] Unity DS-1.

I have a little Yamaha keyboard, and Yamaha is also providing me with one of its new Compass Series guitars to bring down so that I can jam with the tribes. Hopefully it won't get wrecked—stampeded by a herd of water buffalo or something.

What are you going to be recording in the field?

I'm going to 12 different remote villages and recording their ancient folk music. I have a guide, Anindo Marshall, a former pop singer from Kenya who's well loved and recognized, and she'll be my liaison. She's taking me to all the tribes and helping me with translations.

Are you going to get singing and instrumental music?

Mostly I'm interested in the old tribal traditional stuff that I can incorporate into some of the more modern things that I'm doing. The truth is that Los Angeles has a fairly strong population of Kenyan musicians. I've had some of them over here already working on arrangements and recording; I can do that here. I want to get the raw materials there. I want to find the real ancient, rough stuff: the

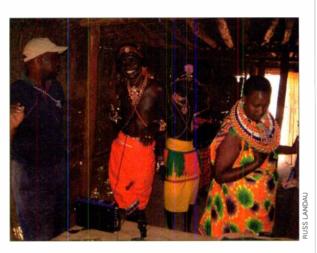
kids' group that's singing the traditional tribal song from 1,000 years ago. I want to learn from that and use it in what I'm writing. I want to put the viewer in the bush. It's as much of a learning experience for me as it is for the viewer.

The show is currently done in stereo. Nothing in surround?

No, just in stereo. Most people have mono TVs, a lot of people have stereo TVs, and a growing number of people have surround systems on their televisions, but [the score] better sound good on the lowest common denominator. When I do a show in surround, a lot of times when it's played back on stereo TV, the music disappears or one element of the music pokes through in a way that's very strange. I don't feel



In Kenya the Kangemi tribe greets Landau with native songs.



Singers from the Samburu tribe in Umoja village listen to takes recorded on the HHB PortaDisc recorder. On the left is Daniel Kip Tanui, Landau's Masai guide.

that the standardization of down mixing is really there yet.

We did mix a version of the theme in surround, and it was fun because we got to do all kinds of cool effects. As far as the music goes, left-center-right is where we would be anyway in a surround system. We would put other things like ambience in the surround speakers, but not the music. If I'm in a movie theater, I don't really want to hear the music coming from behind me; I prefer the center spectrum. That way the music becomes part of the picture.

I have two ears; I'm kind of a stereo person.

From what you say, you're able to work in a traditional post fashion in which you can spot the footage, so you're not writing blind.

I am writing a lot of music blind to give them music to cut to. A lot of music is earmarked for certain kinds of scenes, and the editors get to choose from a library's worth of material.

Picture editors, not music editors? That seems unusual.

We have a great team of editors, and it's really the only way a show like this could work. That's why the music pops so well: the picture is cut to it, so a lot of it plays like a music video.



√ 1-888-773-9665 www.c-techsys.com

Been wanting a PC DAW to record on,

but were afraid to because of all the

horror stories you've heard about PC's?

Fear no more.

California Technology's professional turn-key systems are rock solid. That's why our client list includes Merging Technology (Pyramix software & the Mykerinos card), University of Southern Colorado and UT/Austin music departments, RBC Ministries (radio/TV broadcast), Soundworks Studios (post-production and mastering using Sequoia), US Navy NAWCAD (for mobile broadcast) & others.

Because we're a computer manufacturer, we can handle your networking needs, & upgrade and repair your current systems. That's why you want our *free* e-catalog.

So let's talk. Call Doris toll free at 1-888-773-9665 and she'll send your e-catalog right out. Or see us at www.c-techsys.com. Mention this EM ad & get a free California Technology T-shirt.

California Technology 1837 Fulton Avenue Sacramento, CA 95825 1-888-773-9665



I'm really enjoying it. Sometimes I'm surprised in a painful way, but if I don't agree with something, I can change it. I have that option.

Then, when the picture's locked, we have a spotting session and decide what stuff has to be replaced or where they

couldn't find perfect cue in the library. If I see something I can do better, I'll say, "I can score that with a lot more emotion." So it's a combination of traditional scoring and letting the editors have their way with a library of original music that's been composed for the show.

Survivor: Africa is taking up a lot of time right now because of all the conceptualization of what I am doing with the theme and the languages and how to incorporate the Masai stomps and heavy breaths with the Swahili chanting.

How do you research that?

I have my Kenyan experts; they come over, and we talk. I'll throw a rehearsal together with some Kenyan singers, and we'll just experiment with the microphones on. I'm messing with stuff. I've worked with a lot of Africans throughout my career as a bass player, so I've been dying to sink my teeth into this stuff. The groove is forever.

The last episode of Survivor [Outback] had a live portion of the show. This was maybe the coolest thing I've done in my career. I scored the last 15 minutes of Survivor into the next hour of the Bryant Gumbel portion when he interviews all of the cast members. They determined the winner with a live vote on live TV all over the world, and I scored it with an on-camera 13-piece ensemble, conducted and played.

We were at CBS in Television City [Los Angeles], and it was a live gig in front of 70 million people. It was really nerve-wracking and scary but incredibly exciting. That went over so well that I'm already booked for the next live Survivor gig.

Talk a little bit about orchestration and tools. What is the mix of stuff that you do—synths versus sampled instruments versus instruments performed live?

For the live orchestra performance, I had a sample of a sawtooth loop playing, and that was my click track to keep everybody together as well as a major element in the theme. So I am holding that down in one hand, playing a sort of a soft pad in my left hand, and then everyone is playing along with it. So I'm totally mixing in the synthetic elements, even live.

What about day to day?

I bring people in once a week for a recording session, but most of the framework of the cues is done between my E IVs, GigaStudio, Kurzweils, and EXS24 using a wealth of samples that I've bought. The Spectrasonics stuff is incredible, but with samples you have to be the first guy to use them; otherwise, you've heard them before, so I try to create a lot of my own samples and percussion loops.

SURVIVAL GEAR

At press time, Russ Landau was expanding the number of his studios at his home from two to three, adding, subtracting, and moving gear between the three rooms in the process. As a result, he wasn't able to give actual quantities on some of his gear, but the bulk of his working rig is given below. He adds that his arsenal has a few constants: "Always, a Sadowsky bass, a Taylor guitar, and an old Fender Strat [are] by my side. But I really love the new Yamaha Compass edition guitar, which traveled with me throughout Africa."

Computers

Macintosh G4s (2); 9600 (1) Emagic AMT8s Emagic Unitor8s MOTU MTP2 MIDI interface MOTU MTPAV MIDI interface

General Recording Setup

AKG C 414 EB through Avalon VT-737 Daking 52270H preamps Grace Model 201 preamps

Hardware

Akai S5000s (a couple)
Digidesign Pro Tools/24 Mixplus
(room A)
Digidesign Pro Tools/24 (room B)
Digidesign Pro Tools Digi 001
(room C)
E-mu E4 samplers (lots)
Kurzweil K2500s; K2600s (a mess of them)

them)
Kurzweil K2600 as controller
Mackie Digital 8-bus console
Mackie LM-3204 submixers (plenty)
Tascam GigaStudios (a few)
Yamaha ProMix mixers

Mixdown

Alesis M20 Alesis Masterlink Panasonic SV3700 Tascam DA-88

Monitors

Dynaudio Acoustics BM6A Tannoy 6.5II Yamaha NS10s

Remote Setup

AKG C 1000 mics
AKG C 480 B mics
Digi 001 chassis
Earthworks M30BX mics
HHB PortaDisc MiniDisc recorder
Mac PowerBook G3/500
Magma chassis
Sound Devices USBPre 1.5 preamp

Software

BitHeadz Unity DS-1
Emagic EXS24
Emagic Logic Audio
Digidesign ProTools
MOTU Digital Performer

24-BIT DUAL CHANNEL PROCESSOR



High impedance inputs for instruments Independent processing on each input Up to 5.5 seconds of delay Simultaneous analog and digital outputs S/PDIF input and output 240 presets; 64 user programs

24-bit A/D, D/A, and internal processing Proprietary LexiChip® DSP engine Built-in digital compressor

World-class reverb



The MPX 200 utilizes Lexicon's most powerful DSP, the proprietary LexiChip®





3 Oak Park, Bedford, MA 01730-1441 | Tel: 781-280-0300 Fax: 781-280-0490 | www.lexicon.com/mpx200



It's fun working with loops; it's a good way to get a little motor going instead of a click track playing. Often I'll change the loop after I'm done writing to it. I don't always love writing to loops. I do it when I need what I call a "tasking cue" that needs a groove motor running through it. Otherwise, I just love putting my hands down and writing what comes to mind out of the blue.

You're using a lot of different samplers: you have the E-mus, an Akai, a Kurzweil, and Giga-Sampler, EXS24, and Unity. What makes you choose one rather than another?

I have them set up to do different things. My brass and a good section of my strings are living on the E-mus. A lot of my synthetics and choirs are on the GigaSampler. GigaSampler is great because I can dump everything in there; it's the bin for every sample I have. It can't play all of them at the same time. It does a pretty good job on a fair number of voices, but it's always there when I need it. It's great because I can have this palette of 1,000 sounds available to me all of the time without having to go stick in a sample CD, and I can audition them really fast.

EXS24 is sort of like that; I'm just get-



Landau's portable recording setup works hard while on location in Kenya.



Members of the Masai tribe in Tino village pose with Landau after recording the new intro to the Survivor theme.

ting involved in that. For my portable stuff, I need *EXS24* and *Unity* because I can't take all my racks.

The more software synths and samplers you try to cram through a single output of an audio device, the more it all starts to sound kind of mushy like an organ. So in the studio, I like to have my separate outputs.

Do you sequence everything and mix down from that, or do you print the samplers and synths back to hard disk and mix from those tracks?

I mix from the MIDI. I don't see any reason to dump all the audio on. The only reason to print all the synths as audio would be if I wanted to take it to another studio and mix it on an SSL.

Getting those exact sounds might also be easier. Yeah, but there's something kind of cool about the random nature of what could

happen doing it again. It's a score, so it's a very liquid medium. It's never really done until you say it is. It's kind of the same thing with a song: it's subjective.

The difference being broadcast dates, which don't move.

Yeah, deadlines. It's done. We love that. It limits you. And really, does the music change that much? Is it going to have that much of a different effect on you if I brought up the EQ on the hi-hat another decibel? I'll

hear it a little bit, but is it going to change the impact of the cue?

I'll sit and mix for hours, and sometimes the first demo rough mix is the one you go with, because it has the most life before you kind of EQ the life out of it.

Do you have any parting words about your work? Everything I do is for one reason only: that I hope to get to meet Poe. [Laughs.]

When you're doing music for hire, the hardest thing is to find your own identity. You have to be flexible and not be attached to the individual things that you write. Eventually, you're going to end up working for people that hire you because they love your sensibility and love that little special thing that you bring to their projects. But you can't jealously guard your notes. You're writing for hire, and the grace in what you do will come out in subtle ways. It's a collaborative effort, and your producers will be your collaborators. You have to help them to be successful. The hardest thing to give up is that jealous protection. It's just music. [Landau's son] Max asked me, "Dad, why is music so much fun?" It doesn't all have to be so important; it should somehow be fun. It is the best job in the world if you can do it and have fun with it.

Larry the 0 is a musician, producer, engineer, and sound designer in the San Francisco Bay Area. He has been a contributor to EM since 1986.

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



Our new hard disk recorder gives you 44 hours of uncompressed recording time.



Good luck.



Take a good look at the MRS-1044. Its power and simplicity bring the spontaneity back to digital recording. While you may not be able to see many of the dozens of features that make it so incredible, its greatest asset is the way they all fit together. It's the Zoom of desktop recorders.



No manual required: The MRS-1044's logical control surface makes it simple to record, edit and mix your songs. Large, logical controls and clear displays make it quick to get around with no learning curve. But just in case, the owner's manual it ships with is brilliant.

Bonding experience: Working with the MRS-1044 feels like working with tape. But each of its ten tracks is supported by ten virtual tracks. Auto punch and "easy bounce" allow you to combine and comp tracks with no generation loss. Then there's the familiar scrub control that lets you locate precise edit points with your ears. Scene memory and point markers make it even easier to get around.



It's a bridge: We're talking full MIDI capabilities together with digital audio. There are programmable stereo drums and bass on their own tracks. Their sound - real.

Personal effects: Process and sweeten the mix with legendary Zoom 24-bit digital effects, including EQ, Compression, Reverb, Chorus and even VAMS guitar amp modeling. There's also dedicated EQ on every channel.



It's well connected: The MRS-1044's open design provides enough ins and outs to satisfy any session. Phantom powered XLR balanced, 1/4 inch unbalanced inputs, stereo RCA analog outs, S/PDIF Optical out, MIDI and a slot for add-in SCSI and USB! No kidding.

Zoom audio quality: The MRS-1044 gives you Zoom's legendary audio quality with remarkably smooth, clean 24-bit A/D and D/A converters and 44.1 kHz bit resolution.

More questions? Obviously there's more than we're telling you here but we think we've already got your attention. With the MRS-1044 all you'll need is inspiration. Good luck.



The Zoom MRS-1044 MultiTrak Recording Studio



Musical Protocols

Can't we all just get along?

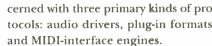
By Brian Smithers

hen shopping for new hardware and software, desktop musicians must wade through a veritable alphabet soup of audio and MIDI protocols. Consumers are constantly confronted with a confusing array of abbreviations, from ASIO to WDM, representing technologies that may or may not be compatible. With so many protocols from which to choose, it's ironic that sometimes the word standard is used to describe them.

For the most part, a protocol is a clearly established, standardized method of handling communication. In a diplomatic context, protocols prevent people from offending folks with big weapons and bad attitudes. In a music-technology context, protocols provide for efficient and reliable handling of audio and MIDI data between hardware and software or between a host program and plug-ins.

Both Macs and PCs have such protocols built into their operating systems, but historically they have been geared toward general-purpose multimedia and gaming rather than critical audio production. The need to achieve consistent professional-level real-time performance with high-resolution multichannel audio is the driving force behind the development of third-party protocols.

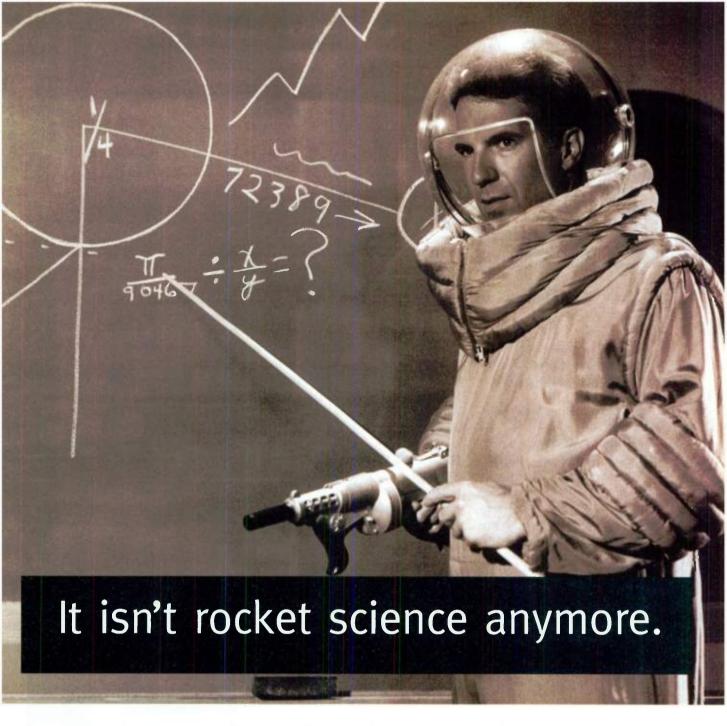
Desktop musicians must be concerned with three primary kinds of protocols: audio drivers, plug-in formats,



ASIO LIKE IT

Audio drivers are the bits of code that make hardware devices available to pro- 8 grams. No matter how different two 5 audio interfaces may be at the hardware \$\frac{1}{2}\$





Introducing Finale 2002. Easy to use. Easy to learn. Easy everything. See for yourself at www.codamusic.com/em. It's easy.

"Finale is so much easier to use now... and still the most powerful!"

Don Pederson, School of Music, University of Tennessee at Knoxville

"It automatically creates and prints custom exercises for every instrument in my band." Kay Hawley, Hopkins West Junior High School

"These new slurs look great... just click and drag!" Robert Piéchaud, Engraver

"Finale's new Band-in-a-Box® Auto-Harmonizer makes arranging fast and easy." William Goldstein, *Composer*

Finale. The world's best-selling music notation software.



codamusic.com/em



FIG. 1: MOTU's *Digital Performer* lets you easily set the sample rate and buffer size when using the ASIO driver.

level, they need to present their functions to the software in a uniform way, and the audio driver enables them to do that.

Probably the best-known effort to improve the state of computer audio drivers is Steinberg's Audio Stream Input/Output (ASIO) specification, which applies to Macs and PCs. In essence, it bypasses Apple's Sound Manager and the Windows MME layer and communicates directly with hardware to provide multichannel, high-resolution capabilities. A hardware manufacturer that writes ASIO drivers can expect any ASIO-compliant program to be able to communicate with the company's hardware, and software developers can expect the same.

In addition to making extra features available, ASIO improves on the performance of OS-level audio protocols. In particular, it succeeds in reducing audio-processing delays (latency) that have traditionally been a relatively low priority for the designers of operating systems. With Windows MME drivers, for example, it could take one-half to threequarters of a second for audio to pass from an input to an output. ASIO brings latencies as low as 6 to 8 ms with current drivers. It accomplishes that in part by giving users control over their audiobuffer settings (see the sidebar "Loving Latency Lost"). The faster your system, the less read-ahead buffering it will need to keep up with the flow of audio, and the lower the latency will be as a result (see Fig. 1).

In another approach to reducing latency, many hardware manufacturers build direct input monitoring into their interfaces, allowing incoming audio to go immediately to an output without passing through the computer. That lets a guitarist hear what he or she is playing in real time along with the prerecorded tracks, for example, but it doesn't let you process the guitar with any software effects.

ASIO 2.0 addresses that problem by allowing you to bypass the hardware's direct monitoring and pass the input through the software. You can then process the signal with reverb and other plug-ins and monitor the audio with a manageable 6 to 10 ms delay. Version 2.0 also adds sample-accurate positioning for ADAT Optical transfers and provides for multiclient functionality, letting audio devices be shared among applications.

NICE AND EASI

Although ASIO successfully delivered performance that was not possible with the default Mac or Windows audio drivers, Steinberg wasn't the only company working to make things better. Emagic developed its own solution, called EASI (Enhanced Audio Streaming Interface). EASI was announced after ASIO 1.0 was released, and it anticipated some of ASIO 2.0's improvements, which included sampleaccurate synchronization. EASI was the audio driver protocol of Logic Audio starting with version 4.0, and Emagic opened it to developers as a potential standard.

Ultimately, ASIO 2.0 grabbed the spotlight, and EASI now enjoys only limited support. Some hardware manufacturers continue to provide EASI drivers, but in a bow to the market's realities, all *Logic Audio* versions also support the ASIO standard.

MODEL DRIVER

Meanwhile, Cakewalk, unconcerned with cross-platform issues for its Windows-only *Pro Audio* 9, was convinced that the shortest path to superior performance was through the operating system itself. Instead of jumping on the ASIO band-

wagon, Cakewalk worked to convince Microsoft of the importance of pro-level audio support. As a result, Cakewalk's support for input monitoring and other features lagged behind its competitors. However, with the release of *Sonar*, the successor to *Pro Audio* 9, Cakewalk's efforts have finally paid off.

Sonar is the first application to take full advantage of the new Windows Driver Model (WDM), the core audio driver for Windows 98 SE/ME and Windows 2000/XP. WDM kernel streaming represents a huge leap forward for audio performance on a PC, providing a much more efficient and flexible link between hardware and software. WDM audio drivers finally solve, at the OS level, the problems for which ASIO and EASI had previously been the only solutions. For example, when I switched from the old MME drivers to WDM drivers on my Pentium II/266 MHz laptop system, my latency when playing a virtual instrument dropped from more than half a second to an imperceptible amount. The performance of WDM drivers is said to be especially good under Windows 2000.

Microsoft isn't alone in finally seeing the light. Apple has implemented a new set of audio application programming interfaces (APIs) called CoreAudio in



FIG. 2: Cubase VST's Audio System Setup dialog box holds many settings, such as buffer size, that give users control of ASIO and VST performance. The Automatic Plug-In Delay Compensation checkbox (lower right) tells Cubase VST to automatically shift audio tracks earlier by the amount of time that plug-in processing would otherwise delay the output.



W WAVES New RESTORATION

Software bundle establishes a new standard for restoration and noise reduction.

Fast and incredibly simple to use, providing real-time feedback.

Ideal for music, post-production and forensic professionals.



X-NOISE

Intelligently learns from a section of noise and then applies broadband noise reduction.

X-CLICK

Effectively removes clicks from vinyl records as well as digital spikes.



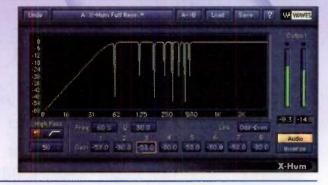
28 2 46 0

X-CRACKLE

The 2nd stage in record restoration eliminates crackles and surface noise.

X-HUM

Removes ground loop hums, rumbles, microphone pops, and DC-offset.



See your WAVES dealer. Free 14-day demo at www.waves.com.



\$699 99 List: \$1199.00 OPESIGN VT-747-SP Call! 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 Powered a i SAMSON S-Com Plus \$17999 Yamaha AW- 516CD

1999 List: \$22399.00 SAMSON S-Phone \$16999 Korg D1600 1599 99 List: \$2000.00 MPX-100 \$19999 minimininini Finalizer Express \$999 Korg D-12

11111111 dbx DBX 166XL \$249*

Roland RFX-2000 \$199° PreSonus) 395

Bluetube \$15999

TC Works Powercore • \$1099.99

Universal Audio Powered Plug-ius • \$799.99 Emagic EMI 2/6 USB Audio 1/0 • \$349.99 M-Audio Omni Studio • \$379.99

Tube MP-Studio \$109° DIGITAL RECORDING SIGNAL PROCESSING, GROOVE BOXES & Heath Mix Wiz DX

599 98 list: \$914.00 CALL Fostex

79999 i t: \$1339.39

HEATH MACKIE.

\$1799

MDR2496 1999 93 List. \$4551.00 dande untachtlan ALESIS

there were the said which is

899 ***

List: \$1150.00

999

499 Li t 1740

W Roland

Visit our website for the best deals in Guitars • Drums • Live Sound • Books & Video

1-800-4-SAMASH www.samash.com

TASCAM CALL

\$999.9 List: \$1195.00



Mac OS X, and its stated intention is to make third-party protocols (such as ASIO and EASI) unnecessary. Apple's list of objectives for CoreAudio includes goodies such as multichannel audio and application-determined latency, and an independent test shows that CoreAudio is indeed capable of impressively low latency.

Does that mean ASIO is in the position of answering a question nobody's asking? CoreAudio's impact is not yet clear, but many major hardware manufacturers are or soon will be offering WDM drivers, and other developers of Windows audio software are working on WDM compatibility.

Still, ASIO is familiar ground for many developers and consumers, and because a lot of companies make products for both Macs and PCs, it might make sense for them to keep ASIO around to facilitate cross-platform development. My crystal ball shows hardware manufacturers turning out three drivers for every audio interface—ASIO/Windows, ASIO/ Mac, and WDM-at least until some consensus about WDM and CoreAudio is reached. (The same crystal ball misses the Lotto numbers week after week, so who knows?)

A couple of other terms you'll often hear in the same breath with ASIO, EASI, and WDM are MAS (MOTU Audio System) and DAE (Digidesign Audio Engine). They are horses of a different color, though: technically, they're harddisk recording engines, not I/O protocols. As such, they function at a different level, communicating with audio hardware through the drivers, MAS, for example, can work with ASIO or Sound Manager.

PLUGGED IN

Plug-ins operate at yet another level by assimilating into the host application. Plug-ins are everywhere these days, even popping up in music-notation programs. I'll focus on host-based real-time audio plug-in formats that are open to thirdparty developers, because that's where much of the action is. Of the major realtime native plug-in formats, two, Steinberg's Virtual Studio Technology (VST) and Microsoft's DirectX, are supported by multiple host programs (see the sidebar "Who's Plugged In?"). The other biggie is MAS (yes, that name does double duty). Although it's exclusive to Mark of the Unicorn's (MOTU's) Digital Performer and AudioDesk, it is supported by a significant roster of big-name thirdparty developers.

Although some people use the term VST to refer to Cubase VST, it actually applies specifically to Steinberg's crossplatform, real-time native plug-in format. VST defines the ways in which plug-in developers integrate their designs with VST-compatible host programs.

Like other native plug-in formats, VST provides a 32-bit floating-point architecture with automation and MIDI control. Those features let you record changes to plug-in settings and also sync effects to the tempo of your sequence. Cubase VST's Automatic Plug-In Delay Compensation (see Fig. 2) can shift tracks slightly ahead to offset the

GAIN

It's not just boosting the signal level, it's adding warmth, increasing presence, and amplifying the essence of your music. It's embracing the signal.

Bellari products have gain. Bellari products are gain. With Bellari products YOU gain.

Sure - our mic preamps have transformer balanced inputs, 48 Volt phantom power, and phase reverse; our compressor/limiters have opto-coupled detector circuitry, our sonic exciter has phase adjustment and spectrum correction encoding, and our direct box has a variable input pad. Yes, all Bellari products have highvoltage plate volt-

ages for that authentic tube sound, but the reason to use **Bellari** products is... gain.

Bellari.





5968 South 350 West Murray, UT 84107 (801) 263-9053 • FAX (801) 263-9068 email: bellari@rolls.com web: www.bellari.com



FIG. 3: Cakewalk's *Sonar* is the first program to support DirectX-based virtual instruments. DX Instruments (and VST Instruments) allow easier setup and better performance by integrating software synthesizers, such as Audio Simulation's *DreamStation DXi*, into the host program.

small amount of time required for plugins to process audio.

VST version 2.0 introduced support for virtual instruments, sometimes informally referred to as VSTi. In the past, software synthesizers ran as separate programs, and you had to redirect MIDI and audio between applications using so-called virtual cables such as the Mac's IAC Bus or *Hubi's Loopback* on the PC. By integrating software synths into the host application, VST 2.0 not only simplified the setup but also reduced the strain on system resources. It's not unreasonable to suggest that VSTi added momentum to the software-synthesizer revolution by making the technology so easy to use.

THE DIRECT APPROACH

Microsoft's DirectX 8 is the other factor in the WDM and *Sonar* revolution. DirectX (technically DirectShow, part of the DirectX family) has provided basic real-time plug-in support for Windows audio programs for years, but now its feature set has been enhanced significantly.

Prior to version 8, DirectX just wasn't in the same league as VST or MAS. Although its 32-bit architecture allowed developers to write competitive-quality effects, DirectX's lack of support for automation and virtual instruments made it a less interesting format than the other two. That has changed, and DirectX 8 supports automation with subsample timing resolution.

Working closely with Microsoft, Cakewalk developed a way to incorporate virtual instruments into the DirectX plug-in environment. Cakewalk's DirectX Instruments (DXi) format was launched in early 2001 with support from several



software-synthesizer manufacturers, and the instrument list continues to grow (see Fig. 3). Like VSTi, DXi supports SysEx and provides for communication of patch names from the synth to the host program.

There has been a perception in the industry that DirectX plug-ins run less efficiently than their VST counterparts, and some circumstantial evidence has supported that impression. According to plug-in developers with whom I spoke, though, that is not the fault of the DirectX specification—VST and DirectX offer identical latency specifications in most cases.

With the major plug-in formats sporting such attractive features, the only potential downside for users would be having to choose just one. Fortunately, the major VST hosts support DirectX plug-ins in their Windows versions, and there are programs designed to make VST plug-ins operate under DirectX or MAS. That is accomplished by wrapping a plug-in in a thin layer of code that makes a VST plug-in appear to be a DirectX or MAS plug-in to a DirectX-or MAS-compatible host. One such program is VST-DX Adapter from FXpan-

sion Audio. *Digital Performer* devotees can use Audio Ease's *VST Wrapper* to add VST plug-ins to their palettes.

In fact, plug-in developers may write for one format and then simply add a wrapper layer to make their plug-in function in the other format rather than completely rewrite the plug-in code. The wrapper layers can be implemented efficiently enough that performance degradation is negligible.

BATTLING MIDI INTERFACES

It seems as though everybody is coming out with new MIDI-interface protocols these days. The good news is that they're typically cross-platform solutions; the bad news is that they're all proprietary.

Emagic led the way with AMT (Active MIDI Transmission), first implemented in its Unitor MIDI interface. In an effort to improve MIDI timing, Emagic devised a way to buffer MIDI messages in the interface before they are sent. That allows data at different ports to be sent simultaneously, instead of sequentially, for tighter timing.

Emagic claims accuracy of better than 1 ms when the Unitor is used with *Logic*

Audio. That is the sword's other edge. Although such precise computer-to-interface timing is great, it requires an interface capable of buffering the MIDI data and a compatible host program that can presend the data to the interface. That's why AMT and its rivals are proprietary systems. Use the Unitor with a different program, and AMT no longer works for you.

A conceptually similar timing scheme joins MOTU's Digital Performer with its line of USB MIDI interfaces. A hardwarebased MIDI-transmission engine called MIDI Time Stamping (MTS) leverages the increased bandwidth of USB (over serial) to deliver what MOTU claims to be 1/2 ms timing between the computer and the interface. The latency for recording MIDI data is said to be even lower: only 1/2 ms. Like AMT, MTS makes use of data buffering within the interface. But MTS time-stamps every data event, regardless of which cable it's going to, so MTS affects the accuracy of every data event, not just data events distributed across multiple cables. Digital Performer's MIDI resolution has been upgraded to take advantage of that precision, so now you can

LOVING LATENCY LOST

Achieving the lowest latency your system can support without degrading audio performance requires balancing three factors: the Disk Block Buffer size, the number of buffers, and the amount of memory that is allocated for each channel. Fundamentally, the smaller the buffer size, the lower the latency. Keep in mind, however, that the smaller the buffer size, the closer to the ragged edge of disaster your system is running. If you hear audio degradation (clicking or dropouts) you should increase the buffer size or number of buffers. That requires a corresponding increase in the amount of memory that is allocated per channel, which can decrease the maximum number of channels your system will support (see Fig. A).

Steinberg's Cubase VST manual has detailed instructions for adjusting



FIG. A: This dialog box in MOTU's Digital Performer lets you set the optimum buffer size and number of audio tracks to deliver the best performance for your system. The bottom of the dialog box indicates the required RAM for the current configuration.

those settings and encourages experimentation to find the optimum settings for your system and needs. Some users deliberately set their buffers a bit too low when recording VSTi parts, enduring some sonic compromises in favor of more responsive timing. During mixing, they set their buffers higher, ensuring flawless audio performance despite somewhat slower response.

Your system's best performance will probably be achieved by using your audio interface's dedicated ASIO drivers (if it has them) rather than the ASIO Multimedia or ASIO DirectX Full-Duplex drivers. For information about audio cards that offer ASIO drivers, check out the web site http://service.steinberg.net/testbase.nsf or www.kvr-vst.com/asio.php.

WHO'S PLUGGED IN?

Here's a partial list of host programs that offer native (without the benefit of wrappers) support for the ubiquitous DirectX and VST real-time plug-in formats.

DirectX: Cakewalk *Pro Audio* and *Sonar* (only *Sonar* supports DXi), Emagic *Logic Audio* (PC version), IQS *SAW*, Magix *Samplitude*, Sonic Foundry *Sound Forge* and *Vegas*, Steinberg *Cubase VST* and *WaveLab* (PC versions), Syntrillium *Cool Edit Pro*

VST: BIAS *Peak;* Cakewalk *Metro;* Emagic *Logic Audio;* E-mu *PARIS;* IQS *SAW;* Steinberg *Cubase VST, WaveLab,* and *Nuendo;* TC Works *Spark*

adjust the resolution over a wide range and select microresolutions with as many as four decimal places.

