Producer Rudy Perez · Experience Music Project · Composer Snuffy Walden

An INTERTEC / PRIMEDIA Publication

WWW.MIXONLINE.COM • U.S. $5.95 CANADA $6.95 FEBRUARY 2001

MIX

PROFESSIONAL AUDIO AND MUSIC PRODUCTION

NEW MEDIA SPECIAL

- SOUND FOR PLAYSTATION 2
- MP3 FIDELITY ISSUES
- ONLINE AUDIO FORMATS
- BROADBAND EXPLAINED

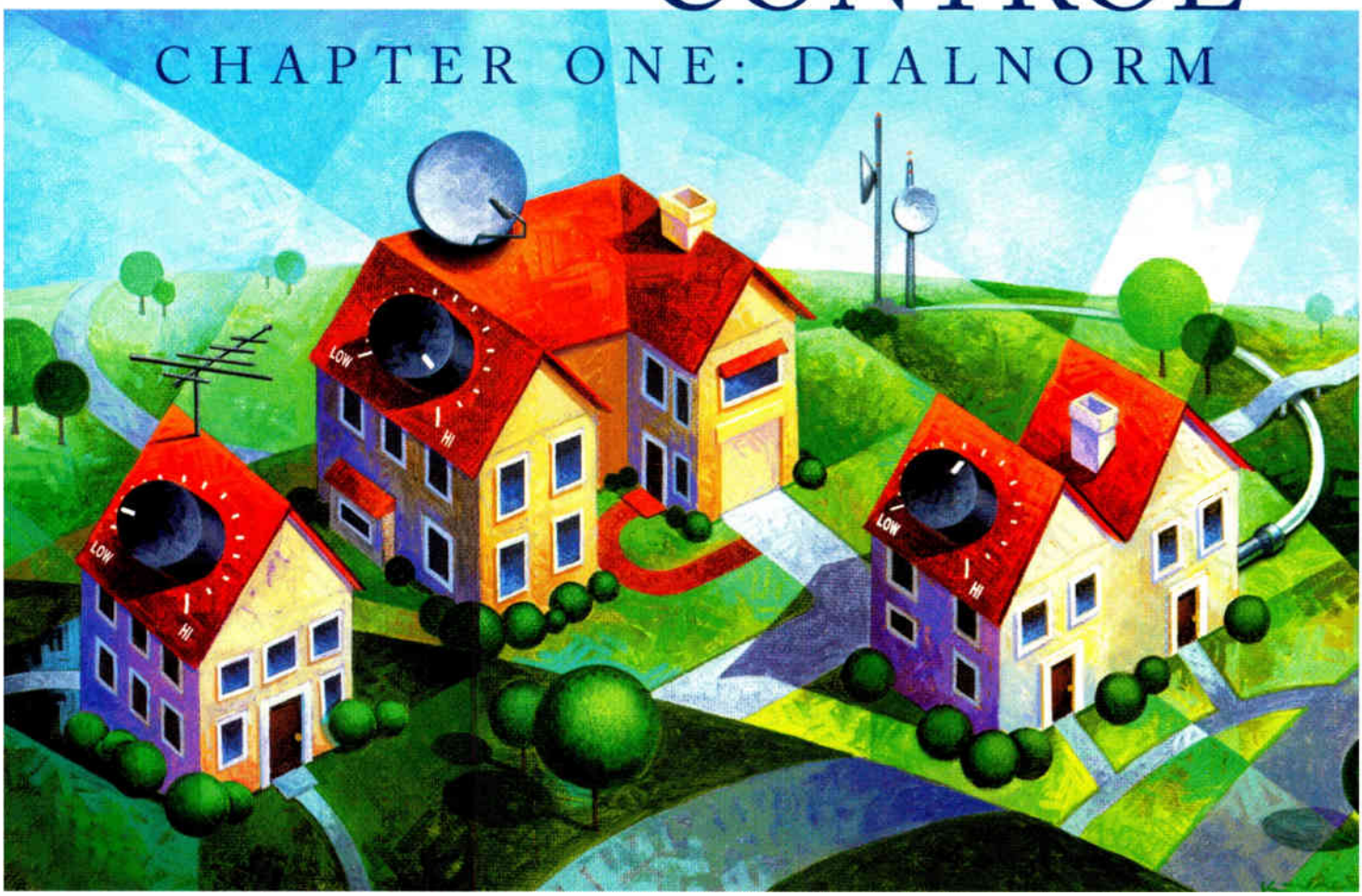
Virtual Instruments: Synths on Disks!

LARRY BLAKE ON MIXING

TRAFFIC

METADATA FOR MAXIMUM CONTROL

CHAPTER ONE: DIALNORM



Dolby Digital uses metadata to change the whole television broadcast listening experience. Consumers with mono, stereo, or surround home theaters all hear the best audio TV has to offer.

Dialog Normalization (dialnorm) is a powerful metadata parameter used to enhance DTV audio received in the home. Dialnorm, set during DTV production and broadcast distribution stages, indicates the average loudness level of a program, and solves volume variations between programs and between channels—no more constant volume adjustments!

With the new DP570 Multichannel Audio Tool, program producers and broadcasters can readily measure and set dialnorm and other Dolby Digital metadata parameters. For more information, please visit our website.

www.dolby.com/metadata

Dolby

BREAKING SOUND BARRIERS

Dolby Laboratories, Inc. • 100 Potrero Avenue • San Francisco, CA 94103-4813 • Telephone 415-558-0200 • Fax 415-863-1373
Wootton Bassett • Wiltshire SN4 8QJ England • Telephone (44) 1793-842100 • Fax (44) 1793-842101 • www.dolby.com

'MT IS THE MOST VERSATILE DIGITAL BOARD'

"I get better results on the MT because I can switch between projects with such ease. Previously that took between 15 and 20 minutes a song. When you're used to the MT's speed you suddenly realize how much time you gain."

DIGITAL MIXING TIP

Try working with automation all of the time, automating EQs and hand sweeps. Creatively, you can then build up the picture you want and keep it in front of you. Rather than try to explain a concept to an artist or A&R guy, you can give them a snapshot or replay of what's happening.

"For the producer digital is the most versatile way of working because you can keep all your options open. Now, if I can't work digitally, I feel a bit cramped because things aren't as readily available and the results I want aren't so easy to achieve."

Photographed at Backstage Studio, Nashville

TOMMY SIMS

Tommy Sims is a multi-talented singer, songwriter, producer, and musician whose creative contributions span musical genres. Winner of a Grammy Award for co-writing "Change The World," Sims is able to divide his time between songwriting and recording his own material, and producing and playing on the recordings of others.

CREDITS INCLUDE

MICHAEL MCDONALD
BABYFACE
ERIC CLAPTON
JOAN OSBORNE
GARTH BROOKS
AMY GRANT
BRUCE SPRINGSTEEN

Axiom MT

Solid State Logic

INTERNATIONAL HEADQUARTERS

Begbroke Oxford OX5 1RU England Tel: +44 (0)1865 842300 Fax: +44 (0)1865 842118
Email: sales@solid-state-logic.com www.solid-state-logic.com

NEW YORK	LOS ANGELES	TOKYO	PARIS	MILAN	TORONTO	SINGAPORE
+1 (212) 315 1111	+1 (1)323 463 4444	+81 (0)3 5474 1144	+33 (0)1 3460 4666	+39 039 2328 094	+1 (1)905 655 7792	+65 (0)438 2272

TRIPLE • POWER

TOP END PROCESSORS YOU CAN AFFORD!

M•ONE
DUAL EFFECTS PROCESSOR

DUAL EFFECTS PROCESSOR

The M-One comes with Dual Engine structure enabling you to run two of the best sounding reverbs or other quality effects simultaneously without compromising sound. The M-One gives you a wide range of high quality reverbs from the classic Halls and Rooms to new and grainy snare reverbs such as Live and Plate.

TC Electronic's M-ONE and D-TWO are very powerful yet affordable new multi-effects units from one of the most highly respected names in signal processing. I highly recommend the M-ONE and D-TWO.
Mike Collins - Electronic Musician (US)

M-ONE FEATURES

- 20 incredible TC effects e.g.Reverb, Chorus, Tremolo, Pitch, Delay and Dynamics
- Analog-style User Interface
- 100 Factory/100 User presets
- Dual-Engine design
- 24 bit A/D-D/A converters
- S/PDIF digital I/O, 44.1-48kHz
- 1/4" Jacks - Dual I/O

RHYTHM TAP FEATURE

TC introduces the truly musical Rhythm tap feature: Not only tempo, but actual rhythm patterns can be tapped directly - or quantized according to a specific tempo and subdivision. The delays and rhythm patterns can be up to 10 seconds each. Control the exact number of repeats with Absolute Repeat Control.

D-TWO MAIN FEATURES

- Multi-tap Rhythm Delay
- Absolute Repeat Control
- Up to 10 seconds of Delay
- 50 Factory/100 User presets
- 24 bit A/D-D/A converters
- S/PDIF digital I/O, 44.1-48kHz
- 1/4" Jacks - Dual I/O

D•TWO
MULTITAP RHYTHM DELAY

A studio effects processor dedicated solely to providing digital delay is a rare thing in this age of all-singing, all-dancing multi-effects units. In the D-TWO, TC have produced a very attractive delay unit that sounds exemplary and offers some unique features as well as all of the expected ones.
Paul White - Sound On Sound (UK)

TRIPLE•C
COMPRESSION MEANS EXPRESSION

THE ONLY INSERT COMPRESSOR YOU WILL EVER NEED !

TRIPLE•C can deal with virtually any given source material. The three Compression techniques combined with an analog style user interface, presets and full MIDI automation make TRIPLE•C the most versatile and ergonomic Compressor on the market. Insert TRIPLE•C on a single channel or on a Sub group and achieve comprehensive results.

MULTI-BAND COMPRESSION

Multi-band Compression allows TRIPLE•C to spectrally Compress your source material in three bands independently.

ENVELOPE COMPRESSION

Alter the dynamic envelope of the incoming source by changing the Attack and Release gain.

TRIPLE•C is available in both Single and Stereo channel versions.

FULL-BAND COMPRESSION

TRIPLE•C simulates the best from the analog world's compressors and allows you to achieve full-band Compression sound instantly.

50 Factory presets + 100 User presets.
24-bit digital In/Out.

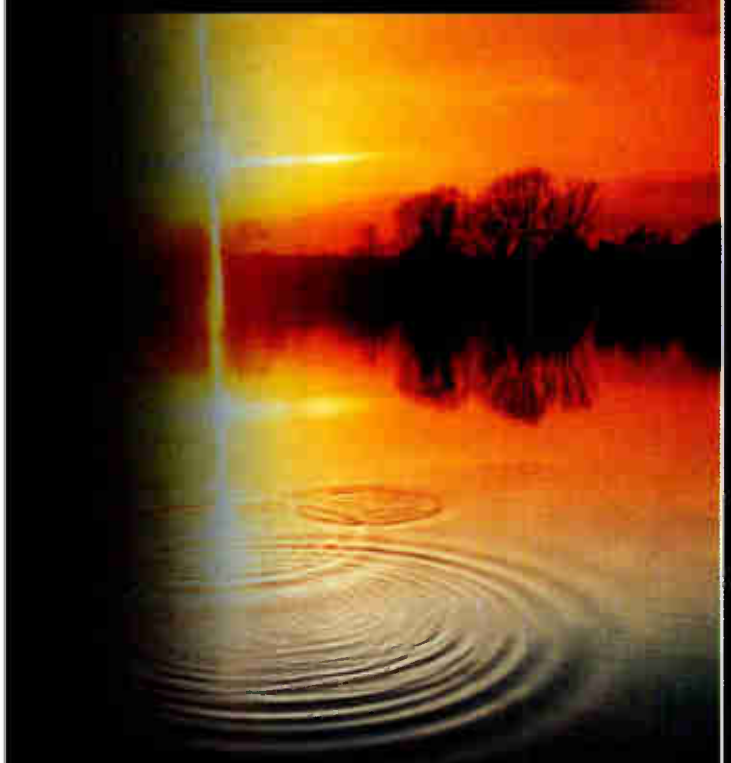
YES! I'd love to have a FREE DEMO CD inc. M•ONE, D•TWO & TRIPLE•C material
Name: _____
Address: _____
City: _____ State: _____ Zip: _____
Country: _____
Phone: _____
E-mail: _____

t.c. electronic

TC ELECTRONIC A/S DENMARK • ☎ + 45 8742 7000
TC ELECTRONIC INC. • 742-A HAMPSHIRE ROAD • WESTLAKE VILLAGE • CA 91361 USA • ☎ (805) 373 1828 • [FAX] (805) 379 2648
INFOUS@TCELECTRONIC.COM • WWW.TCELECTRONIC.COM
CIRCLE #002 ON PRODUCT INFO CARD

THE ORIGINAL POINT SOURCE SPEAKERS

NATURES WAY



In 1947 Tannoy recognized the naturalness, and a whole host of performance advantages, that a point source drive unit such as our Dual Concentric™ design offers. These two pictures explain why such a drive unit will perform in a more natural way than a traditional two or three way speaker system. Notice how no words are required to explain this - it's plain common sense.

Like many things in life, getting it right is all about basics. If design basics aren't right, what follows will eventually become extinct. Ask Mother Nature... If the natural order of communication is disrupted, then the ultimate confusion takes place. deceiv... the recipient into believing what at... isn't REAL. ...ually is.

...TG Tannoy America Inc.
338 Gage Ave. Suite 1
Kitchener, Ontario, Canada N2M 5E1
Phone: (519) 745-1158 • Fax: (519) 745-2364
Dealer order hotline (Fax) (800) 525-7081
Literature Hotline: ...@tannoy.com
e-mail: ...@tannoy.com
Web site: www.tannoy.com

TANNOY

FOR THOSE WHO KNOW

CIRCLE #003 ON PRODUCT INFO CARD

MIX®

PROFESSIONAL AUDIO AND MUSIC PRODUCTION

FEBRUARY 2001, VOLUME 25, NUMBER 2

AUDIO

PAGE 140

Mix magazine is published at 6400 Hollis St., Suite 12, Emeryville, CA 94608 and is ©2001 by PRIMEDIA Intertec Publishing Corp. Mix (ISSN 0164-9957) is published monthly. One year (12 issues) subscription is $46. POSTMASTER: Send address changes to Mix magazine, P.O. Box 1939, Marion, OH 43306. Periodical class postage paid at Oakland, CA, and additional mailing offices. This publication may not be reproduced or quoted in whole or in part by printed or electronic means without written permission of the publishers. Printed in the USA. Canadian GST #129597951; Canada Post International Publications Mail Product (Canadian Distribution) Sales Agreement #0478733.

PAGE 44

NEW MEDIA

SOUND FOR PICTURE

PAGE 94

LIVE MIX

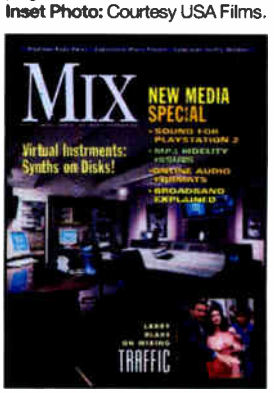
PRODUCTS

PAGE 138

DEPARTMENTS

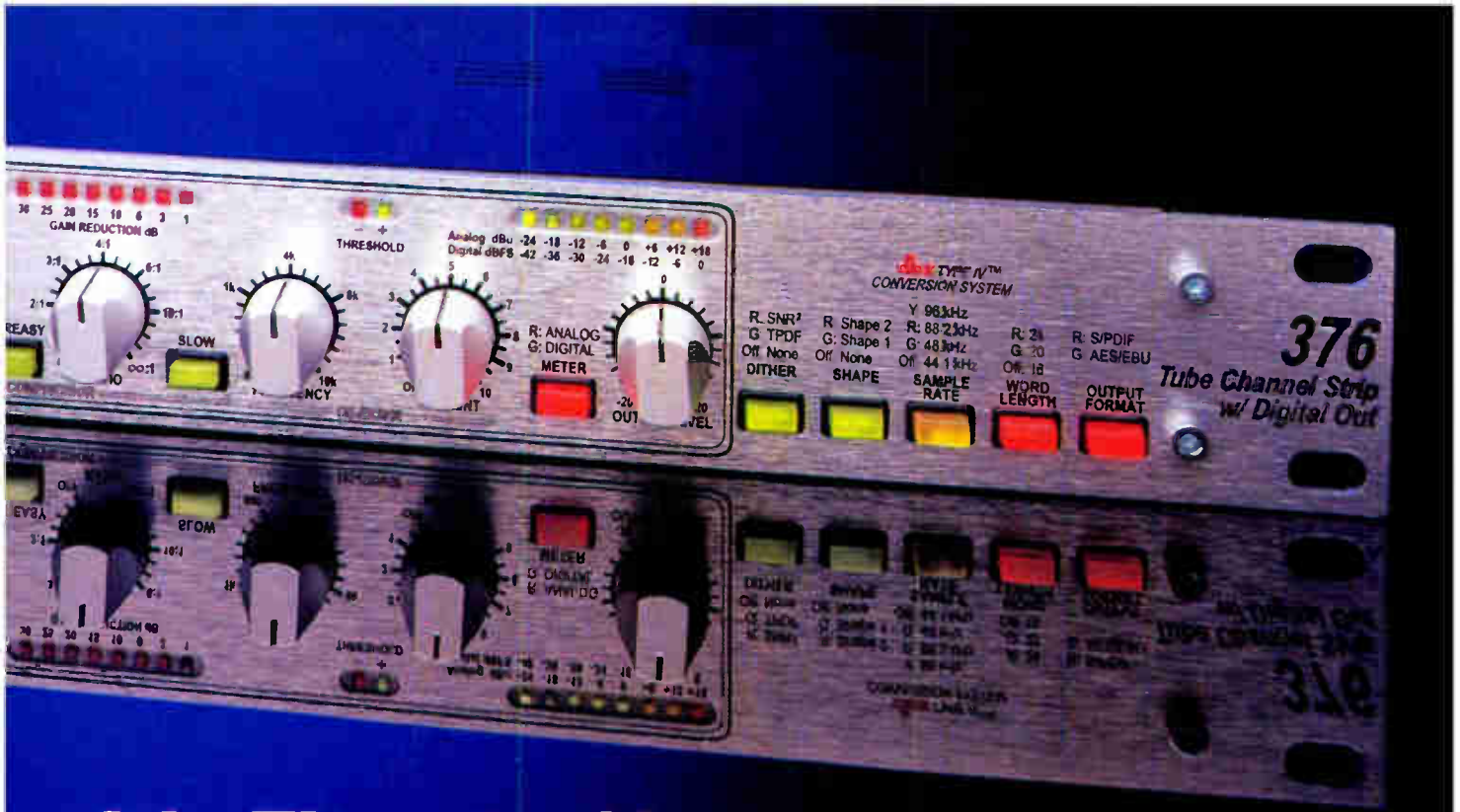
Check Out Mix Online!
http://www.mixonline.com

On the Cover: Enjoying a whirlwind year, Kampo Music Studios (NYC), located inside the Kampo Cultural Center, recently installed an SSL Axiom-MT digital console. Studio manager Alex Abrash describes the John Storyk-designed Studio C, working in the digital realm and preparations for future DVD-related projects. For more, see story on page 14. **Photo:** Tom Reiss. **Inset Photo:** Courtesy USA Films.



Unit is 19" wide and will not fit in a mixing console.

dbx® the Standard in Professional Signal Processing



It's Time to Change the Channel...

Tube Preamp Channel Strip w/ Digital Out

In the digital world, you're only as good as your weakest link or channel. So, why settle for any less than the warmth and integrity offered by the new **dbx 376 Tube Preamp Channel Strip with 96k Digital Outs**? For more than 25 years dbx has been setting the standard, and the 376 is the culmination of those years of innovative success.

With a feature list that includes a vacuum tube preamp section, three-band parametric EQ, compressor and the *real* kickers: built-in De-Essing and AES/EBU and S/PDIF digital outputs, make the 376 an all inclusive Channel Strip toolbox that's just as much at home in a conventional analog mixer application as it is in a state-of-the art digital workstation. With the 376 you can bypass the mixer all together, while producing warm and rich tube mic preamp tones in the digital domain by using dbx®'s proprietary Type IV™ A/D conversion system. Stop by your local authorized dbx dealer and tune into all that is available on the next channel.

376

- **Tube microphone pre-amp**
- **De-Esser**
- **3-Band Equalizer**
- **dbx® Compressor**
- **Type IV™ conversion system**
- **AES/EBU and S/PDIF digital outputs**
- **Front panel instrument input**
- **+48 Volt phantom power**
- **Selectable dither and noise-shaping algorithm**
- **Selectable sampling rates (96, 88.2, 48, 44.1kHz)**
- **24, 20 and 16 bit wordlengths**
- **Word clock sync input and output**
- **Selectable mic/line switch**
- **20 dB pad**

dbx®

PROFESSIONAL PRODUCTS

A Harman International Company

For information call: 1-800-777-1363 • Harman Music Group • 8760 South Sandy Parkway • Sandy, Utah 84070 • **www.dbxpro.com**

CIRCLE #004 ON PRODUCT INFO CARD

FROM THE EDITOR

COME TOGETHER!

Call it convergence if you will, but "multifunction" is the catchphrase for home electronics in the new millennium. Consumers are facing the rapid Manhattanization of their entertainment spaces, as the home A/V center is filled by towers of electronics: 5.1 receivers, DVD players, CD changers, cable/satellite decoders, VCRs, disk-based video storage (TiVo, ReplayTV, TV4Me, etc.), game boxes, cassette decks and maybe even a turntable.

Outside the safe environs of the home theater, the consumer is hardly free of electronic trappings, and today's well-equipped pedestrian may tote a digital watch, Gameboy-type device, PDA/laptop, cell phone, pager, and an MP3, CD or cassette player. It's a wonder that Mr. Spock could get along with just a tricorder and a communicator, but perhaps by the 24th century, human life will be simpler, and we won't need to make stock trades from the golf course, as recommended by a recent (21st century) TV spot.

Unfortunately, we earthlings have developed quite a penchant for gadgets. James Bond started out as a tough secret agent, but by the time Q loaded him down with "essential tools," he became more of a secret technician. The situation is no different in the studio. Does the engineer create the sound, or does the sound just emanate from yet another digital doohickey in the effects rack? And with all of our megatracks and megaracks, why does the goal of creating another *Sgt. Pepper's* album remain the unattainable quest for so many of us?

There may be little chance of swaying the innate human thirst for technology, yet recent developments offer some hope for reducing the sheer volume of gear invading our home spaces. Here, *multifunction* is the key. From the first-generation models, DVD players offered the ability to play audio CDs—in fact, in a few years, CD-only home players will probably disappear entirely. And the CD/DVD player may face extinction, as universal players and new units incorporating features such as MP3 playback and onboard gaming (i.e., Playstation 2 or Microsoft's Xbox) gain popularity. Laptops with DVD drives can double as video players for bored air travelers, while DVD technology in the automotive arena can route movies to the kids in the backseats or play back 5.1 surround symphonies during long commutes.

Cell phones with Internet access are hardly new—although surfing the Net on a 1.5-inch monochrome screen is a truly less-than-satisfying experience. A notch better are wireless PDAs, and stores can barely keep Palm.Net-ready Palm VIIx's in stock. Yet the next step may be building phones into PDAs or a new genre of computers that bridge the gap between PDAs and PCs with wireless mobility, perhaps via the new high-speed 3G technology, providing both on-demand information or streaming entertainment—any time, any place. Get ready for multifaceted Web appliances, such as Harmon Kardon's Digital Media Center, combining an Internet device with a DVD (audio, video or CD) drive and 30 GB of storage for ripping compressed video or music files—or Microsoft's Ultimate TV, offering video storage and satellite/Internet access.

Whether these notions catch on is anybody's guess, but with all of this media coming together, there's gonna be a whole lotta program creation goin' on. The formats and algorithms may change, but for us audio types, the goal remains the same: No matter what playback medium, just make it sound great.

That's the real challenge.

George Petersen

MIX® magazine is affiliated with

BPA SPARS AMERICAN ABM

Subscriber Privacy Notification:
Mix makes our subscriber list available to carefully screened companies that offer products and services that may interest you. Any subscriber who does not want to receive mailings from third-party companies should contact the subscriber service department at 800/532-8190 (U.S.), 740/389-6720 (outside U.S.), and we will be pleased to respect your wishes.

www.mixonline.com

EDITORIAL DIRECTOR George Petersen
EXECUTIVE EDITOR Blair Jackson
EDITOR Tom Kenny
ASSOCIATE EDITOR Barbara Schultz
TECHNICAL EDITORS Sarah Jones Chris Michie
COPY EDITOR Sarah Benzuly
EDITORIAL ASSISTANT Robert Hanson
SOUND REINFORCEMENT EDITOR Mark Frink
NEW TECHNOLOGIES EDITOR Philip De Lancie
LOS ANGELES EDITOR Maureen Droney
EAST COAST EDITOR Dan Daley
NEW YORK EDITOR Paul Verna
TECHNICAL PROVOCATEUR Stephen St.Croix
CONSULTING EDITOR Paul Lehrman
FILM SOUND EDITOR Larry Blake
CONTRIBUTING EDITORS
Rick Clark Michael Cooper Bob Hodas
Eddie Ciletti Oliver Masciarotte

ART DIRECTOR Tim Gleason
ASSISTANT ART DIRECTOR Kay Marshall
GRAPHIC DESIGNER Mae Larobis
GRAPHIC DESIGNER Lizabeth Heavern
PHOTOGRAPHY Steve Jennings

MARKETING DIRECTOR Christen Pocock
SALES PROMOTIONS MANAGER Angela Rehm
SALES PROMOTIONS COORDINATOR Starla Estrada
SALES PROMOTIONS/EVENT COORDINATOR Alison Eigel
SALES PROMOTIONS ART DIRECTOR Wendy Shiraki

PUBLISHER John Pledger

ASSOCIATE PUBLISHER Carrie Anderson
510/985-3228

EASTERN REGION
EASTERN ADVERTISING DIRECTOR Michele Kanatous
718/832-0707

MIDWEST/EASTERN ADVERTISING MANAGER
Greg Sutton 847/968-2390
342 N. THIRD ST., LIBERTYVILLE, IL 60048

WESTERN REGION
NORTHWEST ADVERTISING DIRECTOR
Dan Hernandez 510/985-3266

SOUTHWEST ADVERTISING MANAGER Albert Margolis
323/845-1881
3575 CAHUENGA BLVD., SUITE 350, LOS ANGELES, CA 90068

MIX MAGAZINE
6400 HOLLIS ST., SUITE 12, EMERYVILLE, CA 94608
510/653-3307
SALES ASSISTANT Joe Madison
CLASSIFIEDS/MARKETPLACE ADVERTISING DIRECTOR
Robin Boyce-Trubitt
CLASSIFIEDS SALES ASSOCIATE Kevin Blackford
CLASSIFIEDS ASSISTANTS Monica Cromarty
Diane Williamson-Suber
FACILITIES SALES MANAGER Shawn Langwell

DIRECTOR, SPECIAL PROJECTS Hillel Resner

DIRECTOR OF OPERATIONS AND MANUFACTURING
Anne Letsch
ADVERTISING PRODUCTION COORDINATORS
Douglas Ausejo Jack Dodson
COMPUTER SUPPORT TECHNICIAN Erik Shank
GROUP CIRCULATION DIRECTOR Phil Semler
CIRCULATION MARKETING MANAGER Austin Malcomb
CIRCULATION FULFILLMENT COORDINATOR Jef Linson
CIRCULATION ASSISTANT Jeremy Schmidt

HUMAN RESOURCES MANAGER Julie Nave-Taylor
HR/OFFICE COORDINATOR Janette Rosbroy
FACILITIES COORDINATOR Norm Shea
RECEPTIONIST Tina Lee Scott

An INTERTEC®/PRIMEDIA Publication
CEO Tim Andrews
PRESIDENT Ron Wall
VICE PRESIDENT, ENTERTAINMENT DIVISION John Torrey
DIVISION DIRECTOR OF MARKETING Stephanie Hanaway

PRIMEDIA Business-to-Business Group
PRESIDENT AND CEO David G. Ferm
PRIMEDIA Inc.
CHAIRMAN AND CEO Tom Rogers
PRESIDENT Charles McCurdy
VICE CHAIRMAN Beverly C. Chell

Subscriptions and Customer Service:
POSTMASTER: For subscription inquiries and changes of address contact: *Mix* magazine, P.O. Box 1939, Marion, OH 43306 or call 800/532-8190. Outside the U.S., call 740/382-3322. Send back issue requests to *Mix* magazine, 6151 Powers Ferry Road N.W., Atlanta, GA 30339-2941 or call toll-free 877/296-3125. Outside the U.S., call 770/618-0219.

NATIONAL EDITORIAL, ADVERTISING AND BUSINESS OFFICES, 6400 Hollis St., Suite 12, Emeryville, CA 94608. 510/653-3307, fax: 510/653-5142. Web site: www.mixonline.com. PHOTOCOPY RIGHTS: Authorization to photocopy items for internal or personal use of specific clients is granted by PRIMEDIA Intertec Publishing, provided that the base fee of U.S. $2.25 per copy, plus U.S. $00.00 per page is paid directly to Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923. The fee code for users of this Transactional Reporting Service is ISSN 0164-9957/2000 $2.25 + $00.00. For those organizations that have been granted a photocopying license by CCC, a separate system of payment has been arranged. Before photocopying items for educational classroom use, please contact CCC at 978/750-8400. Organizations or individuals with large quantity photocopy or reprint requirements should contact Reprint Management Services at 717/399-1900. Microfilm copies of *Mix* are available by calling Bell & Howell Information and Learning, 800/521-0600.

Founded in 1977 by David Schwartz and Penny Riker Jacob

BEFORE YOU BUY A CD RECORDER

CHECK ITS PROFESSIONAL CREDENTIALS

CDR-W33
CDR-W66

DSP
SBM, EQ and Limiter

PC keyboard input for text entry

Even among professional CD recorders, the Sony CDR-W33 and CDR-W66 stand apart. Three DSP functions fine-tune your sources.* There's a limiter with adjustable ratio. A 3-band EQ. And Super Bit Mapping® circuitry that captures near 20-bit quality on industry-standard 16-bit compact discs. Conveniences include wired or wireless remote operation and even a PC keyboard input for CD TEXT™ entry. Sony's 24-bit A/D and D/A converters help maintain resolution.

The CDR-W33 uses standard unbalanced analog audio, SPDIF and optical digital I/O.

The CDR-W66 (not shown) adds balanced XLR analog and AES/EBU digital I/O plus 2X speed duplication with a second CDR-W66.

The Sony CDR-W33 and CDR-W66 deliver the design and operational capabilities that professional applications require. And you get every last bit of performance without spending your every last dime. To find out more, call 1-800-472-SONY, ext. CDR.

*Analog sources only on CDR-W33.

SONY

1-800-472-SONY ext. CDR
www.sony.com/proaudio

FEEDBACK

ANALOG NOSTALGIA

Having just listened to a batch of recent CDs, including the latest from Emmylou Harris, *Red Dirt Girl* (reviewed in "Cool Spins" in November Recording Notes), I can't help wondering if we're heading into a lo-fi world.

The paradox of all the effort and desire to increase sampling rates and bit lengths is that the trend is to finish up with a CD that has less dynamic range than a good LP did. It may stand out on radio, but these highly compressed and limited CDs outlive their welcome pretty fast; they're fatiguing to listen to, and any sense of depth or space is squashed for the sake of being a loud CD.

I can't help feeling that the Golden Age for analog was the mid-'70s to mid-'80s, when some terrific recordings were made that had space and depth, without the sometimes bizarre compression that occurs now.

I just wish for a happy compromise: creative use of the medium to let the music speak for itself.

Mel Stanley
Australian Broadcasting Corporation
Melbourne, Australia

REVIEWING OUR FILES

Eddie Ciletti has laudably undertaken the difficult task of explaining analog tape recording technology in a few pages ("The Tech's Files"). But I want to make some points regarding his August 2000 article.

First, the Otari MX-5050B never was a consumer machine. It was equipped with balanced inputs and outputs. Maybe he refers to some earlier version, but the venerable 5050B was and is a workhorse in the studio. By contrast, the Technics RS-1500 was intended as a consumer item, but, being an iso-loop design with great specs, it came to be used in pro applications in broadcast and recording.

Second, any household product used for capstan cleaning must be used with care. But sometimes it is necessary to use more aggressive cleaners because a common problem is baked-on debris on the capstan. This is one reason that "heat-free" and nonferrous ceramic capstans were introduced. With steel capstans, heat from the capstan motor is carried up into the capstan shaft and the debris binds to the shaft. Water-based cleaners may not remove this.

About rubber cleaning solutions: You have to use the type designed to clean and rejuvenate the rubber. Usually wet-honing the pinch roller carefully with 400-grit sandpaper and such a cleaner will take off the glazing that may occur on old machines.

Regarding head cleaning: Ninety-one percent isopropyl alcohol is okay, and pure ethyl alcohol is perhaps better. Cleaning is a two-step process—one wet, one dry—to get the remaining moisture off the head, and I recommend synthetic swabs, because cotton swabs can leave a thread on a critical location. On ATR-100 ferrous-ceramic heads, highly volatile solvents may cause the heads to fracture. So be gentle with those ceramic heads!

Also, in Fig. 2b, the ¼-track stereo format is described as being the same as 4-track ¼-inch. This is not so! The ¼-track stereo format has a wider unrecorded guard band between Side A and Side B of the tape. The two formats are not compatible.

Further, with respect to LF repro response, Eddie says that only a calibration tape made with compensation for multitrack reproduction can be used to check this. I think he should review his ATR-100 manual. Most "standard" tapes are recorded over their full width to be usable with all formats. The result is that LF fringing occurs, making the LF response appear to rise. Practically, it's not a big deal; a dB on the LF range may be less than the head-bumps, anyway.

I am totally with Eddie on the issue of NR and proper alignment and adjustment. If the machine is not up to snuff, then using NR will make things much worse. But rent a calibration tape? Please! Every studio should have a reference (cal) tape for every format they use and should have a service manual on hand for everything they use.

Robert C. Defenderfer
Audio Consultant
Athol, Mass.

ALPHABET SOUP ASIDE...

In "The Fast Lane" (September 2000 issue), Stephen St.Croix writes, "FFT (Fast Fourier Transform) DSP...makes possible a perfect phase correct...real-time EQ...FFT (DFT) FIR DSP is phase-shift free."

This seems to imply that phase shift is bad, and, therefore, no phase shift is good. I'm not sure about that. Phase shift is a natural part of all physical processes that change frequency response. For example, if a long cable rolls off highs, then there will be an associated phase shift. If the roll-off is equalized with an analog equalizer, then both the phase shift and the frequency response will be corrected. Therefore, in at least that one case, equalizer phase shift is good. I suspect that isn't the only case.

It's great that the frequency response and phase shift characteristics of equalizers can be separated with DSP processes. What we have to learn now is, when do we want phase shift and when do we not want it.

Dan Dugan
Dan Dugan Sound Design
San Francisco

EARLY DETECTION

Thank you, Paul Lehrman, for your thoroughly useful and inspiring articles on RSIs (September and October issues). They prompted me to bring up the subject of chronic hand pain to my physician. He referred me to an orthopedist who, in turn, diagnosed me with carpal tunnel syndrome.

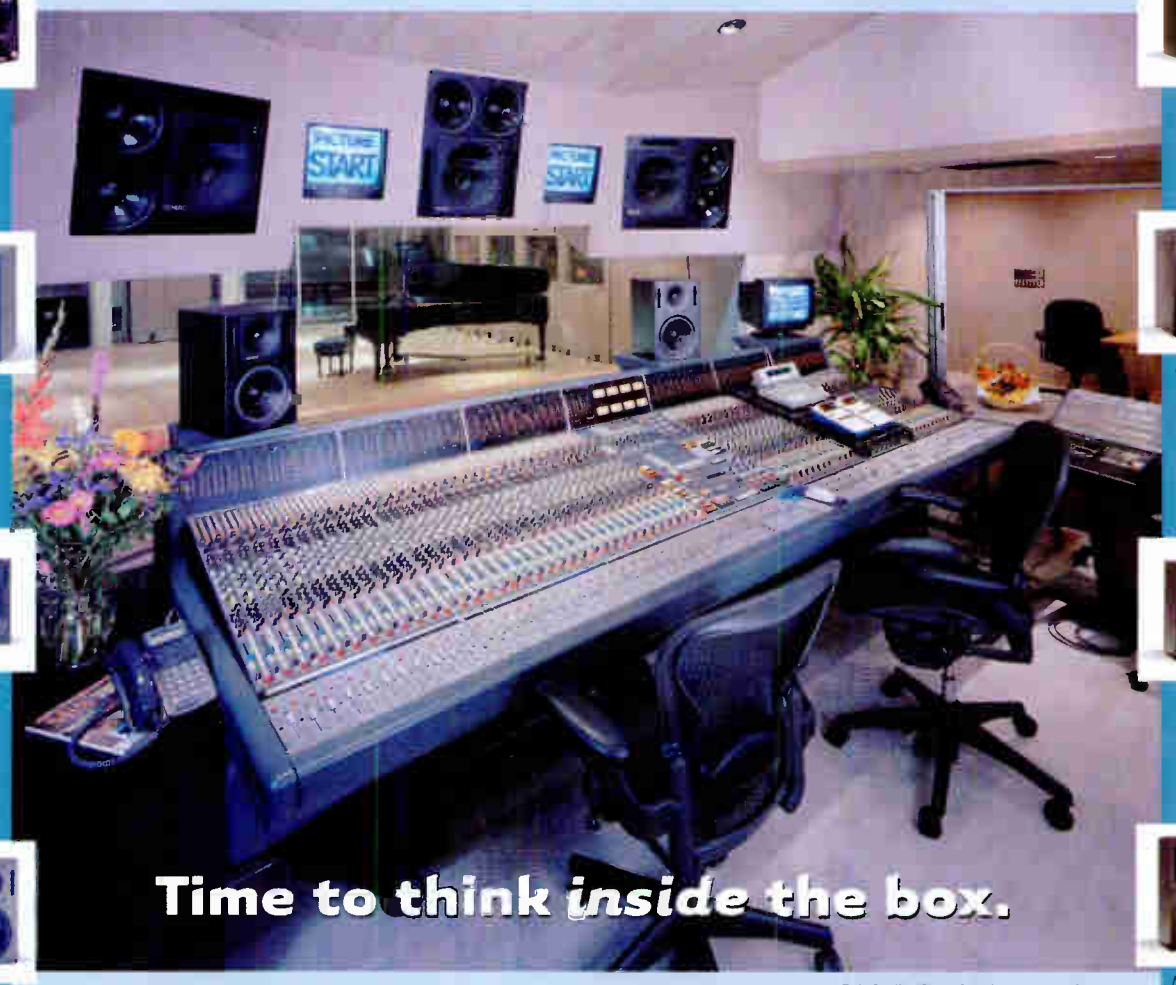
I am production guy/board-op at a local radio station, and I would go home at night with stiff, sore hands and wrists. There are two reasons why I'm thanking you: We caught it early, so there may be things that can be done before surgery is necessary; and if those articles hadn't run when they did, I may still be silently wondering why my hands hurt. I read *Mix* every chance I get, and these last two issues have really paid off.

Gary Griffey
Hopkinsville, Ky.

FOR THE RECORD

The November 2000 issue of *Mix* con-

—CONTINUED ON PAGE 215



Time to think *inside* the box.

Todd Studios/Signet Sound, Los Angeles, CA

Studio Monitor Technology
Model 1036A

Did you realize that Genelec offers more monitoring solutions for your multi-channel surround needs than any other professional loudspeaker company in the world? It's good to have a lot of choices: four different main soffit-mounted systems, three tri-amp systems, four bi-amps, and three subwoofers. All fourteen feature line level crossovers, room response controls, direct-coupled amplifiers and protection circuitry. All come with more than 20 years of active monitoring expertise and the intrinsic quality that will make you feel confident about your work again. Perhaps even passionate.

When L.A.'s busy *Todd Studios/Signet Sound* recently upgraded their main control room, they selected Genelec monitors to satisfy a prestigious roster of critical music scoring and audio post-production clientele. For main monitors, they chose an L-C-R array of our **1034B**'s – renowned for their healthy dose of dynamic headroom, sonic accuracy, precise and stable imaging as well as space-conscious design. For critical nearfield stereo monitoring, **Model 1031A**'s sit close-by on the console. Each active system is a superlative audio solution designed and manufactured by a professional monitor company with more real-world, multi-channel surround expertise than anyone else.

Audition a Genelec 5.1 system. Listen to your ears - and your peers. Because if you're making sound decisions for your facility, it's as good a time as any to think about what comes *inside* the box you buy, not just what's outside of it.

GENELEC®
ACTIVE MONITORING

The Whole Truth and Nothing But The Truth™

Genelec Inc., 7 Tech Circle, Natick, MA 01760 508/652-0900 Fax: 508/652-0909 www.genelec.com
Genelec OY, Olvitie 5 FIN-74100 Iisalmi, Finland +358 17-813311 Fax: +358 17-812267

CIRCLE #005 ON PRODUCT INFO CARD

CURRENT

RESOURCE SITE FOR MUSICIANS

Musicians looking to find just about anything about the music industry can now access this information at a click of a mouse. Musician.com offers a broad range of industry and career development services for the sole purpose of providing musicians with knowledge to create, manufacture and market their music. Founded by music professionals from Guitar Center, Guitar.com and MusicianFirst, the site connects musicians on- and off-line with leading music industry executives, artists, managers, producers and many others.

"We cover all sides of the music business," said Robert Smith, co-president and COO of the site. "Record companies can't provide A&R as it used to, and we provide that access to musicians. They can come to the site from any vantage point and get whatever they want. We are providing the tools, resources and expertise to further benefit musicians."

Smith said that the site will be working with Rocket Network, where musicians can lease studios through the Musician.com site, record their work, and store and transfer files.

For more information, check out www.musician.com.

MP3.COM REVIVED

After shelling out a record $170 million in court-ordered payments to record labels, MP3.com announced plans to resuscitate the My.MP3.com service.

After negotiating licensing plans with the five major record labels, MP3.com can now reopen the service to its broad clientele. The revamped My.MP3.com service will charge users $49.95 a year to access a nearly unlimited number of CDs that users can store in a virtual locker. Users must prove that they own the CD by either inserting the CD into the CD-ROM drive of their computer or buying it from an online retailer that has agreed to connect with MP3.com.

Under this payment structure, MP3.com will sell the data it compiles on the user's musical tastes to advertisers.

According to Robin Richards, president and CEO of MP3.com, "We believe that the service will stimulate CD sales and generate enthusiastic activity from our users."

Despite the effort, Emusic.com Inc. and its independent label partners have filed a copyright infringement complaint against MP3.com in the U.S. District Court for the Southern District of New York. The suit claims that MP3.com continues to illegally distribute unlicensed music.

NAPSTER ADDS TO ITS ROSTER

edel Music AG, an independent music label, agreed to cooperate with Napster and its new membership-based business model. Under the agreement, edel will allow its master recordings and musical compositions to be used in the file-sharing service.

Michael Haentjes, edel's CEO, said, "We welcome Napster's commitment to protect the interests of artists, songwriters and other rightsholders, and we will support any activity that provides for fair compensation for everyone involved."

Artists currently on edel's roster include Ayla, Funkstar DeLuxe, Jennifer Paige, Roxette and SupaKings.

LES PAUL, DIGIDESIGN RECEIVE TECHNICAL GRAMMY® AWARDS

The Recording Academy announced that Les Paul and Digidesign have been awarded the 2001 Technical Grammy Award for their outstanding technical contributions to the recording industry.

According to the Academy's president and CEO, Michael Greene, the foundations of multitrack recording laid by Les Paul and Digidesign's Pro Tools "continue to enable generations of artists, engineers and producers to expand the creative boundaries of recorded music."

Past Technical Grammy recipients include Dr. Thomas Stockham Jr., Ray Dolby, Rupert Neve, George Massenburg, Sony/Philips, Georg Neumann GmbH, Bill Putnam and AMS Neve.

SCOUR ACQUIRED

A U.S. Bankruptcy Court judge awarded the assets of Scour Inc. to CenterSpan Communications Corp., a developer and marketer of Internet software applications for communication, for $9 million.

The decision comes after Scour voluntarily shut down its file exchange community and filed for Chapter 11 in U.S. Bankruptcy Court because of copyright infringement suits brought against the company by the Motion Picture Association of America, the Recording Industry Association of America and the National Music Publishers Association this past July.

The Oregon-based company's bid of $9 million included $5.5 million in cash and $3.5 million in stock, beating out Listen.com's bid of $5 million and a little over 500,000 shares of its stock. Liquid Audio Inc. also joined in the bidding wars, offering an undisclosed amount.

BMG HIRES NEW PRESIDENT AND CEO

Mourning the loss of its recently appointed president and CEO Rudi Gassner, BMG hired Rolf Schmidt-Holtz to fill these positions. Schmidt-Holtz will retain his position of chief creative officer (CCO) in charge of content strategy for Bertelsmann and developing the groupwide Bertelsmann Content Network.

The new music chief will run BMG's activity from the New York and Hamburg offices, garnering support from top executives in the newly formed Executive Committee.

"The music business is undergoing radical upheavals," Schmidt Holtz said. "Reshaping it is one of the most interesting entrepreneurial challenges and opportunities imaginable."

Music industry veteran Rudi Gassner (58) died at his vacation home in Samerberg, Germany, from a heart attack.

"The death of Rudi Gassner is a tragic loss," said Bertelsmann chairman Thomas Middelhoff. "He was a successful media entrepreneur and a great hope for us all in view of the necessary development and reorganization of our music business."

Gassner founded BMG International.

EXPANDING YOUR MIND

Synergetic Audio Concepts announced its Syn-Aud-Con spring seminar, "System Setup & Optimization and Sound System Design." The five-day training will take place in the following cities: Anaheim, Calif., February 5-9; Charlotte, N.C., March 19-23; Louisville, Ky., April 23-27; and Orlando, Fla., May 7-11. For more information, visit www.synaudcon.com.

The TEF Division of Gold Line announced a one-day workshop on 5.1 surround sound systems led by senior instructor Anthony Grimani, president of PMI. The workshop will be held on March 7, 2001, at NSCA in Orlando, Fla. The cost is $199. The division is also hosting a Level I TEF class in Miami on January 11-13, 2001. For additional information, call 203/938-2588 or email Greg Miller at gmiller@gold-line.com.

Registration is now open for the 2001 NSCA Systems Integration Expo, help March 8-10 in Orlando. Attendees can register at www.nscaexpo.org. In addition to the 550-plus product exhibits, NSCA has also added the Business Solutions Pavilion that hosts exhibits devoted to systems contractors. Educational supplements are also planned for the expo, including the all-new series "Integrated Systems Applications" for the electronic systems professional.

CORRECTION

Our December article on analog-to-digital converters inadvertently omitted the HEDD (Harmonically Enhanced Digital Device) from Crane Song (www.cranesong.com). HEDD combines a 24-bit A/D and D/A converter set with adjustable triode and pentode processing, allowing the user to apply varying degrees of tube harmonic enhancement to either the ADC or DAC pathway. Other features include balanced analog I/O, AES and S/PDIF digital I/O and 22-element LED metering. Retail is $3,495.

Mix regrets the error.

HOT LINKS

Official AKG U.S. Web site: www.akgusa.com.

Comunications Specialties Inc.'s new online order tracking feature can be found at www.commspecial.com. ■

INDUSTRY NOTES

Colin Pringle was promoted to the role of managing director at **SSL** (Oxford, England)...**Mark Terry**, former president of **Harman Pro Group North America** (Northridge, CA), was appointed president of **Harman Pro Group Worldwide**...The new CEO and president of **Mackie Designs** (Woodinville, WA), **James T. Engen**, was also appointed to the company's board of directors... **Steinberg North America** (Los Angeles) announced the recruitment of **Brian McConnon** as marketing manager...**Martin Jaffe** was named VP of business affairs for **Dolby Laboratories** (San Francisco)...**Q-Design** (Vancouver, British Columbia) hired **Ken Ashdown** as the new VP of artist and media relations and **Frank Boosman** in the position of VP of product marketing at the Seattle office...**John Bastianelli** joins **Tascam** (Montebello, CA) as new product development manager... **Chris Pelzar** signed on with **AMS Neve** (U.S. office in New York City) as the new executive VP of sales and marketing for North and South Americas, and **Gerard Fiocca** is the new Eastern region sales manager...**Avalon Design** (San Clemente, CA) announced that John Olshefski is the new CEO, while **Wynton Morro** will remain as president. In other company news, **Brad Zell** was named director of sales and marketing, and **Todd Larson** was appointed to the sales manager position. **Avalon** also moved its factory to 1030 Calle Sombra, Suite B, San Clemente, CA 92673...**Alan B. Shirley** joins **Sennheiser Electronic** (Old Lyme, CT) in the position of VP of exports...**Antares** (Scotts Valley, CA) relocated its offices to 231 Technology Circle, Scotts Valley, CA 95066. The company's engineering facility will remain in Auburn, CA. In other company news, two additions to its sales force were announced; **E-mu/Ensoniq** (Scotts Valley, CA), led by Roy Goudie, will cover all European sales, and **Bardy Hayes** of International Sales adds Japan and Australia to his roster...**Sony Disc Manufacturing** (Terre Haute, IN) announced the completion of its Terre Haute facility, where **Richard Riggs** was named manager of distribution services. Over at the Springfield, OR, office, **Dan Riney** accepted the position of manager of facilities engineering...**Russ Berger Design Group** (Dallas) appointed **Nancy Lapio** to be the new marketing and production coordinator... **Barry Snyder** joined **Post Logic Studios** (Hollywood) as president... **DSP Media** (StudioCity, CA) announced the opening of its Japan office. In other company news, **Daxco Audio Pvt. Ltd.** (Mumbai, India) will be the new distributor for India, and **Benjamin Timpauer** was appointed Western regional sales manager...**Crawford Post Production** (Atlanta, GA) and **Crawford Audio** relocated their services to 3845 Pleasantdale Road, Atlanta, GA 30340...**Telex** (Burnsville, MN) announced many new appointments: **Mike O'Neill**, VP and general manager for speakers worldwide and amplifiers in the U.S.; **Joel Johnson**, general manager for wired and wireless mics worldwide; **Ralph Strader**, VP and general manager for intercoms worldwide; and **Kent Rahn**, director of marketing communications...The new systems specialist for QSC (Costa Mesa, CA) pro touring division is **Jim Skiathitis**. The company also announced changes to its rep network; **AV Marketing** (Indianapolis) will service Indiana and southern Kentucky, and **Brian Trankle Associates** (Sacramento, CA) now handles Northern California and northern Nevada...**Elrep** (Tucker, GA), distributor for Bag End, added **Steve Spittle**, manager, to its office. Bag End distributor **GP Marketing Inc.** (Kirkland, WA) welcomed **Mike Mestres** to its inside sales staff. Meanwhile, **Bag End** (Barrington, IL) appointed **Guy Dominick** to the position of sales associate...**The ATI Group** (Columbia, MD) appointed **Transamerica Audio Group** (Las Vegas) as the North American sales representative for Audio Toys Inc.'s rackmount products. ■

Kampo Music Studios

BY SARAH BENZULY

In 1971, the Kampo Cultural Center was created in Noho, a fixture of downtown culture that joins Soho and the East and West Villages, as a means of fusing art and creativity. The following decade, the complex gave birth to Kampo Music Studios, which has gone on to create a mystique all its own. A single-room facility centered around an SSL E Series console, Kampo soon grew right along with the surrounding area, based on the ideal of combining music and art and promoting the "downtown vibe."

"The highest level here is the artistic interest, the artistic integrity," says studio manager Alex Abrash, who joined the staff in the early 1990s after stints at Electric Lady Studios, Unique Recording, Sigma Sound and Hit Factory. "We're trying to make a place that encourages art and creativity.

"I came in here a little naive," Abrash admits, "because I figured, 'Well, why isn't this place packed?' So I just closed it down for a month, did some modifications, built some things and it just took off."

Part of that revamp involved contracting John Storyk to design Studio C, "to get the job done right," Abrash says. The control room saw the early '99 installation of an SSL Axiom-MT digital console, a move Abrash admits was a calculated gamble but has since paid off. "I wanted to put something that was going to not only be current, but was also going to be future-ready as well," he says. "We've had 100 percent success with the Axiom. Our installation went off without a hitch, and we've had nothing but positive feedback from the engineers who have sessioned on the board, including Bruce Swedien, Eddie Kramer and Ray Bardini.

ON THE COVER

"Unlike many of the digital boards out there, the Axiom is very user-friendly," Abrash continues, "especially because it so closely resembles the hugely successful J Series console. That was a significant factor. I knew I wanted to go digital and provide the best possible fidelity for mixing projects off of Pro Tools and other high-quality source machines."

After installing the 96-input MT into the same space where he previously had a 40-input SSL E Series, Abrash began to market Kampo's surround capabilities. "Studio C is very unique in New York, because it's a surround-ready room. There's nothing you've got to plug in or patch or anything. I've got everything from the monitor systems to the mixdown machine [Tascam DA-78, 24-bit 8-track]. One of the more exciting projects to make use of the 5.1 capabilities was the remixing of Jimi Hendrix's Isle of Wight performance for DVD. Eddie Kramer did some amazing things manipulating those old tapes to provide a rich, real-sounding concert experience. It was a thrill to witness him pull out that classic Hendrix sound, the Eddie Kramer sound."

Rounding out the control room are a Genelec 1038 surround monitoring system, Pro Tools MIX Plus, and a slew of digital outboard gear, including Sony's 777 reverb and the TC Electronic System 6000.

Kampo houses three music rooms, along with a private, producer-owned Pro Tools suite. Studio A works as a recording/mixing suite and is able to accommodate a variety of musical stylings. "We're doing a string quartet, we see alternative rock bands, so much of everything," Abrash lists. "A lot of jazz, a lot of recording. The music studio is on the second floor, and on the third floor, we have the Axiom and Studio B, which is a post-production room. You never know who you're going to bump into. We have David Byrne coming in at the same time we have Lauren Hutton doing some kind of commercial."

Despite his digital leanings, Abrash is quick to point out that clients often like the hybrid, making use of the 56-in SSL G Series for tracking and the Axiom for mixdown. "We certainly cater to both sides of the spectrum," he says. "We have a nice-sized tracking room, with classic Neve mic pre's, a Steinway piano and analog outboard gear.

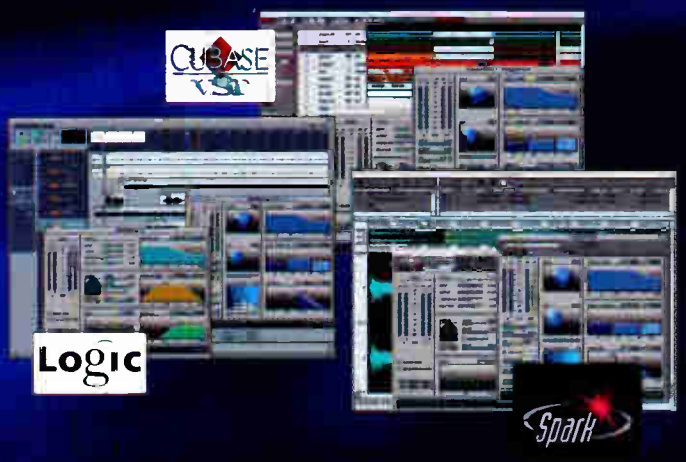
"Musicians who come through our studios always have different things to say regarding what they like about Kampo," Abrash adds. "But they all seem to be of one opinion about the relaxed, creative vibe of the place. Some things are just intangible, and I think that it is not something you can buy or sell. It's here, it's special and it's not something that we designed in. It's just part of what this has turned out to be."

For more information, visit www.kampo.com. ■

DP3
for
2001

MOTU
motu.com

CIRCLE #006 ON PRODUCT INFO CARD



Supports your recording software

Choose any VST-compatible audio recording software package, such as Logic, Spark, Cubase or Nuendo – and you will instantly be able to take advantage of **TC•POWERCORE**'s superior signal processing capabilities. What's more – SparkLe is included to get you started!

Supports any I/O card

Whether it be Direct I/O, ASIO or SoundManager – **TC•POWERCORE** will work with any audio card or system supported by the recording software.

TC Tools/96 included

At last, the renowned TC TOOLS/96 studio-quality FX package with TC MEGAREVERB, TC CHORUS/DELAY and TC EQ[Sat] Plug-Ins is accessible from within any VST-compatible record ng software. In fact, you can run all 3 TC TOOLS/96 Plug-Ins on a single **TC•POWERCORE** DSP, something previously impossible on even the fastest available CPUs!

Expand your virtual racks

Of course, **TC•POWERCORE** can run a lot more than just the included awesome TC TOOLS/96 Plug-Ins – also available:

- **TC VoiceTools**

  The voice processing solution with TC INTONATOR for realtime pitch correction and TC VOICESTRIP, the complete "channel strip" for voice recording.

- **TC MasterX 3+5**

  The TEC-Award winning 3 and 5 band mastering solution from the makers of the industry standard Finalizer mastering processor.

3RD PARTY SUPPORT

- **Open Platform**

  TC•POWERCORE is an open processing platform – many more Plug-Ins are to follow, both from TC Works and other well respected 3rd party developers (details TBA)!

Key Features

- **5 hi-end processors**
  4x 56k DSPs and 1x PowerPC
- **24/96**
  Supports processing of up to 24 bit / 96 kHz
- **TC Tools 96K included**
  Featuring TC MegaReverb, TC Chorus/Delay and TC EQSat
- **Works with any VST application**
  Compatible with Logic, Cubase, Nuendo, Spark
- **Works with all sound cards**
  Seamlessly integrates into your existing setup
- **Includes SparkLe**
  The 2-Track processing, mastering & editing software with VST Plug-In support

VST 24/96 Mac

Available from March 2001

System requirements: G3 or G4 PCI PowerMac, 128 MB RAM, MacOS 9, VST-compatible recording software and any supported sound system.

TC • POWERCORE

THE DSP TURBO FOR NATIVE RECORDING SYSTEMS

WELCOME TO ULTIMATE DSP POWER

No more problems with computer overloads whenever you're trying to run serious signal processing. **TC•POWERCORE** transforms any VST-compatible native recording software into a professional high performance audio workstation, adding incredible power to your existing production environment: it works with all sound systems and VST-capable software (like Logic, Spark or Cubase).

This is the "Turbo" you have been waiting for: Run 8 studio-quality Plug-Ins simultaneously without reducing your track count or ever worse, stealing all of the CPU's available horsepower. Of course you'll still be able to run your standard VST Plug-Ins native on top of what you're running on **TC•POWERCORE** – with no limitations as to the routing or signal path. Mix and match in any way you desire!

TC | WORKS – WE'RE IN IT FOR THE TOOLS NOT THE TOYS!

TC | WORKS
ULTIMATE SOFTWARE MACHINES

CIRCLE #007 ON PRODUCT INFO CARD

US & CANADA: TC ELECTRONIC INC. • 805.373.1928 • CALIFORNIA • US@TCWORKS.DE • WWW.TCWORKS.DE

BIGGER BYTES AND FASTER TOO

MIDI IN THE NEW MILLENNIUM, PART 2

ILLUSTRATION: DAVE EMBER

BY PAUL D. LEHRMAN

Last month I talked about some recent additions to the MIDI Specification that will help to keep it alive and relevant in the 21st century, and about the problems of running MIDI over USB, the ubiquitous connection scheme that's been replacing serial, parallel and SCSI cables over the last couple of years. If you missed that column, then it still should be on www.mixonline.com, under "Opinion."

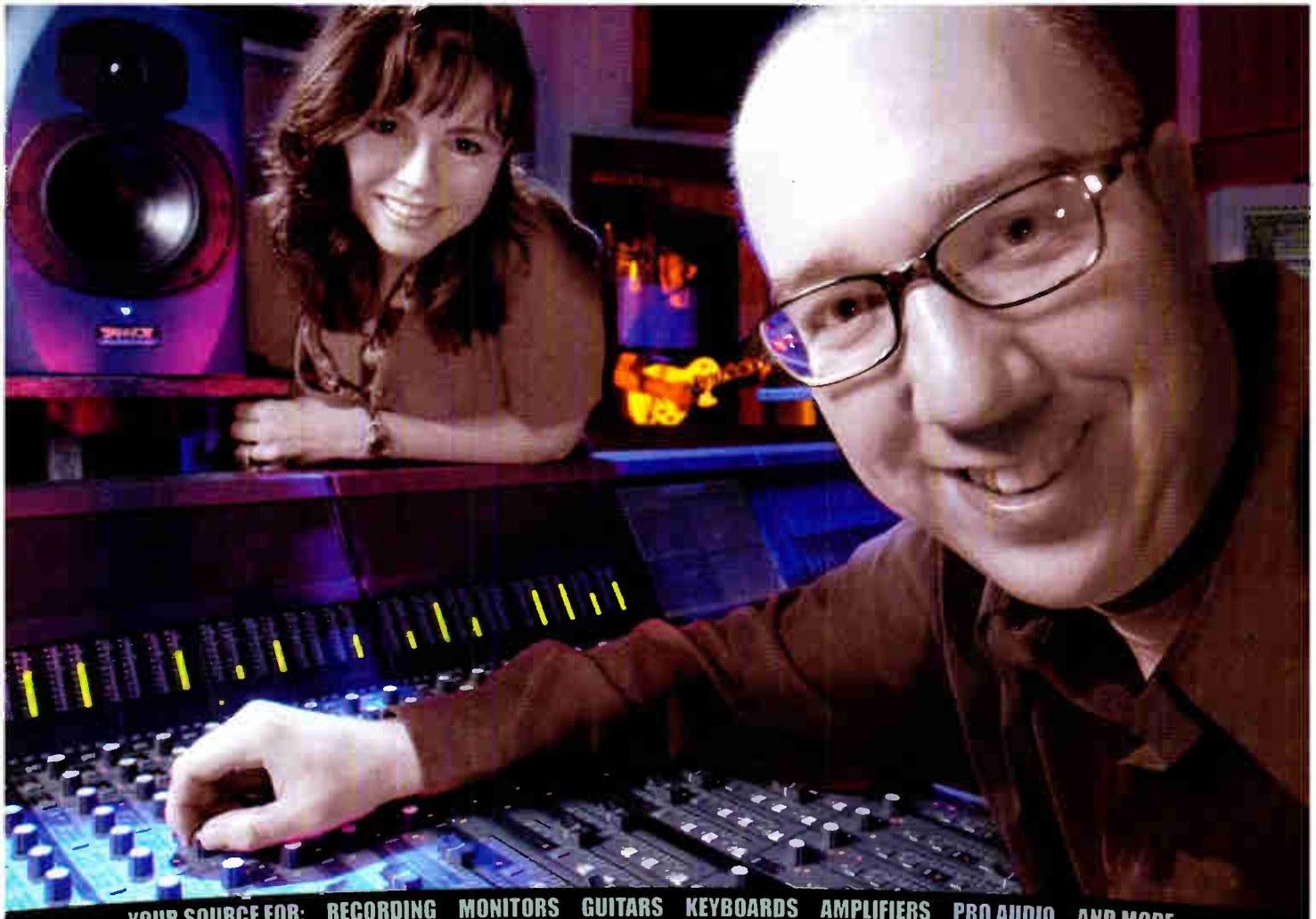
This month, I'll look at how MIDI relates to IEEE-1394, the new communications protocol that's worming its way not only into the computer world, but also into everything from video cameras to dishwashers to cars.

IEEE-1394, as everybody knows by now, was developed by Apple back in 1995 and dubbed FireWire. It was adopted by the Standards Association of the Institute of Electrical and Electronics Engineers, and thus entered the public sphere with a boring name. (Apple will license its name and logo to anyone for free, but Sony calls it "iLink," and other companies use their own monikers.)

1394 is a serial protocol that runs at speeds from 100 to 400 megabits/second, and work is currently under way (and expected to be completed in the first half of 2001) to increase the top speed to as high as 3.2 Gigabits/sec. Even better, it can support multiple data streams simultaneously, bidirectionally and running at different clock rates—so you can be sending and receiving MP3 audio, 96kHz audio, compressed and uncompressed video, and MIDI, and at the same time scanning stuff into PhotoShop, all over the same 1394 cable, without any of them getting into each other's way.

Unlike MIDI, 1394 is not free for any manufacturer to use, but the licensing terms are pretty painless: There's no association to join or dues to pay, and no requirement that Apple or anyone else must certify that a 1394 device works the way it's supposed to. There is a charge of 25 cents per device that reaches the marketplace. (But for a handful of large companies, like Sony, Toshiba, Canon and Panason-

—CONTINUED ON PAGE 209



YOUR SOURCE FOR: RECORDING MONITORS GUITARS KEYBOARDS AMPLIFIERS PRO AUDIO AND MORE

We want to help you have fun making music!

Nothing feels better than having a fine-tuned studio that responds instantly to your every creative whim. We know. We've helped over 200,000 musicians and audio professionals build recording and PA systems specifically focused around their needs. You see, we're not in the business of pushing boxes out the door. We go the extra mile with professional advice and informative publications to make sure that your gear is the best possible solution for your situation.

Give us a call today and find out how fun making music can really be.

800.222.4700
www.sweetwater.com

Sweetwater
music technology direct

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

Forget workstation.

We're talking 200-track production facility here.

system

This is where you can see what your ears have been hearing for years. View up to 200 24-bit audio tracks. Open multiple projects simultaneously. Import and export mixer settings, key commands and views. Editing and arranging are a breeze.