Not to be outdone, Steinberg jumped into the fray with a similar technology called Linear Time Base (LTB). LTB is automatically enabled when you use Steinberg's Midex8 interface with the latest revision of *Cubase VST/32* 5.0. Like its counterparts, LTB makes use

of time stamping and buffering to increase the accuracy of MIDI timing.

STANDARD DREAMS

If, like me, you dream of genuine universal standards (of which MIDI itself may be the best example) this part of the story doesn't have a fairy-tale ending—at least not yet. The three proprietary MIDI timing schemes aren't

likely to merge, but Apple's Mac OS X includes another little gem called the CoreMIDI API, which, like CoreAudio, is intended to make third-party standards obsolete. Its performance objectives include latency lower than 1 ms and very low jitter (timing variations). Windows reportedly also has such an infrastructure. If hardware and software manufacturers adopt these standards, everyone will benefit.

Now that the major audio and MIDI developers have raised the bar and, in doing so, have finally made Apple and Microsoft take notice, professional-level support for MIDI and audio is widely available through operating-system protocols and through various independent standards.

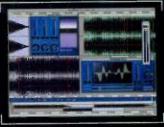
Brian Smithers is the associate course director of MIDI at Full Sail Real World Education in Winter Park, Florida.

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



With WaveBurner Pro, the CD Burning and Mastering software for Mac, the clearly laid-out graphic interface makes it easy to precisely position Track and Index Markers directly in the displayed waveforms. Always keep the complete overview while editing and arranging songs. But WaveBurner Pro also offers much more: integrated high-end Emagic mastering plug-ins, support for Firewire CD burners and VST

plug-ins, and compatibility with all current audio formats. As well as exceptional sound quality thanks to internal 32 Bit signal processing. 24 Bit audio files are first converted to 16 Bit CD format at the mastering stage, using the highly-regarded POW-r dithering algorithm. That's the way professionals leave their mark. WaveBurner Pro — the intelligent alternative for CD Mastering and Burning on Macintosh.



Technology with Soul.



Microphonic Machinations

Microphones are the door to the world of acoustic music.

By Scott Wilkinson

uring the past 15 years, many fundamental music-technology concepts have been explained in "Square One" (originally titled "From the Top"). In 1997 EM technical editor Scott Wilkinson combined many of those columns into a comprehensive primer titled Anatomy of a Home Studio: How Everything Really Works, from Microphones to MIDI, published by EMBooks, an imprint of Artistpro.com (www.artistpro.com).

Our readership has continued to grow, and new readers shouldn't be left behind. Rather than try to reinvent the wheel, we've decided to periodically reprint excerpts from the book in the form of "Square One Classics." These articles clarify the essential, unchanging concepts that make it possible to be an electronic musician.

A microphone's job is simple: it converts an acoustic sound into an electrical signal that corresponds to the original waveform as closely as possible. That signal then can be processed, mixed with other audio signals, and recorded.

Acoustic sounds occur when something vibrates at a frequency between 20 Hz and 20 kHz in air or another medium. That creates small regions of high and low pressure around the vibrating source. As the molecules in those regions move in response to the changing pressure, they jostle nearby molecules, and that causes the regions of high and low pressure to expand outward.

Once the regions of changing pressure reach a microphone, they impinge on a flexible diaphragm within the mic, causing it to vibrate in response. That physical vibration is then converted into an electrical signal, which is sent to a mixer, a signal processor, or another device. The difference between types of mics is the specific manner in which the conversion is performed.



DOUBLE





On the charts, in concert and around the dial — TRITON rules. It's the music workstation that's inspiring more cutting-edge music than anything else. Realize your own platinum-selling dream with the extraordinarily musical TRITON.

Now available — "Orchestral Collection" Expansion Board Set 32 MB of PCM/256 Programs/256 Combinations



KORG

C2001 King USA Fire your Kerg dealer. IRDU 315-280. Feedack into 1831 347-8530. Doc # 350. & 350.1 www.kerg.com. Order the Vide. User a Guide for \$19.95.

PHYSICAL ATTRIBUTES

Before I discuss the various mic types, here are some concepts that are common to all. As mentioned previously, all microphones include a diaphragm, which is usually mounted in something called a *capsule*. The capsule is mounted in an outer case along with any support electronics. Some cases can be handheld or standmounted for stage use, whereas others must be mounted on a stand. Standmounted mics sometimes include a shockmount, which isolates the mic from unwanted vibrations in the stand.

In most cases, the capsule is located behind a screen of some sort that lets the acoustic sound enter while protecting the diaphragm from physical damage. That screen often includes a layer of foam to reduce wind noise and vocal pops, though an external pop screen is usually more effective in the latter application.

Once the acoustic sound has been converted to an electrical signal, it is conveyed to another device along a cable. Some inexpensive mics include a permanent cable that terminates in a 2-conductor, 1/2-inch or 1/2-inch phone plug. The cable includes one central conductor that carries the audio signal surrounded by another conductor (called the shield) that connects to ground. However, that type of cable is susceptible to induced hum and other environmental noise. As a result, most professional and semipro mics use a 3-conductor XLR connector at the end of a balanced cable.

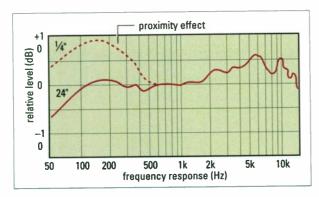


FIG. 1: A microphone's frequency response is depicted in a graph of frequency versus relative output level. If the sound source is close to most directional mics, the proximity effect boosts the low end. Also notice the presence peak between 2 and 10 kHz.

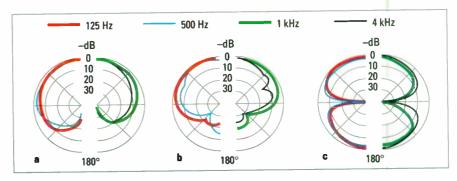


FIG. 2: Notice that the pickup patterns—(a) cardioid, (b) supercardioid, (c) figure-8—are slightly different at different frequencies. In these examples, the left half shows the curves for 125 and 500 Hz; the right half shows the curves for 1 and 4 kHz.

FREQUENCY RESPONSE

The frequency range within which a microphone accurately translates the sound-pressure level (SPL) of acoustic sounds into electrical signal levels is called its frequency response, which is measured in decibels (dB) over a range of frequencies. But what does "accurately" mean? For a given SPL, the output-signal level typically varies by no more than ±3 dB from its nominal level. That is normally depicted in a graph of frequency versus output level (see Fig. 1). A mic with a flat frequency response generates the same audio signal level for a sound of any frequency within the specified range at a given SPL.

However, most mics don't exhibit a flat frequency response, partly because making such a mic is expensive and partly because a frequency response that's uneven can be of some benefit. For example, many vocal mics boost the

upper frequencies; that is the *presence peak* shown in Fig. 1, and it helps improve the intelligibility of words. However, a presence peak can exaggerate a shrill upper vocal range.

At the low end, the frequency response of a vocal mic often falls off below 100 Hz. Because the human voice can't produce frequencies that low, there is no reason to make a mic that reproduces

them accurately. Instrument mics generally fall off below 50 Hz. However, the low-end response of many mics can be greatly enhanced by moving the sound source close to the mic. That bass boost is the *proximity effect* in **Fig. 1**, and it helps radio announcers achieve their characteristically deep sound. However, moving too close to the mic increases breath noises and vocal pops.

PICKUP PATTERNS

All mics exhibit a pickup pattern, which determines how the mic responds to sounds at different frequencies coming from different directions. An omnidirectional mic responds more or less equally to sounds coming from any direction. That pickup pattern is particularly well suited for ambient mics, which are used to pick up the sound of the room in which an acoustic source is radiating.

In many cases, omnidirectional mics are not used in live performance because they pick up sounds from all directions, which can lead to feedback. However, omni mics are generally less susceptible to wind and breath noise, and they tend to have a relatively flat frequency response with no pronounced peaks, which can actually help to avoid feedback. Omni mics also tend to have excellent low-frequency response, and they do not exhibit the proximity effect.

If a mic does not respond equally to sounds from any direction, it is called a directional mic. There are several types of directional mics, most of which respond best to sounds coming from directly in front of the mic's capsule. (The main exception is the middle-side,

Introducing the

C-Port (DSP2000) Change the way you think!

(Works on all PCI 2.1 compliant motherboards Including Intel, AMD, VIA)



Total 12 in 12 out (10in 10 out 24Bit 96Khz) including - 2 Balanced XLR inputs with MIC preamps and Phantom power - 8 in 8 out 1/4" jack Line level 2 in 2 out Digital IO (Optical, Coaxial and AES/EBU) - Headphone output Stereo 18Bit Converters on the card for Accelerated Direct Sound Support 32 Channel MIDI out - 16 Channel MIDI in - ASIO2, MME, GSIF, Direct Sound, with Rock Solid 2ms Latency @ 24Bit 96Khz Drivers - Multi Card Support (up to 40 Channels I/O) ADAT TDIF VIA DS2000 (Optional) - Logic Soundtrack 24Bit Software

See it! hear It! Believe it!

Unconditional 12 Months warranty Including a 60 day money back guarantee



Distributed by KAYSOUND 5 Coton Lane, Champlain, NY 12919 2165 46th Ave., Lachine, Quebec H8T 2P1 1-800-343-0353

www.staudio.com Available at



www.kaysound.com



www.musiciansfriend.com



the musicmaker's destination*



toll free: 1 - 8 7 7 - 2 5 2 - 7 0 4 7 www.audiocomputing.com

West L.A. Music...Superstars, **Super-Prices, Superstore!** TODAY'S HOTTEST



"Shop Where the Pros Shop"

We Will Beat Any Deal! West L.A. Music

Call Today 310-477-1945

PRODUCTS

The largest and most complete selection of name brand music, audio and recording products— in stock and ready for delivery!

GUARANTEED LOWEST PRICES

"We will beat any price from any authorized stocking dealer anywhere in the US."

GREAT SERVICE & EXPERT ADVICE

Whether you're building a world class studio, or a project studio at home, playing the largest concert arena or a local club, we'll help you achieve your goals.

TOTAL SATISFACTION

We guarantee your complete satisfaction with the products and services we recommend.

www.westlamusic.com • Email: sales@westlamusic.com • Fax: 310-477-2476

SQUARE ONE

or M-S mic, which contains two capsules. M-S mics pick up sounds from both sides as well as the front.) Sounds that strike the mic at its most sensitive spot are on-axis; sounds from any other direction are off-axis. Directional mics are prone to the proximity effect, and their frequency response is normally less flat than in omni designs.

The pickup pattern of any microphone can be depicted in a polar graph (see Fig. 2). In this type of graph, the mic's axis is defined as 0 degrees (usually located at the top of the graph), and the outer circle defines a flat frequency response. The smaller, inner circles represent a drop in frequency response. The curve within the graph indicates how the mic responds to sounds from different directions. An omnidirectional mic's polar pattern



The most popular type of directional mic is the cardioid.

forms a circle. Keep in mind that although polar patterns are conventionally graphed in two dimensions from a bird's-eye view, the mic's actual pickup pattern is three-dimensional.

The most popular type of directional mic is the cardioid (see Fig. 2a). Its polar pattern resembles an inverted heart hence the name. The mic is most responsive to on-axis sounds, whereas off-axis sounds are attenuated; sounds from 180 degrees off-axis are almost completely rejected. In addition, notice that the polar pattern changes slightly at different frequencies. The extra curves give a rough idea of a mic's frequency response and pickup pattern in one graph.

A supercardioid mic is often used in live performance because it rejects more sound from the sides than a cardioid design (see Fig. 2b). However, it does have some response to sounds coming from 180 degrees, as indicated by the small rear pickup lobe. Another

nord electro

clavia.com

distributed by: armadillo enterprises



modeling technology for B3 sound

sample based technology for electric & acoustic pianos

the

48 user presets 61 & 73 semi weighted, waterfall keys

extensive effects section

second manual accessible via midi

17/20 lbs. (61/73 key)

sounds updatable via USB port

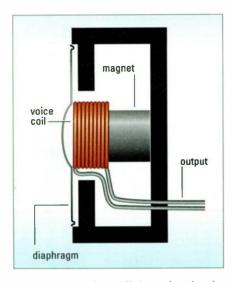


FIG. 3: In a moving-coil dynamic mic, the diaphragm is attached to a coil of wire that vibrates within a magnetic field. That induces an electrical signal in the wire that corresponds to the incoming acoustic waveform.

variation of that design, called the *hypercardioid*, is even more directional.

Some mics exhibit a bidirectional or figure-8 pickup pattern (see Fig. 2c), so-called for obvious reasons. Those mics are most sensitive to sounds from the front and rear, rejecting sounds from the sides. That works well for miking two sources (such as two toms in a drum kit or two singers facing each other) with one mic.

DYNAMIC RANGE AND MORE

Not only must mics reproduce different frequencies coming from different directions but they must also contend with sounds at different levels. If the sound reaching a mic is above a certain amplitude, the signal from the mic becomes distorted, and the diaphragm might even be damaged. This upper amplitude limit is called the *dynamic range*, and it's measured in dB SPL. The dynamic range of most mics is typically between 100 and 120 dB SPL; some go to 130 dB SPL or higher.

At a given source level, different microphones produce an audio signal at different levels. The relationship between the input level and the output level is called the *sensitivity* of the mic; the higher the output level at a given input level, the more sensitive the mic.

Sensitivity is usually measured with a 1 kHz tone at one or two levels: 74 dB SPL (the level of the average speaking voice at a distance of 3 feet) and 94 dB SPL (which corresponds to a loud speaking voice at a distance of 1 foot). The output level is expressed in dBV (decibels referenced to 1V root mean square) or dBm (decibels referenced to 1 milliwatt). (See "Square One: Decibels Demystified, Part 2" in the August 2001 issue for more about those decibel types.) For example, a mic's sensitivity might be specified as an output level of -47 dBV at 94 dB SPL. Many mics also include a pad switch, which lowers the overall output level by 10 or 20 dB. That is useful if the sound source is particularly loud.

Microphones also exhibit impedance, another important electrical characteristic. That is the microphone's resistance to the flow of electrical current, which changes as a function of frequency (see "Square One: The Shocking Truth" in the June 2001 issue). Most professional and semipro mics are low impedance (typically between 150Ω and 250Ω but sometimes as low as 50Ω ; also called low-Z), whereas most inexpensive mics are high impedance (usually above $20 \text{ k}\Omega$; also called high-Z).

Low-Z mics are less susceptible to extraneous electrostatic noise in the cable, such as that caused by fluorescent lights or motors, but they are more likely to pick up hum from electromagnetic interference, such as that from AC power lines. Because they operate with relatively high current levels and use balanced cables, low-impedance mics can drive cables that are hundreds of feet long. High-Z mics, especially those using unbalanced lines, are limited to cable lengths of no more than about 20 feet.

Matching a mic's impedance with the input to which it is connected is important. To connect one type of mic to the other type of input, you must typically use a matching transformer. In a pinch, you can connect a low-Z mic directly to a high-Z input, but you will lose too much level if you connect a high-Z mic to a low-Z input.

DYNAMIC MICS

There are many types of microphones that use different methods to convert an acoustic sound into an electrical signal. Of those types, three are most common today: dynamic, condenser, and boundary.

In most dynamic microphones, the diaphragm is attached to a coil of wire. called the voice coil, which is free to move near a permanent magnet (see Fig. 3). As the diaphragm vibrates in response to an acoustic sound, the voice coil moves back and forth within the magnetic field. That induces an oscillating electric current in the wire, which corresponds to the original sound's waveform. The design is also known as a moving-coil mic. Common moving-coil dynamic mics include those in the AKG Tri-Power series; the Audix OM-3xb, OM-5, and OM-7; the beyordynamic M 88 and TG-X series; the Sennheiser MD 421; and the ever-popular Shure SM57 and SM58.

Moving-coil dynamic mics are often housed in a handheld case. They are also quite rugged and able to withstand rough treatment and high SPL levels. As a result, they are great for miking drums, electric-guitar cabinets, and vocals. Most dynamic mics use a cardioid, supercardioid, or hypercardioid pickup pattern to reject onstage ambient noise. Good dynamic mics have an excellent frequency response, but the diaphragm—voice coil assembly is relatively heavy, so those mics are somewhat less sensitive to fast transients.

A variation of the moving-coil design is called the *ribbon* mic. Instead of a diaphragm and voice coil, that type of mic uses a thin ribbon of metal suspended in a permanent magnetic field. As the ribbon vibrates in response to an acoustic sound, an electric current is generated in the metal.

Although they're not made much these days, ribbon mics have excellent transient response, and they are famous for their warm sound. However, they are extremely fragile and delicate; you can destroy the ribbon by coughing into the mic. Their output level also is generally lower than moving-coil designs.

SMALL SIZE. BIG PERFORMANCE: 1402-VLZ P

is one of the VLZ PRO Series with ultra-high headroom XDR mic preamps.

For groups with big ambitions and modest budgets, vou can't beat a 1402-VLZ® PRO. Low noise. High headroom. Superb XDR™ microphone preamps. Extra features. And it's built like a little tank to last for years.

Sharp cutoff filters on mono channels cut stage rumble, mic stand clunks and P-pops without sacrificing bass.

Musical, natural-sounding 3-band EQ: 12kHz & 80Hz shelving and 2.5kHz mid with broad peak.

Sealed rotary controls resist dirt, smoke and spooge.

Six premium XDR™ mic preamps with I30dB dynamic headroom, ruler-flat frequency response, lower E.I.N. noise specs at working OdB to +30dB gain levels and the best Radio Frequency Interference protection of any compact mixer.



1604-VLZ PRO

16 total chs. • 4-bus configuration • 16 XDR premium mic preamps • 16 mono mic/line channels · 3-band EQ with swept mid, 75Hz low cut filters and inserts on all chs. . 6 aux sends per ch. · 4 stereo aux returns with EFX to Monitor and

bus routing options . Control Room/ Phones source matrix • 60mm log-taper faders • 3-way rotatable I/O pod for rack or table use

1642-VLZ PRO

16 total chs. • 4-bus w/double-bussed outputs • 10 XDR mic preamps • 8 mono mic/line level channels • 2 hybrid mono mic and mono/stereo line level channels • 2 mono/stereo line level chs. • 3-band EQ w/swept mid on mono channels & 4-band EQ on stereo channels • 75Hz low cut filters on mono chs. • 4 aux sends per ch.

4 stereo aux returns with EFX to Monitor

• Ctl Rm/ Phones matrix w/level controls

• 60mm log-taper faders

1402-VLZ PRO

14 total channels • 6 XDR premium mic preamps • 6 mono mic/line level chs. • 4 mono/stereo line level chs. • Extra ALT 3-4 stereo bus • 3-band EQ • 75Hz low cut filters on mono chs. • 2 aux sends per ch. • 2 master stereo aux returns with EFX to Monitor • Ctl Rm/Phones source matrix • 60mm log-taper faders . Switchable AFL/PFL

1202-VLZ PRO

12 total channels • 4 XDR premium mic preamps • 4 mono mic/line level chs. • 4 mono/stereo line level chs. • Extra ALT 3-4 stereo bus • 3-band equalization • 75Hz low cut filters on mono chs. 2 aux sends per ch. • 2 master stereo aux returns with EFX to Monitor • Ctl Rm/Phones source matrix · Rotary gain controls · Built-in power supply

Dust and smoke-resistant log-Control Room/Phones source arithmic-taper 60mm faders for matrix lets you create monitor

accurate control and long wear.

Rugged steel chassis, sealed rotary controls and fiberglass circuit boards resist the radically rude rigors of the road

Instead of arrending the 2001 AES Convention in NAC. Wackie Designs has chosen to in NYC. Mackie Designs nas prosumo in NYC. Mackie Designs nas prosumo in make a significant donation towards disaster in the ne'a significant duration towards disast reliet and present our "exhibit" on line.

> visit out web site for details of six new products, free show "Swag," streaming video demonstrations and more.

the 1402-VLZ Active 2-way

NOV. 28-DEC. 31 wers. Extreme output. Astonishing accuracy. Wide dispersion so your whole audience hears the same great sound.

mixes or remote feeds with any combination of the main mix.

ALT 3-4 stereo bus or tape inputs routed to separate stereo outputs (or submixes to mains).

Inside: VLZ® design minimizes thermal noise at key points in the circuitry. Negative gain mix amp architecture prevents overload when feeding all channels with hot inputs.

00.258.6883

Easy level setting. Maximize headroom and minimize noise quickly via Channel solo and Trim control. Up to 60dB of gain for boosting timid vocalists. -10dB "virtual pad" for toning down drummers.

EFX to Monitor lets performers on stage hear a different level of effects than is in the main PA mix.

Balanced/unbalanced TS outputs plus balanced XLR outs with +4dB or -10dB level switch, RCA-type tape inputs and outputs, too.



CONDENSER MICS

In a condenser mic, the diaphragm is a very thin sheet of Mylar coated with gold or another conductive material and suspended over a parallel conductive surface called the backplate (see Fig. 4). That forms an electrical capacitor, which is sometimes called a condenserhence the name. A static voltage of 9 to 48 VDC is applied across that capacitor. As the diaphragm vibrates in response to incoming acoustic sounds, the voltage varies slightly as the diaphragm moves closer and farther away from the backplate, generating a tiny signal. That signal must be amplified with an internal preamp before it is sent to the mic's output. Popular condenser mics include the AKG C 414, the Audio-Technica 4033a/SM and 4050/CMS, the beyerdynamic MC 834, and the Neumann TLM 193.

The static voltage across the condenser element and the power required to operate the internal preamp are typically supplied by a battery or by the input of the device (such as a preamp) to which the mic is connected. The voltage from the device's input is called *phantom power*, because it is sent along the same cable that carries the signal from the mic to the input; there is no separate power cable. That does not interfere with the audio signal, because the phantom power is a fixed voltage, whereas the audio signal changes over time.

A variation of the approach is called an *electret condenser*. In that type of mic,

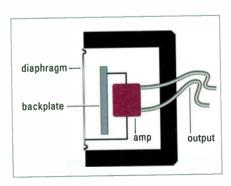


FIG. 4: In a condenser mic, the diaphragm is suspended over a parallel backplate, forming a capacitor. As the diaphragm vibrates, the voltage across the capacitor varies, producing an electrical signal, which must be amplified by an internal preamp.

the diaphragm or backplate is made of a material (such as Teflon) that retains a permanent electric charge, which removes the need for an external power supply. (However, the internal preamp still needs power, which is normally supplied by a battery.) In most cases, the backplate retains the charge, so the diaphragm can be made

of Mylar instead of Teflon, which is less sensitive to acoustic vibrations. That design is called a back-electret condenser.

Condenser mics can exhibit different pickup patterns. Many condensers offer several switchable patterns, which is handy. Condenser mics have excellent transient response because the mass of the diaphragm is very low. They are most often used in the studio for vocals, acoustic instruments, and just about everything else. However, they are more delicate than dynamics, so they are not used as much in live performance.

BOUNDARY MICS

Another variation of the condenser approach is the boundary microphone. In that design, a small electret capsule is mounted in the center of a flat metal plate, and that forms a sonic boundary—hence the name. Incoming sound waves are reflected from the plate and reach the capsule at virtually the same instant as the direct sound waves. That reinforces the acoustic signal at the diaphragm.

Crown's version of the boundary mic, called a Pressure Zone Microphone (PZM), has become the most common form of boundary mic in the United States (see Fig. 5). Unlike other boundary designs, in which the capsule faces away from the plate, a PZM capsule is suspended above the plate by a small distance and faces downward, toward the plate. The gap between the plate and capsule is called the *pressure zone*, where the direct and reflected sound



FIG. 5: The Sound Grabber II is one of Crown's PZMs. The electret capsule is suspended over the plate, facing downward.

waves meet and add coherently to stimulate the diaphragm.

In most boundary mics, the electret capsule is omnidirectional. However, the plate effectively blocks any sound coming from the side opposite the capsule, so the practical pickup pattern is hemispherical. These mics are often mounted on a large board or wall for picking up room ambience. They also work well on instruments with a large sound-radiation pattern, such as vibes or woodwinds. A few boundary mics have a cardioid pattern, in which case the capsule axis is parallel to the plate rather than perpendicular. These mics are often used on stage floors for actors.

Unless you record and perform instrumental music on synthesizers exclusively, you need at least one mic in your toolbox. However, mics can be expensive. Invest in at least one high-quality condenser for recording purposes and one or more dynamics for recording and live performance.

Each mic has its own unique sound, so experiment with different models until you find the right one for each instrument or voice. Once you find the right mics for your applications, the world of acoustic sound awaits your pleasure.

The studio in which Scott Wilkinson records the voice-over narration for United Airlines' Classical Collection audio channel uses a hypercardioid shotgun mic aimed right at his mouth.

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



start playing.

live. sequencing instrument

- record, loop, effect, resample, launch sounds without ever stopping the music

- jam live, log your action, edit afterwards
 sync every sound to the beat
 stretch and pitch audio while playing from disk
 control every function with hotkeys and MIDI
 connect via MTC, MIDI Clock, VST, ReWire, ASIO
- for Mac OS and Windows



Visit your local dealer or download your demo at www.ableton.com.



REVIEWS

Yamaha DX200

TC Electronic Triple-C

Neumann KM 183

(Mac/Win)

Algorithmic Arts SoftStep Pro 2.06a (Win)

Native Instruments Spektral Delay 1.0

Grace Design Model 101

Quick Picks: NemeSys Music Technology
Christian and Lane Ultimate Timpani
Library (GigaSampler) sample library;
F7 Sound and Vision Concept:FX3 sample
CD-ROM; Prosound Communications
Robotalk effects pedal; MIT Press
Machine Musicianship book

NATIVE INSTRUMENTS

SPEKTRAL DELAY 1.0 (MAC/WIN)

More delays than you'll find at the airport.

By Peter Freeman

ative Instruments has already made significant inroads in the desktop-music market with *Reaktor* and other products. Now the company has produced yet another remarkable piece of software. *Spektral Delay* 1.0, which runs as a

standalone application and a VST plug-in, takes the concept of frequency-dependent delays and turns it into a powerful sound-processing environment.

Like all of Native Instruments' products, Spektral Delay runs without dedicated audio hardware. Its flexibility and low cost come with a price, though: you need a serious computer to take full advantage of the program.

I tested the standalone application and the VST plug-in on a Power Computing clone with a 400 MHz G3 processor card with 272 MB of RAM. With the program looping a sound file and the modulation features engaged, the response of the program's controls was sluggish and unwieldy, bordering on unusable. (Keep in mind that the memory architecture on an upgrade card is slower than that on a new computer.) But the actual sound output remained excellent. On a G4/450 MHz, the program's performance was noticeably better, though occasionally the mouse response was still frustratingly slow.

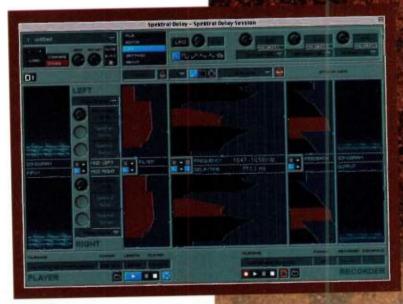
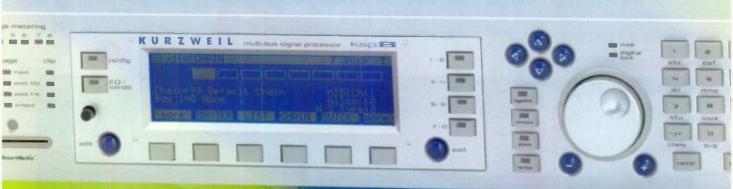


FIG. 1: Spektral Delay's interface is a single charly organized screen. The Matrix Editors (center) allow you to manipulate the three main parameter controls (Filter, Frequency, and Feedback).

From the creators of the finest synthesizers in the world comes the world's most powerful effects processor.





- Process 8 channels simultaneously, with 24-bit precision
- Over 700 world-class digital effects
- Flexible input/output configurations
- Ready for 5.1 surround processing
- Patchable modulation architecture for real-time control
- Optional dedicated controller for remote operation

MURZWEIL

Kurzweil Music Systems 9501 Lakewood Drive, S.W., Suite D Lakewood, Washington 98499 253-589-3200 Fax: 253-588-6809 www.kurzweilmusicsystems.com

Canadian Division 3650 Victoria Park Avenue Suite 105 Toronto, Ontario M2H 3P7 416-492-9899 Fax: 416-492-9299

SPEKTRAL DELAY



FIG. 2: The Editor screen has several functions for manipulating the Matrix Editor controls. Among them are quantization and other mathematical functions, as well as an LFO with variable wave shapes.

Fortunately, you can tweak Spektral Delay's settings in a number of places to optimize performance on your hardware. As is usual with plug-ins, the faster the computer, the happier you'll be with the program's performance.

Spektral Delay supports standard MME, DirectX, and ASIO drivers under Windows or Sound Manager and ASIO on the Mac. (Real Time AudioSuite support is under development, according to the manufacturer.) The program ships with a nicely printed softcover manual in four languages (English, German, French, and Spanish). In general, it communicates most of what's

needed to use the program effectively. However, I wish more were included about the program's MIDI control features, specifically more about using *Spektral Delay* with Open Music System (OMS) on the Mac via the IAC bus.

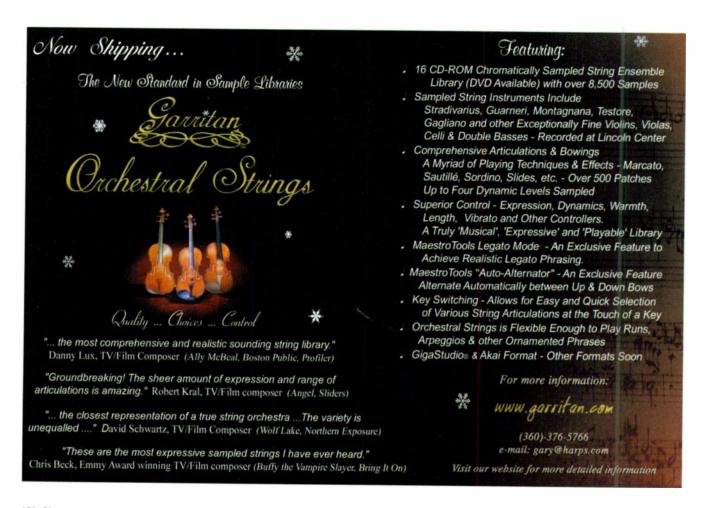
LAY IT OUT

Spektral Delay is laid out in a fairly straightforward manner. All controls are presented in one large window, with the three main parameter controls (Filter, Frequency, and Feedback) occupying much of the space (see Fig. 1). The Modulation controls appear along the top of the window and the file-related ones

along the bottom. Gain and Wet/Dry Mix controls are in the upper left corner, as is a preset-management section for storing and recalling user-created parameter presets.

The program's three main controls are presented as Matrix Editors, which are rectangular edit windows where horizontal (x) and vertical (y) mouse movements control two independent parameters. In the Filter editor, x controls the amplitude of the frequency selected by the y movement. In the Frequency editor, x is delay time and y is frequency, and in the Feedback editor, x is feedback amount and y is frequency.

Each of the three editors provides a left and a right pane for stereo signals, but they can be unlinked to allow independent processing of each channel for each matrix, which is crucial. Some of the most interesting results came from creating a stereo-like effect by using subtly or drastically different settings for the left and right channels in



NT1000 The Critics Agree!

"This is everything that's right with microphone design, and then some. I cannot say enough good things about these mics."

"Every aspect of the NT1000 and NTK is pure class. Instead of just trying to exploit the classics, RØDE has built a better mousetrap, designing a structure so elegant and so smart that the money saved can be reallocated towards stuffing these great cases with some of the best sounding electronics you've ever heard."

- Bruce Richardson

PRO REC COM March 2001

"RODE has set a new standard. It's time to disregard any previous advice you've had about microphones..."

"It blows everything in it's price range out of the water, and shows some far more expensive mics up completely.

"All I wanted to know when I first heard these microphones, was how ... Rode had managed to produce such thumping quality mics at such a low price."

- Steve Evans

Future Music August 2001

"In every situation, both the NT1000 and NTK had lower self noise than either U87."

"With these mics, RODE has beaten the low-cost Sino-capsule market at their own game."

- Ty Ford

Mix Magazine June 2001



WE IN AUSTRALIA

SPEKTRAL DELAY

any or all of the three editors. Each editor can also be bypassed, if desired.

The program's overall layout makes sense but can be a bit hard to get used to. That's because the horizontal (x) values increase as the cursor moves from left to right, which causes a solid graphic fill to be displayed in the cursor's wake. However, the background behind the fill is a striped pattern, which plays a trick on the eyes and can be confusing: it looks as though the

background is actually the fill. I wish that the background and fill patterns were swapped for the sake of clarity.

To the left of the main controls is the Input Modulation section, which offers several preset modulation algorithms that further mangle the sonic transformations controlled by the rest of the program. The algorithms have colorful names such as Deterioration, Jello Mold, Phase Blaster, Pitch Roll, and Lime Twist, and make for good starting



Spektral Delay

MAC: G3/300; 64 MB RAM (standalone version) or 128 MB RAM (plug-in version); OS 8.6; OMS; Sound Manager—compatible audio interface

PC: Pentium II/300; 64 MB RAM (standalone version) or 128 MB RAM (plug-in version); Windows 98/2000; compatible sound card

points (the manual describes the function of each algorithm). I particularly liked Phase Blaster for its watery, shifting quality and Deterioration for its mangling effect. (You can hear examples of the algorithms at the EM Web site.)

The Input Modulation section provides three knobs for independently controlling the parameters of the left and right channels. The knobs can be linked, and their functions change with the selected algorithm.

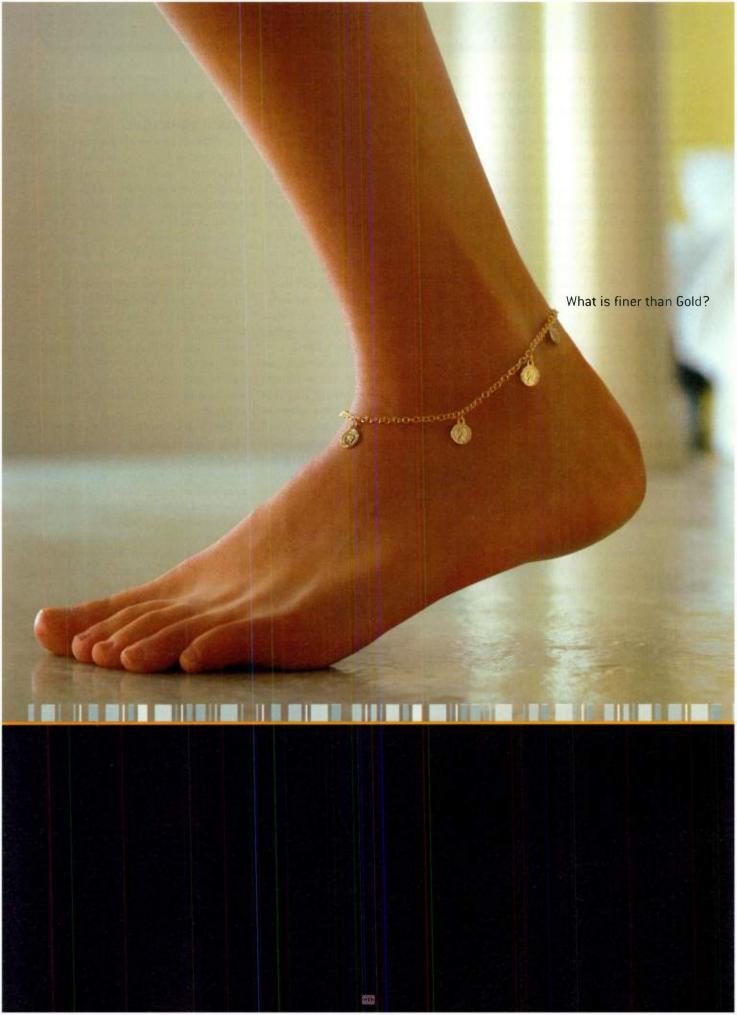
At the extreme left and right sides of the main window are the input and output Sonogram windows. Although not essential to the program's operation, those displays provide a continuously scrolling graphic representation of the spectral content of the sound going through the program. Native Instruments says the Sonogram windows don't impact the program's performance.

SPEKTRAL COMPONENTS

You'll find other transformation possibilities in the Editor panel, which lets you apply mathematical functions to the various edit matrices (see Fig. 2). For example, the Quantize function, which applies only to the Delay matrix, allows edit gestures to be quantized to the current tempo grid (if one is active). Other functions include sine, triangle, sawtooth up, sawtooth down, and random wave shapes. Each shapes the selected area of the matrix being edited if a selection exists or the whole matrix if no area has been selected. Selections are made using the Marquee icon next to Spektral Delay's pencil tool.

Spektral Delay also has a single LFO that you can apply independently to





three destination parameters simultaneously. Each LFO instance can have a different modulation depth. The available destination choices cover all possibilities of x and y modulation of each of the three matrices, so many radical effects are possible. For instance, setting the LFO to a slow sine wave and modulating high-frequency attenuation and low-frequency feedback positively while modulating midband delay time negatively yields a complex shifting timbral result on virtually any sustained sound. The effect is rather like an instant sound sculpture. Available LFO wave shapes are the same as the wave functions.

The Delay Matrix offers a range of maximum delay-time settings, as long as 3, 6, or 12 seconds. Those require 5, 9, and 17 MB of RAM respectively. The number of analysis bands you use determines the maximum resolution for each setting. Five settings control the number of analysis bands: 64, 128, 256, 512, and 1,024. Higher settings require more CPU power. However, more analysis bands do not automatically produce the best sound; the results depend largely on the sound being processed.

Spektral Delay's master tempo can be synced to the tempo of a VST host application when running under VST. In addition, the three matrices can be automated using MIDI continuous controllers and will generate controller data when you tweak their controls manually. The program's MIDI implementation is thorough and allows everything from Effect Bypass to Mod Source Select to remote control of the matrices' settings. The comprehensive set of MIDI options adds a whole new dimension to the program's overall usability. Simultaneously automating such varied parameters as the Filter Matrix, LFO Mod Depth, and Feedback levels independently of each other, particularly with a sequencer, produces some amazing results.

INS AND OUTS

The File Player, found below the Input Modulation section, is handy. It allows you to load a preexisting sound file (WAV or AIFF on both platforms and

Sound Designer II on the Mac) into RAM and play it through the program in One-Shot or Looped mode. That was the first thing I tried when I installed the program—I was curious to hear how some of the samples from my sound library would be transformed. The results were interesting, though largely dependent on the source sample and the program settings.

Spektral Delay's File Panel is intended to demonstrate the program's features through the use of sound files installed automatically from the CD. Every time I tried to invoke the File Panel, however, the program appeared to hang. Native Instruments says that was a known bug in version 1.0 that has been fixed.

Running the standalone version, you can record *Spektral Delay*'s output to disk using the File Recorder, found at the lower-right edge of the window. (In the plug-in version, you can route the output to your VST mixer or effects.) The Recorder supports the same formats as the Player. Like all *Spektral Delay* functions, the Recorder's performance was sluggish on my Power Computing clone. According to the manufacturer, you will get much better performance with a native Power

Mac G3 or G4, thanks to the newer computers' faster RAM and system bus.

SONIC BEHAVIOR

It is difficult to sum up the sonic quality of Spektral Delay, but some adjectives that come to mind include watery, psychedelic, otherworldly, and complex. As with any delay system that includes feedback and long delay times, it's easy to obtain spaced-out results. However, the program's highly controllable frequency parameters set it apart from the others. You could easily configure a process in which the middle frequencies arrive later than the highs while the highs feed back endlessly, for example. The ability to rearrange various frequencies of a sound over time and to alter their behavior makes it easy to animate even fairly static source material.

The modulation capabilities of Spektral Delay make it possible for nearly all of the program's parameter values to be constantly changing—it doesn't take much of an imaginative leap to see where that might lead. Although I found the character of the program's sonic texture somewhat similar to that of some Steinberg GRM Tools plug-ins, particularly the GRM Tools equalizer and filter, Spektral Delay really does sound like itself more than anything else.

Overall, Spektral Delay is an amazing tool. I found it easy to create endlessly varying psychedelia and soundscapes using a wide range of input sound material. The possibilities afforded by the editors in conjunction with the modulation and MIDI control capabilities are staggering. The File Recorder makes the program viable as a standalone application and is incredibly useful for capturing magic moments while twiddling parameters. Be warned, however: you'll be happiest using a truly fast machine; like all Native Instruments' software. Spektral Delay is quite CPU-intensive. Nevertheless, this one is a must-hear.

Peter Freeman is a bassist, composer, and producer in New York. He has worked with such artists as Seal, John Cale and Chris Spedding, Jon Hassell, Nile Rodgers, Sussan Deyhim, and Shawn Colvin.

PRODUCT SUMMARY

Native Instruments

Spektral Delay 1.0 multiband delay \$299

FEATURES	4.5
EASE OF USE	4.5
DOCUMENTATION	5.0
VALUE	5.0

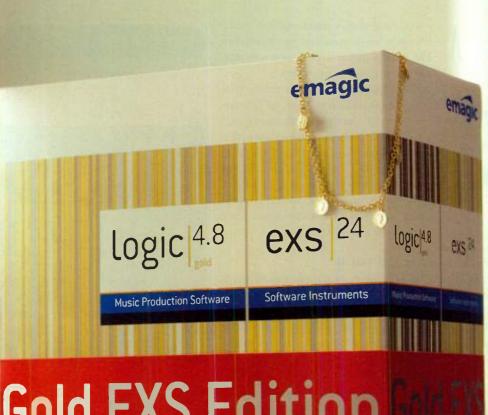
RATING PRODUCTS FROM 1 TO 5

PROS: Runs standalone or as plug-in.
Unique, interesting effects are possible.
Automation allows for dynamic control.
Inexpensive.

CONS: Requires a very fast machine to get the best performance.

Manufacturer

Native Instruments USA tel. (866) 556-6487 e-mail info@native-instruments.com Web www.native-instruments.com



Our Holiday Special.

Gold EXS Edition

Pro Sequencing and Xtreme Sampling in one box

This is luxury! The best value music production software and the most successful software sampler, together in one package. This is fun! Creative freedom combined with technical perfection. This is the deal! Purchase the Gold EXS Edition before 31st December 2001 and save over 40% on the combined price of Logic Gold and EXS24. A special holiday offer, only at your specialist Emagic dealer. Only while stocks last.

- >> Realtime MIDI and audio arranging and editing
- >> Freely configurable user interface
- >> Professional realtime notation, with layout + printout
- >> Up to 64 stereo audio tracks with dual hardware support
- >> 32 Bit internal signal processing
- >> Compatible with ASIO, EASI, Direct I/O, and many more
- >> Digital mixer, 4 band EQ, 8 inserts and 8 busses

- >> Full automation of effects, mixer and more
- >> 35 high quality Emagic effect plug-ins
- >> Supports VST, VST2, DirectX, and more formats
- >> Practically unlimited amount of MIDI tracks
- >> Environment for comprehensive MIDI control
- >> Up to 24 virtual samplers, each with 64 voices
- >> Sample accurate playback timing
- >> Compatible with AKAI, Soundfont2, SampleCell
- >> Compatible with WAV, AIFF and SDII
- >> Supports up to 24 Bit / 96 kHz samples
- >> Powerful low-pass filter with Fatness control
- >> 2 ADSR envelopes and 2 LFOs
- >> Modulatable sample start point
- >> Pitch envelope or glide





Technology with Soul

YAMAHA

DX200

Old-school digital synth meets old-school sequencer.

By Marty Cutler

hen Yamaha introduced the DX7 in 1983, its crisp, detailed, and sometimes clangorous timbres provided stark relief to the cloudy, warm tones of analog synths. The DX7 and its ensuing frequency-modulation (FM) synthesis counterparts had a few drawbacks, however; compared with the capabilities of analog synthesizers, real-time control was minimal. The DX7 couldn't even come close to delivering the timbral warmth and thickness typical of analog synthesizers. By the time I sold my DX7 in the late '80s, the demand for FM synthesis was largely overshadowed by the clean, detailed timbres of sampleplayback synthesizers.

During the past decade, that appears to have come full circle. Real-time control is again part of the musical toolbox. Analog synths (authentic and modeled) are again in favor in the

electronic-music marketplace. Still, Yamaha has continued to champion FM synthesizers with a new wrinkle here and a new feature there.

Enter Yamaha's DX200, a groove box that derives its sounds from an FM synthesizer and a sample-playback engine. Don't be fooled into associating the unit with your old FM sound cards or even your antiquated DX7; the DX200 is a synth of a different stripe. In the DX200, the once cold, brittle sounds of FM synthesis have undergone a truly impressive transformation.

COOK'S TOUR

The DX200's work surface is divided into several functions, many of which overlap (see Fig. 1). The Control section in the lower left corner contains transport controls and buttons to enable the keyboard, shift octaves, tap in tempo, add swing, and perform additional chores. The Shift button accesses secondary functions, which are stenciled in raised letters below the buttons or indicated by a slash next to a knob's main function. Hold the Shift button and turn the filter's Cutoff knob to select a different filter type, for instance.

Directly above the Control section, nine backlit indicators that denote the mode in which you're working accompany a four-character LED display. The

YAMAHA

SCENE

PAEE 16

VOLUME

LINGTH

SCENE

SCEN

FIG. 1: The DX200's surface is divided into four overlapping work areas. Transport controls are in the lower-right corner, and knobs for altering synthesis parameters dominate the center.

PRODUCT SUMMARY

Yamaha

DX200 FM groove box \$629.95

FEATURES	4.5
EASE OF USE	4.0
SOUND QUALITY	4.0
VALUE	4.0

RATING PRODUCTS FROM 1 TO 5

PROS: Real-time FM control. Subtractive synthesis capabilities provide warmth and depth. Free EG feature automates parameter changes. Well-written manual.

CONS: Sequenced FM synth playback is only monophonic. Free EG can't record some FM synth parameters. Rhythm tracks don't record filter tweaks. No onboard Pitch Bend.

Manufacturer

Yamaha Corporation of America tel. (714) 522-9011 e-mail info@yamaha.com www.yamahasynth.com

Store button saves your edited Voices, Patterns, and Songs. The Show Value button interacts with the synth voicing section by "freezing" your most recently edited synth parameter values.

The DX200 offers many thoughtful programming conveniences. If tweaking has taken you far astray of where you started, hold the Shift and the Show Value buttons simultaneously to display a parameter's original value. The Exit button unfreezes the synth parameter controls, and the Data knob changes values in conjunction with other controls.

To the right of the DX200's Control section is a 16-button keypad that serves as a single-octave keyboard for entering notes. Keys 1, 4, 8, and 10 don't transmit notes, which can be somewhat confusing in the midst of pecking out a pattern, but fortunately, the active keys light up. The Shift key engages the bottom row of keys in various Pattern- and Song-editing functions.

The Voice section dedicates 16 knobs and 16 buttons to controlling various



From the world leader in dynamics processing, comes the down Professional Products 20 Series Graphic Equalizers, the EQ series of choice by world-class sound companies. Unparalleled audio quality at a price to fit any budget.

dbx 20 series EQs standard features:

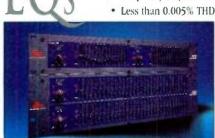
- The world's first and only EQ with Proprietary Type IIITM
 Noise Reduction system, which enables you to boost signal-to-noise ratio by up to an incredible 20dB giving you the quietest EQ available.
- PeakPlus ¹⁵⁸ Limiter technology, with a threshold range from 0dBu to +24dBu, allows you to easily safeguard your gear against hazardous dynamic surges in program materials.
- Four segment LED bargraph for both gain reduction and output levels offers the most comprehensive visual feedback available.
- Dual Channel Models; 2231, 2215, Single Channel Model; 2031.
- ISO frequency centers, +/-12 dB input gain range.
- · Switchable 40Hz/18 dB per octave low-cut filters.
- 45 mm faders, selectable + -6dB or + -15dB boost cut range.
- Balanced input output XLR or 1/4" TRS connectors, plus contractor friendly, barrier strips all with chassis signal ground lift capabilities.
- Frequency response of 10Hz to 50kHz, greater than 90dB SNR (ref +4dBu).
- Less than 0.005% THD +Noise (1kHz at +4dBu).
 - Interchannel crosstalk level of less than -80dB from 20Hz to 20kHz.

Visit your local authorized dbx Professional Products dealer for a through demonstration of the full line of dbx EQs, including the 20 and 12 series, and hear for yourself why dbx is the new standard for Graphic Equalizers.

dbx the Standard in Professional Signal Processing.

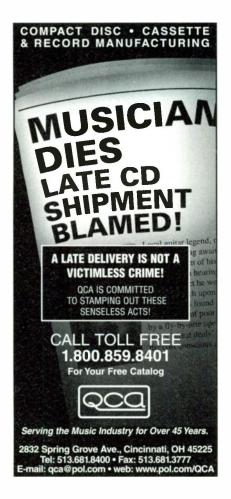


A Harman International Company



ALSO AVAILABLE





sound parameters. Voice-editing capabilities make the DX200 really shine, so perhaps it's best to take a take a closer look at the synthesis functions before I describe the controls in greater detail.

SMOOTH OPERATORS

Yamaha based the DX200's FM sound engine on the same 16-note polyphonic, 6-operator synthesis as the DX7. The DX200 arranges its FM Operators into the same 32 algorithms as its predecessor, and using System Exclusive (SysEx) messages, you can access the DX7's voicing parameters.

Overlaid on the FM synth is a host of subtractive-synthesis features that most significantly provide a powerful multimode filter. Its responses range from 24, 18, and 12 dB lowpass to bandpass, highpass, and band eliminate (see Fig. 2). All filter types are resonant, and the 24 dB model can be driven into whistling self-oscillation.

In addition to the six envelope generators (EGs) provided by the FM operators, the DX200 has ADSR envelopes for the filter and amplifier sections. An LFO (again, in addition to the one embedded in the FM engine) provides a choice of triangle, sawtooth (up and down), square, and sample-and-hold waveforms. You can assign the LFO to modulate amplitude, filter frequency, or pitch.

BEYOND FM

The DX200's sample-playback engine offers 32 notes of polyphony. Instead of

multiprogram Performances, the DX200 provides a single keymap that consists of three bass sounds occupying the greater part of the bottom three octaves and an assortment of drums and other sounds from MIDI Note Number 36 through 120. Unfortunately, each bass extends only 11 semitones before the next sound kicks in: that is definitely not the sound set for Jaco Pastorius devotees. The drum sounds run the gamut from synthetic snares, kicks, and hats to processed- and natural-sounding acoustic drums and cymbals to udu and tabla variations. Higher on the keymap are thwacks, claps, smacks, and chordal instrument hits; some sound natural, and others, blatantly synthetic.

The drum and bass sounds are gated by the DX200's keypads or through MIDI. The inability to mute one sound with another (such as a closed hi-hat muting an open one) is doubly unfortunate, because you can't easily create realistic hi-hat parts. Cymbals cut short immediately after you release their triggers, making realistic cymbal parts difficult, if not impossible, to achieve.

In the Noise Oscillator section, a button lets you select from five noise types. You can sweep the noise source's filter frequency, but that's about it. Although the Noise Oscillator doesn't interact with the FM tone generators, FM synthesis can generate plenty of interesting noise on its own.

IN REAL TIME

All of the DX200's 18 knobs (except the Main Volume knob) send MIDI Control Change (CC) messages. The Data knob sends messages based on its context. For example, when you hit the Pattern Select button, the Data knob sends Bank Select and Program Change commands. If you twirl the filter's Cutoff knob, the Data knob duplicates its function but with finer resolution. Both the Data knob and any parameter knob

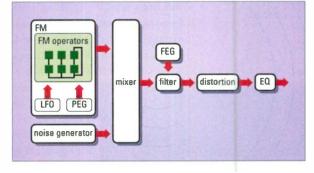


FIG. 2: The DX200 boasts 6-operator FM synthesis overlaid with subtractive-synthesis capabilities. Fully programmed FM sounds pass through the unit's multimode filter, which is controlled over time by the Filter Envelope Generator's (FEG) ADSR settings.

You want it.

A CONTRACTION OF THE PARTY OF T

Inspiring deals on professional audio, video and lighting equipment from the people who know everything about it.



800.476.9886

Need it now? Extended hours.

8am to 10pm CST M-F.

10am to 6pm CST Sat.

Great deals. All the time. Call 800.356.5844



9am to 5:30pm CST

8001 Terrace Avenue Middleton, WI 53562 USA www.fullcompass.com

send a CC message beginning with the parameter's current value, preserving smooth timbral changes by preventing the unit from sending discontiguous values. Because the Data knob offers finer resolution, it sends data more fluidly than a parameter knob, which can achieve a stair-stepped effect if that's your goal.

The DX200's control surface provides a tremendous complement of real-time voicing capabilities. Four knobs, one each for Attack, Decay, Sustain, and Release, afford hands-on control of amplitude and timbre changes over time, with a button to switch between amplitude and filter envelopes. I would prefer four knobs for the filter envelope and four more for the amplifier envelope, but considering the small footprint of the box and the number of controls, a toggle button is a reasonable design compromise.

The filter section sports three knobs for cutoff, resonance, and envelope depth. By adjusting cutoff and resonance settings, I was able to make the filter oscillate. When I applied the EG to modulate the filter, I created a melody that followed the pitches in a Pattern I was playing.

With the Shift key, the Cutoff knob selects among filter types. You can invert the filter's envelope with the Filter Envelope Generator (FEG) Depth knob—a nice touch. Depending on cutoff and resonance values, settings at either extreme of the envelope depth can overdrive the filter, creating short bursts of howling feedback that sound great.

The DX200's effects section is rather spartan, but that's a minor quibble, considering the unit's price. Chorus and reverb supplement a modest assortment of delays, flangers, phasers, and amp simulators. Sparse though they may be, you can sync time-based effects to a song's tempo or MIDI Clock. For the delays, flangers, and phasers, the Parameter knob controls rate, and for overdrive, it controls distortion depth. The effects processor doesn't provide multieffects, so you can choose only one effect at a time. The selected effect applies to FM and sample-playback tones alike.

DX200 Specif	ications
Synthesis	6-operator digital FM; sample playback
Maximum Polyphony	16-note (FM); 32-note (sample playback)
Multitimbral Parts	1 (FM); 3 (sample playback)
Effects	delay, reverb, chorus, flange, phase, overdrive, 2-band EQ
Sequencer	16-step, analog style with Free EG to capture CCs
Analog Outputs	(2) unbalanced ¼"; (1) ¼" stereo headphone
MIDI Ports	In; Out
Display	4-character, 7-segment LED
Dimensions	13.50" (L) × 2.20" (H) × 8.25" (D)
Weight	3.5 lb.

ON THE FM DIAL

The transformations that occur when you can apply real-time controls to an FM synth are a revelation; the DX200's Harmonic and FM Depth knobs are especially effective. The Harmonic knob changes the waveform by continuously varying the frequency of the FM modulators. For example, I selected a rich sawtooth pad and adjusted the Harmonic knob to smoothly change the sound from a muted, brassy character to a bright and bell-like timbre rich with inharmonic overtones.

The FM Depth knob controls the amplitude of the modulators, which allowed me to change a bland sine wave to a harsh, metallic, distorted timbre with overtones that an analog synth could never produce. Using the second Decay knob, which controls only the FM modulators, you can vary the sound from sustained tones with overlapping tails to short, clicking tones. Like the filter envelope, you can invert the modulation values of the Harmonic, FM Depth, and Decay knobs.

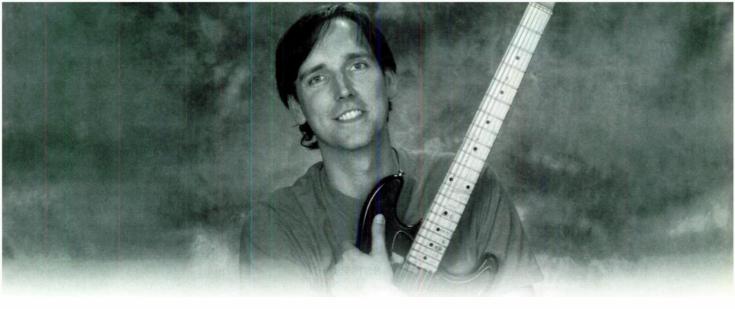
Judicious use of the Modulator button paints your sounds with a finer brush by controlling all the modulators or any one of three. By choosing a single modulator, you can make subtle changes to a single element using the Harmonic and FM Depth knobs. A 6-operator FM patch can contain more than three modulators, but given the wealth of timbral modifiers versus the available surface area, I can accept a few design compromises; I don't want to be greedy.

The Algorithm Type button toggles through all 32 FM algorithms on the fly, drastically altering timbre. Repeated button presses call up the next algorithm in line, from high to low, and then loop back to your initial selection. Pressing the button rhythmically gives the sound a Korg Wavestation-like motion. To scroll through a limited range of algorithms, you can use the Data knob, but for creating rhythmic effects, a button works better. I was disheartened to discover that I could not record algorithm changes into the DX200's sequencer, but I easily obtained the effect I wanted by recording to my computer's sequencer.

ASSEMBLY LINE

Most of the DX200's sequencer controls are simple and mainstream. As with most pattern-based sequencers (and most drum machines), you create Patterns and link them together into a Song. Patterns are limited to single measures of 8, 12, or 16 steps.

The DX200's song-assembly style leaves much to be desired; constructing music one measure at a time is counterintuitive. Even modern hardware sequencers let you assemble parts of a composition from start to finish without the need to link patterns. Furthermore, the keyboard sends a fixed Velocity message, which you can adjust only by pressing and holding a combination of buttons. Nonetheless, the DX200's sequencer offers a bunch of cool tricks all its own, including a



"Four Major Labels Came to See Me Because I Joined TAXI"

Lizard McGee -- TAXI Member

Most musicians never get a chance to meet an A&R person in the flesh. I had A&R guys from Columbia, Dreamworks, Maverick and Hollywood all come to see my band, Earwig, play live.

I spent the next day hanging out with one of them at his house. I played more songs, and we talked one-on-one for hours.

All this happened as a direct result of becoming a member of TAXI.

Ironically, I almost didn't join. Like so many other people, I didn't know a lot about TAXI, and I wondered if it was really legitimate. It just sounded too good to be true.

But I spoke with a few friends who were already members, and they explained how TAXI worked. It made sense.

I began to think about not only getting my music to record labels and publishers, but also pitching my songs to TV shows and movies to make some extra money with my music. So, I joined, and it's already paying off big-time. Earwig is building a huge buzz because of all the contacts we've made through TAXI.

We haven't signed a deal yet, but we've definitely penetrated the so-called "inner circle" of the music industry. And that's exactly where you need to be to get yourself signed.

Can TAXI get you into the inner circle? They'd be the first to tell you they can't promise anything. But four A&R people watching my show was all the proof I needed to know that TAXI can really deliver, if your music is right on target.





The Independent A&R Leader

1-800-458-2111

And if your music is a little bit off-the-mark, TAXI is probably the best thing you can do to whip it into shape. The written feedback you'll get from their A&R department is incredible.

You'll also get to meet top industry executives face-to-face at TAXI's annual convention, the Road Rally. As a member, you'll get FREE passes for you and a couple of guests.

This private convention is renowned for being the best in the business. Just one pass is worth far more than your TAXI membership fee, but you'll get three for FREE.

Whether you're pitching yourself as an artist, pitching your songs, or going for Film and TV placements, TAXI is definitely the place you need to call.

Just ask for their free information kit, and get yourself signed up in a hurry.

I did, and my only regret is that I didn't do it sooner. TAXI has turned out to be the best investment I've ever made in myself. continuously variable Swing function and a button that instantly reverses the pattern.

The sequencer's star feature, however, is the Free EG section. Free EG captures and plays back knob and switch moves, thereby re-creating whatever motion you impart to the synth in real time. The DX200 has four Free EGs, and their lengths can be set to overlap Patterns. Free EGs can be triggered when you press the Play button, send a MIDI Start message, or send a Note On. Note On triggering animates the DX200's sound, even if you use it as a passive sound module.

Free EG can capture most knob and switch movements, but I was disappointed to find a few movements it doesn't record. I was delighted when I started playing rhythm patterns as I tuned the filter cutoff for a wah-wah effect, but when I tried to overdub my filter tweaks, I quickly discovered that the filter section is disabled when you record the sampled parts. Similarly, Algorithm Type selection is disabled when you record FM synth patterns. The Cutoff knob and the Algorithm Type button send MIDI CCs, so you can record them into an external sequencer, but I'm disappointed that the internal sequencer lacks that capability.

The DX200 also lacks a Pitch Bend control. You can certainly send Pitch Bend from an external source, but be-

cause the DX200 is so self-contained, I'm surprised that that basic feature was not assigned to a knob.

Perhaps the strangest limitation is that the sequencer track that records FM sounds is monophonic. Adding a multitimbral FM section would probably have increased the unit's cost, but I can't understand why a 16-note polyphonic synth should be hobbled by a monophonic sequencer part.

OPERATOR ASSISTANCE

The manual is well written and includes 93 detailed tips for using the DX200. If you're new to FM synthesis, the appendix gives you a good, nontechnical introduction to the underlying concepts.

Yamaha bundles a DX200 Editor program for Windows and the Mac OS that allows you to edit and store sound parameters and sequences. You can construct an entire song on your computer and then dump the data to the DX200. The software provides a sequencer section that resembles an analog-style sequencer, with virtual knobs for setting the pitch of each step (see Fig. 3). You can even draw parameter changes into a window that displays the Free EG.

With DX200 Editor's Voice-editing facilities, you can graphically get down to the FM nitty-gritty and then polish your FM sounds with subtractive synthesis parameters. The Voice-editing section features a few parameters that aren't accessible from the hardware, including a 2-band EQ.

A DX7 Simulator window displays a virtual DX7 keyboard for triggering sounds and editing Voices. The simulation is comprehensive, down to its virtual membrane switches and function buttons. Clicking on any button reveals a close-up of the Edit window. Although the simulator lets you edit FM Voices as though it were a DX7, why would anyone want to? Thanks, but I've done that already.

IS IT GROOVY?

The DX200 is a blast to play. The synergy of FM synthesis and subtractive synthesis coupled with real-time control is fresh and powerful. Because the DX200 is compatible with DX7 SysEx, an enormous collection of ready-made sounds is available, and each Voice can seed tons of variations.

I'm not too enthusiastic about the sequencer section, which is a curious mixture of real-time flash and unwieldy button presses. I'd rather sequence a song from beginning to end than arrange single-measure patterns into song form. The sequencer's lack of polyphonic FM playback is a drag, and the keypads aren't Velocity-sensitive. I'm disappointed at the omission of certain real-time recording features, such as changing algorithms on the fly. Devotees of analog-style step sequencing might find a lot to like, but I don't.

On the other hand, strictly as a sound module, the DX200 works well. Clearly, the DX200's designers strove to present an analog, subtractive surface on the DX200, but that's only the tip of the tonal iceberg. The DX200 is quite capable of creating effective analog-type sounds. The fat, resonant filters impart a warm quality to the typically brittle sound of digital FM. The DX200's synthesis capabilities far outweigh its utility as a groove box. Give it a thorough listen and spin some knobs.

Assistant editor Marty Cutler is known for his "outside" approach to bluegrass banjo: his parents always told him to play there.



FIG. 3: The *DX200 Editor* software lets you create Patterns and Songs on your computer. The user interface resembles an analog step sequencer, with virtual knobs for note, gate time, and Velocity.

Need a great vocal sound? Work with a great producer.

Introducing the Antares Vocal Producer.™

Killer vocal sounds.