This is where you'll automate all your surround mixes. Use 5.1 or 7.1 or any configuration you can dream of. Change the room, change the angle, change the direction, change your thinking.

This is where you'll add your sound clips in text and numeric values. If you need a gunshot at 15:03:03, type it in and you're done. We call it an edit decision list or EDL. You can call it a godsend.

This is where you'll find a history of every move and edit you have made from a minute, to an hour, to a week ago. With unlimited undo's and redo's. Yes, its true!

This is where you'll mix your project with full automation of volume, EQ, pans, surround, effects, etc. Use supported external controllers and import and export OMF files for complete compatibility with any situation. And when you're finished, bask in the glow.

This is where you'll get effected like never before. Use over 200 VST or DirectX plug-in effects. 8 aux. sends and 4 inserts, with 4 bands of EQ on each channel, plus surround compatible mastering effects. Did you get all that? If not, you might want to read it again.

Nuendo: New thinking in professional media production systems. Nuendo frees you from the constraints of audio hardware and DSP chips by tapping into the power of today's super processors. With complete scalability, compatibility and open standards, Nuendo offers flexibility, speed, productivity and creative freedom beyond anything you have ever experienced. To find out more or to locate the Nuendo dealer nearest you, visit us at www.nuendo.com. Nuendo. New Times. New Thinking.

NUENDO

New Times.
New Thinking.

Steinberg

www.nuendo.com

www.us.steinberg.net • U.S. (818) 678-5100 • Fax: (818) 678-5199 • Fax On Demand: (800) 888-7510 • Canada: (416) 789-7100 • Fax: (416) 789-1667

CIRCLE #009 ON PRODUCT INFO CARD

TWEAKIN' AT THE TWEAKER'S BALL

OR MAYBE NOT...

Tweaking. One of the true joys of techno-dweeb living. I have tweaked junk my whole life. (Of course, any seriously dedicated heroin addict could make exactly the same claim, so maybe I had better rephrase this.) I have been disassembling gear—*all* gear—ever since I started buying gear.

To me, part of the acquisition experience, part of the reason to own anything, has always been to take it apart and see just how they did it. I admit that I have even bought stuff that I knew I would never use, just so I could see how they built it. My friends loved me—they were always getting techno-toy presents for no reason.

But it is a short path, a very short path, from looking to touching, and then a micro-path from touching to *re*-touching. So the day came when I decided that I had seen so much gear that I thought I could do it better—better than *they* had done it for sure—on just about everything I bought.

The first thing that I remember tweaking was a tiny slot car with a reed motor. We raced these as kids in Arizona, as surfing was pretty much out of the question. I took several of these marvels apart, with the pure joy of discovery and abandon that only the knowledge that I would never have to reassemble them could bring. What a feeling! The Best of Mankind's Knowledge there for the taking. The thrill of structured destruction in the name of Science without the horrible burden of damaging any life-forms (I was flunking out of biology because I refused to disembowel formaldehyde-soaked cats). It was life at its most rich.

Then, suddenly, it all changed. One day I got up off the floor, scooped up a hundred broken reeds and contact springs into my hands, and, standing tall, threw them high into the searing desert winds, as I looked up at the sky and declared my readiness to any ghost riders who might be listening. And I *was* ready. But don't do this. I had a headache for four days from looking into the sun.

And on the fifth day came a major slot car race, one that I had never won. It was 6 p.m., so I had the whole day to tweak. This was actually a pretty scary day, as it was going to be the day of reckoning, the day I found out if I had been missing something, if there might actually be a real reason that these things were only as good as they were, and I would, in fact, *not* be able to improve on them with my special little Stevie St.Croix knowledge that certainly far exceeded that of the original designers and builders.

But it was to be my day in the sun after all (as if the other day in the sun hadn't been enough). I designed several tweaks that I felt would give me the most heinous advantage in the track and implemented each. I had only a tiny track of my own, so my testing could not be in any way representative of the race ahead, and besides, I was pretty sure that a few of the tweaks were going to shorten the mechanism's life considerably. So I didn't test them; I just waited.

Race time finally came, and my heat finally came up. I put my experimental open-class Franken-Car on the track, waited for the signal and squeezed the throttle with sweaty little geek fingers. I ate every other car for dinner. It was such a slaughter that the track manager tried to figure out how to disqualify me, but to no avail, because there were simply no rules back then, other than that they had to have reed motors. I won. I won a lifetime of faith that I could, in fact, improve on almost anything I could buy. What a friggin' curse.

Then I started racing real cars, and it worked pretty much the same way. Once I had taken 20 or 30 cars apart, I started modifying the ones I raced. Then I met other wrenches that taught me more and more, and again I started winning, this time on the quarter-mile drag strip. Life was good. At that age, I could pretty much recover from a major crash in a couple of months, and the females seemed to like all the scars.

Then came music. Music is nothing *but* tweaking once you have the mechanics and theory down, so it was perfect. It became my life.

Some time later I started re-

To me, part of the acquisition experience, part of the reason to own anything, has always been to take it apart and see just how they did it. I admit that I have even bought stuff that I knew I would never use, just so I could see how they built it.

BY STEPHEN ST.CROIX

Think of it as a monkey wrench for your audio files.

Written by digital audio experts for digital audio engineers, AV*transfer*, pro-audio's ultimate file conversion utility, allows you to open, play, combine and export audio files and projects in today's leading professional formats.

With AV*transfer* you can add or extract components to or from OMF, AIFF, WAV, BWAV, discreet edit* systems, cross convert OMF versions, fix drop frame errors and change audio sample rates and bit depths. AV*transfer* reads exports from the industry's most popular professional workstations including Avid, Fairlight, Pro Tools, Lightworks and AMS Neve Audiofile.

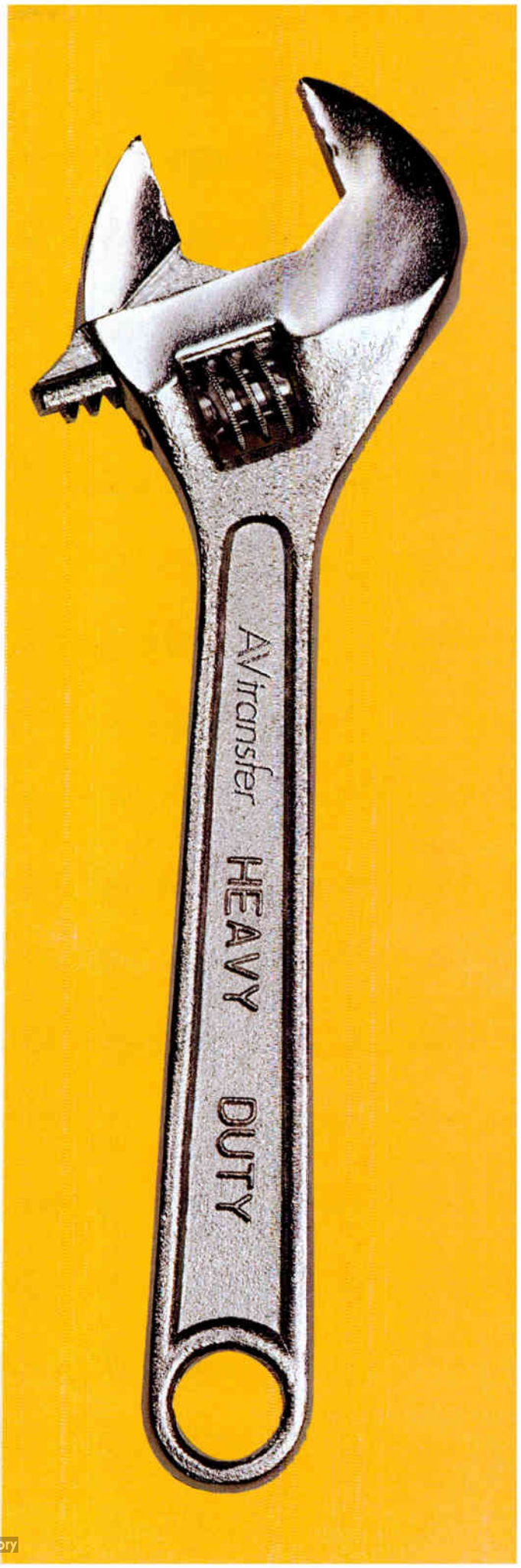
Log onto WWW.**avtransfer**.com
for a **FREE** fully functional evaluation copy.

Los Angeles (818) 487 5656
London +44 (0)20 7664 5688
Sydney +61 (2) 9557 2292

AV*transfer*

[created by DSP Media SOFTWARE DIVISION]

CIRCLE #010 ON PRODUCT INFO CARD



cording, and *this* gear needed to be tweaked big time. Every box called out to me, "Please, help me Steve! Please operate on me so that I may sing with the voice you and I know I possess inside." Now, granted, the gear pretty much stopped talking to me years later when my recreational habits changed, but I have never forgotten what it said: "I'm halfway there, and you possess the skill and knowledge to complete me. Please, give me a soul."

The gear was wrong. I could definitely hear that almost all of the gear in the studios I worked in had problems, but I did *not*, in fact, possess the wizardry to help it evolve.

But that wasn't too much of a problem once I realized that the solution, as is so often the case, lay in history. I would simply do what I had done so many times before: tear apart everything that I could get my hands on and see if I could figure out what was the difference between the gear that sounded good and the gear that sounded strangled and stressed.

And getting my hands on gear to vivisect was no problem; back then, all studio gear broke every three weeks or so. All I had to do was offer to fix it for studio time. And so the deal was struck, and so it began.

With every rogue mod, my confidence that I could make it better was reinforced. Quieter preamps on our plate, fast rail bypass caps in our console and deck, ceramic audio caps in parallel with tantalum to replace cheap-ass electrolytics. All worked, all sweet. Then months learning from the sleeper of all time—that tiny Stephens multitrack deck—led to Scully linearizer mods, Studer record EQ tweaks and trick power supply regulation schemes that made audio smoother and sweeter than we had ever thought possible. Then came Neumann first-stage mods from hell, high-slew op amps in every compressor and EQ in the place, and on and on.

Sound familiar? It should. We have all done this to some degree or another. And do you remember how long it took you to realize *why* we could do this?

I do. It slowly dawned on me that I might *not* actually be the smartest guy on the Earth, and that at least some of these engineers that created these tweakable boxes knew what they were doing. And so evolved my rules of tweaking. And yes, I present them here for your perusal.

1) A certain percentage of gear really does have stupid, or at least not-so-well-thought-out, circuit design, layout or execution. If you fix these, then they just might sing in glorious appreciation or at least in personification.

2) You can tweak for another reason. You are simply not bound by the constraints that the original manufacturer was. You do not have to worry about spending a buck fifty for a capacitor (or $45 for 30 of them) as the original builders did. With a general manufacturer's rule being that the price of parts must be marked up by a factor of six, $270 in caps isn't going to go over real well, while the idea of 30 15-cent caps is pretty easy for them to deal with.

Every box called out to me, "Please, help me Steve! Please operate on me so that I may sing with the voice you and I know I possess inside." I have never forgotten what it said: "I'm halfway there, and you possess the skill and knowledge to complete me. Please, give me a soul."

Other limitations that the creators have to cope with that you don't are worldwide electrical standards, mechanical and electronic complexity as it relates to build time, component heartiness in a world of machine-loaded and wave-soldered circuit boards, and the sheer number of different components that must be inventoried. You know that if a company makes the Furbisher 2000 Hyper-Kompressor, then they are certainly going to try to use the same op amps and pots that they stock when they design their new Deutsche-GrammaCellPhone III, even if they are not quite the best performance choices for their new jobs.

3) And, now, the final reason, the ultimate license to kill: personalization. You are free to tweak for one thing at the expense of another, while the manufacturer must ship a single unit that is safe and stable enough for everyone. For example, I have, and still use today, several ancient Rane EQs, which, with the help of Rane's very supportive president, had insanely fast op amps retrofitted, way hot ±20-volt rail conversions where ±15 should be, and super-precise, half-percent components popped into the frequency control circuitry. Why? So that I could make psychotically deep and narrow adjustable notch filters for a certain type of film restoration that I used to do. And what did I give up? Range. Stock, these boxes would sweep 20 to 20, and after my mods, they could only do 30 Hz to 7 k. But that was more than I needed, and these boxes saved me too many times to count.

Now, I know this is a bit extreme, but haven't you ever put in high-speed op amps that generated more heat than the average user might tolerate? No different.

But that brings us to today, and to both the close of the column and the close of an era.

With all the wonders that the digital age have given, do any of you miss the one it hath taken away? How do you tweak your 2000 Corvette? Or your new reverb or your DAW? Well, you have to be a certified code genius and have access to either original source code or to the world's most brilliant hacker, or, like most of us, you just give up and hope that they make the stuff go fast or sound good.

Hell, I don't even take the covers off DVD players when I buy them anymore. What's the point? I've already seen those three tiny black postage stamps with the 40 silver legs a hundred times. Sure, I know the code in them is different, but I can't see it, I can't touch it...I can't *tweak* it.

And those recipient friends? Well, they still come around, but mostly to lament the passing of the era, and so the passing of the gifts...

Be this the price of evolution? ■

SSC has left the building. He has gone out to pet his oldest Harley, perhaps even to tweak the timing just a little bit.

Euphonix TALKS WITH PHIL RAMONE

ABOUT HIS WORK ON ELTON JOHN'S 'ONE NIGHT ONLY'

The Elton John live event marked another milestone for Ramone: It was the world's first live, 96-track, 24-bit/96K recording and the first time the veteran recording console commander has deployed the Euphonix R-1 hard disk recorder

What made you decide to choose the R-1 on the final mix?

In a word: quality. We were also helped by having 96 tracks in one place, so we didn't have to worry about synchronizing the machines, it was all on the R-1

How does the R-1 compare to other recorders in the industry?

There is nothing on the market quite like it. Euphonix has created something that has the potential to enjoy a prominent place in the industry. It has a little cáche right now, and I think the quality of the Elton recording should quiet any detractors. I think every engineer in the industry should be exposed to this equipment and have a chance to work with it.

How did the R-1 compare to other recorders in the industry?

The layout of the machine was very comfortable to use and gave us a quick response. The R-1 saved us a lot of steps and undoubtedly some grief as well

PHIL RAMONE has his choice of ANY gear in the world. He chose the Euphonix R-1 96KHz/24bit digital recorder.

WHAT ARE YOU WAITING FOR?

all 96 all 24 all the time

Euphonix THE HIGH DEFINITION OF AUDIO

For the complete Phil Ramone interview go to www.euphonix.com

Headquarters	Los Angeles	New York	Nashville	London	Tokyo
Tel:(650)855 0400	Tel:(818)766 1666	Tel:(212)889 6869	Tel:(615)327 2933	Tel:(181)901 7510	Tel:(03)3288 4423
info@euphonix.com	richn@euphonix.com	info@euphonix.com	mfranklin@euphonix.com	milesr@euphonix.com	yshimizu@euphonix.com

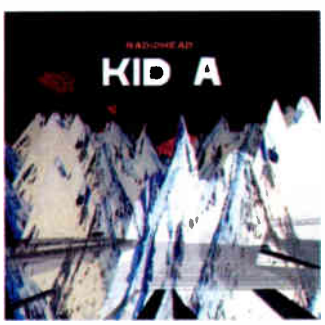
CIRCLE #014 ON PRODUCT INFO CARD

2001 GRAMMY® AWARD Nominees

FOR PRODUCTION AND ENGINEERING

With the number of Grammy Award categories increasing to a truly dizzying number this year, we thought we'd take a moment to salute some of the talented professionals nominated from the recording world, as well as honor the behind-the-scenes audio pros in the Record of the Year and Best Album categories. Additionally, special Technical Grammys are being awarded to musician/inventor/innovator Les Paul and to Digidesign (for Pro Tools).

Hats off to all of this year's nominees! We'll have more on the winners in our April issue.



RECORD OF THE YEAR
"Say My Name," Destiny's Child (Rodney Jerkins, producer; LaShawn Daniels, Brad Gilderman and Jean-Marie Horvat, engineers/mixers)

"I Try," Macy Gray (Andrew Slater, producer; Dave Way, engineer/mixer)

"Music," Madonna (Mirwais Ahmadzai and Madonna, producers)

"Bye Bye Bye," 'N Sync (Jake and Kristian Lundin, producers; Mike Tucker, engineer/mixer)

"Beautiful Day," U2 (Brian Eno and Daniel Lanois, producers; Steve Lillywhite and Richard Rainey, engineers/mixers)

ALBUM OF THE YEAR
Midnite Vultures, Beck (Beck Hansen and Dust Brothers, producers)

The Marshall Mathers LP, Eminem (Jeff Bass, Mark Bass, Dr. Dre, Eminem and the 45 King, producers; Rich Behrens, Mike Butler, Chris Conway, Rob Ebeling, Michelle Forbes, Richard Segal Huredia, Steve King, Aaron Lepley, James McCrone, Akane Nakamura and Lance Pierre, engineers/mixers)

Kid A, Radiohead (Radiohead, producer; Nigel Godrich, engineer/mixer)

You're the One, Paul Simon (Paul Simon, producer; Andy Smith, engineer/mixer)

Two Against Nature, Steely Dan (Walter Becker and Donald Fagen, producers; Phil Burnett, Roger Nichols, Dave Russell and Elliot Scheiner, engineers/mixers)

BEST ENGINEERED ALBUM, NON-CLASSICAL
Absolute Benson, George Benson (Steve Barkan, Jon Fausty. Al Schmitt and Bill Schnee, engineers)

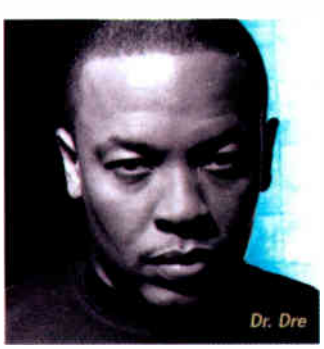
Here's To You, Charlie Brown: 50 Great Years!, David Benoit (Clark Germain and Bill Schnee, engineers)

Kid A, Radiohead (Nigel Godrich, engineer)

Oregon in Moscow, Oregon with The Moscow Tchaikovsky Symphony Orchestra (Rich Breen, engineer)

Two Against Nature, Steely Dan (Phil Burnett, Roger Nichols, Dave Russell and Elliot Scheiner, engineers)

PRODUCER OF THE YEAR, NON-CLASSICAL
Bill Bottrell: "Gotta Get Back," Shelby Lynne and *I Am Shelby Lynne*, Shelby Lynne



Dr. Dre: "B**** Please II," Eminem, featuring Dr. Dre, Snoop Dogg, Xzibit and Nate Dogg; "Chin Check," N.W.A.; *Dr. Dre – 2001*, Dr. Dre; "Hello," Ice Cube, featuring Dr. Dre and MC Ren; "I'm Back," Eminem; "Kill You," Eminem; "The Real Slim Shady," Eminem; "Remember Me?," Eminem, featuring RBX and Sticky Fingaz; and "Who Knew," Eminem.

Nigel Godrich: *Kid A*, Radiohead; and *The Man Who*, Travis.

Jimmy Jam and Terry Lewis: "The Best Man I Can Be," Ginuwine, R.L., Tyrese and Case; "Bliss," Mariah Carey; "Can't Take That Away," Mariah Carey; "Dance & Shout," Shaggy, featuring Pee Wee; "Doesn't Really Matter," Janet; "Petals," Mariah Carey; "Rainbow," Mariah Carey; "Thank God I Found You," Mariah Carey, featuring Joe and 98°; and "Vulnerability," Mariah Carey.

Matt Serletic: *The American*, Angie Aparo; "I Want You To Need Me," Celine Dion; *Mad Season*, Matchbox Twenty; and "Need To Be Next To You," Leigh Nash.

REMIXER OF THE YEAR
Deep Dish: "Barbarella," Sven Vath; "Mohammad is Jesus," Deep Dish; "Music," Madonna; "Rise" (Deep Dish Hi-Rise remix), Gabrielle; "Sexual" (Deep Dish Cheez-Whiz remix), Amber; and "True" (Deep Dish Poof Daddy remix), Morel.

Hex Hector: "Feelin' So Good," Jennifer Lopez; "Give Me Just One Night (Una Noche)," 98°; "I Learned From the Best," Whitney Houston; "I Turn To You," Melanie C; "Music," Madonna; and "Spanish Guitar," Toni Braxton.

Maurice Joshua: "Independent Women," Destiny's Child; "It's Gonna Be Me," 'N Sync; "Jumpin Jumpin," Destiny's Child; "Shackles (Praise You)," Mary Mary.

Peter Rauhofer (Club 69): "Greatest Love of All," Whitney Houston; "He Wasn't Man Enough," Toni Braxton; "I Don't Know What You Want," Pet Shop Boys; "I Think I'm in Love," Jessica Simpson; "Take a Picture," Filter.

Richard Humpty Vission: "Alright," Devone; "American Pie," Madonna; "Everybody's Free 2000," Richard Humpty Vission, featuring Rozalla.

BEST ENGINEERED ALBUM, CLASSICAL
Bach: Mass in B Minor, Martin Pearlman (Jack Renner, engineer)

Bolero! (Works of Kabalevsky, Deems Taylor, Liszt, etc.), Eiji Oue (Keith O. Johnson, engineer)

Dvorak: Requiem, Op. 89, Sym. No. 9, Op. 95, Zdenek Macal (John Eargle, engineer)

Gluck: Iphigenie en Tauride, Martin Pearlman (Jack Renner, engineer)

Mahler: Sym. No. 1 "Titan," Yoel Levi (Michael Bishop, engineer)

PRODUCER OF THE YEAR, CLASSICAL
Manfred Eicher: *Bartok: Concerto For Viola and Orchestra; Dowland: In Darkness Let Me Dwell; Goebbels: Surrogate Cities; Schubert: Fantasis D760 and D934*; and *Tormis: Litany to Thunder.*

Steven Epstein: *Appalachian Journey; Corea.Concerto; Corigliano: Phantasmagoria; Dvorak: Piano Quartet Number 2* and others; and *Songs Without Words* (Works of Mendelssohn, Schubert/Liszt, Bach/Busoni).

John Fraser: *Berg: Wozzeck; Con Amore-Italian Opera Arias; Mozart/Debussy/Takemitsu; Sento Amor* (Works of Handel, Gluck, Mozart).

Thomas Frost: *Barber/Meyer: Violin Concertos ; Mahler: Das Lied von der Erde; Rachmaninoff: Piano Concerto Number 3*; and *Sibelius/Goldmark: Violin Concertos.*

James Mallinson: *Bach: Mass in B Minor; Brahms: Serenades Numbers 1 and 2; Gluck: Iphigenie en Tauride; Mozart: The Abduction from the Seraglio, K. 384.*

High Resolution Recording with Total Confidence. Introducing the DA-98HR.

The **DA-98HR** represents the pinnacle of evolution for TASCAM's world-renowned DTRS modular digital multitrack recorders. It combines all the advantages you've come to expect from TASCAM digital recorders with new features and high resolution 24-bit sonic capabilities.

As you're creating a master archive copy or tracking a crucial performance, the DA-98HR's confidence monitoring feature allows you to make sure that the audio you hear is exactly what's being printed to tape. Fully compatible with recordings from earlier DTRS machines such as the DA-88, the DA-98HR also offers special high sampling rates, allowing for four tracks of 96kHz recording or even two tracks of stunning 192kHz audio fidelity.

Integrating the DA-98HR in professional studios is simple, with 9-pin RS-422 serial control and a parallel port at your disposal. Standard digital interfacing via TDIF and AES/EBU and optional analog interfacing via the IF-AN98HR module makes the DA-98HR an easy fit into your facility. Its new operating system offers special one-touch commands to make sessions quicker and more efficient.

The ultimate modular tape-based machine for acquisition, delivery and archiving of high-resolution digital audio, the DA-98HR should be your first choice for every application in commercial recording studios and post production facilities. See www.tascam.com for all the information on the only professional modular digital multitrack you can use with confidence for your most important work.

DA 98HR HIGH RESOLUTION MODULAR DIGITAL MULTITRACK RECORDER

The DA-98HR easily integrates into your studio with Time Code in and out, an RS-422 (9-pin) serial port, Video Sync in and thru, Word Sync in, out and thru, 8-channel AES/EBU input and output, MIDI in, out and thru, a parallel port, remote/sync input, sync output, TDIF digital interface and meter unit connection. An option slot for analog interfacing via the IF-AN98HR module is also available.

TEAC America, Inc., 7733 Telegraph Road, Montebello, CA 90640
323-726-0303 www.tascam.com

TASCAM
a whole world of recording

CIRCLE #015 ON PRODUCT INFO CARD

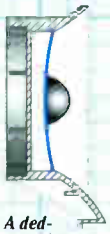
It *looks* like a regular system. It *sounds* like amplified reality.

The technology behind the SR1530 Active 3-Way speaker system and SR-VLZ® Pro Series mixers.

Until the SR1530, there's never been a three-way active processed sound reinforcement speaker in this compact, fit-in-a-van size. In fact, as far as we know, there's never been another compact, active three-way speaker *period*.

And until the SR24•4-VLZ® PRO and 32•4-VLZ® PRO, there have never been compact SR mixers with mic preamplifiers this good.

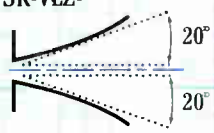
Put them together and you have a new level of sound system accuracy.



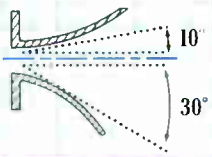
A dedicated horn-loaded 6-inch transducer refines SR1530 midrange.

If you're the non-verbal, gotta-hear-it-to-believe-it type, audition the SR-VLZ-PRO/SR1530 combo at your nearest Mackie dealer. We think you'll agree that it definitely walks the walk.

If you're more of the tech type, read on while we talk up why this system re-defines how good a medium-sized PA can sound.



Symmetrical horn



Asymmetrical Optimized Wavefront™ horn

It's a three-way, not a two-way system.

Midrange is where fundamental vocal and instrumental frequencies are. A two-way system has to compromise by reproducing this range through a too-big low-frequency transducer and a too-small high frequency transducer.

Our three-way system has a specialized transducer with separate horn that's sized perfectly for handling vocals and instruments.

When you listen to the SR1530, you hear the difference right away. Midrange sounds more accurate and natural especially at really high SPLs.

It's internally tri-amplified.

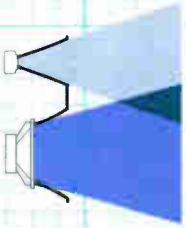
For clear definition, tight transient response and hard-hitting bass, nothing beats application-specific amplifiers for each transducer. Trouble is, until now that's required an outboard electronic crossover, three separate power amps and a lot of speaker cable.

The SR1530 has two 100-watt and one 300-watt internal amps, each optimized for an individual transducer. Moreover, we've built in electronic parametric equalization and time correction for accurate frequency response and phase alignment.

Optimized Wavefront Horn.

Generating accurate high and midrange frequencies is only part of the story. They must be delivered to your audience in the right amounts and in the same place at the same time.

Instead of using separate horns, we created a one-piece 90°x 40° Optimized Wavefront system that combines high and midrange horns. Unlike conventional horns, which are symmetrical, the high frequency section of the SR1530's horn is shaped so that more of its output is directed down into the 6-inch midrange's dispersion pattern. This creates a focused, single wavefront with excellent phase and power response characteristics. Your whole audience gets even frequency balance, instead of lots of midrange up front and too much high end in the back.



Conventional horns fire straight out. The quality of sound depends on where you're sitting in the audience.

Optimized Wavefront™ system mixes high and midrange output for better detail and vocal intelligibility everywhere.

Inside/Outside voice coil.

Because we make our own transducers, we've been able to add technology that gives the SR1530's low frequency transducer (woofer) added thermal protection.

Conventional voice coils have two

layers of wire wound onto the outside of a voice coil former. When heat builds up, the wire and former expand at different rates, which can lead to catastrophic failure.

The SR1530's LF transducer voice coil has one layer of wire on the outside and another on the inside. Both make full contact with the air, transferring heat to both surfaces of the surrounding magnet structure. Maximum cooling takes place...and the voice coil former is forced to expand at the same rate as the wire, relieving stress and preventing separation.

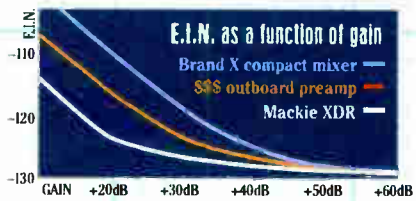
Conventional voice coil (Burnus Outus Potentialia)

Inside/Outside voice coil (Coolus Cucumberous)

XDR™, the best mic preamps ever offered on a compact SR mixer.

With a speaker system as accurate as the SR1530, you can take maximum advantage of the premium, eXtended Dynamic Range mic preamps on our new SR24•4-VLZ PRO and SR32•4-VLZ PRO sound reinforcement mixers.

We spent over two years creating the first mixer mic preamp with specs that meet or beat those of mega-expensive esoteric outboard microphone preamplifiers. For example 0.0007% Total Harmonic Distortion, and frequency bandwidth from 5Hz to 100kHz ±1dB. At real-world gain settings (0 to +30dB), XDR preamps are capable of extracting more detail and better sound out of any microphone — including the dynamic type often used on stage.



And, as the name implies, XDR mic preamps have extended dynamic range to handle screaming vocalists or close-miked drum kits. Plus a full 60dB of gain to boost weak inputs without adding extra noise.

Even more live sound benefits.

Many conventional mic preamps deliver a different frequency response when presented with a 50-ohm load than with a 600-ohm load. Our XDR design is *impedance-independent*. In basic terms, this means that no matter what the combined impedance load of the mic and cable are, you'll get the same frequency response at the mixer. And, XDR mic preamps have the best RFI (radio frequency interference) rejection of any compact mixer brand. So you won't pick up stray signals or background noise when you use long cable runs.

Is your band worth it?

We'll be honest. The SR1530/SR-VLZ PRO speaker/mixer combo isn't the lowest-priced SR system you'll find in a music store (although it's far less money than a comparable tri-amplified passive system). We designed the SR1530 and SR-VLZ PRO Series mixers for musicians who want to sound their best at up to 126dB SPL. If you fit in this category, call toll-free or visit our web site for more info. Or better yet, visit a Mackie dealer and hear amplified reality.

The SR1530 Active 3-Way:

■ Linear response from 45Hz to 18kHz ■ Total of 500 actual watts RMS delivered to internal transducers ■ Electronic EQ for flat frequency response ■ Time correction for accurate phase alignment ■ Optimized Wavefront™ high/mid horn system ■ RCF Precision™ transducers: 15-inch LF transducer with Inside/Outside heat-resistant voice coil and high-flux magnetic circuit ■ 6-inch horn-loaded midrange ■ 1-inch exit HF compression driver ■ Trapezoidal Baltic Birch plywood enclosure with rugged molded resin endcaps ■ Polymer-coated steel grille ■ Weight-balanced with side and top handles for easy carry and set-up ■

SR24•4-VLZ PRO & SR32•4-VLZ PRO:

■ 24•4: 20 mono channels., 2 stereo channels, 20 XDR mic preamps ■ 32•4: 28 mono channels, 2 stereo channels, 28 XDR mic preamps ■ Both: 4-bus design ■ New high-performance 2086 op-amps ■ 6 aux sends per channel ■ 3-band EQ w/swept mid & low cut filters on mono channels ■ 4-band fixed EQ on stereo channels ■ Mute, solo, signal present & OL LEDs on every channel ■ 4 stereo aux returns with EFX to Monitor feature ■ Separate Talkback section with extra mic preamp ■ Double-bussed sub outs for easy studio multi-tracking ■

MACKIE

www.mackie.com • 800.258.6883

Made by Mackies in Woodinville, USA and Reggio Emilia, Italy.

CIRCLE #016 ON PRODUCT INFO CARD

It's a museum! It's an interactive

Experience Music Project

Milestones Gallery

multimedia center! it's a research facility!

by Scott Colburn

Mix takes you on an audio-oriented tour of Seattle's latest wonder

ONCE UPON A TIME, in the Queen Anne section of Seattle, there was a Flintstone-esque, stucco-encrusted building which the locals referred to as "The Blob." It housed a decent enough Greek restaurant, but the main attraction was the innovative, if not cartoonish, melted pudding structure. Alas, the restaurant closed in the mid-'90s, and the building was demolished soon thereafter. Yet another of Seattle's wonderful little oddities was lost forever.

Then, in June of 1997, the ground swelled again, and out from the great maw of Mother Earth was born a second, grander, shinier and perhaps more appealing "blob," a mere 10 blocks from the original, plainer blob's former location. "What the hell is that?" someone asked on the bus. "That's the new Jimi Hendrix Museum," someone else replied. Then, silence. That was three years ago.

The second floor balcony, overlooking the lobby and store

Kiosk display on the history of the guitar

An aerial view of the Gehry-designed building

Now, at long last, Seattle boasts a brand new oddity—the Experience Music Project (EMP). Within 35,000 square feet of neo-modern sculpted architecture at the base of one of Seattle's most recognized and celebrated landmarks, the Space Needle, this blob forgoes dolmas and flaming cheeses to serve up a healthy dose of good ol' rock 'n' roll. EMP's mission statement reads, "EMP celebrates and explores creativity and innovation as expressed through American popular music and exemplified by rock 'n' roll," and the contents within this odd structure bear this intent.

EMP is the brainchild of Microsoft co-founder (and musician) Paul Allen and Jody Allen Patton. Frank O. Gehry and Associates, of Santa Monica, Calif., designed the building, which is composed of formed steel 85 feet high at its highest point, 210 feet wide and 360 feet long with 140,000 square feet of floor space. To fill this vast amount of space,

The Guitar Gallery includes Tampa Red's National steel guitar (1928), a Gibson Flying V prototype (1957) and Roger McGuinn's 12-string Rickenbacker (1964).

PHOTO RICHARD BROWN

SOME COLLECTION HIGHLIGHTS

Guitar Gallery: Tampa Red's National steel guitar, 1928; Rickenbacker "Frying Pan" electric lap steel guitar, 1934; Seattle-made Audiovox electric lap steel guitar, 1935; Gibson's original R&D experimental guitar, 1935; Audiovox "Bass Fiddle" (the world's first electric bass), 1936; the earliest known K&F lap steel made by Leo Fender, circa 1945; ultrarare, handmade Bigsby electric solid-body guitar, circa 1953; Gibson Flying V prototype, 1957; Rickenbacker 12-string, formerly owned by Roger McGuinn of The Byrds, 1964; Parker Fly state-of-the-art guitar (the first off the assembly line in Y2K), 2000.

Northwest Passage: Quincy Jones' original trumpet from his Seattle days, 1940s; Ray Charles' debut recording, "Confession Blues," recorded in Seattle, 1948; The Fleetwoods' Gold Record award for "Come Softly to Me," 1959; The Kingsmen's original Stratocaster guitar used on "Louie Louie," 1962; The FBI's file investigating lyrics of "Louie Louie," mid-1960s; Paul Revere & The Raiders' stage uniforms and instruments, circa 1965, Heart's stage apparel and instruments, circa 1970s; Queensryche's stage apparel, guitars and drums, 1980s-90s; song lyrics handwritten by Nirvana's Kurt Cobain, circa 1988; song lyrics handwritten by Chris Cornell of Soundgarden, circa 1988; song lyrics handwritten by The Presidents of the United States of America, 1995.

Hendrix Gallery: Signed contract for Woodstock rock festival performance, July 17, 1969; Fender Stratocaster played by Hendrix at Woodstock, August 18, 1969; felt hat owned and worn by Hendrix, kimono worn by Hendrix at the Newport Pop Festival, Northridge, Calif., June 1969; orange, floral, velvet jacket owned by Hendrix, late 1967; Fender Stratocaster guitar fragments smashed and burned by Hendrix at the Monterey International Pop Festival, June 1967; *Electric Ladyland* lyric notebook handwritten by Hendrix, 1968.

Roots of Rock 'n' Roll: Southern Jumbo Gibson owned by Hank Williams, early 1950s; Wurlitzer Model 950 Jukebox, 1942; Chuck Berry's Gibson ES-355, early 1970s; Elvis Presley's black leather jacket, early 1960s; Fred Maddox's acoustic bass, 1950s; Big Jay McNeely's tenor saxophone, 1940s; Muddy Waters' guitar, 1960s; Bo Diddley's guitar, 1956; John Lee Hooker's guitar, circa 1959.

Rock's Next Generation: Bob Dylan's harmonica and acoustic guitar used during his early years on the folk circuit, 1960-61; floral bell-bottom pants owned and worn by Janis Joplin, circa 1970; original artwork for Big Brother & The Holding Company's *Cheap Thrills* album, by R. Crumb, 1968; more than 3,000 West Coast punk posters, 'zines and singles; the Grant Hart archive of Husker Du posters, artwork and promotional materials; original artifacts, photos and video from legendary L.A. punk club The Masque; Grandmaster Flash's Technics SL-200 turntables, early 1980s; stage apparel worn by Afrika Bambaataa, Grandmaster Flash & The Furious Five, the Fearless Four, the Cold Crush Brothers, The X-Clan, Snoop Dogg and Notorious B.I.G.; handwritten lyrics by Tupac Shakur. *—Scott Colburn*

IF YOU COULD ONLY HAVE ONE MICROPHONE...

The popularity of the C414 B/ULS remains an enigma. Historians boast that in the last decade the C414 B/ULS has contributed to more #1 selling records than any other microphone in existence. From Barcelona to Rome. From Paris to New York, the C414 B/ULS can be found in almost every professional recording studio. The majority of world-class studios like *The Hit Factory* in New York, have at least 10. Purists have aptly nicknamed the C414 B/ULS "The Chameleon." A master- piece of Austrian technological know-how and precise crafts- manship that knows no boundaries or outer limits. Perfectly suited to any genre of music or instrumentation, the C 414 B/ULS delivers what the world hears over and over and over...

C414 B/ULS

THE MOST POPULAR MICROPHONE IN THE FREE WORLD

CIRCLE #017 ON PRODUCT INFO CARD

AKG

PHOTO LARA SWIMMER

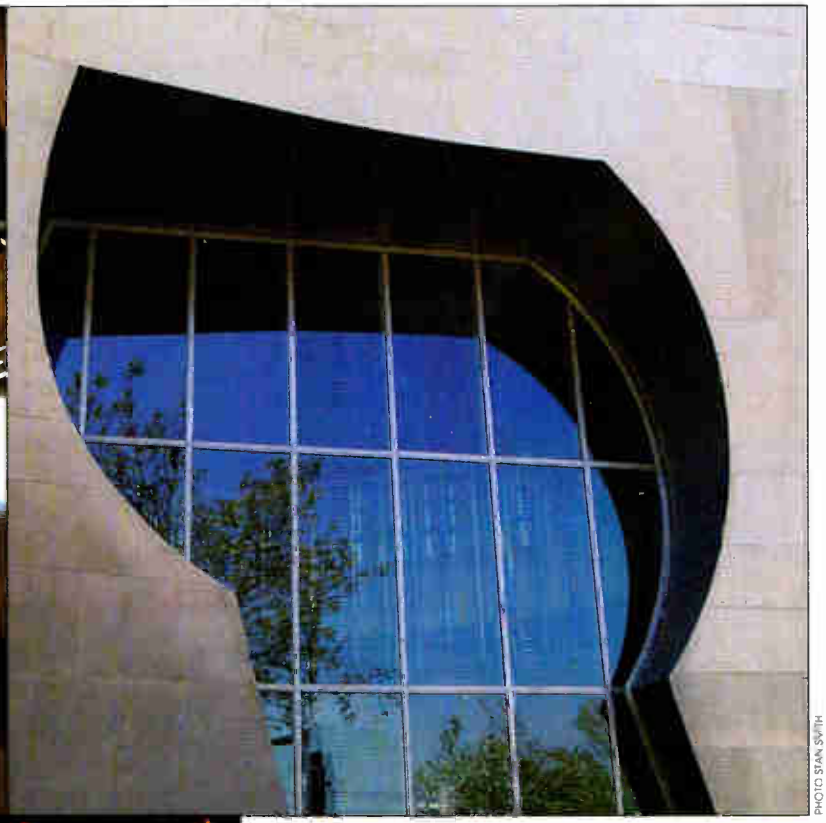


PHOTO STAN SMITH

PHOTO COURTESY OF EXPERIENCE MUSIC PROJECT

Left: A scene from the Funk Blast "ride" through the history of funk music

EMP has amassed over 80,000 rock 'n' roll artifacts that span a range from one of the first electric guitars to handwritten song lyrics to historical pieces of recording equipment. I am told there isn't a single right angle within the structure. Coming from the firm that designed similarly bizarre-looking, but strangely beautiful, art museums in Malibu and Bilbao, Spain, this is not too surprising.

Greeting the visitor at EMP's entrance is—what else?—loud rock music, which creates the feeling of attending an already-in-progress concert. After purchasing our entrance tickets ($20), we proceeded to the soul of the building, appropriately named The Sky Church. Magnificent! An oval room spanned by 85-foot video screens that continuously project MPEG-2 video with surround sound, the atmosphere is completed by an automated light show of grand proportions. The scene was so spectacular I forgot I was there only to pick up my Museum Exhibit Guide (MEG). This is the visitor's first real glimpse at the intricate network of digital multimedia servers EMP uses. The entire museum currently uses 85 AV outputs, streaming 15-mbits/sec video and 26 channels of audio, feeding 75 speakers for a stunning surround sound experience. At the very heart of this network are broadcast-quality audio and video servers, all of which are PC-based systems containing hours of

CIRCLE #018 ON PRODUCT INFO CARD

PHOTO SEAN SMITH

PHOTO TIM STREETPORTER

Above: The Sound Lab kiosk
Right: The Roots and Branches sculpture by Trimpin

high-quality video and real-time MPEG-2 encoding capabilities. These servers digitally transmit AES audio and 601 video to the entire EMP cable infrastructure.

The audio signal chain for the entire museum is based around a SeaChange RAID system that is capable of storing 50 hours of 24mbps MPEG files, or an ENCO Audio Server. The ENCO audio server is a hard disk-based multitrack record and playback device. From there, some signals go to a PESA Router before hopping onto a QSC Rave system, which is used to multiplex the audio channels through an Ethernet backbone. When the audio exits the Ethernet backbone, the signal hits a Harmon BSS DSP module where the stereo audio is mixed down to mono and fed to one port for the JBL Exhibit Audio speaker. In addition, the stereo feed is sent to the Sennheiser transmitters, which are then received by the Museum Exhibit Guide (MEG) and JBL speaker systems. Whew!

EMP's MEGs utilize the Microsoft Windows CE operating system with a handheld interface and a pair of headphones. A 6-gig hard drive—worn across the shoulder—is capable of storing 20 or more hours of CD-quality audio. This audio content enriches the EMP by giving visitors personalized access to audio information about a particular gallery, exhibit or artifact. Items of particular interest can be bookmarked for future reference in the Digital Lab or via www.emplive.com.

At various exhibits are large guitar picks with headphone icons, at which visitors can

Finally, a machine that does everything but deliver your demo to the A&R guys.

MasterLink ML-9600™. Think of it as a complete mastering house in a box. The ultimate do-it-yourself mixing and mastering system, with features like advanced 24-bit/96kHz hard-disk recording. Built-in editing and finishing tools. And the ability to burn your choice of industry-standard Red Book or state-of-the-art CD24™ formats. Whether you're cutting a new demo, or releasing your latest hot tracks to your adoring fans. And all wrapped up in one hot little package – yet priced so low, the question isn't whether you can afford it – but how can you possibly go on living without one? So don't wait. Call 800-5-ALESIS or visit www.alesis.com today. Or better yet, just get off your musically inclined little butt and buy one. After all, it's only your career we're talking about here.

ALESIS

CIRCLE #019 ON PRODUCT INFO CARD

PHOTO RICHARD BROWN

aim their handheld MEGs, press a button and download information onto a screen that can then be played back on the visitor's headphones. This technology utilizes 128kbps MP3s. In the future, the MEG may also include images or short video displays. The icons on the display cases do not transmit the information, per se, but are merely replacements for menu-driven access to the database that is carried over the shoulder.

There are also video monitors sprinkled about the museum that broadcast video related to the accompanying displays. Sound for these displays comes from a mono speaker system that hangs directly above the video monitor and is enclosed in a column that serves to direct sound down to the viewer and provide isolation between this direct sound and the din of the surrounding museum and its occupants. This method is quite effective; however, EMP is currently working with Sennheiser to

Left: The Hendrix Gallery showing his Fender Stratocaster played at Woodstock in addition to his Electric Ladyland lyric notebook from 1968 and kimono worn at Newport Pop Festival, 1969.

MILESTONES PHOTO STAN SMITH

PHOTO TIM STREETPORTER

Above: The Milestones Gallery focuses on specific innovators who have shaped American popular music, from the 1940s to the present.

Left: The Northwest Passage gallery, showing a progression from Quincy Jones' Seattle days in the 1940s to handwritten song lyrics by Nirvana's Kurt Cobain, circa 1988.

develop a method of transmitting the sound from the video displays to the handheld MEG system so that appropriate audio information at the different stations can be delivered via headphones and the sound tube, simultaneously.

After a quick lesson on how to use the handheld MEGs, visitors encounter a central area commanded by an untitled tree sculpture created by Trimpin. This piece is composed of 500 guitars, and the music made by the individual guitars is pumped into the surrounding area, The Crossroads. Standing two-stories tall, this sculpture dominates the center of the museum; the exhibit rooms branch off from this.

Current exhibits include:

"Guitar Gallery: The Quest for Volume" displays 55 guitars chronicling the history of the electric guitar. This installation features an Italian guitar from the 1770s, a 1936 Audiovox Bass fiddle (the first electric bass ever made, which just happened to be manufactured in Seattle) and celebrates such guitar innovators as Orville Gibson, Leo Fender and Les Paul.

"Northwest Passage" explores the history of rock music in the Northwest, featuring a display on the race for fame between Paul Revere & The Raiders and The Kingsmen. Both bands hailed from Portland and both recorded "Louie Louie." One of

them wore silly suits and had a TV show. Not surprisingly, rock superstars such as Heart, Queensryche and Nirvana are displayed prominently.

It's no secret that Paul Allen is a huge Jimi Hendrix fan. Allen's personal collection of Hendrix memorabilia is displayed in the Jimi Hendrix Gallery, and includes a Jimi Hendrix Experience stage setup complete with drum kit, amps, bass, guitar and an outfit worn by Hendrix. *Mix* readers will be delighted to glimpse one of the custom-made Datamix consoles from Hendrix's original Electric Lady studio.

"Milestones" covers the history of rock from 1940 to the present. The focus of this exhibit is on three key innovators—Bob Dylan, Eric Clapton and Janis Joplin—but every genre reaps its own, including punk and rap, and I was particularly pleased to see an acrylic Dan Armstrong guitar used by Greg Ginn of Black Flag included in the exhibit.

"Funk Blast" is an amusement park-style "ride" using a programmable hydraulic seating area enhanced by a widescreen video, which creates the feeling of catapulting through time tunnels to witness funk music masters in motion.

My favorite gallery was the "Sound Lab"—a technical achievement of the highest order, thanks to Andrea Weatherhead (director of Interactive Development). Sound Lab exhibits are unique in their nontraditional use of MIDI, of musical instruments as input/output devices and what EMP calls "electromechanical interactives" to create a musical experience that immerses the visitor in the music-making process. Featuring the new E-mu APS soundcards to provide grander acoustic sounds triggered by MIDI was a great idea, because the soundcards often replace the need for sound modules, allowing for better use of the gallery space. In Sound Lab's main room are several kiosks where visitors can learn to play a guitar, keyboard or drums, and EMP uses MIDI to develop connections between the PCs and the instruments. As the PC "talks" to an instrument, it can judge whether or not the visitor has hit the right note. If not on key, the PC provides more practice time and will play an example over again for the "learner." If correct notes are played, the PC moves appropriately forward. The novice "musicians" around me were having a blast!

The "Cross Jam" feature in the musical instrument platforms function via MIDI, as well. Three instruments are routed through a Yamaha O1V controllable mixer, allowing visitors to hear the other instruments in their area, and enabling them to play together as a "band." A touchscreen sends MIDI information via the PC to the mixer so that visitors can adjust the levels of the other instruments at will.

PHOTO COURTESY EXPERIENCE MUSIC PROJECT

More fun with Funk Blast

Each kiosk is equipped with four JBL Control Is connected to a Spatializer to create a surround sound effect. This includes a Bass Shaker instead of a subwoofer—a technology that actually shakes the floor so the user feels the bass instead of projecting it audibly. A problem with acoustic isolation was solved by placing the monitors within 12 inches of the listener's ears and using the Bass Shaker system to control the overall volume within the Sound Lab. Each kiosk is surrounded by several tall, acoustic panels, which aid in overall sound isolation.

If a visitor wants a more in-depth look at a particular instrument, a practice room awaits them on the perimeter of the Sound Lab. Wenger Corporation provided sound-isolated practice rooms equipped with the Lexicon Acoustic Reinforcement and Enhancement System (LARES). Wenger's system—a technology developed in association with the LARES group at Lexicon—includes microphones and speakers, which are embedded in the surrounding walls. Acoustical events within the room are fed into the LARES processor, driven by patented algorithms, and returned to the room as ambient sound energy. The net result is that patrons hear all the sounds they make, as if within a much larger room—an auditorium or arena, perhaps. But the real wonder of the Wenger/LARES system is the total lack of audio feed-

back. Normally, putting an amplified microphone by a speaker and adding a good dose of reverb is a recipe for pain. One of this technology's patents deals with the way feedback is eliminated before it happens without audibly changing the pitch characteristics of the source or ambient signals. This is accomplished by what LARES calls "Time-Variant Gain Before Feedback"—delaying the outputs randomly and independently over microseconds without changing the pitch, which interacts with the speakers, thus providing changeable acoustics in the room (i.e., reverb).

Each booth is acoustically isolated, with turned, low-force air conditioning attached to each room, S-shaped conduit and junction boxes for wiring, and 4-inch walls with steel plates on either side lined with sheet rock and heavy, acoustical fiberglass. This allows users to do whatever they want, as loud as they want within the booth (perfect for any energetic 13-year-old with flames in their eyes).

One can imagine that with this kind of isolation, museum patrons could completely lose themselves in the iso booth. To keep the crowds flowing, however, Digital Harmony—the company that created the MIDI Toolbox—designed a timer: When a visitor enters a soundproof room, the countdown begins. Once the allotted time is up, MIDI cuts the audio, thereby notifying the visitor that his/her time in rock heaven is over. This benefits other visitors, as well, as they can quickly assess how long their wait will be before it's their turn to play! We really should have had these things on the school playground when I was a kid.

Short lessons on how to play a particular instrument are given inside each booth. For example, some rooms contain modified electric Optech guitars with LEDs on the fretboard to facilitate proper finger positioning, and an interactive sound and visual tutorial guides the lesson. This is a great system for players of any experience level. For those of us who already know how to play, another guitar with an amp is available in the rooms so visitors can strap on and start jamming with various genres of prerecorded music. Both guitars are active, allowing for two to play together, if desired.

We audio engineers will gravitate toward the mixing room, which features a Mackie console, JBL Control 28s and a flat-screen computer. An interactive video display teaches recording through a simple, yet visually stimulating, tutorial on how recording consoles work. Of course, if you already know how to drive a console, you can get right to the mix—the Eurythmics' "Sweet Dreams" in its original 8-track glory!

When the day is done and your MEG has been returned, any bookmarks you have loaded can be saved to EMP's Web site for further exploration in either the Compaq Digital Lab or via the Web utilizing your ticket number. EMPlive.com is an extension of the Project to the rest of the world and accesses even more information about particular display items, as well as full-length songs and digital photos of items from the various collections.

All said, the Experience Music Project provides a multitude of unique and exciting experiences for everyone from the novice to the expert. Kids love it, teens love it, even Grandma will love it—well, maybe. Visit the Web site to see what awaits you. ■

Scott Colburn is secretly producing some of the best music Seattle has to offer. Check out his Web site at www.gravelvoice.com.

24 TRACK COMPLETE SYSTEM

AWARD WINNING SOUND

24-7 RELIABILITY

EASY TO USE

$4,995*

- Fully compatible with RADAR® I and RADAR® II
- 192kHz recording engine
- Integrated 100-BaseT Ethernet for networking
- Optional full-function, professional remote controllers
- No external computer required
- Graphic user interface and wave-form display
- Dual platform, real-time BeOS® operating system
- Integrated digital I/O
- Control RADAR 24® from your MAC® or PC
- Machine control (9-pin serial and MIDI)
- DVD-RAM or tape back-up options available
- Full timecode sync (SMPTE, EBU and MIDI)
- RADAR 24® is Soundmaster® compatible
- More options available online @ www.recordingthe world.com

TEC
TECHNICAL EXCELLENCE & CREATIVITY
1999
Winner
RADAR II

PAR

www.recordingtheworld.com 1 800 776-1356

RADAR

TWENTY FOUR

Available today starting at

$4,995*

Get more information or buy online at www.recordingtheworld.com or call 1 800 776-1356

The Way it iZ

The people at iZ Technology invented, developed and have always manufactured the RADAR® product line.

RADAR® was launched in 1992 by our team at iZ and was later distributed by Otari® Corporation. Now, Otari®'s distribution license has expired.

Our first goal is to have a direct relationship with RADAR® users worldwide. We are a group of professionals who have been devoted to RADAR® since we pioneered 24 track digital recording. We are committed to providing RADAR® users with a support structure that we believe will become legendary.

By adopting an industry leading direct sales, e-business model, we can now offer the award winning RADAR® 24's unequalled sound quality, reliability and ease of use for only $4,995. This price includes the worlds first multi-track 192kHz recording engine, an enhanced graphics interface and the revolutionary BeOs® operating system.

Our award winning, third generation RADAR® 24, iz a manifestation of our ongoing passion to create visionary audio products.

iZ technology
izcorp.com

*Price is subject to change without notice. Shipping and applicable taxes extra. The above trademarks are registered trademarks of their respective owners.

Sound for Playstation2

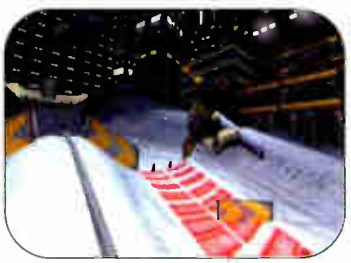
New Platform for Tried-and-True Techniques

by Philip De Lancie

Before the new Playstation2 game console was even on sale in the U.S., it was already clear that Sony had a hit on its hands. People camped out overnight to be first in line for PS2s, and sold-out retailers were back-ordered for months. Following in the footsteps of the original Playstation, which knocked Nintendo off the top of the game-system heap, PS2 was an instant success.

Part of PS2's appeal derives from the fact that it launched with solid support from game publishers. As many as 26 titles were available at launch time, with more than 50 scheduled for release in time for the recent holiday season.

Another element is the technology Sony has packed into the machine. PS2 sports a new central processor, dubbed the "Emotion Engine," that Sony says is capable of peak calculation performance "comparable to that of high-end graphics workstations used in motion picture production." There is also the fact that PS2 supports the use of DVD (in addition to CD) as a medium for game titles, making far more disc space available for game designers to work with. And even when CD media is used, the speed of the built-in DVD drive means that bandwidth from the disc to the electronics is vastly improved over Playstation. Also, PS2 will play DVD-Video titles, making it a nice dual-purpose purchase for $299 (list).



Despite all of these advances, however, audio for PS2 is not radically different than the original Playstation, either in its preparation or the way it is used during playback. "Most video game consoles have restrictions in terms of available storage and memory for audio," says Stan Weaver, lead sound designer on *Star Wars Starfighter*, a PS2 title due out this spring from LucasArts Entertainment Company in San Rafael, Calif. "The sound designers and programmers must make creative decisions in response to these concerns, such as downsampling, limiting the size and quantity of sound files, and optimizing their use. Sony has made some improvements with the PS2, but these considerations are still a factor."

Starfighter, from LucasArts Entertainment

SSX, from Electronic Arts

Madden NFL 2001, from Electronic Arts

NASCAR 2001, from Electronic Arts

AUDIO FORMATS

Most gamers will experience PS2 audio through analog stereo line outputs. In addition to standard stereo signals, these outputs may be used to deliver sound in Dolby Surround (left, center, right and surround channels). "If the user has a Pro Logic decoder, it will decode the Lt/Rt signal and put certain sounds behind you and in the center," says Edwin Dolinski, audio operations director at the Vancouver, B.C., game-development arm of Electronic Arts. "Over the last few years, EA has done dozens of Playstation titles like that." As for PS2, the company's titles so far include *FIFA 2001 Major League Soccer*, *Madden NFL 2001*, *NASCAR 2001*, *NHL 2001* and the snowboarding title *SSX*.

PS2's support for DVD-Video means that the box is also required to support audio in PCM and Dolby Digital formats (support for DTS is optional in DVD), and the console includes an optical digital output that can feed a surround system. But don't look for those capabilities to be exploited much for gaming. "A lot of people think that since PS2 can play DVD titles, the audio on the games could be in 5.1 surround," Dolinski says. "But Sony only included those audio capabilities for DVD playback. In a practical sense, I highly doubt anyone would ever try to do it for a game."

Dolinski sees two obstacles to trying to leverage PS2's DVD-based audio capabilities for games. "First," he says, "you wouldn't be able to use the SPU2 sound chips to do your audio processing, so you'd have to do it on the Emotion Engine. And, at that point, you're in a big fight for processing power with the other elements of the game: the visuals and the AI [artificial intelligence, or game logic]. So nobody would design a game that way."

Sound for Playstation2

Another problem is that there is no programming support for using any audio type other than a proprietary Sony format, called VAG. "At this point," Dolinski says, "Sony doesn't make any tool or give you any function calls to enable the real-time rendering of Dolby Digital or DTS. Everything that you play off of the sound chips in the machine has to be pre-encoded into VAG."

VAG applies data compression of about 3.5:1 to the input signal, which may vary in resolution. In terms of word-length, Dolinski says that "for games, you're pretty much working in 16-bit." As for sample rate, he says, "The Playstation2 hardware is set up to output digital sound at 48 kHz. But it's not required that the source files be at 48 kHz." Deciding on the sample rates of various source files is part of prioritizing the use of bandwidth based on the different roles that audio plays in a game.

"Chances are that you want to cram as much sound as possible into the available RAM or to store more sounds on disc," Dolinski explains. "For example, there's no point in sampling speech at 48 kHz, so you would tend to sample it at quite a bit lower rate. Frequently, you'll mix sample rates depending on the quality of the sound effect that's playing: Do you need any high end on a low-frequency explosion, for instance? So maybe you can save some bits there and save some bits on speech. With music, however, it's going to be more noticeable, so you try to keep the sample rate up."

Edwin Dolinski, of Electronic Arts

Dolinski cautions that even if you use a lower sample rate on some sounds to save disc space or RAM, PS2 will actually upsample everything to 48 kHz at the output. "It's nice to work in simple factors of that rate—24 kHz, for example—when you downsample," he says. "That way, you have the least artifacts when your sounds are upsampled during playback."

The swish of snow in SSX

INSIDE THE BOX

The VAG format was used in Playstation, but Sony has made some enhancements to the audio setup for PS2. "They've given you two of the SPU2 chips instead of one," Dolinski says. "That gives you 48 channels to work with instead of 24. And they've upped the sound RAM from 500 KB to two MB. In game design, there's generally a fight for RAM between visual needs, game logic and audio. But, because PS2 gives you two MB of dedicated RAM attached to the SPU2 chips, you don't have to fight for it. There's 32 MB of main RAM for the other elements, and they access the main processor directly, so visuals and AI aren't going to try to plunder the sound RAM."

The sound RAM is allocated between short sounds that are stored in RAM to be triggered as needed and buffers that are used for continuous sound that streams from disc during game play. "You might stream your background ambience or stream a music track so you don't have to get a 40MB file to fit into the two MB of sound RAM," explains Dolinski. "Instead, you use a 100kB buffer for the streamed sound data from disc. We've tended to stream stereo music tracks ever since we moved to CDs with Playstation."

The streaming is made possible because the drive can deliver data from the disc faster than the game needs to use it. "We stream audio from the CD while the computer graphics are being rendered from the game code stored in the main RAM," Dolinski explains. "If you need additional game elements, you read the disc in a few places while your audio buffer is running down, and then go and refresh the audio buffer before it runs out."

Dolinski says this basic approach has been "par for the course" since EA started developing games on CD, but PS2's higher bandwidth means that more elements can be juggled at the same time. "It's now quite feasible to stream stereo music and at the same time stream continuous stereo ambience, and still have time to read the disc for the game information," he says. "So if you want a crowd chanting in a stadium, for example, you don't have to use a two-second loop, you can use a 30-second loop streaming continuously off the disc, which doesn't sound as monotonous. These capabilities are factored into deciding which sounds should be samples in RAM and which should be streamed."

One of the most profound differences between sound for games and other applications of sound (music industry, sound for picture, etc.) is that there really is no "final" mix. "Think of it more as a sound bank that is loaded into RAM," Dolinski says. "There may be 120 sounds sitting there, and when a certain event happens, it triggers a sound. We can attach parameters to each of the samples, things like amplitude, pan and frequency. The parameters may or may not be controlled by the game code; we'll program in certain variations so that you don't get that repetitive thing of an identical sound each time something similar happens in the game. Even the mix between the sound effects is going to vary dynamically, depending on what's happening in the game."

Another difference is that playback is event-based rather than timeline-based. "There's no timeline," Dolinski says, "because the time at which any sound is fired depends entirely on the game code. Everything sits as a list of sounds in RAM, and there are hooks to the game code. So when a certain event happens, it will fire off a particular sound or start a new stream or duck a stream, because you are going to insert some speech. The mix changes on-the-

DIGITAL PRECISION

Accurate adjustment

- 32 bit floating point processing
- sample accurate editing
- breakpoint automation editing
- 96kHz & 192kHz / 24 bit capable

If mastering is your business, then only the best will do. Only SADiE is able to offer consistent performance across the broad range of file formats and storage media. We pioneered PC-based digital audio workstations and are still setting the benchmark today.

When it comes to providing speed, flexibility and reliability, the current generation of SADiE 24•96 and ARTEMiS workstations are unsurpassed for all serious music editing and mastering applications. Backed up with a full range of sophisticated plug-ins, it is no wonder that SADiE workstations are to be found in the finest mastering facilities across the world.

Accurate, flexible, complete - SADiE - now the only serious choice for mastering. Find out more by visiting our web site or contact us directly.

Flexible operation

- background multi-tasking
- segment based automation
- graphical & text editing tools
- user definable routing

SADiE at Plant Studios, Sausalito, CA

www.sadie.com

THE WORLD'S FINEST AUDIO MASTERING WORKSTATIONS

USA
Tel: 615 327 1140
Fax: 615 327 1699

Europe
Tel: +49 (0)711 3969 380
Fax: +49 (0)711 3969 385

United Kingdom
Tel: +44 (0)1353 648 888
Fax: +44 (0)1353 648 867

SADiE
DIGITAL PRECISION

fly, and you don't know the durations between events. So it has nothing whatsoever to do with linear time."

The event-based and streamed elements are mixed by the SPU2 chips before being sent to the outputs. Regarding how the 48 channels are generally used, Dolinski says it's "a question of which sounds need priority—who's going to get cut off if you've got more sounds than available channels. Certain channels may be set aside for the streams, certain channels for speaking voices and others for effects such as collisions. You can choose to reserve channels for specific classes of sounds, or you can leave the whole thing up for grabs. But it's obviously nicer to have 48 voices to work with than 24."

PRODUCTION PROCESS

Dolinski sees the overall production process of sound for a game as involving three major phases. "There's the planning," he says, "and there's making and delivering all the sounds. Then after you wait for the sounds to be implemented in the game, there's listening back and tweaking the results."

Because sound for a PS2 game can involve hundreds or even thousands of dialog, effects and music elements, making the sounds and incorporating them into a game is a big job that requires a lot of teamwork. "For each title in development, we typically assign a lead sound designer and a lead composer, in addition to the voice director and voice editor," says Jeff Kliment, sound department manager at LucasArts. "We also have two assistants in our department who get assigned to projects as needed."

At LucasArts, the voice director gets involved early, working closely with the game designers in creating the script, casting the actors and supervising the voice recordings. "Once the recording is done," Kliment says, "the voice editors will create the master set of high-resolution voice files. These then go to the sound department for additional processing, which may include compression, equalization and creative processing, such as radio effects or reverb. For some files, the final step is a sample-rate conversion. The lead sound designer then hands the final voice set to the project team to be incorporated into the game."

Weaver says that for a *Star Wars* game, the sound design process starts with a library of sound effects from the movies. "We work with Skywalker Sound to make sure we have the raw materials we'll need to get started," he says. "But that's just the beginning. Since our games contain characters and locations not seen in any of the movies, we have to do a lot of original sound design to supplement the existing material. Rather than relying too heavily on off-the-shelf SFX libraries, we try to do as much original recording as possible for each game. This includes field recording, Foley and electronic composition with synthesizers and samplers. Over the years, we've amassed an extensive library of original material. In the end, the sound design will be a combination of all these elements."

The ships assemble in Starfighter

Music, Weaver says, is handled similarly to effects. "Again, if we're talking about a *Star Wars* title, then it's usually based on the John Williams scores, but lately we've been adding our own twists with additional composition and/or remixing. Our non-*Star Wars* titles get original musical treatment. The score will generally consist of a blend of MIDI-based tracks with live players added for sweetening."