Auto-Tune™ pitch correction.

\$495.00



WHILE THE AVP WORKS GREAT WITH ANY MIC, THESE MICS PROVIDE IDEAL INPUT FOR ANTARES MICROPHONE MODELING:





SHURE 8

AT4033

CAN YOU HEAR THE LOVE?

- >> Auto-Tune Real-time Pitch Correction
- >> Antares Microphone Modeling
- >> Analog Tube Modeling
- >> Variable Knee Compressor
- >> Downward Expanding Gate
- >> Variable Frequency De-Esser
- >> Flexible Parametric EO
- >> Automatic Mono or Stereo **Double Tracking**
- >> Fully Programmable
- >> MIDI Automation
- >> Factory Presets for a Wide Variety of Vocal Styles
- >>> Really Easy To Use

THE HEART OF ANY GREAT SONG is a great vocal sound. With Antares's new Vocal Producer, we've combined our world-renowned Auto-Tune Pitch Correction and TEC-Award-winning Microphone Modeler technologies with state-of-the-art vocal processing modules to give you everything you need to create stunning vocal tracks in any musical style.

FREEDOM OF CHOICE

Live or in the studio, the AVP lets you instantly select from a large library of sounds. From gorgeously mellow to seriously twisted, we've included factory presets for a wide variety of vocal styles as well as an interface that makes it easy to create your own signature sounds. (And given the power and flexibility of the AVP's processing modules, we've even included a selection of presets for instrumental and percussion tracks.)

NOW HEAR THIS

Check out the Vocal Producer at your local Antares dealer or surf on over to our web site for some illuminating audio examples. With an estimated street price of \$495, this is one great producer you can afford to work with.



WHERE THE FUTURE'S STILL WHAT IT USED TO BE

ANTARES AUDIO TECHNOLOGIES 231 Technology Circle, Scotts Valley, CA 95066 USA voice: 831 461 7800 | info@antarestech.com | www.antarestech.com

TC ELECTRONIC

TRIPLE-C

A rackmount digital compressor with a few new twists.

By Rick DiFonzo

igital compressors have never been highly regarded. Despite their obvious advantages over analog compressors—automation, more precise control, and program storage (thus repeatability)—many recordists feel that they just don't sound as good. Fortunately, as with all things digital, the technology has improved by leaps and bounds, and the bad rap for digital compressors might finally be on the wane.

TC Electronic's latest digital signal processor, the Triple-C multiband compressor and envelope (see Fig. 1), could well have the right stuff for winning over even the most die-hard analog curmudgeon. In addition to full-range dynamics processing, the voltage-controlled-amplifier-based Triple-C provides two additional compression modes, a sidechain function, and several new music-enhancing features not typically found on compressors. As for repeatability, the Triple-C holds 50 factory presets in ROM and an additional 100 user presets in RAM.

The Triple-C comes in two versions: stereo and mono. For this review, I tested the mono version in my personal studio.

REAL HARDWARE

The Triple-C's front panel is logically laid out in six sections: Input, Multispectral

LCD, Dynamic, Spectral Levels, Makeup Gain, and System. The Input section provides a Level knob with decibel markings at -6, 0, +3, +6, +9, +12, and +18.

The Dynamic section provides control of the usual compressor parameters through four dedicated, continuously variable knobs labeled Threshold. Ratio, Attack, and Release. The Threshold knob has decibel markings at -40, -30, -20, -15, -10, -5, and 0, and the Ratio knob has markings for 1:1, 2:1, 3:1, 4:1, 6:1, 8:1, and ∞:1 ratios. The Attack knob has markings at 0.2, 0.7, 2, 5, 10, 20, and 50 ms. The Release knob's millisecond markings are at 20, 100, 200, 500, 700, 1k, and 2k. Also in the Dynamic sections are four buttons labeled Multiband Off, Peak Sensitive, Softlim, and Look Ahead.

The Spectral Levels section contains two detented knobs labeled Lo-Band and Hi-Band, each with markings for Min (counterclockwise), Normal (straight up), and Max (clockwise) settings. The section also has a button labeled Envelope Mode. The Makeup Gain section provides a Bypass button and a Level knob with decibel markings at -18, -12, -6, 0, +6, +12, and +18.

The System section comprises two concentric knobs and a Menu key. Use the outer Parameter knob to scroll between parameters and the inner Value Set/Enter knob to change values. You can also turn the Value Set/Enter knob to scroll through menu selections (after pushing the Menu key) or push it to approve actions such as recall and store.

The multispectral LCD is large, well organized, and pleasing to the eye. Divided into four sections, the LCD clearly shows all the information you need. On the left is a pair of vertical meters that display input and output levels. A prominent meter in the display's top-center section shows total gain through the unit and, when the

unit is in Multiband mode, gain reduction for each band. That section also shows the input source (analog or digital), sync status, and sampling rate (44.1 or 48 kHz), and provides indicators for Link mode and MIDI receive. The Envelope window, located at the top right, uses diagrams to show the shape of the attack and release. A fourth section along the bottom of the display shows the patch name and corresponding parameter value in large type, which is nice considering how difficult it is to read the front panel's silk-screened

The stereo Triple-C's rear panel provides two balanced 1/2-inch TRS inputs; two balanced 1/2-inch TRS outputs (the ins and outs also accept unbalanced connections); S/PDIF I/O on RCA jacks; MIDI In, Out, and Thru ports; and a 1/4-inch external control jack for connecting a bypass pedal (see Fig. 2). The rear panel of the mono Triple-C differs slightly: in place of the stereo version's second analog I/O is a sidechain input and direct output (for linking two mono units). Both versions (stereo and mono) have an internal power supply and provide a standard IEC connector on the back panel for attaching the power cord.

WE THREE MODES

The Triple-C's three modes of operation are Full-range, Multiband, and Envelope. In Full-range mode, the Triple-C functions as a conventional compressor. You can adjust attack times from 0.2 to 70 ms (not 50 ms, as the front panel indicates) and release times from 20 ms to 2 seconds.

The Triple-C provides a greater range of compression ratios than most compressors, ranging from 1.12:1 (not 1:1, as labeled on the front panel) to 64:1 and on to ∞:1. As you change the ratio, the values show in the display.



FIG. 1: In addition to traditional compression, the versatile Triple-C offers Multiband and Envelope modes, tube simulation, 50 factory presets, 100 user programs, and extensive parameter control through MIDI.

totally reliable hand-crafted DAWs?

until now...

"The combination of Sound Chaser's PC Workstations and Nemesys GigaStudio is the most powerful tool in my studio. I now have more sounds and textures at my disposal than I thought possible. Get one today !"

- Don Felder/The Eagles

Experience and Innovation

Sound Chaser creates the absolute best audio software and hardware solutions available. Take advantage of our years of experience and R&D. Our passion and dedication means superior customer service coupled with exceptional engineering and quality control. Whether custom built or preconfigured / ready to ship, our computers are the reliable tools your studio can depend on.



San Francisco New York Los Angeles

Multiband mode splits the input into three user-defined bands—designated Lo, Mid, and Hi—and compresses each band independently. In that mode, the threshold, ratio, attack, and release controls affect the Mid band. The other bands are compressed with the same ratio, attack, and release, but only if they exceed the threshold.

Spectral Levels boost or cut the Lo and Hi bands; think of Spectral Levels as makeup-gain controls for the Lo and Hi bands. If the one band is being squashed, you can use Spectral Levels' controls to bring its level back up a bit; they allow very precise tweaking and subtle shaping of harmonically complex signals.

Multiband mode also provides the Look Ahead feature, which delays the output by 3 ms. With Look Ahead engaged, the Triple-C analyzes the incoming signal, and if it sees a peak that exceeds the threshold, it squashes it before it appears at the output. Because most people don't perceive such a short delay, the attack time in Look Ahead is virtually 0 ms. (I wish this feature were available in Full-range mode.) One minor annoyance was that my test unit exhibited an audible pop every time I pressed the Look Ahead button.

Peak operation is another feature that's available only in Multiband mode. The Triple-C is basically an RMS-based compressor, meaning that it responds to the average level of the incoming source material. The Peak Sensitive switch lets you change from RMS to Peak operation, letting you use the unit as a peak limiter.

Envelope mode is unusual, if not unique, in that it lets you independently adjust the signal's attack and release times. Envelope mode makes it possible to shape a signal's dynamic content throughout its duration, which is pretty cool. I used it successfully to soften the pick attack on a bass-guitar track, accentuate the pick attack on a biting electric-guitar track, and dry up a wet signal somewhat by dipping the reverb tail.

The Envelope mode's effect was most apparent when I used it to add attack to a snare drum played with brushes. The range of settings let me soften the brush hits to mush, make them crack like a stick hit, and dial in any sound between those two extremes. Be careful when monitoring at high levels, though; with a fast attack and the threshold set near 0 (thus affecting all signals), attack transients can be sharp enough to damage your speakers.

MAY I SEE A MENU?

The Triple-C's concentric knobs let you recall, edit, and store factory and user presets easily. To recall a preset, scroll with either knob until you find the desired patch and then press the inner Value Set/Enter knob. When you've finished editing the preset's parameters, select Store from the Edit menu. You then have the option of storing that patch in the first available User patch location. If you wish to overwrite one of the 100 User locations, just scroll to it and save. Before saving, the Triple-C prompts you to name the patch. You can archive User patches through a MIDI Bulk Dump.

Pressing the Triple-C's Menu button provides access to all menus. The Edit menu lets you change the crossover frequencies of the Lo and Hi bands, select patch categories (vocal, percussion, bass, horns, and so on), and enable or disable the unit's sidechain.

The I/O menu provides access to a slew of options. You can choose analog or digital input source, clock settings (44.1 kHz, 48 kHz, or external), AES/EBU or S/PDIF operation, digital input levels, analog output levels, and dithering alternatives. The I/O menu is also where you find the Triple-C's MIDI functions—MIDI channel, Control Change (CC) enable, Program Bank (where you determine whether CC messages call up factory or user presets), Bulk Dump, and SysEx ID—as well as the means to enable the Link function when chaining together two units.

The Triple-C's MIDI implementation affords access to parameters through Control Change messages. That useful feature helps when a single compression setting isn't sufficient for a whole track. For example, you could automate the unit with MIDI commands to provide really hard compression on the lead vocal during the chorus and gentle compression during the verses. Furthermore, you could automate changes in tonal characteristics by changing the Hi-Band and Lo-Band settings in Multiband mode.

The manual also lists Bypass and View Angle in the I/O menu, but those options were missing from early versions of the Triple-C, including the one I

Triple-C Specifications

(2) S/PDIF
(2) balanced ¼" TRS
(2) balanced %" TRS
MIDI In, Out, Thru; (1) 1/8" TS footpedal
44.1, 48 kHz
24-, 20-, 16-, 8-bit
24-bit, 128× oversampling
23-character, 280-icon
Super Twisted Nematic (STN) LCD
+4 dBu
100 dB (20 Hz-20 kHz; analog input)
0.002% @1 kHz, +20 dBu; analog output)
20 Hz-20 kHz (+0/-0.5 dB@48 kHz; analog
output)
100/50
1U × 8.2" (D)
4.1 lb.

Planet Waves Instrument Cables

The Difference is Sound



tested. If you happen to have one of those early units, TC will update it to the current software revision for free.

CHAIN, CHAIN, CHAIN

The Triple-C's Sidechain function works like any compressor sidechain, letting another device—an equalizer, for example—control how the Triple-C behaves by triggering the compression.

When you select Add from the menu, the internal settings and the external device share control of the compression—equally, using a summing amplifier—which kicks in when the combined signal of the input and the sidechain exceeds the threshold. (I was disappointed that the Add function wasn't explained more adequately in the manual.)

You can also use the sidechain input to link two mono Triple-Cs for stereo operation. Connect the direct out of the master Triple-C to the sidechain in of the slave Triple-C and vice versa, connect MIDI Out from the master to MIDI In on the slave, and then select Link On in the I/O menu on both units. In stereo mode, both units respond to the signal present in the master unit. The master's threshold determines when compression kicks in on both units, providing operation identical to that of a stereo compressor.

You can also set up a dual-mono mode by making only the MIDI connection and again selecting Link On in the I/O menu. In dual-mono mode, you set the parameters for both units from the master, but each unit responds to its own inputs. Dual-mono and stereo mode are both useful for compressing two tracks identically. Unfortunately, because I had only one mono Triple-C, I was unable to test those functions.

THE REAL WORLD

Like most studio owners, I have my favorite compressors for specific applications. Some have tubes, others have solid-state circuitry, and a few are computer plug-ins. For example, I typically use Daking 91579s on drums, bass, electric guitars, and vocals. The Bomb Factory Classic Compressors plug-ins—the LA-2A and 1176-also get a lot of use on drums and guitars. For recording acoustic guitars, I usually prefer the dbx 166. If I want to add just a little compression to a mix, I patch my Audio Design Compex Limiter across the stereo bus. (For a comprehensive tutorial about compression and characteristics of different types of compressors, see "The Big Squeeze" in the February 2001 issue.)

The Triple-C stacked up well against the other compressors in my studio, and it proved extremely flexible, working well on everything I tried. It has become my first choice—or it at least receives equal consideration with my usual standbys—for several applications, including bass, acoustic guitars, vocals, and percussion.

To test the Triple-C, I first recorded a variety of instruments and vocals with no EQ and compression. I then patched the Triple-C into a channel insert and played back my tracks to see how the Triple-C performed.

I started by dialing in factory presets and tweaked from there. With Fast Bass (a Multiband preset), fiddling with only the threshold and makeup-gain controls produced desirable results for a pounding rock piece. Tube Bass Comp worked well right out of the box. For electric guitar, I chose the Natural GTR preset with no alterations other than slight adjustments to the Spectral Levels, which helped place the guitar track in the mix.

Heavy guitars benefited from a generous dose of Multiband compression with a slow attack time, especially when I boosted both Lo and Hi bands a bit, leaving a small notch in the middle. I

PRODUCT SUMMARY

TC Electronic

Triple-C
rackmount digital compressor
\$699 (mono model)
\$999 (stereo model)

FEATURES 4.5
EASE OF USE 4.0
AUDIO QUALITY 4.5
VALUE 4.0

RATING PRODUCTS FROM 1 TO 5

PROS: Flexible compression modes. Smooth sound when you want it. Nice tube simulation. Extremely fast attack times. Eye-catching, information-packed display. Good MIDI implementation. 100 user programs. Moderate price.

CONS: Look Ahead and Peak functions unavailable in Full-range mode. Difficult-to-read front-panel graphics. Mediocre manual.

Manufacturer

TC Electronic
tel. (805) 373-1828
e-mail tcus@tcelectronic.com
Web www.tcelectronic.com

also achieved a very nice U2-like guitar sound using the Light GTR Comp patch with a fast attack time and a high ratio. Background Vocs added silkiness to layered vocals and made me wish I had two units to process the voices in stereo.

I tried cutting some tracks with the Triple-C in the signal chain. I plugged in my Bass Pod's balanced output and turned off the Pod's compression. The bass guitar growled nicely, and the Triple-C smoothed out its sound. Loud passages were held in check, and quiet passages exhibited both pick attack and finger noise—just what I wanted. Also, thanks to the Multiband compression containing the boomy, lowend stuff, I was able to print the signal hotter to disk.



FIG. 2: The Triple-C's rear panel offers S/PDIF I/O, balanced analog I/O, a footswitch jack, and a trio of MIDI ports.

All of my instrument tracks were improved by various amounts of compression ranging from subtle to over the top, especially in Multiband and Envelope modes. Generally, the factory settings were fine starting points for further tweaking, but because every compression task calls for its own settings, the ability to store 100 user-programmable patches is extremely useful.

RADIANT HEALTH

One of the Triple-C's most outstanding features is the Digital Radiance Generator (DRG; accessible through the Edit menu), which adds second-harmonic distortion to the signal to simulate tube warmth. On acoustic guitar, the effect was subtle but nice; it added a richness to the sound that I really liked, and afterward the track blended better with the other tracks. The DRG is also a compelling effect for background vocals, adding a nice airy quality.

Because the DRG is under MIDI con-

trol, you can process different sections with varying amounts of "radiance" during mixdown. Although I didn't have access to a tube compressor for comparison purposes, I really liked the DRG's sound.

MANUAL LABOR

I have a few minor complaints about the Triple-C's user manual. In some places, the writing is difficult to understand because of poorly constructed sentences and translation errors. For example, when describing the Multi-band mode's parameters, the manual reads, "By dividing the source material into three frequency areas you can avoid that peaks at certain frequencies controls the compression of the entire signal." Huh?

Another problem is that the manual's front-panel diagrams are difficult to read. Although the manual includes a brief, helpful introduction to compression and basic guidelines for novices, it inadequately explains or arbitrarily omits some features.

CHRONICALLY COMPRESSED

The Triple-C is a reasonably priced, flexible, great-sounding digital compressor that is at home in pro and personal studios. Its three modes offer functionality I haven't seen in one box before. The Triple-C performs well in Full-range mode and merits consideration as the primary compressor for any decently equipped studio for that mode alone. In Multiband mode, however, the Triple-C really distinguishes itself. On top of that, you get Envelope mode and the DRG—quite a lot of truly useful features.

In the end, the ultimate test of a piece of gear is, will I buy one? I already own six compressors; do I really want this one too? Yes, without a doubt.

Rick DiFonzo is a guitarist, composer, producer, engineer, programmer, and father. He has played with Bob Dylan, Mick Jagger, and Roger Waters, among others. Like other guitarists, he always needs something to whine about.



NEUMANN

KM 183

An omnidirectional mic with diffuse-field equalization.

By Myles Boisen

n the beginning, there was omnidirectional: all microphones start out as omnis and are tweaked to acquire various directional characteristics. As the science of making microphones progressed (aided in no small part by Georg Neumann), unidirectional designs found favor for P.A. systems, broadcast, and music recording.

Thankfully, Neumann has continued to design and offer omnidirectional mics, including benchmarks such as the famed M 50. Now the venerable mic manufacturer has updated the Neumann KM 83 (the omni sibling to the well-known cardioid KM 84), logically christening the latest family member the KM 183 (see Fig. 1).

WINDOW RATTLER

All KM 180-series Neumann mics are small-diaphragm, phantom-powered condensers employing transformerless FET electronics. At just over four inches in length, the transducers are extremely light and easy to position. All 180-series mics are manufactured in nickel and matte-black finishes, and accessories are available from the manufacturer. Although it appears that the threaded microphone capsules, which screw on to the preamp bodies, can be swapped (as is the case with the modular 100-series Neumanns), the 180-series capsules are not interchangeable.

Generally, small-diaphragm omnidirectional microphones are favored for critical recording applications in which flat frequency response, accurate transients, and neutral, uncolored sound reproduction are prime concerns. For classical recording, film sound, and sampling, that transducer class is highly regarded. In contemporary pop recording, however, omni mics are more of a specialty item. That is partly because of the dominance of close-miking techniques and perhaps also because of a prevailing notion that omni mics don't offer adequate lowend response.

Regarding the latter view, it's true that small-capsule omnis provide neither the enhanced midbass warmth of a large-diaphragm mic nor the proximity-dependent bass boosting inherent in all focused-pattern microphones. However, most quality omnis, including the KM 183, offer low-end response that is flat to 20 Hz and below. That translates to windowrattling lows when recording orchestral bass drums, organ pedals, gongs, acoustic and electric basses, and thundering rock drums (with the omnis used as room microphones).



FIG. 1: The Neumann KM 183 has a presence boost that helps it sound crisp on distant sources, making it distinctive among small-diaphragm omnidirectional microphones.

HELPFUL BOOST

Another aspect of the KM 183's frequency response deserves a note of explanation. It is technically possible to design an omnidirectional microphone with ruler-flat frequency response beyond the audible frequency range: the Neumann KM 131 is such an item, as are models by DPA (formerly Brüel and Kjær), Earthworks, and others. But the neutrality of a flat microphone is not always desirable and can result in washedout sound and lack of high-end detail, especially in concert-hall and studio recordings.

To compensate for the high-end loss that occurs when miking with an omni at a distance of three or more feet, Neumann designed the KM 183 to have a rising presence boost similar to that of its ubiquitous vocal mics. Diffuse-field equalization—a smooth increase in high-end response above 4 kHz, peaking with a 7 dB boost at 10 kHz—allows the KM 183 to sound crisp on distant sources.

That characteristic also lets the KM 183 compete in the studio as a closemiking tool, because it can enhance detail yet remain free of the muddiness that often attends bass boosting caused by the proximity effect. Because omni mics exhibit no proximity effect and off-axis coloration on high frequencies, they are surprisingly easy to position on complex instruments. Omnis are championed by a growing number of engineers for recording acoustic guitars, for example. Like other omnis, the KM 183 can be placed directly in front of a guitar's sound hole to capture rich resonance and plenty of high-end sparkle with little of the boominess and unfocused lows that afflict cardioid mics in that position.

NO MATCH MADE IN HEAVEN

For this review, I received a pair of matte black KM 183s packaged as a set complete with swivelmounts and foam-rubber windscreens in a single wooden jeweler's box. Although the KM 183s are sold both individually and in stereo pairs (with sequential serial numbers), the stereo pairs are neither provided with frequency-response graphs nor



3-color on-disc printing!

Money-back satisfaction guarantee!

Custom graphic design from award-winning designers!

(or we'll work with your design files)

Complete CD packages in just 12 working days!

Disc Makers gives you the fastest turn time available for CD replication – your complete CD package, including design, insert printing, three-color printing on disc, CD replication, and packaging will ship in just 12 working days! You get a complete package, not some stripped down version. No one does it faster. And every Disc Makers CD package includes over \$1,200 in extra services, including a FREE UPC bar code for retail sales – a \$750 value! – and 300 full-color, 11" x 17" posters for \$99 – a \$491 savings!



Call today for a FREE Disc Makers catalog! 1-800-468-9353



1-800-468-9353 www.discmakers.com



sonically matched. According to Sennheiser and Neumann product manager Karl Winkler, the caliber of construction and the quality-control process for Neumann mics ensure that any two mics of the same model will sound enough alike that, in general, they should work fine for stereo-recording applications. But again, no extra testing is done to precisely match the stereo pairs.

In loudspeaker tests with a two-way speaker system playing full-range rock mixes, I was surprised to hear distinct differences in frequency response between the two KM 183s. For the signal path, I used Baltic Latvian Universal Electronics (BLUE) Kiwi mic cables and a Langevin Dual Vocal Combo or Focusrite Green preamp, with gain matched by meters and by ear. All signals were recorded to DAT.

I initially positioned the KM 183 pair about two feet from the speaker, with the capsules approximately one inch apart. But I ended up moving the mics back to a distance of six feet from the source to minimize discrepancies caused by the relative proximity of the tweeter or woofer. At that distance, listening sessions in the studio (and later in my mastering suite) revealed marked dissimilarities in presence and in highend reproduction between the two mics and subtle differences in bass pickup. I tried switching both mic preamps and mixer channels but received the same results.

Specifically, one KM 183 had a noticeably bigger sound; it enhanced the mix's high-frequency components such as hi-hat, snare, and vocal sibilance, and it added a bit more punch to the kick drum. I also heard minor variations in the lower midrange, which affected the timbre of electric bass and distortion guitar in the mix.

I also recorded an acoustic guitar with both mics and compared the results. One mic was obviously brighter, and the other had a thicker, more woody-sounding midrange quality. However, both microphones sounded good, and the differences were not as pronounced as in the loudspeaker tests. The mics' output levels were closely matched too. But still, the KM 183s were not sufficiently matched for critical stereo recording. Were I to audition a pair for the purpose of buying just one KM 183, the obvious sonic differences would prompt me to do a lot of testing before deciding which flavor I preferred.

DISTANT DAZZLER

To test the suitability of the KM 183s for classical-style recording, I set them up as a spaced pair to record composer Dan Plonsey's Portcullis Ensemble. Incidentally, during that session, I also tested an MBHO MBNM-622, a unique stereo mic that employs boundary-layer mics on either side of a modified Jecklin disk (see the review in the October 2001 issue).

In general, the KM 183 pair conveyed a realistic, unexaggerated left-to-right balance with a blended center image and an authentic-sounding ambience. Although each recording system had its strengths, the Neumann pair timbrally was the more natural, displaying open, airy detail that was particularly appealing when monitored on a pair of Grado SR 125 headphones.

Compared with the sharp separation

and drier quality of the MBNM-622 recording, the imaging of the KM 183 tracks was sometimes blurred with slight shifting in the perceived position of high-end instruments such as cymbals and piccolo. However, part of that could be attributed to room reflections (which are minimized by the MBNM-622) and to the aforementioned differences in high-end response between the KM 183 transducers.

Positioned about four feet in front of a Taylor acoustic guitar, a single KM 183 added a world of subtleties when mixed in with an XY pair of close mics (Oktava MK012s). Low-end fundamentals, pick sound, sparkling harmonics, and early reflections from the room were accurately represented by the KM 183, contributing an exciting, three-dimensional realism to what would otherwise have been a fairly standard foreground guitar track.

Throughout the tests and especially for ambient miking on quiet sources, the KM 183's low self-noise and relatively high output were a boon. The only hitch in that session came when the KM 183 faithfully conveyed some machine noise from another part of the building. A low-cut filter on the mic preamp effectively dealt with the unwanted rumble, and I made a mental note that industrial buildings and omni mics don't always get along.

I discovered another noteworthy use of the KM 183 as a distant microphone while recording the improvisational trio Maybe Monday. When cellist Joan Jeanrenaud (formerly of the Kronos Quartet) entered as a guest artist, I decided to isolate her in the drum room, away from the trio's electric guitarist, Fred Frith, and saxophonist, Larry Ochs. I left the door to the woodfloored drum room open and supplemented Jeanrenaud's close mic (a Royer SF-1 ribbon) with a KM 183 taped to the floor a few feet away.

Employing the KM 183 as a boundarylayer mic added some interesting and rather dark live reverb to the mix. The mic also picked up amazingly clear artifacts from Frith's amp, which was 30 feet away, around a corner. Mixing that room track in with the close-miked

firewire storage is here!



M Project is the new FireWire hard drive storage solution for your MOTU hard disk recording system from Glyph Technologies.

M Project adds up to 75 GB of audio storage to your MOTU rig in seconds, backed by Glyph's lengendary service and support.

M Project is the only MOTU-approved FireWire storage solution for the 828 FireWire interface and all MOTU PCI-324-based systems, including the 2408mkll, 1296, 1224 or 24i.

M Project easily shares the FireWire bus with the 828. M Project is the ideal alternative to SCSI drives because it frees up a PCI slot.

Call Glyph at 800.335.0345

cello track contributed a pleasant high end to arco passages. Used in moderation, that track filled in the instrument's sound transparently without adding boominess or boxy coloration.

CLOSE ENCOUNTERS

In addition to being a reliable, smoothsounding performer in conventional omni applications (distant miking of instruments and ensembles), the diminutive KM 183 also has some big surprises to offer as a stand-in for standard cardioid-pattern close-miking duties. For a session engineered by my studio partner, Bart Thurber, I proposed using the KM 183 as a single mic on a Hammond M-3 organ and Leslie Model 51 combination. At a distance of four feet and routed to a vintage Telefunken V72 tube preamp, the KM 183 delivered an even, airy sound with just enough ambience to grant the organ a spacious character. The Leslie cabinet had no problems with harshness or mechanical noise, and positioning the mic between the high and low rotors yielded plenty of low end. The only drawback was that the Leslie's speed control was installed on a homemade metal switching box, and even from ten feet away, the KM 183's big ears picked up the click of the switch.

I used the two KM 183s as a spaced pair on a set of three conga drums while recording rhythm tracks for a CD by singer and songwriter Jen Faith. Although I never tried that with omnidirectional mics before, after a couple

of quick positioning adjustments, the Neumanns allayed any reservations I had. The low end of the conga set was rich in tone but never boomy, there was plenty of slap and skin sound, and the overall tone was tightly focused with a perfect amount of organic room sound.

Encouraged by those results, I threw caution to the wind and used one of the KM 183s during a session with jazz drummer Milo Francis—not as an overhead microphone, but in front of Francis's double-headed bass drum.

The KM 183's low self-noise and relatively high output were a boon.

When positioned as close as I usually like—one to two inches away, aimed at the outer rim of the head—the +25 dB gain setting on a Neve 1272 mic preamp provided way too much gain for my analog recorder. The mic has no attenuation pad, so I simply moved it back about four inches from the head and slightly lowered the preamp trim setting. The KM 183 never complained, and after a few EQ cuts in the low end and a small boost at 4 kHz, I had a solid, present bass-drum sound that provoked enthusiastic comments

throughout the mixing session. I was knocked out by the KM 183's ability to capture that elusive jazz boom and appreciative that the leakage from the kit, though a bit more pronounced than with the usual cardioid mic, was even and uncolored.

PLAIN SOUNDS GREAT

As an engineer who savors the rich qualities of room ambience in studio recordings, I have developed a great appreciation for omnidirectional microphones over the years. Some in my collection will do something to enhance room sound or contribute a unique equalization curve to closemiked sources. I have also tried ultraflat instrumentation omnis in the studio but have generally found that they lack character for my preferred recording style.

Excluding the top-dollar mics, nothing that I've heard in the omnidirectional class compares to the pleasant neutrality and sweetened high end of the Neumann KM 183. Purists may debate the merits of diffuse-field equalization, but my ears reveal that this little mic has an amazing reach, and its highend compensation delivered astounding nuances from near or far without ever sounding overly bright or fizzy.

As with all Neumann KM 100-series mics, low noise, lifelike transient response, and clear resolution of delicate acoustical details are hallmarks of the KM 183. The pair I tested was not sufficiently matched for use as a stereo set, which was a disappointment given Neumann's stature and reputation. Nonetheless, the mic just plain sounds great, and it should provide years of sonic revelations in the studio and for live recording. I highly recommend the KM 183 to those looking to branch out into ambient miking, expand their miking techniques, or simply upgrade from budget omnis.

Myles Boisen is a guitarist, a producer, a composer, and the head engineer and instructor at Guerrilla Recording and the Headless Buddha Mastering Lab in Oakland, California. E-mail him at mylesaudio@aol.com.

KM 183 Specifications

Element	externally polarized (DC bias) capacitor
	("true" condenser)
Diaphragm	18, 3-micron, gold-vapor-deposited Mylar
Polar Pattern	omnidirectional
Frequency Response	20 Hz-20 kHz
Dynamic Range	124 dB
Sensitivity	12 mV/Pa (±1 dB; @ 1 kHz into 1 kΩ)
Signal-to-Noise Ratio	78 dBA
Self-Noise	
Maximum SPL	140 dB (for 0.5% THD)
Power	48V phantom (±4V)
Dimensions	4.21° (L) × 0.87° (D)
Weight	0.18 lb.



The most advanced musical mstrument in the world is a computer Justadd Unity DS=1. That's how Musical Director Harry Sharpe of Wynonna has

rocked 300 arenas occurring with his Umty BSOI and a 63 PowerBook computer. Unity integrates with his sequences by day, and then becomes his Tive 24-bit sampler by night.

Get free demos for PC and Mac at www.bitheadz.com. Take it with you into the studio or on your next world tour. BitHeadz software is every sound you ever wanted.



Umity DS+1 was designed for musicians by musicians. We wanted a real

stereo sampler with layers, splits, and full MIDI continuous control. We

huge samples in seconds instead of minutes.

also wanted lightning fast note on response time and the ability to load

• True phase locked stereo signal path throughout



- Fantastic 24 bit. 96 KHz sound quality
- Imports most major sample libraries including Akai.
 Soundfont. SampleCell
- RSIO, MAS 2.0 ReWire and
 DirectConnect support
- G4 and P3 optimized for up to 128 stereo voices

Unity DS=I's ability to re=create the sounds of acoustic instruments or any other audio source with stumming realism and control is just the beginning. Extensive MIDI implementation for realism control of all parameters, enormous capacity for RAFII, and possibly the best integration into existing MIDI setups in the industry may even make your life a little easier. So whether you need a multi-timbral sound module at home, or a live





performance sampler for the road. Unity DS+1 has power to spare.

Osmosis is a PC and Macintosh® utility that allows you to convert entire Rkai® \$> 0000 /\$>3000 and Roland \$\$760 / 170 formatted disks into Unity or SampleCell® formats. Osmosis will read samples from almost any removable media disk, and display the disk file hierarchy in a single window. Also, the entire disk directory can be saved to a text file. Convert all those great Akai® and Roland® libraries into the modern world of computer® based sampling. It makes the perfect companion for Unity DS® or Sample Cell®.





BitHeadz, Inc. 2850 South County Trail Suite One

East Greenwich. RI 02818 Tel. (401) 886+7045 Fax. (401) 886+7049



Convert Roland
 Akai
 Ibraries with a computer
 Convert entire multisamples

Audition before converting

Save as SampleCell II.
 MFF. • Umty DS•I



ALGORITHMIC ARTS

SOFTSTEP PRO 2.06A (WIN)

A mind-bending software music machine.

By Peter Hamlin

fascinating program from Algorithmic Arts, SoftStepresponds to your playing in creative and spontaneous new ways. Play a major scale on your MIDI controller, and the software responds with an exotic microtonal cluster. Play a few more notes, and it responds with a soft, delayed version of the melody at a tempo determined by your playing Velocity. When you pause for more than a specified period, a long arpeggiated chord sounds. The harmony unfolds in response to biological information from genetic code, and a background rhythm responds to the patterns of a fractal image on the screen. Those are only some of the musical scenarios you can produce with SoftStep.

Algorithmic Arts describes SoftStep as "a Windows-based, modular MIDI step sequencer and algorithmic-composing program patterned somewhat after the modular analog step sequencers: the big ones, with lots of knobs and blinky lights." On the Algorithmic Arts Web site, you can download a free introduc-

tory version called *SoftStep Basic*. There's also a fully loaded *Pro* version and *Soft-Step LE* (\$79), which is positioned about midway between the other two. The difference between them is the number of functions available. Although serious users will soon want to upgrade from the free version, *SoftStep Basic* provides more than enough for you to learn how to use the program and decide which level is best for your needs.

FIRST STEPS

When you launch SoftStep Pro, you're greeted with an empty Workspace window. A menu bar at the top offers basic functions such as opening and saving files, creating modules, setting configurations, creating your own user functions, navigating the Workspace, and getting help (see Fig. 1). Below the menu bar are tools for creating a snapshot of a configuration and for storing and retrieving those settings. You can also launch the Composer utility, a playlist editor that lets you create a sequence of configuration snapshots. The Composer is useful for building large and varied compositions.

A metronome sets the master tempo, and the Run button acts as the Play control on a sequencer transport does. Monitor lights indicate MIDI input and output, quarter-note tempo ticks, and timing errors if they occur. You can show or hide a console of 16 faders. An indicator reminds you if the current configuration has changed since the last time you saved it.

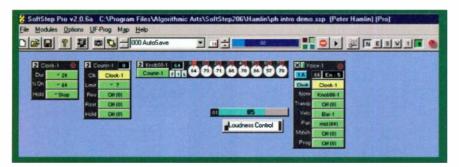


FIG. 1: The main work areas in *SoftStep Pro* provide a series of menu options at the top and a large Workspace for building configurations in the remainder of the screen. This simple example shows a Clock module triggering a Counter module, which in turn cycles a sequencer through its eight steps. Values are set by the sequencer's knobs and are sent to the Note input of a MIDI-Voice module. A slider bar sets the volume.

Minimum System Requirements

SoftStep Pro

Pentium/120; 32 MB RAM; Windows 95/98/ME/2000

A REALLY BIG WORKSPACE

SoftStep Pro's opening screen is just 1 of 16 work areas. The entire program is organized into four Banks of four Pages; the Banks are numbered 1 through 4, and the Pages are identified as North, East, South, and West.

The opening screen (Bank 1, North) is large enough for many typical configurations, but when you create a large, complex configuration that doesn't fit comfortably on one screen, you can span different Pages and Banks and switch easily between them. You select which Page is visible by clicking on buttons marked N, E, S, or W and toggling between the four Banks with another button. The program's modules can be interconnected across Bank and Page boundaries, so there are no limitations other than whether a Page is visible.

Pressing the Map button brings up an overview of all 16 Workspace areas, allowing you to keep track of the whole structure. You can click on any part of the Map overview to move to that Bank and Page. Such a system of organization works well: it avoids screen clutter and lets you organize your project any way you want.

ALL THE INS AND OUTS

SoftStep Pro has 175 modules with various functions that you can freely interconnect. To create a module on the screen, left-click where you want the module to show. A pop-up list of categories arranged by function appears, and you can select the type of module you want from the list. Modules can also be selected from the Modules menu, or you can right-click in the Workspace to duplicate the last module you created.

Each module has one or more inputs, which appear as green rectangles for data and yellow rectangles for clock inputs. Clicking on an input produces a pop-up screen with a choice of numerical values, control flags, or the output

A professional sound system for under \$530

- A 6 channel 200 watt RMS professional system
- · Compact, easy to use with lots of flexibility
- Lightweight design with aluminum chassis and rugged plywood enclosures
- 24 bit DSP digital processor with over 256 effects
- Crystal clear highs & deep bass right out of the box
- The best pro sound value on the market today
- Made in USA

CARVIN





Voted best PA packages by Acoustic Guitar Magazine Readers Poll

Over 256 Digital Effects!

PK EF	FECT	SELEC		RAMETE
4	5 6 RE	VERM	CHORNE	6 7
2	1 8	- 10 P	7 3	3 8
- 13	9		2	
0		ECHO	LANGE	10
		FFECTS PR		10
SELECT				FLANGE
	4-817 E	FFECTS PR	OCESSIMG -	

As shown

620-805 complete system with 1 PA620 mixer • 2 805 heavy-duty 10" 200 watt speakers • 2 PH50 50' cables • 1 CM50 pro mic & XLR25 cable

\$529.99 shipping \$39.99, no tax outside CA

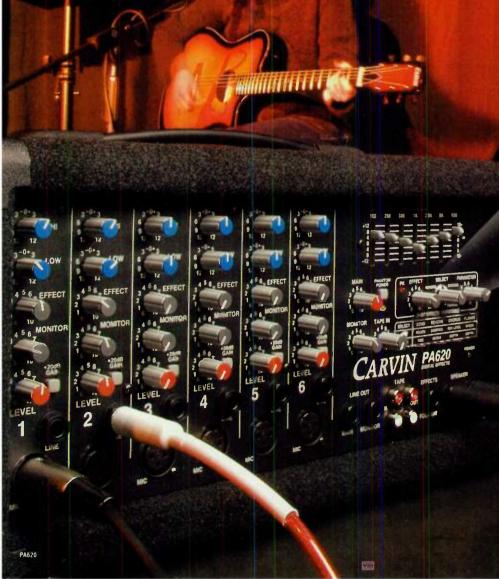
Options: PSS20 Two heavy-duty speaker stands - \$69.99 when purchased with system M\$13 \$29.99 Professional boom mic stand F\$22 \$29.99 Footswitch to turn effects off/on

Order now and save - Factory Direct!

For specs and to order, visit <u>carvin.com/PA620</u> or call

carvin.com 800.854.2235

Factory Direct Sales • Gultars • Amps • Pro Sound



of any other module (SoftStep follows the MIDI standard of using numerical values 0 through 127). Rather than using visible "patch cords" to show connections, each input clearly displays the name of what has been connected to it. That keeps the screen clean and uncluttered.

Control flags indicate various system values and track information such as the Run button's status, which computer keys you press, or the status of Composer playlists as they run. For example, if you press a key on the computer keyboard, the KeyChar control flag will equal the ASCII code for that character, and that value will be available to any module that has KeyChar selected as its input. If you push the Run button on SoftStep Pro's transport, the Run control flag will equal 127 (logical "true"). Pushing the Run button again will toggle it off, and the Run control flag will equal 0 (logical "false").

Having access to those system states

through the control flags provides many options for interactivity while the program plays. For instance, you could push the computer key that determines which chord the program will play, or you could simply use the Run button on the transport to start and stop Clock modules in a configuration.

When they're created, modules are assigned numbers to make them

easily identifiable. For example, the first Clock module you create will be called Clock-1, followed by Clock-2, Clock-3, and so on. That makes the modules easy to differentiate when you interconnect them.

In my example of a simple *SoftStep* configuration in **Fig. 1**, a Clock module drives a Counter module, which causes an eight-knob Step-Sequencer module to



FIG. 2: The Fill feature gives you powerful editing control over Step-Sequencer modules. Manipulating its graphic interface is easy; the data it creates can be used for many purposes.

cycle through its eight positions. A MIDI-Voice module (labeled Voice-1) plays the notes specified by each knob setting on the sequencer. In other words, the Knob08-1 output controls the Note input of the MIDI-Voice module. The horizontal bar, marked 01 and set to 85, is used as a volume control and is connected to the Velocity input (Velo) of the MIDI-Voice module. Moving the

SELECTION DANS AND MUSICIANS:

INDIE MUSIC CDS For Sale

Modus; The Twin Jade Sessions Ground-breaking improv funk jazz from S.F.,CA. Check out samples at www.cdbaby.com/modus

Benny Rietveld; Mystery of Faith Alt Jazz/Rock by Miles Davis/Santana bassist. \$15 w/Carlos Santana, Barbara Higbie. www.bennyworld.com

Myles Boisen; Scrambledisc A masterpiece of studio cutups and improvisation. Audio CD \$15 mylesaudio@aol.com

Gino Robair; Singular Pleasures Industrial Percussion Solo Performance CD \$10. Audio Format www.rastascan.com/brd023.html Are you an individual or band with self-released music for sale?

Now you can run an EM classified for \$35 and sell your music to over 50,000 readers!

Tell Me More!

\$35 includes Up to four lines of text (27-32 character spaces per line), and band name in **bold**. You must run a minimum of three issues in a row. Prepayment is required by credit card or check.

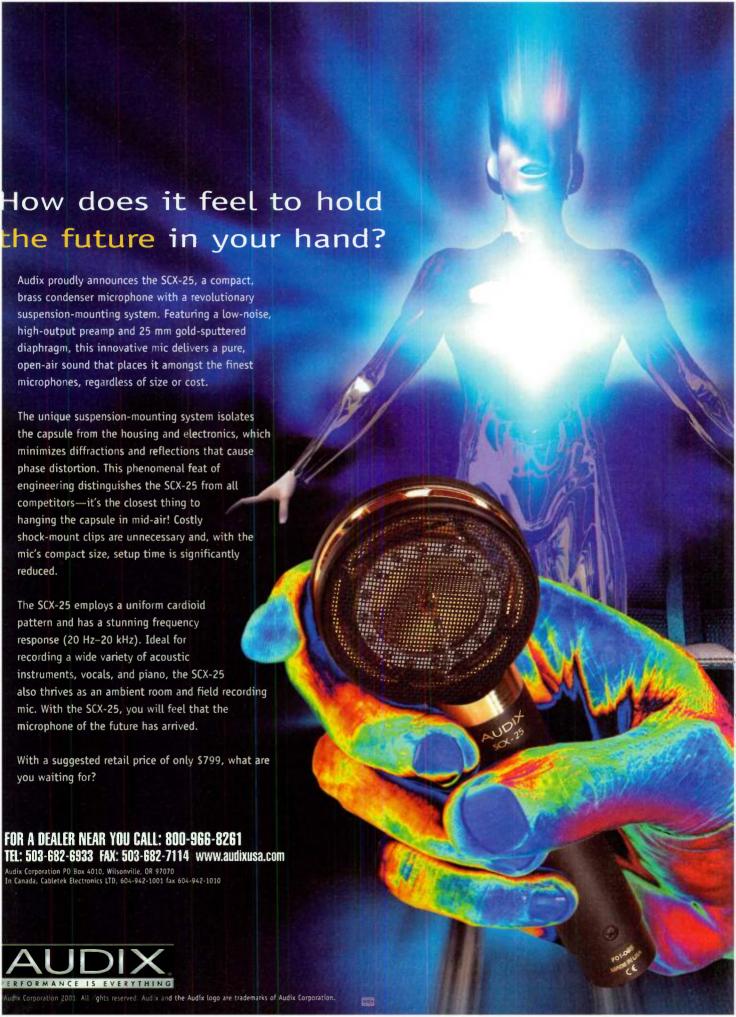
Please mail the following text (in order) to emclass@intertec.com:

Band Name (underline if bold type is desired)
 Music Style/genre

Price of your music product
 Web address OR e-mail address (just one.)

Send your ad with the following required information: Your name, address and daytime phone number. Check or credit card information. We accept Visa, Amex, Discover and Mastercard. Include expiration date. We will charge the card once per month, for three months. No additional copy/text is allowable at this rate; this offer is only available for self-released, independent music releases. This is not applicable to production & sound effects libraries or sampling CDs. Send your ad and payment to: EM Classifieds, 6400 Hollis St., Ste. 12, Emergyille, CA 94608.

Ph: (800) 544-5530 Fax: (510) 653-8171 E-mail: emclass@primediabusiness.com



new from the mit press

Microsound

Curtis Roads

Below the level of the musical note lies the realm of microsound, of sound particles lasting less than one-tenth of a second. Recent technological advances allow us to probe and manipulate these pinpoints of sound. dissolving the traditional building blocks of music-notes and their intervals-into a more fluid and supple medium. Covering all aspects of composition with sound particles, Microsound offers composition theory, historical accounts, technical overviews, acoustical experiments, descriptions of musical works, and aesthetic reflections. The book is accompanied by an audio CD of examples.

392 pp., 68 illus. \$47.95

To order call 800-356-0343 (US & Canada) or 617-625-8569. Prices subject to change without notice.

http://mitpress.mit.edu



SOFTSTEP PRO

right edge of the bar's blue rectangle changes the setting within the range from 0 (silence) to 127 (loudest). The Loudness Control information box identifies the horizontal bar's function.

WATCH YOUR STEP

Many functions provided by the modules are straightforward, such as those that let you set values with a slider or knob. Other modules are more complex; the Kicker module, for example, monitors a stream of numbers and produces a clock pulse if less than a user-determined number of different notes appears within a user-determined period of time. You can use the Kicker to make sure there's enough variety in a sequence of numbers being generated in a configuration.

SoftStep provides Clock modules for timing; they include an innovative Ball module in which a ball creates interesting and varied rhythms as it bounces within four walls. You can adjust the box's size and shape and the ball's speed to get many variations in the rhythm. The Ball module creates a natural and changing rhythmic pattern without the rigid regularity of a precise MIDI Clock, offering one useful way to create more fluid and less me-

chanical timings in your configurations.

You can create rhythmic patterns using both the Arpeggio module and a series of Pattern modules. You can have as many as 128 separate patterns, each containing 32 steps, in a single module.

Central to the program are the many step sequencers, which offer different numbers of steps and distinct kinds of controls. The controls include knobs, sliders, and numerical inputs. Step sequencers with many steps work the same way the smaller ones do, but they take up more space on the screen; you are free to select the size you need. The individual controls allow you to enter data in the manner you find most convenient and most appropriate for the task.

Two other options are a choice of several types of Matrix modules, which are two-dimensional sequencers organized in rows and columns; and a choice of Page modules, which can hold 128 sequences at once.

FILL 'ER UP

All the sequencers make use of the powerful Fill feature, which can be used to control parameters such as pitch, Velocity, and tempo (see Fig. 2). Adjust the green sliders by dragging with the mouse to specify MIDI values from 0 through



FIG. 3: SoftStep Pro can draw fractals in real time and use data extracted from the image for various control purposes. Bitmapped graphics files can also be imported and used to control other functions.

SOFTSTEP PRO

127. You can also set values by checking the Keyboard option, which summons an onscreen music keyboard you use to select pitches.

To use the Fill function, click on the Fill button of the step sequencer you are working with. You can enter the data for each step manually or use Source commands to automatically create different data patterns. Available patterns are Random, Random-Walk, Repeat the First Value, and Count Up from the First Value. The Modify commands change the values in various ways, such as adding a value to all steps, sorting them in ascending order, removing duplicate values, and scattering the values to random positions. That's quite a bit to keep track of, and fortunately, tool tips appear when you move the mouse over each button.

Quantize functions force the notes to conform to selected scales and chords. Five working buffers are marked A through E, letting you try various op-

tions and compare them. For example, say you have a random sequence, and you want to try some variations without discarding the original. You could copy the sequence to all buffers using the Copy/Paste feature and then move to the B buffer and quantize to a major triad, move to the C buffer and quantize to a whole-tone scale, and so on. Available options are major, minor, pentatonic, and whole-tone scales as well as octaves, fifths, and major and minor triads. A Jitter function moves notes randomly one step at a time.

RANDOM EXCESS

SoftStep Pro offers several modules that create either random numbers or numbers that follow probability distributions. Random sequences are useful in many settings, but if you don't want pure ran-

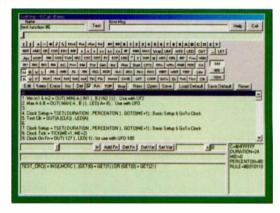


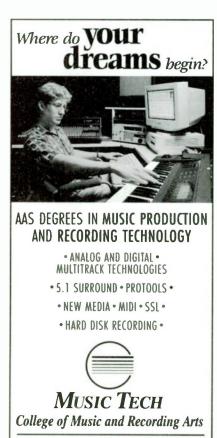
FIG. 4: Users can create their own functions with the *User Function Editor*, a utility that offers an extensive toolkit for designing complex modules that can interact with the default resources the software provides.

domness, you can use the Probability module to make certain outcomes more likely than others according to a probability table you create. A simple example would be to emphasize the tonal center of your piece by creating a probabilitydistribution table that makes the tonic



SOFTSTEP PRO





1.800.594.9500 www.musictech.com In Europe call +46(0)322.639211 pitch most likely, emphasizes the intervals of a fifth and a third, and uses seconds and sevenths least often.

You can also get data from fractals or other graphic images. SoftStep Pro's Fractal module draws fractal images on the screen in real time; you can use the patterns created by the changing positions of the pixels as they are drawn (see Fig. 3). The Clock module determines how quickly the drawing unfolds. The Image module works a little differently: import any image you wish (in BMP format), and SoftStep Pro will extract the color values at every x-y coordinate. You can use a Clock and a Counter to trace horizontally across the screen and then use the changing color values as loudness, pitch, or tempo information in other modules. The Image module includes a simple tool for drawing and editing fractal images to work with rather than importing them.

SoftStep can also read data from MIDI files, but they must first be imported and converted to SoftStep's own MIDI-data format. You can create a SoftStep configuration that reads a MIDI sequence of a song, or even a tone row, and creates variations on it. You can choose to extract just the Velocity, Program Change, or Pitch Bend information from the MIDI file and use that data as a control source.

GOING MICRO

SoftStep's Tone module has extensive support for microtonality. A built-in selection of 103 tuning tables includes ancient Greek scales, just intonation, scales from various non-Western traditions, and scales developed by Harry Partch, Wendy Carlos, and Lou Harrison. If you want to create your own tuning tables, you can purchase a copy of the MicroTone editor (see the sidebar,

MUSICAL WEATHER, SINGING DNA, AND EXOTIC TUNINGS

SoftStep has modules that let you use genetic information and other kinds of data in your musical materials as well as offer support for microtonal scales. If you want to go beyond the built-in features, you can buy three additional programs.

DataBin (\$29) imports any text file and converts it to a binary format that SoftStep understands. That file could be a list of numbers, data organized in columns, or data delimited by commas. You could, for example, use a year's worth of temperature data to control changing tempos in a composition that depicts the passing of the seasons.

BioEditor (\$39) lets you import genetic information (available on the Web and elsewhere) and use it in SoftStep configurations. SoftStep's Bio-Sequencer module contains a number of built-in examples of genetic sequences, and the help files offer detailed information as well as links to additional sources. Those sequences produce not-quite-random

patterns that often translate into interesting musical results. SoftStep Pro limits you to a few built-in genetic sequences, however; if you want to add new information, you need BioEditor. (To learn more about work in that area by biologist Mary Anne Clark and SoftStep creator John Dunn, go to http://mitpress.mit.edu/e-journals/Leonardo/isast/articles/lifemusic.html.)

MicroTone (\$49) is a program you can use to create customized tuning tables. SoftStep comes with more than 100 tuning tables, but if you have a hankering to create your own, MicroTone is the way to go.

Each program is easy to learn and use, and all have well-conceived editing features appropriate to the type of data they handle. You can download the programs for free to try them, but you have to purchase a license key before you can save the data to files that *SoftStep* can use. You can buy all three programs in a bundle for \$89.

The world's best selling USB MIDI interface now comes with a few added features...



Introducing the USB Keystation Series from MIDIMAN.



"Musical Weather, Singing DNA, and Exotic Tunings").

You might be wondering how SoftStep Pro could offer microtonality when MIDI uses only the 12-tone tempered scale. That's easy: it uses Pitch Bend messages before each note. Because Pitch Bend is a Channel message, though, if you want more than one note to sound at a time, you have to put each note on a separate MIDI channel. If the notes are playing quickly, you will hear a Pitch Bend "swoop," especially when the difference from traditional tuning is great. Consequently, if you really want to explore microtonality, you'll probably need to work with a synthesizer that has good support for it. Even with that limitation, microtonal support is a welcome feature.

DO YOUR MATH

SoftStep Pro's math modules support standard features such as adding, subtracting, dividing, or multiplying values. The program also has modules that combine functions, such as multiplying two numbers and then dividing the result by a third, and a module that works with percentages.

Modulus arithmetic is supported, and because the Western musical scale is itself an example of modulus arithmetic, the feature is useful. For example, say you have a random sequence of pitches, and you want a chord to play whenever the note C sounds, no matter what octave it's in. If you performed modulus division by 12 on the sequence of pitches, all the Cs would give a result of 0. You could then use the number 0 as a trigger for the desired chord. Modulus arithmetic would also allow you to compress all MIDI notes into a single octave.

Logic modules come in two general categories: logical and bitwise. The output of the logic modules is true (127) or false (0). Logic modules are for functions such as synchronizing two clock signals, delaying clock signals by a specified amount, changing state at every clock pulse, and producing the opposite of the input at the output (a logical "not" function).

Bitwise logic modules let you work with each bit of a number. They have many uses; for example, you could create as many as seven tracks of rhythmic patterns using the Rhythm module (a clock function) and then employ the Mask logic module to select which of those tracks, in any combination, will be sent to the output. The logic modules give you many opportunities to control your configurations in various ways and to make the musical results interesting and varied.

MAKE YOUR OWN

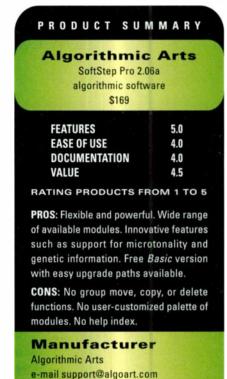
Although I just touched the surface, you can see that a module exists for just about anything imaginable. If you think of something the built-in modules can't easily handle, however, Soft-Step includes User Function modules for creating unique functions (see Fig. 4). Though they take a little effort to learn, there are some particular features, such as interactive graphics, that User Functions make possible.

For example, you can use User Functions to create a visual MIDI monitor that displays notes and their Velocities with vertical bars of varying sizes or colors. Or you might create a geometric design that dances on the screen in response to the music. Various drawing commands are available to create graphic images, and you can also import preexisting graphic files.

IN A WORD

SoftStep's help documentation is good: the tutorials are excellent, and handy tool tips appear when you move the mouse over different parts of each module. It would be useful, though, to be able to reach detailed help for each module directly from the Workspace. In addition, an index within the documentation would be helpful.

I would appreciate the ability to organize modules in my own way or create personalized palettes of modules that I use often. I also wish you could select several modules and then move, copy, or delete them as a group. As it is, you must deal with the somewhat disconcerting fact that you have to delete modules in different ways. You click on a box in the upper-left corner to delete most modules, but some require you to shift-click on little squares to delete



them; others even insist that you rightclick on the modules themselves. Moreover, some modules disappear as soon as you delete them, but others ask you to confirm your decision with a dialog panel. Although I understand why those differences exist (you wouldn't want a Button module to be too easy to delete accidentally, for example), a group select-and-delete function would be a useful, timesaving feature.

Web www.algoart.com

Aside from those minor points, SoftStep Pro is a well-conceived program that's a pleasure to learn and use. It has many innovative and useful features; the bouncing-ball timer, microtonal support, and ability to use unusual data sources in your music are a few of my favorites. Customer support is excellent, and the upgrade paths let you start anywhere you want and dig in as deeply as your interests demand. Musicians interested in algorithmic techniques or interactive performance will find that SoftStep Pro delivers just about anything their musical imaginations can dream up.

Peter Hamlin is a composer who teaches at St. Olaf College. He is also a member of the live electronic-music improv band Data Stream.

broadjam

K

highest ranked broadjam artists: 10.2001



Artist: Robb Roy Song: What If

Genre: Alternative



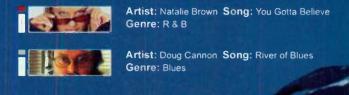
Artist: Brassnucks Song: Digital Domain

Genre: Rap / Hip Hop



Artist: deepBluesecret Song: Glazier

Genre: Electronic



unleash your songs

← → Get it up

Don't want to deal with the hassle of encoding and uploading your music? Send it to Broadjam, and we'll do it.

← ► Get it out

We'll get it up on our site and then get it out to all the best Internet music sites.

◆ → Get it back

Oh you'll get feedback all right. From fans, peers, industry pros, professional guest reviewers and even a moron or two.

◆ ▶ Get a homepage

A well-designed world-class page that you'll be proud to call home.

← ▶ Get it on

Whatever you do, get it online and give your music a chance. And give us a chance to do it for you. If you want to talk to a human and ask questions, call us toll free at 877-527-3651. If you prefer email, we can deal with that as well.

■ CustomerService@Broadjam.com



GRACE DESIGN

MODEL 101

Uncompromising sound from a classy yet affordable mic preamp.

By Myles Boisen

o the observation that you can never be too rich or too good-looking, I would add that your recording signal path can never be too pristine. Microphones and mic preamps, after all, are the points at which the signal starts, so it only makes sense to ensure that each component is as clean, quiet, and accurate as possible (assuming that you're not intentionally seeking distortion, coloration, or the like).

The best gear comes at a price, and usually a steep one, which is why recordists working in personal and project studios must often settle for a compromise between quality and affordability. Fortunately, the gap between the two tends to narrow each year, thanks to low-end companies steadily improving their lot and to high-end outfits finding ways to reduce costs yet retain quality.

Grace Design, highly respected manufacturer of premium mic preamps such as the Model 201 and the Lunatec V2, is helping to further reduce the chasm between price and performance.

The company's new Model 101 offers the same dazzling specs and immaculate sound (or lack of sound) as its forebears, but it is priced at less than \$700 (see Fig. 1). I used the 101 in numerous recording sessions during a period of several months; my only unanswered question is how in the world this small boutique audio manufacturer managed to put together a world-class preamp that's within the budget of nearly anyone with a mic and a part-time job.

BUMPER TO BUMPER

The Model 101 is a single-channel, solid-state, half-rack mic preamp featuring a balanced, transformerless mic input and a high-impedance instrument input. The build is sturdy and elegant, and the unit's chrome front panel, which sports the same retromodern metallic gleam and rounded contours as the company's Models 801 and 201, is so lovely that it practically begs to be smudged with fingerprints.

The 101's few front-panel features are laid out cleanly and labeled clearly. From left to right, it has a 1/4-inch highimpedance direct injection (DI) jack (labeled HIZ), a 48V phantom-power switch, large easily grasped Gain and Trim knobs, a 75 Hz highpass-filter switch (labeled HPF), and a power switch beneath a recessed amber powerindicator light. Another recessed bulb in the top center of the panel glows green to indicate signal presence of -20 dBu and higher; when the signal level hits +16 dBu (a conservative 9 dB below clipping), the indicator turns red, bringing to mind the brake lights

in the chrome bumper of a muscle car.

The Gain knob range is marked 10 dB (counterclockwise) to 60 dB (clockwise), with no intermediate calibration marks. Rather than use a standard linear potentiometer, Grace upped the ante by employing a precision stepped-gain switch with 11 positions. Each detent on the Gain knob corresponds to a 5 dB gain change, facilitating repeatable settings for anyone willing to count switch clicks. The continuously variable Trim control, useful for reducing gain in increments of fewer than 5 dB, is meant to be set to unity (fully clockwise in the 0 dB position) but can provide 10 dB of attenuation at its lowest (counterclockwise) setting.

The rear panel of the 101's sturdy all-metal chassis provides a balanced input and a balanced output on gold-plated Neutrik XLR connectors, along with a balanced ½-inch TRS output. Power is supplied to the unit by a 6V wall-wart transformer. Although that may elicit grumbles, the alternative, a built-in toroidal AC transformer and linear power supply, would have resulted in a larger and more costly product. In addition, according to Grace Design, this is not your run-of-the-mill wall wart; rather, it is a high-quality power supply.

The lack of a polarity-reverse switch, a useful feature that Grace includes on its 801 and 201 models, is always vexing to me as a studio engineer. In multiplemic setups or when interfacing with older gear in my studio, I often need to check and reverse polarity at the preamp. So when testing the Model 101, I kept a polarity-reversing XLR cable (one with pin 2 wired to pin 3 at the other end) within reach. However, considering the cost-to-quality factor of the unit, not having a polarity-reverse switch is an inconvenience I can easily overlook.

More troublesome is the absence of an indicator light accompanying the phantom-power switch. Because of the unit's snazzy front-panel sculpting, the position of the 101's 48V switch is difficult to see at a glance. Fortunately, that didn't lead to any mishaps during the test period; nevertheless, it's easy



FIG. 1: Although shy on features as compared with some competing boxes, the Grace Design Model 101 mic preamp and DI is remarkably transparent, coming about as close to the ideal of a "wire with gain" as you could ask.

NEWandIMPROVED

audioMIDI SOFTware PLUG-ins HARDware | PRO-audio SYNTHS & accessories com aMAGIC. MIDIMAN MAUDIO RME TASCAM WAVES MOTU LINE 6 TC WORKS UNIVERSAL AUDIO CELEMONY ACCESS SPL HHB. YOUR CART YOUR ACCOUNT SPECIALS SEARCH











MOTU



TOWORKS





audin MIDI

साम्तानभूति । देशका सम्बद्धाः मित्रास्त्र ते ते तात स्वत्र तात है। નામાર ક્રિયા પ્રાથમ તામુક ક્રિયાનો

Specializing in the products needed for music creation using a

ນານຖືກຊຸເຊີ ຊຸເຄາຊີ.

computer, we carry all the main players as well as the "hard to find" products from the boutique vendors. Further, we are often the first to get the "new hot products" We have stock

reviewed these products before other shops even know about them. Inventory is only limited by supply and

and have

demand.

news letter. Every 50th

registrant will receive a FREE

Sound Davices Solami Sound Tiak Ecity Spacical Davigns لالإذلالية Emagic รับเขา รับรงเม่า Hainbary Studio Elastronica Sucora Slactronica Sucora Slactronica วีพยายาแร Falur Syntyillin Tasani

11/11/2

eling/4

Eurlacii

design

1.39%

1/11/

जिल्लान

Fucucila Perign Group Genelac TC Electronica Grace Designs TC Helicon Granya Tabas TC Works GT Electronics TerraTec

U & I Software Harmanic Vision HHB Universal Audio Hoss

Waldorf li Mulimadia Waya Machanica 136 Wayas Kayrax

Kind of Loud Wildent Canyon Line 5 Wizou

VilSound

Natibalista (nim dari Nationalista (nim dari

Native to Native to Native 26 Marie Propelleriand Propelleriand Propelleriand Mainy Sultrery Medical Mainy Sultrery

प्रमुखान प्रमुखान प्रमुखान

Sunsun SUG Soft

Sonorus

Saar Music SERU

Jonis Foundry Jonis Tungriories Sigaligg

Lucid World Wide Woodsited Lyne Studio Technology Yowra

Heal Solutions, Heal Service, Heal People, Heal Products

your NO-NONSENSE resource for computerMUSIC products

9240 derring AVE

chatsWORTH .

month of December. Enter your size and Code EMD

register for the audioMIDI.com

audioMIDI.com Tee Shirt through the

Visit the site and

91311-5803

call 818.993.0772

fax 818.993.0856

Amplifier Type	solid-state, transimpedance, transformerles
Inputs	(1) balanced XLR; (1) balanced 1/4" TRS
Outputs	(1) balanced XLR; (1) balanced ¼" TRS
Gain Range	10-60 dB (mic); -10 dB-40 dB (line)
Maximum Output Level	+25 dBu
Output Trim Attenuator	0–10 dB
Frequency Response	@ 40 dB gain, -0.05 dB:12 Hz-170 kHz (mic); 7.5 Hz-300 kHz (line)
Dynamic Range	113 dB
Equivalent Input Noise	<-130 dB (50 Ω source); <-128 dB (150 Ω source); <-124 dB (600 Ω source)
Total Harmonic Distortion + Noise	<0.00085% (@ 20 dB gain, +20 dBu out)
Signal-to-Noise Ratio	>92 dB
Peak LED Meter	-20 dBu (green); +16 dBu (red)
Highpass Filter	75 Hz, 12 dB/octave
Dimensions	0.5U × 6.5" (D)
Weight	3.5 lb.

to imagine someone accidentally disconnecting a condenser mic from the 101 while the phantom power is on, perhaps resulting in a loud pop and possibly even blown tweeters.