Live sessions for both music and sound design take place in LucasArts' main recording studio. "The current setup in that room," Kliment says, "is a Pro Tools system routed to a Soundcraft Ghost 32x8 console, with Meyer HD-1 monitors, plus a small complement of outboard gear and software tools. We have a handful of Neumann and AKG microphones, as well."

The rest of the voice editing and sound design work at LucasArts is handled in soundproof offices, each equipped with a Pro Tools system, a small mixing desk and monitors. "Each of the workstations is equipped with a set of software tools and plug-ins," Kliment says, "and we have an array of samplers, synthesizers and outboard gear that is moved around as needed."

As files for a game are completed, they are converted to VAG. "If you are a game developer and you have Sony's developer kit," Dolinski says, "you get a Sony tool to convert your audio into that format. If you are an outside contractor, you are probably going to deliver your sounds to the game developer as uncompressed digital audio files in one of the common formats, like .AIFF, .WAV or SDII."

Once compressed, the files are handed off to programmers for incorporation into the game. "Depending on the state of the game code, the sounds are not always implemented right away," says Dolinski. "So sometimes you have things finished, but you don't really get the satisfaction of hearing how it's working out in the game until weeks later."

When the sounds are incorporated, the next phase of production begins. "You start doing a lot of listening back," Dolinski says, "and trying to correct the mix. You'll notice that certain things sound different in the game than they did on your desktop. There might be a piece of code that fires the same sound twice, or you're getting the wrong sound when a certain action happens. So there's a lot of final massage and tweaking once you've delivered all these sounds and they've been put into the game. That's really when most of the mixing work begins."

The tweaking phase continues through for as many iterations as are necessary to create a soundtrack that fully supports the game designer's intended gaming experience. "Our main concern," says Weaver, "is that the sound and music help make the game fun to play. If the soundtrack puts a smile on your face and gets your feet tapping, then we're doing okay." ■

Philip De Lancie is Mix's *new-technologies editor.*


"If you are considering a career in the entertainment media industry, I think there's only one choice. With the way technology is moving and the speed at which it changes, Full Sail is the only school that I've ever seen or heard of that consistently remains so up-to-date. It's a place that approaches education right - by getting your hands on the world's most current technology."
-Steve Vai
GRAMMY®-award winner Steve Vai at the Neve Capricorn console in Studio C - one of Full Sail's 37 production studios.
FULL SAIL®
Real World Education
School of:
Audio • Show Production & Touring
Film/Video • Computer Animation
Digital Media • Game Design
800.226.7625
Tune into webstationzero at www.fullsail.com
CIRCLE #024 ON PRODUCT INFO CARD
3300 University Boulevard • Winter Park, FL 32792 • Financial aid available to those who qualify • Job placement assistance • Accredited by ACCSCT
©2000 Full Sail Recorders, Inc. All rights reserved. The terms "Full Sail", "Full Sail Real World Education", and the Full Sail and WebStationZero logos are either registered service marks or service marks of Full Sail Recorders, Inc. Other product and company names mentioned herein may be the trademarks of their respective owners. The appearance of these marks does not necessarily indicate a formalized sponsorship or affiliation with other such companies.
World Radio History

MEGA-SYNTHS

VIRTUAL INSTRUMENTS FOR EVERY BUDGET, EVERY SONG

on the Tip of a Chip

Hardware and software of all sorts cross this desk, but the small-package/big-sound index leapt off the scale after I bought a palmtop studio and started installing some of the virtual instruments listed in this *Mix* roundup. There are dozens of virtual software instruments listed here that open up a studio's worth of electronics from a tiny corner of a CPU chip.

Virtual software instruments come in two flavors, each with inherent advantages. Stand-alone synth, sampler and drum machine applications are generally deeper and more powerful than their plug-in counterparts but aren't nearly as integrated with the sequencing environment most of us dwell in all day long. Plug-in instruments, meanwhile, are plenty powerful and tightly woven into the automated software recording experience but are also fully host-dependent and subject to sharing processor real estate with other native plug-in tools.

Our focus this year is on 40 virtual instrument plug-ins. A list of 35 stand-alone instrument apps and where to find them on the Web is included on page 54. There are even soft synths for Linux, BeOS and DOS devotees below, so check it out and start bleeping and tweaking!

by Randy Alberts

Koblo Vibra 9000

Native Instruments Pro-52

Waldorf PPG Wave 2.V

LinPlug RM 2

Emagic EXS24

TC Works Mercury-1

The Access Virus family of hardware synthesizers now includes Access Virus TDM ($795, www.digidesign.com) software that plugs into Mac and Windows TDM systems to soft-model analog synthesis. The first synth plug-in released on the TDM platform, Virus adds software features the hardware versions can only dream about. Up to eight multitimbral Virus synths can be running per TDM DSP chip, 80 Virus voices can be had on a standard Pro Tools|24 MIXplus system, and 150 automatable parameters per synth should keep even the most knob-centric programmers happy for a long time.

Big Tick Software's Rainbow VST 1.6.3 (www.chez.com/rainbowvst/en/home.html) is a sharp little shareware plug-in synth for Mac and Windows users with VST-compatible host apps. Rainbow sports FM, AM, additive and subtractive synthesis techniques, and one of the smoothest interfaces around on either CPU. A bandpass filter and 16-step sequencer are built-in, and Rainbow, tested with Cubase VST 3.7, also runs as a stand-alone, soft-synth application.

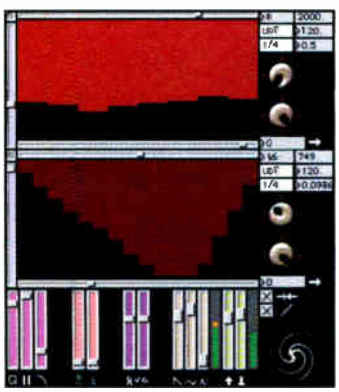
BitHeadz's Unity DS-1 2.0 ($449, www.bitheadz.com) is a stand-alone digital sampler for Mac and Windows that has enough third-party sequencer integration improvements lately to deserve mention here among the host-devoted plug-ins. New patch name utilities make it even easier to choose Unity banks and programs from within Cakewalk Pro Audio, Emagic Logic Audio and other popular sequencers without having to first launch Unity. Further, the Unity editor can now audition banks and programs through the sample engine when multitasking Unity and your sequencer of choice side by side. The company's popular Retro AS-1 stand-alone software synth has a new Windows VST plug-in synth version, Retro AS-1 VST ($199), that's optimized for G4 and P3 processors, supports Digidesign's DirectConnect plug-in format and can store multitimbral setups for each MIDI channel using the Save Effect function right in Steinberg's Cubase VST|32.

Though technically not virtual instruments, Bomb Factory's (www.bombfactory.com) moogerfooger Ring Modulator and

Access Virus TDM

Lowpass Filter pedal-emulation plug-in duo ($399, Mac/Windows) for TDM, MAS, RTAS and AudioSuite host environments adds enough synth-like tones to any track to warrant a mention here. The dual-waveform LFOs and variable 2-pole/4-pole resonant filters are strictly vintage, and all plug-in features are fully automatable. The graphic user interface faithfully emulates the hardware originals from Big Briar, a nice touch.

Most of the 74 VST/MAS plug-ins offered up in Cycling '74's **Pluggo** suite ($74, www.cycling74.com) are generally signal processors, but three are distinctively instrumental in nature. Laverne is a subtractive synthesizer used largely to demo Pluggo's MIDI capabilities, but it's not bad in a pinch for some basic, two-fisted, dual-oscillator work. Sine Bank controls up to 32 sine waves and is ideal for being controlled by one of Pluggo's many modulator plug-ins. Synth is the first of many Pluggo-sourced soft synthesizers to come: Instead of processing its audio input, Synth spits out grooves controlled by two built-in step sequencers that independently control pitch and filter cutoff frequencies of various waveforms. Synth's interface is quite intuitive for generating new tones, though it looks as if it were designed somewhere other than on Earth.



Cycling '74 Pluggo

SynC Modular from Dr. Sync ($49, www.mtu-net.ru/syncmodular) is both a stand-alone app and VST plug-in synth for Windows and BeOS. Offering an awful lot of synth-building bang-for-the-buck, the modular SynC approach allows users to create custom oscillators, filters and macros from the ground up and feed 16-part multitimbral MIDI parts to the plug-in version from a sequencer. The stand-alone version of SynC supports DirectSound drivers and can render MIDI files directly.

Digidesign's **Bruno/Reso** ($395, www.digidesign.com) is a unique cross-synthesis plug-in duo for Mac and Windows TDM users that turns any audio track into something decidedly synth-like. Users can create some deeply adjustable resonant tone layers with up to 24 voices per plug-in, depending on CPU, and the resulting output can be "played" interactively with an external MIDI controller. Bruno cuts audio into time slices with adjustable crossfades and velocity-sensitive gain stages, and it can be controlled by an external audio source via sidechain input; Reso generates harmonic resonance that can be switched using envelope triggers or MIDI beat clock.

Emagic (www.emagic.de) has released the first two of many planned Logic-based virtual instruments to come: the **EXS24 polyphonic sampler** ($399, Mac/Windows) and the **ES1 virtual synthesizer** ($99, $199 TDM). The EXS24 is a great-looking Logic Audio and MicroLogic AV plug-in that sports lowpass filtering with selectable 12, 18, 24 "classic" and 24dB "fat" slopes, self-oscillating resonant filter, and pitch, filter cutoff, volume and pan that can be modulated by two LFOs. Depending on CPU power, up to 16 EXS24s (64 voice) can run simultaneously under Version 4.0 and higher for both applications, and planned support for Digidesign's DirectConnect will allow Logic users to feed 32 outputs from each EXS24 module into a TDM mixer. Also available for TDM systems, the **ES1 subtractive synthesis plug-in** is Emagic's first foray into the world of virtual soft instruments. Up to eight ES1s can be had at the mousetip in Logic Series sequencers, the ES1 integrates nicely into Logic's internal digital mixer, and all ES1 parameters can be fully mix-automated.

With a name that sounds inspired by those amber waves, **GrainWave 3.0** is another shareware synth wonder that far exceeds its $40 registration fee (http://nmol.com/users/mikeb/grainw.htm) for Mac users. GrainWave runs an uninterrupted audio stream in the background, while OMS-savvy sequencer applications use it as a virtual synthesizer slave, and Cycling '74 MAX users can generate custom interfaces for GrainWave.

Distributed by Digidesign (www.digidesign.com), the **Koblo Studio 9000** suite ($720, Mac) of TDM-based synths, sampler and drum machine also works with VST 2.0-, ReWire-, MAS-, FreeMI, DI- and OMS-based host applications.

Big Tick Rainbow VST 1.6.3

The suite also can be used as a stand-alone synth app with Digidesign's Direct I/O or Sound Manager. Two monophonic analog-modeling synthesizers (Vibra 9000 and 6000), a sample playback module (Stella 9000) and a drum module (Gamma 9000) in the Koblo Studio interface perfectly with Pro Tools via DirectConnect. Vibra 9000 has two stereo oscillators with five morphable waveforms each, three synchable LFOs, and a variety of notch, saw comb and square comb filters; both the Gamma and Stella modules support SampleCell key maps when importing sound sets.

It's hard to detect a common thread in the company's product naming convention, but LinPlug from Berlin (www.linplug.de) nevertheless deserves high marks for offering a host of drum machine and synth plug-ins for the Windows VST platform that costs little or no dough. The $75 **GakStoar Delta 2.0** is an analog-modeling polysynth that's worth every penny and free to registered LinPlug users; the **GakStoar Alpha VST** plug-in is a freeware virtual synth with resonant lowpass filters, velocity/aftertouch and three ADSR envelopes; and the **Rupsta Gamma Drum Sampler** ($30) features 11 drum sounds, up to 24-voice polyphony and the ability to route stereo and six mono outputs individual-

—CONTINUED ON PAGE 56

Like a vacation...
No problem

Nathaniel Kunkel

Nathaniel Kunkel has recorded James Taylor, Linda Ronstadt, Little Feat, Kenny Loggins, Lyle Lovett's Grammy-winning Country Album of the Year, "The Road to Ensenada," the 5.1 soundtrack for Robert Altman's "Dr. T. and the Women" and was a Grammy nominee for engineering "Trio 2" with Linda Ronstadt, Dolly Parton and Emmylou Harris, produced and mixed by George Massenburg

Think Quantegy

At Quantegy we set the standard with products like GP9 Grand Master™ Platinum. So it's no wonder that more music around the world goes gold and platinum on Quantegy media than on all the other brands combined. While opinion may vary on what it takes to make a hit, there's no argument on what it takes to master one.

QUANTEGY
The Hit Maker's Media

Tel: 800-752-0732 Fax: 800-628-0535 www.quantegy.com

CIRCLE #025 ON PRODUCT INFO CARD

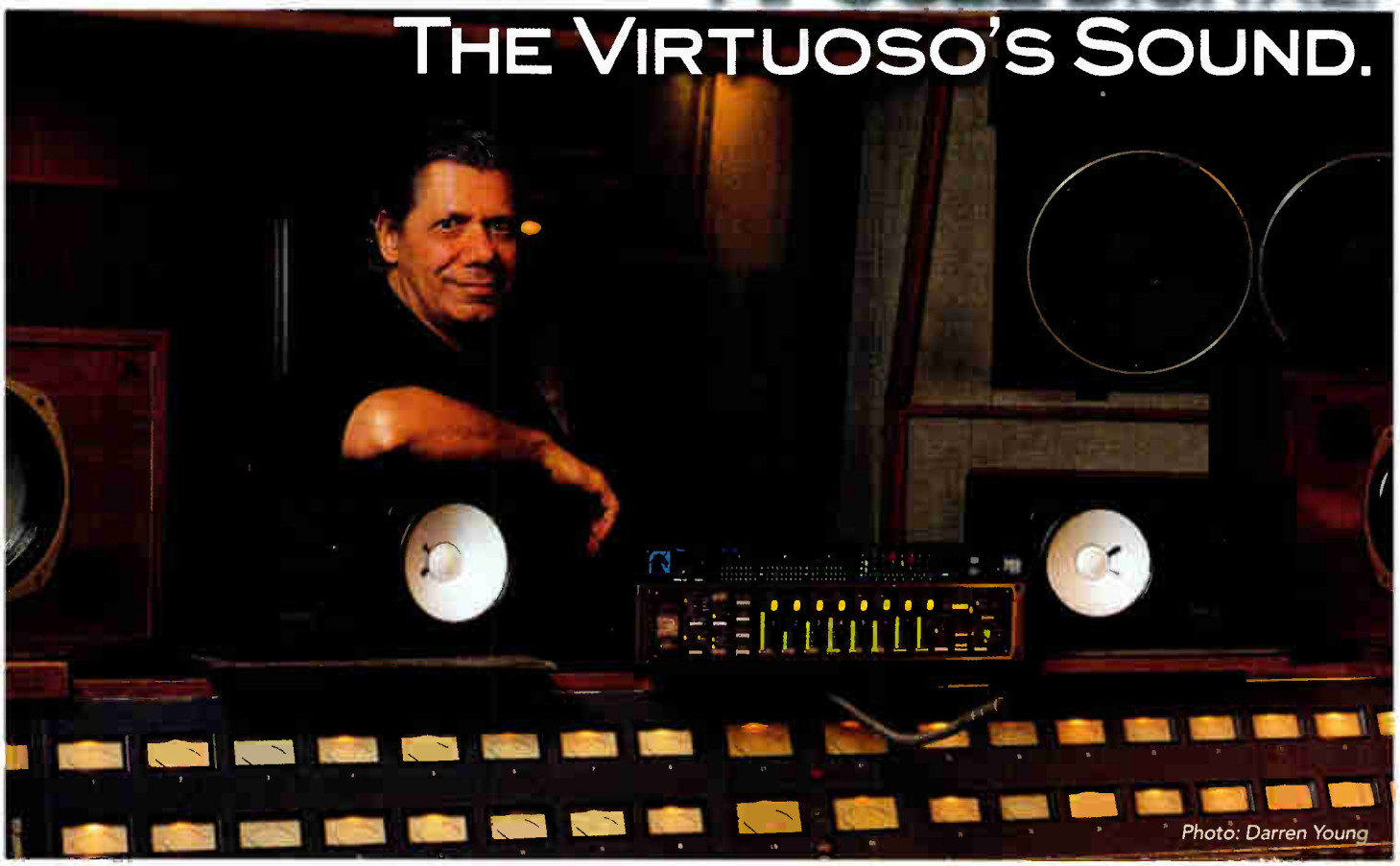
STAND BY YOUR SYNTH

Many of these stand-alone software synths, drum machines, bass mods and samplers adhere to audio connectivity protocol, like Propellerhead Software's ReWire, Mark of the Unicorn's Virtual Input Plug-In and DirectConnect from Digidesign, to multitask with sequencing software applications and share audio, MIDI and program info. A number are share/freeware in nature, several work both as a stand-alone and as a virtual instrument plug-in, and all rank high on the bang-for-your-synth-buck gauge. Enjoy!

COMPANY	INSTRUMENT	PLATFORM	CONTACT
Applied Acoustics Systems	Tassman	Win 95/98	www.applied-acoustics.com
Arboretum Systems	Metasynth	Mac	www.arboretum.com
Arturia	Storm 1.1	Win	www.arturia.com/en
Audiofusion	TWS 1.0.1	Mac	www.audiofusion.com
Audio Simulation	Dream Station	Win	www.audio-simulation.de/
Bitheadz	Unity DS-1 2.0	Mac/Win	www.bitheadz.com
BitHeadz	Retro AS-1	Mac/Win	www.bitheadz.com
Bitmechanic	Freebirth	Linux	www.bitmechanic.com
Dr. Sync	SynC Modular	Win	www.mtu-net.ru/syncmodular
Cycling '74	MSP	Mac	www.cycling74.com
Digidesign	Koblo Studio 9000	Mac	www.digidesign.com
Digidesign	Turbosynth	Mac	www.digidesign.com
DrumSynth	DrumSynth 2.0	PC	www.abel.net.uk/~maxim/drumsyn.htm
FruityLoops	FruityLoops 2.7	Win	www.e-officedirect.com/fruityloops2000/NewFrames.htm
FruityLoops	SimSynth 2.7	Win	www.e-officedirect.com/fruityloops2000/NewFrames.htm
Kagi	VSamp 2.3	Mac	www.kagi.com/smaug/vsamp/
Koblo/Digidesign	Koblo Studio 9000	Mac	www.digidesign.com
Master Zap	Stomper Ultra 4.0	Win	www.master-zap.com/stomper/
NemeSys	GigaSampler	Win	www.nemesysmusic.com
9Bar Recordings	MASS	Win	www.9barrecordings.co.uk/mass.htm
Nyr Sound	Chaosynth 1.0	Mac/Win	www.nyrsound.com
ObjektSynth	ObjektSynth 1.0	BeOS	www.objektsynth.com/
Polyhedric Software	Mellosoftron	Win	www.polyhedric.com/software/
Polyhedric Software	Acid WAV	Win	www.polyhedric.com/software/
Propellerheads	Reason	Mac/PC	www.propellerheads.se
Rave Technologies	Audio Architect 4.0	Win	www.audioarchitect.com
Seer Systems	Reality	Win	www.seersystems.com
Seer Systems	SurReal	Win	www.seersystems.com
Software Technology	VAZ+	Win	www.software-technology.com
Software Technology	VAZ Modular 2.1	Win	www.software-technology.com
Sounds Logical	WaveWarp 1.2	Win	www.soundslogical.com
Joerg Stelkens	crusherX-Live 1.4	Win	www.stelkens.de/sk/crusherx/index.html
Syd (formerly SoftSynth)	Syd 1.0.6	Mac	www.jbum.com/syd
Symbolic Sound	Kyma	Mac/Win	www.symbolicsound.com
VirSyn Soft	Synth	Win	www.virsyn.com/English/Ehome/ehome.html

APOGEE DIGITAL.

THE VIRTUOSO'S SOUND.



Chick Corea pictured in his Mad Hatter facility in Los Angeles with the AD-8000SE and MOTU 2408

ORIGINALLY DESIGNED AS A SPECIAL ORDER FOR ONE OF APOGEE'S MASTERING CLIENTS, THE AD-8000SE OFFERS AUDIOPHILE-QUALITY ANALOG CIRCUITRY, IN ADDITION TO STANDARD AD-8000 FEATURES SUCH AS EIGHT CHANNELS OF SUPERB CONVERSION, AND MULTIPLE OPTIONAL INTERFACES INCLUDING PRO TOOLS, ADAT, TDIF, SDIF-II, SSL, & AES/EBU. VIDEO SYNC OPTIONAL. AND AN INCREDIBLE SOUND. AT YOUR AUTHORIZED DEALER.

APOGEE'S AD-8000SE.

"TO ME, THE SOUND OF 30 IPS, 2IN TAPE RECORDING WAS ALWAYS WARMER AND MORE ATTRACTIVE. BUT WITH THE AD-8000SE IN LINE WITH ANY DIGITAL SYSTEM, THE SOUND QUALITY COMES UP HIGH AND WE CAN BE AESTHETICALLY PLEASED ONCE AGAIN."

One of the most significant jazz musicians to have emerged in the last 30 years, multiple Grammy®-Award-winning virtuouso keyboardist Chick Corea has made a unique name for himself – from his groundbreaking work with Miles Davis to his own acoustic and electric bands. He relies upon the AD-8000SE as his converter of choice – whether at home or in the studio.

TRAK2 MIC PRE/96kHz CONVERTER
PSX-100 2-CHANNEL 96 kHz A/D-D/A

ROSETTA 2-CH A/D
44.1/48 & 44.1–96 kHz

MEDIA & CABLE
PRODUCTS

APOGEE ELECTRONICS
www.apogeedigital.com

APOGEE ELECTRONICS CORPORATION, 3145 Donald Douglas Loop South, Santa Monica, California 90405-3210, USA.
Tel: +1 310/915-1000 Fax: +1 310/391-6262. Email: info@apogeedigital.com. See our Web site for full details and local dealer info.

CIRCLE #026 ON PRODUCT INFO CARD

—FROM PAGE 52, VIRTUAL INSTRUMENTS

ly. And the new RM 2 ($45) builds on Rupsta's technology and features. Roagine won't slow up male pattern baldness, but this $25 percussion plug-in

Steinberg LM-4

is plenty strong when it comes to live performance control; each of the module's 15 parameters can be controlled by any external hardware controller.

Hailing from the UK, Muon Software (www.muon-software.com) is another EU-energized family of virtual synth plug-ins in the affordable (i.e., virtually free) price range. **Muon Electron** ($75) is a powerful 64-bit tri-oscillator synth plug-in for Cubase VST or Logic Audio 4.1 and above for Windows with two user-assignable LFOs, two independent

Muon Electron

resonant filters that can crossfade, and a slick interface complete with shadowed knobs and a nifty X-Y parameter controller. **Muon Atom Pro** ($30) is a simple VST synth with oscillator, lowpass filter and amplitude envelope sections, and **Muon Tau** is a free monophonic bassline synthesizer that looks like a mini-TB303, features an 18dB lowpass filter and certainly wins the "cutest virtual synth 2001" award for its one-octave keyboard and minimal screen footprint.

The Hammond B3 has perhaps never before been better emulated than by **Native Instruments' B4** plug-in ($199, Mac/Win, www.nativeinstruments.com). The B3 organ and rotating speaker tandem is re-created with loving detail that accurately models harmonic foldback, drawbar crosstalk and loudness robbing, and the B4's "back panel" view allows users to fine-tune sound and even route external audio inputs into and out of the B4's NSP technology—the same as is used in Native's Reaktor soft synth. **Dynamo** 1.0.3 ($199, Mac/Win) is a synthesizer/sampler/sequencer package with 25 of Reaktor's synthesizers that works both as a stand-alone and as a virtual instrument plug-in within VST, MAS, Logic and Digidesign DirectConnect applications. Deemed an entry point to Native's pricier and more powerful **Reaktor** ($499, Mac/Win), Dynamo comes with 25 instruments from Native's Premium Library that can be continually upgraded via free instrument downloads from the company's Web site. Finally, Native's new **Pro-52** ($199, Mac/Win) does a convincing job of re-creating a Sequential Circuits Prophet-5 synthesizer, including the ability to import Prophet-5 system exclusive data to reproduce every sound library in the Prophet family. Cool.

Like several other virtual instruments in this guide, Propellerhead Software's (www.propellerheads.se) **ReBirth TB-338** ($199, Mac/Win) moves out of the sidebar on stand-alones [page 54]. Deeply integrated with Cubase (via ReWire), Digital Performer (via VIP) and other sequencers, ReBirth and its "lite" version (**ReBirth One**, $69) offer synth and drum modules based on Roland's legendary TB-303 bass synth and TR-808 and -909 drum machines—instant beat gratification guaranteed.

Prosoniq's **Orange Vocoder VST** plug-in for Mac and Windows ($199, VST, MAS, RTAS version due soon; www.prosoniq.com) is an all-digital simulation of the classic EMS vocoders from Germany. Orange Vocoder features an 8-voice analog synth bank, reverb, and a highly expressive freeform EQ and filter bank control interface that can subtly harmonize a vocal track or render it unrecognizably robotic.

Steinberg (www.steinberg.net) has likely been in every plug-in buyer's guide ever published, and this roundup is no different. The **Waldorf PPG Wave 2.V** ($199), a VST reincarnation of the original 1982 digital synth classic, works well on both Wintel and Mac machines and produces an aural and ocular virtual equivalent that emulates almost every move the original ever had, and then some. Automation is complete, audio files can be rendered directly from within the plug-in, and up to eight-part multitimbral Wave instruments can be opened in Cubase VST at a given time. The **Waldorf D-Pole** ($199, Mac/Win) is a software version of the MicroWave II's lush filter section known for its phat tendencies. The 4-pole filter in D-Pole performs identically to its hardware counterpart and accepts external input to synthify anything. The Steinberg **Model-E** ($199, Mac/Win) VST plug-in is as close to a real Minimoog as many of us will ever get and about $2,000 cheaper than the best vintage Moog deal around. This soft synth looks and sounds like the real thing and adds polyphonic voices and 16-part multitimbrality to the soup,

Waldorf D-Pole

among other digital advantages. The **LM-4 VST Drum Module** ($99, Mac/Win) rounds out the Steinfare. It's a 24-bit drum plug-in that includes two sound kits, each containing at least 18 drum sounds built from any 16- and 24-bit .AIFF and .WAV file collection. Very cool.

Two potent entries into the virtual synthesizer plug-in realm were announced at last year's summer NAMM show in Nashville by TC Works (www.tcworks.de), each sporting a gray finish that recalls early modular synths. **Spark Modular** ($99, Mac) can be used directly in any sequencer supporting VST instruments and includes virtual MIDI keyboard, step sequencer, amplifier, filter and dual-oscillator synth modules that can be mixed, deleted and matched in various combinations that will keep most knob twirlers up all night. TC's **Mercury-1** ($199, Mac/Win) is a monophonic, virtual, analog soft synth with two oscillators and a sub-oscillator for that gut-challenging low end, a 24dB/octave lowpass filter with resonance, oscillator sync, ring modulation and a sample-and-hold module. ■

Other than some sawtooth dreams and a tendency to now arpeggiate his sentences, Randy Alberts carries on his writing, audio and music business in Pacifica, Calif.

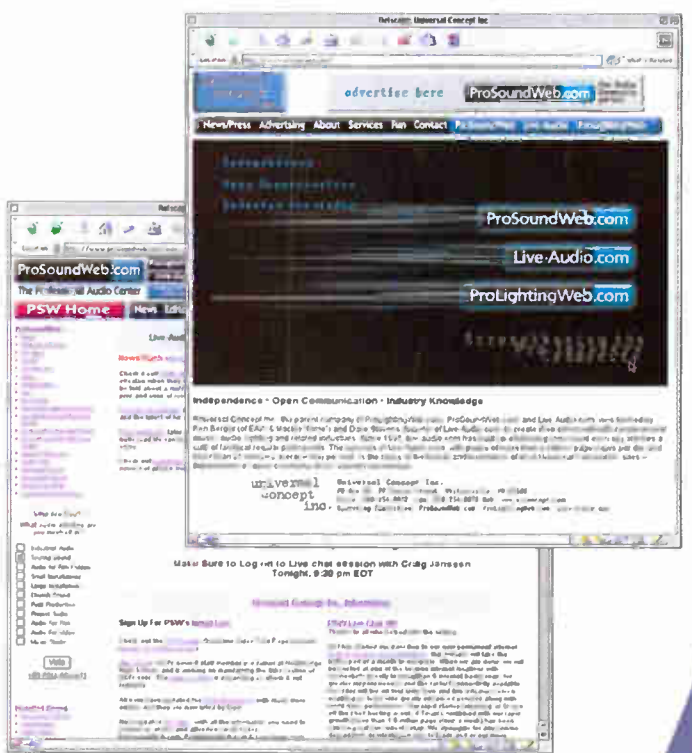
ProSoundWeb.com

THE POWER OF CONNECTION

World's Largest Pro Audio Online Community

Join In with The Industry's Best Professionals

- Over 3 Million Page Views per Month
- User Dominated Forums
- Live Chat with Professionals Worldwide
- Study Hall - A Comprehensive Reference Library
- Commentary from Industry Leaders

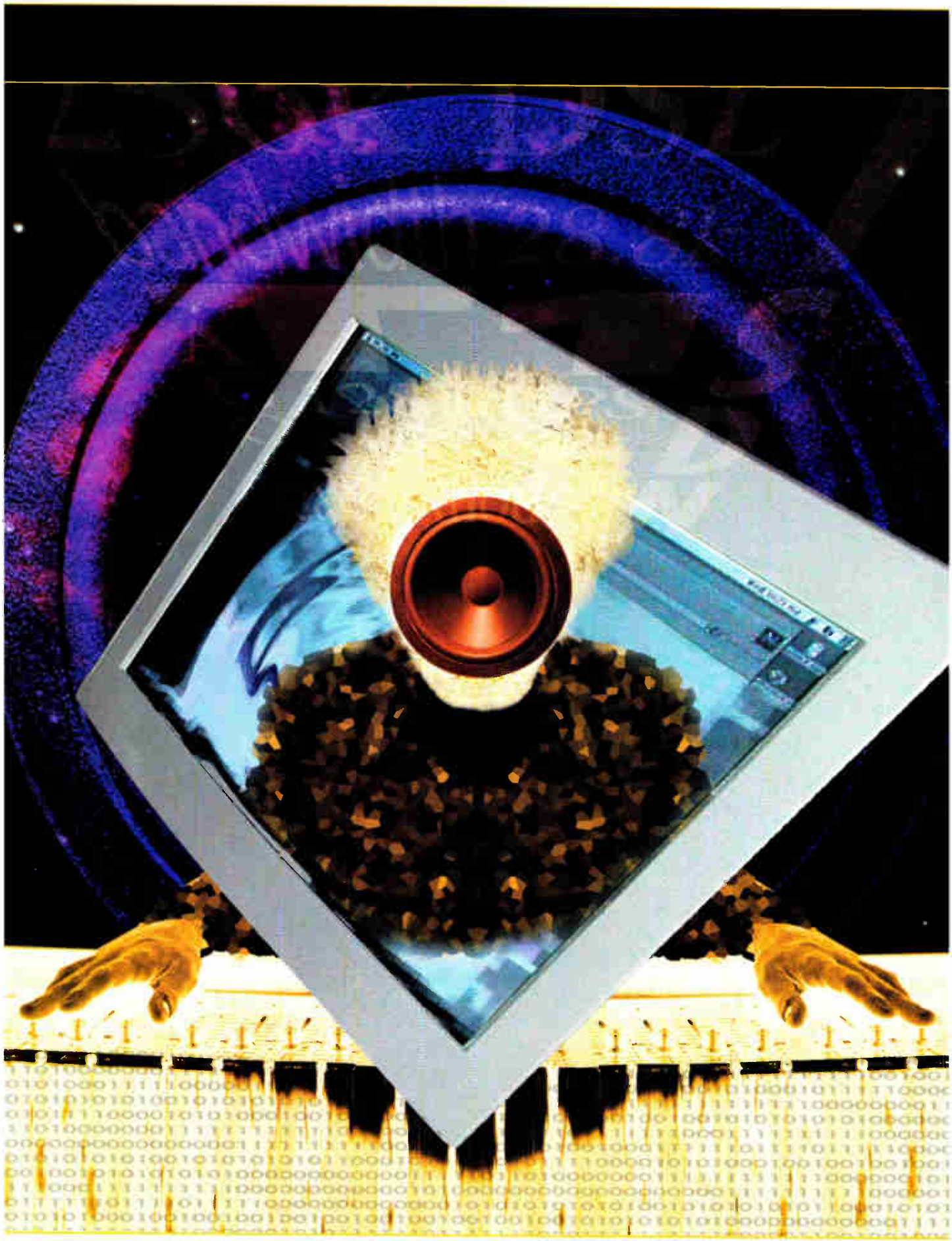


Universal Concept, Inc.
99 Church Street
Whitinsville, MA 01588

email info@prosoundweb.com
phone 508-234-8832
fax 508-234-8870

www.ProSoundWeb.com

CIRCLE #027 ON PRODUCT INFO CARD



Online Audio

BY PHILIP DE LANCIE

Online audio is a huge subject. There are the moral/ethical/legal issues that incite courthouse brawling between major labels and dot-com upstarts. There are the business issues, with their attendant glut of buzzwords like "e-commerce" and "bricks-and-mortar." And then there are the technical issues, such as bandwidth, telephony infrastructure, perceptual coding and a host of acronymic codecs.

But from an audio engineering perspective, the only issue that there isn't enough talk about is audio fidelity. In the rush to squeeze big sound through small pipes, we're losing the battle to preserve the audio quality that we struggle so long to achieve in the studio. But that's neither unique to the Internet—think AM radio or the 7-inch 45—nor something over which we have much control.

PHOTOMONTAGE: TIM GLEASON

Online Audio

Eventually, ubiquitous access to broadband and further improvements in coding techniques may minimize the fidelity gap between the Internet and prerecorded media (CDs, DVD-Audio, etc.). In the meantime, the Internet is here to stay as a medium to disseminate sound, no matter what we may think it does to that sound. And its influence on the music business—and thus the recording industry—continues to grow. So there's no time like the present to examine online audio from the professional audio perspective. If you are already deeply involved in audio Internet applications, then you're probably already familiar with much of the information below. If not, then here's your chance to get up to speed.

WHY SONIFY?

Identifying why you or your client wants to use audio on a Web site in the first place is essential to make the right choices, in terms of how to do it. The opportunities include promoting and selling your own work, as well as doing audio work for someone else's online enterprises.

The most common type of site on the Web is the promotional site, and it's as valuable for music and sound professionals as any other line of business. If your site has anything to do with music or audio-related services or products, then it's natural that it includes not only text and graphics but also sound. In particular, for studio owners, producers and engineers, performers, composers, sound effects designers and voice-over artists, the Web can serve as a kind of online demo tape, a convenient way to expose your portfolio to potential clients.

Online music's promotional function is handled by posting samples that visitors can click on and listen to as they browse the site. Even if the samples are low-fi, at least they'll give a suggestion of what you can do. In the core music business, it's a very effective way for new artists to reach listeners who might enjoy their music, and it lets established artists give fans a taste of their latest work. It also helps music lovers to explore music that is not otherwise promoted, such as back catalogs.

If you have finished sound products to sell—commercial CDs and tapes, "needle-drop" music, sound effects or synth patches, for instance—then you can take a promotional site one step further by allowing visitors to place orders from the site, or at least get an

MINI GLOSSARY OF ONLINE AUDIO TERMS

AAC: The MPEG Advanced Audio Coding codec.

Bandwidth: Data transfer rate, usually expressed as kilobits or megabits per second.

Broadband: A high-speed, high-capacity transmission channel.

Client: An individual computer that is connected to a server on a network.

Codec: Compression/decompression algorithm, generally used to reduce the amount of data needed to transmit and/or store a given type of information, such as digital audio or video.

Dial-up: Internet connection using a modem over a standard telephone line, generally at bit rates of 28.8 to 56 kbps.

Digital Download: Copying a file from a server to a client.

Digital Rights Management (DRM): Mechanisms for controlling the exchange of intellectual property in digital form over the Internet or other electronic media.

EMD: Electronic Music Distribution, see digital download.

MP3: MPEG-1, Layer 3 audio.

On-demand streaming: Streaming individual files that are posted on a Web site (rather than Webcast).

Perceptual coding: A data-reduction technique where some source file audio information is discarded, based on human sensory perception models.

Player: A software program or hardware device that runs a decoding program for encoded files and handles additional display information (if any) included.

Secure Digital Music Initiative (SDMI): A record industry initiative to promote the protection of intellectual property rights in digital media.

Server: A specialized computer for storing files and distributing them to client computers over a network.

Streaming: The playback of files on a client as they are transmitted from a server. Data is copied from the server into a buffer on the client; playback begins as soon as there is sufficient data in the buffer, without waiting for the entire file to be transferred.

Webcast: A program fed in a continuous stream, often live, from a server to a client. ■

A wall of sound is good. A world of sound is better.

Instant Access to the Sounds You Need.

Welcome to Sonomic. A whole world of **sound FX** and **samples** delivered online – right into your studio. All digital, searchable and downloadable in seconds. Take a minute. Find out how easy it is to select exactly the right sound – without running around. Visit **www.sonomic.com.**

sonomic™

our partners:

CIRCLE #028 ON PRODUCT INFO CARD

TITUS · 95 EXCESS · numerical sound · CLACK! · DOUG BECK MUSIC

OnlineAudio

order form to e-mail or fax back to you. Independent artists, record companies and online music retailers are all using Web sites for direct sales of prerecorded audio.

As the MP3 phenomenon has shown, convenience and instant gratification are higher priorities for many people than getting the best possible fidelity. If the target users of your site fall into this category, then you can add digital downloads to give them what they want—without having to press CDs or duplicate cassettes. In this "electronic music distribution" model (EMD), the content owner isn't actually selling a physical object embodying the sound, but rather selling (or giving) the buyer a license to copy a digital file of the material. Needless to say, this is the aspect of online audio that has proven most controversial, because not everyone agrees about who has the right to allow others to copy files.

Another type of online audio is Webcasting, where continuous sound is available to end-users in real time. Applications range from large news organizations covering big events to local radio stations simulcasting their broadcast signal. Webcasting is of particular interest if you're involved in sound for live performances and broadcasts, because it dovetails well with the core package you already offer your clients. However, it requires specialized equipment and a different approach than typical Web sound applications such as playing samples from a page. See "Webcasts on the Rocks," page 76, for more information.

Finally, the opportunity to hire your services out to others to create sounds that add interest to sites, even when those sites have nothing to do with music or audio, is offered through the Web. Flash animations—often with soundtracks—are an increasingly popular method to welcome visitors to a home page. There's also the possibility of using ambient music to create a pleasant experience for visitors as they browse around. And then there are event-triggered sounds that provide feedback in response to user actions.

HOW BROAD IS YOUR BAND?

Once you determine what you want to do with sound, you can start assessing the various categories of online audio to see how well they apply to your situation. First you have to bear in mind that almost everything depends on bandwidth, the bit rate that data can be transmitted from point A to point B across a connection.

"Dial-up" modem connections top out at 56 kilobits per second. "Broadband" connections—generally either cable service or DSL lines for home users—offer much higher bit rates, starting at 256 kbps. Though the number of broadband connections has undoubtedly risen, early 2000 research from *The Wall Street Journal* found that about 95% of American households with Internet service used dial-up connections.

If your primary purpose is to enable digital downloading, then the bandwidth of your typical user's connection is not a make-or-break issue, because the main purpose of downloading is to transfer audio files to the client in their entirety, where they remain available for listening—even when the client is no longer connected to the site. But even so, the bandwidth of the user's connection and the offered file's bit rate affects the decision of whether it's worth the time to download.

Consider a four-minute song, which would take 42 Megabytes in 16-bit/44.1kHz PCM on a CD. Encoded to a 128kbps MP3 file, the song is reduced to a mere 3.84 MB. It would take 10 minutes (best case) to download with a 56k dial-up, which is 2.5 times real time. Over a 256k DSL connection, however, the download time drops to two minutes. This seems to be among the reasons that downloading is most prevalent on college campuses, where dorms are frequently served by high-capacity connections, such as T1 or ISDN lines.

With streaming audio, the listener doesn't have to wait for the entire file to be transferred onto the client system. Instead, sound begins playing from a data buffer on the client's hard drive as the file is transmitted from the server to the client. When the bandwidth of the connection is greater than the bit rate of the file, you've met the main criteria for streaming audio.

Depending on the software used to play streaming audio, old data may be overwritten by new data as it is recorded into the buffer, meaning that a complete copy of the file might never be present on the client's hard drive. In other words, the listener might have to be connected to the server to hear the file.

Webcasting is one form of streaming where the point is generally to listen to

The Totally FireWire Project Studio is here!

The 30GB X-Project Hard Drive

Record, mix and edit 144 minutes of 24-track, 24-bit audio at 48K!

Glyph's FireWire SMOKES!

- Glyph optimized for superior A/V performance
- Drives mount on your desktop and you're ready to go
- 24-hour advance replacement warranty*
- Compatible with Macintosh and PC
- No host bus adapter card needed (For Macs, your PC may not have FireWire on board)

WILDFIRE

WildFire 3-in-1 CD-RW

The FireWire edition of Glyph's X-Project™ and Glyph's WildFire™ CD-RW.

Tools that simplify digital audio production.

Enjoy the performance, Herculean service and crushing technical support that professionals do.

Plug in...turn on Start Creating.

CIRCLE #030 ON PRODUCT INFO CARD

FireWire Mac Designed for Microsoft Windows NT Windows 98

*Applies to single hard drives in 1st year of warran-

GLYPH

800 • 335 • 0345 www.glyphtech.com sales@glyphtech.com

the audio as it streams, rather than retaining a copy for subsequent listening. Like tuning in a radio station, the listener selects an audio program that is fed in a continuous stream from the server to their local machine. Perhaps the most common form of streaming in the music business, however, is "on-demand" streaming that is used to play samples of songs in response to listener's clicks when they browse a label or artist Web page.

Though streaming and downloading both involve prerecorded performances in the form of digital audio files, ambient music on the Web is well-suited to a MIDI-based approach using software synthesis. With the Beatnik editor, for instance, you can transform MIDI files into Rich Music Format (RMF) files, which play back via the Beatnik plug-in for Internet Explorer (Windows only) and Netscape browsers. RMF files download before they play. But because MIDI data is tiny compared to digital audio, the files start playing almost immediately, using the plug-in's built-in General MIDI sounds. RMF files may also include digital audio, which you can use for event-based sound effects.

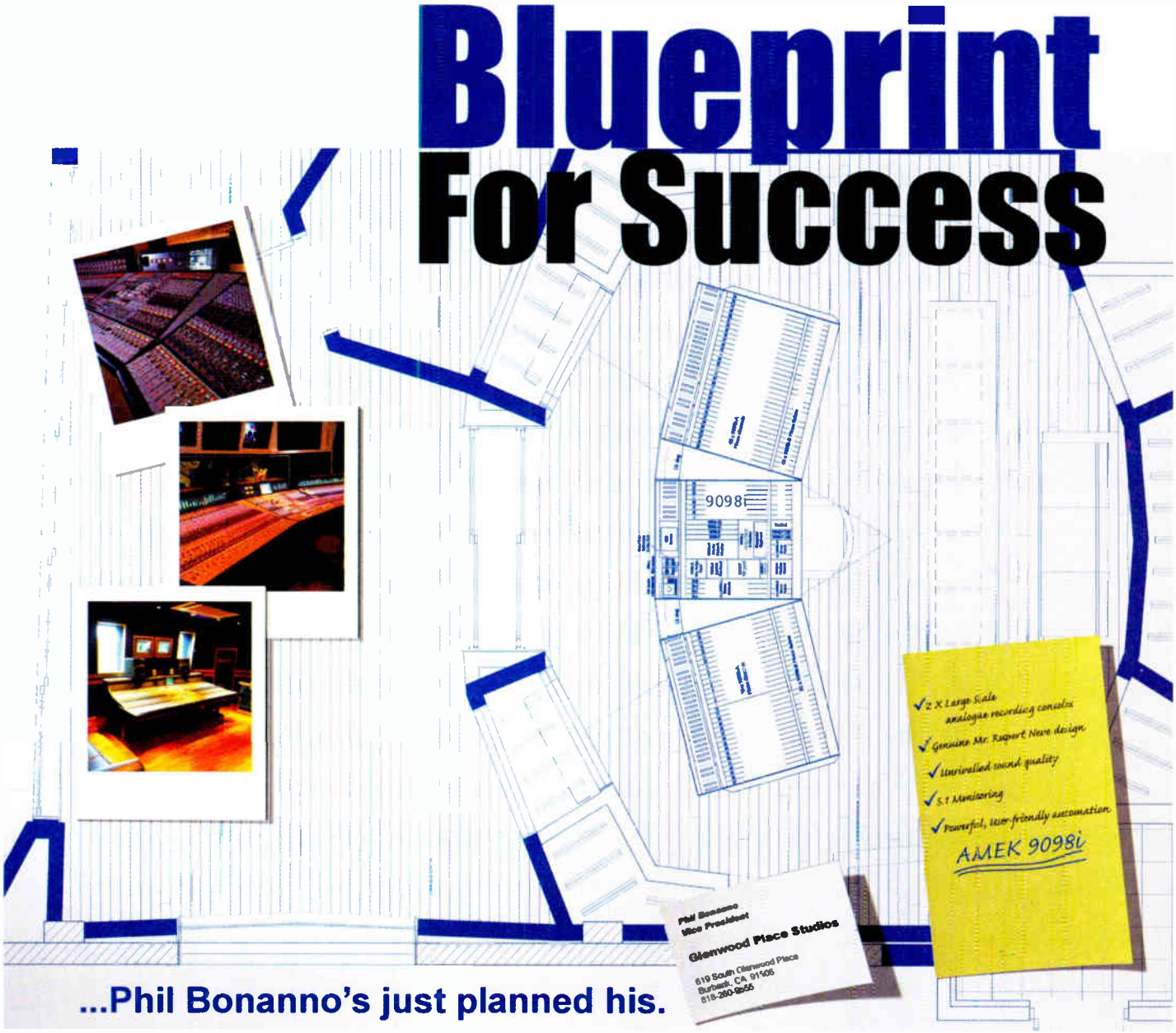
CODECS, FILE FORMATS AND PLAYERS

As with other forms of audio data compression, encoding for the Web involves what is known as "perceptual coding." A "codec" (compression/decompression algorithm) makes the file smaller by discarding parts of the audio information. The elimination of audio material is based on assumptions about what information the human ear is least likely to notice. During playback, the codec decodes the data and re-creates an audio signal for the listener.

Because a codec determines how audio data is compressed, it also determines how it sounds when it is decoded. Codecs may be more or less clever at choosing what data to discard, and there certainly have been major advancements over the last few years. In general, however, a higher bit rate still means better fidelity.

Most codecs allow audio encoding over a range of different bit rates to support transmission over connections of different speeds. For instance, if you're creating 30-second song samples for an artist's site, then you can make one set

Blueprint For Success



...Phil Bonanno's just planned his.

In fact he has just doubled his potential by installing the pinnacle of sonic excellence, trusting in proven ease of operation and sensibly relying on the unquestioned knowledge and design skills of a legend. Central to Glenwood Place Studio's blueprint for success are two of Mr. Rupert Neve designed 9098i master recording consoles from AMEK. Want to stand out from the pack? Start planning.

"I've always been a big fan of British consoles and Mr. Rupert Neve, but I have also wished someone would couple that classic sound with the best in console automation. After sitting behind the AMEK 9098i for a short time I am convinced that AMEK and Rupert Neve have achieved this magic combination.

I now have that classic sound coupled with an automation system that is not only powerful, but so easy to use. Put simply, Glenwood Place is my vision for success and I know I can achieve it, because Rupert and AMEK have designed the ultimate analogue board, the console of our dreams."

Phil Bonanno
Vice President/Producer/Engineer, Glenwood Place Studios

AMEK

US Headquarters
1449 Donelson Pike
Nashville, TN 37217
Tel: (615) 360-0488
Fax: (615) 360-0273
Web: www.amek.com
Email: amekusa@harman.com

A Harman International Company

Manchester
44 (0)161 868 2400

Los Angeles
1 (800) 585 6875

Nashville
1 (888) 286 9358

Tokyo
81 3 5707 0575

CIRCLE #033 ON PRODUCT INFO CARD

for dial-up users and another higher-fidelity set for broadband users. Depending on the file format, these two versions could be incorporated into a single file. The playback software for that file format can use "bandwidth negotiation" to figure out the connection speed and stream the corresponding file. Popular codecs today include RealAudio, which is primarily used on audio streaming, and codecs that create files at bit rates appropriate for streaming or downloading, including MP3 (MPEG-1 Layer 3), Windows Media Audio and MPEG Advanced Audio Coding (AAC).

In addition to audio data, many file formats support information for display during playback, in both text (artist name, song title, composer, etc.) and graphic format. Some file formats, including Liquid Audio and Windows Media, let file creators (presumably the owner of the material) define the circumstances that allow an end-user to download—for instance, after entering credit card information. (It is the lack of both of these features, particularly digital rights management capabilities, that makes MP3 a poor format for electronic commerce in music.)

File formats are designed to work hand-in-hand with audio "players." A player runs the decoding codecs for the file formats it supports, and handles the processing and display of any additional information included in a file. Most players handle playback of downloaded files; some also support streaming. To stream, a player must manage—perhaps in concert with the listener's Web browser—the real-time flow of data between the server and the client, which is not required for digital downloading.

Software players are plentiful, each supporting various file formats and codecs. The widely used RealPlayer line from RealNetworks supports streaming of RealAudio files, and the company's RealJukebox plays downloaded files in a variety of additional formats, including MP3, Liquid Audio, WMA and .WAV. Liquid Audio files (using AAC, Dolby Digital and MP3 codecs) are also supported by the Liquid Player, as are files in MP3 and .WAV formats. Apple's QuickTime supports a variety of formats, including codecs from QDesign for music and Qualcomm for voice. Windows Media Player supports WMA, MP3 and Voxware. Many other players are also available, and the range of supported formats and codecs is continually evolving.

Players may also be stand-alone hardware devices. For a couple years now, you've been able to transfer audio files to Walkman-style portables such as Diamond Rio, RCA Lyra, Creative Nomad and Sony Music Clip. There are also handheld computers from Compaq, Casio and HP (all using Microsoft's PocketPC operating system) that play Windows Media and MP3 files (the Casio can be fitted with a wireless modem for streaming on-the-go), plus Internet radio devices from companies such as Kerbango, Sonicbox (iM Remote Tuner) and Akoo (Kima). Wireless phones with streaming capabilities are also reportedly in the works from companies such as Motorola.

MAKING THE BEST OF IT

Although connection bandwidths today generally don't support high fidelity,

there are, however, a few things one can do in advance to mitigate the damage to the original audio. The key steps are filtering, EQ, normalizing and compression, though the specifics of how these are used depend on both the content of the source file and the target format you are optimizing.

For streaming over dial-ups, the audio preprocessing may be quite radical compared to that used in premastering for CD. Low- and highpass filtering reduce the audio bandwidth of the signal, while EQ can strategically bring out frequency ranges that seem lost in the encoded file. Normalizing ensures that peaks are close to (but not over) maximum, and compression then brings all the music below the peaks up into the higher end of the dynamic range, where it is less likely to be discarded by the perceptual coder.

Unfortunately, you generally can't directly hear how your preprocessing will affect the sound of a given encoded file; you have to encode it and then listen back. Because level, dynamics and frequency content interact to affect the outcome, truly optimizing for the best possible encode can be a time-consuming process, one best done on a song-by-song basis. However, most organizations that have large quantities of material to encode either don't preprocess at all or use general presets rather than custom optimizing each song.

HOW CAN PRODUCERS AND ARTISTS ENSURE THAT THEIR MUSIC IS HEARD AT THE BEST POSSIBLE FIDELITY IN EACH MEDIUM? BY INSISTING THAT THEY HAVE THE SAME INPUT INTO MASTERING THE FINAL PRODUCT FOR THE WEB THAT THEY HAVE OVER MASTERING THEIR RELEASES FOR CD.

Given these circumstances, how can producers and artists ensure that their music is heard at the best possible fidelity in each medium, including over the Internet? By insisting (contractually or otherwise) that they have the same input into mastering the final product for the Web that they have over mastering their releases for CD. Instead of letting someone else throw your music into a batch-processing run with thousands of other files, you can deliver your own optimized, encoded files for each codec and bit rate where the music will be made available online.

Besides developing a "Web mastering" market for studios and engineers, custom-optimized files will also give fans more reason to pay for authorized downloads rather than settle for unauthorized MP3s "ripped" (off) from CDs. By focusing on the "traditional value" of fidelity in music, artists and labels may help keep new online audio technologies from running the music industry out of business. ■

BY GARY HALL

THE MP3 Machine

...or, What Is Happening to My Audio?

Editor's note: *This article appeared in the January issue of Mix's new* Internet Audio *magazine. If you'd like a free subscription or to find out more about this quarterly publication, then visit www.mixonline.com/internetaudio.*

YOU'RE AN UP-TO-DATE AUDIO PRO, savvy to audio on the Internet. You've uploaded and downloaded, optimized your material for compression and use only the very best encoders. But in the back of your mind, there may be one little question that just won't go away: "What the heck is this MP3 stuff actually doing to my audio?" This article will attempt to explain what really happens in the most prevalent compressed-audio format on the Internet, MP3.

A LITTLE HISTORY

Research on audio data compression has been going on almost as long as there's been audio, driven by both military and civilian needs. Military organizations are interested in getting intelligible voice in terrible conditions, and this means bringing down the amount of data transmitted. Civilian telcoms, on the other hand, have a potent interest in cramming as many phone calls as possible onto a single cable.

This has added up to significant budgets for a lot of years of private and academic researches delving into the mysteries of human hearing, as well as really neat coding

ILLUSTRATION / NATHAN OTA

schemes. For decades, the research focus was on speech intelligibility, but in the 1980s and early '90s, it became feasible to code in such a way that good-sounding music could be compressed into a fraction of the space required by CD audio.

In the early 1990s, as the Internet grew in popularity, compression issues became even more important as more people wanted to transmit audio across a medium with limited bandwidth and speed. It was about this time that the MP3 standard was developed.

ACRONYMS AND LAYERS

MP3 is an acronym of an acronym, expanding into "MPEG-1 Layer 3 Audio." MPEG stands for the Motion Picture Experts Group, and MPEG-1 is the first in a series of standards for the compressed coding of audio and video for presentation in various media. MPEG-1 video is commonly used on Video CD (a major industry in Asia). MPEG-2 is well known today in association with DVD, Direct Satellite Broadcast (DSB) and Digital Video Broadcasting (DVB) outside the U.S. MP3 audio is part of the original MPEG-1 specification. So what is this Layer 3 thing about, and what happened to Layers 1 and 2?

When the MPEG-1 specification was defined, there were two promising candidates, MUSICAM and ASPEC, vying to become the standard for audio encoding. Listening tests didn't produce a winner, so MPEG decided to codify three options, which became known as Layers 1, 2 and 3.

MPEG-1 Layer 1 Audio requires the least processing to encode and has the lowest latency, or encoding delay. Its intended application is direct recording, with encoding in real time. The compression algorithm used in the Digital Compact Cassette, known as PASC (Precision Adaptive Subband Coding), is a close relation.

MPEG-1 Layer 2 Audio is the same in principle as Layer 1 but uses more refined processing for encoding. Layer 2 is in widespread use today for DVD (especially in PAL markets), as well as Video CD, digital audio and video broadcasting.

MPEG-1 Layer 3 Audio (MP3) takes the next step: The basic framework of Layer 1/Layer 2 encoding is preserved, but additional elements are added for more efficient compression. See Fig. 2.

SO HOW DOES IT ALL WORK?

It's easier to understand MP3 if you first understand Layers 1 and 2, MP1 and MP2, respectively. MP1 and MP2 are examples of a class of compression techniques known as Subband Coding, or SBC. SBC techniques vary in details but have the same general structure and approach. Let's examine the steps in this process; a block diagram of the MP1/MP2 algorithm is shown in Fig. 1.

THE FILTER BANK

Uncompressed audio data (such as CD audio) goes into the system. The first step toward compression is division of the signal into 32 frequency bands by a filter bank. In decoding, these subbands are summed together to reconstruct the signal.

Layers 1 and 2 use filters, called polyphase filters, that are comparatively simple and, therefore, imperfect. These diverge from the ideal in two respects: For one, the filter bands are spaced evenly in regards to frequency (about 500 Hz), making them uneven to the ear. The other imperfection is the sharpness of the filter cutoff curve. Polyphase filters have only moderately sharp roll-off and must overlap one another to reconstruct the signal accurately.

PSYCHOACOUSTIC ANALYSIS

As the input signal goes to the filter bank, it also feeds a section that analyzes the signal content using a Fast Fourier Transform. FFT analysis is also frequency-based, but it is relatively low-resolution and unsuited for reconstructing the signal with any fidelity. Rather, it identifies where there are strong (high-

GLOSSARY

Bit Rate: The average number of bits that one second of audio data will consume. Measured in kbps (1,000 bits/sec).

Critical Band: "Reception bands" in the human auditory system, where frequency components will mask a given tone. There are 24 critical bands; bandwidth varies with frequency but is usually between 1/6 and 1/3 octave.

Fast Fourier Transform (FFT): A mathematical function used for analyzing frequency content as it varies over time.

Lossless Compression: A method of data compression in which no data is lost. In terms of size reduction, it is not as efficient as lossy compression, where redundant data is removed.

Motion Picture Experts Group: Established in 1988, a working subset of ISO/IEC to develop standards for coded representation of digital audio and video.

Multiplex: To combine or transmit several data streams on the same circuit or channel.

Psychoacoustic Model: A hearing perception model based on the interaction of sounds with the human auditory system.

Threshold of Audibility: The minimum sound pressure level that can be perceived by the human auditory system—usually referenced as the standard of sound pressure, 0 dB.

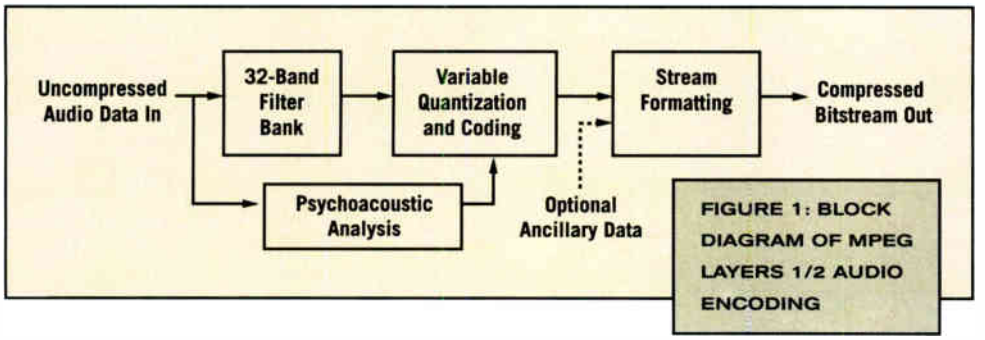


FIGURE 1: BLOCK DIAGRAM OF MPEG LAYERS 1/2 AUDIO ENCODING

amplitude) tonal or nontonal components, in order to mask lower amplitude sounds in the vicinity.

A psychoacoustic model is applied to determine the effects of frequency masking, which is an upward shift of the hearing threshold of some relatively weaker tones by louder tones. Each component identified in the analysis is assigned a spreading function that determines how strongly it will mask the sounds around it. These are added together to assign a threshold of audibility for each of the 32 subbands.

The MPEG-1 specification defines two optional psychoacoustic models, one relatively basic (Model 1) and one more elaborate (Model 2). Each of these models can be applied in any of the three Layers. Model 2 includes specific features applicable to the more sophisticated processing of MP3.

VARIABLE QUANTIZATION

The psychoacoustic analysis results are then applied to the filter bank outputs. If the energy in any band falls below the overall threshold of audibility, then that band is deleted. Most explanations of audio compression focus on the elimination of inaudible components, but what happens to the audible portions is equally important.

Each audible band is then quantized individually. Signal-to-noise ratio is proportional to bit resolution. By looking at the energy and audibility threshold for each band, the encoder can determine the lowest bit resolution that can be applied.

Thus, subband coding adds content in the form of quantization noise, as well as removes bands that fall below audibility. The combination of these processes results in the overall compression ratio.

CODING AND FORMATTING

We now have a set of bandpass filter outputs, rendered at various resolutions. These are assembled to distribute the bits evenly into a bitstream with a constant data rate. For MPEG-1 audio in hi-fi stereo applications, data rates of 128

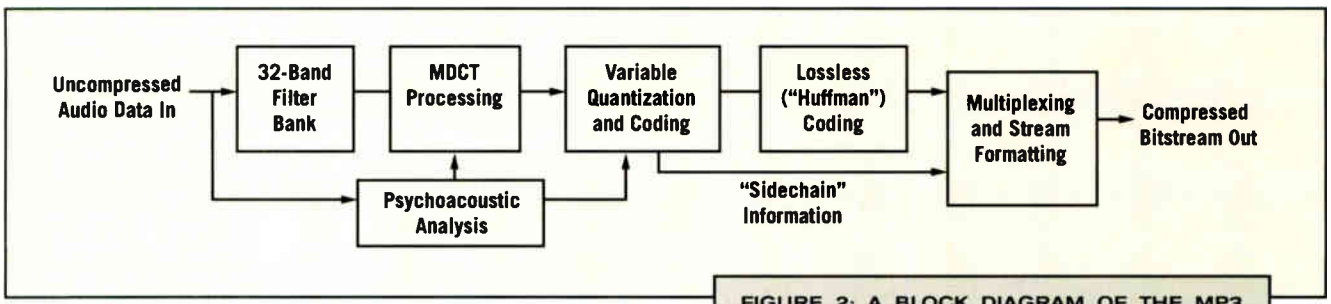


FIGURE 2: A BLOCK DIAGRAM OF THE MP3 COMPRESSION ALGORITHM

to 256 kbps (thousands of bits per second) are typical.

The coded bitstream is then formatted by dividing the raw bitstream into sections, or frames. Additional useful information, such as the stereo mode, bit rate, coding layer, etc., is embedded in headers that mark the beginning of each frame.

STEREO MODES

Stereo audio typically has a large share of redundant information between channels. Greater efficiency results if redundant information is identified.

The sensitivities of the ear to different cues can also be exploited. At low frequencies, localization is weak, and differential information can be combined into a single channel. At high frequencies, cues from the temporal envelope become more important than instantaneous amplitude.

MPEG-1 audio provides three modes for dual-channel input: Dual-Monophonic, Stereo and Joint-Stereo. Dual-Monophonic coding treats each channel separately, with no advantage from redundancy. Stereo mode exploits only direct bit-for-bit redundancy. Joint-Stereo uses more sophisticated analysis and applies psychoacoustic mapping for different frequency ranges.

A BETTER FILTER BANK

MP3 uses a more elaborate design for the first stage filter bank, allowing filters to be placed at intervals matching critical bands of the ear so that each band more closely matches the frequency regions where the ear will experience masking.

MP3 achieves this by following the polyphase filter with a frequency transform filter, known as Modified Discrete Cosine Transform, or "MDCT." MDCT is optimized for audio, and its output can be reconstructed into an accurate representation of the original waveform.

The downside of the MDCT filter is that it is subject to a form of transient smearing, known as pre-echo. MP3 compensates by detecting the conditions for pre-echo and modifying the filter settings for that interval.

SMARTER QUANTIZATION

MP3 also uses more clever means than Layers 1 and 2 to determine the threshold of audibility in each frequency band. The more sophisticated Model 2 psychoacoustic model is used with better estimates of masking effects. These are used to determine optimal quantization levels for each subband.

LOSSLESS COMPRESSION

MP3 applies a form of lossless compression, called entropy coding, to the output of the filtering and quantization process. In entropy coding, data words (or "symbols") that occur more frequently are given shorter codes, like an abbreviation.

The type of entropy coding used in MP3, known as Huffman Coding, uses a fixed look-up table to match more commonly used values with shorter codes.

VARIABLE BIT RATE

MP3 makes a provision for a type of variable bit rate encoding, called a "bit reservoir." When data is multiplexed and formatted, extra space is allowed so that when a difficult-to-encode section comes along, the extra space is used to store additional information. Overall bit rate remains constant.

DRILLING DOWN

For more technical information on MP3 than you ever wanted to know, grab something caffeinated and check out the following Web links...

www.cselt.it/mpeg The home page of the Moving Pictures Experts Group. Includes comprehensive technical references on MPEG standards, plus work group news and plans.

www.iis.fhg.de Home page of the Fraunhofer IIS-A, the main developer of MPEG Layer 3 and MPEG-2 AAC (Advanced Audio Coding).

www.mpeg.org A guide to MP3 resources on the Internet. Includes FAQs, search engines and links.

www.tnt.uni-hannover.de/project/mpeg/audio The University of Hannover's department of Electrical Engineering and Information Technology's MPEG audio page. Includes general information, plus sound quality assessments and other tests.

Optimum Performance Ultimate Sound

When Your Sound is an Ideal, Not a Compromise

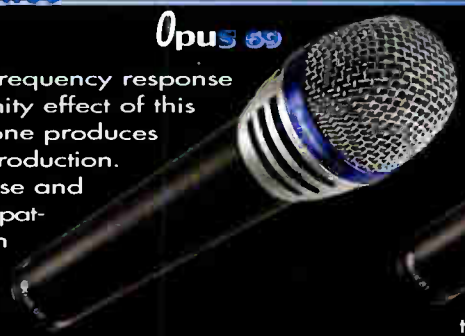
beyerdynamic introduces Opus, a selection of high performance touring and sound reinforcement microphones for the demanding musician and audio engineer.

The collective work of German engineering and ingenuity, the Opus range of microphones is a cohesive family of products optimized for music performance. Classic technology and 21st century materials combine to create a complementary range of microphones for the musician on stage or in the studio.

Vocal Microphones

Opus 89

A wide,uncolored frequency response and warm proximity effect of this dynamic microphone produces spectacular vocal reproduction. Its remarkable response and tightly controlled polar pattern enhances usable gain before feedback, producing a crisp, natural sound.



Opus 81

Advanced technology and extraordinary engineering has produced this state of the art condenser microphone. The Opus 81 can be used on the stage or in the studio. It produces a smooth, warm sound, accurately reproducing the rich textures of a vocal performance.

Instrument Microphones

Opus 51

A boundary microphone, the Opus 51 captures direct and reflected sounds from an instrument in perfect balance and at an equal level. This microphone is ideal for capturing the full sound within an instrument such as the piano or bass drum.

Opus 65

The Opus 65 is built with a 1.5 inch diameter diaphragm within a powerful neodymium magnet. The Opus 65 requires little or no equalization to produce the natural sounds of low frequency producing instruments, virtually eliminating the problems incurred by other kick drum microphones.

Opus 83

The Opus 83 is a condenser microphone ideal for drum and percussion overheads, cymbals, and acoustic instruments. Built from solid brass, the casing of the microphone protects the sensitive element from the rigors of the road.

Celebrating its 76th anniversary in professional audio, beyerdynamic adds to its legacy of audio innovation with Opus, the uncompromising choice for musicians who refuse to sacrifice their sound.

beyerdynamic)))) North America
www.beyerdynamic.com
in the USA: Tel.: (800) 293-4463 • Fax: (631) 293-3288 • e-mail: salesUSA@beyerdynamic.com
In Canada: Tel.: (888) 567-5940 • Fax: (450) 975-7764 • e-mail: salesCANADA@beyerdynamic.com

beyerdynamic))))
.. Fidelity in Audio.™

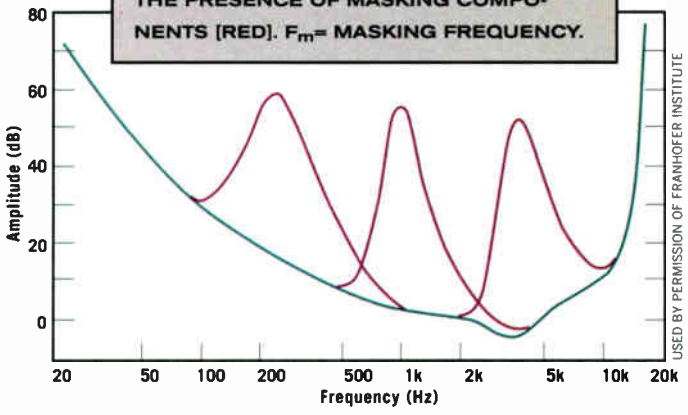
MP3 also allows for true, variable bit rate encoding. Many MP3 encoders do not implement variable bit rate, but some of the newer encoders support this technology.

MPEG LAYER IMPLEMENTATIONS AND PERFORMANCE

The three MPEG-1 audio Layers are implemented in order of efficiency. Nominally, the MPEG spec posits that for MPEG-1 Layer 1, a bit rate of 256 kbps should produce results that are close to CD quality. The rates for Layers 2 and 3 are 192 and 128 kbps, respectively.

Can this claim be verified? Well, yes and no. Most people will cheerfully listen to 128kbps MP3s and be quite satisfied. (Note that there are substantial differences between encoders.) If you A/B between a CD original and its MP3-coded form over headphones, then it won't take long to convince yourself that output is not identical to input. The goal of the standard is that the difference between original and encoder be "perceptible, but not annoying."

FIGURE 3: THE CURVE OF AUDIBILITY THRESHOLD, IN SILENCE [GREEN] AND IN THE PRESENCE OF MASKING COMPONENTS [RED]. F_m= MASKING FREQUENCY.



CONCLUSION

We've taken a lighting-quick look at the way MP3 compresses audio data. There is a lot of detail in the process that has been omitted for brevity and (hopefully) clarity. While professional listeners are likely to find the limits of any audio data compression scheme, it's indisputable that MP3 has satisfied most of the listeners most of the time. Perhaps the true measure of an audio coding scheme's effectiveness should be the number of lawyers employed as a result of its application. On that basis, MP3 is a hands-down winner. ■

Gary Hall has been working in digital audio for over 20 years and has been responsible for many innovations in audio processing. His real ambition, however, is to dance in Bollywood films.

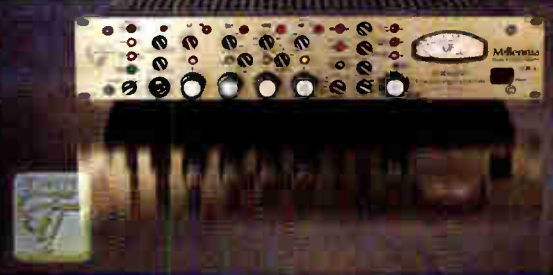
because...

STT-1

tube or solid state

Over 130 product combinations in one chassis

Select transformer-coupled vacuum tube preamp, parametric EQ, compressor/limiter, de-esser, & DI input for a lush, rich sonic pallet. Or choose transformerless, all discrete Class A solid-state amplifiers for Millennia's trademark musical realism. Or select ***any combination*** of transformer, vacuum tube, or solid-state signal paths for an almost unlimited array of tonal creativity.



great sound is

HV-3D

The standard in critical acoustic recording worldwide.

Eight channels of Millennia's extraordinary microphone preamplifiers housed in a new, ruggedized chassis befitting a military envoy. The ***HV-3*** remains a first choice of top artists, engineers, and producers. Also available in two and four channel units.

a passion

TCL-2

Unlike compressors intended for color and personality, the ***Twincom*** is designed for pure, accurate sonic performance.

With a single balanced amplifier comprising the entire audio signal path, the ***Twincom*** compressor/limiter with ***Twin Topology***® offers what many call the most musically realistic opto-dynamics processing available at any price. Employing a selectable vacuum tube or discrete solid-state gain amplifier, the ***TCL-2*** is equally at home in tracking, mixing, or mastering.

NSEQ-2

Overwhelmingly embraced by recording, mixing, and mastering engineers, the ***NSEQ-2*** parametric equalizer with ***Twin Topology***® offers stereo equalization via euphonic vacuum tube amplifiers or sonically pure discrete solid-state amplifiers. What we believe to be the most musically faithful analog equalizer available, the ***NSEQ-2*** offers uncompromised performance at a realistic price.

Millennia
Music & Media Systems

530-647-0750
Fax 530-647-9921

Nominee Nominee Nominee Nominee

CIRCLE #038 ON PRODUCT INFO CARD

www.mil-media.com

WEBCASTING ON THE ROCKS

STREAMING FROM THE STAGE TO THE INTERNET

BY CANDACE HORGAN

Engineer Chris Mickle has been at the forefront of Webcasting concerts in the Colorado area for five years now since putting the first ISDN lines into Red Rocks in 1995 for a Blues Traveler show. And, because Webcasting is a fairly new field, Mickle has experienced his share of headaches getting the shows on the air.

"1996 proved an interesting year," says Mickle. "I did Webcasts of two big shows that year and had trouble with the phone company with both of them. The first was the Hootie and The Blowfish Red Rocks concert, which was the first streaming Internet concert out of Red Rocks. We set up a conference call via an Internet phone service provided by Intel between the bandmembers and people all over the world on their computers. It was crazy. All the phone lines went down 15 minutes before the interview was to start. I still get goose bumps about it," he laughs, pulling up his sleeve. "We got everything up and running again five minutes after the on-air time, which was a miracle. Then, later that year, we were to do a Big Head Todd and The Monsters Webcast from the Paramount, and two hours before a worldwide broadcast, we had no ISDN lines at the venue. Having been through this type of nightmare previously, I had direct contacts at U.S. West, which I used and kept using, and because we were all told the work had been done, they called a SWAT team in to install the ISDN modules and engage the lines with 15 minutes to spare."

Mickle, now 48, got into engineering originally because he was "too broke" to record his own songs. Now he does the recording for many Colorado festivals, and his company, Professional Sound and Recording (PSR), regularly engineers remote recordings and Webcasts in Colorado and elsewhere, including a summer 2000 Puff Daddy show in London. In July 2000, PSR did the Webcast for the KBCO World Class Rock Fest in Winter Park, a two-day festival headlined by The Barenaked Ladies, Natalie Merchant, Kenny Wayne Shepherd, and Medeski, Martin and Wood. PSR produced the audio program, which was linked with a video company's feed and sent out over the Net via the House of Blues uplink truck.

Mickle's technical setup starts at the stage splitter, which routes all inputs to the house P.A., monitors and recording truck. "I also usually put up a couple of mics for ambience," he says. Inside the truck, which can accept over 100 inputs, up to 40 inputs are routed to an Amek Einstein. "It's a great-sounding, low-tech board," says Mickle. "Our main console has 40 inputs, and our large second console has 24 inputs. We have two other sidecar consoles, each with 16 channels, and we have eight channels of Grace Design mic preamps, with more available."

Inputs go directly from the preamps to the tape machines, normally Tascam DA-78s and DA-88s. Two Stephens 24-track machines are also available for 2-inch analog. Using the line-level returns from the tape machines, Mickle returns sources to the main console for monitoring and mixing. "Obviously, that way we have the cleanest, most direct signal to tracks," comments

Mickle. "I discourage the use of any effect or dynamic going to the tracks; we only use effects and dynamics on the mix side."

Some of the Webcasts Mickle has worked on, like the Puff Daddy show, were recorded first and then posted on the Internet later. At other times, Mickle processes the signal right from the truck for streaming audio. When the show is a streaming audio production, such as the Winter Park festival, Mickle sends the signal from the board out to A/D converters. His preferences for converting the signal might surprise people. "I know you are looking for me to say I am using an Apogee or Prism, but I save that quality of conversion for the real audio processing in the truck. I feel any good A/D converter is suitable for the kind of Web broadcasting listening quality that is currently achievable today," he explains. "I don't think a better A/D converter would necessarily improve the end listener's enjoyment of the broadcast. I think what improves the enjoyment of the broadcast is great processing of the signal prior to streaming. That comment might result in a lot of raised eyebrows from my peers in this business, but in an era where MP3 is completely acceptable to the vast majority of listeners, I fail to see how a $6,000 A/D converter will significantly improve the listener's enjoyment over a very fine $2,000 converter."

At the Winter Park festival, the final stage of Mickle's production involved sending the show out live over the Internet, for which he uses the RME Hammerfalls sound card. From there, the signal chain can follow several branches. "Sometimes we use a dedicated piece of gear, like a [Telos] Zephyr for ISDN, but usually we are just sending it into a PC or Mac," Mickle says. "From there it goes into the encoder; you can use MP3 or Winamp for that. You can also convert it to Real Player, Real Audio, QuickTime for Mac, Windows Media Player or Liquid Audio. Each one is its own specific process. Basically, you have a whole bunch of windows open, each of which is taking the data stream and processing it." Certain clients, such as House of Blues or Liquid Audio, use a proprietary conversion process. "Typically, I am busy in the truck making sure the program is worth broadcasting," laughs Mickle. "I leave it up to our associates to do most of the conversion."

As well as using the PC for Internet audio, Mickle has been using the hard drive as a high-resolution backup for the tapes. "I am working on a project using Hammerfalls to record 48 tracks simultaneously to hard drive on a PC," he explains. "Hammerfalls have the lowest latency and best written drivers; each card has 24 channels, and you can hook as many cards together as your system will allow."

Broadcasting over the Internet often

Inside engineer Chris Mickle's truck are an Amek Einstein console, eight channels of Grace Design mic pre's, and Tascam and Stephens tape machines

WEBCASTING ON THE ROCKS

calls for multiple outputs at different resolutions. "One of our associates, Music Badger, Webcasts a lot of shows that we are involved with, and they take several MP3 conversions at once, as many as four," explains Mickle. "Those converted MP3 streams are sent to different servers or high bandwidth hubs around the country or the world for distribution on the Internet. It has to be a high-bandwidth hub, because you will have hundreds of people dialing in simultaneously to pick up the program. One reason you send out so many streams is that some will be high quality for cable modems, DSL and ISDN connections, and you want to have some streams available for 28.8 to 56k modems, for people who don't have the ability to pull down such dense data so fast.

"You have to have a couple of options out there," he continues. "If you just send it out as high definition, then most of your potential audience won't be able to participate. If you just send it out low definition, everyone might be able to participate, but it won't be available to anyone as a high-quality broadcast. If you just sent it out low bandwidth, you won't be able to convey how good it sounds; you want a high bandwidth signal to go out so that all your hard work in producing the broadcast shines through. One important aspect of either Internet or radio shows is to have your excellent mix compressed enough as it leaves the truck so that the compressors at the station, satellite or Internet don't adversely affect the program. If you send it out too hot, then those kinds of compressors will wreak havoc on your show as it comes over the air."

For those who think Internet streaming of shows is the future, or for those with a more negative worldview who think that it offers a great chance for piracy, Mickle has some sobering words. "I had the eye-opening pleasure of producing the very first Internet broadcast from Red Rocks in 1996, a Hootie and The Blowfish show," he recalls. "It was a part of Intel's new Internet phone service, and we spent days working out a system. Intel brought six Pentium Pro computers on-site for the production and had engineers for each PC. After the show was under way, I was able to listen through headphones to a return Internet line through one of the computers, and it sounded like a really cheap, ancient transistor radio.

"There were all these suits from brand new Internet companies watching our effort and seeing this dawning of a Webcast age," he continues. "I remember, after initially hearing how it sounded through the computer, I went into the truck and grabbed Kevin Clock, my chief engineer, and had him listen as well. With the headphones on and without thinking about it, he looked at me and said quite loudly, 'This sounds like crap.' You could just see the blood drain from the faces of the executives around us," laughs Mickle. "Of course, things are a lot better now, but I hope MP3 is not the final answer. I don't know that I have experienced the full reservoir of MP3 material, from average quality to the best quality. I've been told some MP3s are pretty good, but I haven't experienced it. I think as bandwidth improves, maybe through satellite technology, we will be able to come up with less intrusive techniques to transmit high-quality audio and video." ■

Candace Horgan is a freelance writer based in the Denver area.

PROFESSIONAL RECORDING EQUIPMENT

MANLEY Langevin

COMPANY PROFILE: Manley Laboratories, Inc. in recent years has expanded and thrived under EveAnna Manley's leadership. Our 11,000 sq. ft. building houses our own machine-shop, printed circuit board manufacture, audio transformer winding, engraving, and silk-screening facilities. All custom design, R&D, assembly, testing, and quality control processes are performed with precision and pride at the Manley factory, located just 35 miles east of Los Angeles.

NEO-CLASSIC: MANLEY ALL-TUBE GEAR

We take a purist approach to everything we build; refining, executing, and expanding upon Manley's legacy of vacuum tube design philosophies proven over years of real-world experience, using high quality modern components, many of which are fabricated in-house. This attention to detail delivers the rich, present, and natural sound our vacuum tube designs are renowned for. Never small, sterile, or boring.

Beyond this, Manley means reliability, real technical support, and a company attitude that professionals depend on.

BIG BANG FOR THE BUCK: LANGEVIN

LANGEVIN is a legendary marque of premium electronics whose lineage goes back to World War II. **MANLEY** acquired the **LANGEVIN** brand name several years ago. With these products we offer you the different sonic flavor that **ALL-DISCRETE CLASS A CIRCUITRY** brings using fresh, original designs built alongside and to the same exacting standards as the Manley equipment.

We believe that good music and those who create it deserve the finest gear.

The choice is yours.

CIRCLE #040 ON PRODUCT INFO CARD

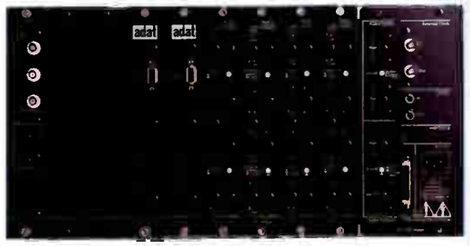
MANLEY LABORATORIES, INC.
13880 MAGNOLIA AVE.
CHINO, CA. 91710 USA
TEL: (909) 627-4256
FAX: (909) 628-2482
email: emanley@manleylabs.com
http://www.manleylabs.com

Compatible Solution

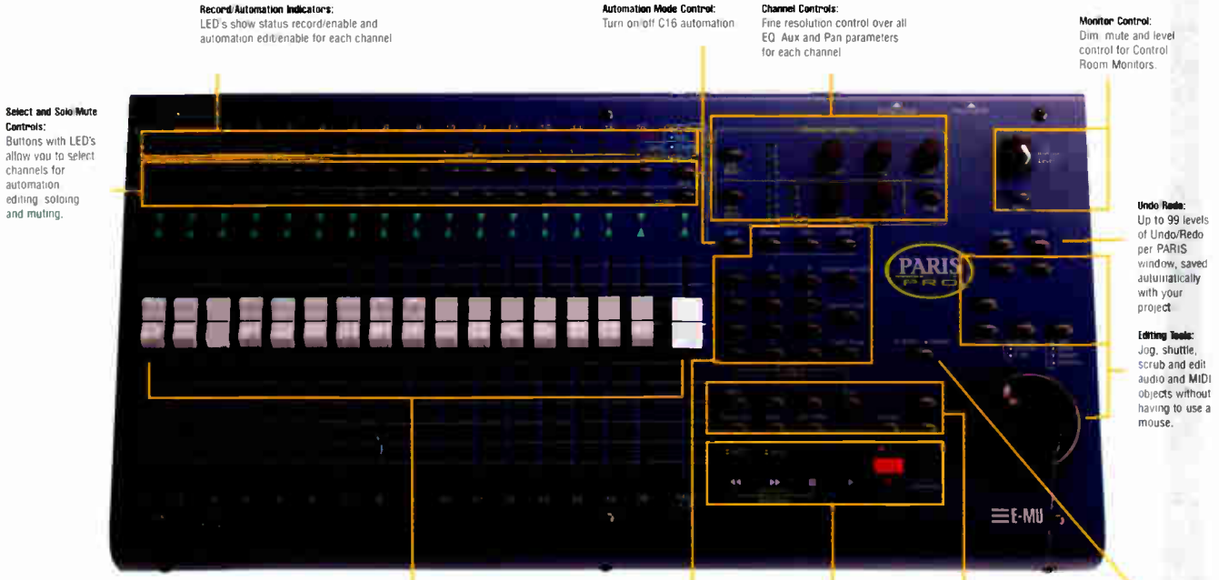
As a truly professional audio solution, PARIS Pro integrates easily into your studio environment by supporting a variety of file formats, platforms, plug-ins, MIDI sequencers and storage media. While PARIS Pro uses its own true cross platform (Mac/PC) native .PAF file format, it can also read and write .SD2 and .WAV file formats. PARIS Pro can also import and export OMF (Open Media Framework®) files, allowing you to easily work with projects created on other pro audio systems. But unlike other systems, PARIS allows you to record up to 64 individual tracks straight to off-the-shelf IDE drives, saving you the expense and complications of using "proprietary" SCSI drives. And PARIS Pro also supports the many professional MIDI sequencer programs available (i.e. VST™, Logic®, Performer®) in addition to offering you it's own integrated MIDI recording, editing and playback, letting you run your favorite sequencer alongside PARIS.

From tracking the first instrument to mixing down the final product, PARIS Pro is a state-of-the-art audio solution that fits seamlessly into your studio and delivers professional audio results. PARIS Pro was designed in response to thousands of individual feature and performance requests from the recording community, and it shows- PARIS Pro delivers audio quality and flexibility of expansion that is second-to-none. Choose PARIS Pro as your total audio solution and be secure in both your creativity and your final product's quality. Then take the money you saved and pick up those high end preamps and microphones you've been looking at– you deserve it!

MEC (Modular Expansion Chassis) Front



MEC Back w/Expansion Modules



*all specifications are subject to change

E-MU

P.O. Box 660015, Scotts Valley, CA, USA, 95067-0015
Tel. 831.438.1921 • www.emuparis.com

United Kingdom Office: Suite 6, Adam Ferguson House, Eskmills Industrial Estate, Musselburgh, Scotland EH21 7PQ • Tel: +44 131 653 6556

Dual Mode System

PARIS Pro is actually a unique fully integrated dual mode DAW that allows you to simultaneously use both hardware-based and host CPU-based tracks and DSP. This design gives you the best of both worlds by insuring that PARIS Pro's hardware core functionality is always available, while letting you decide how to tap into your CPU's unused power. And you will find more CPU power free than you thought, because PARIS Pro uses its own hardware for all the playback, mixing, EQ and included effects. When you want more tracks PARIS Pro allows you to use your host CPU to add "native tracks" to your project without additional hardware.

Want more effects? PARIS Pro supports the world's largest base of third party plug-ins, VST™ and DirectX®, giving you power beyond the arsenal of studio-grade processors already running on the PARIS hardware. And don't forget that these tools cost a fraction of the price of "closed" pro audio plug-in systems.

CPU processing speed and power are increasing exponentially these days, and PARIS Pro automatically makes the most of your computer investment by intelligently incorporating every bit of your system's processing power. Nothing can beat the PARIS Pro dual mode advantage.

Expandable Architecture

PARIS Pro is a truly modular expandable system. It can be expanded to 256 real hardware tracks in minutes. No other pro audio system can be upgraded as easily, and none is capable of as many actual hardware tracks. The intelligent total modular design allows additional cards to transparently provide more real-time tracks and more DSP for all projects- new and existing. This allows moving projects among various system configurations with no loss of tracks.

This same flexibility also applies to expanding your PARIS Pro I/O. Since PARIS uses a rack-mounted cage for I/O expansion, you simply install the I/O and sync modules you need into the Modular Expansion Chassis. With PARIS Pro you don't replace hardware to expand, you only add exactly what you want! No costly planned obsolescence. PARIS Pro offers you a host of professional I/O and sync modules, including 24-bit input and output modules (with full metering, trim control and ground lift), ADAT® (with 9-pin sync out), and more, allowing you to configure your system to your specific needs. The PARIS SMPTE Module provides all the professional features that you would expect- full LTC/VITC/Blackburst support, window burn, SMPTE regenerate/reclock, and front panel signal and sync-lock metering.

Post production users can even upgrade their software, offering full Quicktime® support and additional post production features for a surprisingly modest price. When you invest in PARIS Pro, you have a truly scalable and affordable solution that will grow with you, and be supported into the future.

EDS-1000X Expansion Card

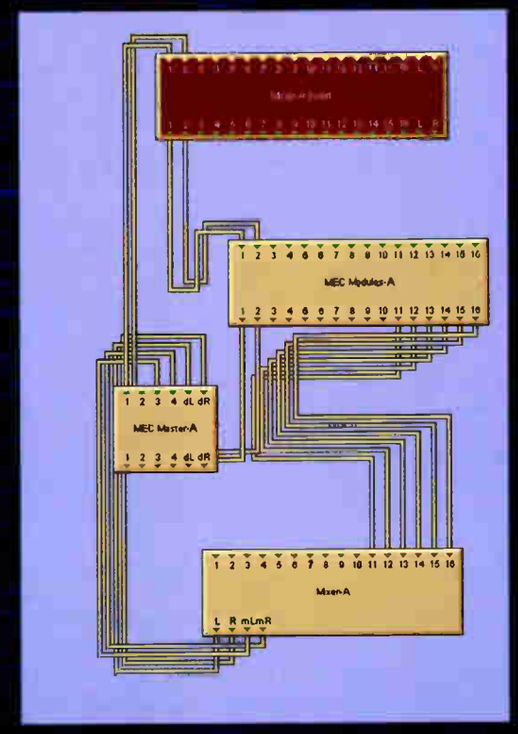
Intuitive Interface

From its inception, PARIS Pro was designed to offer professional users cutting-edge technology with the most intuitive hardware and software interfaces possible. Even the newest DAW users can be up and running in no time due to an exceptionally user friendly system design.

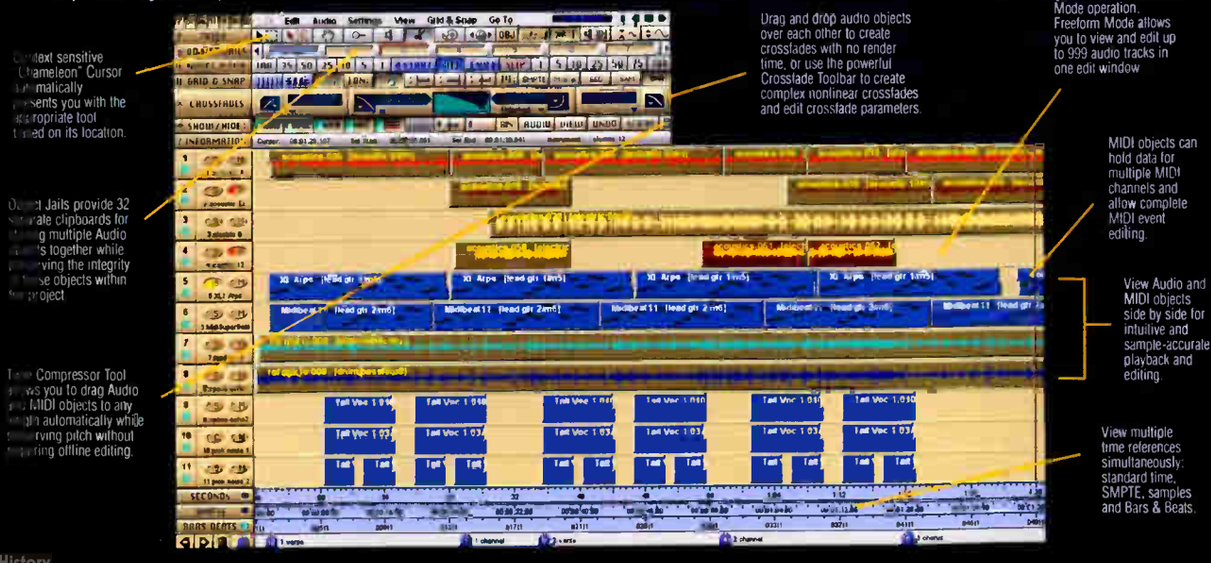
Every PARIS Pro System ships with a C16 Pro Interface, a physical mixing console that puts almost every operation at your fingertips without having to touch your computer's keyboard or mouse. In addition to its 16 high resolution faders, each C16 Pro also has dedicated buttons and knobs for transport control, editing, EQ (level, frequency, bandwidth), effects, solo, muting, automation, navigation, undo/redo, placing markers and much more. And PARIS Pro software is developed specifically to support the C16 Pro, so your control surface will always work seamlessly with every aspect of the overall PARIS Pro System. Want to add motorized faders from another manufacturer? No problem, PARIS Pro also supports 3rd party control surfaces! Once you've experienced the level of tactile control and integration that PARIS Pro offers, you'll never go back to mixing with a mouse!

The PARIS Pro software has been optimized so that you can work as quickly and efficiently as possible, while acting, feeling and even sounding like a top-end analog studio. Imagine the editing and creative power of a professional DAW with the feel and sound of a world class analog console, patch bay and multi-track tape deck. The user interface is very visual, providing you with graphical depictions of your signal flow for patching signals to and from your MEC and outboard gear. And the software's overall appearance has even been specifically designed to be less fatiguing on your eyes during long sessions. You can create up to 99 custom views per window, allowing you to zoom right in on specific critical locations in your mix and then return to the exact same view with a simple button push. Switch views to quickly set up the 8 aux send busses, and then switch back to adjust 4 bands of EQ per track instantly. And with 99 levels of undo/redo (all saved permanently with the project), you can work quickly while still feeling free to experiment with your edits and mixes. Imagine not worrying about getting back to the last good point if a creative experiment goes awry.

Fading and cross-fading can be as simple as extending the edge of an object or overlapping one object with another. And when you need more control you can use the graphic cross-fade editor to see exactly what you are hearing while adjusting every parameter. PARIS Pro is so user-friendly and intuitive (and sounds so good) that many engineers who have steadfastly refused to work with audio in the digital domain have become some of the most loyal PARIS proponents.



Patchbay Editor



COMPOSER SNUFFY WALDEN

FROM "THE WONDER YEARS" TO "THE WEST WING"

Born in Louisiana and raised in Texas, W. G. "Snuffy" Walden started piano lessons at the age of six before deciding that the self-taught method was a better choice. And he never looked back. After composing for some of the most innovative shows on TV, including *thirtysomething*, *The Wonder Years*, *Ellen*, *Roseanne*, *I'll Fly Away* and *My So Called Life*, he won the Emmy Award for Outstanding Achievement in Main Title Theme Music this year for *The West Wing*. He has also received eight Emmy nominations. Currently, Snuffy is also scoring music for the programs *Once and Again*, *The Drew Carey Show*, *Roswell*, *Providence*, *Norm*, *Three Sisters* and *The Street*. His solo CD of guitar-based music (he is a virtuoso) will be released early next year on Windham Hill.

PHOTO: RAY KHACHATORIAN

Walden has also worked on a variety of TV movies and miniseries, including *The Homecoming*, *The Stand*, *A Friend's Betrayal*, *Rise and Walk: The Dennis Byrd Story*, *Burning Bridge* and *Roe vs. Wade*.

As a humble Texan guitar player, did you ever imagine yourself writing a weekly score for the hottest show on TV? And to take home an Emmy? Did you ever imagine yourself even working with a big orchestra?

No, I never dreamed I would be so successful at composing. It has all been such a gift. When I realized I wasn't going to be the next Clapton, I knew I had to do something. In 1985, I just started branching out—producing artists and trying to get into songwriting. I was approached by agents because they needed guitar scores, and I fell into this groove. I was pretty sure for the first five or six years that they were going to find out that I didn't know what I was doing!

Even after I was doing successful shows like *thirtysomething* and *The Wonder Years*, I was just looking at film and playing until something happened emotionally. That was my process. In the beginning, I didn't even have a sequencer—just an engineer. We would roll tape until I got an idea that started to work, and we'd develop it and overdub on it. And that's how I did the scores.

The reason *West Wing* came together is that I got a call from Aaron Sorkin to do *Sports Night*. He called because he loved *thirtysomething*. Aaron had never done television, always [screenplays] for *A Few Good Men* and *The American President*; movies like that. At the end of the year, Tommy [Thomas Schlamme, executive producer] and Aaron said, "Listen, we're doing this show called *West Wing*. Do you know how to work with an orchestra?"

Did they think that the score needed that big orchestral feel?

In the beginning, they thought that we'd go with guitar, because we used that on *Sports Night*. They thought we'll have some guitars, but not blues-based. Then they started putting the show together, temping it with big orchestral stuff. They came to me and said that it just really works well with an orchestra.

From the down beat of* The West Wing *theme, it's a magnificent build and, for me, a perfect prelude to the show. But the pilot had a longer version, right?

Yes. For the pilot there was a four-minute opening sequence that went into another three-minute orchestral sequence. The first time I looked at it, my jaw dropped. I went, "How are we going to do this?" Because in television you would never be able to get a budget for that size of an orchestra. They said to me, "Why can't we do it?" I said, "Because it costs too much money." And they said, "How do we go about doing it?"

[Executive producer] John Wells asked in one meeting: "Why don't we get the Musicians Union to make a deal with us?" I started a conversation through orchestrators and union people I knew, because you couldn't do it directly. All of a sudden, I realized that everybody was going, "Okay, let's see if we can." We actually pulled that off. That's how we managed to do the pilot. The Union made a special low-budget agreement with *West Wing* for the pilot and the first year on a trial basis, which they have now ratified for all of television. It allowed us to go in four or five

BY MEL LAMBERT

times a season with a big orchestra and score the show.

Where do you record the show's orchestral score?

At Warner Bros. [Burbank]. I go in with a scaled-down, 50-piece orchestra and record pieces for different shows and then fill in the rest with electronic devices. But it's deceiving. Once your ears hear the orchestra and the theme behind the main title—that big sweeping expanse of music—you're already buying it. But probably 65 percent of the score on *West Wing* is me playing electronics. I use that kind of a palette, because we have built up this incredible sample library.

What is your overall creative philosophy about writing music for film or TV?

My main job is to support the dramatic nature of the film and to set up an atmosphere of believability and involvement, so that the viewer can get inside his own emotions about what is happening on the screen. If my music takes you out of the film, I've done it wrong.

Ed Zwick and Marshall Herskovitz [coproducers of *thirtysomething*, *Once and Again* and other shows] taught me this years ago. They forced me to understand film from the screenwriter's point of view: The "arc" of the scene—what the point is. I try to leave enough room in what I'm doing for a person to reflect on their personal experiences and react to a scene. Rather than me telling them, for example, that they're supposed to be sad.

Contrasting the main title theme for a show like* West Wing *and the incidental music heard throughout a particular episode—which obviously depends upon the action—how long does it take for you to refine your signature sound for a main theme?

The process is different every time. I try to get feedback from the filmmaker. Generally, the ultimate process is still the same: sitting down and looking at a picture and trying to feel something. In terms of *West Wing*, the guys temped the main title with a piece of John William's music from The Olympics, so it was this big, heroic feel. They'd also asked me to do a sketch of a Phil Collins-kind of "Rock Heroic," a real pop kind of feel. I did both of those, but it didn't speak to me in the same way. It wanted something that was more expansive and emotional.

For* West Wing*, did you see the whole pilot episode or edited highlights?

We actually scored the pilot, which was recut. The original pilot that we sold to the network was a hybrid of some big orchestral temp music and a score I did. Once it got picked up, we went back in and scored the show.

By the time it actually went on the air, the first couple of episodes had an electronic version of the theme, not the orchestra. It was the same arrangement, because, by that time, it had been orchestrated but the theme wasn't finished by the first scoring session. We actually recorded the main title theme during the second orchestral session, for Episode Three, I believe. But we dropped it back into the early episodes so that if you see it now, it has the new orchestral theme.

How do you choose what instrumentation to use?

It depends on the show. Generally, I'll put up the film, look at it, pick an arbitrary tempo and play—whether it's a sequencer or a guitar. I try to use a completely different new palette for each series, because I do so many. The only way I can keep *Once and Again* from sounding like *West Wing*, or *West Wing* from sounding like *Providence* is by giving each one a different palette. *Providence* is a string quartet and nylon-stringed guitar. *Once and Again* is electronics and acoustic guitar with some effects.

What is your focus for the music for* The Drew Cary Show *and* Norm*?

With *Drew* it was simple. The producers, Deb Oppenheimer and Bruce Helford, whom I'd worked with before, wanted a garage band. But the show was set in a particular area of Cleveland, where it was a lot of Polish people. So polka comes to mind. We talked about it and [opted for] a garage band with an accordion. When I think of a great garage band, I think of the Rolling Stones. So the very early model for me was a Rolling Stones-like garage band with an accordion player. That's how I built the early cues, and it had a sound that we're still doing.

Norm, on the other hand, has been through every kind of aberration; this year, we are using a lot of vocal scatting that is put into a sampler. Before we write the music, I bring Leslie Smith, who sings a whole bunch of different things. Then we change the pitch and timing, and build it out of that. I take a little snippet of this and a little snippet of that, put them together and add guitars. But each cue is a only a second or two—not much time to make much of a musical statement!

Some of your shows are scored end-to-end, and for others, you prepare li-

The cast of The West Wing

Avi Kipper, Snuffy Walden and Ray Pyle

PHOTO: RAY KHACHATORIAN

braries for the music editor to cut against each episode. Do they involve different approaches?

For half-hour shows, it's all predominately libraries. But *Sports Night* was scored. With shows like *Norm* and *Drew*, there's little dramatic scoring; it's mostly transitional ins and outs. It's really the nature of music in those shows to get us quickly from one setup to the next, of bridging two different tones. There's no reason for me to score those every week.

You have a unique setup here at your Los Angeles studio: a spacious control room and a recording area with separate vocal and instrumental booths. How do you work?

I have a studio that's an exact match to this in my home. The only difference is that I don't have all the mixing tools. But I have all the samplers set up in a smaller room at my house. I've met with the producers, and we've got a whole list of the cues they want me to do. I have a great staff [including freelance mix engineers Avi Kipper and Ray Pyle, plus director of operations Tim Young] that will have set up everything for me, so I'm ready to go when I sit down and start making music. That's how I manage to do so many shows every week. I'm personally scoring six shows this season.

At home I work in [MOTU] Digital Performer, with direct recording of acoustic instruments, if that's what's called for, and MIDI for the sequencer and synth voices. I'll just sketch with these [elements] and generally play it a couple of times to get the general idea. And then maybe finesse the theme and work musically on it. I spend an hour on that, and then another hour or two getting the timing just right: opening up the themes so that it caresses the film—never intrusive, never pulling you out.

For library-based shows, we deliver the cues in stereo on CD-ROMs. If it's more complicated, we'll give the music editor a Pro Tools session. We tend to mix in Pro Tools, because that's generally how they [the music editors and dubbing stages] build their sessions. For my hour dramas, I deliver split-out tracks on one or two [Sony] PCM-800s, just like film. We deliver an 8-track split so that they've got control of the percussion, the guitars and the strings. I try to deliver everything that way, because [it offers] maximum flexibility.

We can work very quickly in our studio. I just bring in my Digital Performer files, recall a mix on the Euphonix [CS Series] console and mix to the R-1 [hard disk recorder]. Each show is computerized. We can recall snapshots we've used before and go back to other mixes—there's nothing like it!

What composer do you admire most?

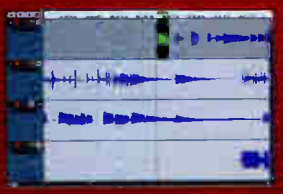
Tommy Newman. He has a very true, clear, unique voice that speaks to me. And he has "heart"; Tommy's music is always emotional and always lets the moment play, which is one reason why [his music] is used so much for temp tracks. It's not hitting anything, and yet it's hitting *everything*. ■

PHOTO RAY KHACHATORIAN

Walden at his composing station

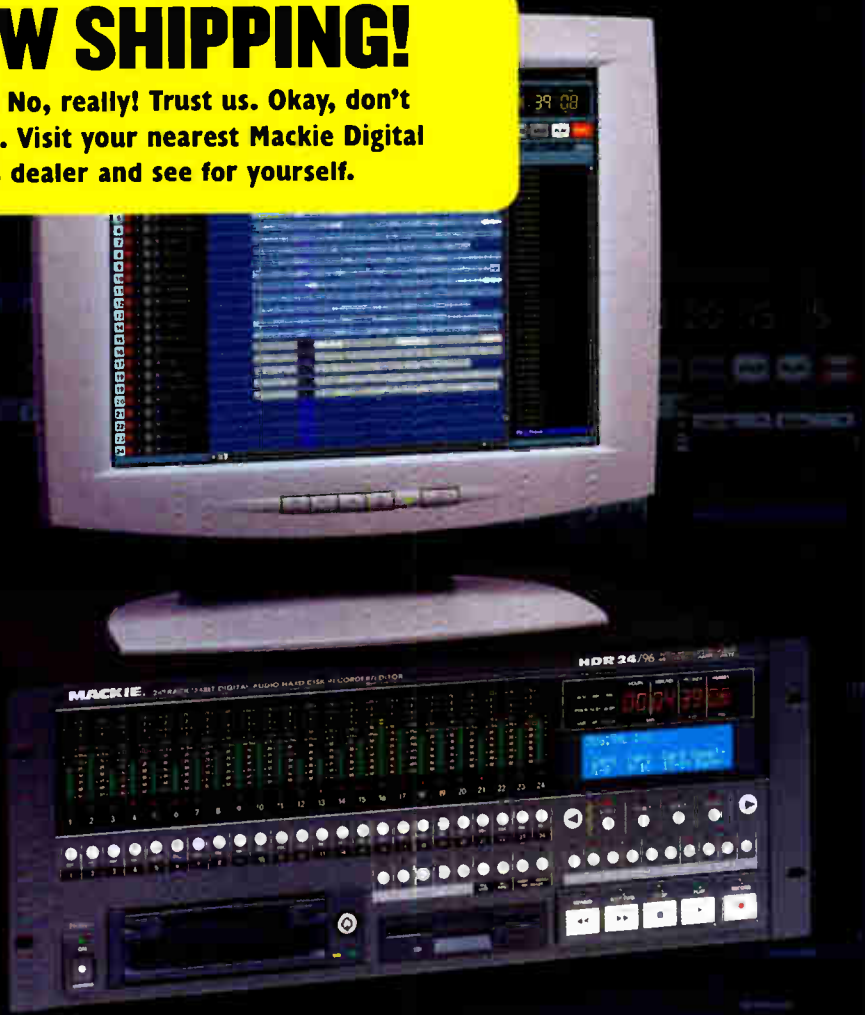
Mel Lambert is a freelance writer and technical consultant. Visit him at www.mel-lambert.com.

HDR24/96. MACKIE'S NEW 24 TRACK RECORDER. WORKS WITH ANY MIXER. NO EXTRA COMPUTER OR SOFTWARE NEEDED.



NOW SHIPPING!

Honest. No, really! Trust us. Okay, don't trust us. Visit your nearest Mackie Digital Systems dealer and see for yourself.



- **24 tracks...24-bits**
- **Built-in full-feature digital workstation editing**
- **Affordable pull-out media**
- **Built-in SVGA, mouse & keyboard ports**
- **Built-in 100BaseT Ethernet**

New hard disk recorders are popping up all over the place.

Our new HDR24/96 is the only recorder with built-in nondestructive graphic waveform editing. Just plug in a mouse, keyboard and SVGA monitor to view all recorder parameters on screen in real time. Enjoy complete editing control with unlimited levels of undo, drag-and-drop crossfades with 9 preset combinations plus fade/crossfade editor. And look forward to more powerful DSP-based editing features in the near future.

The HDR24/96 uses pull out Ultra-DMA hard drives and $29 removable cartridges—so affordable that you can keep one for each project—over 90 minutes of 24-track recording time costs less than a reel of 2-inch tape!

Call or visit our website for info on the new HDR24/96. Shipping now from Mackie Digital Systems.

HDR24/96 editing features include:
8 takes per track with nondestructive comping, nondestructive cut/copy/paste of tracks, regions, drag-and-drop fades & crossfades, 1x/2x/4x/8x/24x waveform views, bidirectional cursor scrub locators and loops... with 999 undos — but without requiring an external computer!

Coming soon: extended DSP processing and editing functions.

- Built-in 20-gig Ultra-DMA hard disk plus front panel bay for additional easily available pullout drives
- Intuitive analog tape deck interface and monitoring
- Syncs to SMPTE, MIDI, Black Burst, without extra cards
- Unlimited HDR24/96 linking! Sync 48, 72, 96, 128 or more tracks sample accurately
- 96kHz recording via software update and optional 96kHz I/O cards
- Digital 8 • Bus I/O cards—mix and match!
- 3.5-inch disk drive for software upgrades & tempo map importing
- Fast Ethernet port built-in
- Remotes available.

MACKIE. Digital Systems

www.mackie.com 888/348-6301

DIGITAL MACKOIDS AT OUR FACTORY IN WOODINVILLE WA, USA

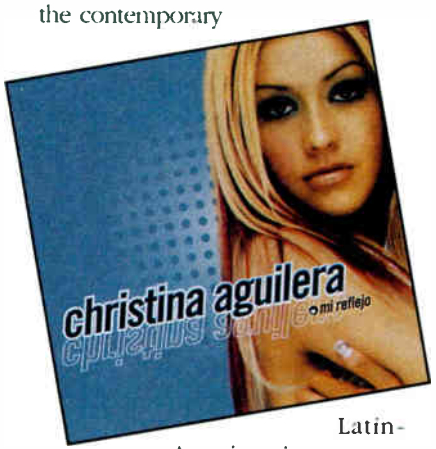
CIRCLE #044 ON PRODUCT INFO CARD

RUDY PEREZ

TWENTY YEARS AT THE CREST OF THE LATIN WAVE

The United States has long had a love affair with Latin music, and that affection is growing. Although the popularity of current teen favorites such as Ricky Martin, Christina Aguilera and Jennifer Lopez may pass, these performers will likely give way to further generations of Latin music stars. "Livin' La Vida Loca" was perhaps the perfect novelty pop tune for the turn of the century, but behind it is a formidable force in music sales, production and creativity.

Rudy Perez is perfectly positioned to be a pivotal figure in the growing Latin-American music scene. This producer/engineer is already responsible for tens of millions in sales with his productions for Latin music stalwarts such as Jose Feliciano, Julio Iglesias, Placido Domingo, Frankie Negron, Luis Miguel and Arturo Sandoval. And he has had just as much influence on the contemporary



Latin-American juggernaut. He produced teen sensation Christina Aguilera's Spanish-language, multi-Platinum recording *Mi Reflejo*, and he is helping consolidate the striated Hispanic market with bicultural remixes, such as adapting Puerto Rican songstress Millie Corretger for the Mexican-American audience. He is also part of Miami's studio industry renaissance with two Pro Tools-based studios running out of his home-based production company, Bullseye Productions.

Perez is a multitasking producer; he often composes, arranges, sings and plays on the tracks he produces. In the process, he has racked up numerous achievements and awards, including four Grammy Awards, 50 Platinum and 30 Gold albums, and 70 Top 10 hits. He has been ASCAP's Latin Songwriter of the Year two years running; he was elected the first president of the Florida branch (now a full chapter) of NARAS, and he was instrumental in establishing the first Latin Grammy Awards, which debuted in 2000. Perez has also left his musical mark on dozens of film soundtracks, television commercials and world music specials. Did we mention the Presidential Endowment of the Arts Award?

Born in Cuba 42 years ago, Perez came to Miami with his parents, two sisters and one brother at the age of six and settled in Liberty City, one of Miami's more notorious barrios. His success story needs to start that far back...

That childhood had a pretty significant effect on your career.

I was kind of glad that we wound up living in the projects, which was all my father could afford when we first got here. It really introduced me to music, especially R&B and gospel music. My dad was a Baptist minister, and when my mom saw all the Baptist churches in the neighborhood, she thought that was great. But these were not Cuban Baptist churches, as you might have guessed with being in Liberty City. But I had never seen or heard anything like it. The music was incredible. I got to sing in the choir and learned to play piano, guitar and drums because of the churches. Whatever instrument they needed, I learned. That led me to joining a few garage bands in the neighborhood.

Latin bands?

Actually, no. Mostly rock bands. The biggest one was called Pearly Queen, a Top 40 cover band, which got pretty hot in Miami in the days before the Miami Sound Machine [the band that launched Gloria Estefan's career]. We landed a contract to play all of the Big Daddy Flanigan's clubs in the U.S. and Canada—90 clubs playing five sets a night, five or six nights a week. I started when I was 15, and I turned 18 in those clubs. That was where I went to school, in those clubs. Playing cover songs taught me how pop songs were

BY DAN DALEY

STUDER

Studer Creates Surround Solutions

Sound with the power of picture

As digital television becomes a reality, post-production in surround sound becomes an essential. With over 10,000 analog and digital consoles installed worldwide, Studer has the experience to offer the finest surround sound solutions to television program-makers and broadcasters. Optimized for operational simplicity and easy to integrate into existing environments, Studer systems deliver the creativity and flexibility that the audio engineer has been waiting for. So he can deliver sound that is as powerful as picture.

Over the last 50 years, Studer's name has become synonymous with excellence in professional audio. Thousands of television and film producers all over the world put their trust and their professional reputations in our hands. Because our technology will not let them down. Because it is by Studer.

Studer North America

Main Office:
Toronto, Ontario M3B 2M3
Phone +1 416 510-1347
Fax +1 416 510-1294
eMail studer@mail.studer.ca

www.studer.ch

The new Studer D950 M2 Digital Mixing System

Studer Headquarters: Switzerland +41 1 870 75 11 / Direct Subsidiaries: Austria +43 1 865 16 76 0 / France +33 1 45 14 47 80 / Germany +49 621 7 77 08-0 / UK +44 208 953 67 19 / Japan +81 3 34 65 22 11 / Singapore +65 225 51 15
Sales Offices: New York +1 917 439-5824 Nashville +1 615 300-4827 Los Angeles +1 818 841-4600

CIRCLE #045 ON PRODUCT INFO CARD

arranged and played. Now I wanted to know how they were recorded.

When did you decide you wanted to produce records and work in the studio?

I was producing some local Latin artists in Miami after I came off the road, as well as writing songs for them.

You were in Miami, which had become famous for being the base for musicians like Eric Clapton and the Bee Gees, as well as studios like Criteria. Yet you were working in the Latin world. Did those two domains interact in the studio?

They didn't. Back in those days, there may have been Latin musicians all over Miami, but not a lot of them were recording there. I started working as a gofer at Miami Sound Studios, which was owned by Carlos Granados, whose father was a legendary record guy. He pressed the first record ever made in Colombia. Bob Marley and Wild Cherry used to record there. It was the competition to Criteria in the late '70s. It had an old, old Neve 1073 console. After I got my initial experience there, I moved over to Climax Recording in north Miami on 30th Street. I used to sleep there, because I was just going through a divorce. I would record my own songs there and do demos for my friends' bands. One day, the owner, Pablo Cano, came in and heard this ballad I had written. He said, "Who's that?" I told him it was me, and he freaked out and said we have to do a real record. We did, and he brought it over to Jose Menendez, who was then at RCA Records, who signed me to a contract.

I really believe that the Latin market in the U.S. is still relatively untapped. There's something way bigger here than we can see yet.

Here's where how I became a real producer comes in, though. I had written a ballad—"Que Voy a Ser Sine Ti?" ["What Am I Going to Do Without You?"]—and Pablo hired this arranger to work it up, with strings and everything. I came into the studio, heard the arrangement and told Pablo that that's not the way I heard the song. We went back and forth about it, but finally Pablo said, "Let's do it your way." We did, and that record did okay on the radio with me as the artist, in 1983. But while I was on a promotional tour for it, I was in Puerto Rico and met José Feliciano. I had to tell him what a big fan I was of his music. Well, it turns out that Menendez had played him my version of "Que Voy a Ser Sine Ti?" and when he found out I was the writer and producer, [Feliciano] said right there, "I want you to produce my next record." He said he loved the arrangement of the song. If I had let someone else produce it, if I had not followed my musical instincts, I never would have had the career I've had, my destiny would have been very different, because that record I did with José opened up all the doors for me. It won two Grammy Awards, for the album and the song "Por Ella," which José did as a duet with Jose Jose. That's what I try to teach any young person who works with me: Always follow your instincts.

You told me that you did that record over the initial objections of Feliciano's

TOTALLY TRANSPARENT.

Introducing our new INVISIBLE MIC PREAMP

Make a quantum leap with BEHRINGER®'s new EURORACK®'s. 5 years of development have culminated in the best and most "invisible" microphone preamp we've ever built. Add space-age SMD technology, high-end 4580 op-amps and double-flooded circuit boards, and you end up with audio so transparent you can see right through it.

- *State-of-the-art mic preamps*
- *Super low-noise 4580 op-amps*
- *5 Hz - 100 kHz bandwidth*
- *Panasonic/Alps faders and pots*
- *Steel chassis, fiberglass PCB's*
- *Individually tested with System One*
- *Manufactured under ISO9000 certified management system*

The new EURORACK®'s from BEHRINGER®

More information at:

www.behringer.com

Canada	Tel.: + 902 860 2677	Fax: +1 902 860 2078	Email: support.ca@behringer.de
International	Tel.: +49 2154 920 666	Fax: +49 2154 920 665	Email: support@behringer.de
Japan	Tel.: +81 3 528 228 95	Fax: +8 3 528 223 96	Email: support.jp@behringer.de
Singapore	Tel.: +65 542 9313	Fax: +65 214 0275	Email: support@behringer.com.sg
USA	Tel.: + 425 672 0816	Fax: +1 425 673 7547	Email: support@behringer.com

BEHRINGER

JUST LISTEN.

CIRCLE #047 ON PRODUCT INFO CARD

manager, which was understandable considering you had no track record and you were being asked to produce one of the pop world's biggest stars. When you flew to L.A. to do the record, were you intimidated?

Very! But as a musician, I was always into reading the [album] credits, and I knew the guys I wanted to work with, like David Foster and Robby Buchanan and Mike Landau, and the studios, like Sunset Sound and Ocean Way and Conway. I knew I was walking through big doors. But José was really behind me as the producer, and I got to work with great engineers, like Mick Guzauski, who was sleeping on a mattress under the console at Conway.

I have to ask this question about working with José Feliciano. How do you keep a blind singer on mic?

We used to tape a music stand in front of him so he knew that when he grabbed both sides of it, the microphone was in the middle. But also I was always in the booth with him when he sang, not in the control room. He liked the vibe of me being out there with him, and the engineer appreciated having someone keep José centered on the mic, 'cause when he starts singing he really gets to rocking around.

What mics did you like on José?

José has a very sharp and powerful midrange. So I would try to warm it up with a tube [Neumann] U87 or U47, sometimes a U49.

Working with Feliciano led to a whole succession of calls from great Latin artists. What's it like working in the studio with Julio Iglesias? He seemed to love the studio—he had his own lounge at Criteria for years...

Julio really suffers in the studio, because he is such a perfectionist. He can't always explain what he hears in his head, so he just keeps going on and on until he finds it. And you'd think it would drive you crazy to have to be in the studio with him during all of this. But the truth is, you can see how much he suffers to achieve what he wants, and all you want to do is make this man happy by helping him find what he's looking for in the music. So when people say to me, "You produced Julio," I say, "No one ever produces Julio. We are only there to capture his moments." He's sold 200 million records doing it that way.

And Arturo Sandoval? He seems like such an inspired madman onstage; what's he like in the studio?

Pretty intense there, too. I did the *I Remember Clifford* record with him [a tribute to jazz trumpeter Clifford Brown], and I remember watching him play four trumpet parts in harmony on one track, and that was after he had transcribed all the solos. Punching in overdubs on these parts is more than just engineering; he's playing at 380 bpm, and he says to you, "Punch me in on the third beat of the fourth bar." It's almost magical getting those punches. It's not about just having good ears. That's one of the reasons I engineered and produced that record. You have to have good time as well as being musical. Musicians at Arturo's level don't tolerate people who can't make those punches the first time, because great musicians will usually give you the best stuff on the first take, and they don't like to have to play it twice. That's another thing I try to teach young engineers I work with: to learn some sense of rhythm. Don't just be punching in on the downbeat, especially in Latin music, where there is much syncopation.

Christina Aguilera is one of the teen idols of the new Latin movement. But she's not Latina in the way the previous generation of Latin artists were, is she? You mentioned her mother is American and that her Spanish is far from perfect. People still say a record's not

Who Needs Another Mic Preamp?

"...the finest sounding preamp I've ever used...as close to being the perfect preamplifier as possible. It is made well and it sounds unbelievable."

Russ Long, Nashville based producer/engineer, Pro Audio Review, June 2000

"The 1100 is the sweetest, cleanest, warmest, most flattering preamplifier I've ever used."

Jon Barry, Radio Personality, WMXB (FM), Richmond, VA

"The Aphex Model 1100 is a good example of something different... A work of art...The results were astonishing, providing an awesome sound that was natural, dynamic and absolutely free of noise."

George Petersen, Editor - Mix Magazine, April 2000

Model 1100 Discrete Class A 2 Channel Tube Mic Preamp with 24-Bit 96kHz A to D from Aphex Thermionics

Yes, the Aphex Model 1100 Thermionic Preamp is different - it's a completely new design filled with Aphex proprietary circuitry. These inventions, combined with the absolute highest quality components, provide accuracy, clarity, detail, and depth that have never been available before with any preamp, at any price.

The Reflected Plate Amplifier™ tube circuit imparts all the wonderful characteristics of a conventional tube circuit without any of the sonic drawbacks. The MicLim™ provides up to 20dB of limiting on the microphone output- before the preamp gain- allowing hot levels without fear of overloading. And the Drift Stabilized™ 24bit/96kHz A to D converters make the transfer into the digital domain at the highest possible resolution. Specs? How about –135dBu EIN! This means that the Model 1100 adds less than 1dB of noise to the output of a microphone!

There are many mic preamps on the market, but if you're looking for something different, with awe-inspiring performance and unique features, **you need another mic preamp–you need the Aphex Model 1100.**

CIRCLE #049 ON PRODUCT INFO CARD

APHEX SYSTEMS

Improving the way the world sounds℠

11068 Randall Street, Sun Valley, CA 91352 U.S.A.
818-767-2929 • Fax: 818-767-2641 • www.aphex.com

country if it's not made in Nashville or if the artist isn't wearing a hat. In this changing demographic, what makes an artist Latin or not?

When I met her, I asked [RCA A&R person] Ron Fair if she can speak Spanish, and he says, "Not really." She could once; her father was from Ecuador and her mother was American, but they separated. I knew she could sing, though. That's for sure. The thing that makes the difference is the Hispanic last name. That makes a big difference for Latino. If you're Celine Dion, that's great. But that doesn't mean you can sell records to Hispanics. If she was named Celine Rodriguez...

A long time ago, I stopped thinking of myself as anyone other than the person who has to make the person on the cover of the album sound good. That's my job—to make them shine.

So you were brought in to produce the Spanish-language record for Aguilera. That's not unusual now; Ricky Martin has done separate albums for Anglo and Hispanic markets. But is this a kind of musical segregation? And does it limit you as a producer?

Not at all. I told Ron, if you did an album in Spanish with this girl, she would kill in Spanish. She had to work hard on pronunciation, and she has Spanish lessons every day. But this is a generation that's bicultural. These are not Argentineans or Mexicans. These are the children of immigrants, and they are connecting to their Latin roots in a different way. Christina is an example of that. As for limiting me as a producer, no way. The Anglo record had several producers; I was the only one on the Spanish record. And I got to spend a year working on it with her.

Do you see yourself being used to legitimize her to the Latin market?

Perhaps the record label does, but I know it works in both directions. I worked with [contemporary Christian artist] Jaci Velasquez. I crossed her from English to Spanish. She's another artist with a Hispanic name but who doesn't speak it. You need someone who can work in both languages. A producer specializing in Spanish only would be totally lost in the pop [idiom]. A long time ago, I stopped thinking of myself as anyone other than the person who has to make the person on the cover of the album sound good. That's my job—to make them shine. With Millie, who is from Puerto Rico, I realized that we were not getting onto the Ranchero [Mexican] stations in the U.S., of which there are something like 3,000, and they report to *Billboard*. So I said let me take a crack at it. I took a click track and built a Mexican-sounding track around her, and we had a big hit in that market: It went Number One for four weeks. Thank God for this new bicultural audience. I really believe that the Latin market in the U.S. is still relatively untapped. There's something way bigger here than we can see yet. When I was president of the Florida branch of NARAS, we commissioned a study that indicates the growth of Latin is unstoppable. By 2007, we'll have 75 million Latinos in the U.S. [The study shows that] for every 10 records sold here, at least four will be in Spanish. Those are big numbers, and they became the basis of the Latin Grammy Awards.

You love your Pro Tools setups. But do you also use commercial studios?

I use Crescent Moon and Hit Factory Criteria and Middle Ear. I like Digi-Note, which is a Pro Tools studio [on South Beach]. I thank God for Pro Tools. I can go out and play God with audio. If I miss analog, I just record some on tape and transfer it to hard disk.

Do you still do a lot of engineering?

I had to let a lot of that go. It takes too much out of you. I want to spend more time on songwriting. But I have a great engineer now named Bruce Weeden, who comes out of that Philadelphia sound. He keeps it very half and half, not using the plug-ins but using lots of outboard compressors and signal processors. Once I found Bruce, I knew I could quit engineering.

Some day, all producers will work from home. At the end of the day, the important thing is that you spend time with the project, not with the studio. When a producer owns the studio, the project wins in the end. ■

Dan Daley is Mix's East Coast editor.

SPIRIT M SERIES

Soundcraft

01.18.01

A PERFECT MIX OF FORM AND FUNCTION

WWW.SPIRITMSERIES.COM

CIRCLE #051 ON PRODUCT INFO CARD

Facility Management

The job of a studio manager has been much maligned, rarely understood, almost always underpaid, and very often a last resort for those who failed to get by in production and engineering. However, as the music recording industry morphs into a model that more closely resembles General Motors than a Bon Jovi tour, the studio manager is looked at as being key to a facility's profitability and success.

CHANGES IN INDUSTRY AND BUSINESS MODELS SET THE TONE FOR STUDIO MANAGERS

Still, old perceptions die hard. The position still lacks the kind of respect it deserves, and finding and developing people with both management talent and an intimate understanding of the ways of the studio business is difficult. At a time when many high-end music recording facilities are growing larger and more complex and expanding into other locations, it's possible that future generations of the management infrastructure will be drawn from business schools rather than from the trenches of pro audio.

BY DAN DALEY

ILLUSTRATION: WILL TERRY

THE OLD DAYS ARE OVER

"The days of having a manager who just hangs out near the phone and books the studio when people call in are over," says Dale Moore, owner of Emerald Entertainment in Nashville. Via acquisitions and joint ventures, Emerald has grown from a two-room facility to seven studios and a broadcast suite spread over four buildings along Nashville's Music Row. Although the local economics of Nashville's studio community had much to do with Emerald's rapid expansion, the overarching propulsion comes from larger forces in the media industry, most notably the consolidation of dozens of record labels into a handful of budget-conscious, super-content providers. Studios such as Emerald; The Hit Factory in New York, which bought and refurbished Criteria Studios in Miami; and Quad Recording, also in New York, which added a Nashville facility a year ago, have reacted to this trend by consolidating operations and expanding services. The paradigm is more akin to Home Depot, not the cottage industry-like approach that music studios had historically taken. More complex operations need more astute management.

"In many ways, I'm finding that we almost would rather not have someone who has been in the [studio] industry," says Moore. "When you bring in someone who has worked in studio management in the past under the old way of running studios, it's harder for them to adapt to the new way it's being done."

That's one of the biggest problems with studio management—managers wind up being the chew toy in the middle between studio owners on one side, and engineers and clients on the other.

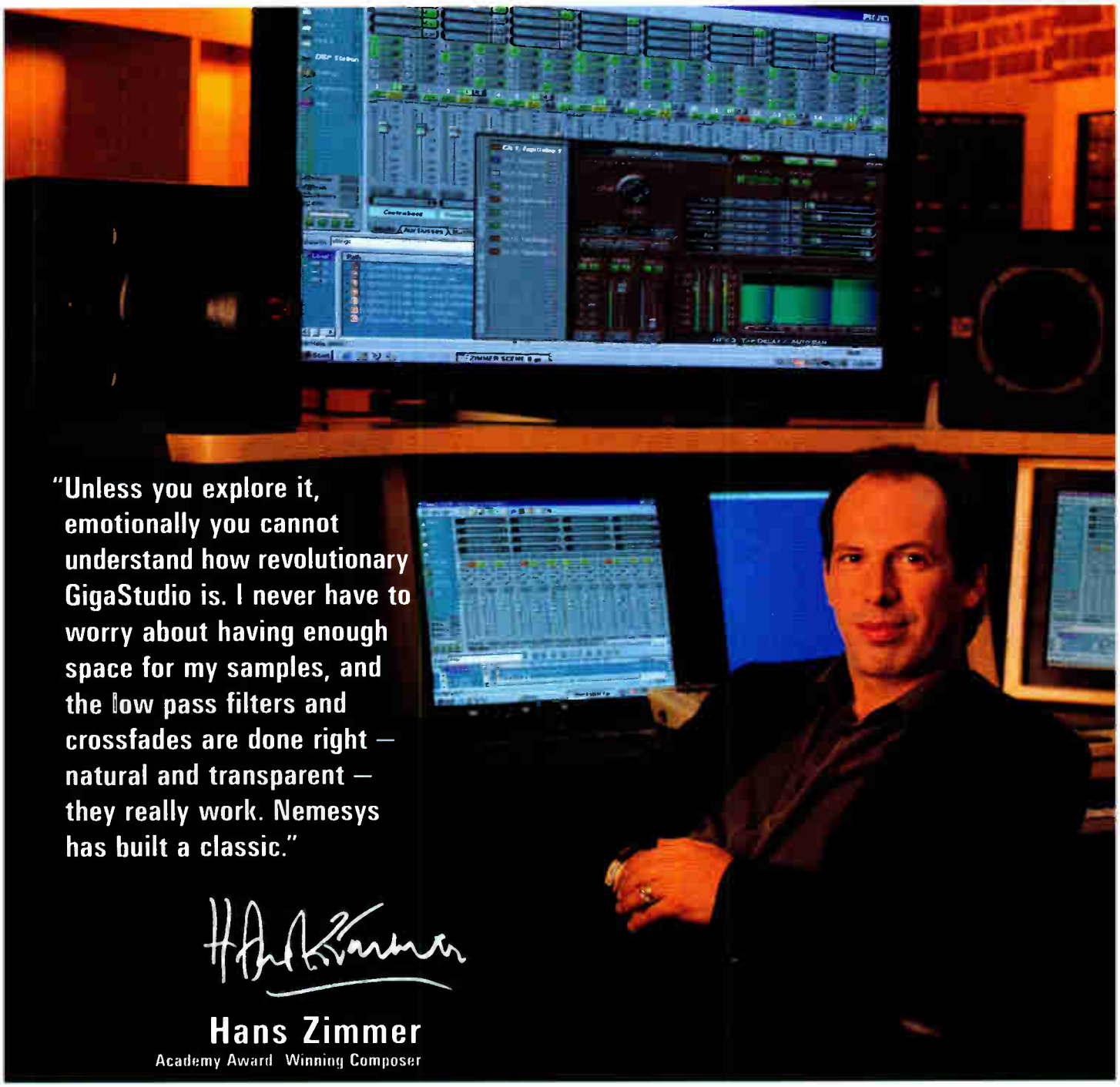
—Doug Mitchell

Emerald's growth has led to a divisional break in the business, including music recording, mastering, audio post-production and broadcast. At Emerald, each division has its own manager, each of whom hires a dedicated management staff and reports to Andrew Kautz, Emerald Entertainment's COO, a position that was established in the past 18 months. "The people you need to run organizations like this in the studio business are a whole new breed," says Moore. "They don't learn the skills they need in the traditional studio business. That's why it's often better to train them yourself in management. You're better off building them from a kit in the basement."