HEAVYWEIGHT BOUT

The solid-state preamps in my studio are European and expensive, which means that I pitted the diminutive 101 against some heavyweight competition in recording sessions. Nonetheless, during the testing, the Grace preamp was predictably neutral in character and impressively close to the technical ideal of a sonically transparent "wire with gain."

For the 101's first outing, I paired it with a Baltic Latvian Universal Electronics (BLUE) Bottle tube microphone on singer Shelley Doty; the high-end characteristics of that mic-and-preamp combination highlighted an acoustic sibilance problem. Switching preamps (to a Focusrite Red 7) diminished the sibilance, and eventually I chose another mic to filter the vocalist's sizzle. The lesson is that accuracy (the 101's frequency response is virtually flat from 12 Hz to 170 kHz, according to Grace Design) is not always an advantage in the real world of recording.

As it turned out, that was the only

occasion in which the 101 wasn't the right tool for the job. Indeed, I soon discovered that the same microphone in the same room sounded stunning through the 101 when used on a different singer. When set up for an impassioned male vocalist with a hint of



The highs extend
into realms only dogs
and test gear can
appreciate.

soulful grit, the signal chain displayed open highs extending into realms only dogs and test gear could appreciate.

A recorded A/B comparison showed that the Focusrite Red 7 had a warmer, chestier sound (a trait of transformers) with a bit more of an up-front attitude and more projection in the crucial 4 kHz range. The Grace, on the other hand, was beautifully airy without a hint of sibilance, and it conveyed more room detail along with a glossy realism. Although both preamps had merits, the next time the singer came into the studio, I set him up with his usual micro-

phone through the Model 101 and never looked back.

The 101 also garnered oohs and ahs for its performance on a track by poet Gilbert Marhoefer for his band, the Apes of God. I had already attempted Marhoefer's spoken-word piece on previous occasions, but until the 101 entered the equation, his voice never quite seemed to cut through the musical accompaniment. Matched again with the BLUE Bottle mic and followed by a Manley Variable Mu tube compressor, the Grace preamp worked like a charm to sharpen the vocal delivery without detracting from the tube warmth of its signal-processing companions.

Paired with an omnidirectional Neumann KM 183 as a distant acoustic-guitar mic, the 101 scored points for openness and radiant high harmonics as compared with a modified Neve 1272 preamp. The Neve seemed to concentrate and thicken the tone of the Taylor acoustic, emphasizing inner chord voicings. In contrast, the 101 brought lowand high-end details dramatically to the fore; discerned every pick stroke in a natural, realistic way; and made the guitar's top E string sparkle.

The 101 also seemed to optimize the omnidirectional characteristics of the KM 183—to the point that I picked up some distant machine noise coming from the other end of the building. Fortunately, the unit's low-cut filter effectively cut out the rumble without sacrificing the instrument's tone. For pop-music recording, the Neve sound will always have advantages and champions; for accuracy and presence, however, it lost that round to the Grace Model 101.

NO-PAIN GAIN

The 101 has sufficient gain for distantmiking applications and can run at its highest gain setting without noise or artifacts. I teamed it with a Royer SF-1 ribbon mic on two rather delicate acoustic instruments: violin and Japanese koto. The Grace delivered adequate signal for +4 dBu recording to digital and analog media, and it ran clean right up to its +60 dB maximum. More important,



We will beat any advertised price from any dealer! Bayview Pro Audio Inc - US Distributor for SE Electronics Classic performance reborn at a fraction of the cost.

Type: small diaphragm condenser

Output Impedance: <200 ohm Output Noise: <18dB typical, A weighted

THD: <0.5% at 134 dB SPL

Power: +48V phantom power

Frequency Response: 30Hz to 18kHz

se.electronics

Sale \$299.00



SE5000Tube Microphone

Frequency Response: 20Hz to 18kHz

Output Noise: <18dB typical, A weighted

Power: external regulated 115/220 P.S

Type: vacuum tube condenser

Output Impedance: <200 ohm

THD: <0.5% at 120 dB SPL

SE2000 Sale \$129.00

Sale \$89.00

Polar Pattern: cardioid

Sensitivity: 10mV/Pa

SE₁

Type: large diaphragm condenser -10db Pad - lo-cut filter Frequency Response: 30Hz to 20kHz Polar Pattern: cardioid Sensitivity: >18m V/Pa Output Impedance: <200 ohm Output Noise: <17dB typical, A weighted THD: <0.5% at 120 dB SPL Power: +48V phantom power



SE1000 Sale \$99.00

Type: large diaphragm condenser Frequency Response: 30Hz to 20kHz Polar Pattern: cardioid Sensitivity: >18m V/Pa Output Impedance: <200 ohm Output Noise: <17dB typical, A weighted THD: <0.5% at 120 dB SPL Power: +48V phantom power



Type: large diaphragm condenser Frequency Response: 30Hz to 18kHz Polar Pattern: cardioid Sensitivity: >16m V/Pa Output Impedance: <200 ohm Output Noise: <17dB typical, A weighted THD: <0.5% at 120 dB SPL Power: +48V phantom power



SE3000 Sale \$179.00

Type: 1.07" twin diaphragm condenser Frequency Response: 20Hz to 20kHz Polar Pattern: cardioid, figure 8, omni Sensitivity: >18m V/Pa Output Impedance: <200 ohm Output Noise: <17dB typical, A weighted THD: <0.5% at 120 dB SPL Power: +48V phantom power

Bayview Pro Audio Line Card



SE3500 Sale \$169.00

Type: 1.07" large diaphragm condenser Frequ1ency Response: 20Hz to 20kHz Polar Pattern: cardioid Sensitivity: >20m V/Pa Output Impedance: <200 ohm Output Noise: <15dB typical, A weighted THD: <0.5% at 120 dB SPL Power: +48V phantom power



Polar Pattern: cardioid

Sensitivity: >16m V/Pa



















































































































есно



www.bayviewproaudio.com We build custom Daw Systems









the 101's pristine signal path worked beautifully with the ribbon mic, and its ability to convey crisp detail was magical. (For recordists who require even more gain, Grace Design also offers a high-gain version of the Model 101, providing +70 dB maximum gain.)

On various members of the clarinet and saxophone families (recorded through a Lawson L47) and on trumpet (through the BLUE Bottle mic with a B2 capsule), the 101 lent a bright and incisive sheen to tube mics without sounding sterile, harsh, or buzzy. I also used the 101 on clarinet, marimba, violin, and bass drum for a session with composer Beth Custer featuring the Tin Hat Trio. A little reverb really made the instrumental tracks come to life and displayed vividly what the 101's clean electronics and extended highend response can do.

DIRECT FLIGHT

Used as a DI on a Fender Stratocaster guitar, the Model 101 sounded clearer and less noisy than the other preamp/DI boxes in my rack. Tonally, it came closest to my favorite guitar preamp, the Drawmer 1960, but the 101 provided cleaner, more articulate low notes and glassy, big-budget highs. There, with no EQ and no compression, was the crystalline direct sound, free of midrange muck, I had always imagined hearing from the Drawmer.

After that stunning revelation, I admit that I did not expect miracles from the 101 on direct bass. But it turned out to have more low-end depth and thump than most of my rack inhabitants, eclipsed only by the thunderous fundamentals of the Peavey VMP-2, my long-standing favorite for bass-DI duties. True to its flat-response character, the Grace sounded less thick in the crucial 150 to 300 Hz midbass octave than the other preamp/DIs tested, but don't call it thin just because it isn't fat. As was the case with guitar, the upper notes and harmonics were crisp, and the low end was wonderfully articulated and defined. I expect the 101 would really shine on a high-tech bass rig and allow the instrument to sit in a mix with minimal compression.

PRODUCT SUMMARY

Grace Design

Model 101 microphone preamp and DI \$699

FEATURES	4.5
EASE OF USE	5.0
DOCUMENTATION	5.0
VALUE	5.0

RATING PRODUCTS FROM 1 TO 5

PROS: World-class sound and construction. Superlative high-end response. Affordable. Easy to set up and use. Sufficient gain for ribbon mics and quiet sources. DI sounds great on guitar and bass. No electrolytic capacitors in signal path. Gold-plated XLR input and output connectors. Precision silver-contact stepped gain switch.

CONS: No polarity-reverse switch. No phantom-power indicator light. Wall-wart AC transformer.

Manufacturer

Grace Design
tel. (303) 443-7454
e-mail egrace@gracedesign.com
Web www.gracedesign.com

GRACEFUL EXIT

For anyone accustomed to making a choice between premium and affordable gear, the Grace Design Model 101 is a real eye-opener. The solid, world-class microphone preamplifier can bring out all the subtleties heard at the microphone without imposing its own personality. In addition to that rare quality, the 101 provides high-end response that seems to extend without limit.

Although it may lack a few features common to other preamps, the modest single-channel unit outperforms any other preamp in its price range and offers serious competition even to legendary models costing three and four times as much. When you add it all up—uncompromising sonic purity, good looks, and affordable price—clearly, the Model 101 is an outstanding value for recordists working at all levels and in all styles of music.

PUT THE PUWER IN YOUR HANDS DOWN SCHOS

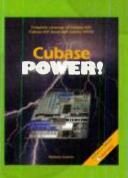
A thorough guide to Sonic Foundry's digital audio-editing software.

By Scott R. Garrigus
Technically edited by Sanir Foundry
1-929685-10-6 \$29.95



Covers hardware and software setup, score editing, track editing and distribution.

> By Robert Guerin Technically edited by Steinberg 1-929685-45-9-\$29.95



Takes the reader from start to finish, from conception to polished CD.

By Ben M. stead

1-929685 08-4 \$29.95

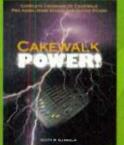




Create, mix, record and deliver music and sound projects for CD, video and multimedia projects using SONAR.

By Scott R. Garrigus Technically edited by Cakewalk

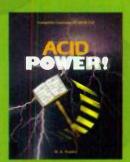
1-929685-36-X \$29.95



Covers Pro Audio 9, Guitar Studio 2 and Home Studio 9.

By Scott K Pringus Technically edited by Cakewalk

1-929685-02-5 \$29.95



Approaches ACID 3.0 from a creative and artistic angle.

By Dovid E. Froms

1 929685-49-1 \$29.95

www.muskalipman.com or call 888-270-9300

Books are available at bookstores, music stores or wherever books are sold

Distributed to bookstores by Independent Publishers Group/Distributed to music stores by Music Sales Corp

Quick Picks

NEMESYS MUSIC TECHNOLOGY

Christian and Lane Ultimate Timpani Library (GigaSampler)

By Zack Price

The Christian and Lane Ultimate
Timpani sample library of four CDROMs (\$349) was produced and performed by professional percussionists
Donnie Christian and Sean Lane. It
contains just about every kind of timpani
performance that you can imagine. The
samples derive from a set of Hinger TouchTone timpani with calfskin heads.

EM*****

Touch pick

erroneous
instead of
go to Chri
desoundy

You get six types of timpani performances: Hits, Hand Muffled Hits, Rolls, Crescendo and Decrescendo Rolls, Timpani Effects, and Timpani Extras. Each performance features playing with five types of mallets: cartwheels, which have thick, soft heads; three mallets with felt-covered heads, each with varying degrees of softness; and bare wooden mallets. The library also offers a set of timpani performances created by striking the timpani with fingers and hands. The combination of performances and mallets yields a complex matrix of sound choices.

The Hits Keep Coming

The five mallet varieties each have six kinds of Hits performances: Hits, Hits Light, Pan, Pan Light, Bass Timpani, and Soprano Timpani. All Hits have eight Velocity levels, giving each hit a wide dynamic range. Hits, Hits Light, Pan, and Pan Light have separate left- and right-hand samples ranging from MIDI Note Numbers 36 to 57 (C to A) on the left to 60 to 81 (C to A, one octave higher) on the right. That keyboard layout makes it possible to play sustained crescendo, and decrescendo rolls in real time. Hits Light performances simulate the effect of a light cloth placed on the timpani head, which is useful for creating articulate passages. The patches' hit and fade levels can be controlled with the Mod wheel. Pan and Pan Light performances map the timpani pitches

from right to left as you move up the scale.

Ranging from C36 to A57, the Bass and Soprano Timpani hit patches offer nice special effects. The Bass Timpani is a standard timpani pitch-shifted down one octave. You can use the Mod wheel to control the samples' attack and release times. That can provide some cool, eerie effects, especially if you use some of the effects processors available in *GigaStudio*. The Soprano Timpani is a normal timpani sound, but it is pitch-shifted up one octave. It has an interesting, almost

Oriental-sounding tone; I used it to play a Chinese-inspired melody, and it sounded great.

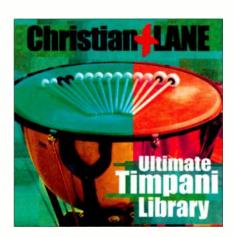
Each time I played A45 on the Green Soprano Timpani patch with a hard velocity, the sound

erroneously switched to a regular timpani instead of soprano sound. However, you can go to Christian and Lane's Web site (www.dssoundware.com) to download an articulation file that corrects the problem.

The Hand Muffled performances contain single hits that are muted with the hand after the initial stroke. The Hand Muffled performances are arranged similarly to the Hits performances, with the following exceptions: there are no hand-muffled Bass or Soprano Timpani patches, and there are no separate left- and right-hand hits. That's as it should be—in performance, one hand would be busy muffling the head.

Merrily We Roll Along

Playing realistic rolls is possible using the Hits patches; however, doing so uses con-



The Christian and Lane Ultimate Timpani Library from NemeSys Music Technology provides an impressive collection of realistic, expressive timpani sounds and performances.

siderable polyphony. The Rolls patches reduce polyphony demands and generate smooth rolls. Each note (C36 to A57) in the Rolls patches (Rolls, Rolls Light, Rolls Pan, and Rolls Pan Light) is mapped at four Velocity levels. Furthermore, rolls in the softer dynamics of the lower pitches are slower than rolls of the higher-pitched notes, which is how they occur when performed live. Each note has a release trigger that allows for a realistic release when you need a roll shorter than the actual sample. Considering that each Rolls note lasts about 30 seconds, you often will need shorter releases. You also can control the release time with the Mod wheel.

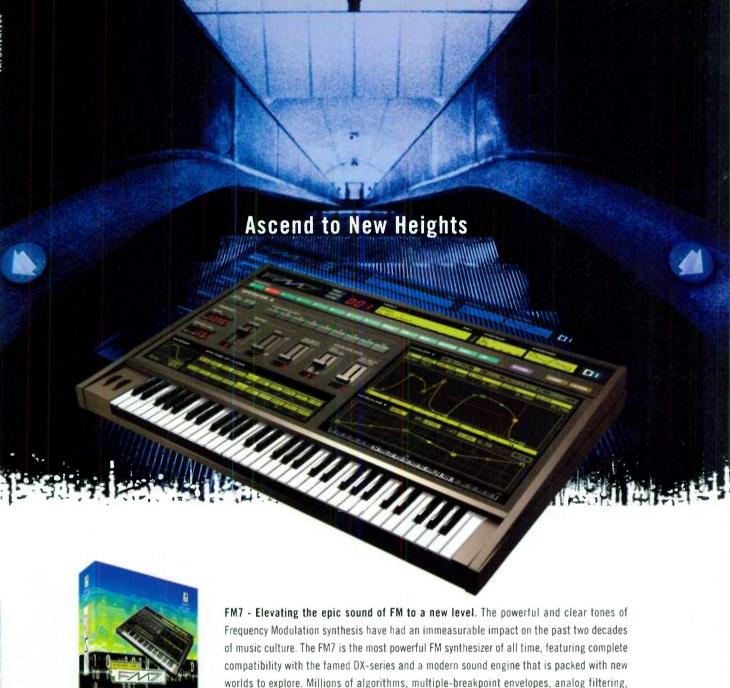
The Crescendo and Decrescendo patches let the user generate smooth, realistic crescendo and decrescendo rolls with a minimum of polyphony. As in the Rolls patches, notes are mapped from C36 to A57. The speed of each roll (short, medium, and long) and its dynamic direction are determined by playing notes C60 to A69 before playing the desired roll note. Again, the Mod wheel can control release times.

The Timpani Extras patch includes glissandi, bowl hits, and my personal favorite, a glissando with a cymbal on the head. It's an eerie sound, but I like it. The Fingers and Hands performances are similar in many ways to the Hits. Both have Hits, Hits Light, Pan, Pan Light, and Bass patches, and each corresponding patch is laid out in the same way on the keyboard. However, the Fingers and Hands performances have only four Velocity levels, ranging from a tap with a single finger to a fortissimo hit with the entire hand. Additionally, the Alto Fingers and Hand patch is pitched lower than the Soprano Hits patches. Even though probably no music is written for those patches, they are fun to play.

Decrescendo

Most of the performance parameters are pretty straightforward. However, more specific information concerning mapping and key switching would be nice. Unfortunately, the only documentation provided is a Microsoft *Word* file that duplicates the information in the CD-ROM booklet. Nonetheless, the Christian and Lane Web site offers additional information and tips about creating realistic performances.

Despite that and the easily corrected



worlds to explore. Millions of algorithms, multiple-breakpoint envelopes, analog filtering, and more are all under full graphic control. Step up to adventure! 😂 www.ni-fm7.com





GENERATE THE FUTURE OF SOUND









patch glitch mentioned previously, Christian and Lane have labored through a Herculean project to provide the best timpani sample library you could hope for. If you need to access a variety of timpani sounds on a regular basis, get the *Ultimate Timpani Library*. It truly lives up to its name.

Overall EM Rating (1 through 5): 5

NemeSys Music Technology; tel. (512) 219-9181; e-mail sales@nemesysmusic.com; Web www.nemesysmusic.com

F7 SOUND AND VISION

Concept:FX3

By Jeff Obee

Michael Oster is the sole guiding force behind F7 Sound and Vision and the producer of two high-quality CD-ROMs of sound effects in the Concept:FX series. Concept:FX3 (\$89.95) is Oster's third CD-ROM of 16-bit,

44.1 kHz AIFF and WAV files. The collection is aimed at video and film post-production, radio and TV broadcast, multimedia and game development, and Web sound design. All three CDs are available in the Concept:FX Pro Bundle for \$169.95.

The sounds come from a cornucopia of sources, and they tend toward the experimental and the unusual. Sound sources include Oster's voice, old tube radios, microcassette recorders, a ¼-inch tape machine, microphones from both ends of the quality and price spectrum, office supplies and paper products, an antique movie camera, and old clothing. Oster also derived sounds from a Roland JP-8000, a Sequential Circuits Six-Trak, an ARP Odyssey, and E-mu modular synths as well as old effects pedals, guitar, and bass. A Korg Kaoss pad further assisted with sound manipulation.

Oster fed microphone and line sources through a 2-channel Amek System 9098 Dual Mic Amp and direct injection box and Apogee AD-8000 and Rosetta digital converters to either an HHB CDR850 CD re-

corder or Pro Tools 24/Mix system. Once in Pro Tools, the samples were sliced, diced, and processed with plug-ins. Oster deliberately refuses to use presets or take notes, ensuring that he won't fall back on redundant production methods.

Conceptual Menu

The CD-ROM contains folders of AIFF and WAV files, each with seven identical subfolders that are organized according to the basic characteristics of the sounds they contain: Bites, Comic, Grunge, Hits, Longer, Small, and Static.

Oster's sound palette serves as a springboard for today's sound-design production work. A random sampling of the 282 sounds in the Bites folder revealed fluttering flybys; panning resonant noise bursts; electronic animal roars; alien sci-fi snippets; quick, chirpy stings; machine noises; hollowsounding whooshes; crispy crackles; and scorching sizzles. All in all, the versatile panorama of sound design ranged in size from 30 to 770K.





Concept:FX3, a sample CD-ROM from F7 Sound and Vision, has a generous variety of special effects that can be used for video and film post-production, Web sound design, multimedia and game development, and more.

The files stand well on their own. However, you can easily append, crossfade, convolve, and mix them into a longer, altogether different sound. I chose BT002 and BT003, blended and reversed them, played with some pitch shifting, and ended up with

a sound very different from the originals.

Concept:FX3's Comic sounds lack the humor of those in Concept:FX2. Appending a few and sculpting them further can provide amusing results, though, and the sonorities of the sounds work well together. The Static folder contains distorted buzzes, noise, and, yes, all manner of searing, electrical static. The Rip files in that folder are exactly the tearing, shredding noises that one would expect.

The Hits folder brims with brief barks, smacks, wails, thuds, and squeals. It holds some unusual snare sounds—not the typical Oster offering, but a nice addition. The Grunge folder outdoes them all in terms of rude, intense samples: you get loud, raw, machinelike bits; piercing distortion; deeppitched rumbling; and much more. Brace yourself.

The Longer folder contains some beauties. Ambnce01 gives the impression of an airport ambience fed through a transistor radio, whereas Ambnce03 has a droning, netherworld quality. Bgds03 is a slightly

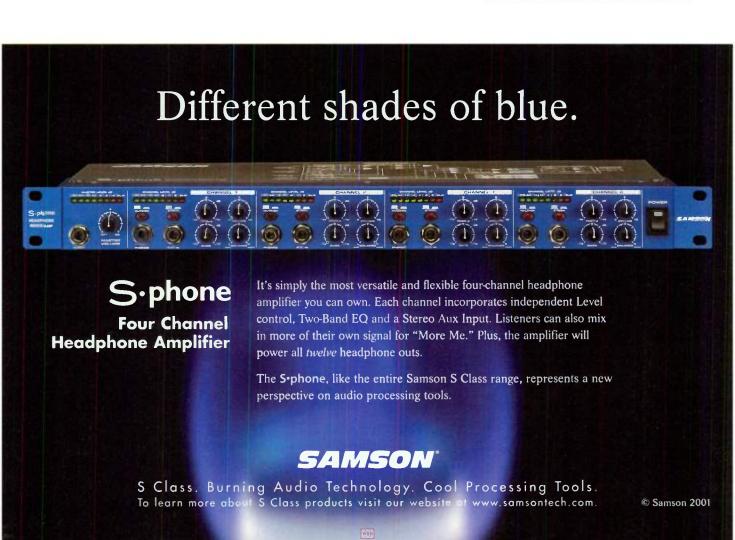
resonant dull-noise sample that churns and chugs in a consistent rhythm of approximately 127 bpm and is excellent for looping. Voxsim02 has the spiky rhythm of a speaking voice, blurred by just the right amount of distortion. Many files contain loop markers.

How It FX Me

F7 Sound and Vision has released another fine collection of creative sound designs. The zany file names of the earlier offerings in the series are replaced by a more pragmatic naming system, which makes things less entertaining but easier to grasp in organizational terms. In contrast to *Concept:FX2*'s 305 medium to long samples, *Concept:FX3* gives you 1,292 short to medium samples. The shorter file lengths make them excellent base material for manipulating to your needs. The price is right too. I recommend it.

Overall EM Rating (1 through 5): 4

F7 Sound and Vision; tel. (813) 991-4117; e-mail f7sound@gte.net; Web www.f7sound.com





PROSOUND COMMUNICATIONS

Robotalk

By Steve Broderson

Despite the popularity of do-everything multi-effects processors, stompboxes have held their ground in the hearts and rigs of many musicians. A patchwork pedalboard of unusual effects is the mark of individuality, and to some players, the more obscure the effect, the better. Enter Robotalk (\$280), a filter pedal that combines three effects in one device.

Robotalk gives you a wah-wah, an envelope filter, and a sample-and-hold effect in a hefty bare-metal box. Each pedal is handbuilt with U.S.-made parts. Robotalk has two footswitches: a Function switch, which toggles between the envelope filter and sample-and-hold effect, and an Effect On/Off switch, which is not a true bypass switch. An LED indicates when the effect is on.

The Robotalk offers three %-inch jacks: an audio input, an output, and an expression-pedal input. You activate the wah-wah effect by plugging a voltage-control expression pedal in to the expression-pedal jack. When an expression pedal is connected to Robotalk, it overrides the Function switch and locks the unit into Wah-Wah mode.

Most standard expression pedals work with Robotalk; I used Roland's EV-5, which the manufacturer recommends. Two 9V batteries power Robotalk, but it has no provision for an AC adapter.

The Envelope, Please

As a standard envelope filter, Robotalk works well and sounds great. The filter characteristics are controlled by two tiny trim pots labeled Range and Freq. Range adjusts the



Prosound Communications' Robotalk combines an envelope filter, a sample-and-hold effect, and a wah-wah in one stompbox. amount of gain required to make the filter kick in, and Freq adjusts the EQ curve. Adjusting the trim pots is tedious and difficult because of their size and lack of markings, and identifying the settings is difficult.

The two other controls, Volume and Rate, are larger and clearly marked. The Volume dial drives the pedal's overall output, and the Rate dial directs the speed of the filter's sample-and-hold portion.

In Sample-and-Hold mode (which is misleadingly termed Arrpegiator [sic] by the manufacturer), the filter setting changes randomly at a speed that's determined by the Rate control. The speed ranges from a couple of seconds per step to a fast warble. At higher speeds, the result is a rhythmic burbling reminiscent of an analog synthesizer. The Range control doesn't function in Sample-and-Hold mode because the filter sweep no longer depends on your input level. You can set the sample-and-hold frequencies using the Freq control.

Robotalk's filter sweeps in Wah-Wah mode are smooth. The wah-wah's range seemed to be wider than that of Dunlop's familiar Crybaby pedal. After using Robotalk for a while, I wished for a way to use all three effects modes at one time without disconnecting the expression pedal.

Way Out

The Robotalk pedal's only drawbacks are the small trim pots and the boutique-level price tag. Without the sample-and-hold circuit, Robotalk is merely a pricey envelope filter and wah-wah pedal. Still, Robotalk is a solid stompbox that drips with custombuilt retro chic. Collectors of unusual stompboxes will want to make a space on their pedalboard for Robotalk.

Overall EM Rating (1 through 5): 3.5

Prosound Communications Inc.; tel. (818) 996-8603; e-mail info@prosoundcommunications .com; Web www.prosoundcommunications.com

MIT PRESS

Machine Musicianship

By Douglas Geers

Musicianship is the set of skills most musicians need to understand and perform

music well, including the ability to recognize and repeat a phrase of melody, the ability to find a tune's meter, and the ability to identify a chord from the notes that are playing. Luckily, musicians are born with some of those skills and can learn others through experience. Still, musicianship often requires years of practice and performance to achieve a sophisticated level of mastery.

What about computer musicianship? Computers are used all the time to play, record, and edit music, but can they be programmed to hear and understand music as people do? If so, how? Those questions and others are answered in a new book titled *Machine Musicianship* (\$47.95), by Robert Rowe, a composer and professor of music at New York University.

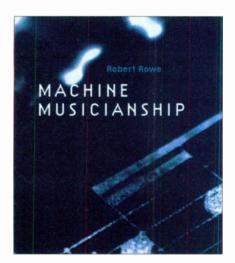
Rowe's book is written for the DIY music hacker. Accompanied by a CD-ROM of software examples and utilities, the book takes users through ten chapters of progressively more sophisticated machine-musicianship topics, ranging from general explanations to discourses about algorithmic composition, computer improvisation, and musically responsive Web sites. Rowe explains concepts and then describes how to program computers to accomplish the tasks discussed.

Chapter and Verse

After chapter 1's introductory discussion, Rowe begins the real work in chapter 2. There he explains how to write the C++ code that instructs a computer to name chords as they are played on a MIDI keyboard, from simple triads to thick jazz chords and inversions that can be named only by examining their musical context. As he proceeds, Rowe explains his algorithms and the theories behind them, which is informative but at times complex and digressive.

Chapter 3 covers beat tracking, a technique in which a computer finds and follows the beat within an incoming audio stream—something easy for people but quite tricky for a computer, Rowe explains. He then takes the reader through his own beat-tracking algorithm, a fascinating method in which the computer makes multiple simultaneous guesses of the tempo, judges them, and then crowns one as the winner. It works well and sounds useful for solo performances.

With readers and their computers able to analyze pitch and rhythmic data, Rowe zooms out to larger issues. In chapter 4,



Robert Rowe's *Machine Musicianship* shows you how to supply a computer with the many skills needed to create and analyze music.

he succinctly discusses how computers can recognize musical motives and other patterns. Chapter 5 examines useful compositional techniques for real-time performance, such as cueing sequences, transforming input, and varying stored musical materials. Chapter 6 covers systems that learn over a period of time, and the final chapters investigate interactive improvisation, interactive multimedia, installations, and possibilities for the future.

Extra Goodies

The book's CD-ROM has the code needed to realize those computer-musicianship skills and, as a whole, is a well-organized gold mine of useful tools for interested musicians with computer-programming chops. The programs, written in C++ and Cycling '74's Max, give the user tools for accomplishing just about every basic interpretive function she or he might want a computer to perform upon receiving musical input, from chord identification to genetic algorithms. Rowe includes the source code and executables for those computer routines. so even those interested in the ideas but not the programming can bring to life what is discussed in the text.

Unfortunately for PC users, the applica-

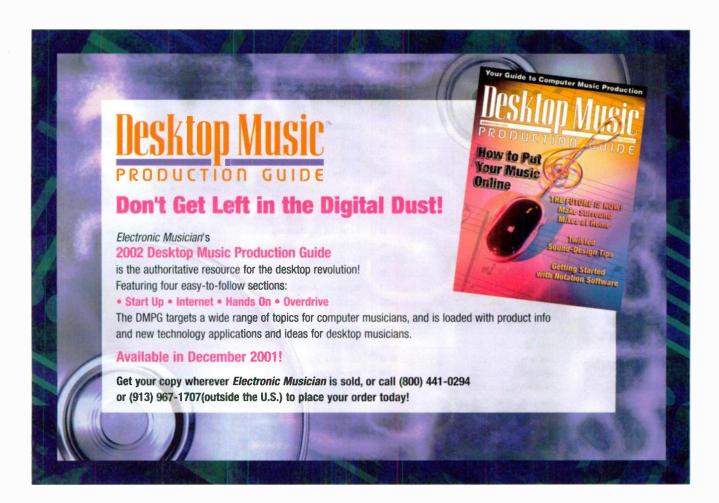
tions on the CD-ROM were created for Macs, and the C++ code was optimized for the Mac as well. But the CD does contain 18 tracks of audio examples and several QuickTime movies that are playable on Mac and PC.

Rowe's writing style is generally clear, but he keeps up a fairly brisk pace and assumes that the reader is an educated musician. For those who aren't versed in music theory, things will get confusing rather quickly. In chapter 2, for example, Rowe discusses pitch-class equivalencies and "normal form" in relation to recognizing and classifying triads. But if you're brave enough to plow through it, Machine Musicianship could help you turn your old computer into your new bandmate—able to do anything but help you carry your gear to the next gig.