Studio managers are not acquiring these levels of management skills at media educational facilities, either. Most programs have not made academic accommodation for management skills; few tend to underplay it, realizing that studio management is not a major draw

GIGASTUDIO™

Innovate. Never Imitate.



"Unless you explore it, emotionally you cannot understand how revolutionary GigaStudio is. I never have to worry about having enough space for my samples, and the low pass filters and crossfades are done right – natural and transparent – they really work. Nemesys has built a classic."

Hans Zimmer
Academy Award Winning Composer

Sample Outside the Box.
Patented Hard Disk Based Sampling Technology, 160 Voice Polyphony (all disk based), Multimode Resonant Filters with External Q and Fc, DSP Station™ 32 Bit Zero Latency Effects, 32 Channel 32 Bus Digital Mixing with Automation, QuickSound™ Database, Dimension Articulation Switching/Crossfading

"Academy Award" is a registered trademark and service mark of the Academy of Motion Picture Arts and Sciences

www.nemesysmusic.com • 1.877.NEMESYS

NEMESYS™

CIRCLE #053 ON PRODUCT INFO CARD

for prospective tuition-paying students with hopes of becoming engineers, mixers and producers.

"Admittedly, it's not a sexy subject," concedes Doug Mitchell, associate professor at MTSU's Recording Industry Management (RIM) program, which is attended by 1,400 students. MTSU offers a Studio Administration course, but it's an elective and designed to provide a range of entrepreneurial skills to students, many of whom will go directly into personal recording environments after graduation, rarely setting a W-2 foot in conventional studios. "It's more for teaching them how to start and run their own [studio] business," says Mitchell. "It doesn't teach what someone needs to know about running a very complex, large facility, or about the kinds of personal management skills you need when you're dealing with a lot of very creative people in a business setting. That's one of the biggest problems with studio management—managers wind up being the chew toy in the middle between studio owners on one side, and engineers and clients on the other."

"On one hand, you're responsible for making sure the facility runs smoothly as a business and plotting strategies to keep the studio on top, from console choices to single microphone purchases," adds Michelle Moore, manager at the new Studio Atlantis. "On the other hand, you're lining up dry cleaning and finding massage therapists who are willing to come to the studio when a client wants one. This is what a concierge does at a hotel, but even the concierge isn't also responsible for booking the rooms, too."

Moore, who over the past decade has managed several Los Angeles facilities, including Ground Control, Studio 56, Studio 55 and Private Island Trax, came into studio management after a shot at engineering. She received a degree from the Trebas Institute in 1991 and, like many others, found that studio management turned out to be just as challenging and more reliable than a freelance engineering career.

In fact, because of changes in the fundamental landscape of the music business, the challenges may be even greater. Brett Blanden, who managed Ocean Way Nashville for a year and a half until departing in October 1999 to open his own studio, observes that, "The competition used to be the studio next door. Now it's the demo studio on the other side of town, which can rent a 2-inch tape machine for what a studio like Ocean Way pays in electricity for a day, or the producer who used to be a client. Labels are now encouraging artists and producers to use their own studios. A manager is someone who works to market and position a facility to counter those kinds of forces. That is not an easy job, and it's not one that managers had to face a decade ago."

The studio management career track has created its own handful of superstars, such as Blanden, Moore, Record Plant's Rose Mann-Cherney (now president of that facility), former Power Station/Avatar manager Zoe Thrall, and a few others, though you'd be hard-pressed to find them on the covers of trade publications, which remain as shrines to engineers and producers. But, thanks to them and others, the perception of the studio manager role is changing.

INTRODUCING THE ANTARES ATR-1a AUTO-TUNE INTONATION PROCESSOR

The Same. Only Better.

BACK IN 1998, Antares introduced the ATR-1 and made the unlikely claim of "perfect pitch in a box" a solid reality. Based on the technology of our ground-breaking Auto-Tune plug-in, the ATR-1 corrected the pitch of vocals or solo instruments, in real time, without distortion or artifacts, while preserving all of the expressive nuance of the original performance.

Since then, thousands of ATR-1s have found their way into touring racks, live performance rigs, and recording studios of artists and producers like Cher, Reba, Everclear, Al Schmitt and many, many more.

Now, Antares (never willing to leave a good thing alone) introduces the ATR-1a. Preserving the great sound quality and ease of use of the ATR-1, the ATR-1a adds some significant new features as well as a snazzy new appearance inspired by our AMM-1 Microphone Modeler.

HOW LOW CAN YOU GO?

Looking to do some pitch correction in the lower depths of the frequency range? The ATR-1a's new Bass Mode lowers the lowest detectable pitch by a full octave to 25Hz. Since the lowest E string on a bass guitar is about 41Hz, Bass Mode (as its name so ably implies) allows you to apply pitch correction to those pesky fretless bass lines as well as other low bass range instruments.

WORKING FOR SCALE

If you've ever had occasion to pitch correct a melody line whose key was not exactly clear, or which had too many accidentals to fit comfortably into a conventional scale, you'll appreciate the ATR-1a's new Make Scale From MIDI function. Simply play any line into the ATR-1a from a MIDI keyboard or sequencer and let the ATR-1a automatically construct a custom scale containing only those notes that appear in the line. No muss, no fuss.

CHECK IT OUT

So if you're still looking for perfect pitch in a box, check out the ATR-1a at your Antares dealer now. Where the song remains the same.

Only better.

UPGRADE ALERT! *Got an original ATR-1? Except for the new cosmetics, current ATR-1s can be upgraded with all of the ATR-1a's new features by simply replacing an EPROM. (And if you purchased your ATR-1 after August 1, 2000, the upgrade is free.) Contact your local Antares dealer for all the details.*

CIRCLE #055 ON PRODUCT INFO CARD

ANTARES

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

NOT THE BIG BUCKS YET

"I've noticed a major increase in awareness of the value of a studio manager at top-flight facilities," says Claudia Lagan, former manager at Studio 56 and now manager of CMS Mastering Services in the Los Angeles area. "The ones I know in the industry are being treated better. There is a willingness to increase their compensation, both in terms of salaries and benefits, such as retirement plans, vacations, personal days and medical coverage. This is a noticeable change from even 10 years ago, and I attribute it to the fact that there are a few very good ones out there, and when they leave a facility, you notice it."

The trouble is, Lagan says, most managers have to prove their worth over time. Achievements at previous positions rarely count for much in terms of compensation, at least initially. Only those who have been headhunted for their positions have any real leverage for compensation and other employment perks. "The sad truth of the matter is that [studio] management still tends to attract people who have failed at other aspects of the industry," Lagan observes. "And that works against you every time you take on a new position."

The ongoing expansion into the upper tiers of the music recording market will eventually make its facilities look and feel a lot like large audio post-production facilities. Hank Neuberger, general manager and executive VP at Chicago Recording Co., where he oversees a dozen studios, thinks that the post management model might also work for large music facilities. "[Post facilities] depend on management staff a lot more, because they have to hand off projects between so many different rooms all day long," he explains. "Managing a music facility could be headed that way, as well, and that really puts a new emphasis on management."

Studio management is still not a very lucrative pursuit, although it indicates that compensation is on the upswing. According to 2-year-old data from the Mixonline Audio Production Facilities Report, the

most recent figures available, facility managers reported a median salary of $30,000 per year and an average salary of $42,500. More recently, and admittedly anecdotal, reports indicate that salaries in the Los Angeles and New York City markets at top-end music studios are currently closer to between $50,000 and $60,000, with a few approaching $75,000. Nashville, where the cost of living is considerably lower, is in the $30,000 to $40,000 range at high-end studios.

Actual compensation is difficult to assess, because many facilities put managers on a combination of base salary and bonus/performance. Such a mixture tends to shift the emphasis of the manager toward direct sales of studio rental time and other immediate revenue/commission generators, as opposed to long-term strategic pursuits, such as marketing and public relations. From the studio owner's perspective, though, this makes perfect sense, because it allows management salaries to ride with the revenue waves and limits overhead liability during troughs in the business cycle.

Managers also say that studio owners need to start appreciating just how difficult the management role has become. Most managers seem less concerned about a few thousand extra dollars a year in salary than they are about being given the freedom they need to get their job done.

"There's the sense [by owners] that you're always supposed to be out getting bookings for the studio, even while you're trying to manage all the other aspects of the facility," says Blanden. "I kept a three-ring notebook filled with every phone conversation I had there for two years so I could show what it was I had to do besides try to bring in new business. Also, owners are concerned with how much a manager gets to know about company secrets and about other studios stealing gigs from you. The reality is, a good manager is always in contact with other studios and always juggling clients between his place and other studios. You have to do that to keep the client happy, and that's the bottom line to make any studio successful. No one studio can give every client everything he wants all the time. But given the right resources and freedom to act, a good studio manager can."

Zoe Thrall agrees vociferously. "The best thing a studio manager can have is a [studio] owner who understands everything that a manager has to accomplish and what they need to do it," she says. "There's definitely a kind of a Mars/Venus thing when it comes to communication between ownership and management."

The most telling irony of all is how much the words of these interviewed studio managers sound like as if they have fallen out of the pages of *Business Week* or *Forbes*. The need for company management to adapt to changes in technology and business models, to deal with changes in how clients operate, what the economic realities of a given industry are, for company ownership to support management and recognize that it needs to work hand in hand with it are common themes in every industry today. If anything comes out of the dialog stirred up by the alternating forces of consolidation and expansion in the upper echelons of the studio business, say managers, then it's the stark realization that recording music and running a recording studio is first and foremost a business venture, not an artistic one. And studio managers have been on the front lines of that battle for a long, long time. ■

Dan Daley is Mix*'s East Coast editor.*

APAULING STUDIOS

HALL & OATES' HIGH-TECH BARN

Engineer Peter Moshay

Project studios, *de rigeur* for all serious musicians these days, weren't the norm in 1987 when Peter Moshay hauled a bunch of guitars out to a barn owned jointly by Daryl Hall and Tommy Mottola. Moshay, who had spent time on the road as an engineer/tech for Hall & Oates, was intrigued by the barn on the Pauling, N.Y., property and, clapping his hands, realized that the space could serve as a live recording room. Thirteen years later, Moshay is still running Apauling Studios, the site of recordings for both Hall's solo projects and Hall & Oates records, including the duo's soon to be released Sony Music title. Apauling has also hosted a select group of outside talent, including Jennifer Lopez, the Average White Band and boxer Oscar de la Hoya.

Originally intended as a demo facility for workaholic Daryl Hall, Apauling Studios is centered around an Akai MPC, racks of samplers and a handful of Akai 1212 recorders. "Remember those? They were very cool for the time," says Moshay. Before long, Hall and Moshay, along with label executives, felt that the sound being churned out of Apauling Studios was good enough to go beyond the demo stage, and Hall & Oates' *Change Of Season* (1990) was tracked at Apauling. "John and Daryl had just put out a series of electronic records and wanted to go back to their acoustic roots. So they brought in the band, and we cut everything live," says Moshay. Final mixes were handled in Manhattan.

The barn, which dates from the 1800s, features beautiful ax-cut beams, so the renovation was built around the original frame. The main room, located on the second floor, measures about 43x20. "We took advantage of the 15-foot ceilings and the nice barn angles," notes Moshay. "We've got two more rooms downstairs where I can run wiring from amplifiers if that's the sound we're going for. I'm a big believer in getting everyone to play together, and if players like the sound they get through their own amps, we'll get the separation we need by running cable."

During down time between Hall & Oates projects, Moshay began working with other artists. "John Oates, T-Bone Wolk and Jimmy Bralower produced the music for the first *Sports Illustrated* swim suit video here," Moshay recalls. "That was a lot of fun! Then we tracked *Soul Alone* (1993) for Daryl, and the studio took on a life of its own." Moshay recently tracked and mixed the current top-selling CD in the Spanish market, *Too Loco Amour*, by the group Sentidos Opustus.

Moshay has run lots of equipment through his room, often relying on Morgan Pettinato, owner of the East Coast Music Mall, to send him gear on a trial basis. "I'm now using a Trident 80B board with flying fader automation. It's a great-sounding console," notes Moshay. "We also just added a Sony DMX-1000, the so-called 'baby Oxford.' Do I need two boards? Probably not—the Trident has 56 inputs. But there are times I want to mix digitally, and the Sony has a gorgeous sound. It's like a guitar player owning both a Strat and a Les Paul.

"I have an 02R here, and I still think that Yamaha did a fantastic job with that board. But as far as stock compressors and gates that sound fantastic right out of the box, the Sony is an amazing accomplishment. The routing scheme is outstanding; so are the save functions."

As Moshay notes, great gear is important, but not essential. "Anyone who can open up a couple of tracks and push Record can track a great sound when John and Daryl sing," he says. "They'll do a background stack that would take others hours to complete in less than 30 minutes; just about every take is perfect. The natural blend of their voices is key. Daryl has a nice, powerful midrange with lots of cut to the sound, lots of energy. The sound has chest, but it's not huge. John's voice fills the spectrum around Daryl. He's got a huge bottom end, low and warm. Plus he's got sizzly, crisp highs. I generally use a U87 on Daryl. It's the perfect mic for him. Eighty-sevens work well for John."

Moshay says that the new Hall & Oates album combines their signature sound with modern production values; "Daryl and John make a point of listening to current sounds, but always manage to stay true to their roots. I never get tired of working with them." ■

Gary Eskow is a contributing editor to Mix.

BY GARY ESKOW

the tide is turning

In an ocean of digital consoles the latest competitor is **analogue**.

The ASP8024 boasts exceptional sonic performance, with an arsenal of features normally found on far more costly consoles.

Just what you would expect from Audient **Analogue Signal Processing** technology.

ASP 8024

HIGH RESOLUTION MIXING CONSOLE

CIRCLE #059 ON PRODUCT INFO CARD

audient

Sales & US Distribution: Audio Independence Ltd.
2140 W. Greenview Drive #7, Middleton, WI 53562, USA.
tel: (608) 831 8700 fax: (608) 831 7100

For technical information: email: audient@compuserve.com

BROAD & DEEP NEED FOR SPEED

FILE TRANSFER TECHNOLOGIES EXPLAINED

ILLUSTRATION: MAE LAROBIS

Faster, cheaper, everything you always wanted...in a common carrier. Broadband is the soon-to-be-retired buzzword of the year gone by. Not as fashionable as WAP, but infinitely more important. Not as cheap as POTS, but essential, nonetheless, to modern business. But it's not the savior of man-, woman- or engineering-kind either.

The first thing to remember: Broadband is just another distribution method. Second thing to remember: E-business is just business. Whether it's DAM (digital asset management), VPNs or entertainment, the Internet is changing the first world, and broadband is changing the Net, but not in as fundamental a way as some might think. The telegraph started us on this instant communication road, and broadband is just a natural extension.

In 1992, some renegades from Skywalker Ranch started EDnet, the grandpa of virtual tie line services. They first used ISDN, the only reasonably priced digital service available from the telcos at that time, to send approval mixes from Northern California to Southern California for the Ron Howard film *Backdraft*. ISDN was too costly for widespread adoption and never made significant inroads here in the States. A basic business SDSL account provides 12 times the bandwidth of a similarly priced ISDN account. A single channel of raw 48/24 requires 1.152 Mbps, and two channels of 44.1/16 sucks up 1.4112 Mbps. With a symmetrical, 1.5 Mbps, always-on SDSL connection, phoning in your part doesn't seem so lame. The investors of Rocket Network are trembling with anticipation.

So let's talk about the current technologies. Right now, symmetrical broadband access to the Net is really valuable only to select businesses, such as multinationals with far-flung satellite offices. Media moguls, like ourselves, are a small but often motivated group that could also benefit from broadband services. Trouble is, most of us don't get paid enough to afford industrial-strength versions.

THE CONTENDERS: CABLE

In some outlets, cable is the only way you can get broadband service. Several cable providers are starting to price their services aggressively, targeting corporate users in addition to the home accounts that we've all heard about. Like the dangling participle in my previous sentence, broadband via cable has one glaring problem—the dreaded shared bandwidth. With half a dozen subscribers in a neighborhood, life is good, as the fixed bandwidth available is divvied up only a few ways. As more and more subscribers tap in, however, individual service degenerates as the aggregate bandwidth is sliced wafer thin. Just think what video over IP would do!

WIRELESS

My cell phone is a WAP–enabled device that works great as a digital phone, which isn't saying much. It's supposed to be "free and clear," but, boy, can you hear the compression artifacts. Anyway, it has a Web mini-browser, which I never use due to two factors: exorbitant cost and absurd display. Imagine getting deeply involved with the wireless Internet when you're staring at a screen the size of a Brazil nut. That about sums up the current state of wireless broadband—costly and quirky.

Currently, there is practical broadband wireless, and it comes in two distinct flavors. So-called fixed wireless applications, where the transceivers are nailed down, are projected to be a high-growth

BY OLIVER MASCIAROTTE

Loops for ACID

ROYALTY-FREE MUSIC & EFFECTS

"IT'S ABOUT TIME"

"When I'm composing for artists or doing sound design work for networks like The Sci-Fi Channel, Loops for ACID helps me get there fast. Drums are my main instrument, so the beat is at the heart of what I create. ***Loops for ACID allows me to spend time being creative -*** not monkeying around with computers. Instantaneous loop bpm brings a new perspective to sound for picture. ***Sonically, it's true open architecture.*** My sound, my beats, my time - I'm in control, not the technology. Loops for ACID. It's about TIME."

- Ambient Atmospheres & Rhythms: *Robert Rich*
- Ambient Grooves: *Bill Laswell's Sample Material*
- Ambient Realms
- Blues Guitar: *Whiskey, Cigarettes & Gumbo*
- Classic Country
- Classic Drum Machines: *Syntonic Generator*
- Dark Ambient Soundscapes: *Pandora's Toolbox*
- Drum Components: *RADS*
- Drum Tools
- Electro Hip-Hop: *Mac Money*
- Electronica Grooves: *Cyclotronic Resonator*
- Essential Sounds II
- Ethnicity
- Futurist Drum 'n' Bass
- Hip-Hop/R&B Vocals: *Mac Money*
- Industrial Toolkit: *Methods of Mayhem*
- Jazz Solos and Sections
- New York Dance
- On the Jazz Tip
- Psychedelic Guitar: *Harvey Mandel*
- R&B Drums: *Groove Spectrum*
- Sounds of Asia: *Opium*
- Street Beats
- Techno Club Grooves I & II
- Techno Synth Loops I & II
- Textures and Soundscapes: *Rapoon*
- Twisted Reality: *Synthetic Sound Effects*
- Universal Groove Elements
- Voices of Native America
- World Percussion: *Marc Anderson*

Willie Wilcox artist / producer / sound designer / composer
Utopia, Meat Loaf, Natalie Cole, Pointer Sisters, Sci-Fi Channel, USA Networks, MTV

CREATE EDIT DELIVER

SONIC FOUNDRY®

SONICFOUNDRY.COM

CIRCLE #060 ON PRODUCT INFO CARD

area of broadband services. One approach has targeted MANs, or metro area networks, where fat connections between buildings in a campus setting are desired, but digging up the lawn to plant some fiber isn't. The other approach is more akin to some current digital TV services; they use a satellite. These services, aimed at the more than 20 million folks outside the reach of fiber, cable or copper, will be challenged by rural electric utilities that will offer AC power and broadband into your house over the same wire.

G3, or third-generation wireless protocols, promise seemingly infinite bandwidth anywhere. In reality, migration costs will limit adoption to those who really need such services. Once better standards emerge and consumer products mature, wireless delivery will become another specialized player in the overall information dissemination fabric.

DSL

DSL is the winner in the interim time frame, with reasonable cost for both provider and consumer as long as you're physically close to your local telco switch. A significant feature of all business DSL accounts is a static IP address. This means that your company has a permanent address on the Web, which in turn means you can host an ftp or Web site in-house.

The content: Data, it's all data. Just as networked storage will some day all be transported over IP, I'll hazard a guess that even a nice reuben sandwich will someday be delivered via IP packets. Just kidding, though it seems that way at times. Eventually, IP traffic will carry everything, both block- and file-based data, around the world.

The emerging 10Gigabit Ethernet standard is shaping up as the bridge between LANs and MAN/WANs. 10GigE explicitly incorporates QoS (Quality of Service), a feature not inherent in the PSTN network and vital to the continued growth of broadband. Interestingly, general adoption of 10GigE should foreshadow the eventual retirement of reliable but expensive ATM, which has been the only way to provide WANs and MANs with guaranteed QoS.

The catalyst for widespread adoption may not be, gasp, surround audio but good ol' low-bandwidth voice communication. Because disagreements between record companies and CE manufacturers continue to impede the development of a digital content protection standard, music downloads won't fill up anyone's bank account any time soon. Instead, everybody's frantically vying for a piece of the VoIP action, hoping to cash in on the public's perception of the Net as a place to go for anything cheap. And money is really the gating factor for broadband. Though fiber to the home will eventually win the war, the required changes to the infrastructure, whether it's a passel of new photonic DWDM switches at the local exchange or licenses for wireless spectrum from the government, are horribly expensive. Who's going to bear those costs? If you said "the end-user," then me thinks you'd be right. ■

OMas is a provider of professional services to the content creation community. More nerdy reading on this and other topics is always waiting for you at http://seneschal.net.

JARGON GUIDE

What would a broadband column be without some jargon?

FTP

File Transfer Protocol provides facilities for bidirectional transfers between remote computer systems. FTP is a basic, no-nonsense method for moving entire files around the Net. Several ftp "clients," as applications that perform this duty are called, provide the valuable ability to pick up a transfer where it left off if the connection fails, a common problem with dial-up service.

DWDM

Dense Wave Division Multiplexing is the frequency domain equivalent of time-domain multiplexing. DWDM is used by telcos to launch multiple data streams down a fiber, each carried on its own wavelength (or frequency or color, all the same thing) of coherent laser light. This allows one fiber to carry simultaneously many more streams of data than it was originally designed to carry, saving upgrade costs.

CIRCUIT SWITCHED

The Old Way. Think Ernestine the operator, patch cord in hand. Switched circuits mean that, at setup time, a connection is made between two parties to complete a "call." When the call is finished, the entire connection structure is broken down to be rebuilt for the next call, a slow and inefficient process.

PACKET SWITCHED

The New Way. All nodes on the network are "always on," and able to send, receive and forward "packets" of data, small quanta of information framed or "wrapped" in a virtual envelope with address and routing instructions "printed" on the outside.

POTS

Plain Ol' Telephone Service, that reliable product we all take for granted.

PSTN

Public Switched Telephone Network, which carries our POTS around the world.

QOS

Quality of Service is a generic network mechanism that provides some combination of guaranteed throughput, error rate and latency. The current PSTN uses RSVP protocols as a QoS Band-Aid.

SYMMETRICAL BROADBAND

Same speed/bandwidth in both directions, the "S" in SDSL. The less costly ADSL service is asymmetrical, with download speeds far greater than upload speeds.

VOIP

Voice over IP means simply that "telephone" voice traffic is encapsulated within IP packets rather than over traditional switched circuits, with great potential cost savings all around.

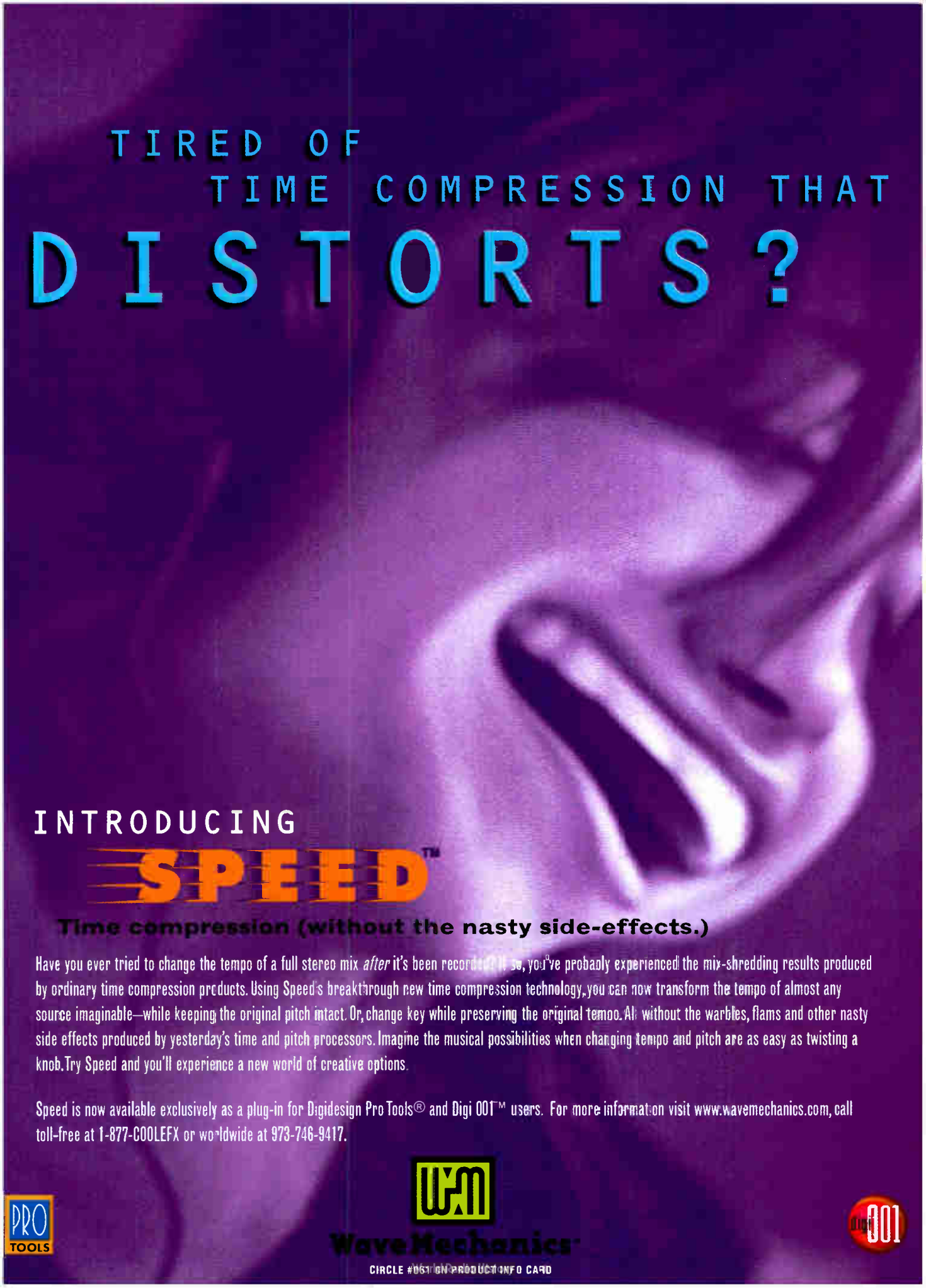
VPN

Virtual Private Networks provide virtual secure connections over an unsecure public network.

WAP

Wireless Application Protocol is a spec-defining, secure, bi-directional Net access via wireless devices, specifically those without keyboards. WAP is not an international standard and will most likely go the way of the dinosaur real soon.

—Oliver Masciarotte


TIRED OF
TIME COMPRESSION THAT
DISTORTS?
INTRODUCING
SPEED™
Time compression (without the nasty side-effects.)
Have you ever tried to change the tempo of a full stereo mix *after* it's been recorded? If so, you've probably experienced the mix-shredding results produced by ordinary time compression products. Using Speed's breakthrough new time compression technology, you can now transform the tempo of almost any source imaginable—while keeping the original pitch intact. Or, change key while preserving the original tempo. All without the warbles, flams and other nasty side effects produced by yesterday's time and pitch processors. Imagine the musical possibilities when changing tempo and pitch are as easy as twisting a knob. Try Speed and you'll experience a new world of creative options.
Speed is now available exclusively as a plug-in for Digidesign Pro Tools® and Digi 001™ users. For more information visit www.wavemechanics.com, call toll-free at 1-877-COOLEFX or worldwide at 973-746-9417.
WaveMechanics
PRO TOOLS
001
CIRCLE #061 ON PRODUCT INFO CARD

New Software/Hardware for Audio Production

STEINBERG SHIPS CUBASE VST 5.0 FOR MAC

Steinberg North America (www.steinberg.net) announced Cubase VST 5.0, the newest Cubase VST Series for the MacOS. The Cubase VST 5.0 Series features a complete graphic makeover, plus Magneto technology for "analog" warmth and 32-bit recording, output and mixdown in the top-of-the-line Cubase VST/32. The Cubase 5.0 Series is optimized for Power Mac G4 with Velocity Engine for faster audio processing. All three products in the series, Cubase VST, Cubase VST Score or Cubase VST/32, employ Cubase's digital recording engine and have scalable recording modes and up to 32-bit floating point resolution in the top-end Cubase VST/32. Cubase VST/32 allows recording in 96 kHz and is equipped with Apogee's UV22 dithering technology and has 128

channels of digital audio, eight FX sends, four Channel inserts each and four Master inserts. Other new features in the Cubase VST 5.0 line include LTB (Linear Time Base) technology for precision MIDI timing, enhanced drag-and-drop capability, Internet functionality with Rocket-powered technology and the Universal Sound Module, a new, virtual sound module with over 70 MB of sounds offering General MIDI compatibility. Cubase also includes a new MIDI Track Mixer that offers VST-style control over any connected MIDI gear, plus custom window sets and a new FX rack that hosts new control elements; the new channel EQs can now either be edited graphically or with the familiar virtual pots. MSRP is $499 for Cubase VST 5.0; $549 for Cubase Score VST 5.0; and $799 for Cubase VST/32 5.0.

Circle 339 on Product Info Card

AUDIO EASE SURROUND PANNER FOR MOTU

With the release of Peter Pan, a plug-in for MOTU Audio System, Audio Ease now brings surround panning to Mark of the Unicorn Digital Performer and AudioDesk users. Peter Pan positions the source sound by dragging around a red ball in a round arena; center and rear speaker outputs are routed to buses via pop-up selectors, and a sub-woofer channel can be separated from the input signal with a smooth and adjustable lowpass filter. The application uses little processing power and retails for only $39.95. The Audio Ease Web site, www.audioease.com, features a fully functional demo (that beeps every few seconds) and offers the software for download purchase.

Circle 340 on Product Info Card

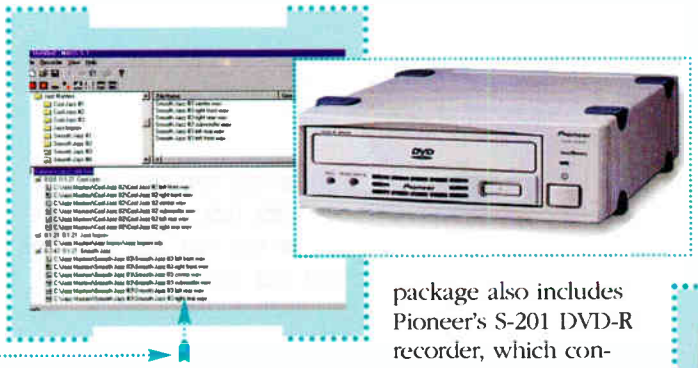
DIGIGRAM XTRACK VERSION 4.0 WITH MP3

Digigram (www.digigram.com) has introduced Version 4.0 of its Xtrack Audio Suite with MP3 functionality. Xtrack 4.0 can import, export and edit MP3 files and is able to merge any combination of PCM, Layer 1 and Layer 2 audio tracks to generate a single MP3 file. (Format, sampling frequency and bit rate conversion selections are made in the export process.) The software also allows users to convert MP3 files into a single PCM, MPEG Layer 1 or MPEG Layer 2 file, and a wide range of compression is offered, from eight kbps at 22.05 kHz to 320 kbps at 48 kHz. Xtrack 4.0 allows 24-bit recording and includes full support of Digigram's PCXpocket 440 PCMCIA card. Xtrack 4.0 is the same price as its previous version at $500; current Xtrack users can order an upgrade to Xtrack 4.0 for $100 at Digigram's Web site.

Circle 341 on Product Info Card

MINNETONKA/ MICROBOARDS MASS 5.1

Minnetonka (www.minnetonkaaudio.com) has teamed up with Microboards to produce MASS 5.1, a bundled system for creating DVD-Audio discs. The package, which runs under Windows 98, 2000 or NT, includes Minnetonka's Mx51 and MASS 5.1 software applications and a



Pioneer DVD burner. Mx51, a surround mixing application, allows users to build their own mixer and can include an automated surround panner on each channel; an interface for a motorized joystick is built-in. MASS 5.1 lets users compile DVD recordings by dragging and dropping sound files to create playlists, then burning DVD-Audio. The program accepts 5.1 surround encodings as six sound files or as an MLP-encoded sound file. The package also includes Pioneer's S-201 DVD-R recorder, which connects through SCSI and can also be used to make data DVDs. Retail is $8,495.

Circle 342 on Product Info Card

U-MASTER CD DUPLICATOR

The Logical Company (www.u-master.com) introduces the U-Master CD Mastering/Duplication system, which can be used with both a computer (PC, Mac or Unix system) or as a stand-alone unit. In Mastering mode, the U-Master works by making multiple CD-R drives appear as a single drive to any computer system; in Duplication mode, the U-Master allows copying of premastered CDs without the use of a computer. In addition to copying directly from CD to CD, the U-Master can copy a premastered CD to one of 10 different user-selectable CD images on its 10GB internal hard drive, allowing users to easily switch between multiple jobs. The U-Master is available as a "controller only" unit for integration into an existing system, as a drive-ready tower unit with room for up to eight 12X Plextor drives or in a fully configured tower version for end-users. The U-Master's RISC processor and RAID architecture allows adaptability to faster CD-R drives and DVD drives in the future. An eight-drive system is $6,000.

Circle 343 on Product Info Card

UPGRADES AND UPDATES

Mark of the Unicorn (www.motu.com) announces **FreeStyle Version 2.31** for Windows 95, 98, Me, 2000, NT 4.0 or higher, Power Macintosh and 68K Macintosh systems. This software upgrade makes **FreeStyle's latest feature set identical across-the-board**, bringing all users major new features, such as Event List editing, Step Record, system exclusive recording and editing, support for over 275 MIDI instruments and sound modules, and more...**Emagic** (www.emagic.de) announced that the **ES1 synth for TDM-based systems is now shipping**. The ES1 TDM provides subtractive synthesis with that "classic" analog sound and offers oscillators, filters, flexible modulation possibilities and fast envelopes. The ES1 TDM integrates seamlessly into Logic's internal digital mixer with access to all plug-ins, effects and automation, and a direct connection with Logic Audio's sequencing engine with sample-accurate timing. The ES1 TDM can be used by Logic Audio Platinum 4.5 (or higher) owners working with Digidesign's Pro Tools TDM-based systems (Mac only). Price is U.S. $299...**SEK'D**'s AudioCaster Software for **fully automated playback of audio files** for broadcast and public venues is now shipping. The current Version 1.1 adds time-automated switching to inputs for satellite feeds or other sources. Visit www.sekd.com...**Emtec Pro Media** announces the **next generation of DLT linear backup media**, storing up to 80 GB of compressed data; get more information at www.emtecusa.com...**Syntrillium Software has released two new members of the Cool Edit 2000 family: the Phat Pack plug-in and the Tweakin' Toys plug-in**. The Phat Pack plug-in adds four delay-based effects to Cool Edit 2000: Full Reverb, Multitap Delay, Chorus and Sweeping Phaser. The Tweakin' Toys plug-in offers four special effect and mastering tools: Hard Limiter, Pan/Expander, Pitch Bender and Convolution. Each plug-in is $49; for more information, visit www.syntrillium.com...**LaCie's (www.lacie.com) U 160 hard drive transfers data at up to 75 MB/sec in RAID and 47 MB/sec for a single drive.** The U 160 combines 18 GB of storage with an Ultra 160 SCSI interface and has a 4MB buffer and 15,000 rpm speed. List price is $599 for the internal version; $699 for the external version...**Sounds Logical announces that the WaveWarp Audio Toolbox for MATLAB** is now shipping. The release features a set of extensions to WaveWarp 2.0 that enables seamless communication between WaveWarp and the MATLAB technical computing environment (available separately from The Mathworks Inc), allowing MATLAB to function as an audio source, sink or in-the-loop processor of audio streams managed by WaveWarp. Visit www.soundslogical.com.■

RANDOM NOISE

THE LONG-TERM EFFECTS OF SHOCK THERAPY

After writing this column for nearly a year, I seem to have found my niche among *Mix* readers. I have been rewarded by questions, comments, tips and suggestions; all are greatly appreciated. Because *Mix* predates the project studio and the cover includes the legend "Professional Audio and Music Production," I was surprised to discover how many do-it-yourselfers and knowledgeable technicians read this magazine.

Just yesterday, a customer called up to send in an ADAT for overhaul. Nine months before he had called with an emergency. I was the only person who suggested popping the cover to look at the belt. (It had either broken or slipped off.) While all equipment carries a warning label—*AVIS! Risque de Choc*—I encourage all engineers to investigate their gear *safely*. No booby traps are set off when the cover is removed—though you should disconnect the power and wear shoes and socks.

Get to know what's normal, buy a service manual, own good tools and don't be in a hurry. At a minimum, you'll become more aware of the heat that is generated, which should make you more considerate when stuffing gear into an enclosed rackspace. Knowledge is power, success builds confidence, and experimentation helps you to ask the right questions. So, rather than talking deep-fried tech this month, I thought a few short stories—some related and some not—might shed some light on this technician's perspective. First, a bit about me and my path toward maintenance.

TO SIR WITH LOVE

It all started in the late '50s as I watched my mom and dad play 45 rpm records on a little turntable with a fat spindle plugged into the back of a black-and-white TV set. (Figure 1 shows the exact model in question.) My father got great pleasure from hearing his favorite music; the "connections" from turntable to speaker delivered more than "just sound," it was about romance and passion and spine tingles.

When tubes and capacitors needed changing, I couldn't get close enough, zooming in until he would say, "Get out of my light." An audio career may not have been my father's vision, but seeing his passion, hearing him sing with gusto—and with a very respectable voice, I might add—inspired me more by proximity than conscious effort. All I can say is, "Thanks Dad!"

SHOCK THERAPY

During the time I lived with my parents, we never owned a new TV. (Can you imagine that today?) Our second boob tube was a second-generation B&W tube set that used cheesy printed circuit boards. Then as now, PCBs suffered from cold solder joints, and this set had intermittent audio. At first I smacked the side of the cabinet to restore the sound to my favorite cartoons. My father knew to apply pressure to an I-F can—an Intermediate Frequency tuning coil—on the audio board. Later, I learned his "repair technique," reaching in while the set was on, only inches away from the high-voltage anode of the picture tube. (It was only 15,000 volts or so, but the current was low.) Again, I ask, can you imagine this happening today?

The geek seeds were planted early for me, for most of my geek friends and perhaps for you as well. Somehow, through all of the experimentation, I avoided death by electrocution. That is to say, I have no idea what effect any accidental shock therapies might have had on my brain.

BY EDDIE CILETTI

Figure 1: An RCA Victor 45 rpm "Victrola," circa 1955.

PAYING THE RENT/ RAVING THE VENT

So I ended up in New York City, where the East Village is "just a little" more popular now than 20 years ago when I arrived. Just a few months before leaving town, my shop lease expired, and the landlord wanted to double the rent. (Commercial leases are not bound by rent control, and $1,800 seemed a little steep for a measly 450 square feet plus six floors overhead of potentially leaking bathrooms.) When someone mentions building an audio facility in New York City, I realize that those self-administered shock therapy treatments were beneficial. For me, the transition from the Big Apple to the Mini-Apple was mildly traumatic, as any move would be. I was too busy getting back into the biz to worry about culture shock; the biggest hassle was getting a quick cuppa cappa. What was formerly an enjoyable walk now requires a car.

In New York City, at least 90% of my biz was walk-in. Compare that to the Twin Cities, where most business now arrives via UPS and FedEx, a factor that has radically changed one facet of my servicing technique. In New York, I could be a "cowboy," providing reasonably fast turnaround, knowing that any problem child could be "returned to day care for conflict management."

Now, with shipping time and costs, all machines spend more

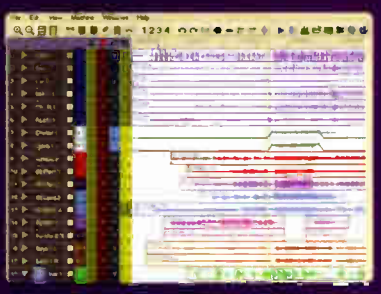
MX-2424 Profile:
Rudi Ekstein of Foxfire Recording

Rudi Ekstein may not be a household name. But his studio, Foxfire Recording, has been thriving for over ten years, with over 40 hours of bookings every week. And the new cornerstone of Foxfire is the TASCAM **MX-2424 24-Track 24-Bit Hard Disk Recorder.**

When you can have any recording system you want, why pick the MX-2424? "After looking at other hard disk multitracks, I chose the MX-2424 based upon its incredible versatility," says Rudi. "First and foremost, the MX has fantastic sound quality that is comparable to anything I've ever heard. The ability to use 24 channels of analog and digital I/O simultaneously was another big reason for my decision. Plus, the ability to edit from the front panel, to easily set locate points and to use the auto-punch and scrub features have helped make sessions run smoother and quicker."

With audio file format and disk drive compatibility with your favorite DAW systems on Mac® and PC, easy interfacing with popular analog and digital gear and all the advantages of our world-class hard disk engine, it's easy to see why thousands of musicians, project studios and professional facilities like Foxfire have chosen the MX-2424 for their main recording system. For the complete MX-2424 story, see www.tascam.com or visit your TASCAM retailer. You never know...the next MX-2424 profile could be yours.

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



The new MX-View graphic user interface software, available soon for all MX-2424 owners. Includes powerful waveform editing and much more.

TEAC America, Inc., 7733 Telegraph Road, Montebello, CA 90640
323-726-0303 www.tascam.com

TASCAM®
a whole world of recording

CIRCLE #062 ON PRODUCT INFO CARD

time on the burn-in rack. For a while, Panasonic DAT decks were so problematic that post-surgery monitoring was extended to three days to make sure they stayed fixed. This is not the way to increase profit margin, but the process eventually shed some light on the cause of the failures. The mysterious problems have since been nailed.

New Yorkers generally don't like to ship, because there's no space to store the original packing materials. Add in the fear of shipping damage and compare both to the ease of getting into a cab. If you must ship and don't own the original box, then use two boxes. When possible, choose heavyweight, double-wall cardboard, rated for 275 to 350 pounds. Bubble-wrap the device in the first box and use packing peanuts in between the two boxes. Insure for the list price. Don't ship the power cord unless it is unique. Include a description of the problem with the device.

But enough about me. Here are some random musings for you, along with the answers to some questions you've sent my way.

ANALOG REBIRTH

The rebirth of analog technology—and the cottage industry that supports it—owes thanks to the CD and to digital naysayers. All of the enhanced digital formats that offer higher sampling rates and bit depths will make digital audio more accurate, but none will endow it with analog's "elusive and desirable idiosyncrasies."

In the achievable-reality department, we all need to be careful what we wish for. One example is 24-bit technology, where even the most expensive 24-bit converters barely achieve 21.5-bits. Admittedly, this is an impressive accomplishment—24-bits is more than enough, and more samples will push the envelope of what is possible. All the licensing and format wars aside, we need to increase user confidence in digital technology so that it is considered sonically accurate by the majority *and* have long-term data integrity.

$$RMS = \frac{1}{2} * Volts_{p\text{-}p} * \left\{\frac{\sqrt{2}}{2}\right\}$$

$$RMS = \frac{1}{2} * Volts_{p\text{-}p} * \left\{\frac{1.414}{2}\right\}$$

$$RMS = \frac{1}{2} * Volts_{p\text{-}p} * \{.707\}$$

$$Volts_{p\text{-}p} = \frac{V_{RMS}}{.707} * 2$$

Figure 2: RMS formulae

GEEK PEAKS: THE RMS TITANIC

During the Stone Age, Peak Power ratings drew a consumer's attention to a power amp's performance. (Eventually, RMS power specs were also published, revealing the truth.) RMS stands for Root-Mean-Square, not Royal Mail Steamer, but the end result is about the same. Consider that the Titanic had 2,200 "peak" passengers. Sadly, the 705 survivors number only 72 passengers short of the RMS formulae detailed in Fig. 2.

The peak-to-peak value of a sine wave is converted *to* RMS so that it is "effectively" equivalent to that of the same DC voltage. (For a square wave, the "peak-to-peak" voltage would simply be halved.) The bottom formula works in reverse to determine the peak-to-peak value *from* the RMS. Plug into your local wall outlet—the juice is 120-volts RMS or 339.46-volts peak-to-peak.

Note: Visit www.whatis.com to get a detailed explanation on RMS and many other geek subjects.

FEEDBACK

Anyone who's ever built an amplifier knows the importance of feedback for reducing distortion and improving frequency response. I rely on reader feedback to better hit the target and to fill in the gaps in my own knowledge. For example, the LA-4 upgrade project detailed in the November 2000 *Mix* replaced a RC4136 quad op amp with two dual op amps. Two readers responded—Mark De Martini (formerly of Sigma Sound in Philly and now of Larrabee in L.A.) and John Roberts (of Peavey)—reminding me that a TL075 is pin-compatible, if you can find them (I couldn't). I still like my dualing-duals version, but anything is an improvement over the RC4136.

Regarding capacitor upgrades, a few readers told me that Panasonic's HFS/HFQ Series were no longer available. This is not entirely true. The line is being discontinued with some inventory remaining. (The FC Series is the replacement.) My most recent experience at www.digikey.com allowed the option to check availability for each part and the FC Series, which is smaller by design and only available in the radial format. See Fig. 3 for a closer look.

Finally, I get asked for vintage schematics all the time. One source for a variety of documentation is www.triodeel.com, specializing in vacuum tubes, amplifier schematics and related parts (not to mention links galore—related and not, some quite humorous).

That's enough random wanderings for now. Next month, I'll be back with a bit more on digital recorders.

Send unused cross-country ski equipment to Eddie Ciletti at www.tangibletechnology.com for a maintenance credit. ■

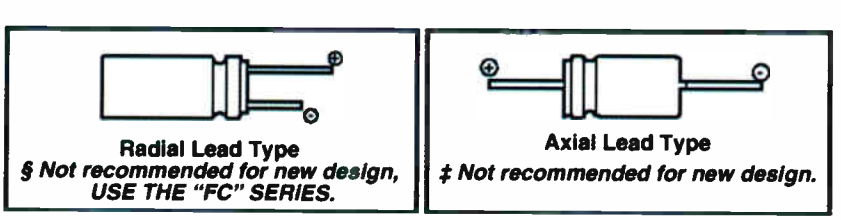


Figure 3: In case your brain is dense like mine, these pictures show the blow-by-blow. Also note the quote "not recommended for new design" applies to both capacitor styles, but only radial suggests that you "use the FC Series," which is not available in axial format. (Illustration courtesy of Panasonic and www.digikey.com.)

...mum of four coats of paint ... based on Haber's TRM-6 ... during all of the components

PREVIEW

of a channel strip: a tube mic preamp, EQ, compressor/limiter, de-esser and noise gate. Automated control parameters minimize the number of controls and speed setup. The compressor/limiter uses SPL's Double VCA Drive, and the de-esser operates in SPL's Auto-Threshold mode that only reduces the sibilant parts of the frequency spectrum. The 3-band EQ offers proportional Q characteristic, and an air band coil EQ and a distortion stage are included. Additional features include 48V phantom power, pad/phase reverse switches, and instrument and line inputs. A headphone monitor output lets users bypass common HD recording-related latency problems. Options include Lundahl analog I/O transformers and an integrated 24/96 A/D converter. Price: $1,399.

Circle 336 on Product Info Card

TC SYSTEM 6000 UPDATES

TC Electronic (www.tcelectronic.com) debuts software Version 1.20 for the System 6000. The new update, free of charge to System 6000 owners, includes more robust SMPTE automation, enhanced networking capabilities for remotes and mainframes and an improved version of the VSS-5.1 Surround Reverb algorithm. TC Electronic is now shipping the SP-1 Surround Panner Joystick for the System 6000 (retail price $799), and a new AES-8 digital expansion card expands the System 6000 Audio Mainframe to a maximum of 16 AES/EBU inputs and outputs running at sample rates of up to 96 kHz. The AES-8 card is $1,995, bringing the price of a System 6000 with 16 digital I/Os to $11,395.

Circle 337 on Product Info Card

AMEK DRIVER IN A BOX

The Pure Path™ Driver in a Box (DIB) from Amek (www.amek.com) includes eight separate line-in/line-out, transformer-coupled line amps, each with individual mute and phase controls, trim and output meter. Designed by Mr. Rupert Neve in conjunction with Amek, the DIB's internal jumpers allow the eight channels to be independently configured for advanced applications, such as deriving mix minus broadcast feeds. Used as a line receiver, the DIB overcomes signal mismatches due to ground potential differences. The DIB can feed one or more output signals to a variety of destinations, and its high isolation between channels allows channels not used for distribution to act as line-receiving circuits. The DIB may be used to boost levels of semi-pro gear to a true +4 dB, and internal trim controls even permit levels to be raised to +26 dBu. Insert points let users control the outputs via faders, and signals may be enhanced by means of a SILK circuit, switchable on each output channel. Price: $3,250.

Circle 338 on Product Info Card

HOT OFF THE SHELF

Cases by Masco offers shipping and storage cases for equipment, tools, instruments, test equipment, etc. Standard rack and custom cases are available in various sizes and colors, with/without lids, wheels, drawers and molded dividers. Options include waterproof/shockproof designs, molded or ply construction and varying grades of ruggedness. Call 714/223-0322 or visit www.casesbymasco.com...**The Fourth Edition of F.Alton Everest's *Master Handbook of Acoustics* is now available.** Check out www.rpginc.com/news/index.htm#04...**Hannay Reels offers a color catalog** of cable reels designed specifically for audio and video applications. Depending on the model, stackable reels have integrated handles and include side panels for XLR and BNC connectors, and stagebox storage trays. Call 877/goreels or visit www.hannay.com...**HHB upgrades its 2.6/5.2GB Magneto Optical discs** for increased data transfer rates. A new specification ensures that bad sectors are below a maximum percentage and are identified during low-level formatting. Call 310/319-1311 or click on www.hhbusa.com...**Antares offers the ATR-1a Intonation Processor,** a rackmount version of the ATR-1 pitch correction device with new features, including a Bass Mode, a new front panel design and the ability to control pitch correction via MIDI. The ATR-1a is $849, an upgrade kit is $49.95 (recent ATR-1 customers can upgrade at no charge). Call 831/461-7800 or surf to www.antarestech.com...**Soundcraft offers a comprehensive library of information** on all of its console products on CD-ROM. The two discs include data sheets, user guides, brochures and images in four formats. Contact Soundcraft at 615/360-0471 or visit www.soundcraft.com...**Audio Amateur Inc. offers the sixth edition of *The Loudspeaker Cookbook*** by **Vance Dickason** (an industry consultant and editor of ***Voice Coil,*** the loudspeaker industry monthly). The new edition includes a rewritten chapter on transmission line speakers, a number of new graphs and references. Call 888/924-9465 or visit www.audioXpress.com...**ARX Systems of Australia has released its latest CD-ROM catalog of ARX pro audio products,** including the SPL range of powered loudspeakers and ZA multichannel amplifiers. Contact the ARX North America office at 818/225-1809 or surf to www.arx.com.au...**Mic manufacturer MBHO now offers 11 different types of interchangeable capsules** for its modular microphone system. Exchangeable capsules offered are omni and figure-8, and several flavors of cardioid pickup characteristics can be used with the MBNM-603, -680 and -548 mic preamps. Call 718/963-2777 or visit www.mbho.de.■

WARNING: Don't let this happen to you!

At SAE, we offer:

- **Localized education**
- **Small class sizes**
- **Hands-on learning**
- **World-class recording studios and multimedia labs**
- **Financial assistance for qualifying recipients**
- **Career placement**

Life is short. Go for your dream now. The alternative could be frightening—a dead end job you never wanted and certainly won't enjoy.

If you dream of a career in professional audio or multimedia as an artist, engineer, or producer, you have a real choice. Attend one of our 30 schools around the world. Join more than 12,000 students in 15 countries who are already turning their dream into a promising reality.

Since 1976 SAE has been preparing thousands of people for fulfilling careers in entertainment technology and services. At SAE you can study in your own backyard or half way around the world and still enjoy the same quality education. Maybe that's why leading entertainment companies look to SAE for their technology interns and entry level positions.

Reach for your future today and call SAE toll free at 1-877-27Audio. You already know the alternative.

Licensed in the U.S. by The New York State Education Department and The Tennessee Higher Education Commission. Licensed internationally in Australia, the U.K., Germany, France, and Italy. Main institutes located in New York, Nashville, London, Sydney, Munich, Paris, Amsterdam, Athens, Milan, Singapore, Zurich, Auckland, Vienna, Madras, Kuala Lumpur and Stockholm.

SAE

State-of-the-Art Education in Audio · Multimedia

www.sae.edu

Toll free 1(877) 27-Audio

AVALON DESIGN AD2022

DUAL-MONO CLASS A PREAMP

Avalon Designs has a deserved reputation for designing high-quality, robust-sounding outboard gear. I've had the pleasure of accumulating several pieces of Avalon gear over the years, including a pair of M5s, the company's premiere 1-channel microphone preamp/DI combo. So, when Avalon released the AD2022, an updated 2-channel version of the M5, I was more than happy to take it through the testing process.

The AD2022 is a dual-mono, fully discrete, Class A preamp, combined with two hi-Z instrument inputs. As is the case with the M5, the microphone input stage includes a low-ratio, balanced input transformer. Split low-ratio primary windings are combined within a custom mu-metal core for extended frequency response and low distortion. A built-in, variable highpass filter eliminates low-frequency rumble at sub-sonic frequencies.

The most obvious improvement over the M5 is the inclusion of an output gain control that is controlled by an additional pot on the front of the unit, but the most drastic change in design is less obvious: The AD2022 uses two signal amplifiers per channel, as opposed to one per channel in the M5. According to Avalon, the change "improves transient response and doubles the internal bandwidth" of the amplifiers.

Another improvement is the positioning of the two hi-Z instrument inputs on the front of the unit. (The hi-Z instrument input is on the back of the M5—terribly inconvenient.) Further improvements include selectable microphone source loading, an improved power supply and double-plated circuit boards for superior low-level signal transfer.

Over the past several years, I've come to love using my M5s in a variety of situations, especially for vocals. The first test I took the AD2022 through was with a female vocalist, a real screamer. One similarity between the M5 and the AD2022 is the unit's ability to take an exceptionally high sound pressure level before distorting—definitely an important feature with loud vocalists. As I expected, I also found the AD2022 to have the same overall characteristics as the M5: smooth, with a well-defined top end and tight low end, and very present, or, as our test vocalist called it, a real "in your face" sound. The unit is also very quiet, even with the gain cranked up.

The addition of the second amplifier and gain stage to the AD2022 allows the user to control the "color" by varying the ratio between the two amplifiers. Also, the addition of the selectable microphone source-loading switch (50, 150 and 600Hz) adds even more control options—a definite plus over the M5.

I tried the AD2022 with various microphones in a range of situations. These configurations included a pair of Neumann U67s used as drum overheads, a U47 set up as a room mic and a Royer 121 ribbon mic on a tenor sax. The AD2022 was exceptional in all of these situations, but I was especially pleased with the drum overheads. The tune I used it on was a roots-rock song with a lot of cymbal and hi-hat. The drummer, who was a session pro, was quite impressed with the clarity of the kit and definition of the cymbals.

As far as the DI goes, the AD2022 is the same animal as the M5. As expected, the DI has a very "in your face" quality, too—very clear and present. Synth pads, sampled drums and synth bass all benefit from the unit's fast transient response, and if you're looking for a clean but extremely gutsy bass guitar DI, then this is one to put at the top of your list. I also had a lot of fun running some drum loops out of a sampler into the unit with the gain cranked up pretty high; the AD2022 added a bit more color than a Countryman, but not as much as a racked Neve 1073. Positioning the instrument inputs on the front of the unit has reduced the hassle factor to zero—extra kudos to Avalon for this improvement.

With the AD2022, Avalon has improved on an already successful design witout adding nonessential features. The unit is an extremely low-noise/high-power unit, and it is an exceptional piece of gear that would do well in a wide variety of situations. If you're looking for a stand-alone preamp/DI combo within this price range ($3,000), then the AD2022 is an excellent choice.

Avalon Design, PO Box 5976, San Clemente, CA 92673; 949/492-2000; fax 949/492-4284; www.avalondesign.com. ■

Walt Szalva was born and raised in America.

BY WALT SZALVA

Looking to Sell Equipment Online?

Your Internet Storefront is Ready.

Right Now.

Imagine one online marketplace where you can sell professional, digital-media production equipment – without investing time and money in the sale. Now imagine that you can leverage this powerful sales tool right now – for free. That's the reality of Digibid.

Solve Inventory Problems

Sell your individual components, overstock items, discontinued products or trade-ins, demo gear and more, with no hassles or phone calls. Simply post them on Digibid and get top dollar. It's that simple.

Visit Digibid Today

Thousands of smart production professionals turn to Digibid every day. There's no better source for relevant, timely competitive intelligence and industry-equipment information. Visit today!

It's FREE to List Items for Sale

You pay a commission only after your item sells. Digibid completely handles the buyer side of the transaction. To date, we've more than 25,000 successful auctions.

How to Get Started

Just register online at digibid.com.

Get a Branded, Online Storefront

If your company is interested in a higher level of promotion and exposure, inquire about our setting up your own, branded digital marketplace, leveraging our state-of-the-art technology. We have more than 21,000 registered users and more than 90,000 unique monthly visitors.

digibid.com
Auction Network
an IndustryClick solution

a member of IndustryClick
Where industry clicks on the Web!

E-mail: **sales@digibid.com**
Phone: **609-371-7833**

CIRCLE #065 ON PRODUCT INFO CARD

D.A.S. MONITOR-8

A RETURN TO STUDIO MONITORS

I would hazard a guess that most studio engineers will not recognize the D.A.S. name, as the Spanish company's last studio monitor was produced roughly 20 years ago. Established in 1970, D.A.S. began as a manufacturer of studio monitors before changing its focus to produce loudspeakers for sound reinforcement applications. The company has returned to its roots with the introduction of its Monitor line of near- to mid-field recording and broadcast studio monitors. The Monitor-8s and their smaller sibling, the Monitor-6s, are the first offerings in the expanding product line. The larger Monitor-8s are reviewed here.

At $459 each ($918/pair), the Monitor-8s are modestly priced, so I was completely surprised by what I heard when I first auditioned these superb passive monitors in my control room. In short, I was completely blown away. The Monitor-8s are world-class monitors offered at a bargain-basement price.

FIRST LOOK

Straight out of the box, the Monitor-8s are beautiful to behold. The heavily radiused side panels are fashioned from exotic Iroko plywood, adding rigidity as well as visual contrast to the black, 15mm-thick MDF cabinet. This reinforcement minimizes coloration from panel vibration. The top and bottom edges of the cabinet are not radiused. Cabinet dimensions (with a vertical orientation) are 16.5x11 x11.5 inches (HxWxD). Each cabinet weighs 28 pounds. The monitors are not magnetically shielded.

Behind the detachable, black cloth grille are two drivers—an 8-inch polypropylene woofer with a rubber surround and a 1-inch soft-dome, ultra-fine aluminum diaphragm tweeter. The low-frequency driver's oversized motor structures and cast-aluminum chassis promise improved efficiency and impulse response. The tweeter's voice coils are Ferrofluid-cooled for maximum power handling and improved linearity.

The tweeter sits behind a protective fine-mesh metal grille. Both the tweeter and grille are inset in a Linear Quadratic Spherical™ waveguide, the curved shape that reportedly reduces diffractive effects at high frequencies (the radiused side panels make a similar contribution). The result is wider, more uniform imaging and less distortion due to comb filtering. The waveguide also increases the tweeter's sensitivity.

A circular bass tuning port is on the rear panel, directly opposite the high-frequency driver. Also on the rear panel are two binding posts that provide power amp connections; these accept only bare wire. Two M6 (metric 6) female mounting points are located on the bottom of the cabinet that allows the monitors to be anchored to a flat stand with a downward tilt.

BY MICHAEL COOPER

SPECS

The Monitor-8s are rated at 125-watt RMS power, 250W program power and over 500W peak power handling capability; D.A.S. recommends an amplifier rated at 125 to 250 watts at eight ohms. The specified peak SPL at full power is 116 dB, and I found a stereo pair of Monitor-8s to be plenty loud when powered by my 150-watt Hafler P-3000 Trans•nova amp. On-axis sensitivity (1 watt/1 meter) is a respectable 89dB SPL.

The Monitor-8s' frequency response is specified as 38 to 33 kHz (with no tolerances given). D.A.S. recommends you place the Monitor-8s four inches from a wall for added reinforcement of bass frequencies, and a supplied chart shows the frequency response one would ideally expect with such placement. The response is three dBs down at 55 Hz and two dBs down at 20 kHz, with impressive linearity in between both extremes. (These measurements were made using a 1W swept sine signal at one meter with the Monitor-8s in a

CD-R/DVD-R

The Complete Spectrum of CD-R & DVD-R Products

The Total Package

The DSR 1203
The DSR 1200 Series is a low cost, high performance CD Recordable Duplication system that utilizes superior technology.

The Saturn II P
- 150 disc standalone CD publishing
- Simultaneous print and record
- Unattended batch job processing
- Intuitive user interface

The Orbit II
- 50 disc standalone CD duplication
- Low cost, entry level
- Sleek desktop aesthetics
- Easy operation, friendly user interface

The Apollo II
- 150 disc standalone CD duplication
- Unique FIFO Disc Up Stacker
- Unattended batch job processing
- Intelligent "Menu Mentor" navigation

The CopyWriter 121
- One to One CD Duplication
- Support for 12X recording speed
- Compact footprint, contemporary design
- One button user operation
- Ruggedized acrylic enclosure

StartREC Editor/Duplicator is a 4 recorder CD-R duplicating and editing system for on the fly recording.

MicroBoards Technology offers the highest quality **CD Recordable Media** from Taiyo Yuden, Inc. the inventor of CD-R technology.

Corporate Headquarters: (952) 556-1600
Toll Free: (800) 646-8881 • Fax: (952) 556-1620
Latin America (Miami): (305) 932-2600 • Fax: (305) 932-2603
Europe: 44-1789-415-898 • Fax: 44-1789-415-575
Japan: 81-3-3561-2266 • Fax: 81-3-3561-2267
India: 91-40-6504218 • Fax: 91-40-3326566

www.microboardsproaudio.com

MICROBOARDS Technology

CIRCLE #066 ON PRODUCT INFO CARD

Tannoy PS-88 active subwoofer (a discontinued model) completely corrected the imbalance, and the Tannoy perfectly complemented the Monitor-8s. In fact, the Monitor-8s' relatively high-bass rolloff kept interference with the sub to a minimum, creating a more seamless coupling of the two systems.

With the sub added to the mix, drums sounded extremely realistic. Stick and kick drum beater strikes were beautifully defined and the traps' timbres perfectly balanced. Heaven.

I found the Monitor-8s to be very nonfatiguing without sounding even slightly dark or veiled. Of course, the timbre was understandably darker outside of the sweet spot, but the balance was nevertheless easily workable.

CONCLUSIONS

Engineers looking to use the Monitor-8s as their main speakers will want to add a subwoofer, especially if they can't place the cabinets four inches from the wall, as the manufacturer suggests. But even without a sub, "mid-room" placement still affords an extremely accurate reference for checking stereo imaging and the spectral balance from the midbass frequencies on up. This has always been a near-field monitor's *raison d'être*, and the Monitor-8s deliver in spades.

The Monitor-8s are one of the most detailed and transparent monitors I've ever had the pleasure to work with. Imaging and depth are downright superb. As an added bonus, the monitors are really fun to listen to, without sacrificing accuracy.

With their first studio monitor offering in 20 years, D.A.S. has hit a grand slam home run over the center field fence. These are world-class monitors at a dirt-cheap price, and there's no way that I'm going to relinquish them. My check is in the mail!