Overall EM Rating (1 through 5): 4

MIT Press; tel. (800) 356-0343 or (617) 253-5646; e-mail mitpress-orders@mit.edu; Web http://mitpress.mit.edu

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



ADVERTISER INDEX

ADVERTISER	INTERNET	PAGE	ADVERTISER	INTERNET	PAGE
AKG	Maray akayaa aam	20	PO.M.		
Alesis/Numark	3		PG Music		
Alesis/Numark			Planet Waves		
Antares			QCA	F 1	
ART			Rock n' Rhythm		
Audio Computing			Rode Microphones		
AudioMidi			Roland		
Audix	www.audixusa.com		Roland		
B&H Photo-Video	www.bhphotovideo.com		Rolls Corp		
Bayview Pro Audio	www.bayviewproaudio.com		Royer Labs	,	
BIAS	www.bias-inc.com		Sam Ash	***************************************	
BIAS			Samson Technology (MRS 1044)		
BitHeadz			Samson Technology (S Class)		
Broadjam			Sonomic		
Cakewalk			Sound Chaser		123
California Technology				www.squest.com	
Carvin	,		SRS Labs Inc		
Cool Breeze Systems			Studio Projects		
dbx Professional Products	,		Sweetwater Sound #1	www.sweetwater.com	29
Disc Makers	www.dbxpro.com		Sweetwater Sound #2	www.sweetwater.com	131
Discrete Drums	www.discmakers.com			www.sweetwater.com	
Echo Digital Audio	www.discretedrums.com		Sweetwater Sound #4		
Edirol				www.tascam.com	
	www.edirol.com		Tascam (MX 2424)		
		41	Tascam (US-428)		
emagic (Gold EXS)	www.emagic.de	113	Taxi		
emagic (Teaser) emagic (wbPro)			TC Electronic		
	3.4.4.4		TC Works		
				www.wavedigital.com	38
Fostex	www.fostex.com		Waves		89
Frontier Design Group	www.frontierdesign.com		West LA Music		100
Full Compass Systems	www.fullcompass.com		Yamaha (AW2816)		45
Full Sail	www.fullsail.com		Yamaha (DMI)	7	
Garritan Orchestral Strings/GigaStrings			Yamaha (ProAudio)	www.yamaha.com/proaudio.com	77
Grandma's Music	www.grandmas.com		ELECTROBIC MUCICIAN MARKETIN		
IK Multimedia/sampletank	www.sampletank.com	1	ELECTRONIC MUSICIAN MARKETPLA	ACE ADS	
Ilio Entertainments	www.ilio.com		Gefen	www.gefen.com	163
Interstate Music	www.interstatemusic.com		Media Form	www.mediaform.com,	166
Kay Sound	www.kaysound.com		The Gate	www.gatemedia.com	166
Korg (D1600)	www.korg.com		Topaz	www.mediamat.com	167
Korg (Karma)	www.korg.com		Funk Logic	www.funklogic.com	163
	www.korg.com		Multiloops	www.multiloops.com	164
Korg (Workstation)	3	55	Digital Disc Manufacturing		
KRK Systems			Media Services	www.mediaomaha.com	
	www.kurzweilmusicsystems.com		CD Labs		
Lexicon	.www.lexicon.com	81	Lonely Records		
Mackie (MDR 24/96)	.www.mackie.com	2-3	Independent Audio		
Mackie (1604VLZ)			Earthdisc		
Mackie (\$500)	.www.mackie.com	25	Neato	www.neato.com	165
Mark of the Unicorn	.www.motu.com	BC	Crystal Clear Sound	www.crystalclearcds.com	165
Midiman (Keystation)	.www.midiman.com	141	Triple Disc	www.tripledisc.com	164
Midiman (Surface One)	.www.midiman.com	62-63	Europadisk	www.europadisk.com	166
Midiman/Ableton	.www.ableton.com	105	Recording Workshop	www.recordingworkshop.com	163
Midiman/Propellerhead	.www.propellerheads.se	27	Sonic Reality	www.esoundz.com	100
MIT Press	.www.mitpress.mit.edu	138	Shreve Audio		
Music Tech	.www.musictech.com	140	SE Electronics		
Musician's Friend				www.trubitt.com	
Muska & Lipman				www.iustdupeit.com	
NeMO	.www.nemoboston.com	139	Mini Music	www.justdupert.com	165
Net4Music/Finale	.www.codamusic.com/em	87	Rainho Records	www.rainborecords.com	165
nord				www.ramborecords.com	166

FROM EM ADVERTISERS, VISIT WWW.emusician.com/rs

AND CLICK ON READER SERVICE APPLICATION.

EM's Online Reader Service is the quick and easy way to contact advertisers to receive **FREE** product information. Simply go to **www.emusician.com/rs**. From our Online Reader Service page you can then select the issues and the advertisers you are interested in. It's that simple. Your request is immediately e-mailed to the advertiser.

Also, while you're there, take a moment to complete our RATE THE ARTICLES survey in each issue. We want to know what works for you!

IMPORTANT NOTICE TO READERS:

Reader service inquiries are sent directly to the advertiser, who is solely responsible for sending product information. Electronic Musician can not guarantee a response from all advertisers.

EM Advertiser Sales Regions and Representatives



Northwest

outhwest

Stacey Moran (323) 782-2016 smoran@primediabusiness.com

Mari Deetz (323) 782-2011 mdeetz@primediabusiness.com

East Coast/Europe

Joe Perry (770) 343-9978 jperry@primediabusiness.com

Kevin Blackford (West Coast) Jason Smith (East Coast)

(800) 544-5530 or (510) 653-3307 emclass@primediabusiness.com



Reviews

Aardvark Direct Pro 24/96 (Win) audio interface	6/01
Adept Nightingale 4.0 (Mac) music-notation	
software	
Akai DPS16 portable digital studio AKG C 2000 B small-diaphragm condenser mic	
Algorithmic Arts SoftStep Pro (Win)	1/01
algorithmic software	12/01
Allegroassai Opus 2.6 (Mac/Win) notation	·
software	5/01
Analogue Systems Sorceror modular analog synth	9/01
Applied Acoustic Systems Tassman 1.2 (Win)	
software synthesizer	
A.R.T. Tube MP Studio tube mic preamp	
Audio-Technica AT835ST stereo shotgun mic	
BitHeadz Phrazer 1.0.1 (Mac) audio loop arranger	
Cakewalk Sonar 1.02 (Win) digital audio	
sequencer	10/01
CES Software VST Instruments (Mac/Win)	
software synth plug-ins	7/01
CreamWare PowerSampler 2.03 (Mac/Win)	2.004
sampling system DUY EverPack (Mac) audio plug-in bundle	-
Echo Digital Audio Mona 24/96 (Win) digital audio	7/01
interface	4/01
Emagic EXS24 1.0 (Mac/Win) software sampler	
Emagic Unitor8 MkII MIDI interface/SMPTE	
synchronizer	4/01
Eventide Orville Harmonizer multi-effects	
processor	6/01
Focusrite Platinum MixMaster stereo dynamics processor	2/01
Fostex VF-16 portable digital studio	
Grace Design Model 101 mic preamp and D1	
GT Electronics AM40 tube condenser mic	
HHB PortaDisc MDP500 portable MiniDisc	
recorder	
HHB Radius 3 Fat Man stereo tube compressor IK Multimedia GrooveMaker 2.0 (Mac/Win/BeOS)	7/01
loop-based music generation software	1/01
Ilio Entertainments Skippy's Big Bad Beats	,
and Retro Funk sample CDs	
	2/01
iZ Technology Radar 24 hard-disk recorder	
Johnson Amplification J-Station guitar-amp	7/01
Johnson Amplification J-Station guitar-amp modeler	7/01
Johnson Amplification J-Station guitar-amp modeler	7/01 3/01
Johnson Amplification J-Station guitar-amp modeler	7/01 3/01 10/01
Johnson Amplification J-Station guitar-amp modeler	7/01 3/01 10/01 7/01
Johnson Amplification J-Station guitar-amp modeler	7/01 3/01 10/01 7/01 8/01
Johnson Amplification J-Station guitar-amp modeler	7/01 3/01 10/01 7/01 8/01 2/01
Johnson Amplification J-Station guitar-amp modeler	7/01 3/01 10/01 7/01 8/01 2/01 10/01
Johnson Amplification J-Station guitar-amp modeler	7/01 3/01 10/01 7/01 8/01 2/01 10/01
Johnson Amplification J-Station guitar-amp modeler	7/01 3/01 10/01 7/01 8/01 2/01 10/01
Johnson Amplification J-Station guitar-amp modeler	7/013/01 10/017/018/012/01 10/01 11/013/01
Johnson Amplification J-Station guitar-amp modeler	7/013/01 10/017/018/012/01 10/01 11/013/01
Johnson Amplification J-Station guitar-amp modeler	7/013/01 10/017/018/012/01 10/01 11/013/01 10/01
Johnson Amplification J-Station guitar-amp modeler	7/013/01 10/017/018/012/01 10/01 11/013/01 10/01
Johnson Amplification J-Station guitar-amp modeler	7/013/01 10/017/018/01 10/01 11/013/01 10/018/01
Johnson Amplification J-Station guitar-amp modeler	7/013/01 10/017/018/012/01 10/01 11/013/01 10/018/01
Johnson Amplification J-Station guitar-amp modeler	7/013/01 10/017/018/012/01 10/01 11/013/01 10/018/01
Johnson Amplification J-Station guitar-amp modeler	7/013/01 10/017/018/01 10/01 11/013/01 10/018/018/01
Johnson Amplification J-Station guitar-amp modeler	7/013/01 10/017/018/01 10/01 11/013/01 10/018/018/01
Johnson Amplification J-Station guitar-amp modeler	7/013/01 10/017/018/012/01 11/013/01 10/018/014/019/01
Johnson Amplification J-Station guitar-amp modeler	7/013/01 10/017/018/012/01 11/013/01 10/018/014/019/01

		-
Oberheim OB-12 analog mo	deling synthesizer5	/0
Peavey TMP-1 tube microp		
PreSonus Blue Tube tube m		/0
PreSonus DigiMax mic pres		_
converter		
PreSonus VXP voice proces		/U
Propellerhead Reason 1.0 (software synthesizer/samp		40
PSP StereoPack and MixPa		/υ
audio plug-in bundles		m
Roland HPD-15 HandSonic		ĮV
controller/sound module	•	/n
Roland VP-9000 sampling e		
Roland XV-5080 synthesizer	· ·	
Royer Labs SF-1 ribbon mic		
Shure KSM44 large-diaphra	•	
Sonic Foundry Vegas Audio	_	
audio editor		/0
Sound Burst Fx4u 1.2, vols.		
effects plug-ins		/0
Sound Quest Midi Quest 8.0		
editor/librarian	4	/0
Soundscape Digital Techno	logy R.Ed (Win)	
computer-based digital aud	io workstation2	/0
Starr Labs Ztar Z1 and Z1-S	MIDI controllers11	/0
Steinberg Cubase VST/32 5	.0 (Win) digital audio	
sequencer	1	/0
Steinberg Nuendo 1.5 (Mac	/Win) digital audio	
workstation		/0
Steinberg WaveLab 3.0 (Wi	n) multitrack	
audio editor	2	/0
Symbolic Sound Kyma Syst	em 5.11 (Mac/Win)	
sound-design workstation.	5	/0
Synthesis Technology MOT	_	
synthesizer		
Tactex Controls MTC Expre		
Tascam 788 portable digital		/0
Tascam US-428 (Mac/Win)	-	_
interface/control surface		/U
TC Electronic Triple-C rackr	-	m
TC-Helicon VoicePrism voc		
TC Works Mercury-1 (Mac/		
TC Works TC VoiceTools 1.0		/V
voice-processing/pitch-cor		m
Truth Audio TA-1P passive r	nonitore 7	m
U&I Software MetaSynth S		/0
sound-design software bun		m
Ultrafunk Sonitus:fx 2a (Wir		, u
effects plug-ins		m
Waves Gold Native 3.0 (Ma		, -
plug-in bundle		/n·
Waves L2 Ultramaximizer m		, -
limiter/normalizer	•	/0
Yamaha AW4416 digital aud		
Yamaha DX200 FM groove b		
Zoom PS-02 Palmtop Studio		
•		
Quick Pick Reviews		
-		_
Apogee Electronics Master	Tools 1.6 (TDM, Mac)	
bit-rate reduction plug-in		/0
Apogee Electronics Session		
studio-management databa	se4	/0
Art Vista Productions Malm		
(GigaSampler) sample CD-F	łom5	/ 0
Big Briar Moogerfooger CP	-251 voltage control	
processor		/ 0
Big Fish Audio Big Beat: Me	egaton Bomb, vol. 4	
sample CD	1	/0

Big Fish Audio Helter Skelter sample CD	
Big Fish Audio Off the Hook sample CD	
Big Fish Audio Play the Tango sample CD Big Fish Audio Things That Go Bump in the Night,	7/01
vol. 2 sample CD	4/01
Big Fish Audio Wall of Vinyl 3 sample CD	
Big Fish Audio Xperts of Techno sample CD	2/01
BitHeadz Tubes, Tines, and Transistors 1.0 (Mac/Win) software synth	7/01
Contempo sas Virtual Sound book	
DACS Freque II ring modulator	
Diamond Cut Productions Diamond Cut Live 4.59	
(Win) audio restoration software	
Discovery Firm World Groove sample CD East West Quantum Leap Brass sample CD-ROM	
eLab Abstract Hip-Hop sample CD	
Encore Electronics Knobby MIDI controller	
Endlessflow Productions Ugly Remnants (Win)	
F7 Sound and Vision Concept:FX3 sample CD-ROM	
Focal Press The MIDI Manual, 2nd ed.	
Gear Vision Logic Audio Basics and Techniques,	,
vol.1: Getting Started instructional video	7/01
Gmedia Technology GForce M-Tron 2.04 (VST,	E /0.1
Mac/Win) software synthesizer	
IK Multimedia T-Racks 24 (Mac/Win)	,
mastering software	11/01
Miller Freeman Books Vintage Synthesizers,	
2nd ed Mil Productions Modularing 2.01 (Mac)	4/01
step-sequencer construction kit	4/01
MIT Press The Csound Book	
MIT Press Machine Musicianship	
Muska and Lipman Sound Forge Power book	10/01
Native Instruments 84 1.0 (Mac/Win) virtual tonewheel organ	1/01
Native Instruments Pro-52 (Mac/Win) soft synth	
NemeSys Music Technology Christian and	
Lane Ultimate Timpani Library (GigaSampler,	
GigaStudio) sample library NemeSys Music Technology <i>Dan Dean Solo Wood</i> -	
winds (GigaSampler) sampling CD collection	
NemeSys Music Technology Nashville	
High-Strung Guitars (GigaSampler) sample CD	7/01
NemeSys Music Technology Peter Ewers's	
Symphonic Organ Samples (GigaSampler) sample CD	8/01
Northstar Productions Ancient Worlds sample	
CD-ROM	4/01
No Starch Press The Book of Linux Music	
and Sound	-
NoTAM DSP 1.0 (Win) sound synthesis and editing toolkit	
Prosoniq Time Factory (Mac/Win)	
time-scaling/pitch-shifting software	1/01
Prosound Communications Robotalk effects	
Phirametric Software Abounth 103 (Mac)	12/01
Rhizomatic Software Absynth 1.02 (Mac) software synth	3/01
Riot Act Slow Death by Vise sample CD	
Rising Software Auralia 2.1 (Win) ear-training	
software	9/01
Rising Software Musition 2.0.2.11 (Win)	0.004
ear-training software	6/01
sample CD-ROM/audio CD	2/01
Serato Audio Research Pitch 'n Time 2.0.1	
(Mac/Win) AudioSuite plug-in	
Sherman Filterbank 2 multimode filter	8/01

2001

Sonic Foundry World Pop Loops for Acid sample	
CD-ROM	.11/01
Sonic Implants Afro-Cuban Percussion	
(GigaSampler) sample CD-ROM	11/01
Sound Burst Classic Synths sample library	8/01
Soundforest Voice Fusions sample CD	9/01
Steinberg Waldorf PPG Wave 2.V (Mac/Win)	
software synth	2/01
University of Illinois Press Theremin: Ether Music	:
and Espionage	6/01
Waves C4 (TDM, Mac/Win) multiband parametric	
processor	2/01
Features	

processor	.2/01
Features	
2001 Editors' Choice Awards	
By the EM Staff	.1/01
5.1 Mixing on a Budget (affordable consumer	
receivers and subwoofers for mixing in 5.1	
surround sound)	
By Mike Sokol	6/01
Battling Medusa (how to wire your studio like the professionals)	
By Karen Stackpole	6/01
The Big Squeeze (a tutorial on compressors and a	
roundup of hardware and software compressors)	
By Michael Cooper	.2/01
Breaking the Sound Barrier (four top female audio	
professionals share the secrets of their success)	
By Carolyn Keating	.2/01
Construction Site (how to build a Web site)	
By Frank Jones	9/01
Debunking Digital-Audio Myths (the truth behind eight common misconceptions)	
By Dan Phillips	5/01
Direct Action (tube direct-injection boxes)	,
By Michael Cooper	11/01
Electric Ladyland (the electroacoustic music and	,
performance art of Krystyna Bobrowski, Miya	
Masaoka, and Kaffe Matthews)	
By Bean with Gino Robair	.4/01
GM Modules for the Masses (the state of the	
General MIDI spec and reviews of ten GM sound	
modules)	
By Julian Colbeck	.2/01
Good Connections (different types of audio cables	
and how to properly use them)	
By Jeff Baust	.1/01
Good References (studio monitors explained and	
how to choose close-field monitors)	
By Brian Knave	.6/01
Heard It on the Web (how to use the Web for	
online music distribution)	
By Robert Powell with Alex Artaud	.4/01
In Control (roundup of mainstream MIDI string,	
wind, and percussion controllers)	
By Marty Cutter, Gino Robair, and	
Scott Wilkinson	5/01
The Incredible Shrinking Studio (roundup of seven	
portable digital studios)	
By Marty Cutler	7/01
Making a Joyful Noise (tips for getting the most	
from singers in the studio)	
By Myles Boisen with Cary Sheldon	8/01
Mark My Words (markup languages for musicians)	
By Alan Gary Campbell	11/01
,,	
Master Class: Learning the Lexicon (advanced	
Master Class: Learning the Lexicon (advanced programming tips and tricks for Lexicon's MPX 100)
Master Class: Learning the Lexicon (advanced programming tips and tricks for Lexicon's MPX 100 and MPX 500 effects processors))







- The Latest Gear At The Best Prices
- Expert Advice From Working Professionals
- Worldwide Shipping Usually Within 24 Hours



Complete Hardware & Software Solutions For Computer-Based Audio Production

















Visit The B&H Superstore

Featuring Our State-Of-The-Art Interactive Pro Audio Showrooms

420 Ninth Ave New York City

(Between 33rd & 34th Sts)

Call Toll Free:

800.947.5509

In NYC

212.444.6679

On The Web:

www.bhphotovideo.com

The Professional's Source For All Of Your Pro Audio Equipment Needs





94	
Master Class: Mastering MetaSynth (U&I Software MetaSynth 2.7 graphic sound-design software) By Len Sasso	
Master Class: Mastering <i>Retro</i> and <i>Unity</i> (BitHeadz's <i>Retro AS-1</i> software synth and	2/01
Unity DS-1 software sampler) By Len Sasso	7/01
Master Class: Taming the Triton (programming tips for the Korg Triton)	
By Clark Salisbury Mixing in the Round (basic techniques for mixing in 5.1 surround)	6/01
By Mike Sokol	5/01
movie The Indian Tomb in a home studio) By Eric Beheim	.3/01
Music in the Palm of Your Hand (music products for handheld Palm devices)	
By Cat Taylor	12/01
engineers share tips and tricks for overcoming common problems)	
By Brian Knave	.4/01
(controlling the signal level in your audio chain) By Myles Boisen Production Values: Cellular Electronica (David Torn)	.9/01
By Matt Gallagher	0/01
By Larry the O	2/01
(Brian Deck) By Rick Weldon	1/01
Sackbuts and Spectrograms (the story of Hugh Le Caine, a pioneer in electronic music)	
By Gayle Young	7/01
Apple's QuickTime 4) By Neil Leonard III	1/01
Secret Encoder Ring (how to encode a 5.1 surround sound mix for playback on consumer audio devices By Mike Sokol)
Shortcuts to Success (keyboard tips and macros for speeding up music production)	u/u i
By Larry the 0	7/01
and PC) By Dennis Miller and Geary Yelton1	0/01
Something Old, Something New (roundup of modular analog synthesizers)	.,
By Gino Robair	
By Nick Peck	3/01
preparing and optimizing your music for the Web) By Eric and Karen Bell	9/01
Stocking Stuffers (EM's annual gift guide) By Gino Robair	2/01
to use it) By Mike Sokol	2/01
Truth or Consequences (how to tune your control room for a flat frequency response)	,, 01
By Michael Cooper11 Web Music Launchpad (the benefits of Internet	/01
marketing and distribution) By David Battino	/01
World of Options (overview of DVD-R as a recording technology for personal studios)	
By Gary Hall	/01

Columns	-
Desktop Musician	
Customizing QuickTime MIDI	
By Peter Drescher	5/01
Desktop, Tabletop, or Laptop?	
By Zack Price	8/01
DirectX 8 Steps Up	
By Matthew P. Graven	4/01
General MIDI Redux	
By Brian Smithers	6/01
Mac OS X for Musicians	
By Jim Rippie	10/01
Musical Protocols	
By Brian Smithers	12/01
Notation and the Internet	
By Brian Smithers	7/01
Surviving the Upgrade Path	
By Rick DiFonzo	3/01
U Store It	
By Brian Smithers	2/01
Web Audio Action	
By Spencer Critchley	9/01

Pro/File **Emphatic Statement (Hanna)** By Matt Gallagher..... The Final Frontier (Chroma Key) By Matt Gallagher11/01 Flood Advisory (Michael Oster) By Matt Gallagher..... ..2/01 Forbidden Planet (Neil Haverstick) By Mark Smith 12/01 License to Groove (The Mind Club) By Matt Gallagher1/01 Metal Machine Music (Chas Smith) By Mark Smith..... .3/01 School Is in Session (Math and Science) By Matt Gallagher.... .5/01 Soul Distribution (Soulstice) By Matt Gallagher.....

Square One
Decibels Demystified, Part 1 (Square One Classics)
By Scott Wilkinson7/01
Decibels Demystified, Part 2 (Square One Classics)
By Scott Wilkinson8/01
Going Direct (Square One Classics)
By Scott Wilkinson11/01
Microphonic Machinations (Square One Classics)
By Scott Wilkinson12/01
The Next Big Thing
By Brian Smithers2/01
The Shocking Truth (Square One Classics)
By Scott Wilkinson
Tracks, Voices, and Channels
By Jeff Baust5/01
What's in a Web Page?
By Alan Gary Campbell3/01
Who's Driving?
By David Roach1/01
Recording Musician

The Earl of Whirt	
By Brian Knave	3/01
Got You Covered	
By Kevin Smith	11/01
Off-Kilter Vocals	
By Sean Carberry	10/01
	·

Scraping It Together	
By Myles Boisen	2/01
Sounds in the Key of Life	
By Karen Stackpole	9/01
Underground Drum Sounds	
By Myles Boisen	7/01
, ,	, • •
Tech Page	
Faster, Smaller, Better	
By Scott Wilkinson	10.004
Legends of the Small	
By Scott Wilkinson	40.004
	12/01
Objective Subjectivity	
By Scott Wilkinson	7/01
Out of My Head	
By Scott Wilkinson	3/01
Semiprecious Semiconductors	
By Scott Wilkinson	6/01
Supreme Being	
By Scott Wilkinson	8/01
Vocal Modeling	
By Scott Wilkinson	2/01
Xena: Wired Songstress	
By Scott Wilkinson and Joanna Cazden	4/01
Working Musician	
Distribution Roundtable	
By Michael A. Aczon	8/01
Do the Right Thing	
By Eric Leach	4/01
Follow the Money	7/VI
By Eric Leach	11.01
Getting It Online	I I/VI
By Mary Cosola	3/01
Keep It on the Download	
By Markkus Rovito	
By Markkus Rovito Publish or Perish?	9/01
By Markkus Rovito Publish or Perish? By Mary Cosola	9/01
By Markkus Rovito	9/01
By Markkus Rovito	9/01
By Markkus Rovito	6/01 2/01
By Markkus Rovito	6/01 2/01
By Markkus Rovito	
By Markkus Rovito	9/012/017/011/011/011/01
By Markkus Rovito	9/012/017/011/0112/0110/01
By Markus Rovito	9/012/017/011/0112/011/011/01
By Markus Rovito	9/012/017/011/0112/011/011/01
By Markus Rovito	9/012/017/011/0112/011/011/011/01
By Markus Rovito	9/012/017/011/0112/011/011/011/01
By Markus Rovito	
By Markkus Rovito	

When a Divider Is the Uniter By Larry the O

By Larry the 0

You Say "Potato," and I Say "Tomato"

9/01

.3/01

MARKETPLACE

LEARN the ART of RECORDING.

You can get the practical real-world skills needed to successfully start your career as a recording engineer or producer. For 29 years, thousands of students from the US and around the world have started their career at the Recording Workshop.

- The Original since 1971
- 8 Studio Facility / Latest Gear 3 6 Students per Class
- Very Affordable Tuition
- Hands-On Training
- 2 Month, 300+ hrs Training Financial Assistance
- On-Campus Housing
- Job / Internship Assistance

Contact us for a Free Brochure 800-848-9900 www.recordingworkshop.com

RECORDING WORKSHOP

email: info@recordingworkshop.com Outside the USA: 740-663-2544 fax machine: 740-663-2427 455-L Massieville Road, Chillicothe, OH 45601 Ohio State Board of Proprietary Schools Registration #80-07-0696T

The DVI Repeater & the DVI to ADC Conversion Box

Extends & Connects an Apple Flat Panel Display to any Mac or PC Computer.



The DVI Repeater works by doubling the distance of any DVI cable with no loss of quality. The DVI to ADC Conversion Box converts DVI, USB and power to the ADC connection.



818-884-6294

800-545-6900

www.gefen.com







High Quality Vintage-Style Rack Fillers for Filling Your Empty Rack Spaces with Vintage-Style Rack Fillers Many Designs and Variations ~ Silky-Smooth Knobs ~ Info at www.funklogic.com or Call 760.305.6213

MARKETPLACE

GRAPHIC DESIGNOPRINTINGOMASTERING SERVICES

IGITAL DIS ANUFACTUR П CORPORA

CD.VHS.CASSETTE.VINYL DVD AUTHORING AND REPLICATION

216 WALNUT STREET GARWOOD, NI 07027 888.219.4456 www.digitaldisc.com 908.709.1243

Major Label Quality Indie Attitude Musician's Prices

500 CDs vith Printing

\$899.00
includes:
color separations
glass master,
jewel box, assembly
and wrap

· Audio Masterina

50 CDs with Printing

· Graphic Design · Prepress (film)

\$199.00 In as little as 3 days

· Printing · Packaging

Call today for our free CD manufacturing quide

PACIFICNORTH COMPACT DISC

www.pncd-arts.com

1 800 662-4033

NAKED DRUMS

24-bit.44.1k Multitrack Drum Loops Easily imported into ANY 24-bit digital audio program. Specially enhanced for Pro Tools! (includes tempo-mapped session documents.)

ROCK VOL. 1 - THE ESSENTIALS:

2cd-rom set Over 300 loops \$99.95 Kick, Snare, Stereo Overheads, Tom1, Tom2, Tom3 POP R&B:

4cd-rom set Over 450 loops \$149.95 Kick, Snare, Hi-Hat, Stereo Overheads, Tom1, Tom2, Tom3 To download the DEMO or to ORDER visit our website:

WWW.MULTILOOPS.COM

615-646-0150

To order by mail send Check or Money Order to:
MultiLoops Orders, PO Box 411, Pegram, TN 37143 (add 34.95 \$&H)
Please specify Macintosh (\$011) or Windows (.WAV) Format.

1000 4 Panel CDs: \$1375

From your CDR Master and Art Files Package includes: Glass Master, Replicated CDs Full Color Covers & Travcards (4/1) Assembly into Jewelboxes and Polywrap

Short Run CDs. Quick Turns, Business Card CDs. DVDs Graphic Design, Digital Mastering, and Multimedia Production Also Available

RIPLE

800-414-7564 OR WWW.TRIPLEDISC.COM QUALITY C.D.S. ON TIME, AT A FFORDABLE PRICES WITH SUPERIOR CUSTOMER SERVICE



RARCODE





Music™

Music software for all Palm™ & Handspring™ handheld computers.

NotePad — Use standard notation to enter, edit, and play songs. Store an entire library of songs on your handheld. The perfect tool for composing or for learning songs and notation.

BeatPad — Quickly design & edit loops and patterns with this intuitive interface. The best of hardware sequencers with the portability of the Palm Platform. Adds texture and rhythms to any piece.

BugBand — Practice sight reading, note names, piano and guitar. Introduce kids to the basics, help students get through music class, or teach anyone a little more about music with BugBand.

Free Demos! Order On-line!





www.minimusic.com

(415) 831-1514 • P. O. Box 210761 • San Francisco CA 94121







SWARKEIDLYCE





The ultimate stereo image.

- Plug straight into portable recorders, soundcards and camcorders.
- Record your gig discretely looks like in ear mini headphones.
 - Record ambient sounds, interviews, choirs and orchestras. Great stereo sound with video.

43 Deerfield Rd. Portland, ME 04101 - Phone (207) 773-2424 info@independentaudio.com - www.independentaudio.com





Retail-Ready CD Packages with 4/4 Color Printing - no extra charge!

- Vinyl Records Direct Metal Mastering
- ASTORING STUDIO BB Charted Hits Every Week
- ette Duplication Lyrec w/ HX-Pro
- On-Demand Printing Stunning Color
- Graphics Studio Custom Designs

Work direct with the factory and save. All products made in our plant, the U.S.' most complete facility!

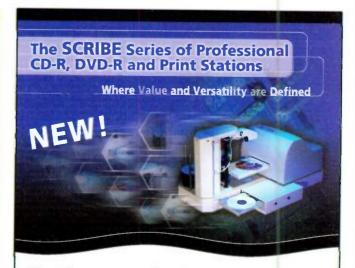
NEW! - Digital Business Cards & Shaped Disks

rvice...Best Price...Period.

Free catalog or quote: (718) 407-7300

(800) 455-8555

t out our coal website at: WWW.EUPOD21



Starting at under \$2,500! Featuring:

- CD-R / DVD-R / Print station options for a fully integrated system that creates, duplicates and automatically labels
- SmartDRIVE technology to protect intellectual property and provide advanced professional audio features
- Wide Printer Selection offering a variety of thermal transfer and inkjet disc labeling options; depending on your needs



www.mediaform.com



INCLUDES: ORIGINATION . 1-COLOR 1-PAGE BOOKLET AND TRAY CARD" . 1-COLOR (D LABEL" • JEWEL BOX & SHRINK WRAP • QUICK TURNAROUND from your print-ready film (in Rainbo's specs)

INCLUDES: ORIGINATION . FULL COLOR 4-PAGE BOOKLET* (INSIDE B&W) and 4-(OLOR TRAY CARD" . 2-COLOR LABEL IMPRINTING® . JEWEL BOX & SHRINK WRAP . QUICK TURNAROUND

from your print-ready film (in Rainbo's specs) ASK FOR OUR FREE BROCHURE!