Dist. by Sennheiser, 1 Enterprise Dr., PO Box 987, Old Lyme, CT 06371; 860/434-9190; fax 860/434-1759; www.dasaudio.com. ■

Michael Cooper is a Mix *contributing editor and owner of Michael Cooper Recording in beautiful Sisters, Ore.*

—FROM PAGE 122, ON THE BENCH

ple from that value that the green trace was derived from. This modulates the data away from the wrap-around at the crossover point for a better look. Although the one-sample offset introduces its own phase shift (i.e., it compounds the Monitor-8s' phase shift and therefore produces inaccurate absolute data), the yellow trace is useful in that its linearity confirms that there are no discontinuities in phase shift around the 3kHz crossover point.

Figure 3 shows the Monitor-8s' impulse response in SpectraFoo Complete. Especially considering the nonconcentric orientation of the drivers, the impact and decay response are outstanding. An examination of the spectral history (not shown here) in SpectraFoo Complete reveals that the second impact spike (broader and lower in amplitude; noted by the pointer in Fig. 3) was produced by the woofer and occurs later than the tweeter's initial spike.

—Michael Cooper

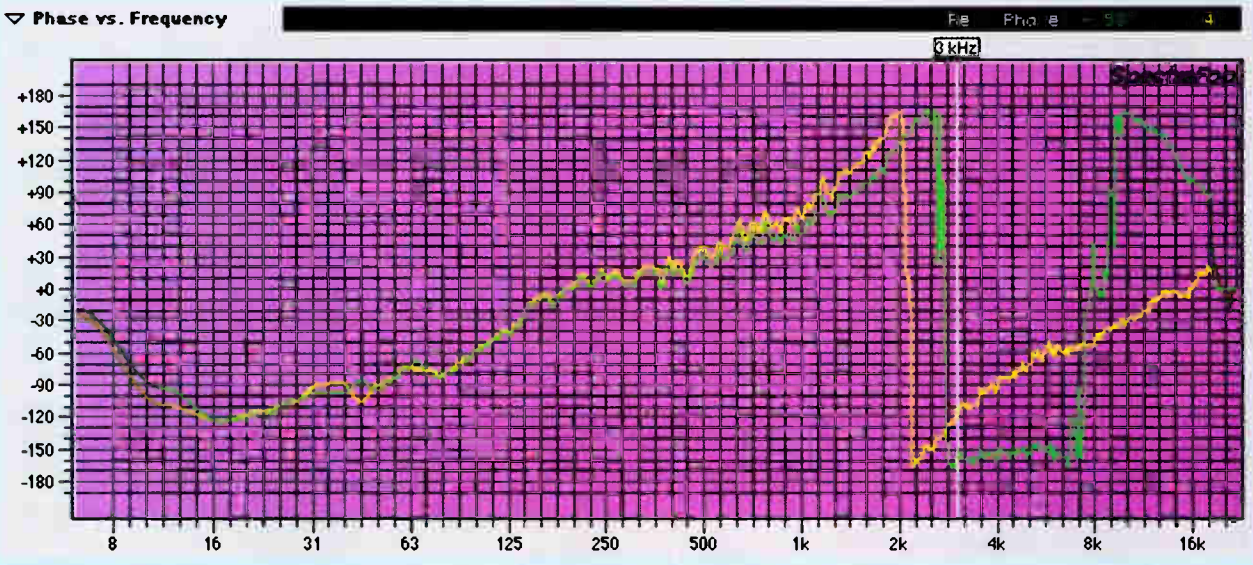


Figure 2: The Monitor-8s produce minimal change in phase shift around the 3kHz crossover point, indicating proper crossover alignment.

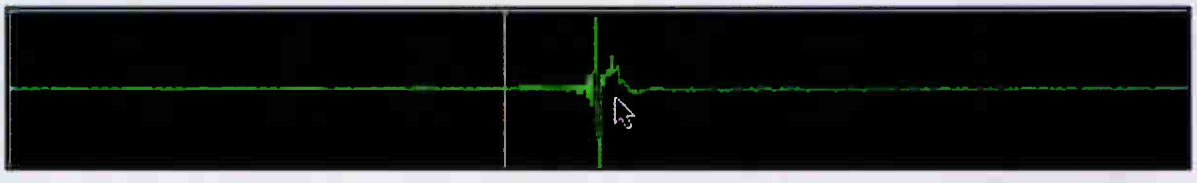


Figure 3: Impulse response. The Monitor-8s' impact and decay response characteristics are excellent.

THE ROAD TO A BETTER MIX.

Compact, battery or mains powered, the RQ™ 200 is loaded with professional features like low Z mic preamps, inserts, smooth 60MM faders, and a few you don't expect like RCA and 3.5MM mini-phone line inputs/outputs.

Great for everything from location video to desktop recording, if you can use 6 low noise mic preamps, with 4 stereo line inputs in a road-rugged package, use the dealer locator at www.peavey.com to find the closest Peavey dealer, your total sound solution.

The Peavey RQ™ 200*

PEAVEY
www.peavey.com
877.732.8391

* Microphone Sold Seperately

CIRCLE #068 ON PRODUCT INFO CARD

ROLAND VP-9000 VARIPHRASE

SAMPLE-BASED PROCESSOR

So is it a sampler or your favorite loop-based application in a box? People seem a little bit confused about who and what the Roland VP-9000 Variphrase Processor is for, though everyone seems pretty convinced that it's the next big thing. (It recently scored an *EM* Editors' Choice Award for Most Innovative Product.) The VP-9000, intended for professional producers, engineers and especially remixers, delivers the features and creative flexibility that we've all wished for from our samplers and DAWs.

Though the VP-9000's pitch, time and formant control features are available as separate pieces of software for a fraction of the cost, the Roland unit packs all these features in one box, conveniently behind a few knobs and allows you to audition them in real time (which no software can presently do). The interface gives users a quick and creative way of tweaking and remixing elements of audio that would normally bog down computers and throw a wrench in the creative process.

Roland's advertising pitch of "Elastic Audio" isn't too far off: The VP-9000 allows you to match the tempo of different samples and add swing to stiff rhythms, and the unit also provides real-time, independent pitch, time and formant control. The VP-9000 is not, however, an all-purpose sampler; the six-voice polyphony, the loading time and the output architecture do not compare with the features of the E-mu and Akai units. But the powerful, sample-based processor will allow you to create fresh sound designs that you can send right to multitrack.

MAIN FEATURES

The in/out architecture clearly speaks to both the professional and semi-pro recording set. The I/Os include a pair of ¼-inch balanced inputs (with selectable -20, -10 and +4dBm gain settings); optical and coaxial digital I/Os; three pairs of ¼-inch outputs; MIDI in/out/thru; a single front panel, ¼-inch, balanced input; SCSI A and B; and a headphone jack.

The front panel is divided into three regions. On the left side are all the controls for loading and recording samples, including control knobs for output volume and recording level. In the center is a larger, amber-colored LCD with a series of function and scroll keys. On the far right are the time, pitch and formant/groove control knobs, the real meat and potatoes of the unit, plus a generous complement of onboard effects. The effects are based on the same algorithms found throughout the Roland/Boss family of products: chorus, reverb, numerous multi-effects and standard LFO for each sample, and they can be automated. There is also a great resampling function, which allows you to print effects to an existing sample and create a new file out of it.

The unit ships with eight MB of installed memory, allowing for a maximum sample length of 25 seconds in stereo (50 seconds mono). The onboard memory can be expanded to a respectable 136 MB (though no single sample can be larger than eight MB, even with the upgrade). The memory upgrade is accomplished by simply removing the top panel of the unit (four screws) and dropping in up to four 32MB SIMMs; in fact, any combination of eight, 16 and 32MB SIMMs will work. For storage, the VP-9000 includes a 250MB Zip drive; the good people at Roland swear that the infamous and unexplainable "Zip-disk click of death" is a thing of the past, and I didn't experience any problems with it. The VP-9000 will also back up to an external hard drive and is capable of burning its own CD-Rs via SCSI.

BY ROBERT HANSON

GETTING STARTED

Getting audio into the VP-9000 really couldn't be any easier. Users familiar with Roland's VS Series of workstations will recognize the concept of EZ routing, though the VP-9000 uses a slightly different version. Simply press the Sampling key on the front panel to pop up the sampling screen. Turn the value knob (on the right) to select the desired input source (front panel mic, analog or digital in), adjust input level, create a name for the file and you're rolling. All the settings for source, stereo/mono, original pitch, etc., are also totally straightforward, and they all appear in the same screen along with the recording level. From here, you have to load or "encode" your new file in order to audition the unit's real features. This, unfortunately, takes longer than you'd expect—30 to 40 seconds.

Features associated with the internal metronome allow you to set tempo, sample length in bars, click and count off. This can save time in the sample editing screen (because you're essentially punching in your performance to a click), plus the information travels with the file for later use. However, if you fail to properly label these elements, then you will be unable to sync samples and swing rhythms accurately. After recording and truncating a sample in the wave edit

Radically Accurate

It took over half a century of experience to create the revolutionary transducer design. Carefully tuned to preserve the integrity of the source. At the heart of the C4000B is the world's first true 1 inch dual - diaphragm backplate condenser capsule. Radically accurate highs and smooth uncompromising lows make the C4000B a revolution in price and performance. The C4000B can capture your virtual reality.

C4000B

virtual reality

AKG

CIRCLE #069 ON PRODUCT INFO CARD

screen, change tempo and the sample length, in bars and beats, to reflect the changes.

When encoding a sample, you have three labeling options for the file: Solo, Backing or Ensemble performance. Following Roland's recommendations, vocals and lead instruments should be encoded as Solo files, drum and rhythmic phrases as Backing files, and strings, pads and ambiences as Ensemble. The Solo and Backing formats allow you to apply the formant and groove controls as they were intended.

PITCH, TIME, FORMANT AND GROOVE

One obvious use of the VP-9000's pitch control is to produce harmony vocals, which you can control via MIDI from inside your favorite DAW without taxing your system. I found that the 50 seconds of mono recording time was generally more than enough to thicken up the average vocal phrase. With the VP-9000 set to Time Sync and Polyphonic modes (which allows you to trigger the phrase from several keys, at different times, without the phrase starting over or falling out of sync), you can simply create whatever elaborate harmony you like right off the keyboard and then fine-tune it in a MIDI step editor.

The formant control is also a slick feature. Without affecting the time or the pitch, you can literally transform vocals from James Earl Jones to Alvin of the Chipmunks. The sound does begin to get artificial and otherworldly at either extreme, but that's not to say it's unusable. Another interesting feature is the "Robot Voice" function, which removes pitch from a vocal phrase, leaving only the base tone. With the unit still in Time Sync mode, you can then "play" a new vocal melody. Again, this can sound less-than-natural, but it didn't stop me from coming up with all sorts of bizarre sounds, and I've already begun hearing a number of remixers and dance music producers using this trick. The catch is that you have to play legato or create just a tiny overlap between notes inside your sequencer's step editor, which I found to be a lot more accurate. It can be tricky in places to line up the notes of the sequencer with individual syllables and breaths in the vocal track, but practice makes perfect.

I found the Time control to be dead-on and blissfully easy to use. All you have to do is turn the knob or dial-up a new master bpm, and you're there. Nothing could be easier. The unit does produce a few pops and hisses with the tempo turned way, way down, but within the 60 to 220bpm range, the results were excellent. The Groove control, however, failed to impress on a practical level. You're given the option of adding either an eighth or a 16th note of swing via a number of templates. But I just didn't feel comfortable with the results, even with the simplest 4/4 drum loop. On the other hand, drums 'n' bass and other electronic artists might really enjoy some of the unpredictable syncopation and breaks that the Groove function produces. I found it especially fun to pitch a two-bar breakbeat way down to the basement octaves and apply the Groove function; the result was a cool elemental texture that fell in and out of sync with the rest of the track.

SYNCHING SAMPLES

The VP-9000 is capable of synching up to six phrases of mono audio, regardless of their original tempo (the pieces do, of course, have to be in the same time signature). For this to work, the bpm for each piece must be known and entered. If you're playing or singing into the VP-9000, then this isn't a problem, because you can enter that information before you start. If you're

Sounds Great. Less Schilling.

Minidrive™. It's BSS for less.

You already know that Omnidrive™ Loudspeaker Management Systems are insisted upon by many of the world's biggest tours and most prestigious venues. But on smaller gigs, the budget can often be even more demanding than the acoustics. That's why BSS made the new, affordable Minidrive™. In a front of house rack, the 2 input/6 output FDS-336 is ideal for controlling a stereo 3-way system, while the 2 input/4 output FDS-334 is perfect for monitors. And unlike other low-cost processors, Minidrive™ is much more than just a digital crossover, delivering all the core functions of the larger BSS Omnidrive™ system: crossover, assignable PEQ, mid-band limiters and input/output delay.

MINIDRIVE™

So if you thought you couldn't afford a BSS loudspeaker management system, talk to us today about Minidrive™.

BSS Audio USA
1449 Donelson Pike, Nashville, TN 37217
Tel: 615.360.0277 Fax: 615.360.0480 E-mail: BSSAudioUSA@harman.com
www.bss.co.uk
A Harman International Company

BSS Audio

CIRCLE #071 ON PRODUCT INFO CARD

sampling from a CD or some other source, then the VP-9000 can identify the bpm of a phrase as long as it's edited to an identifiable number of bars and beats. The VP-9000 then forces all the elements to play to the identified master bpm, which works fairly well. The overall process of synching samples is again pretty straightforward, but it can get tricky in places. Obviously, if you fudge the beginning of a given sample, then the Sync function is not going to work. Also, if you're trying to get a couple of samples to loop continuously, then you'll have to spend some time really fine-tuning your edits so the whole thing doesn't get thrown off. Otherwise, simply retriggering the phrases on every bar (assuming the original samples were longer than one bar) will keep things moving very smoothly and very accurately.

CONCLUSIONS

Gripes. I can't understand why the three control knobs for pitch, time and formant/groove don't have any sort of corresponding readout on the LCD. If you follow the procedure for sampling and encoding, then the sample files already carry the appropriate pitch and tempo information. Why isn't there a little icon following you along when you turn the pitch knob? A simple display showing the number of steps the sample has moved—or the amount that the tempo has changed in % or relative bpm—would be a huge help. And the same applies to the Groove function; you turn the knob to alter the amount of swing, but in relation to what? The sample editor should also have a playback scroll marker to make editing and identifying loop points a little easier, though it's otherwise very user-friendly; the Zoom function is great. Also noticeably absent from the feature set are any filter envelopes, and this is bound to irritate many users. But if you intend to integrate the VP-9000 into a larger studio environment, then this isn't a big hurdle.

To Roland's credit, though, the company, just prior to press time, began shipping the V-Producer software suite for the VP-9000 ($395 MSRP). The software is compatible with both Mac and PC platforms and brings to the VP-9000 a greatly enhanced feature set that deals with many of the issues noted above. Features of note include: "drag-and-drop" sequencing of VP-9000 files; intricate graphic editing and displays for pitch, time and formant; 6-channel mixing and effects routing; batch encoding of .WAV and .AIFF files; MIDI clock/MTC sync; and a Song Export mode that creates a Standard MIDI file.

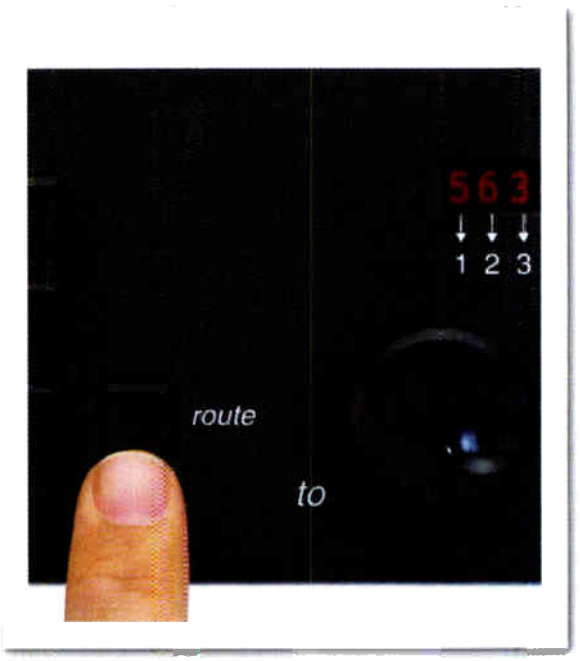
So should everyone rush out and buy one? If you are a professional remixer or the bulk of your business is loop- and sample-based music (especially hip hop and dance music), then go for it; the real-time pitch, time and formant controls will justify the $3,200 MSRP in a matter of weeks. Also, from a sound design perspective, the VP-9000 lets you really mangle audio in new and very controllable ways. For the rest of us, the Variphrase is obviously the first in a line of products, which speaks of a very bright, not-so-distant future, but the current high price tag and limited feature set may convince some potential customers to wait for the next product iteration. Today's VP-9000 is a great unit, but a costly one.

Roland Corporation U.S., 5100 S. Eastern Ave., Los Angeles, CA 90040; www.rolandus.com. ■

Robert Hanson, Mix's editorial assistant, is a musician/producer living in San Francisco.

Digital Patching
(pun intended)

Are you caught in a tangle of AES/EBU, S/PDIF, and optical cables? Do you find yourself spending way too much time plugging and unplugging digital cables and trying to figure out how to make *this* device talk to *that* device? Then you need a Digital Detangler, the automated solution to your digital audio patching problems.



You'll never have to climb behind your rack of digital gear again; at the flick of a digit, you can recall a routing pattern and completely reconfigure "who's talking to who."

Available in sizes from 8x8 stereo pairs all the way to 64x64 stereo pairs. Choose from standard configurations or get the one that's perfect for you. Control it from e front panel, use our router remote controller, or use our Mac or Windows control software.

Find out what the world's top mastering, recording, post-production, and broadcast facilities already know: a Digital Detangler from Z-Systems is the smartest way to connect your digital gear.

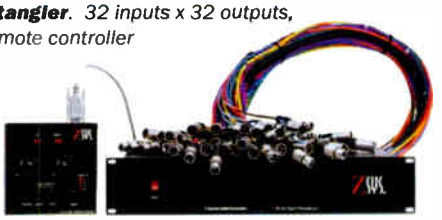
AES/EBU? Coaxial S/PDIF? Optical S/PDIF? ADAT Lightpipe?

No problem!

z-16.16 Digital Detangler
16 inputs x 16 outputs, front panel controls

z-64.64r Digital Detangler.
64 inputs x 64 outputs, shown with router remote controller

z-32.32r Digital Detangler. *32 inputs x 32 outputs, shown with router remote controller*



Z-Systems Audio Engineering
Tel: 352.371.0990 ▷ Fax: 352.371.0093
z-sys@z-sys.com ▷ www.z-sys.com

ZSYS.

CIRCLE #073 ON PRODUCT INFO CARD

SHURE KSM44

MULTIPATTERN CONDENSER MIC

The KSM44 multipattern condenser mic is the second offering in Shure's KSM microphone line. It follows on the heels of the cardioid-only KSM32, which was introduced a couple of years ago. Shure's intent was to optimize the KSM44's frequency response for vocal tracking, though the mic is well-suited for a variety of other applications.

Considering its $1,340 list price, the solid-state KSM-44 boasts a surprisingly extensive feature set. Its three polar patterns—cardioid, omni and bidirectional—are selected by a switch on the front of the mic body. A 15dB pre-attenuation switch and a three-position low-frequency response switch are found on the rear of the mic. Looking beyond these obvious external attributes, however, it becomes clear that rigorous attention to detail went into the design and production of this microphone.

The side address KSM44 employs dual, 1-inch diameter, mylar diaphragms that are only 2.5 microns thick and are layered with 24-carat gold via a vapor deposition process. The Class-A, discrete, transformerless preamplifier helps the KSM44 achieve maximum SPLs of up to 151 dB with the pre-attenuator switched in and the mic in Omni mode. Self-noise is rated at a mere 7 dBA, and sensitivity is a hefty 28 mv/PA in Cardioid mode, foretelling tracks with a rock-bottom noise floor. Omni and Bidirectional modes offer a considerably more modest (yet respectable) 14 to 16 mv/PA output and a still hushed 10dBA self-noise spec.

The externally biased capsule works best with phantom powering in the 44 to 52VDC range, but can tolerate juice as low as 11 VDC with only slightly decreased headroom and sensitivity. The KSM44 is something of a current hog, typically draining 5.4 mA at 48 VDC. Unless you have a really wimpy phantom power supply and use many modern mics simultaneously, the 44's current drain will not pose a problem.

The KSM44's frequency response in Cardioid mode exhibits a smooth boost between 2 and 8 kHz (culminating in a 3dB boost at 6 kHz) and a still milder bump centered on 11 kHz. Response falls off fairly rapidly above approximately 13 kHz, ending 5 dB down at 20 kHz. At a 6-inch distance from the mic, the proximity effect causes a gradual rise below 600 Hz, reaching a maximum +5dB boost at 50 Hz.

Omni mode is virtually ruler-flat up to 9 kHz, rises +4 dB to 11 kHz, and then it drops off in similar fashion to the Cardioid mode response. The response in Bidirectional mode is fairly typical of a pressure-gradient, large-diaphragm condenser, with a more dramatic boost in the lower highs compared to that produced by Cardioid mode, twice the bass proximity effect and a gradual roll-off above 9 kHz.

Shure took several measures to reduce the KSM-44's sensitivity to vocal plosives and to allow creative tailoring of the mic's low-frequency response. The aforementioned low-frequency response switch offers three passive EQ curves: flat (no bass roll-off), a steep 18dB per octave roll-off below 80 Hz, and a milder 6dB per octave roll-off below 115 Hz. The mic also features a fixed subsonic filter to eliminate rumble and structure-borne noise below 17 Hz. An internal shock-mount complements the ShureLock™ elastic-suspension-shock-mount included with the mic (more on the shock-mount below). The head grille is a three-stage affair, featuring a nylon cloth layer inside two layers of hardened, low-carbon steel. The grille is somewhat unusual in that the outermost grid offers far smaller apertures than the layer beneath, a choice made for cosmetic purposes.

The zinc, die-cast mic body adds to the KSM44's reassuring heft. The mic weighs in at slightly over one pound and measures a little over 7 inches long and 2.2 inches in diam-

BY MICHAEL COOPER

The Next Step in the Evolution

TSM-300

Near Field Studio Monitor

In keeping with our philosophy of providing state of the art speaker technology for today's uncompromising professionals. TAD/Pioneer introduces the next step in the evolution of Near Field Studio Monitoring Systems... models TSM-300.

Utilizing Linear Power Response design woofers (edgeless) and a titanium HF driver with tractrix "AFAST" horn, the TSM-300 reproduces sound with clarity and imaging not thought possible in a compact size speaker system.

TAD® Technical Audio Devices

Professional Loudspeaker Components Division

Pioneer

1925 E. Dominguez Street • Long Beach • CA 90810 • U.S.A. Tel: 800-872-4159 • http://www.tad-pioneer.com

CIRCLE #074 ON PRODUCT INFO CARD

eter at its widest point. Internal and external connectors are gold-plated. The KSM44 ships with a locking, foam-lined aluminum carrying case, a protective Velveteen pouch with Velcro closure, a mic stand swivel mount and the ShureLock elastic-suspension shockmount—a sturdy, polycarbonate plastic contraption that secures the base of the mic via a bombproof locking ring, assuring absolute confidence in hanging placements.

All of my critical listening tests were performed using a Millennia HV-3 dual-channel mic preamp. The KSM44's spectral balance (in Cardioid mode) falls somewhere between that of a Neumann U87 and an AKG TL-II. The KSM44 is fuller in the low mids than a TL-II, but not quite as full as a U87. The Shure mic offers a more detailed top end than a U87, but it is not quite as articulate as a TL-II. The TL-II also has a bigger low end at the extreme bottom (around 50 Hz). The KSM44 produces a mellow, smooth midrange response, resulting in a somewhat "neutral" sound.

The KSM44's transient response is excellent, which is not surprising considering its 2.5-micron membranes. But the mic also lacks depth and air compared to the U87 and TL-II, both of which sound rounder and offer significantly more nuance.

Next up was a test of the KSM-44's off-axis response. All three polar patterns exhibited excellent rejection at their nulls. Cardioid mode sounded remarkably uniform out to 30° to either side of the front of the mic. However, I found off-axis coloration to be more pronounced in Omni and Bidirectional modes than the supplied charts implied. In Bidirectional mode, the sound at the rear of the mic was very muffled and dramatically different from that produced on-axis. This could be a problem when miking two background vocalists from different sides of the mic, as any remedial EQ would have to be averaged for two decidedly different sounds. Similarly, I found Omni mode produced noticeably greater depth and detail on-axis compared to at the rear of the mic.

On a happier note, another A/B test revealed that the KSM44 is considerably quieter than a Neumann U87A, even after mic preamp levels were adjusted to make up for the 44's slightly lower (yet still very robust) output. With mic pre channels boosted near the max, the U87A picked up a bit of EMI buzz, while the KSM44 was as silent as a desert night. The KSM44's low self-noise and high sensitivity are clearly its main strengths.

I obtained good, if not awe-inspiring, results recording both male and female vocals with the KSM44 in Cardioid mode. The microphone's neutral timbre lent itself equally well to both types of vocals. The Bidirectional mode's enhanced proximity effect lent helpful support to thin-sounding female vocals; the trade-offs, however, were decreased high-end detail and increased sibilance. On softly spoken voice-overs, the KSM-44's subterranean noise floor and high output was a lifesaver, delivering squeaky clean tracks utterly devoid of perceivable noise.

The three polar patterns produced dramatically different timbres from one another. Omni mode is particularly well-suited for recording acoustic guitar, producing a more open track with less ponderous upper bass content than many mics would provide. And the mic's Directional modes dish out plenty of low-frequency support when placed close to the source, yielding good results when tracking instruments such as electric bass guitar.

There are bigger sounding mics on the market at competing prices; nevertheless, the KSM44 is a high-quality microphone with its own unique sound and winning attributes. Thoughtful design, quality construction, an extended feature set and a generous allotment of standard accessories provide good value for the money. The KSM44's excellent transient response makes it a good performer for tracking instruments as well as vocals. And the mic's smooth proximity effect, neutral mids and high-frequency emphasis in Cardioid mode make it a versatile performer for recording various vocalists. For applications where any added noise cannot be tolerated, such as on exposed voice-overs or spoken word recordings, the KSM44 is a strong candidate for your consideration.

Shure, 222 Hartrey Ave., Evanston, IL 60202; 847/866-2200; fax 847/866-2200; www.shure.com. ■

Michael Cooper is a Mix *contributing editor and the owner of Michael Cooper Recording. The studio is located outside the beautiful resort town of Sisters at the base of the Oregon Cascades.*

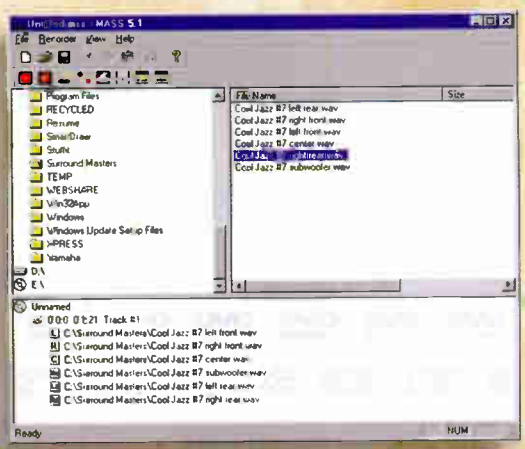
create DVD-Audio disks

with the MASS 5.1 System
from Microboards and Minnetonka

Mix it

Mx51. Mixing is incredibly easy and fun with Mx51. Take your multitrack recording and place each track anywhere in the surround sound field. Mx51 uses Minnetonka's unique "Build-Your-Own-Mixer" architecture, letting you build a custom mixer in minutes. Includes an interface for a motorized joystick, letting you ***FEEL Surround Sound as you HEAR it.***

Compile it



Assemble a playlist of songs in any order. MASS 5.1 makes it EASY to assemble your DVD-A. Just drag-and-drop the sound-files from your master recordings into the bottom window. MASS 5.1 accepts the masters as 6 soundfiles or as an MLP-encoded file. Just line up the recordings in order, and hit the Record button!

Burn it

Included in the package is a **Pioneer S201** DVD-R recorder.

Minnetonka AUDIO SOFTWARE, INC.

MICROBOARDS Technology

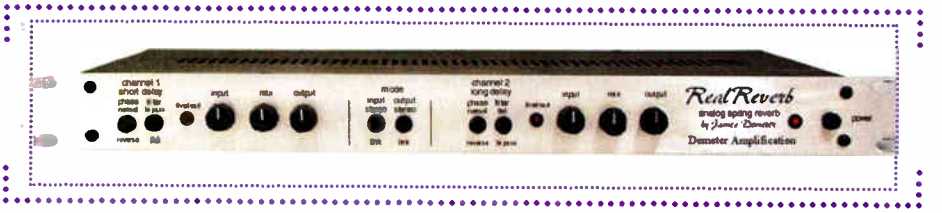
Corporate Headquarters: (952) 556-1600
Toll Free: (800) 646-8881 • **Fax:** (952) 556-1620
Europe: 44-1789-415-898 • **Fax:** 44-1789-415-575
Japan: 81-3-3561-2266 • **Fax:** 81-3-3561-2267

www.microboardsproaudio.com

CIRCLE #076 ON PRODUCT INFO CARD

DEMETER RV-1 REAL REVERB

STEREO SPRING REVERB



Most folks who hear the name Demeter immediately think of the manufacturer's well respected gates and mic preamps. Yet, for several people at last year's AES show in L.A, one of the winners was Demeter's new stereo spring reverb, the RV-1 Real Reverb. This limited-edition unit is a pure pleasure to work with and should find a place in any studio that needs a quiet analog reverb with personality.

Designed by James Demeter, the RV-1 is a 2-channel unit that takes up one rackspace and is 10 inches deep. The bulletproof chassis houses two Accutronix spring reverb tanks, each containing six springs. For added flexibility, channel 1's reverb tank has a decay time of 1.5 seconds, while channel 2 decays in 3.5 seconds. The tanks are shielded to reduce noise, and each channel has its own dedicated connections.

The burnished-gold front panel of the RV-1 features the controls for each channel, ranged in identical pairs. Control knobs include input, mix and output, and two buttons flip the phase and engage a high-pass/low-cut filter. Dividing the channel sections are two mode buttons that separately link the inputs and/or outputs or leave them in Stereo mode. Both channels have a red overload indicator next to the input knob.

There's an emphasis on quality components and construction in the RV-1. The back panel I/O connectors are fully balanced XLR and ¼-inch TRS (Analog Devices 2142 and 2143 connectors). The unit also features an ±18V regulated power supply to optimize headroom and transit attack, and uses a custom-shielded, toroidal transformer to help lower noise. Connection is made via IEC cable, and you can select between 115V or 230V operation.

For this review, I compared the RV-1 to an Orban 111B, an AKG BX-20 and a spring reverb built into an old Electrocomp modular synth. The sound quality and imaging of the RV-1 unit blew away the Orban and equaled the dark character of both the AKG and Electrocomp. It never felt brittle or irritating—no tiny "springing" echo that would grate nerves. The sound had a clear vintage appeal with a modern studio feel.

Whether tracking or mixing, the RV-1 was a joy to work with. It provided a wonderful shimmer on acoustic and electric guitars, and gave my Minimoog depth and room to breathe. I found that gentle application of the RV-1 improved vocals I had tracked and stored to hard disk. I also recorded percussion through individual channels, occasionally tracking the "chirping" spring of the hi-hat to use later in a song. In general, the RV-1 added a wonderful, spacious quality to the finished stereo mixes I auditioned. While the difference in decay times between the channels was slightly noticeable on lighter instrumental passages, it never distracted me.

I primarily worked with the RV-1 in Stereo modes, but I also messed with the two Linked modes. These were fairly distinct in character. Linking the two inputs sums the input signals and sends the combination to both outputs, thus retaining some "stereo" flavor. Linking the outputs sums the output signals and yields a much more dramatic, tighter image. Reversing the phase of either channel while in this second output-combined setting brought subtle shifts to the tight image, creating a complex room-within-a-room feeling. I found this setting useful for emphasizing the center of the mix or even on stereo drum tracks. I also noticed a slight attenuation of highs when flipping the phase in both Linked and Stereo modes. One operational note: Reversing the phase while material plays will give an audible click. The highpass filter buttons, however, can be pushed in and out with no click.

A typical complaint with spring reverbs is that they're noisy. The RV-1 is a surprisingly quiet unit. I didn't find a need to gate the output, lift the ground of one channel or add a hum remover to the signal. Demeter cautions that strong EMF fields will introduce noise and advises that users can reduce EMF by linking the outputs and creating a hum-bucking configuration.

Given its versatility and features, the RV-1 is likely to be the best spring reverb you'll find for your studio today. Not just for someone who has occasional fits of nostalgia, it's suitable for serious applications and boasts a noise floor that's competitive with many digital reverbs out there. At $699 list, the small initial run of 50 units should be snatched up fast by engineers who want a unique analog tool in their arsenal. Who knows how many more will be made? Grab one before they become a collector's item. ■

BY ALEX ARTAUD

Alex Artaud is a musician and engineer living in the Bay Area.

WHAT WERE YOU DOING IN 1973?

WE WERE MAKING SUBWOOFERS.

In 1973, disco was king, and studio monitoring was done on two speakers. Music has moved on, and monitoring systems need to keep up with the times.

Millions of listeners are hearing your mixes through a subwoofer in their home system – with deeper bass and more low end than the soffit or nearfield monitors in your studio. These listeners may be able to hear more of your work than you do!

Regardless of whether you mix for CD, DVD, film, broadcast, or games, only an M&K Professional subwoofer insures that you will hear everything your listeners hear, with no surprises. Nothing speaks louder than experience. Call us or go to www.mkprofessional.com to learn more.

M&K MILLER & KREISEL PROFESSIONAL

10391 Jefferson Blvd. Culver City, CA 90232 310-204-2854 fax 310-202-8782

www.mkprofessional.com

CIRCLE #077 ON PRODUCT INFO CARD

MUSIC IN HIGH PLACES

A NEW MUSIC SHOW BOLDLY GOES WHERE NO SHOW HAS GONE BEFORE

BY BLAIR JACKSON

Music in High Places is such a good idea, it's a wonder no one has tried it before. The monthly series, which debuted last fall on DirecTV and has now been picked up by MTV, sends musicians to remote, exotic settings, follows them as they become immersed in the local culture and history, and then tapes them performing in these breathtaking, out-of-the-way places; it's sort of a *National Geographic Explorer* meets *MTV Unplugged*.

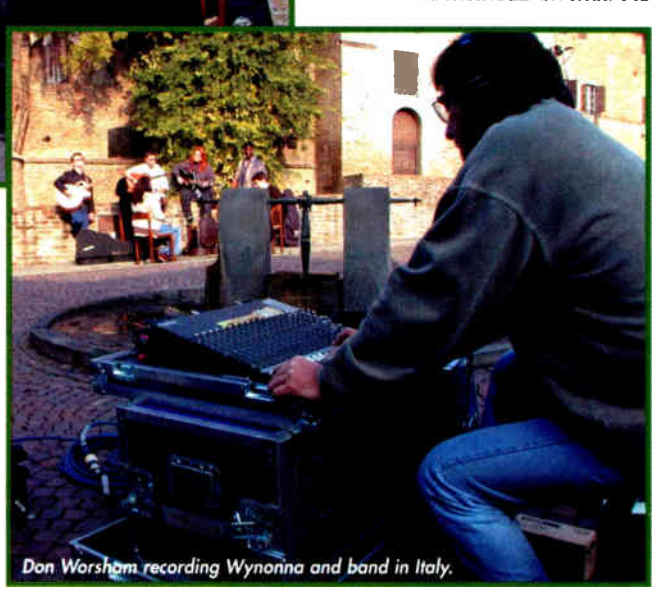
Completed episodes so far have included Alanis Morissette in Navajo country—Canyon de Chelly and Monument Valley; multi-Platinum-selling soulster Brian McKnight in Sao Luis, Brazil (where he takes in a voodoo ceremony and visits the ruins of a one-time slave market); Wynonna Judd in Venice and the tiny nearby town of Fontenellato; Shawn Colvin in Tahiti and Bora Bora; and Collective Soul in Morocco. Future episodes involving the likes of Wyclef Jean, LeAnn Rimes, Moby and Sugar Ray will explore and feature music in other fascinating sites around the world. In all, the first season of *MIHP* will consist of 12 adventures, and, naturally, the producers, Tall Pony Productions of Malibu, Calif., are hoping to get the series picked up for more episodes that will take them to far-flung places such as Ayers Rock, Stonehenge, Angkor Wat, the Great Wall and Machu Picchu.

This series didn't invent the notion of playing and recording music in historic settings and spiritually "high" places. Jazz flutist Paul Horn cut simple records in the Taj Mahal and the Grand Canyon decades ago. Pink Floyd filmed a concert (with no audience) in the ruins of Rome's Colosseum 30 years ago. The Grateful Dead played three nights at the foot of the Great Pyramid in Gizeh back in 1978. A few years ago, Yanni played outside the Acropolis in his native Greece as a battery of video cameras and multitrack tape recorders captured the spectacle. But *Music in High Places* is marked by a relaxed intimacy; there are no crowds witnessing the performances. No theatrical lighting. We don't even see any microphones. It's just musicians, playing acoustic instruments in beautiful places. The audio quality is superb and the visuals stunning—no easy feat when you consider the hardships of working in remote environments.

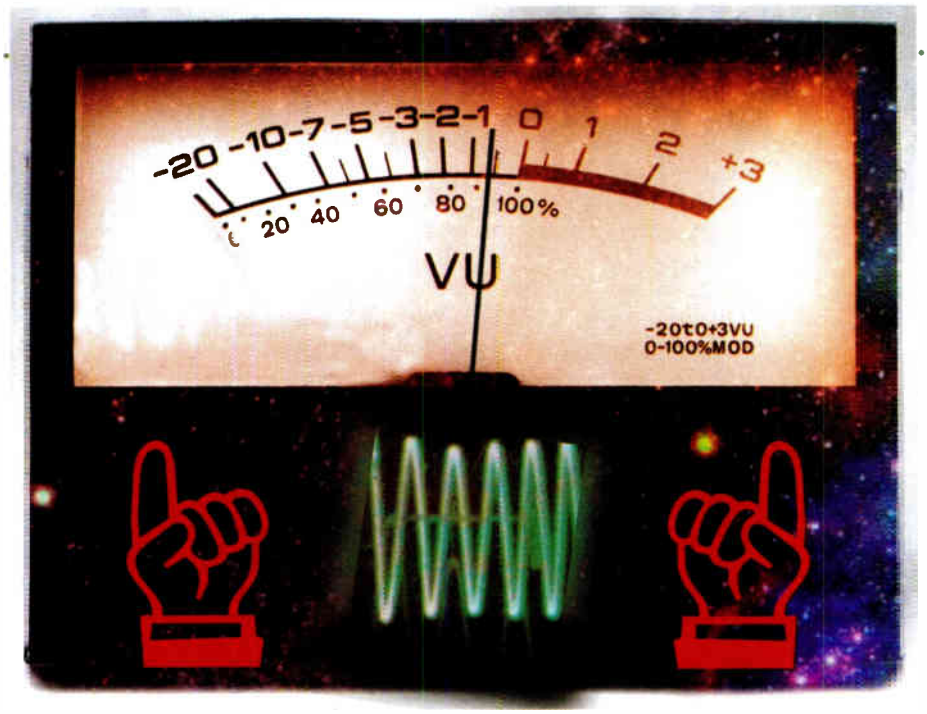
Heading up the *MIHP* sound team is veteran engineer Don Worsham, who, over the course of 35 years in the entertainment industry, has been nominated for 21 Grammy Awards and won six for audio mixing. His credit list includes nearly two decades of contributing to Grammy telecasts, several Miss America pageants and dozens of television music specials in every genre. He has designed audio facilities and was instrumental in helping devise surround mixing standards for television. In short, he's a good guy to have onboard for a challenging audio project, which *MIHP* certainly is.

"This particular show has been trying to hatch for a

—CONTINUED ON PAGE 142



Don Worsham recording Wynonna and band in Italy.



SOUND FOR PICTURE

TO: DIRECTORS FROM: YOUR SOUND DEPARTMENT

BY JOHN COFFEY

Our Sound for Picture coverage here at Mix *has been criticized in the past for not focusing enough on production sound. Admittedly, our emphasis is on post-production, but we put the call out, and John Coffey of Coffey Sound in L.A. came in with the following. Rather than bring up the decade-old argument about the need for cooperation between production and post, he wanted to focus on the set, with an open letter to directors about how they could help to improve the film's track.*

We, the sound crew, are the ones that you depend on to create and protect *your* original sound tracks during production. This is, after all, the age of digital sound. Theaters have multichannel digital audio playback. Even home audio systems are often better than many theaters. Yet today's production sound departments face more problems and greater apathy than ever before.

The majority of the film crew is working for on-camera results, but the mixer's efforts cannot be "seen" on the set. Almost no one hears what the microphone picks up. Too few are even sure just what it is that

we do, so only the most obvious bad noises are brought up for discussion.

Included in our job is to monitor the sets for unnecessary, accidental, ignorant and sometimes even malicious actions (or lack of actions) that may compromise your sound track. We are too often frustrated by the state of conditions that now exist on most sets; many times, we are expected to solve all sound problems alone.

Instead, solving these problems should always be a cooperative effort with the assistant directors and other crafts. The majority of events that ruin sound tracks are totally predictable and happen over and over, show after show, year after year. Let's try to identify the audio problems that each craft or process brings to your film.

PRE-PRODUCTION

Good sound begins by anticipating the outcome well in advance. Communicate early and often with your mixer in preproduction. Pay the mixer to go listen to potential problem sets ahead of time. Let the mixer make a mock recording to see what noises can be removed in post, just as the DP does with camera tests. Do this before the locations are locked in and before the scouts with your key department heads. If the mixer is still on another show, then have the mixer

—CONTINUED ON PAGE 150

—FROM PAGE 140, MUSIC IN HIGH PLACES

couple of years," the gregarious Worsham says from his L.A.-area home between location shoots. "I've had a long, comfortable relationship with Tall Pony Productions. They mostly do music—they were responsible for the five years of the *Sinbad Soul Music Festival* on HBO, which I did, and the Radio Music Awards and the Burt Bacharach show [*One Amazing Night*] that was on TNT. They don't do sitcoms, they don't do documentaries. It tends to be very music-oriented, and it tends to be on location. In this particular case, they wanted to go on location, which I said was fine; we've done it a thousand times, no problem. But then they said, 'We're talking about *really* going on location. We're not talking about taking trucks here. We're talking about battery power, carrying stuff up cliffs.' I said, 'You're kidding. You want to go out, have people perform, record essentially on no more than what people can carry, and we're not going to be near power? No generators?' 'No generators.'

Jeff Fecteau on location in Brazil. Above: Don Worsham at work in Venice.

"The first two problems with this presented themselves simultaneously: One was putting a plan into place that would give the flexibility of recording these things to a standard that would allow post-production flexibility so that you can get it right. And then, secondly, it had to be done on battery power. Now, I've worked with a lot of budgets, but this was the first time I had a *power* budget. It had to be all portable batteries. So that then led us into a number of limited options. When we're talking about a battery budget, we started working backwards: What are the batteries available, and how much power does that represent? And how long will that run? We ended up with a battery system that was 28 amp-hours at 12 volts. You do the mathematics—one amp-hour at nine volts is nine watts; volts times amps equals watts. Wattage is a description of the amount of energy a device requires to run, and, generally, it's on an hourly basis. So we ended up with this wattage number, and then we had to find something that would work with that.

"One of the priorities of the production company is that they wanted to do a state-of-the-art digital recording on location," he continues. "When we started looking at small digital consoles, we were looking at running just 45 minutes or an hour and then we were out of battery, which is not very good. Dragging around multitrack tape machines was out of the question because of size. So, naturally, we were then looking at modular digital multitracks, and we ended up with a DA-78 as opposed to anything else because it only draws 50 watts. Once you get a DA-88 to do all of the things a 78 can do, it draws twice as much power. The DA-78 has the built-in timecode generation, plus it gave us the opportunity to go 24-bit long word length, which gives us higher resolution audio in the field. Then the next question is, what do we feed it with? We knew there were a couple of digital mixers that were close, power-wise, but not close enough, so we ended up getting a Mackie 1604 VLZ Pro—lots of positions, direct outputs, very highly touted microphone preamps. So we could acquire this stuff out in the field, so to speak, and get it on tape cleanly. We generally have 8-in, 8-out, but we might have as many as 10 or 11 inputs, so we might do some sort of combine submix on something.

"The other thing that we're using is a 4-track hard drive recorder by Zaxcom called Deva. This is a box with a 10-gig hard drive, and it can be configured as a 4-track, 24-bit recorder. We'll use that as a 4-in, 4-out device where we can't pull our regular gear along. It's really small; only about 4-by-4. It's got an interchangeable hard drive; it can be line- or mic-in; digital in, digital out. And what we'll do with this is take four audio sources into the Deva, then take four line-level outputs from the Deva into a very small but high-quality mixer made by J.L. Cooper, the CS104—it's a 4-in by 2-out model—and we use that to generate a stereo mix to videotape. We use it mostly in places where we don't have the space or time to take the other stuff. But all of the Tahiti show was shot on the Deva. For Brian McKnight, we used it in the desert and at the slave quarters, straight to tape, 2-channel. On Wynonna, we used it for an a cappella performance in the church.

re·verb (rĭ-vûrb) 1. Lexicon 960L

For over twenty years, Lexicon has been revered as the industry leader in digital reverb. From the groundbreaking model 224 in 1979, to the industry standard 480L in 1986, Lexicon has continued to build the world's best sounding reverbs at any price. But the world has quickly embraced multi-channel sound as successful new formats like DVD have given rise to the need for world-class surround reverbs in addition to world-class stereo reverbs. Enter the 960L.

The 960L sets the new industry standard for stereo and multi-channel reverbs while providing enough flexibility to grow as formats evolve. With support for 16 channels of I/O, the 960L meets the demands of any application today with ample flexibility to address the demands of tomorrow. A built-in CD-ROM allows for easy software upgrades ensuring that the 960L will remain at the forefront of performance and sound quality well into the future.

So experience the new standard, experience the 960L.

THIS IS THE FUTURE

960L Highlights

- World-Class Stereo and Surround Reverbs
- 3-Dimensional Perceptual Modeling (3DPM™)
- LARC2™ Controller with Assignable Joystick and Touch-Sensitive Motorized Faders
- 24-Bit, 96kHz Processing
- Available In Digital I/O Version

Version 2 Software

- Support For 16 Channels Of I/O
- Global Mix and I/O Control
- Multiple Reverb Card Support
- Mono, 4 X 4, and Cascaded Input Configurations
- Enhanced Input Metering
- Additional Presets
- Mappable I/O
- Dual LARC2™ Support

Already own a 960L?
Contact your advanced agent to receive a V2 CD-ROM at no charge.

Want to lease or own a 960L?
Contact an advanced agent or *www.lexicon.com/960L* to learn more.

lexicon
A Harman International Company

CIRCLE #079 ON PRODUCT INFO CARD

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

"So, for all that, we carry three battery sets that are good for 28 amp-hours. Two of them are single batteries, and then there's a set that is four individual 7-amp batteries. At 100 watts an hour of power consumption, that gives us three hours. The Deva and the Cooper mixer use the small 7-amp batteries, so we have extended battery life on them. The Mackie has been modified to operate directly off of 12 volts. That's helped us quite a bit. Between the Mackie and the tape machine, we're right at 100 watts."


Two views of Shawn Colvin in Tahiti.

Miking the performers presented another set of challenges, because the producers stipulated that they didn't want to see *any* microphones. "Fortunately, I had some great help on this," Worsham says, "a person I've worked with for years named Jeff Fecteau, who's an accomplished musician and a great audio guy who I've worked with on a lot of music projects for television. Jeff is the kind of guy who can walk up to a musician on the stage and there is instant rapport. He knows the language. And, of course, he knows the technical end as well as anyone. Our problem here was how do we hide these mics and still have it sound good and not like it's some kind of news show out in the field? So Jeff came up with some ideas, using straight-off-the-shelf gear and really careful microphone placement to get what we wanted.

"Obviously, we have to be wireless, so we were using Lectrosonic wireless systems, which I think are about the best of the battery-operated field wireless systems available. And we're using a combination of lavalier microphones. We have some Trams, which are fairly popular and widely used. They're physically flat, instead of being round; their size and shape make them very suitable for hiding under clothing. The response of these microphones has been specifically tailored with a presence boost in them to overcome being hidden under clothing. We've also been using Sennheiser K2 lavalier mics, which are similar to the ones that are used on the Broadway theater stage for voice. They're very flat microphones, and they have very good reach. You can hide them in places that normally wouldn't work well, yet they sound full and open. Then we have a new lavalier microphone from Shure, the WL50, which is small like the Sennheiser, and it sounds unbelievable—it is the cleanest, clearest microphone. It has an option that allows you to go with either flat response or peak response. It was used on the acoustic basses on Wynonna and for both the vocal and the acoustic guitar on Shawn Colvin, and it sounded great."

Generally speaking, Fecteau will place a mic on the singer(s) and on each instrument; in the guitar's sound hole, for example. Not surprisingly, there are leakage issues having microphones in such proximity, but as Worsham notes, "Not all leakage is bad leakage, and, in fact, on Shawn we tried to use the leakage to spread out the sound, because it's just vocal and guitar. There was a lot of guitar in her vocal mic, but it was different than the sound in her guitar mic so we tried to use that to our advantage. We've shunned using pickups, because the guitar coming through the vocal mics gives us a more complementary sound. We're looking for the essences and overtones and the subtleties that go beyond just the sound of the guitar."

Additionally, wherever physically possible, the sound team puts up ambient mics to capture the overall sound of the performance and "to record the air, the space, to give a sense of where we are," Worsham says. "So we'll use a couple of Schoeps mics—sometimes we're using straight X-Y crossed mics; in a couple of instances, we've used M-S, sum-difference, miking. And, in every instance, we've used them in the mix to give a sense of size and to give a feeling of air around what would otherwise be an extremely dry environment. Lavalier microphones on people outside are dead-dry. So part of our post-production is to not only put these ambient mics in to open up the mix, but also to put in a touch of any other additional ambiences we have—wind, birds, the sort of things we acquire as part of our production. We might also put a little reverb on it to try to tie it all together; it depends." Wor-

Is your digital console Perfect for Post?

Avant

Does it have

A dedicated user-friendly control surface with up to 96 fully-configured channels and another 96 pre-dub channels?

6 EQ bands on the main channels and 2 bands on pre-dub?

96 inputs (48 main, 48 pre-dub) from 24 faders?

A flexible stereo channel option?

Varispeed automation which can write and replay at any speed down to zero?

Off-line editing for inserting, removing and swapping sections?

The capability of mixing in surround and stereo simultaneously?

A configurable, programmable 64 x 8 monitor matrix?

A comprehensive installation, commissioning and training service with unrivalled worldwide support?

If it does, relax, it's an SSL Avant.

If not, discover how Avant improves productivity, enhances creativity and expands your business.

Call to arrange a demonstration.

"The Avant is powerful, flexible and accurate. It gives me peace of mind that while working on a project such as 'Judging Amy,' I have the most reliable console out there. It is always a pleasure to work on an SSL."

André Perreault, Complete Sound, Hollywood, CA.

"Judging Amy" image courtesy CBS

Solid State Logic

International Headquarters

Begbroke Oxford OX5 1RU England

Tel: +44 (0)1865 842300

Fax: +44 (0)1865 842118

Email: sales@solid-state-logic.com

www.solid-state-logic.com

New York	Los Angeles	Tokyo	Paris	Milan	Toronto	Singapore
+1 (1)212 315 1111	+1 (1)323 463 4444	+81 (0)3 5474 1144	+33 (0)1 3460 4666	+39 039 2328 094	+1 (1)905 655 7792	+65 (0)438 2272

sham says that on location they also record hours of environmental sounds on an HHB DAT, using either the Schoeps mics, a Sennheiser 416 or Sennheiser 405, and there's even been talk of releasing a CD of nature sounds culled from the series. Worsham also uses the DAT to pick up city ambiences as needed.

"In the Wynonna show," he says, "they perform at a place called Domino Point, and it's right at the end of the day and we do two or three takes and on one of the takes, the Saint Marco square bells ring. So I make a note that I have to come back and get the San Marco bells not only from this location, but from a couple of other places, too. Later, we were able to get back to Venice for another half a day, and I sat out on that point for an hour and a half with a DAT machine to get the right bells. So I'm waiting and then this helicopter hovers over the square for 20 minutes and I miss my first pass at the bells and I have to wait for the next one. Sure enough, we go into post and I've got two different performances, one with bells and one without bells, and we were able to put the bells in where there were no bells, so the texture of that presence is in there, even though the best performance we had on tape would not necessarily have given us the continuity of that."

A typical shoot for the show is just three days, which means that logistics must be planned out carefully in advance, and then the actual work has to be done efficiently. In all, the audio and video teams travel with 1,500 pounds of gear in 29 cases—all just for audio. "Sometimes we've shipped it; sometimes we've taken it as baggage," Worsham says. "When we go to the airport...well, we're hard to miss," he says with a laugh.

Usually there will be two or three takes of each song, with the cameras (usually three) moved between takes to add variety; then in the post stage, a seamless edit between performances is achieved. Worsham notes that besides the 4- or 8-track recording, "We also put a 2-track mix to videotape. My philosophy is that they're going to go back and look at this thing, and they're going to make editorial decisions based on what they hear, so it becomes important that there is something representative of what's happening. Secondly, there's always the possibility that what we've put on our multitrack medium is not usable for any reason. So far that hasn't happened, but that has to be part of our concern—we've gone all the way to Brazil and I only did a so-so 2-track mix, and now it turns out the tapes don't sound right or they won't play, or whatever. I don't want to face that. We've been very lucky so far. Everything has worked beautifully. We've had batteries die at the most awkward moments, but no equipment failures so far. As fragile as digital can be, we've dodged the bullet, so to speak."

After the location shoot, the video post takes place on an Avid system in a Santa Monica facility called Chainsaw, while the audio is assembled by Worsham at The Post Group. "What we do," he explains, "is take the Avid audio file—an OMF file—and transfer it into a Fairlight over at The Post Group. We conform everything else—which is our original location tracks, voice-overs, any additional incidental music, like themes, etc.—into the Fairlight, as well. The Fairlight is a phenomenal system in terms of its ability to edit and move things around. It's pretty sharp. And we're able to do things in the Fairlight as a full digital editing system that is also locked to picture and locked to timecode. It's really like the extension of a Pro Tools into a picture format.

"But, because of the amount of material that is involved in each show, there

MUSIC TO OUR EARS . . .

"StorCase carriers have become the de facto standard removable for transporting and mounting hard drives. They allow seamless integration between digital workstations and enable us to work fast with proven reliability. That's why we choose StorCase."

Sony Picture Studios

SONY PICTURES
POST PRODUCTION FACILITIES

"The Kingston/StorCase products are the choice of the professional in the film, audio and post production industry."

TASCAM.
a whole world of recording

Jim Lucas
TASCAM

TASCAM MX-2424 shown with StorCase RJR100 removable

"The StorCase Data Express system is such an integral fixture in motion picture sound post production that it is impossible to imagine any aspect of our work where it is not used."

Liberty Livewire Audio,
Todd Hollywood Division

LIBERTY LIVEWIRE
CORPORATION

. . . ARE THE HIGH-NOTES THAT KINGSTON/STORCASE HAVE received from prestigious customers like Sony, TASCAM, FPC/Kodak and Liberty Livewire Audio. Editing commonly requires the use of multiple removable drives that are often swapped between workstations or transported from location to location. Whether mounted into a TASCAM unit or into our Data Silo® DS320 2-bay or DS351 4-bay rack mount chassis, Data Express® and RhinoJR® are the removable drive units of choice in the entertainment industry and have been for years because they continue to work flawlessly.

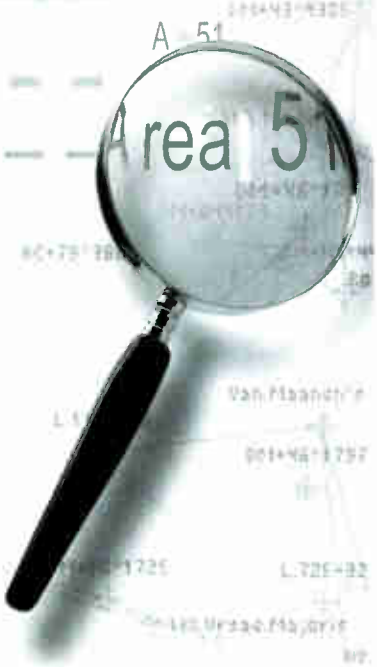
Call a Kingston/StorCase representative today at (800) 435-0068 to order your FREE 60 day evaluation unit and experience reliable, worry free removable storage for yourself.

StorCase™
TECHNOLOGY
A Kingston Technology Company

www.storcase.com/jump/av/

CIRCLE #082 ON PRODUCT INFO CARD

SECRETS REVEALED!



Somewhere in the night sky of Nevada, a shimmering cylindrical object appeared . . . emanating deep and euphonic tones. We were immediately transfixed by the remarkable resonance and . . .

Above and Below: Alanis Morissette in Navajo country, at Canyon De Chelly National Monument.

is a realistic limitation to how much memory that the Fairlights can manage, so we've been doing the final mix into analog multitrack through the Neve at The Post Group. And one reason is we have a couple of versions of the show we have to do: There's the standard air version and another for MSN—Microsoft has a Web site for the show [http://musicinhighplaces.msn.com] that has Windows Media files of the videos of the performances, without the voice-overs and some of the cutaways and things. They basically take performance only and put that on the Internet." The MTV shows will also be slightly different, as the one-hour running time of each episode will probably be reduced by commercials and the inclusion of a short "making-of" segment each month.

Both the musicians and the technical personnel who work on *Music in High Places* seem to be enjoying themselves immensely. For the artists, it's an opportunity to present their music in a different, very personal way: You've never heard Alanis Morissette's music stripped so bare, and Wynonna's small, gospel-influenced acoustic group is a wonderful revelation. Even Worsham, the old pro who's seen and heard it all, is in awe of what he's experiencing through the show.

"These artists really have got to have their chops down. There is *no* hiding. Every note you hear in that show has been performed right out there. Nobody's gone in and fixed anything. The quality of what we were hearing—the artistic quality—is absolutely phenomenal. We're talking about people who are at the top of what they do, and that makes it a lot of fun to work on." ■

Blair Jackson is executive editor of Mix.

THE BEST KEPT SECRET IN THE PRO AUDIO UNIVERSE

The only Microphones Endorsed by Aliens!

"... I was reminded of a U-67".
Rob Shrock, EM Review

"A studio musician who brought in his gorgeous Martin guitar instantly fell in love and wouldn't try any other mics ..."
Mike Sokol, EQ Review

"...new mics that have similar sonic characteristics to these classic mics. but are priced so cheaply that someone with a modest home studio can afford a pair."
Steven Stone, Vintage Guitar Magazine Review

Telefunken-Toned Mother-Ship

Twin Brothers from Different Galaxies
Combine to create Cosmic Overtones

Thomas and Betts Switches from U.S.A.
Toshiba Low Noise FET from Japan

CIRCLE #084 ON PRODUCT INFO CARD

ADK

ADK·(360) 566-9400

www.adkmic.com

—FROM PAGE 141, SOUND DEPARTMENT LET-
designate a trusted associate. In the end, it's cost-effective.

LOCATIONS DEPARTMENT

More can be done here to save a film's audio than in any other department! Set selection should consider sound, but at the very least, try to weigh-in environmental noise factors. Often, we shoot in a place that could have easily had a substitute location. So, when you can't change locations...

Lock down all the noise problems before we get to the set and always consider the control of the air conditioning. This is a must! Without A/C control, the audio background will change from shot to shot as the air goes on and off. If it is a large building, then have someone standing by with a walkie-talkie to turn the air back on after each shot.

Have control of all noise-makers in locations like bars, offices and hospitals. All refrigerators, computers, ice makers, X-ray and other machines must be able to be turned off. Computer hard drives and fans are particularly important to kill. Request fake prop computers when you anticipate a problem.

Try to schedule filming during non-work times in locations such as bars and restaurants. Avoid tin roofs during the rainy season. Make sure the electric department can cable the set and still keep the windows, doors and openings closed. And please avoid creaky, old wood floors. They are a recipe for sound disasters.

HOW MUCH IS A PRODUCTION SOUND CREW WORTH?

by Bruce Bisenz

Today's emphasis in Hollywood is on schedule and cost control. With so many new directors, producers and executives, it is important that everyone has the information necessary to make optimum production decisions—including decisions about production sound!

Intelligent decisions above the line are made with accurate time and money data for the bottom line in this commercial/art business. By taking a few extra minutes a day to understand and deal with sound issues, money can be saved in post, and a good dialog track can become a superior dialog track. Although some say a schism exists between the production mixer and various post personnel, I find (in over 30 years of production sound mixing) that the entire post crew is extremely grateful for high-quality production dialog and sound effects.

First, consider some of the inherent values of a quality production track as you enter post-production: The director can more easily evaluate performance to pick and edit takes. Temp dubs and rough cuts for screening are everywhere now. Executives evaluate only what they hear and see. Approvals for more time, or money, come faster with good dialog. Previews (many scheduled before any ADR) examine demographics, poll audience reactions and suggest "changes"—more effective with good dialog.

All TV shows face accelerated schedules. High-quality production dialog cuts faster; changes, ADR and added dialog match easier. Although "principals" usually have ADR time in their contract (if not, then it's often five figures/day), "day players" cost about $400 to $600 a day. Other ADR charges include: ADR supervisor, studio time, media costs, editors (conform production, spot and adjust ADR tracks) and re-recording/dubbing time.

But before even examining the dialog track, directors need to assess worth based on the job. Here is what we, the production mixer, boom operator and utility sound tech, manage on a set:

Playback (PB): For music sequences (live vocals and music can be mastered, too), we use arena-size speaker systems and edit PB tracks "on-the-fly." On-camera talent can hear silent cues transmitted to inductive, or radio frequency, ear canal "bugs." PB and Cues run the set.

FCC-licensed radio networks: 50 to 200 walkie-talkies, two to four networks and 16-plus frequencies. High-power vehicular mobiles. Repeaters are installed on mountain tops for county-wide coverage. Frequency coordination with aircraft and many government agencies. All for safety and operations efficiency.

Mockup Communications need multiple mixes: On-camera talent. Director/off-camera actors (with cue mics). Special effects (explosions work on dialog or director's cue, etc.). Audio feed to video assist. Production recording (combo mix for dailies and "Iso" dialog for post) is often done amidst deafening special effects. Although "Que" or "Guide Tracks" can result, they are vital for later ADR; cameras cannot roll without this sound crew service.

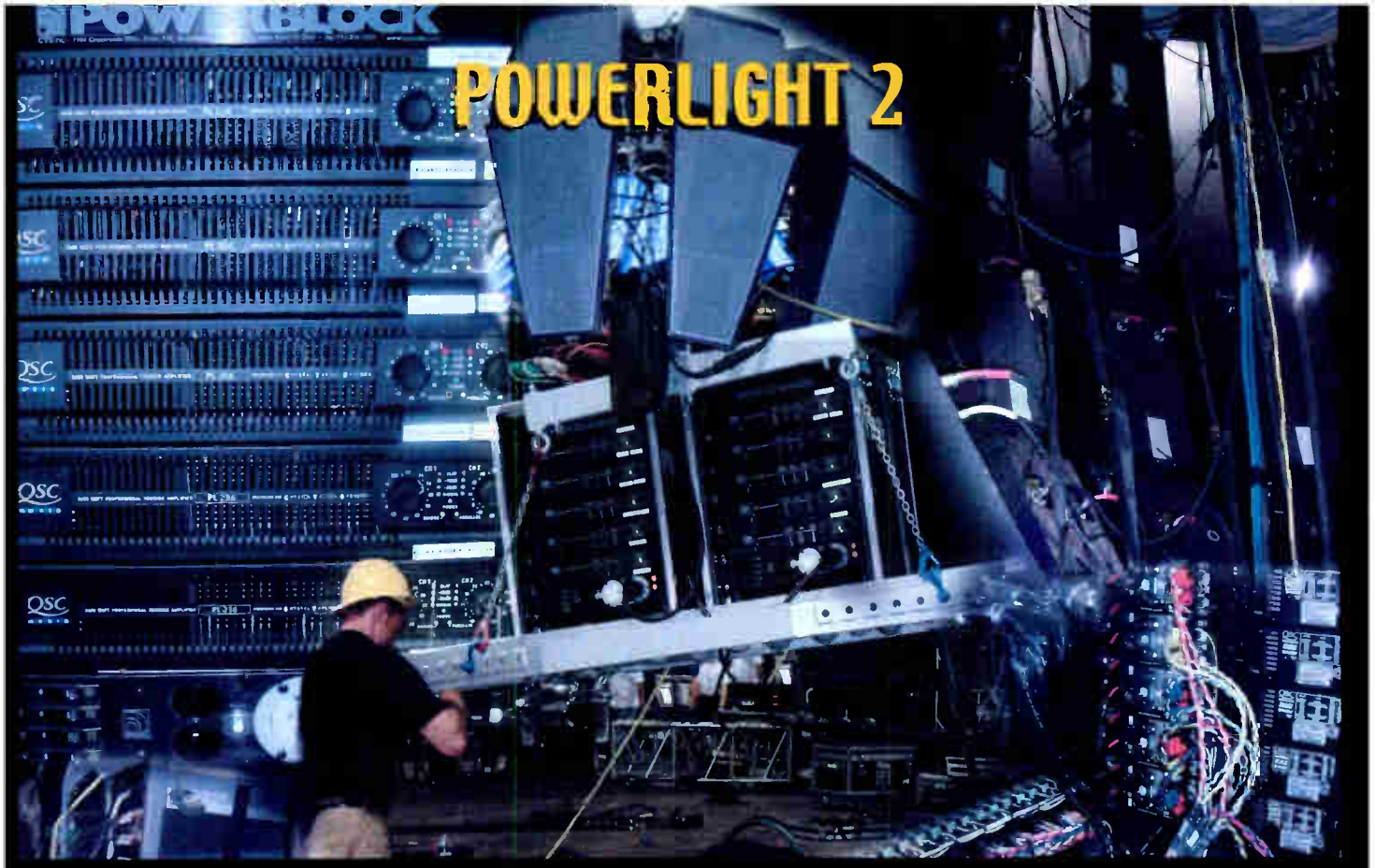
Private Line (PL) headset communications: Between crane or dolly grips and the camera operator. Between director of photography and multiple camera operators.

Public Address: Allows assistant directors to control and motivate extras/atmosphere and onlookers. All for reactions and safety.

Retransmission: Production dialog mix sent via "Comteks" (they often contain telemetry from the actors' wireless mics) to the director, script and producers (also camera operators and ADs).

It's a lot to handle for a three-person (all too often two-person) crew. So the next time you watch a movie or TV show, search the end credits for the Production Sound Crew, as well as your post favorites. Why not get a crew that earns its own way and adds a big bonus from more exhibition revenues? ■

Bruce Bisenz has been a feature and TV production mixer in Los Angeles since 1967. He is a member of the C.A.S., AMPAS and IATSE Locals 695 and 700.



Who says you can't teach an old (road) dog new tricks?

Live sound has come a long way since its rock 'n' roll roots. Today's sound reinforcement companies are smarter, more efficient, and are using the latest technology to raise the bar on what audiences can expect out of a live show.

Inspiring innovation

We developed the PowerLight 2 in response to what they've asked for—an efficient, customizable power solution that includes flexible remote control and dynamic processing.

Just ask Nashville-based CTS Audio. They have been using more than 80 PowerLight 2s on the road for over a year, powering concerts, tours and one-offs nationwide.

"It seems that whenever we are planning our next technology development, QSC is right there helping us innovate. The PL 2s offer excellent sound quality, breakthrough packaging, leading-edge processing, and great value—and that makes my job a lot easier."

– Carl Taylor, owner & president of CTS Audio.

Custom configuration

The PowerLight 2 Series delivers up to 3,700 watts in eight versatile models only 2RU and 21 lb. The new PowerLight 2"A" amplifiers also give you on- board processing power, including:

- Built-in analog signal processing
- VCA-controlled output power limiters
- Selectable input sensitivities
- Comprehensive I/O options
- DataPort for computer control or DSP capability

A family of solutions

Whether you need a large-scale FOH concert system, high-powered monitor rig, or an upscale "speaker on a stick," QSC's PowerLight family delivers the clean, dynamic, reliable power that you—and your audience—have come to expect.

PowerLight 2"A" Signal Processing

Side panel controls for built-in processing

To learn more about the new PowerLight 2, visit us on the web at www.qscaudio.com/powerlight2/mix.html or contact Brian English at 800-854-4079 email: brian_english@qscaudio.com.

Rear view of PowerLight 2"A" amplifier

QSC™
AUDIO
Hear the Power of Technology.

CIRCLE #085 ON PRODUCT INFO CARD

ART DEPARTMENT

A few tips: Confer with the sound department when adding noisy set furniture, computers and machinery. Try to consider overhead mics before building low-covered ceilings, hanging lamps and cross beams. Inject foam into constructed stairs and steps to get rid of hollow footsteps over dialog. And, whenever possible, carpet the sets to deaden echo and live rooms. Especially consider taking this step in rooms where the majority of dialog takes place.

PRODUCTION MANAGERS

First and foremost, budget in a third sound person and the proper amount of audio equipment. A third person provides invaluable support so that the other two can keep rehearsing or shooting. Time saved on set at the moment when every department is ready to shoot are dollars well-spent. When blocking changes necessitate adding a second moving microphone operator, it can be done in a jiffy without stopping production to show someone else how to perform this skilled job. Lots of other problems can be solved more quickly, from killing an errant fan to fixing a director's headset on-the-fly. In a pinch, the third person can keep production shooting in the event of a sudden emergency or sickness befalling a sound person.

CAMERA DEPARTMENT

Camera assistants: When (not if) there is camera noise, make all reasonable efforts to contain it by using barneys, glass, blankets, tweaking, etc. Also, don't turn the slate on and off, as timecode will then be wrong. Let the mixer know as soon as a slate shows any problems. Finally, let the sound mixer know what frequencies are being transmitted in case one steps on wireless mics or Comteks. Be prepared to kill the Panatape when it causes microphone interference.

Operators: Hold only the frame size to be used and no more. Communicate and work out any problems with the boom operator before the first team is called in. Be willing to operate in a pinch with a cover or blanket over a particularly noisy camera.

Directors of photography: There is almost never a good reason to light a boom operator off of the set. An overhead mic in capable hands should be able to dodge your lights; but it is important to give the boom operator the space above the frame, because the sound is never as good with wireless as it is with an open boom mic. Also, don't use Xenon lights unless the director is informed ahead of time that the whole scene will have to be looped. Finally, when shooting practical car scenes, try to light so that windows can be closed where possible.

SPECIAL EFFECTS DEPARTMENT

Make a reasonable effort to keep the offstage noise-making devices away from the set, and baffle them whenever there is dialog in the same scene. When making rain, put the rain machines and water truck as far away as possible. Use hog's hair to muffle raindrops on roofs and under windows. When a fan is used to blow a curtain or plant, work it out with the sound mixer before the noise problem crops up after the first take. When using fireplaces, try to limit the hissing gas sound. Heaters on cold sets need to be shut off well before rolling to eliminate the crackle and pops from shutdown.

WARDROBE DEPARTMENT

Cotton is our friend. Silk is our enemy. When requested, the wardrobe department can help by creatively placing the wireless in the best possible position on the actor's body. Avoid noisy fabrics, especially when the principal actors will wear the same clothing

GREAT MINDS THINK ALIKE.

Logic DELTA

M-AUDIO & emagic

emagic

Few companies have the privilege of setting the standard of excellence within their field.

M Audio's Delta soundcards have earned their place at the top of the class with superb engineering and performance. Critics have called them "*stunning*" [1] with sound quality "*none can beat.*" [2]

Emagic's Logic programs are the essence of innovation and creativity, and are celebrated the world over as a benchmark of software design.

Now **M Audio** and **Emagic** are proud join forces to bring you the **Logic Delta Systems.** Each one has been individually optimized for seamless hardware/software integration. All systems feature Logic Delta for Mac and PC, a 24-bit/96kHz audio and MIDI recording application that is as powerful as it is elegant. Delta systems are expandable up to four per computer*, so you'll always have the configuration that best suits your needs.

Add to the mix Maximum Audio Tools, an assortment of today's most popular programs by Bitheadz, Sonic Foundry and others, and you've got the right answer to your next musical question.

Logic DELTA

Every Delta is now a complete Solution.

M AUDIO

M POWERED.

• 800-969-6434 •
• WWW.M-AUDIO.COM •
• EMAIL: INFO@M-AUDIO.COM •

Mac

1-Computer Music, January 2001; 2 Sound on Sound, January 2000
** - Dependent upon CPU resources. Multicard drivers for Mac coming soon.*

Logic Delta & Maximum Audio Tools now included with every

DELTA 1010, DELTA 66, DELTA 44 & Omni Studio

CIRCLE #087 ON PRODUCT INFO CARD

is running one camera wide and another tight at the same time. This means that sound will be compromised by losing "perspective." All actors must then be wired, because the wide camera will not allow a mic to get close enough to the tight camera size. That means that a sweet-sounding overhead mic may be replaced by an inferior-sounding lavalier. This can be resolved by the second camera only filming nonspeaking actors or not working at all during the wide master shot. Then, go to two cameras for all your coverage.

Rehearsals. It's fine to have closed rehearsals for actors only, but give one to the crew or at least let the boom operator see one. Otherwise, we can only guess where and how the sound will be delivered. The words we dread the most are "let's shoot the rehearsal." You might get lucky, but your sound will suffer and you will do extra takes as unknown problems surface.

Ad-Libbing. Again, it's impossible to mike lines no one knows will happen. If you want to keep an ad-lib, then do another take for sound if they didn't get the line the first time.

Air Traffic. Probably the single-most frustrating audio problem on set is being in a plane traffic pattern. You, the actors, and the whole crew knows the sound is no good. Yet, after a while, you have no choice but to plow through and start printing those takes. In that case, rather than looping, it's much better to get through the scene with lots of short clean pieces that can be cut together later.

Louder Actors. Sometimes we really need you to get the actors to project in order to save a scene. In loud scenes (such as a crowded bar or stock exchange), it's best to make the actors speak unnaturally loud. If not, then your post background sound will be thin and your editors won't be able to add the rich background effects to create reality.

MOS and Q-Tracks. Always roll on all takes. It is best to record sound all of the time, because it will make looping much easier when you have a sync reference track to work with. Do not talk over effects shots with no dialog (such as car drive-bys), because post will have to then add more Foley.

FINAL NOTES

The words, "We'll fix it in post," should be replaced by, "Let's fix it on the set." Reasonable efforts should always be made to do all of these things in a reasonable amount of time. It bothers us to sit quietly in a corner while *your* sound tracks are being butchered. We care about our work.

Most importantly, find the time to communicate with your sound mixer. You need to know that you are getting the best sound tracks possible. Sound and camera should complement your film in proper proportion. The audience is watching *and* listening.

Sincerely, Your Sound Department. ■

Written by John Coffey, with help from Klay Anderson, Brydon Baker, Mike Barnitt, Darren Brisker, Joseph Cancilla, Carl Cardin, Peter Devlin, Carl England, Mike Filosa, Stu Fox, John Garrett, Alexandre Gravel, Robert Gravenor, Mike Hall, Hans Hansen, Larry Long, David Marks, Mike Michaels, Matt Nicolay, Todd Russell, Tim Salmon, Dave Schaaf, Wolf Seeberg, Brian Shennan, Chris Silverman, Scott Smith, Mark Steinbeck, Randy Thom, Noah Timan, Eric Toline, Charles Tomaras, Glen Trew, Von Varga, Mike Westgate, Charles Wilborn, Rob Young, and many others.

Fall in Love Again

Introducing the Universal Audio 2-610™ Vacuum Tube Microphone Preamplifier

Wouldn't you like to fall in love with making music again? The UA 2-610 is our new dual channel tube mic-pre — a preamp that will breathe new life into any microphone collection, bring out the emotion in vocals and reveal the true nature of your instruments. The 2-610 captures those elusive attributes that will make you fall in love with your gear — and with making music — all over again.

Unlike other "vintage style" mic preamps, the UA 2-610 — modeled on the Putnam-designed 610 console — is true to its heritage. From Sarah Vaughan to Frank Sinatra, *Pet Sounds* to *LA Woman*, the 610 preamp left its imprint on countless classic recordings.

UA 2-610 Features

- **Two variable gain channels**
- **Mic, Direct and Hi-Z inputs**
- **Phantom power**
- **Polarity reverse**
- **Variable Mic/Hi-Z impedance**
- **HF/LF shelf stepped EQ controls**
- **Selectable frequency EQ**
- **Custom-wound transformers**
- **12AX7 and 6072 tubes/channel**

UA Classic Compressors

Whether you're tracking pure analog or running a digital studio, you'll find the UA 2-610 the perfect companion to our classic compressors, the 1176LN Limiting Amplifier and the Teletronix LA-2A Leveling Amplifier.

1176LN™ Limiting Amplifier
Hand-built to exacting standards, no studio is complete without this classic compressor.

Teletronix LA-2A™ Leveling Amplifier
Obsessively precise, right down to the point-to-point hand wired components.

We've retained the best of the original while adding functions designed to meet the rigors of the modern recording studio, including phantom power, impedance control and expanded EQ settings. Custom transformers feature specially selected double-sized alloy cores and sophisticated winding techniques; every tube is scrutinized before qualification. Our expert analog design team has produced a classic tube mic-pre with uncommon character and uncompromising quality.

Sure it's a lot to attribute to a pre-amp, but wouldn't you like to fall in love with music all over again?

Universal Audio Classics from the Analog Ears and Digital Minds of Universal Audio.

Visit **www.uaudio.com** today to learn more and to register to win your own LA-2A!

UNIVERSAL AUDIO INC.
ANALOG EARS | DIGITAL MINDS

www.uaudio.com VOICE 831 466 3737 FAX 831 466 3775 EMAIL info@uaudio.com

CIRCLE #090 ON PRODUCT INFO CARD

ADVENTURES IN TDM PART 1: TEMP DUBS

PHOTO: BOB MARSHAK/©2000 USA FILMS. ALL RIGHTS RESERVED

Director Steven Soderbergh (left) and Michael Douglas (right) on the set of Traffic, a USA Films release.

BY LARRY BLAKE

A little over a year ago, I had a grade-A film sound epiphany, as some of you may remember. What had started off as an experimental approach to the mix of a low-budget film ended up changing the way I looked at film sound post-production.

If you didn't read my October and November columns in 1999, then you might be asking yourself, what did this Southern boy discover? A way to deep-fry a hard drive? A technique to edit sound while playing basketball? No, it simply involved taking full advantage of the automated Pro Tools TDM environment in conjunction with moving fader control surfaces. A totally virtual mix in which nothing was printed (save for check screenings) until the final mix stems were rendered just prior to print-mastering. And, by the way, no console of any type was used, only Pro Control and HUI surfaces.

The potential for flexibility and creative power offered by this approach made itself present every day of the mix, while the feared potential downside—that moves would not come back, and I would be left high and dry with nothing to show for weeks of mixing—never reared its ugly head.

After this mix (for the independent film *Housebound*, formerly titled *Kitchen Privileges*), I made a pact with myself that after my next film (*Erin Brockovich*), I would turn my back forever on the standard approach: cut on workstation, record premixes, record final mix from premixes and sweeteners on a large console using outboard gear. (I'm tired just from saying all that.) *Erin* was done the "old" way, because I had made a previous commitment to go back to the Vine Street Studios facility, whose staff is aces and with whom I had a great time mixing *Out of Sight*, *The Limey* and, indeed, *Erin*. When it came time to book the mix for my next film, *Traffic*, I had to tell them that there was one big roadblock preventing me from mixing there: They had a console.

This is the first of a three-part series covering my experiences cutting and editing the sound for *Traffic* in the virtual TDM realm. The key difference between my work on *Housebound* and *Traffic*, besides budget and schedules, was that *Traffic* would go through the temp dub/preview/picture change process. We started cutting and mixing for *Housebound* with a truly locked picture. So this first installment will be on how virtual mixing can make some damn fine lemonade out of the temp dub lemons.

Before I get started, one note for clarity: These columns are not necessarily Pro Tools/TDM-specific and could be applied to any workstation that has a moving fader control surface. (That no other workstation platform is being used in serious film re-recording is a separate issue.) However, do understand that I am *not* talking about virtual mixing in the broadest sense that would include having workstations feeding a completely automated board with automated outboard equipment attached. As I noted in my first column on this subject last year, there are too many things that could go wrong in this method for me to rely on it completely.

ON TO THE TEMP

Sometimes it seems as if film sound post-production can be reduced to a simple battle of quality and efficiency vs. sloppiness and waste.

The most prominent enemy in these circles is the specter of picture changes. Your budget and schedule might *say* that you get a locked picture four weeks prior to the start of the dub, but, instead, they deliver a "latched" cut two weeks before the dub, one that continues to be tinkered with until the bitter end. While no one argues with the director's right to make the best possible film, six months earlier you submitted a budget based on a schedule that is now complete fiction. More important, your ability to bring high-quality sound to the mix has been compromised, because you and your editors are spending what little time you do have keeping up with picture changes, rather than actual creative editing.

A frequent subset of the picture change dilemma is the infamous temp dub, a mix to accompany a new edit of the film during post-production, often before a recruited preview audience. In the old days (say, before the '80s), a preview was either a very simple affair thrown together with a handful of tracks or was in fact the final mix itself (subject to post preview fixes, of course). Translation: A minimum of wasted effort.

The worst period in temp dub history was in the '80s, when virtually all feature sound editing was on mag film, yet directors started to spend more and more time on temps. Dialog would usually be cut from copies of the edited worktrack, "splitting and filling" the mag units prior to the mix. This was the quintessential example of temp dub waste, because not only did this take forever to cut problem scenes (little bits of fill needing to be reprinted from the worktrack), but this work was never seriously considered as ready for prime time, and was always thrown away prior to the dialog premix.

Sound effects editing fared better, but only slightly so. If there were few picture changes and good work had been done, then units could be con-

ESSENTIAL READING

HHB CDR850/850PLUS CD Recorders

HHB CDR830 BurnIT CD Recorder

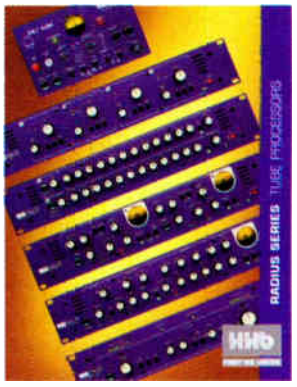
PORTADISC Professional MD Portable

HHB Circle Active/Passive Monitors

HHB Advanced Media Products

Genex GX8500 Multi Format Recorder

TLA VTC Vacuum Tube Console



HHB Radius Tube Processors

HHB Classic Tube Processors

Genex 24-bit/192kHz + DSD Converters

Quantec Yardstick Reverb

Rosendahl Nanosyncs Clock Generator

Download information · Locate a dealer · www.hhbusa.com

HHB Communications USA LLC · 1410 Centinela Avenue, Los Angeles, CA 90025-2501, USA
Phone: 310 319 1111 · Fax: 310 319 1311 · E-Mail: sales@hhbusa.com

HHB Communications Canada Ltd · 260 King Street East, Toronto, Ontario M5A 4L5, Canada
Phone: 416 867 9000 · Fax: 416 867 1080 · E-Mail: sales@hhbcanada.com

HHB Communications Ltd · 73-75 Scrubs Lane, London NW10 6QU, UK
Phone: +44 20 8962 5000 · Fax: +44 20 8962 5050 · E-Mail: sales@hhb.co.uk

Pro Audio Digital SA de CV · Rousseu No. 26 Col. Nueva Anzures, México D.F. 11590
Phone: 525.531.5859 · Fax: 525.203.0018 · E-mail: irbach@audiosistemas.com.mx

SK Audio Professional Products · R. Barão de Jaguara 1481, cj 142, Centro Campinas, Sao Paulo, CEP 13015-910 Brasil
Phone/Fax: (5519) 3236-0450 · E-mail: skaudio@uol.com.br

HHB

FIRST WE LISTEN

CIRCLE #091 ON PRODUCT INFO CARD

formed and used again for the real mix (or subsequent temps). But if there were extensive changes, then sometimes it was easier to simply start again.

Cutting on workstations altered this approach slightly, because updating to new versions is far easier, so less work has to be redone. Less editorial work that is; I know of no one who makes attempts to conform console automation—it's just too damn much trouble. As noted above, you have to take into consideration every patchcord, every piece of outboard gear *plus* every output assignment on every workstation track.

To get around this problem, most films will record stems for temp dubs, conforming them so that subsequent temps can be accomplished with a minimum of grief. Sometimes the original workstation files are updated for temps, sometimes not, depending on the schedule.

So far so good, but only up to a point. All of that pesky mix data—fader level, EQ, sends, busing, outboard gear settings—is history, even one temp dub in the future. Furthermore, if you are only conforming temp stems and adding sweeteners when necessary, then there will undoubtedly be much good editing work that will go by the wayside, never to be incorporated into the "money" files that will be used in the final film.

We can glibly criticize directors for having bad cases of "temp love" and falling for sounds and mixes from previews, but the fact is that what is done in the heat of temps often *does* have that something extra. At the very least, it should be a starting point.

This, in a nutshell, was my goal for the sound post-production of *Traffic*, a goal that we achieved with flying colors. The Pro Tools sessions containing TDM mix data from the first temp in August were conformed and updated over the next three months, leading up to the last day of the final mix on Saturday, November 11.

The only recordings that we made were either the 35mm mags to screen during previews or temp dub stems. The sharp-eyed viewer might think, "Hey, you're cheating here; you said you weren't going to use temp stems." The answer is, "We didn't." Although we did use the conformed "real" sessions for the big second temp preview, there were a few subsequent updates that had to be made in rapid succession that were more easily accomplished by just conforming the stems. More on this later.

I laid out the sound on the film so that there would be three Pro Tools sessions that would contain all of the sounds for *Traffic* except for music, which was in the dialog session during temps. Only when the multitrack score arrived for the final mix would music be granted its own large session. One of the remaining two sessions contained backgrounds, with the last one comprising hard effects and Foley.

I'm a "give me the bad news first" kind of a guy, so let me state the pitfalls of this approach, at least how they are in late 2000.

Falling under the category of both good and bad news is that you would do well during temps to think ahead to how your final mix stems will be laid out and use this from the beginning. Also, you should try to incorporate from the first mix every possible need you have for buses, EQ, reverbs, gates, etc.—anything that can be sent or inserted. Of course, you can change your mind, but remember that every change that you want to make that is not reel-specific has to be made retroactively to all the other reels (eight total in the case of *Traffic*). Not fun.

Thus, it was with great care that I laid out the three master TDM session templates and their sister sessions where the editing was done initially. In other words, my editors and I cut in standard sessions on standard Pro Tools systems with none of the elaborate EQ, etc., that would eventually be needed.

Before the sessions were sent to the stage, they were Track Transferred into the full TDM sessions that required the DSP horsepower of three or four Mix Farm cards to open. From this point on, there was no turning back, and we had two systems with the requisite horsepower—one used by Aaron Glascock, lead sound editor, in cutting the dialog and my own Pro Tools system, on which I cut and conformed the backgrounds. (Aaron and I split duties on the hard effects.)

There's no doubt that we were operating under next-to-ideal circumstances, with two sound editors having an overview of the whole film. Many big Hollywood films might need a half-dozen or more editors who are not only equipped with large systems (a MIX Plus system would even be too small for us), but who are also "game" to undertake the challenge of conforming 1.2MB sessions filled with precious TDM automation data.

On *Traffic*, the pressure was primarily on Aaron, who had to do an extensive reel rebalance after the first temp. Conforming the automation data of reverbs and EQs inserted on aux faders is considerably more involved than just moving regions in an audio track and is not for the faint of heart.

However, the upside of all of this planning was that when we came to do the second temp dub, and the dialog premix a month after that, all of the moves that I made played back without a hitch. Most of the ADR in the fi-

THE REFERENCE DESK

The three-part film sound glossary that we printed two years ago was very well-received and is indeed still available at mixonline.com. However, not only do I keep coming across words and phrases that didn't make the cut, I know that it would be even more helpful if new entries were defined on a month-by-month basis, as topics and concepts are presented. So this month I begin the first installment in my glossary updates. Stay tuned.

TDM: Time Division Multiplexing. The name for the high-speed data bus inside the Pro Tools system that allows for automation of almost all parameters within a Pro Tools session.

VIRTUAL MIXING: Mixing without recording audio, using automation to record moves.

REBALANCE: A picture change that entails scenes (or parts) moving between reels, most commonly to reduce the total number of reels in a film after much material has been deleted. Without such a rebalance, there would be too many reels, many of them having very short lengths.

TRACK TRANSFER: A utility in Pro Tools that allows you to transfer tracks between Pro Tools sessions offline. Track transfer will go away with Version 5.1, which will allow you to transfer material between sessions while they are open. —*Larry Blake*

nal film had been shot and incorporated during temps, and that precise mixture of EQ, send, dry fader level, reverb return fader level came back exactly. If we needed a little EQ nip and tuck on one word or a reverb spritz on some Foley, then I only had to do it that one time. In the past, I would save TDM settings and keep notes, and when I started the premix proper, I would reapply settings as needed.

This was a head start, but would still not include the simple and obvious issue of fader level. On *Traffic*, having heard the dialog from the first temp in a handful of theaters, I was able to incorporate many small tweaks into the second temp, which I would also hear a few times outside the mixing stage. Then, when I got to the final mix, everything was very well-balanced, allowing me to use the dialog premix as a "super-tweak" period and not to reinvent the mix.

Another important consideration in creating your session templates is deciding on your "default" settings. This is something that the Pro Tools manual glosses over but is absolutely essential to good mixing hygiene. The first time that you write automation on any enabled parameter, that is where that will be for the entire reel, *including* earlier. So you can get yourself in a world of trouble if the first time that you write EQ on a track is at the end of a reel. When you wind back, you will find to your dismay that the whole track will now have the +12 boost on the low end!

Therefore, you need to intentionally "black" (a term I use, carrying it over from video editing when you would record video black on a blank reel prior to insert editing) each track for sends, fader level and TDM plug-in data in the setting that, all things equal, you want to be the default. For me, the sends are all turned down, but the reverb returns are at unity. You also should choose what reverb setting you will want to use (obviously music and dialog would have very different settings).

Next month, I'll follow *Traffic* to New Orleans, where we did the final mix. As always, I can be reached at PO Box 24609, New Orleans, LA 70184, or at swelltone@aol.com. ■

Larry Blake is a sound editor/re-recording mixer who lives in New Orleans for reasons too numerous to mention, although one of them would have to be that he can order red beans and rice to go with his TDM.

TOUR PROFILE

BRITNEY SPEARS IN EUROPE

Britney Spears is currently dazzling her European fans with her all-American mix of dance, song and showmanship. But how are things backstage? I met up with her sound crew to ask how European touring differs from life on the U.S. circuit.

Monitor engineer Raza Sufi is the lone British member of the crew, though for the past 16 years he has been based in the U.S. and has worked for clients as varied as Billy Joel and Bush. "Touring in the States, you tend to get spoiled. Compared to Europe, the fan base is so huge—you can be out for three months solid filling arenas and sheds, knowing that there are another 20 tours doing the same thing. Over here, many things are more difficult—simple stuff like smaller trucks and poor access for load-ins really make a difference. I grew up working in these European venues years ago. They were terrible then, and in some cases are still no better!"

All is not bad, however, as FOH engineer Monty Lee Wilkes points out. "As new venues are built, people are becoming aware that it's not just sport that pays the rent, so venue acoustics are improving. There are a few European venues, including, strangely, a velodrome in Switzerland, where getting good sound is not too difficult." Wilkes adds that the situation is far from ideal in his home country. "A lot of venue owners in the USA should be ashamed of themselves. New buildings are being constructed without a thought to live performance. And there is no excuse for the way they sound, other than greed and apathy. Sadly, at the end of the night, an audience doesn't go away saying the venue sounded terrible—they go away criticizing the sound system. We just need a fighting chance!"

Monitor engineer Raza Sufi

Wilkes, who has toured extensively in Europe, recalls his first visit to London's Wembley Arena several years ago. "I was really excited when I heard we were going there—the place

TEXT AND PHOTOS BY MIKE MANN

LIVE ON TOUR

N/DYM®

N/D767A
Premium Vocal

N/D267AS
Lead/Backing Vocal

N/D167
Standard Vocal

N/D478
Percussion, Guitars & Vocal

N/D468
Brass, Drums, Percussion & Guitar Amps

N/D868
Kick Drum, Bass & Seven String Guitar

N/DYM Wireless **Series**
featuring ClearScan *technology*

PAPA ROACH

On Tour with Electro Voice® Microphones

For more information call **1-800-392-3497** www.electrovoice.com

CIRCLE #094 ON PRODUCT INFO CARD

has a romantic ring to it for those who have never worked there. I got to the venue and thought, 'Holy Crap—what is this place? For God's sake, put some money into it!'" Touring in Europe, he claims, has changed significantly in the last decade, especially in the area of creature comforts. "I mixed a club tour for a vicious U.S. punk band in 1985—in those days, it would cost you a week's per diem just to call home! Now you can see familiar programs on the hotel TV, and the tour buses are better—still smaller than ours, but if they weren't, they wouldn't get 'round the corners!" Wilkes still misses his AT&T phone, which, with the solely digital mobile networks now operating in Europe, cannot be used here. "On the other hand, I'm being paid very well to do a job I love, and I get to visit places that many Americans only ever dream of!"

FOH engineer Monty Lee Wilkes

As for the tour itself, the production has been shipped in its entirety from the States, a rare occurrence at this level where smaller venue sizes tend to force each department to scale down their equipment. Showco's PRISM® system, under the eagle eye of Jim Ragus, has proven to be very flexible, essential for dealing with the varying European venue dimensions and layouts. Ragus has also, astonishingly, managed to pack the contents of a standard 53-foot U.S. semi into a European-footprint, 44-foot truck. "That must be a hell of a pack," exclaims Wilkes, "but Jim and the Showco crew (Jaimeson Hyatt and Eric Rizner) are great—they have all cut their teeth by doing some really bad gigs in awful places, which teaches you a thing or two. Jim does a great job of taking care of the system and me, and Showco's level of support on the tour has been great."

The proprietary PRISM system, which uses a variety of cabinets loaded with different components angled to form a near-perfect point source, is adapted for each venue according to its height, width and the coverage required. In Sheffield, England, for example, Ragus flew the system in an 8-wide, 4-deep configuration, but with the outermost column of cabinets fed separately with a mono mix. "For people sitting right 'round at the sides, stereo would have no meaning," explains Wilkes, adding that a further, vocal-heavy mix is used for the front fills to lift Spears' voice for those fans closest to her and to preserve the central image.

Wilkes is mixing the tour on a combination of Yamaha PM4000 and PM3000 consoles, an unusual choice, perhaps, for a show that is heavily choreographed and might benefit from some automation. "I did consider using the ShowConsole [Showco's digitally controlled flagship board, developed with Harrison], but the budget wouldn't allow it. And, in any case, I prefer to have dedicated outboard units and channels for each function, rather than using scene changes. I just assign my VCAs judiciously and mix like most live guys do." Wilkes' effects racks are populated with industry-standard gear, but he still retains a few old favorites, including a number of dbx 903 compressors. "They're old, but I love the sound of them," he enthuses. "The old dbx units have something that no one else can match, particularly for kick and snare drums." Wilkes also uses the 903s on Spears' two vocal mics, a Shure Beta 58A handheld and a Crown CM-311AE headset-mounted capsule. "What I need for her is as much gain as possible, but then when she screams, it has to stop dead in its tracks," Wilkes comments. To achieve this, he has daisy-chained each 903 to a dbx 160A, one providing the controlled lift and the other a much more

A professional sound system for under $500

- 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

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

$499.99 shipping $39.99, no tax outside CA

Options: PSS20 Two heavy-duty speaker stands - $69.99 when purchased with system MS13 $29.99 Professional boom mic stand FS22 $29.99 Footswitch to turn effects off/on

Order now and save - Factory Direct!

CIRCLE #095 ON PRODUCT INFO CARD

For specs and to order, visit carvin.com/PA620 or call

carvin.com 800.854.2235

Factory Direct Sales • Guitars • Amps • Pro Sound

dramatic limiting function.

Although the singer does sing the show live, she has a safety net in the form of an ADAT track running in the background. This is used for those moments when her dance routine becomes too energetic to allow her any voice control. As controversial as this may be, the transitions are seamless, and the only alternative would be to cut the dance numbers, which are an integral part of the Britney Spears experience.

Wilkes is acutely aware of the nature and age of Spears' audiences and is careful to protect young ears from excessive levels. "I can't understand why they always make so much noise," he explains during a break, as the crowd's whistles and screams peaked. "But then, I'm 38. How do I know what goes on inside an 8-year-old's head? I've seen the crowd reach well over 120 dBA on their own—so it's a fight you can't win. I just try to mix the show at a reasonable level so that if Britney's fans do quiet down, they'll hear her sing!"

Onstage, Raza Sufi has instigated some sweeping stages since his arrival on the tour in August. The original Harrison consoles have been replaced by a pair of Midas Heritage 3000 boards, which not only cope with the in-ear and wedge monitor mixes, but also handle stage communications. Spears' band, the backline technicians and Sufi are all fitted with in-ear monitors (Shure PSM600s and 700s) and headset mics, enabling rapid and clear communications around the large stage area. "The comm mic feeds are basically mixed over the top of the existing IEM feeds, which works because no one in the band sings," explains Sufi.

Spears does not use IEMs, preferring the ambient sound of a battery of eight Showco SRM wedges spread across the downstage area. These are augmented by Showco SS full-range sidefills and a pair of one-by-18-inch subs on each side of the stage. Like his FOH partner, Sufi uses a dbx 160A to limit Spears' louder moments, while backing vocalists are controlled by a duo of BSS DPR901 Dynamic Equalizers. Effects are limited to vocal and drum reverbs, while the output mixes are tweaked by either Klark Teknik or Showco graphic EQs. Amplification for the wedges and the FOH system are all Crown-based, with a pair of drum stool shakers completing the line-up.

One unusual aspect of audio production for this tour is that every last cable has been brought into Europe from the USA, a change from the more common practice of picking up racks 'n' stacks in the UK or European mainland. This is partly a budgetary consideration affected by the current exchange rate between the pound and dollar, but is primarily a technical one. Without a significant European stock of PRISM® systems, Showco would have needed to source an alternative loudspeaker/amplifier combination for this leg of the tour, an idea that neither engineer relished. "This way, we could turn the consoles on at Wembley (the first date of the European sector) and pick up the show exactly where we left off. It's been wonderful," notes Wilkes.

In Europe, as in the U.S., Britney Spears has her fair share of critics, as well as a loyal fan base. But even those who spotted the subtle use of vocal support could not fail to be impressed by the artist's energy, enthusiasm and stamina as she executed routine after routine for an intense two-hour period. And, according to her crew, Spears is the perfect boss. "There is a great vibe on the tour," commented Wilkes. "Every single department gets on with every other, and it all comes down from the top. Britney is almost the anti-pop star—she's a very nice person to deal with and works harder than most. That's very rare, especially among younger artists." And the fans? Of course, they love every minute, and shows are selling out all over Europe in record time. Which, at the end of the night, is what really matters. ■

Mike Mann is a freelance writer living in England.

"These days there's a FIVE on every rider"

Ed Pratt, Pratt Sound, Salt Lake City, UT

CASCADE SOUND

"For us the FIVE's were an easy choice as we were seeing it appear on more and more riders. The board is so intuitive that visiting engineers can get on and mix really quickly. The FIVE was also great value for money for the features and performance you get."

Larry Carroll, Cascade Sound, Salem, OR

Midwest Concert Concepts Inc.

"Time and time again the FIVE kept appearing on the riders but before we went ahead we had demos from all the main console manufacturers. The FIVE had that great warm British sound and musicality along with the sonic purity that was superior to the rest. It's a very intuitive board, everything is where it should be and the layout is incredible."

Brian Houle, Midwest Concert Concept, Superior, WI

PRATT SOUND

"Owning the Soundcraft Series FIVE and FIVE Monitor combination gives us and our clients virtually unlimited flexibility in a great sounding, aesthetically pleasing and easy to use package. The Series FIVE affords us more options... just like an amplifier that actually goes to eleven! And the FIVE Monitor is great for the diversified and demanding situations we find our company in from day to day."

Ed Pratt, Pratt Sound, Salt Lake City, UT

DALLAS BACKUP INC.

"We just purchased a Series FIVE FOH desk this month to tour with the FIVE Monitor desk we already own. Again, the sonic property of the desk, along with the MIDI snapshot, MIDI fx control and data fader features were the deciding factors in our purchase."

Charles Belcher, Dallas Backup, Dallas, TX

SERIES FIVE

FIVE MONITOR

Soundcraft

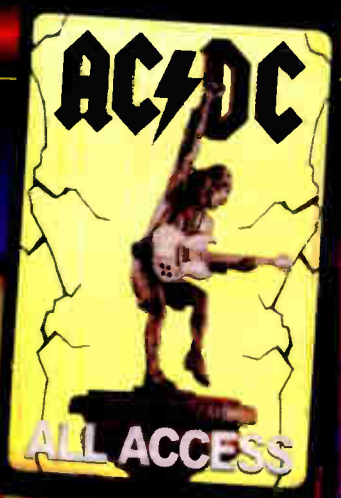
A Harman International Company

www.soundcraft.com

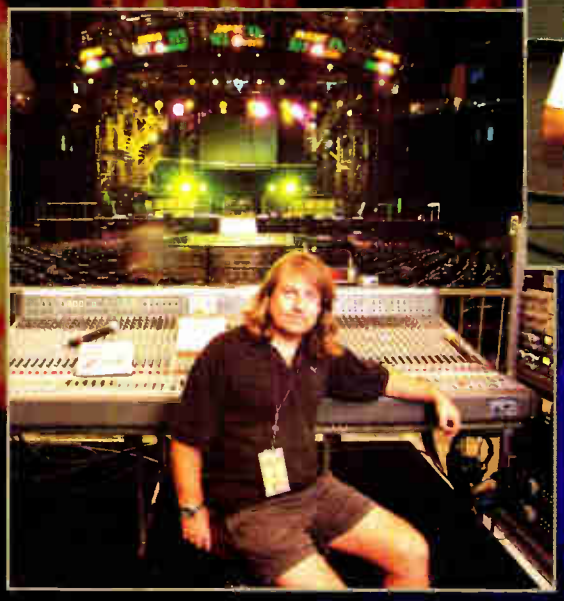
Soundcraft +44 (0) 1707 665000. Soundcraft USA +1 615-360-0471

ALL ACCESS

PHOTOS AND TEXT BY STEVE JENNINGS



AC/DC is out on their first world tour in nearly five years, promoting the recently released *Stiff Upper Lip*. *Mix* caught AC/DC's two Bay Area shows—at the San Jose Arena and the Oakland Arena—last September, when guitarist Angus Young, vocalist Brian Johnson and the rest of the boys indulged in a lengthy sampling of the band's catalog of hits. Included in the set were such crowd favorites as "Back in Black," "Let There Be Rock," "You Shook Me All Night Long" and the current single, "Safe in NYC." AC/DC will be back in the U.S. for a string of dates this summer.



A veteran of AC/DC's last world tour in '95-'96, FOH engineer Paul "Pab" Boothroyd (center) is mixing on a Midas XL-4. "I think it's one of the better touring consoles," says Boothroyd. "I like the flexibility and quality of it. The input mic amps and EQs are very accurate, and it's reliable so you can go out on a world tour with it, and it will outlast you." Boothroyd is using only about 30 inputs and few of the board's automation features. "There's no real scene setting," he notes. "It's a very manually mixed, straightforward show. It's a very loud show, and yet, with the quality of the Shure microphones, the Midas board, the accuracy of the EQ to gain some separation and finally the control of the E-V X-Array system, it all adds up to a good result."

Boothroyd is using a Summit Audio TLA-100A leveling amplifier on Brian Johnson's vocals and a TC Electronic M5000 for reverb. Other units in his rack include dbx 160sl "Blue Series" compressors, a Lexicon PCM-81 for multi-effects and a PCM 91 for drum reverb. In addition to miking the onstage guitar amps, Boothroyd has set up offstage iso boxes and blends those signals with the onstage master amps.

Guitar tech Jeff Banks (below) oversees a complex setup—Malcolm Young's guitar rig includes six cabinets on his side of the stage, two on the other. "And then I have a Marshall head, which runs a 4-by-12 cabinet offstage in an isolation box, almost like a studio environment," adds

Banks, describing the setup that allows FOH engineer Boothroyd to make use of the isolated signal in a bad hall. "The secret to Malcolm's sound is his Gretsch guitar, the beat-up one with the holes," says Banks. "It was given to him by Harry Vanda, the guitar player in The Easybeats, the '60s band that Malcolm's older brother George was in." Angus Young's guitar rig is looked after by guitar tech Tom "T.C." Callcettara.

Monitor engineer Niall Slevin (left) is using a Midas Heritage 3000 console. Outboard gear includes Drawmer gates, Behringer and Klark-Teknik compressors, and a pair of BSS Varicurves.

Singer Brian Johnson is using in-ear monitors, and drummer Phil Rudd sometimes uses one in-ear. The rest of the bandmembers rely on wedge and sidefill mixes. "Phil has a mix of everyone, with a drum fill behind him, then two floor wedges, which are a left/right mix for guitars and a bit of vocal," Slevin explains. "Then it's a wash of drums in the sidefills and in front, vocals in the sidefills and a hot spot in the center for vocal. There's close to 120 dB around that stage."

Slevin commends the rejection characteristics of singer Brian Johnson's wireless Shure Beta 58A. "It works well when he comes out on this catwalk, which stretches halfway down the arena," notes Slevin. "When the band's pumping away at 120 dB and you've got a vocalist out in the middle of the room, that's when you really have to have control! We seem to be achieving that, so I'm quite happy. The mic's also very reliable. There's a lot of running around and sweat, and it's never in a stand, so it's being shaken around for two hours."

AC/DC endorses Shure microphones, and the setup includes SM57s on the background vocals, SM91s and a Beyer 88 on the kick drum, SM57s on the snare (top and bottom), Audio-Technica ATM35s on the toms and ATM25s on cymbals.

AC/DC

AC/DC is using an E-V X-Array system from DB Show Services (Des Plaines, Ill.); it is similar to the system used for the most recent Rolling Stones tour. "I'm pleasantly surprised; it's got great throw, good zone control," says FOH engineer Boothroyd.

Audio systems engineer Dave Dixon (above) oversees physical alignment of the P.A. system, plus delaying and EQ'ing the system as necessary. The entire system is controlled via 16 XTA 226 crossovers, and Dixon uses a laptop computer with a radio link for remote control. "The XTA units work great with any sound system we've used, and, with the remote, we can communicate in real time and listen and change things right from the listening position," adds Dixon. "It's a very nice little tool." System amplifiers are E-V 3000 models.

Phil Rudd, drums

Brian Johnson (left), vocals, and Angus Young, lead guitar (above and below)

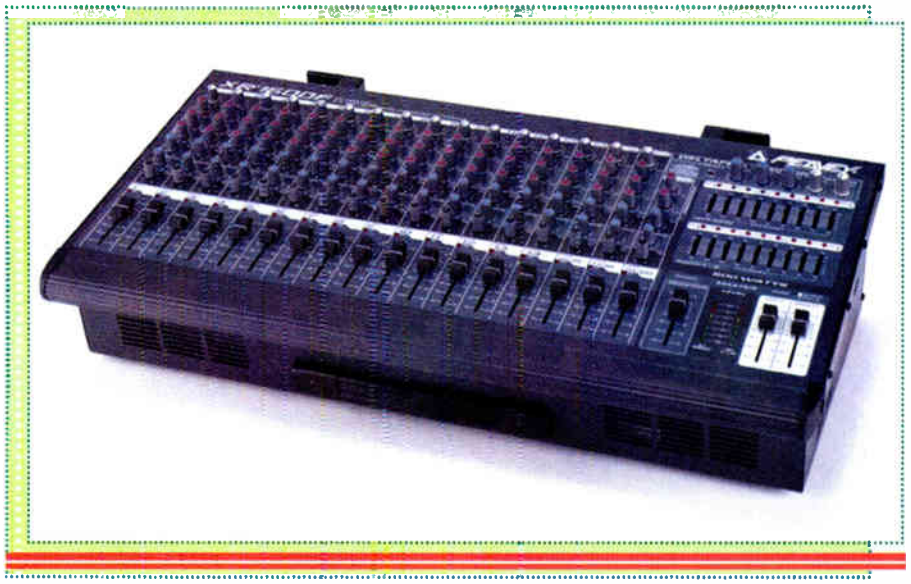
AC/DC is:
Angus Young, lead guitar
Malcolm Young, rhythm guitar
Brian Johnson, vocals
Cliff Williams, bass and
Phil Rudd, drums.

New Sound Reinforcement Products

PEAVEY POWERED MIXER

The XR 1600F from Peavey (www.peavey.com) is a powered 20-channel mixer with three power amps (for driving stereo FOH and a single mix monitor system, for example). Channels 1 to 14 feature discrete low-noise mic preamps, phantom power, line-level ¼-inch inputs and 3-band EQ. Channels 15/16 and 17/18 are stereo. Channel 19/20, also a stereo channel, includes 2-band EQ and stereo tape input/output jacks. An onboard Deltafex™ digital signal processor provides 16 stereo digital effects. The master section has two 9-band graphic equalizers with FLS (an automated feedback location system) and a 7-segment LED level meter for the stereo master out. The XR 1600F can also be used as a stereo amplifier with EQ.

Circle 314 on Product Info Card



MARTIN WAVEFRONT UNDERBALCONY ENCLOSURE

Martin Audio's (www.martinaudio.com) Wavefront WT UB is a compact enclosure designed for theater underbalcony and fill applications. Containing two 6.5-inch cone drivers splayed 60° and three soft-dome, 1-inch HF units in a line array, the WT UB exhibits a wide 120° coverage pattern and is capable of 115dB SPL continuous (121dB peaks). On-axis frequency response is 80-18k Hz ±3 dB, and the passive system includes a 1.2kHz crossover and HF protection circuitry. Constructed of multilaminate birch, the 12kg cabinet features a 45° rear angle for down-facing ceiling mounting, M8 inserts for a dedicated mounting bracket and a pole mount socket. The Neutrik NL4MP connectors allow daisy-chained cabinets to be fed with two discrete signals.

Circle 315 on Product Info Card

STAGE ACCOMPANY ES40 AMP

The ES40 from Stage Accompany (www.stageaccompany.com) is a 2-channel Class-G design amplifier capable of delivering 1.810 watts continuous (2,850 watts peak) per channel at 2 ohms. Featuring individual power supplies, the ES 40 is the latest in SA's Efficiency Series range and has a proprietary damping control circuit that results in a damping factor of 10,000. Control modules specific to various SA loudspeaker models may be inserted in front-accessible slots to ensure maximum output combined with optimized clip/protection characteristics. Additional features include ACE™ active clip monitoring circuitry, DC and short circuit protection, 2-ohm load stability, Easy Bridge mode and Soft Start power-on circuitry.

Circle 316 on Product Info Card

SOUNDCRAFT BROADWAY UPDATES

Soundcraft (www.soundcraft.com) intros new sofware for its Broadway digitally controlled analog mixing console. Version 3 system software adds new crossfade capabilities and an Off-set Group feature, allowing manual changes to a programmed show be written to selected channels as user-defined cues. V. 3 software also integrates an Offline Editor function, a stand-alone PC software package that allows advance programming and editing of new and existing Broadway projects. A new feature allows channels to be given up to four "Family" names, simplifying VCA assignments.

Circle 317 on Product Info Card

CABLE FACTORY DI

Cable Factory (www.cablefactory.com) debuts a new DI in both active and passive versions. Both the P-1 (passive) and AP-1 (active) units are housed in an extruded, blue, anodized, aluminum box containing a Lundahl LL1530 transformer. The AP-1 is selectable active/passive and, in Active mode, provides a 15dB signal boost. The AP-1 is powered by two Ni-Cad batteries, which are rechargeable via phantom power or an external power supply. Both units feature TRS input and loop-through, and XLR output connectors and a dimple-punched recessed ground lift switch. Prices are $99.95 for the P-1, and $129.95 for the AP-1.

Circle 318 on Product Info Card

Searching for a line array?

Watch the theoretical become the practical.

Follow and be part of the development process of the truly evolutionary **KF760 Line Array** online at the dedicated KF760 area of our website.

history
goals
evolution
video
spy photos
threaded discussions
white paper

to come >
- field work
- gigs
- testimonials

EAW
EASTERN ACOUSTIC WORKS

The Laws of Physics | *The Art of Listening*

One Main Street, Whitinsville, MA 01588
800 992 5013 / 508 234 6158
www.eaw.com

CIRCLE #097 ON PRODUCT INFO CARD

EAW is the worldwide leader in the design and manufacture of high performance professional loudspeaker systems.

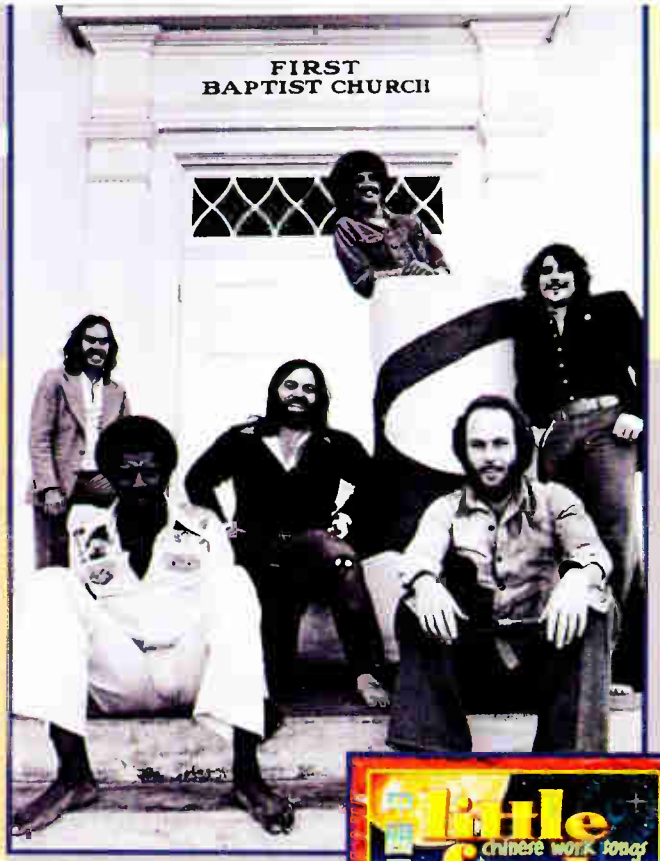
LITTLE FEAT

BILL PAYNE AND PAUL BARRERE TALK ABOUT THEIR 30-YEAR RIDE

by Blair Jackson

The world is a better place for having Little Feat in it. Had they never played another note together after they disbanded in the late '70s following the death of their ostensible leader and frontman, Lowell George, their place in rock history would be secure. Albums such as *Sailin' Shoes*, *Dixie Chicken*, *Time Loves a Hero* and the live *Waiting for Columbus* document a superb, tight, eclectic band that moved easily from New Orleans-inspired funk to rock 'n' roll to jazz-influenced instrumentals, while always retaining a distinctive group sound. In slide guitarist George, lead guitarist Paul Barrere and keyboard wizard Bill Payne, the band had a powerhouse front line of players and singers. And the Little Feat rhythm section—bassist Kenny Gradney, drummer Ritchie Hayward and percussionist Sam Clayton—was second to none when they were really "on."

After Lowell George's death, it was nearly 10 years before the group reconvened for the critically acclaimed album *Let It Roll* in 1988. The band has been touring and making new records ever since, and if anything, they are even better musicians now than they were at the band's commercial peak. They're still a dynamite live attraction that never fails to get an audience up and dancing, and post-Lowell albums such as *Ain't Had Enough Fun* and their most recent studio affair, *Chinese Work Songs*, show that there is still lots of spirit in the band and great songs to be shared.



Mid-'70s Feat

Besides *Chinese Work Songs* (which includes great covers of The Band's "Rag Mama Rag" and Phish's "Sample In a Jar," among other delights), the group's illustrious career was recently celebrated in the superb Rhino Archives box set, *Hotcakes & Outtakes*. The four-CD set beautifully chronicles the entire history of the group and includes a full CD of demos, alternate versions and rarities. The accompanying booklet contains a fine historical essay, session annotation and many photos.

Not long ago, I spoke with Paul Barrere and Bill Payne about the box, *Chinese Work Songs* and recording with Little Feat. They had just returned from a European tour that included a gig in Kosovo, where they played for U.S. troops while wearing flak jackets!

I gather that **Chinese Work Songs** ***was cut mostly live, with the entire band playing at once.***

Bill Payne: Right. We wanted to do it with everyone in the room, with the exception of Sam, who lives a little further away from everyone

—CONTINUED ON PAGE 182

BONE THUGS-N-HARMONY

KEEPING IT REAL

by Chris J. Walker

To the unappreciative ear, most rap artists sound pretty much the same. Those who aren't into hip hop recognize rappers by their unusual names or associated news headlines, not by musical styles. But even those who don't follow the rap game have to admit that Bone Thugs-N-Harmony, whose most recent release is 2000's *BTNHResurrection*, is definitely not your average rap group. The five-man group—consisting of Krayzie, Wish, Flesh, Layzie and Bizzy—has a rapid-fire delivery, which isn't that unusual for rap. But combined with their incredible vocal range, which goes from glass-shattering falsetto to ocean-deep bass, their sheer musicality easily surpasses many of their competing contemporaries.

"They're more musical in comparison to other rap groups," states engineer/producer Aaron Connor, from a suite at Artisan Recording Studios in Hollywood. He's been involved with BTNH for their last three projects and has strong ties with them. "These guys are singers, but don't tell them that! They take a lot of pride in rapping and that's what they consider themselves, but they're singers. They can all sing, and they come up with incredible harmonies that people don't do in rap. That's what sets them apart, but now their style has been copied."

Layzie Bones (aka Steven House), who handles the mid-range vocal and rap parts for the group, recalls Eazy-E, the deceased founder of Ruthless Records, and his initial reaction to the group: "He used to tell us, 'Man, you got a different style.' We'd say, 'Nigga, we rapping; ain't no style.' We'd hit our harmonies together when we'd say our shit. We flip our flows, and we all help each other in the harmonies part of the shit. But we didn't know we had a different style 'til the media brought it to our attention."

Imitation is said to be a form of flattery, but in rap, it's a much-practiced art form, with a lot of BTNH sound-alikes vying for a slice of the pie. Early on, before the Platinum CDs, BTNH attributed their uniqueness to their Cleveland, Ohio, roots. "The Midwest is just waiting for its time to blow," says Layzie from the offices of Ruthless Records in Los Angeles. "The East had theirs, the West got their time and so did the South. But in the Midwest, there's a whole bunch of talent there that the industry hadn't tapped into until we hit. We get the best of all worlds, because we don't just listen to East Coast, West Coast or the South—we listen to everything. That's where we get the upper hand. From Cleveland to Detroit to Chicago, we got some shit jumping out our way."

The aptly titled *BTNHResurrection* came out after a three-year layoff for the group, during which a raft of solo projects and various non-musical issues kept the bandmembers apart. To Connor, "They keep growing and the songs keep getting better, with the songwriting being the most significant difference. Also, the way that we work and the instrumentation keeps getting deeper."

A change on this album is the infusion of inputs from multiple producers. On their previous releases, DJ U-Neek wrote and produced the majority of the tracks, but now, according to Connor, "The songwriting got stronger, because there was more variety to the beats with different flavors from some people."

BTNH's creative process for *BTNHResurrection* involved various producers auditioning rhythm tracks, usually on DAT, for consideration. The "beats," as they're called, could just be a simple groove or a full-blown song. "They would decide on which ones they *felt*," says Connor of the band's selection process. "If they didn't feel a particular beat, they might still keep it and come back to it later. But usually whatever they feel initially inspires them, and they'll start writing lyrics to it immediately. If we need extra music, we'll add that later."

From the artist's perspective, Layzie says, "Sometimes all of us are in the studio together and we'll just vibe to a beat. Somebody will have a concept and we'll just all go off of that. Or Krayzie will drop a hook and everyone else will follow after that with verses. It's just like preparing a meal—you start with the little basics and you just keep adding to it 'til it all comes together. We do tracks ourselves, but right now we're really focusing on working with DJ U-Neek, L.T. Hutton, Jimmy "JT" Thomas and other more solid producers. Krayzie is really the producer in our group; he's made a lot of tracks for our previous CDs. The bottom line for us when it comes to producers is, if they got the shit, some *beat*

—CONTINUED ON PAGE 193

CHEAP TRICK'S "SURRENDER"

by Chris Michie

Formed in 1974 by four musicians from Rockford, Ill., Cheap Trick possessed all the ingredients necessary for success: experience, musical chops, quality material, a ferocious work ethic and an instantly recognizable image. The zany onstage persona of guitarist Rick Nielsen played well against the studly good looks of bassist Tom Petersson, while singer Robin Zander's choirboy-in-a-strip-club exuberance only emphasized the air of world-weary sophistication exuded by mustachioed drummer Bun E. Carlos. And they not only looked good, they could play. Taking on Midwest booking agent Ken Adamany as manager, the quartet worked a grueling apprenticeship, playing four or five nights a week on the club circuit, interspersed with supporting act slots for such arena-filling acts as AC/DC, Kiss, Rush, Queen, The Kinks and Ted Nugent.

The hard work paid off. In 1976, A&R executive Tom Werman signed Cheap Trick to Epic, and the band recorded their eponymous first album with producer Jack Douglas. It sold a modest 150,000 copies in the U.S. but went Gold in Japan, a pattern that was to repeat throughout the band's career. The follow-up LP, 1977's *In Color*, which was produced by Werman, only just penetrated the U.S. album charts, though it did feature a song that would figure large in the band's future—"I Want You to Want Me." Finally, the first single from the third album, *Heaven Tonight*, became the group's first 45 to make the U.S. singles charts. Though it peaked at a lowly Number 62 in September 1978, "Surrender" undoubtedly paved the way for the group's breakthrough single—the live version of "I Want You to Want Me," which reached Number 7 in the U.S. Sales of the *Live at Budokan* album eventually reached Platinum status in the U.S. (triple-Platinum in Japan).

Recording for *Heaven Tonight* began in January 1978 at Sound City in Van Nuys, Calif. Producer Werman, who was based at Epic's headquarters in New York, recruited engineer Gary Ladinsky through a round of phone interviews. "I was given the name of four engineers who worked at the Record Plant a lot by Rose Mann, who was the manager," recalls Werman. "I remember calling each one of them and thinking that Gary sounded the best. He was the least boastful, the most honest and down-to-earth. I just liked the way he sounded, so I said, 'Okay, you'll do the record.'" Ladinsky had been on staff at the Record Plant and had become an independent in around 1975 or '76. "But I did most of my stuff out of Record Plant," Ladinsky says. "I just knew the place so well; I knew the facility, knew the staff. It was comfortable to do stuff there.

PHOTO: REID MILES

From the album sleeve: (L to R) Rick Nielsen, Bun E. Carlos, Robin Zander, Tom Petersson

"I don't remember how we ended up at Sound City," Ladinsky continues. "I think we were just looking for a big room, and Sound City had a reputation as being a good rock 'n' roll room, and it had a Neve. I don't think I'd ever worked there before. We just went in there and scoped it out, probably set up the way they suggested, but we ended up moving things around a lot."

In fact, it took Ladinsky and Werman about three days to get the drums sorted out to their satisfaction. The drum-miking setup included both close and distant mics, and, more than two decades later, Ladinsky can only guess at the mic selection, but it probably included a Shure SM57 on the snare or an AKG 451. "There could have been two kick drum mics," notes Ladinsky, naming an AKG D-12 and a 421 as the most likely candidates. Tom mics were likely Sennheiser 421s and overheads were probably 451s or 414s. In addition to the close mics, Ladinsky remembers using two room mics. "And then I had a shotgun mic in the room," he adds. "But I didn't use much of it, at least not on 'Surrender,' I know. It's more of an in-your-face kind of a record."

Tom Petersson's 8- and 12-string basses also posed some recording challenges. "It was tough to get the sound decent, because Werman wanted to make a guitar record—that's what he makes, guitar records," recalls Ladinsky. "And it's hard to get a bass that needs to really have some definition—to sound like a bass—when there's all that information. I remember we tried every combination of amplifiers and we finally settled on one cabinet, which had a single 15 in it, turned down soft." That was recorded on track 8, with a DI signal on track 9.

Rick Nielsen's original guitar track was recorded on 10, and was supplemented on January 11 with overdubbed rhythm guitars on 11 and 12. "Looking at the track sheet, it says 'shower,' so we probably recorded it in the shower," notes Ladinsky of the stereo pair. "They had a bunch of little rooms on the side of the studio, and we put amps in the different rooms to vary the sound."

"We did all kinds of experimental setups," adds Werman. "We recorded in the bathroom, we recorded in the hall, we used the shotgun mic for the bass strung up on the ceiling pointing at the cabinet. But I think 'Surrender' was pretty straightforward." An additional rhythm guitar part was added on January 13, two days after the rhythm guitar overdubs.

By the time the vocal overdubs were recorded on February 21, the sessions had moved to Studio B at the Record Plant. Ladinsky remembers using a Neumann 47 FET to record Robin Zander's vocals, compressed through a UREI 1176. "I found that just worked really well with him," he notes. "We double-tracked everything, and in the mix I used a 65-milliseconds delay, just on the lead, probably an early Eventide device." Zander also sang a harmony part on the verses and choruses (track 18).

As the track sheet indicates, multiple vocal parts were stacked for the choruses. "I know Rick and Robin sang together, and then we doubled them,"

HOT CD-R COOL PRICE

Welcome to the new CDR830 BurnIT™, a studio quality HHB CD recorder for a lot less money than you might think. When it comes to sound quality, there are no short cuts, no gimmicks. The BurnIT uses precision 24-bit A-D converters, 24-bit Delta-Sigma D-A converters and an advanced laser assembly to deliver recordings of unrivalled accuracy.

BurnIT™
CDR830 COMPACT DISC RECORDER

It's easy to make copies from CD, DAT and MiniDisc via the SCMS-free digital inputs, and the BurnIT records on standard CD-R and CD-RW media.

You can even name your discs, tracks and artists with the BurnIT's CD Text facility.

OK, so it's a hot CD-R. But just how cool is the BurnIT's price? Find out by calling an HHB dealer today and prepare yourself for a pleasant surprise.

HHB Communications USA LLC · 1410 Centinela Avenue, Los Angeles, CA 90025-2501, USA
Tel: 310 319 1111 · Fax: 310 319 1311 · E-Mail: sales@hhbusa.com

HHB Communications Canada Ltd · 260 King Street East, Toronto, Ontario M5A 4L5, Canada
Tel: 416 867 9000 · Fax: 416 867 1080 · E-Mail: sales@hhbcanada.com

HHB Communications Ltd · 73-75 Scrubs Lane, London NW10 6QU
Tel: 020 8962 5000 · Fax: 020 8962 5050 · E-Mail: sales@hhb.co.uk

www.hhbusa.com

HHB

FIRST WE LISTEN

CIRCLE #098 ON PRODUCT INFO CARD

Ladinsky recalls. "And that was on the first couple of choruses. For the out chorus, they were singing everything—'Surrender,' 'mommy's alright, daddy's alright.' And then when it came to the out chorus, they did 'Surrenders' on two separate other tracks."

Though the 24-track was getting pretty full by this point, Ladinsky doubts he did any compositing of the vocal tracks. "I don't think there's more than just two voices per track, so there's probably only four voices, left and right," he says of the background vocal tracks (19 and 20). "But the hardest thing I remember doing was, they decided at the end, after all the backgrounds were completed, they wanted to go back and go, 'Oh, let's put our names in there. Let's go "Bun E.'s alright, Tommy's alright, Robin's alright, Rick's alright, we're all alright, we're all alright."' And that was scary, in that I had to punch in on the tracks that we already had recorded vocals and stacked the vocals on. I wasn't even sure they knew what they were doing. I remember working with The Eagles once, and they'd started doing these really close drop-ins—we used to just cut leader into the master tape so they wouldn't record back into something you want to save. And I might have done that on 'Surrender,' I don't remember. I don't think so. It probably was like a half a breath, get in, get out."

On February 25, Jai Winding added a stereo piano overdub on tracks 22 and 23. "The only place I can really hear it is on the bridge," says Ladinsky. "I know we just compressed the crap out of it and just put it in to reinforce the rhythm guitar. In the chorus, it was just an eighth-note part. Really just a simple, simple part."

According to Werman, the synthesizer part (marked as a "string ensemble" on track 7) was based on an idea from *Who's Next*. "I copped as much as I could from The Who," Werman laughingly admits. The backing track had been recorded without a click, so the loop-based synthesizer part tended to drift against the track tempo. "I know we had to stop a few times to punch in," says Ladinsky. Werman added tambourine on track 24, and the song was ready to mix.

Ladinsky remembers the Record Plant's API console, but he is less sure about the monitor setup. The main monitors were custom Record Plant models with JBL driver and wooden horns, but he thinks the record was probably mixed on Auratones. "The band wasn't even with us when we mixed. They were on tour—I think they might even have been in Japan. But they left as soon as they finished all the overdubs, and Tom and I and [manager] Ken Adamany were the only ones there for the mix, plus assistant engineer Mike Beiriger."

Ladinsky's notes from the mix session include his EQ settings on various tracks (including a Pultec on the snare), aux bus assignments and settings, and control parameters for limiting the lead vocal and its double through a pair of 1176s. "I also used the B&B equalizer on the rhythm guitar, the middle guitar. I think it just fattened it up for when it popped in the chorus," he recalls. The B&B EQ was a module that slotted into a cage like the dbx and Kepex units. "I seem to remember they were orange," says Ladinsky. "And they were pretty versatile. They had at least three bands. It wasn't parametric or anything like that,

Cool Spins

The Mix Staff Members Pick Their Current Favorites

Meat Puppets: *Golden Lies* (Breaking/Atlantic)

Twenty years down the line, Curt Kirkwood is the only remaining original member of the Meat Puppets, but his idiosyncratic vision is strong enough to carry the day and make this first new disc in five years a very strong Meat Puppets statement. The typically eclectic outing has a grand sonic sweep to it, with an avalanche of Kirkwood's and Kyle Ellison's guitars droning, ringing, squealing and fuzzing through most tracks; soaring above the ultrasturdy rhythm section of bassist Andrew Duplantis and drummer Shandon Sahm (son of the late, great Doug Sahm, to whom the CD is dedicated). At turns majestically brooding and surprisingly light and poppy, *Golden Lies* makes for a fascinating journey. Kirkwood's lyrics have never been more interesting and self-revealing. The album has lots of textural variation from track to track, and the vocal blend of the guitarists is natural and appealing. It's easy to imagine some of these tracks ("Armed and Stupid," "Take Off Your Clothes," "Tarantula") getting serious "Modern Rock" (hey, it's not *my* label for it) airplay, and one or two songs—such as "Endless Wave"—could conceivably make it onto (horror of horrors!) Triple-A formats. Certainly it's a CD that deserves to be heard. A triumph for the Austin-based band!