Rainbo Records and Cassettes

1738 Berkeley St. • Santa Monica, CA 90404 • (310) 829-3476 • Fax: (310) 828-8765 • www.rainborecords.com • info@rainborecords.com



THE GATE MEDIA GROUP CD, CD-ROM, DVD AND VINYL REPLICATION CD-R SCREEN PRINTING AND REPLICATION AUDIO & DVD MASTERING & AUTHORING COMPLETE GRAPHIC DESIGN SERVICES POSTERS, STICKERS & POSTCARDS PROMOTIONAL SERVICES 800-655-1625 FILM AND GRAPHIC DESIGN INCLUDED FREE! 1000 CD's RETAIL READY-\$1395.00 GATE PROMO PLUS 500 CD's RETAIL READY-\$1200.00 1000 CD's 2000 Bulk CD's-\$1280.00 2000 Postcards 200 130GRAM VINYL-\$1295.00 1000 Posters 500 2-color CD-R's -\$495.00 \$2695.00 Member of Association for Independent Music

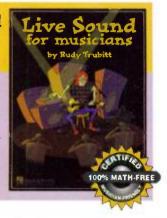




Finally, a live sound book for musicians, not engineers!

Live Sound for Musicians steps you smoothly from setup to sound-check and on through your gig. Math-free, lots of pictures,152 pages, just \$19.95.

Get it from www.trubitt.com or Music Dispatch (800) 637-2852. Q&A? ask_rudy@trubitt.com







EM 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.







*Full line of Professional booths Custom Projects of all kinds

mail: sales@soundsuckers.co



info@silentsource.com • www.silentsource.com info@sienisource.com • www.sienisource.com Acousticore Fabric Panets • Sound Barrier Isolation Hangers • A.S.C. Tube Traps Silence Wallcovering • Whisper/Wedge Metaffex • S.D.G. Systems • Tecnifoam R.P.G. Diffusors • Sonex • Sound Quilt

Monitors

Tired Of Bad Sound?





Acoustics · www.auralex.com ·



AcousticsFirst™ Toll 888-765-2900

Full product line for sound control and noise elimination. Web: http://www.acousticsfirst.com

Happy Holidays from Electronic Musician

BUSINESS OPPORTUNITIES

Starting a studio?

Get advice, Ideas and guidance from an experienced studio owner and educator

www.CriticalPathCoach.com 301-596-5018

COMPUTERS for MUSIC.

Preconfigured Macs and PCs optimized for Cakewalk, Cubase, Digi 001, Digital Performer, Emagic, Gigasampler, Pro Tools LE/TDM, Sonar and more. Featuring audio & MIDI hardware from Digidesign, MOTU, Midiman, Frontier, RME. Optimized for MIDI sequencing, hard disk recording, A/V, CD-R mastering & duplication. Desktop, tower and rack-mount configurations available.

www.wavedigital.com (973) 728-2425. Call for information about our new Rack-mount Apple G4 Macs and PowerBook-based portable DAW solutions.

Sales Engineer

Sweetwater, Inc., the nation's leading music technology equipment retailer, has an immediate opening for a Sales Engineer.

We are actively seeking a sales professional to join our team in Fort Wayne, IN. If you share our passion for music technology, thrive in a dynamic work environment and are looking for a career where you can help musicians & engineers design & build their studios and live rigs, then this is the opportunity for you. Candidates must have hands on experience with a wide variety of equipment including hard disk recording systems, microphones, keyboards, MIDI, recording consoles and computers.

Sweetwater, Inc., offers outstanding compensation and excellent benefits including paid holidays, 401K and health insurance, in an exciting, professional

Contact Kristine Haas, Director of Human Resources, at 1-800-222-4700, ext. 1050 for a confidential interview.



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

Tell our advertisers you saw their ad in EM Classifieds

EMPLOYMENT OFFERED

Electronic Musician

JobZone

Your Source for Qualified Entertainment Technology Professionals

jobzone.industryclick.com

For rates and info, contact: Robin Boyce-Trubitt at 800.544.5530

ENUIPMENT FOR SALE

The Case Specialists



Flight cases for guitars, pedalboards, mixers, drums, rackmount equipment, keyboards, DJ equipment, etc.

> Call for avotes and FREE catalog

Discount Distributors 800 346-4638 In New York: 631 563-8326 www.discount-distributors.com

Pre-owned or new cosmetically

flawed Digital recording equip-

ment at near wholesale pricing.

Mackie, Yamaha, Panasonic, Sony,

Alesis, Tascam, Roland and more.

Save thousand. Many new items

have just had the box opened

and never used. Over 350 brands.

Absolutely the best prices anywhere!

Over 72 years in business. Call today

(800) 264-6614 or (860) 442-9600.

Email info@carusomusic.com.

Caruso Music 94 State St.,

New London, CT 06320

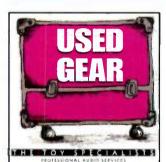
www.carusomusic.com



electronic-music modules.... **METASONIX**

881 11th St, PMB 109, Lakeport CA ISA www.metasonix.com (707) 263-5343 95453 USA





hundreds of items in stock just point...click...and buy

www.toyspecialists.com 800 445 3330

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.rollsmusic.com





NO FUNNY AFTERTASTE

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! 680 Rt. 211 E Middletown, NY 10940 altomusic@altomusic.com (845) 692-6922 www.altomusic.com

OMNIRAX



OMNIRAX 800 332 3393 415.332 3392 FAX 415.332 2607 www.omnirax.com

Have gear you

want to sell? Run a Classified in EM

digital olayroom

Everything needed to create an audio & video studio. Ready to use out of the box. Sales, sevice and set-up.

> Pro Tools, Final Cut Pro, Adobe & Other Pro Gear

(800) 822-6434 www.digitalplayroom.com





EM CLASSIFIEDS



Gary Jennings

Nostalgic roots rock music \$10

Check out samples at

www.JenningsMusic.net

Robert Ceely: BEEP CITY

Instrumental & Electronic Music

Hear what you're missing. CD \$16

www.ceelymusic.com

Gino Robair: Singular Pleasures Industrial Percussion Solo Perfor-

mance CD \$10. Audio Format www.rastascan.com/brd023.html

Benny Rietveld; Mystery of Faith Alt Jazz/Rock by Miles Davis/Santana

Robert Bitte; Autumn Moon

Music for the Age of Anxiety.

CD \$15 www.cdbaby.com/bitte

Myles Boisen; Scrambledisc

A masterpiece of studio cutups

and improvisation. Audio CD \$15

mylesaudio@aol.com

Una Pong; I Love You Very Much

Petri-dish music, beehive ballet

CD \$15

www.cdbaby.com/unapong

Modus: The Twin Jade Sessions

Ground-breaking improv funk jazz

from S.F.,CA. Check out samples

atwww.cdbaby.com/modus

Lakeside Rebar: Lost at Shore Debut album from San Francisco's

finest avante-garage roots-pop band

www.lakesiderebar.com

Subscribe to EM



Recording Engineer

Multimedia/Digital/Video/Film Radio/TV/Sports/News/DJ/Talk Show

Broadcasting

No experience required

with approved home study course. American School of Plano Tuning

Tools Included-Diploma Granted



VAVAVAVAVAVAVAVAVAVAVAVAVAVAVAVA



Piano Tunino

LEARN AT HOME

1-800-497-9793

LEARN the ART of RECORDING RECORDING WORKSHOP 300-848-9900 or 740-663-2544

See our ad in Marketplace



PARTS & ACCESSORIES



or Disit www.lecoper.com The Le Cover Co.

Only \$35

per month to place a classified to sell your self released CD. Sign up online at emusician com

RECORDING SERVICES

~~~~~~~~~~~~



See our ad in Marketplace

Fax your EM Ad: (510) 653-817

#### CD - B DUPLICATION 100+ 1.79

Price Includes CD - B. Duplication, Thermal Imprinting, Jewell Box Inserting of cover THE 4th CREATION & Shrinkwrapped

DUPLICATION (936) 756-6861

### onely Records.com

100 Retail | 1000 Retail \$1.99--

\$.99 ....

800-409-8513

See our ad in Marketplace

#### \*\*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

### The Digital Sunspot Inc

CD MASTERING CD REPLICATION

www.digitalsunspot.com

### Silk Mastering

Make your tracks sizzle Big sound, small price, fast turnaround, 10 years experience. Call for free quote and demo. (312)961-6758 Silkmastering@aol.com

#### HOME STUDIO ENGINEERS

Professional Audio Mastering that gives your recordings the "Major Label Sound." Audio transfer and Vinyl specialist. Before you burn call (636) 461-1273 www.thesystemaudio.com

### **Attention bands** and musicians:

Sell your Indie Music CDs with an **EM Classified Ad** 

Call (800) 544-5530

or sign-up online www.emusician.com

(800) 245-273

### RECORDING SERVICES & REPAIRS





# AMERICA'S BEST CD PACKAGES HANDS DOWN 1000 Retail Ready CD's Only \$1399 100 Retail Ready CD's Only \$299 800-367-1084 www.electricdisc.com ELECTRIC

RECORDS, TAPES & CDS

### HEY LOOK! WE'RE ON THE WEB!

Toll Free: 800-538-2336



All Formats! Best Prices!

www.tapes.com



# Lovingly Handcrafted CDs at Factory Direct Prices. We own the factory. (And the Elves aren't unionized.) CD SOURCE.NET

toll free 1-877-CD PRESS









### EM CLASSIFIEDS



### CD-R COPIES **Lowest Prices**

48 Hr. Turn Aound!

1-800-927-3472

check out our internet specials! www.elsproductions.com







?Why Buy.....

www.CDSleeves.com



www.eclickpro.com



See our ad in Marketplace

**500 CDs and Jewel** Boxes for '650°° **22 800-859-8401** 

Great prices on complete packages w/ printing, graphic design & mastering www.go-QCA.com

www.yourmusiconcd.com 100 BULK CDRS-\$99 100 BASIC CDRS - \$149 100 FULL COLOR CDR PACKAGE ONLY\$299.00 500 CDRS \$599.00 flechdes chr. in Atlanta 678-442-0933
Toll Free 877-442-0933 SNS DIGITA



### CD-ROM - DVD - AUDIO CD

 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



www.qvrjr.com Good Vibrations-RJR Digital 800-828-6537

"Simply the best prices and service for CD Replication, Duplication and Design!" **SINCE 1976** 



New England Compact Disc A Division of New England Digital Media, Inc

Uptown Recording Studio Need CD's in a hurry? 1-500 CD-R's, 1 day turnaround Includes CD-R, jewel case and CD imprinting./Great Prices!!! http://uptownrecordinastudio.com (877) 381-CDRs MC/Visa Accepted



See our ad in Marketplace







#### FREE DESIGN RETAIL READY CDS

FILM-GRAPHIC DESIGN
MANUFACTURING
MAJOR LABEL QUALITY
FULL COLOR FRONT/BACK
4 PAGE INSERT COLOR/B&W
2 COLOR ON DISC
SHRINK WRAPPED BAR CODE
IN-HOUSE GRAPHIC DESIGN
using your files / images / photos

ONE PRICE
ALL INCLUDED

1000 @ \$1250 ~ 500 @ \$925 DESIGN & DUPLICATION SINCE 1983 CHECK YOUR PRODUCTS @

dbsduplication.com DEAL DIRECT @ 888-565-8882

### **Got Fat Sound?**

Analogmastering.com (800) 884-2576

### SOFTWARE, SEQUENCES & SOUNDS

BAND-IN-A-BOX IMPROVEMENT
PRODUCTS\*\*\*You can put a
Better-Band-In-Your-Box.
Power-User Styles, Fake Disks
& More! GenMIDI SEQUENCE
& CD-ROMs, tool FREE info!
Norton Music & Fun, Box
13149, Ft. Pierce, FL 34979.
Voice mail/fax (561) 467-2420.
www.nortonmusic.com

### CD Looper Pro Now Just \$49.99!

Slow down anything & keep the pitch: MP3, CDs, Wav, Berlitz language CDs...

RePlay Technologies, Inc. 888-3Replay www.replayinc.com



### Here's where the PRO's Come For Their Tracks...!

Over 6,000 backing tracks with that "off-the-record" feel.

Pop - Oldies - Jazz Country - Standards Swing - Latin - Blues Big Bands - Dance MIDITIES

1010 S. Riverside Dr

New Smyrna Beach, FL 32168 (800) 593-1228

Int'l (904) 426-1263 Fax (904) 426-8928

### Simply AWESOME Ear Training!

www.midi-hits.com

- 26 Ear Training Topics
- Great for jazz & contemporary musicians!
- FREE Demo CD



www.risingsoftware.com Toll Free: 888 667 7839

### Get The Best Session Players Performing LIVE With You

For LESS Than You Spend On Beer II!

Real Guitars - Real Drums Live Vocals - Hot Horns & Strings

#### Digitally Mastered LIVE Musicians With NONE Of The Attitude

- All The Songs in All The Styles -Rock / Pop / Country / Standards Old / New

More Gigs - Better Gigs More Money!!



www.vsplive.net - 859-543-8677

### www.beatboy.com

New low prices
legendary drummers/
percussionists
online downloads
excellent EM reviews
world class drum grooves
with character and nuance
Beatboy Drum Sequences

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



VIEW OUR CATALOG & ORDER ONLINE AT:

WWW.KIDNEPRO.COM

KID NEPRO PRODUCTIONS

TEL:(246) 420-4504 E-Mail: KidNepro@aol.com

#### **COMPUTER MUSIC PRODUCTS**

Beginners Welcome! Sound card MIDI cables, MIDI & Audio software, hardware & accessories. Online catalog & MIDI Tutorials: www.musicmall.com/cmp



March 2002 issue Ads due: Jan. 2nd April 2002 issue Ads due: Feb. 1st May 2002 issue Ads due: Mar. 1st

Call (800) 544-5530

e-mail: emclass@ primediabusiness.com

# FREE SOUNDS! @ eSoundz.com met kitelanante on lusc Schware Protessonal CO ROM Sample Libraries porter por

### 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

NEW STYLE DISKS
All credit cards accepted.
Visit our Web site at
www.petersolleyproductions.com
Peter Solley Productions

### Extreme High Quality Giga Sampler Instruments!

www.BardstownAudio.com 800-814-0820 502-349-1589 Bardstown Audio Bardstown, Kentucky 40004

### **Music Tools Blowout!**

Great Deals & Service

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 06088

### TALENT AGENCIES

#### "LOOKING FOR A RECORD DEAL???"

Getting signed is very hard to do. But we will get the record deal you are looking for Guaranteed Service.

Call now to receive your FREE information

TALENT 2000 1-800-499-6395

Place your next Classified Ad in EM! Call for rates (800) 544-5530

### **Expand Your MOTU Desktop Studio**

Start with this ultimate FireWire-based mobile rig with plenty left over to expand

TC • PowerCore<sup>\*\*</sup>

DSP Turbo for MAS • PowerCore Plug-ins

TC-PowerCore is a major breakthrough for Digital Performer's real-time MAS plug-in environment because it provides DSP turbocharged plug-in processing. At last, the renowned TC PC TOOLS/96 studio-quality FX package processing. At last, the renowned TC PC TOOLS/96 studio-quality FX package processing. At last, the renowned TC PC TOOLS/96 studio-quality FX package processing. At last, the renowned TC PC TOOLS/96 studio-quality FX package processing. At last, the renowned TC PC Looks/96 studio-quality FX package processing at last place at your fingertips in Digital plus processing plus other TC I Works processing plus other TC I Works

plug-ins such as
TC MasterX and
TC Voice Tools
(sold separately).
These powerful



appear in Digital
Performer's mixing
board, just like regular native
plug-ins, but they run on four powerful
56K DSP chips on the TC-PowerCore
PCI card. It's like adding four G4
processors (equal to 2.8 gigahertz of
extra processing power!) to your
computer. Run 12 studio-quality TC
plug-ins with no hit on your CPU
power, and run other native plug-ins
at the same time! And coming soon
from 3rd party developers: Waldorf
Vocoder, Antares AutoTune,
TC Helicon Voicecraft and others.

TC WORKS

### blas

### Peak 3.0

### **Advanced waveform editing and mastering**

BIAS Peak 3.0 for Mac OS 9 and X, is the ultimate editing, processing, and mastering companion for Digital Performer! Peak gives you lightning fast, nondestructive waveform editing with support for audio files up to 32 bits and 10 MHz, including 24-bit/96kHz files. Unlimited Undo/Redo gives you the freedom to work creatively. Select an audio region in

DP, choose the "Use External Waveform Editor" command, and instantly switch into Peak! Peak's sophisticated options for on-the-fly marker, region and loop creation are simply unparalleled. Advanced DSP and looping tools include Convolve, Repair clicks, Loop Tuner™, Loop Surfer™, Loop It™ and Guess Tempo™ and more.

Process thousands of files, or just a few, using Peak's batch processor. Peak directly supports all MOTU audio interfaces and includes Roxio Toast™ Lite CD for burning your own redbook audio CDs directly from Peak's powerful playlists. Create web or multimedia content for export with multiple file formats, including Apple's QuickTime.



### Aardvark Aard Sync II<sup>®</sup> Ultra-low jitter master clock for your MOTU studio

The problem? Multiple word clock devices that you need to sync perfectly with your MOTU system. The Solution? The AardSync II Master Clock from Aardvark. The Aard Sync II will make everything in your studio slave together smoothly. With four industry standard word clock outputs and ultra low-jitter performance, you can set the Aard Sync II to generate any digital audio sample rate desired—not only 44.1 and 48 kHz, but also the pull-up and

pull-down rates required for film and video applications. The AES/EBU outputs are low-jitter approved and make any converter sound more accurate. No clicks, no pops, no falling out of sync! Slaves to video blackburst in both NTSC and PAL/SECAM format. If you've got multiple digital audio devices in your MOTU studio that need to stay in sync, Aard Sync II is the wonder box you've been looking for. Call Sweetwater today to find out more.



### SAC-2K controller

### **Precision touch-sensitive automated worksurface**

The Radikal Technologies SAC-2K sets a new standard for hands-on control of Digital Performer with a custom plug-in for DP

automated controls. Vithin minutes, you'll achieve a whole new level of interaction and creativity that you never thought possible with fader groups, mix automation, plug-in automation (up to 12 parameters at once), transport with jog/shttle,

solos, mutes...it's all just one touch away.

order yours today

and
easy,
one-touch
access to
every element of
the recording process
in Digital Performer with
responsive, touch-sensitive

**Sweetwater** 

music technology direct...



### Altiverb Add real acoustic spaces to your mix with the first and only sampled reverb plug-in



Pictured here is the Concert Gebouw, a worldfamous concert hall in Amsterdam with superb acoustics. Altiverb, the first (and only) realtime sampled acoustics plug-in, delivers the sound of this hall to your Digital Performer virtual studio - along with dozens of other sampled acoustic spaces. Altiverb is an astonishing breakthrough in reverb technology because it fully reproduces the acoustic qualities of real spaces, rather than synthesizing an approximation with artificial algorithms. Only a few very expensive (\$10K+) hardware processors offer sampled acoustics processing, but Altiverb gives you this unsurpassed level of realism for less than \$500. thanks to the amazing "Velocity Engine" Altivec

> processor in all G4 Power Macs. Provides dozens of real spaces, from concert halls to closets, or sample your own! Now shipping exclusively for Digital Performer. VST version coming soon.

 $\textbf{UVI Plug-ins} \ \ \textbf{Universal Virtual Instrument plug-ins for Digital Performer and MAS}$ 

DIGfishaudio The UVI Plug-in will Digital Performer system. It's a playback sampler that opens as a plug-in right inside your Digital Performer project. With nine brand new titles to

choose from, you can have a different sound library with hundreds of samples at your fingertips. What makes this plug-in so unique? Instead of trying to cram an entire sound collection into a ridiculously small amount of RAM, these libraries serve as a

LONDON Orchestral virtual sound module right inside DP. No more wasted time loading CD-ROMs, waiting, listening, loading again, waiting some more... With UVI plug-ins, the patches are loaded in seconds and are available directly inside Digital Performer. There's nothing quite like this! London Orchestral Percussion. Prosonus Orchestral Collection, Prosonus Grand Piano, Six PlugSound Volumes: 1-Keyboards,

2-Frets, 3-Drums, 4-Hip Hop Toolkit, 5-Synth Collection, 6-Global and more titles on the way.





Plug-in'







### COOL School Interactus



From the newbie to the guru, there's no better way to get more out of Digital Performer than CSi-Volume 6. It's like having a DP product specialist looking over your shoulder, with click-for-click tutorials, a massive glossary of DAWrelated terms and over 40 movie tutorials. Includes our new "AutoPlayer" mode: just sit back and soak up the info!

### SweetCare 24-hour support from the MOTU system specialists!

Nobody knows MOTU-based systems better than Sweetwater. So we've developed SweetCare, one of the most comprehensive approaches to technical support in the music industry. On the web or in person, our commitment to helping our customers is our passion. Our 23 years of experience with advanced music technology



products from companies like MOTU is at your disposal 24/7 via our online 24-Hour SweetCare Support Center or in person six days a week with new extended hours on Saturdays. SweetCare includes on-line services beyond just Q&A, such as in-depth articles, live media, online forums, and the most complete knowledge base of musical and technical information available anywhere. Visit www.sweetwater.com/support for complete details.

ce: (219) 432-8176 • Fax: (219) 432-1758 • Email: sal 5335 Bass Road . Fort Wayne, IN 46808

### **Expand Your MOTU Desktop Studio**

Start with MOTU's ultimate 96kHz, 32-bit native recording system

### Avaion VT-737 SP Tube preamplifier / opto-compressor / Class A equalizer for your MOTU interface

The VT-737SP brings that magic Avalon sound to your MOTU workstation. Run your dullest, most sterile mic through the VT-737 SP and you'll be amazed at how warm and sweet it sounds. This 2U space combo brings a new standard to high-end audio, taking your sound to places you never thought possible and giving you precise creative control. With vacuum tube and discrete design, the VT-737SP provides a wide range of tube tone and control: Avalon sound with maximum flexibility.



AVALON (1) DESIGN

PURE CLASS A MUSIC RECORDING SYSTEMS

### Presonus DigiMax

### Pristine 8-channel mic pre-amplification for the MOTU 2408 audio interface

Why is the PreSonus DigiMax perfect for your MOTU rig? Because it's the purest path to digital. DigiMax combines 8 channels of award winning 24-bit mic pre-amplification with our unique simultaneous

RMS/peak detection limiting and EQ enhancement, giving you maximum gain before clipping while maintaining the musical transparency of a compressor. The result? Fast, natural and versatile

limiting on every channel. And DigiMax connects all 8 channels via ADAT optical to your MOTU 2408 system in pristine, 24-bit digital glory. And you can expand: add up to 3 DigiMax's to your 2408.



### MotorMix®

### Hands-on automated mixing for Digital Performer

With its new, custom software written specially for Digital Performer, MotorMix becomes a seamless, tactile extension of your MOTU software recording environment. Put your hands on eight 100mm motorized faders and rotary encoders to tweak your mixes in record time. Gain instant easy access to all MIDI and audio tracks with control banks. You'll never even think about mixing with a mouse again. Imagine having tactile control over most of Digital

Performer's features with MotorMix's

intuitive layout and easy operation. MotorMix gives you all the advantages of a professional mixing board, at an incredibly affordable price. Bring motorized mixing to your MOTU desktop today. For more info, visit cmlabs.net or contact your Sweetwater sales engineer today to enter the future of mixing.

### DashBoard

**Editing worksurface for Digital Performer** 

In the beginning, there was only magnetic tape and razor blades, but editors could still make over 200 edits per hour! Dashboard restores speed and finesse to editing with DP3 and eliminates fatigue caused by point-and-click editing. Dashboard will bring you the same level of control to Digital Performer as the very

popular Motor Mix. Dashboard can operate as a standalone worksurface, or it can be fitted to one or more Motor Mixes. Dashboard's Locator, Navigator and Zoom control sections get you gickly to where you want to edit, and the Clipboard section makes your actual edits. You can arm and record tracks remotely with Dashboard just like machine control. The mixer section provides access to Digital Performer's mixer and plug-ins.

### order yours today

**Sweetwater** 

### Dual-processor G4/MP800 Capable of 128 tracks with 8-band EQ and dynamics on every track

**MOTU DP3** audio workstation software Now with full surround production up to 10.2

MOTU 1296 12-channel 96kHz audio interface Or any MOTU PCI interface like the 2408mkII or 1224



### Gold Native™ version 3.2

### Optimized perfomance and complete automation





Waves Native Gold gives you the complete line of legendary "musthave" Waves processing, including C4 MultiBand and Renaissance Reverb. Version 3.2 introduces cutting edge performance optimizations and complete MAS automation. What does this mean for you? Apply more Waves processing to your mixes than

ever before possible. Automate your Waves plug-ins with pristine, sampleaccurate precision and 32-bit floating point processing. You get everything you need to track, sweeten, sound design and master. Get Native Gold now and join the top industry pros who rely on Waves to make their

### mixes Gold everyday.

### High-performance FireWire hard drive storage

M Project

M Project is the new FireWire hard drive for your MOTU hard disk recording system from Glyph Technologies. M Project adds up to 75 GB of audio storage to your MOTU rig in seconds, backed by Glyph's lengendary service and support. M Project is the only MOTUapproved FireWire drive for the 828 and all MOTU PCI-324-based

systems, including the 2408mkll, 1296, 1224 or 24i. M Project easily shares the FireWire bus with the 828, and even allows you to connect multiple 828s to your computer. And M Project is the ideal alternative to SCSI drives because it frees up a PCI slot. So call Sweetwater today and ask about M Project, the ultimate storage solution for MOTU hard disk recording.



(219) 432-8176 • Fax: (219) 432-1758 • Email: sal 5335 Bass Road . Fort Wayne, IN 46808 Smart Code Pro

### **Surround Encoder Plug-ins For DP3**

SmartCode Pro is the first LOUD and only surround encoder plug-in for Digital Performer. It allows you to deliver fully encoded surround mixes to your clients. Burn CDs or DVDs that you can preview using any consumer DVD player that supports Dolby Digital™ or DTS™ — a crucial final step in producing professional quality surround mixes. By encoding

with Smart Code Pro directly within DP3, you avoid having to invest in expensive dedicated hardware encoders (that cost thousands), which saves you both time and money.

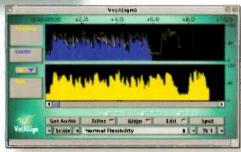
SmartCode Pro is available in two versions to accommodate the two most widely used surround formats: Dolby Digital and DTS. Both versions allow you to preview your 5.1 surround mixes in real time 5.1, then encode and decode the mix to create a 6-channel surround master. Smart Code Pro is a must-have for serious surround production with DP3.



### SYNCHROARIS

### **VocALian Project**

Unique automated audio alignment software



Still spending hours re-recording dialog or vocals? There is another way! Because of its unique ability to align two signals, VocALign can be used creatively to take guide or even live tracks and create performances with perfectly aligned overdubs. VocALign also gives the producer the ability to choose the rhythm and pace for a specific vocal, or even lay down the required tempo pattern for the artist. VocALign gives you

perfectly aligned double-tracked vocals, tight backing vocals, easy regrooving of recorded vocals for remixing and shorter overdub sessions. For post-production, VocALign is designed to take a line of replacement dialog and precisely align it with the dialog recorded with picture. And VocALign Project integrates seamlessly with Digital Performer 3. At only \$299 list, can you afford to be without it?

# FINAL MIX

### **Box of Rain**

here are times when a person may experience something truly and literally incomprehensible—that is, something the meaning of which the mind cannot fully grasp. Different experiences may evoke various feelings, but incomprehensibility is a glaze that dissolves focus even while you may be single-mindedly riveted by what is occurring. When everything you know is wrong, you feel separated from any sense of understanding the world, and that throws you for a loop. All your regular points of reference are washed over by waves of confusion and shock until they are worn down to a rubble of questions about things that no longer fit neatly together as they once seemed to. Mind boggling, world shattering: overhyped colloquialisms that today describe an indigestible daily reality.

Now multiply that effect by hundreds of millions, even billions. It is nothing less than a global wrench in consciousness.

How can a planet thrown so off-kilter begin to search for balance? There are many good answers, but I believe one of the best is music. Music speaks internationally and can be eloquent in any language. Music expresses feelings and thoughts in ways that words alone cannot. Music reaches into the heart to touch the spirit, and that is where healing begins.

Clear Channel Communications' idea of issuing a list of songs its radio stations should not play in the wake of the September 11 attacks may have been presented as a desire to avoid further hurt, but what is needed is exactly the opposite. Perhaps certain music will upset some people, and it is even possible that music could provoke people to bad actions, but the power of music to draw people together and remind them of the miracle of humanity is far greater and more important. It is not worth risking the baby by throwing out the bathwater.

A Bach sonata, Coltrane's A Love Supreme, Ravi Shankar spinning a flowing raga, a silky samba, the ancient voices and drums of the Middle East or Africa or an anguished Chicago blues—all can transport people to a place where themes of life are set forth, embellished, and woven into a fabric in which each of us is but a thread, and those of us no longer here leave holes that may appear small from the viewpoint of the entire fabric but are huge and gaping from the perspective of the strands around them.

Music helps people relate that which is clearly beyond them to that which they see, do, and feel every day. This connection, where the cosmic, cerebral, physical, and emotional converge, is a genuine meeting of the spirit, and it is this process—and the awareness that it is happening—that can help us begin to regain our balance.

Although the old mix of elements has been destroyed, a new mix will be created.

Whether you are a player, a listener, or a dancer, this is a good time to listen to music that touches you. Find solace in favorite music you know and discover new perspectives in music you have not heard before. If you make music, let it take you where it wants to go. Sit down and lose yourself in it or let it play behind whatever else you're doing. Don't be afraid to understand other people; you can do it by listening to their music.

Regaining balance is only the start of what must happen in the world from this point, but it is a crucial first step. I make no claim to know the Right Thing to Do, but I know that any hope of wisdom for charting our course from today will be strengthened by balance. The greatest global coalition will happen as different people around the world become aware that they can develop a bond. Fear is a powerful motivator for cooperation, but understanding fosters joining together, and that is a stronger force.

I can say nothing in the six or seven hundred words of this column that could make any real difference, but almost anything that could make a difference can be said in a few well-played notes. They may not explain the incomprehensible, but they can provide a picture of life that includes the incomprehensible, and that's a beginning.

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

### **Customers and reviewers say:**

"WaveCenter/PCI was a snap to install, and I appreciate the included Cool Edit Pro SE software. A very fine product at a great price."

"Tango24 provides accurate, robust, well-defined and clean recording. It captures the body and essence of the instruments it is recording. This is a very fine sounding and well-designed recording system."

"WaveCenter/PCI has been trouble-free and robust. Tango24 sounds superb, to my ears. Even older 16-bit mixes are sounding more detailed and alive."

### WaveCenter/PCI:

8 channels ADAT optical I/O.
Stereo coax/optical SPDIF I/O.
Built-in MIDI (2-in, 2-out).
GigaSampler & ASIO drivers.
Easy plug-and-play installation.
Windows & Macintosh support.
Includes Cool Edit Pro SE.
Patchbay for input monitoring.

### Tango24:

Professional 24-bit A/D & D/A.

Optically-isolated converters.

Balanced analog I/O (8-in, 8-out).

ADAT optical in/thru/out.

BNC word clock connectors.

Switchable +4dBu/-10dBV levels.

### **Buy a Bundle**



### Save a Bundle

WaveCenter/PCI + Tango24 bundles are now available at fantastic prices.



### **Digital Performer In Concert**

### Mike McKnight Programmer / Keyboards Madonna 2001 "Drowned World" Tour



"The entire Madonna show is driven by Digital Performer running on two G4 Power Macs with four MOTU 1296 audio interfaces. When I hit the space bar, Digital Performer begins triggering everything: backing tracks, jumbotrons, and (for HBO)

the Neve in the recording truck." Is DP reliable? "When you're playing for 20,000 people in the venue and another 120 million on HBO, you've got to have the most reliable, musical system available. DP is that program." And overall? "Digital Performer has revolutionized the way I work. I put DP on the road with the two biggest tours of the year: U2 and Madonna. It has to be the best when you put your ass on the line like that. You can take DP from me when you pry it from my cold, dead fingers!"

Learn more at www.motu.com

### **NMOTU**