Producers: Curt Kirkwood, Paul Leary (two cuts). Engineers: Kyle Ellison, Jared Tuten, Paul Leary, Stuart Sullivan, John Plymale, Marcus Ulibari. Studios: Studio X (Austin), House of Blues Studio (Memphis), Brooklyn Bridge (Austin), Overdub Lane (Durham, NC), Pedernales Studio (Pedernales, TX), Westlake Studios (L.A.).

—Blair Jackson

PJ Harvey: *Stories from the City, Stories from the Sea* (Island)

She just keeps getting better. PJ Harvey manages to perfectly balance the soul of folk and blues with the most edgy and slick modern production techniques around. *Stories from the City* has Harvey

making a break with longtime producer/collaborator Flood. The lack of Flood's heavy-handed, Nitzer Ebb-style of production bodes no ill effects and actually helps Harvey breathe some new life into her sound. Thematically, *Stories from the City* feels like equal parts of a foreigner's unique perspective on city life in the good ol' USA and Harvey becoming comfort-

—CONTINUED ON PAGE 194

Packed

Ever since Rupert Neve* designed the first generation of Focusrite EQ and Dynamics modules, they have been the choice of many successful recording engineers and producers.

The ISA 430 repackages these classic designs in one comprehensive unit. Versatile routing and access to the signal processing blocks means you can split the EQ and compressor into two separate signal paths for simultaneous use on two tracks. Or use them both together with the original classic transformer-coupled microphone preamp for the best Total Input Channel money can buy.

Cap it off with the AES/EBU 24 bit/96 kHz optional **Digital Output Stage**, which can also be used as an independent A/D Converter. This is the best of Focusrite signal processing packed into one unit. Hence we've dubbed the ISA 430 the "Producer Pack".

Ask for a demonstration before your next session.

ISA 430 Producer Pack

"The ISA 430 redefines the word 'flexible' and has the power and quality to live up to what it promises. Kudos to Focusrite for a job well done."
Mitch Gallagher – EQ Magazine July 2000

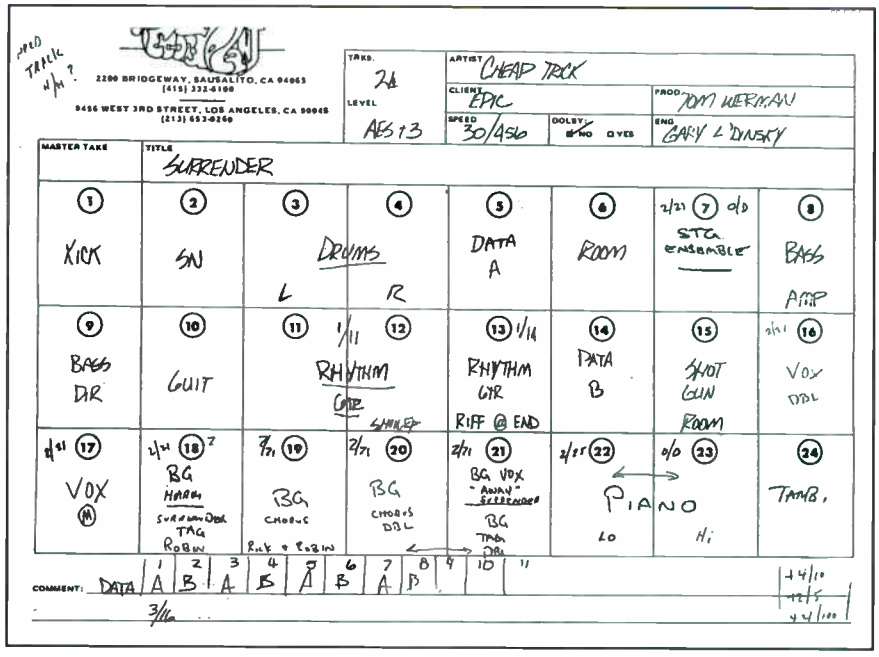
$3,495srp
$3,990 with digital output

*Rupert Neve does not design for, nor is affiliated with Focusrite Audio Engineering Ltd.

PRODUCED IN THE UK BY
Focusrite
www.focusriteusa.com

DISTRIBUTED IN NORTH AMERICA BY
www.digidesign.com
digidesign
1.800.333.2137, code 682

CIRCLE #099 ON PRODUCT INFO CARD



Track sheet for "Surrender" by Cheap Trick

but pretty radical compared to the API 550A board EQ."

For reverbs, Ladinsky set up a live chamber on send 1, with an EMT 250 ("R2D2") on send 2. "I know I used the 250 when it first came out," he recalls. "But I didn't use it as echo, I used it in the Chorus mode. I don't remember what I put it on—I could have put it on everything. [Laughs.] I was kind of a fan of that piece of gear. I bought one later, and that's how I started my company [Design FX Audio]." On send 3, Ladinsky set up a phaser effect with an Eventide unit. "I don't know what I used it on," he says. "I probably put a little bit on background vocals and possibly rhythm guitar."

Ladinsky used the Allison automation system then current at the Record Plant, which meant that two tracks on the 24-track had to be erased for the automation data. "I know I had to erase the hi-hat [track 5] in order to have a data track, and I erased something else to get another open track to bounce back and forth," recalls Ladinsky. "There was enough hi-hat on the overheads and something had to be sacrificed. The automation helped mostly in muting stuff, where you pop things in and out. Especially in this song, because it starts off with just the drums, and then the guitars kick in and the vocals pop in and out." As most Allison users have noted, the system was somewhat primitive, and, after a few passes back and forth, the automation cue points would slip. The finished album, which was mixed to ¼-inch, 30 ips non-Dolby, was mastered by George Marino in New York with both Ladinsky and Werman in attendance. "I ended up going to New York quite a bit on almost every record Tom and I did," says Ladinsky.

As Werman recalls, "Surrender" was a modest hit. "I think it did well, but it didn't do that well at first on radio, and then it became an anthem later on. It did well on album radio." In July, *Heaven Tonight* reached Number 48 in the U.S. album charts and was the band's first record to reach Platinum sales in Japan, no doubt aided by their first—and wildly successful—tour of Japan in February.

As Ladinsky relates, "The record came out, and, all of sudden, I'm hearing from Tom, 'We're going to be doing another studio record, but they're doing this live record first.' I think it started out as a promotional record, and then they decided to make it a full record. As I remember, I was in New York doing some other work, and I went by the Record Plant where they were working with Jack Douglas and Jay Messina, doing overdubs and cleaning up the tapes. At some point, management called me and said, 'We want you to mix *Live at Budokan*.' So they came to L.A. Not the band, but just Ken Adamany came. I don't even think Tom [Werman] was there. Tom was probably doing something else. And we mixed about seven of the songs in three days."

The unexpected success of *Live at Budokan* led to Ladinsky being offered more work, but he also spent a lot of time in the studio with Werman. "We had a good relationship working with

Professional Audio Design Inc.

A Pre-Owned SSL Console

Hundreds Of Hits Already Produced. Thousands More Still To Come.

As the great studios of the world refit with new SL 9000 SuperAnalogue™ and Axiom-MT digital consoles, it's never been easier to buy a classic, pre-owned SL 4000.

Professional Audio Design is North America's exclusive factory-authorized supplier of pre-owned SSL consoles, each sold with a full warranty and on-site commissioning by our SSL-trained technicians.

Every console is prepared for sale in strict accordance with factory procedures and we can also undertake custom upgrades, expansions and reconfigurations to customers' requirements.

Professional Audio Design always has a wide choice of pre-owned SSL consoles in stock and favourable financing is available. Call today or visit our web site for a full list.

www.usedssl.com

Professional Audio Design, 357 Liberty Street, Rockland, MA 02370 Tel: 781-982-2600 Fax: 781-982-2610 info@proaudiodesign.com

CIRCLE #101 ON PRODUCT INFO CARD

each other," says Ladinsky. "We were like brothers together. After *Heaven Tonight*, I think we went and did Molly Hatchet four or five months later. Tom and I did about 12 records together."

Ladinsky dropped out of the music studio world in the mid- to late '80s. "I stopped doing records and switched over to doing films and TV stuff," he explains. "I did a lot of films, large orchestra and big band type recordings, which was great, totally different." In 1983, Ladinsky started the Design FX Audio equipment rental company, a business idea that had been germinated during the *Heaven Tonight* mix sessions, for which Ladinsky had rented the EMT 250. "I said, 'Tom, let's buy one of these things. We'll rent it to ourselves at half the price, and we'll have it to use,'" recalls Ladinsky. "So, I borrowed the money, and I just sent away and bought it. And what happened was, we used it on all our records, and then people kept calling me to use it. I was working at the Record Plant and just kept it there, and a lot of the people at the Record Plant wanted to use it, so I just started renting it. And, as they say, the rest is history. Now I'm a slave to the equipment." [Laughs.]

The hardest thing I remember doing was, they wanted to go back and go, "Bun E.'s alright, Tommy's alright, Robin's alright, Rick's alright, we're all alright, we're all alright." I wasn't even sure they knew what they were doing.

—Gary Ladinsky

More than 20 years later, Ladinsky remembers the Cheap Trick sessions with particular fondness. "The guys were great, really good guys," he says. "They were fun, they knew what they

Loud! - The Voice of the Pro Audio Community

The latest news and information for audio professionals is now delivered FREE to your desktop.

- *Get product reviews, tutorials and hot news*
- *See the latest trends in the audio market*
- *View streaming product demos*
- *Win prizes*

Sign up now!

http://www.digitalmedianet.com/register.htm

Digital Media **NET**
Where the Creative Community Meets

wanted to put on the record. Tom [Werman] was in his element, and he knew exactly what he wanted to do. Everything went really smooth. I mean, I'd worked on Deep Purple and Black Sabbath—I had done some heavy rock 'n' roll stuff—but this was more pop-y and fun. The guys could sing and play and were quite entertaining." Werman agrees. "*Heaven Tonight* was my favorite record that I've ever done," he says. ■

—FROM PAGE 172, LITTLE FEAT

else. It sounds like a no-brainer to work that way, but a lot of times we'll go in and record with just two or three people at a time. But this was sitting in one room together.

Paul Barrere: This was at my house, in a converted garage that's almost like a studio, but not really. [Laughs.] We brought in an 02R and a Pro Tools system that [engineer] Nathaniel Kunkel had. Before we started the project, we were discussing what format to use, because Billy and I both own DA-38s and that's what we did *Under the Radar* on, but Nathaniel had this Pro Tools system that he swore he could make it work like a 24-track machine and it would be quick, it would be simple. And he was right. He knows his way around those things. I was amazed at how good he got it sounding so quickly.

Payne: There were a few fixes and we overdubbed percussion, both Sam and Lenny Castro, and we overdubbed the horns, too.

Barrere: We had to clear some space in the room to get those guys in. It would've been a problem to have so many open mics in the room if we'd had horns and percussion in at the same time as the band. Fred [Tackett, second guitarist] uses an old Deluxe amp and I use an old Vibrolux, and all we had to do was put some stuff up between them and throw furniture pads over them and those two mics, and then all the drum mics were the only real live mics in the room. Kenny [Gradney] was going direct, and Billy was mostly going direct.

Did it change the dynamic of the group not having Sam Clayton's percussion in there? It's so much a part of the Little Feat sound...

Payne: It is. We had to sort of imagine it being there. There was a leap of faith on "Just Another Sunday" when we hit the instrumental portion where the beat breaks down right before we take off to Fred's guitar solo. I asked Ritchie [Hayward] to play a quasi half-time feel and leave it as open as he could, because there would be percussion and other things going in there, and it took him a second or two to adjust to that.

You guys tend to record songs and then take them out and play them live, rather than vice versa, right?

Barrere: Actually, it works both ways. "Eula" [on *Chinese Work Songs*] is a song that goes back to the *Ain't Had Enough Fun* days that, for whatever reasons, never captured our fancy back then. The basic track was recorded as a demo on my old Fostex 8-track, so what we did was take that basic track—the guitar and vocals—and passed it over to the Pro Tools system, and then we put in Billy playing this old acoustic piano I have in my living room...

Payne: That was almost by accident. I was walking to the kitchen and I said, "Hey, does this piano work?"

Barrere: It was just out of tune enough...[Laughs.] Then we put Ritchie and Kenny and Sam on and some vocal overdubs.

I really like the version of The Band's "Rag Mama Rag." It totally sounds like a Little Feat song...

Payne: Yeah, we sussed that tune out. A lot of what this record was about, maybe not consciously, was influences. There's Dylan on there, some blues. And the influences go back and forth. We've certainly influenced Phish, or they said that we have, and they've influenced us. I'm not sure we influenced The Band in any way, but Levon Helm had a huge smile on his face when he heard we'd cut the track and when he actually heard the song.

Let's talk about the box. One of the things that always struck me about Little Feat is that you always made good records—you were able to translate the band's energy pretty well in the studio. You were able to be loose enough to be the way you were live but tight enough to make solid records. Why is that?

Payne: That's a good question. Certainly we've been accused of not being as good in the studio as we were live, but I think we made some good records; they stand up well.

My background, other than playing classical music, is that I've done an extraordinary amount of session work. I've often told people that whether you're writing music or recording music, it's a lot like sneaking up on a glass of water to get a drink. You have to assume a role; that's how I tricked myself into it. A lot of people are cam-

PORTABLE ONE DUAL DOMAIN

Digital+Analog+Interface Audio Test

True Dual Domain Audio Testing at an Attractive Price Point

The Portable One Dual Domain is the complete portable test solution for analog and digital audio and the AES/EBU/SPDIF serial digital interface. As the first portable Dual Domain® audio analyzer, it includes separate and independent hardware for analog, digital and interface signal generation and measurement.

- Comprehensive analog audio analyzer
- True digital domain analyzer with -140 dB residual noise
- Independent analog & digital audio generators and analyzers
- Generate and measure interface jitter
- Digital interface analyzer
- View AES/EBU status bits
- Internal save and recall of 30 test setups
- Loudspeaker monitor for digital & analog audio signals

Audio precision

PO Box 2209
Beaverton, Oregon 97075-2209
Tel: (503) 627-0832 Fax: (503) 641-8906
US Toll Free: 1-800-231-7350
Email: sales@audioprecision.com

Our worldwide force of Audio Precision representatives will be pleased to demonstrate the many advantages of the Portable One Dual Domain

INTERNATIONAL DISTRIBUTORS: **Australia:** VICOM Australia Pty. Ltd., Tel: 3 9563 7844; **Austria:** ELSINCO GmbH, Tel: (1) 865 04 00; **Belgium:** Heynen NV, Tel: 11 60 09 09; **Brazil:** INTERWAVE LTDA., Tel: (21)494-2155; **Bulgaria:** ELSINCO Rep. Office Sofia, Tel: (2)958 12 45; **Canada:** GERRAUDIO Distribution, Tel: (613) 342-6999; **China, Hong Kong:** A C E (Int'l) Co. Ltd., Tel: 2424-0387; S & V Instruments Co. Ltd, Tel: 2833 9987; **Croatia:** ELSINCO Rep. Office Zagreb Tel: 1 615 34 50; **Czech Republic:** ELSINCO Praha spol. s r.o., Tel: (2) 49 66 89; **Denmark:** npn Elektronikaps. Tel: 86 57 15 11; **Finland:** Genelec OY Tel: 17 813 311; **France:** ETS Mesureur, Tel: (1) 45 83 66 41; **Germany:** RTW GmbH & Co. KG., Tel: 221 70913-0; **Greece:** KEM Electronics Ltd., Tel: 1 6748514/5; **Hungary:** ELSINCO Budapest KFT, Tel: (1) 339 0000; **India:** Comcon Industries, Tel: 11-6311606; **Israel:** Dan-El Technologies, Ltd., Tel: 3-647 8770; **Italy:** Audio Link s.r.l., Tel: 521 648723; **Japan:** TOYO Corporation, Tel: 3 (5688) 6800; **Korea:** B&P International Co., Ltd., Tel: 2 546-1457; **Malaysia:** Test Measurement & Engineering Sdn. (Selangor), Tel: 3 734 1017; Test Measurement & Engineering Sdn. (Penang), Tel: 4 6422088; **Netherlands:** Heynen B.V., Tel: 485 55 09 09; **New Zealand:** Audio & Video Wholesalers, Tel: 9 279 7206; **Norway:** Lydconsult, Tel: 47-69-178050; **Poland:** ELSINCO Polska sp. z o.o., Tel: (22) 39 69 79; **Portugal:** Acutron Electroacustica Lda., Tel: 1 940 1785; **Singapore:** TME Systems Pte Ltd.,Tel: 747-7234; **Slovakia:** ELSINCO Slovensko s.r.o., Tel: (7) 784 165; **Slovenia:** ELSINCO d.o.o., (61) 133 62 79; **South Africa:** SOUNDFUSION MFG., Tel: 11 477-1315; **Spain:** Alava Ingenieros., Tel: 91 567 97 00; **Sweden:** TTS Tal & Ton Studioteknik AB Tel: 31 52 51 50; **Switzerland:** Dr. W.A.Gunther Audio Systems AG, Tel: 1 910 45 45; **Taiwan, R.O.C.:** Double Advance Tech., Tel: 2 2596 0696; **Thailand:** Massworld Company Ltd.,Tel: 2-294-4930; **United Kingdom:** Thurlby Thandar Instruments, Ltd., Tel:(1480)412451

(08-12-98)B&B

era-shy, for example, and a lot of people get weird when the red light is on in the studio or they have to perform and there isn't the ambience of a crowd or crowd noise. And the mix you're listening to usually is a little strange. So I learned in the early days, if you don't like what you hear in the phones, go in the control room and fix it until you do. But, also, recording is a process, and every time you go into the studio, you both learn and forget bits and pieces of information about it. Every song, every record, whatever growth period you're at, takes its toll and adds to your glory when you go into the studio.

Every song, every record, whatever growth period you're at, takes its toll and adds to your glory when you go into the studio.

— *Bill Payne*

Beyond that, Lowell was a guy who liked the studio and who knew a lot about making records and cared about it, usually.

The rise of Little Feat coincides with the rise, for better or for worse, of bands recording in multiple studios. Here's* Sailin' Shoes *being done at Amigo and Sunset Sound and Sun West...

Payne: Well, a moving target is hard to hit... [Laughs.]

How much of that was the influence of people like [Warner Bros. producers] Russ Titelman and Ted Templeman wanting to work in different places, and how much of it was the peripatetic world you lived in or not being able to get people together?

Payne: It might have had something to do with those guys, but I'd lay it more on Lowell. He was a very bright guy who loved to experiment, and that included experimenting with recording in different rooms with different sounds. He was very aware of room sounds and what they might do to the drums or to a guitar or anything. That was one of the strengths of Lowell—he wasn't afraid to

The pearl of great post...

You've Lusted for it for years.

A sound effects server for your editors - a production music server for your producers - a video and graphics server for still pictures, video, and logos. A way to fully utillize all your production assets to make your facility run like it should! There really is one system that can do all of this - ServerSound from mSoft Inc., the "pearl of great post" at cutting edge facilities worldwide.

SERVERSOUND™

mSoft

Toll Free: 800-489-9314 · Phone: 818-716-7081 · www.msoftinc.com

use that mystery part of an artist and say, "Let's make it even more mysterious and more eclectic and take some shots at doing things differently."

I gather he was somewhat autocratic in the studio.

Barrere: He was and he wasn't. Lowell was very strange. He would dangle the carrot out in front of you and get you to go for stuff and let you feel like you were actually going to have a say in some things, and then, lo and behold, things would change. He also did a lot of work on his own late at night in studios, so things were rarely the way you left them the night before when you'd been there. [Laughs.]

You guys were lucky in that you came along at a time when radio was pretty open, so there weren't these insane expectations about what was a "radio-friendly" song. It was a more experimental era in all ways.

Payne: That's a very interesting point to bring up. Pop music's undercurrents have always been there. It was indeed a more experimental time. What was going on at Warner Bros. is that we were, along with Van Dyke Parks and Ry Cooder and Randy Newman, Dr. John and, later, Bonnie Raitt, allowed a freedom to do what we did without having to worry about how many records we were going to sell. So that existed, but it existed within the realm of artists and acts that were bringing in money for the company. That is not a situation that exists today. Artist development? What the hell is that? There is no artist development anymore, so how do these labels expect to be afloat 10 or 15 years from now? And now you've got all the Internet stuff happening with Napster and all that, and the labels really don't know what hit 'em.

They're freakin' out!

Payne: They should be, because they haven't been paying attention to much of anything for years other than the bottom line and trying to make giant hit albums. It's biting them in the ass, and there isn't anything they can do about it at this point.

In an odd way, we may be looking at a lot more freedom than we had back then, forgetting radio, because that has become so restrictive. There's so much stuff out there now, and new ways of doing things and promoting things and getting the music out, but you have to look a lot harder for it. The good part of that is that people *are* looking for it and bypassing conventional things.

Barrere: We're all learning how to do it. Young people are probably ahead of the curve, technologically, and people my age are a little slower to get on it.

Payne: I think we have a better chance than we did 10 years ago, but it's such a free-for-all out there I wouldn't dare predict what's going to happen. But the Pandora's Box is open.

Tell me a little about working with Ted Templeman. He made lots of great records in the '70s. What was it about his personality that allowed him to work with a headstrong guy like Lowell and so many other gifted artists?

Barrere: The thing I liked about Ted is that when Billy and I went to his office before we started *Time Loves a Hero*, and he was the producer of the record and he had Don Landee, who was a wonderful engineer, Ted gave us a lot of freedom. He was great at rhythm sections and talking to drummers and percussionists and getting them on the same page and finding the groove fairly fast. And Don was always right there getting the great sounds on 'em. He was also full of good ideas—like I remember he suggested that on "Keeping Up With the Joneses" that we go for that Ray Charles string sound, and then Billy thought of the idea of, since we've got the string section there, why not put that crazy Marx Brothers ending on "Old Folks Boogie"? Ted's a very musical cat, and

The first name in MIDI.

For more than a decade, one company has remained at the forefront of the evolution of MIDI, making innovative, cost-effective solutions with legendary dependability. Our new best-selling USB MIDISPORT family is yet another step in our commitment to bring you the latest tools with the latest technology, without the latest headaches. It's no accident we're the world leader in MIDI.

USB MIDISPORT 8x8/s - 8 in/ 8 out MIDI interface with SMPTE.

USB MIDISPORT 4x4 - 4 in/ 4 out MIDI interface.

USB MIDISPORT 2x2 - 2 in/ 2 out MIDI interface.

USB MIDISPORT 1x1 - 1 in/ 1 out MIDI interface.

midiman

Leading the MIDI World.

The MIDISPORT line is compatible with: Mac G4s, G3s, iMacs and PCs.

800-969-6434 • WWW.MIDIMAN.COM • EMAIL: INFO@MIDIMAN.COM

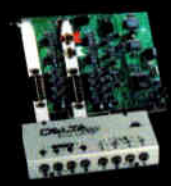
The last word in Digital Audio.

We know that choosing your recording gear is serious business. We feel the same way about making your gear. That's why we're proud that thousands of you have chosen to make a Delta card part of your recording set up. Whether you chose us based on reputation, specs, compatibility, or just after talking with us, our message is definitely getting out: your success is our success. After all, we're here for the same reason-- to make music better.

DELTA 1010 - 10 in/ 10 out PCI digital recording system.

DELTA 1010-AI - ADAT/Litepipe I/O for DELTA 1010

DMP2 - 2 channel high-performance mic preamp direct box.



DELTA 66 & DELTA 44 - multi I/O recording interfaces.

AUDIO

Making music better.

The Delta product lines features full 24bit 96kHz operation. We are proud to offer the following driver support:

W M NT A² E G DX L

800-778-3241 • WWW.M-AUDIO.COM • EMAIL: INFO@M-AUDIO.COM

CIRCLE #111 ON PRODUCT INFO CARD

he had a nice, easygoing nature. He managed to keep things going.

Payne: I would just add that Don Landee was always there to help you out and work with you. A lot of times, engineers would stake out their turf and say, "This is how it's done." But what was great about Don, and people like Nathaniel [Kunkel] and George Massenburg, too, is they're willing to meet you halfway or ask you what it is you're after and then help you get it. It doesn't mean that what I'm looking for is necessarily the best idea, but they don't prejudge it.

I remember one time, during a period when everybody was using the Rhodes, I really loved these certain sounds I got out of a Wurlitzer—it had an explosive quality in rehearsal that we couldn't seem to get in the studio. But Don really listened to what I was saying, and he figured out how to add the compression I needed to get that strong, huge sound I was looking for. A lot of engineers wouldn't take the time to do that.

You guys were working with George Massenburg before he was GEORGE MASSENBURG, revered audio guru!

Payne: [Laughs.] Well, he was already doing great stuff, though he wasn't well known. He'd designed the parametric equalizer. I had no idea how brilliant he was, quite honestly; that came later. Paul, wouldn't you say he's a really easygoing guy?

Barrere: Extremely easygoing, but also kind of a prankster. He fit in really well with Little Feat, especially with some of the antics of Lowell and myself. It's interesting—on this box set there's the original "All That You Dream." That was something that when we were back in Maryland [at Blue Seas Studio, where Massenburg was an engineer] doing *Feats Don't Fail Me Now*, I kept trying to get Lowell to listen to the song, and he just said, "Ehhh, go away kid, you bother me!" shit, which I got a lot of from him, 'cause he was sort of like an older brother to me, since he knew me since I was a 12-year-old punk. But George [Massenburg] liked the song, and he said, "Come on in tonight and we'll record it." So I got Ritchie and we made a demo of the song. And then for about a year George would be in the studio whistling the hook, and finally Lowell said, "What *is* that?" So George played him the demo, and Lowell says, "Oh, that *is* a good song!" That son-of-a-bitch! [Laughs.] We ended up cutting the song eventually, and then Lowell thought he could

make it into a single, and about $80,000 later, it was just about the same as the way we did it originally for the record. [Laughs.]

What was Blue Seas like? It must have been odd to go from recording in L.A. to Maryland?

Payne: Well...it was a chance to...heal. [Laughs.]

Barrere: [Laughs.] He's right.

Payne: We had all sorts of horseshit going on around the time of that record. We were kind of burned out and had various problems. We were kind of scattered. Lowell and I were supposed to be in a band with John Sebastian and Don Everly, some kind of super band that thankfully fizzled out before it had a chance to go anywhere. I was with the Doobie Brothers on a tour called "What Once Were Vices Now Are Habits" and about two weeks into that I respectfully bailed out and started touring with Bonnie Raitt. Lowell was in New Orleans working with The Meters and Allen Toussaint on a Robert Palmer record called *Sneakin' Sally Through the Alley*—a wonderful record—and Bob Cavallo, who was our manager at the time, spoke to Steve Boone, who had also been with the Lovin' Spoonful, and Steve had a studio back in Maryland, Blue Seas. It was Cavallo's idea to re-center the band back in Baltimore; give us complete freedom to record and do what we wanted, put us in an atmosphere away from Los Angeles, and by God, it worked. That's a good record.

The current Feat lineup (clockwise from left): Kenny Gradney, Fred Tackett, Bill Payne, Paul Barrere, Ritchie Hayward, Shaun Murphy, Sam Clayton

Do you think Lowell picked up much from Templeman in terms of being a producer?

Barrere: I think he definitely got some smarts from his dealings with Ted and with Russ [Titelman] and the engineers, especially Don. He also picked up a lot from Van Dyke Parks, including getting that sound on the slide, which was a Russ Titelman-Van Dyke idea, using dual compressors and all that.

Payne: And that came through Ry Cooder.

Barrere: But Lowell was a very smart cat and he picked up a lot. I'm sure he picked up some miking techniques from George Massenburg. The very first session I ever did with Lowell, I was 18 and it was with myself and Lowell and Dr. John and my brother Michael playing drums and some others, and he would put a speaker in a bathroom and mike it. He had mics all over the place. He was always experimenting.

Were you surprised when Waiting for Columbus, ***your live album, actually became a hit?***

Payne: Yeah, definitely. That album is certainly an icon of live recording, but it's also a live recording that had a lot of overdubs on it. We never hid that.

Barrere: There were a lot of guitar fixes and there were quite a few vocal fixes.

Payne: And that was largely Lowell's idea. He said, "Here's the energy we've got; let's work with it." I think the drums and keyboards didn't change much. We edited the keyboard solo in "Dixie Chicken." One track, "Mercenary Territory," came from a soundcheck, rather than a show.

Barrere: It wasn't as blatantly worked on as [The Who's] *Live At Leeds*, where you can hear the old tracks in the background. [Laughs.] Warren Dewey, who recorded *Waiting for Columbus* [along with Massenburg and Andy Bloch] did a great job of getting separation.

I know you guys used to have a big following in Europe and that you recently returned from there. How is it for you now?

Payne: It was great. For some reason, we sort of lost touch with our audience there for a while. I don't know if we'd fallen out of favor or what. You know, we live with this duality—the band with Lowell and the band without Lowell. There are different camps, and in Europe for a while there was a feeling that without Lowell, it's not Little Feat. And, of course, there are people here who think that, too, and there always will be some of those. But when we went over there recently, we did very well.

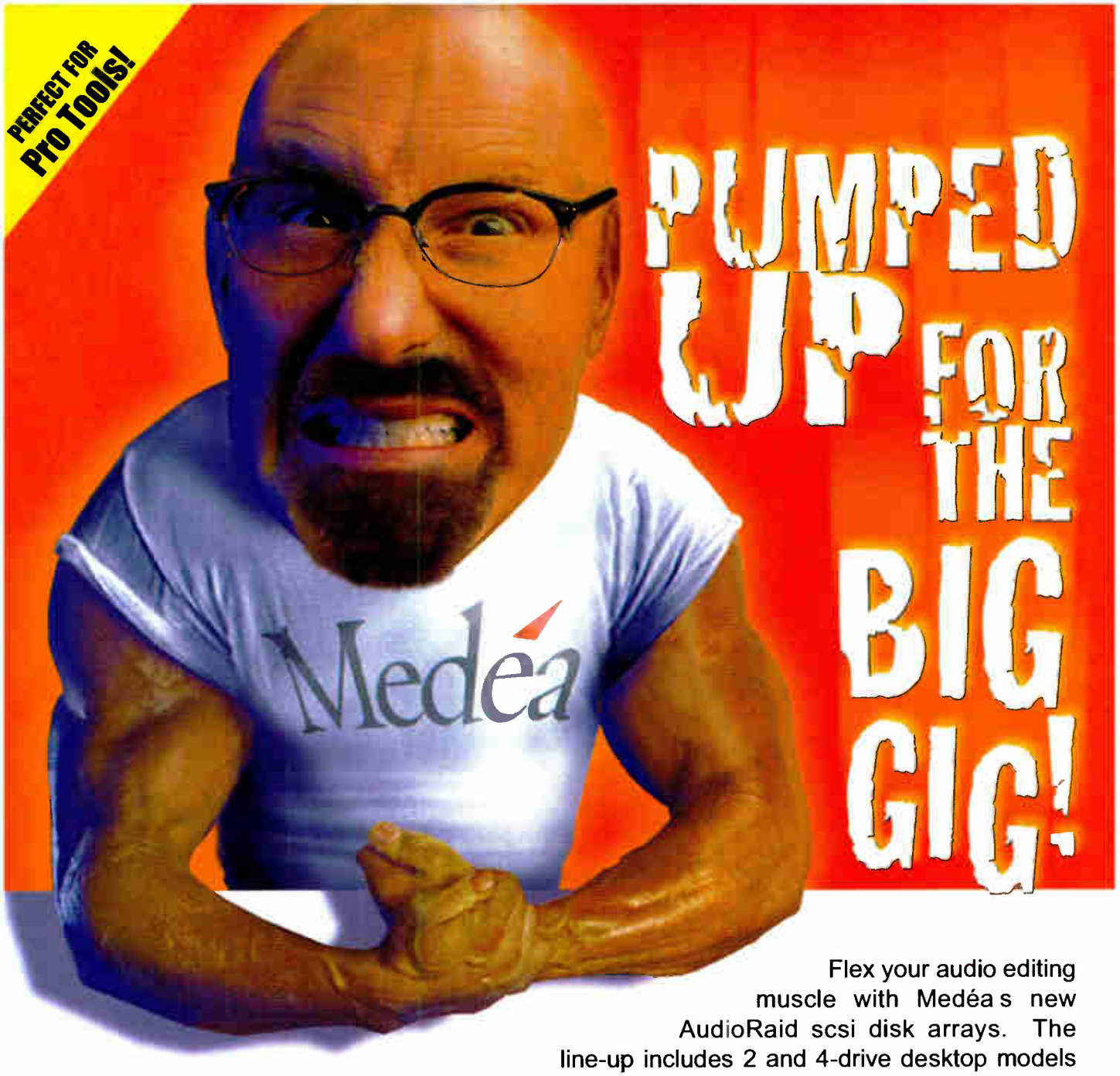
Well, it's still a kick-ass band. And disc three, with the post-Lowell stuff on it, is really strong.

Payne: I agree. I think it still works. We're still having fun, and when I look out at the audience, it looks like they're having fun, too.

Massenburg is a thread that goes through a lot of the story. When you made the decision to come back in the late '80s and work with George again, that must have added to the stability of the situation. And Bill, you co-produced several Feat albums with George.

Payne: George is great, and he's definitely a major reason why those albums when we came back sounded so good. It was nice to have that familiarity, to not have to come in cold with someone new at that point.

The way we approached that first album when we re-formed [*Let It Roll*] is that we got together and worked on



Flex your audio editing muscle with Medéa s new AudioRaid scsi disk arrays. The line-up includes 2 and 4-drive desktop models and dual-channel rackmounts all optimized for digital audio workstations (DAWs). AudioRaid supports mixing of up to 128-tracks of 24-bit/96 kHz audio and offers storage capacities to 240 gigs! Full compatibility with the leading DAWs plus a 5-year warranty makes AudioRaid a real heavyweight. And since AudioRaid appears to your DAW as a single SCSI disk drive, configuration is no sweat. Best of all, at the industry s lowest price per gig, AudioRaid is all gain and no pain.

Desktop and rackmount models available

Performance. Reliability. Value.

Medéa

888-BY-MEDEA

www.medeacorp.com

From outside the U.S. (818) 597-7645

CIRCLE #117 ON PRODUCT INFO CARD

some songs, keeping in mind that we were only going to commit to recording them if we thought they were good enough to stand with our earlier work and not hurt our legacy. I knew we had the confidence to make a great record, and I think we did make a great record in *Let It Roll*. Does it compare to *Sailin' Shoes*, which is another one of those iconic records? Or *Dixie Chicken*? I don't know. Each of those is its own little thing, but so is each of the later records. I just want people to walk away from a Little Feat record feeling like they've been taken some place. And I think more often than not we succeed on that level. The thing with a band like Little Feat is that because we've been so eclectic, everyone has different things they like more than others that we do.

That's the fun part—that you're "Dixie Chicken" and "Borderline Blues" and "Easy to Slip" and "Day at the Dog Races," which I was shocked to read in the liner notes that Lowell did not like.

Payne: I guess he didn't like fusion music, or whatever you want to call it. But also, quite frankly, I think he felt a little left out because he wasn't that involved with it. He had actually gone to Paul before that and said, "I'd like you to get more involved with the material." But then when Paul went and did get more involved...[Laughs.]

I don't want it to seem like I'm denigrating Lowell at all. His genius is *way* intact. I mean, what a great songwriter, and his guitar playing, his vocals, his lyrics...He was undeniably a genius. But Paul and I have sort of been characterized as stunting his growth around the time we, quote unquote "took over the ship," around the time of *Time Loves a Hero*. We spent an inordinate amount of time explaining that that's not exactly what happened. And if you look at Lowell's own album from that time, *Thanks I'll Eat It Here*, explain to me why there are so few Lowell George songs on there. And the reason is he stopped writing; he didn't have the focus and energy to do it. And Paul and I thought we had a great thing in Little Feat, and we worked hard in that period to keep it together and keep it strong.

And now here you are all these years later and you guys are managing the band, too, and if anything, Lowell's legacy has only grown, not diminished.

Barrere: Right. And it should. But Paul and I also have to worry about what's happening now with Little Feat, and what's happening next. We're always looking forward. ■

—FROM PAGE 173, BONE THUGS-N-HARMONY

for BTNH, we'll add the flavor to it. It just comes together like that."

The 17 completed tracks on *BTNHResurrection* were culled from 40 tunes; in fact, they originally considered putting out a double CD, but because they'd done that three years ago with *The Art of War*, they decided to whittle it down to one. "This one was the quickest so far," states Connor. "It was basically three months of tracking and six weeks of mixing. *E. 1999 Eternal* took about 10 months from beginning to end. *The Art of War* took about 14 months. We're always cutting way more songs than we need; that way we always come in with real strong records. A lot of other acts will cut a million songs and throw them all out on the public, and a lot of them are just garbage."

Connor mixed about half of the CD's tracks; other engineers on the project included Al Machera and Tim Nitz. The mix was done at Sound Castle in L.A.'s Silver Lake area on an SSL SL 4000 G mixing console. Most of the members of BTNH have small home studios, and they do some production work there, but when it comes to putting a finished master together, they prefer to leave it to the professionals. "Aaron's my cat," states Layzie. "We've been working him since the *1999* album. If you listen to the whole sound and the perfection of our CDs, that comes from his ears. Personally, my favorite thing is the stage. Period. I like being in the huddle on street corners rapping. But I also like being in the studio where I can concentrate, touching knobs and tweaking my vocals. I just love the whole process."

Because of the numerous producers involved in the project, Connor wasn't as intimately involved in the recording of the CD as he was on the earlier projects. In most cases, the producers cut the tracks, and Connor came in to help out on recording the all-important vocals and getting the mix together. "On previous records, I've been very involved, and we cut everything from scratch," he notes. "Most of the time live musicians will play, and then we'll sample from that, so that we can be as tight as possible. On this record, everything came to me pretty much complete."

The rappers couldn't say in technical terms what exactly Connor does that they like, but they know they like it. The engineer, who also works with other hip hop groups, says, "Compression is my big thing. I'll compress the vocals to tape; that's how they come out so tight. I usually use a dbx 160x or a TL Audio 2 compressor, and I'll compress the vocals maybe five or six dB to tape. Then I'll transfer the tape to Pro Tools and compress them again slightly. By the time the vocals are done, I've compressed them three times.

"When I mix I'll use some fat, warm tube compressors, like the Manley or Avalon. BTNH leaves all the mixing up to me. Matter of fact, if anyone is in the room, I'll usually kick them out. I need high levels of concentration, and I can't even have a conversation going on. For *Eternal*, I mixed the record down here [Artisan Recording Studios]. They didn't even know this place existed. They came in after everything was mixed, we played the record for them and they loved it. So that's the way things have been done since that time."

Connor knows that top-notch sonics have not always been important in rap and hip hop, but he believes that is changing now, and he is happy to be at the vanguard of that change. "One point that I really want to emphasize," asserts Connor, "is that these records are really high-quality records. Our main goal is to have the fans appreciate what

we're doing and be entertained. We really care about them."

And this time out, the band has tried hard to broaden their perspective as a way to bring in new fans. Layzie says, "We're not just talking about the 'hood' on this record; we go to other levels. We got songs such as 'Change the World' and 'Who's Serving the Fiends,'—there's more issues now." Bizzy, the youngest member of the group who does the first tenor parts, adds, "'Battlezone' and 'Murder One' are standouts. To me, the record is about prophecies we see and things that have happened in the past. It's definitely an emotional album, but we want to complement what's already out and keep it tight. If we don't keep it real and have the music flowing, there's really no reason to come out." ■

—FROM PAGE 176, COOL SPINS

able in her own skin and recognizing the excesses of life. (Harvey recently moved to New York City and scatters images of the city throughout the album). *Stories from the City* opens with the catchy but chilling "Big Exit"; only with Harvey's signature croon could the lyrics "Baby, baby ain't it true/I'm immortal when I'm with you/But I wanna pistol in my hand/I wanna go to a different land" sound so sickly sweet and delicious. In places it seems Harvey is maybe picking up on David Bowie's fear of Americans, asking the questions and making the connections that only an outside perspective can afford. On the flip side of the coin, she puts together tracks like "This Is Love," which comes off as a dirty, distorted, bluesy affirmation of life and living for the moment. Another high point is the song "This Mess We're In," where Harvey steps into the background and Radiohead's Thom Yorke provides the lead vocals. All in all, *Stories from the City* is an excellent effort.

Producers: PJ Harvey, Rob Ellis and Mick Harvey. Engineer: Head. Four-track recording: PJ Harvey. Mix engineer: Victor Van Vugt. Mastering: Howie Weinberg/Masterdisk Studios (New York City). —*Robert Hanson*

Merle Haggard *If I Could Only Fly* (Anti) and Loretta Lynn *Still Country* (Audium/Koch)

Still country, indeed. Haggard's disc has already been widely praised for its stark, emotional approach to themes of family and integrity. Spare arrangements and Haggard's powerful, aging voice make this CD even more meaningful than Hag fans have come to expect. This album has aptly been compared in the press to Johnny Cash's comeback releases with American Recordings, but unlike Cash's stellar tracks, these are almost all original Haggard tunes, and that's a big part of what makes this

old-fashioned album so refreshing. Loretta Lynn's *Still Country* doesn't hit as consistently as Hag's album; some of the arrangements are too pop or too blown-up for Lynn's simple approach. What's nice about her release, though, is that the great songs are all Lynn songs, and producer Randy Scruggs clearly has a way of getting to Lynn's strength: singing with true feeling. Highlights include her compositions "God's Country" and "I Can't Hear the Music," written for her late husband, to whom *Still Country* is dedicated.

Merle Haggard Producer: none credited. Recording/mixing engineer: Lou Bradley. Studio: Merle Haggard's Tally Studio. Mastering: Hollis Flatt Custom Mastering (Nashville).

Loretta Lynn Producer: Randy Scruggs. Engineer: Ron "Snake" Reynolds. Overdub engineer: Bob Bullock. Studio: Scruggs Sound Studio (Nashville). Mastering: Benny Quinn/Masterfonics (Nashville). —*Barbara Schultz*

***Requiem for a Dream*. Original score by Clint Mansell, featuring Kronos Quartet (Nonesuch Records)**

Haunting best describes Clint Mansell's com-

position for the wonderful Darren Aronofsky film *Requiem for a Dream*. Following the descent of a trio of junkies, with a parallel collapse (and an amazing performance) by Ellen Burstyn, it's not an easy movie to watch, and it's not an easy score to digest. But it's evocative in the best way that a film score can be—you rise, you plummet, you feel hope, then you want to turn your system off as Mansell sucks you down with the closing nine cues that make up the Winter section of the film. Mansell wrote the score in his New Orleans studio, then brought it to Skywalker Sound for overdubs by Kronos Quartet and a final mix with Leslie Ann Jones. It's not all despair, however; listen to the "Hope Overture," and ride with the comic absurdity of the conga pieces. Then just try to get his lingering "Dreams" theme out of your head.

Soundtrack produced by Clint Mansell and David Harrington. Studio: Skywalker Sound (Marin County, CA). Engineer: Dann Michael Thompson. Mixing engineer: Leslie Ann Jones. Mastering engineers: Paul Zinman, David Harrington, SoundByte Productions Inc. (New York City). —*Tom Kenny*

John Prine: *Souvenirs* (Oh Boy)

Rather than going the traditional "greatest hits" route for his latest CD, singer/songwriter John Prine decided to re-record 15 of his best and

most famous songs with a small group over a two-day period last spring. As he puts it in his pithy liner notes: "These songs are beautiful. They have been faithful companions throughout the years, never letting me down and constantly making new friends, even when I was sleeping." The result is everything one could hope for: The spare, tasteful settings let Prine's distinctive voice, which I happen to love, sell the songs. If you're familiar with Prine's ouevre, you already know that he is a master portraitist whose characters are alive with feelings we can all recognize, put in settings that are also true to life. This is "folk" music in the most literal sense. As you'd expect, "Angel From Montgomery," "Sam Stone," "Grandpa Was a Carpenter" and "People Puttin' People Down" are here, but as a fan who has only kept up with Prine sporadically through the years, there are also tunes that were new to me; it's like getting to read new short stories by a great writer... which Prine is.

Producers: Jim Rooney and John Prine. Studio: The Cowboy Arms Hotel & Recording Spa (Nashville). Engineer: David Ferguson. Mastering: Denny Purcell/Georgetown Masters (Nashville). —*Blair Jackson* ■

A Killer Track Record.

The 7 Series. Professional cassette recorders from Denon.

Since 1953, when Denon first developed a professional-use tape recorder for broadcast, Denon has armed professionals with state-of-the-art cassette recorders. The 7 Series is no exception. With sound quality as our number one goal, we also work to develop user-friendly features. To manufacture rugged dependability. And to offer the kind of functional variety your industry demands. Since 1910, audio professionals have relied on Denon. The 7 Series is proof that you can, too.

DENON
Imagine what we'll do next

Number One

CIRCLE #121 ON PRODUCT INFO CARD

www.del.denon.com • Denon Electronics, 19 Chapin Rd., Pine Brook, NJ 07058 (973) 396-0810 • Denon Canada Inc., 17 Denison St., Markham, Ontario, Canada L3R 1B5 (905) 475-4085 • Labrador, S.A. de C.V., Zamora No. 154, 06140 Mexico, D.F., (52) 5-286-5509

COAST TO

L.A. GRAPEVINE

by Maureen Droney

Marcussen Mastering's new four-room facility on Wilcox in Hollywood was still being built when I visited in mid-November, but that didn't prevent Stephen Marcussen from completing projects there for clients ranging from Aerosmith, Everclear and Sammy Hagar to Cher, Patti Austin and Seal.

PHOTO: MAUREEN DRONEY

Stephen Marcussen inside the new Marcussen Mastering Studio in Hollywood.

Studio A, the first completed room, was an oasis in the middle of all the construction on the day I dropped in. It was mastering business-as-usual behind the airlock doors; Studio A has been fully booked since it went online in July 2000. That's when Marcussen left his temporary home at A&M Studios, where he'd been sharing space with longtime A&M chief mastering engineer Dave Collins. The two hooked up when Marcussen departed Precision Mastering, where he'd garnered a loyal clientele and credits such as REM's *Automatic for the People* and Tom Petty's Grammy-winning *Wildflowers*. Looking for a temporary location to work out of while he built his own facility, he landed at the in-transition A&M Mastering. There, he and Collins shared a room and in the process discovered that they were a highly compatible team. When the mastering division of A&M Studios was phased out by new owners, the Henson family, it was a logical step for Collins, known for his work on such projects as Madonna's *Evita*, Soundgarden's *Superunknown* and Bruce Springsteen's *The Ghost of Tom Joad*, among others, to sign on for a room at the new complex. His suite, Studio B, was scheduled to be up and running as of February 1.

"A&M was a great facility," comments Marcussen. "And Dave and I, sharing

—CONTINUED ON PAGE 198

NY METRO REPORT

by Paul Verna

Like so many other studios in the 1980s, New York's Clinton Recording opened as a jingle house. However, unlike most of its contemporaries, Clinton survived the recession, the project studio revolution and the skyrocketing rents in midtown Manhattan.

Lately, the two-room facility has been busier than ever with high-profile sessions by the likes of James Taylor, Blondie, Joe Jackson, new act Good Charlotte and the cast album for *Jane Eyre*—not to mention an unmentionable household-name artist who popped in to cut some tracks for an upcoming album.

Taylor's project is the artist's first new "pop" album since his 1997 Grammy-winning *Hourglass* collection, which he tracked in a rented house in Martha's Vineyard using Tascam DA-88s and the then-new Yamaha 02R. Produced by Russ Titelman, J.T.'s newest material is slated to end up on a Columbia Records album due sometime in 2001.

Blondie enlisted producer Craig Leon to track songs recently written by group cofounder Chris Stein; the sessions—which may become the next Blondie record—were cut to DA-88 and Otari RADAR.

The Jackson project was an Acoustic Café radio interview/listening session on which the multifaceted artist was joined by bassist Graham Maby. Jackson and Andy Cahn produced, Clinton veteran Troy Halderson served as chief engineer and Jeremy Welch assisted.

For the Sony Classics *Jane Eyre* project, seasoned Broadway producer Mike Berniker worked with Clinton owner/

—CONTINUED ON PAGE 202

The recently installed SSL Avant digital post/film console at Soundtrack Recording with COO Chris Rich (left) and post-production engineer Tony Volante

COAST

NASHVILLE SKYLINE

by Dan Daley

Owners of Sound Kitchen Studios told *Mix* that they plan to add on a 5,800-square-foot addition later this year. Dubbed "Digital Village," the adjunct facility will house new services, including DVD authoring and Pro Tools-based editing and assembly, as well as audio mastering. The new facility, located on a lawn the staff has taken to calling "the grassy knoll," will be adjacent to the existing six-studio facility, which brought its most recent room—a large tracking studio equipped with a custom API Legacy console—online last year.

The owners also plan to install a new digital console in one of the studios in the near future. But co-owner Dino Elefante says it will not be one of the large-format digital desks. "We don't believe in the big ones; they don't work," Elefante said.

Elefante also doesn't believe in investing in certain other technologies that he thinks will expand most quickly in the personal recording sector—he mentions online recording systems, such as Rocket Network. "I don't want to get involved in anything that anyone can do from home," he says. "We've been doing well with tracking and mixing; now, we want to get more of the ancillary business and the things in between."

Elefante also denied that there had been staff cutbacks at the studio, saying that layoffs had taken place at Pamplin Records, a record label in Portland, Ore., and one of the Elefante's other businesses, and that the layoffs were in preparation for relocating the label's operations to Nashville. Only one studio staffer, a technician, has been laid off from Sound Kitchen, he says. The facility has also shelved plans, announced over a year ago, to

—CONTINUED ON PAGE 204

PHOTO ALAN MESSNER

Poison steps in at Track Record Studios. L to R: engineer Ai Fujisaki, C.C. Deville, producer Richie Zito, Stu Simone, engineer Phil Kaffel, Bobby Dall and Bret Michaels.

Aerosmith takes over The Village. L to R: engineer Scott Gordon, producer Mark Hudson, Steven Tyler, Village CEO Jeff Greenberg, drummer Joey Kramer and Jim Cox

SESSIONS & STUDIO NEWS

SOUTHERN CALIFORNIA

Those dudes who look like ladies, **Aerosmith**, pulled into The Village (West Los Angeles) with producer **Mark Hudson** to work on their latest album set for release on Columbia Records. New British boy band a1 (who recently inked a U.S. deal with Sony Music) brought their four-part harmonies, $200 highlight jobs and charming accents to The Village to work on their new album, *The A List*. The group booked Studio F and worked with producer/engineer **Alex Greggs**...Every rose has a thorn; not eager to squander their *Behind the Music* buzz, **Poison**, L.A.'s kings of glam, glitter and rehab, checked into **Track Record Studios** (North Hollywood) to mix their upcoming album with producer **Richie Zito**, engineer **Phil Kaffel** and assistant Ai Fujisaki. Also in at Track, core Wu-Tang Clan member producer RZA stopped in to continue work on the forthcoming **Wu-Tang Clan** album *The W* with engineer **Choco Reynoso**. RZA also teamed up with producers **Rick Rubin** and Amy Finerty, engineer Reynoso and assistant **Eric Williams** to work with **System of a Down**. The band was recording a track for the *Loud Rocks* CD for Loud Records, which also features **Tom Morello** (Rage Against the Machine) on guitar...Out in Studio City, producer **Matt Wallace** (Faith No More, Train) was in at **Scream Studios** mixing the latest offering from **Blues Traveler**. Producer **Brendan O'Brien** also cruised into Scream to work with **The Offspring** on the track "Vulture"; engineer **Steven Rhodes** assisted on both sessions.. Out at **Sound Image** (Van Nuys) producer engineers **Paul Q. Kelderie**

—CONTINUED ON PAGE 204

doing—especially if they're new in the business. Because to me, this whole business is about developing relationships. That new customer might not be a hugely successful engineer right now, but someday he's going to be. And if we help him out in the process of getting there, he becomes a client with longevity. So even if someone is just coming in to buy a pair of speakers, we don't only give them price and availability. We try to help them figure out what's the best pair of speakers for their purposes."

Daily meetings and regular visits by manufacturers' reps help keep Conard and his staff abreast of new products. In addition, there are on-site demo rooms, including a Pro Tools suite that is part of Westlake Studios.

"It's a working part of the studio," Conard explains. "But twice a week, a Digidesign representative is here doing demos for customers. Mackie, Sony and many of our other manufacturers also come here to do demos. And, because we have two product specialists, if a client wants a demo on an off day when a manufacturer isn't here, we can facilitate that as well. One of our strong points is our relationship with manufacturers. That helps the client feel secure about buying the product here and about the product itself."

Some current hot items, according to Conard, are the Lexicon 960L, Cedar's DNS1000 background noise eliminator and Alesis' Masterlink. And, of course, Pro Tools and peripherals. Westlake specializes in Pro Tools system design.

"We got involved with Pro Tools at the beginning," Conard explains. "Originally, a lot of our Pro Tools market was in post-production, because, until it went 24-bit, the sound just wasn't there for a lot of music people. Now, of course, it's everywhere. But we still have an edge, because we became known early on for being able to deliver a turnkey system. We treat systems design a little differently than a music store might. People think, 'I'll just get my computer and my Pro Tools, and everything will be fine.' Well, there's a lot more to it than that. Part of what people get here is the experience and knowledge of our product specialists—sometimes they're putting fires out all day long."

From an MRL for your analog Studer to an API console to Emagic software, they really do seem to have it all at Westlake. "You can call here and get an LL2B," laughs Conard. "You know, the little mount that goes on the

visit us on the web at www.samash.com or call

1•800•4•SAMASH

twenty-four hours a day • seven days a week

Thinking about buying musical equipment? You can buy it from a friend, travel to another planet or go with one of the most trusted names in the music industry!

The largest selection of the hottest products all at the guaranteed lowest prices!

No other on-line/catalog retailer can offer you the incredible selection of musical instruments, pro audio and accessories like SamAsh.com. Our huge 70,000 square foot warehouse is packed with the latest and greatest from such leading manufacturers as Roland, Korg, Alesis, Yamaha, JBL, Crown, Mackie, Shure, Steinberg, Samson, dbx, Fender, and Gibson - to name only a few!

Every major brand, every top model - including some that you won't find anywhere else!

Our staff is filled with musicians who will make sure that you find exactly what you are looking for - at the lowest price available. For over 76 years guitarists have relied on Sam Ash for professional advice and service. We created SamAsh.com specifically for musicians that want Sam Ash style selection, price, service and expertise without having to leave the privacy of their own homes.

Acoustic, electric, bass - you name it, we got it! In-stock and ready to ship!

Use your Sam Ash Credit Card and make no payments, pay no interest for six months on purchases of $500 or more!* Call 1-800-4-SAMASH today and get a copy of our 180-page full-color catalog featuring thousands of the latest products from all of the leading manufacturers - it's like holding a music store in your hands!

It seems that every new day brings a new dotcom music retailer claiming to have the best selection and the lowest prices. Who are these people and where do they come from?

Only SamAsh.com offers the benefits of over 76 years of service to musicians. The Sam Ash family is committed to delivering their world-famous selection, service and famous discounted prices to musicians on-line.

The Guaranteed Lowest Prices

Everyone claims to have the lowest prices. But only SamAsh.com stands behind their claim with the industry's best price protection policy. Simply put, find a lower advertised price from an authorized dealer within 60 days of your purchase and we'll beat it.*

The Best Selection

Our multi-million dollar inventory means the gear you want is always in-stock. And most orders are shipped out the very same day!

Personalized Service

Your complete satisfaction is our only goal. That's why SamAsh.com gives you 45 days to make sure you are totally happy with your purchase.* If you ever have a question, our call center is staffed by actual musicians, producers and DJs ready to handle any and all questions you might have regarding our products and services. If you are ever dissatisfied for any reason call (516) 932-6400 and an Ash family member will be glad to take your call.

samash.com

The on-line musical instrument megastore!

*No interest no payments on approved credit. Call 1-800-4-SAMASH for complete details. Some restrictions apply on our return and price policies - both are fully detailed on the website or call 1-800-4-SAMASH for full details.

Get A FREE 180 Page Color Catalog!
Call Toll-Free: 1-800-4-SAMASH

end of a stand so you can get a mic off fast. There are dealers in town who won't touch that stuff, but we do, because when you need it, you need it. And that's what we're about. We want to have what you need and to build a relationship and maintain it. With over 10,000 products, we can't know everything, but we work hard to stay on top of things. And, if we don't have the answers, we get them. We really want to help our clients do what they do better." ■

E-mail your L.A. news to MsMDK@aol.com.

—FROM PAGE 196, NY METRO REPORT

engineer Ed Rak and assistant Keith Shortreed on a week-long tracking/mixing marathon that took advantage of both Clinton's massive recording spaces—large enough to accommodate 85 musicians—and its mixing capabilities, with a Flying Faders-equipped Neve console and the outboard gear to match.

In other Clinton news, the 17-year-old facility has promoted longtime bookings manager Bill Foley to operations manager and acquired four LA-2As and four 1176s.

You expect New York to have the tallest skyscrapers, the busiest airports, the most crowded streets and the most taxicabs per capita than any other city in the world. But when it comes to Gothic cathedrals, surely the great European capitals must have the Big Apple beat in every respect.

Wrong. The biggest Gothic church in the world is the Cathedral of St. John the Divine, right here in Manhattan. (Yes, yes, I know. Paris, Rome, Chartres, Rheims, Cologne and countless other Old World cities have more attractive, more historically significant and more architecturally interesting churches, but we're talking size here.)

The reason I bring this up has nothing to do with religion and everything to do with surround sound. You see, at a time when the recording industry is on the verge of its second multichannel revolution (following the quad fiasco of the '70s), St. John the Divine is the site of a ritual that must be the pinnacle of the surround sound experience. I'm referring to world musician Paul Winter's Winter Solstice concert, a pan-cultural, nondenominational musical celebration that takes place annually around the time of the longest night of the year (usually December 21).

A sprawling space with 125-foot ceilings and seemingly interminable aisles, St. John boasts a reverb time estimated at between seven and eight seconds (depending on the time of year). It is, in the words of Winter front-of-house engineer Jody Elff, "a spectacular-sounding place—if you use the room to your advantage."

That means respecting the room's awesome acoustics, knowing which elements to leave out of the house mix (like the organ, which is loud enough on its own to drown out the P.A.) and—by God—*never* using artificial reverb. "You can never stop being aware of the room as you're mixing there," says Elff. "The minute you forget you're mixing in a space like that, the room will win."

Additionally, using the room to one's advantage means allowing its dimensions to provide an unparalleled surround experience, an art Winter has mastered in his 21 years of Solstice concerts at the Cathedral. Among his signature techniques are playing his soprano saxophone at one end of the church while another musician—this year it was Uillean piper Davy Spillane—responds from the other end.

"When Davy is playing, I can hear him, but he's really faint," says Winter. "That, to me—drawing listening out of people—is one of the objectives of our show."

An open-minded, inclusive artist whose collaborators have run the gamut from Irish-born Spillane to veteran Brazilian guitarist Oscar Castro-Neves to Turkish sensation Arto Tuncboyaciyian, Winter believes that spreading the sound around the church space is a way to "get voices from all over; not only all over the cathedral, but all over the planet."

His views on surround sound are similarly expansive. He says, "In so many situations, the sound is right in your face. You sit in your seat, fasten your seatbelt and get deluged. In most of those venues, you have a kind of us-and-them setup. You have the performers onstage and the audience out there in rows. At the cathedral, it's all *us*; there is no *them*. My wish is for people to feel they're part of this whole village."

Watching and hearing the Winter Solstice shows over the past several years, I've been awestruck by the otherworldly sound of the soprano sax so far off in the distance that I couldn't see its player, while low timpani would rumble behind me. At other times in the

"The Best Location Recorder Ever!"

That's what our customers tell us.

Deva II

- **4 TRACK 24 BIT UNCOMPRESSED RECORDING QUALITY**
- **10 SECOND PRERECORD CAPABILITY...A MUST FOR SOUND EFFECTS AND DOCUMENTARIES**
- **ZERO MAINTENANCE DESIGN**
- **56 TRACK HOUR INTERNAL DISK RECORDING CAPABILITY**
- **TOTAL IMMUNITY TO HUMIDITY, MOTION AND AUDIO DROPOUTS**

Deva II, the most reliable location recorder ever built, has a track record of hundreds of thousands of hours of perfect recordings. Its "solid as a rock" mechanical design has given Deva its flawless reputation. Deva's Prerecord capability is an excellent feature and will allow you to record even if Deva is *not* in record mode—you have 10 seconds to decide if you want to capture the sound. A user friendly control panel completely eliminates the possibility of accidental over-records (erasure). Extreme attention has been paid to the design of the A-D and D-A converters giving Deva the ultimate in audio quality.

There are hundreds of Devas in use today on some of the biggest shows in production. Join the top recording mixers in the world who have switched to Deva disk recording from tape. Call us for a list of Deva owners. They will be happy to tell you themselves!

Also check out our Cameo Digital Location mixer and watch for our Digital Wireless Microphones coming soon.

Zaxcom

Visit our website for a list of our dealers worldwide. http://www.zaxcom.com

140 Greenwood Avenue • Midland Park, NJ 07432 USA • 201-652-7878 • Fax: 201-652-7776

All specifications subject to change without notice.

DO DISK NOT DAT

CIRCLE #127 ON PRODUCT INFO CARD

set, I've marveled at the all-enveloping sound of the organ, whose main pipes are at one end, while its state trumpets are at the other extreme.

The show's climax, too, is a surround sound-lover's dream. A Paiste "sun" gong measuring 80 inches in diameter is hoisted on a platform along the back wall of the church, while percussionist Scott Sloan strikes it repeatedly, making its sound wash over the vastness of St. John.

Now that home theater is well-entrenched and DVD-Audio is upon us, it's time someone—anyone with the chops and the courage to try it—mixed the Winter Solstice in surround sound. I can't imagine a more impressive showcase for the multichannel medium. ■

Send your NY Metro news to pverna@vernacularmusic.com.

—FROM PAGE 197, NASHVILLE SKYLINE

build a film and video shooting stage and post-production facility, citing a failure to reach an agreement with a prospective partner. However, Elefante says he still believes that the Nashville area could support a high-end, film-oriented facility.

A number of recent changes at MasterMix: MasterVision, which launched Nashville's first DVD authoring operation in 1998, has terminated the partnership it was based on. The company operated as a sister company to 15-year-old audio mastering facility MasterMix, in the same new Russ Berger-designed facility both companies moved into two years ago. MasterVision was a venture between MasterMix owner and chief engineer Hank Williams and rental company Equipment Pool owner Mike Poston. Both Poston and Williams describe the decision to terminate the venture as mutual.

In its place, Williams established MasterMix Media, which will be based out of the same space once occupied by MasterVision. The company will also provide most of the same new-media services, including DVD authoring, while MasterMix continues to do audio mastering. One new service available for DVD clients is Weblinking from discs, enabled by the addition, in November, of a Sonic Solutions E-DVD add-on to the Sonic Creator system that the company uses for DVD authoring.

Other changes at the company include the departure of Tracy Martinson, former director of new media for MasterVision and one of the brightest of Nashville's few new-media tech stars. Williams gave no reason for Martinson's departure. In her place, Devin Pense takes over in that position, and Jim Kaiser, a longtime fixture in Nashville's engineering community and formerly of Studio Techs, comes on as director of technical operations.

When MasterVision was launched two years ago, it seemed to herald a new era in Nashville's media history. While studios began a long downward spiral that took at least one major mastering facility—Masterfonics—with them, Williams was looking to new-media formats as the key to future success. MasterVision had one significant coup right out of the box when it landed a nonexclusive contract to provide authoring services for Bertelsmann/RCA's Sonopress disc manufacturing facility in North Carolina, which had just started DVD replication at the time. That relationship remains in place.

Asked if the new-media bonanza had turned out as well as he hoped, Williams laughed briefly and replied, "The range of media we cover had to be broader. It's no secret that the music and record business climate in Nashville for certain genres is a little more challenging than in others. Studio and mastering facility owners know that the effects of that travel across town into every sector."

Asked whether Nashville still has a chance of developing a new-media footprint, Williams says, "If I didn't think so, I wouldn't be doing this. There's always a chance it can." At the very least, he adds, Nashville has developed a deep pool of technical talent to wrangle new media, including audio, video and graphics hotshots.

Rooster comes home to roost—for a while, anyway: Legendary producer Norbert Putnam, who produced records for Dan Fogelberg, Linda Ronstadt and Jimmy Buffett out of the pop music oasis he created in Nashville at Quad Studios in 1970, returned to that studio to work for the first time since selling it in 1980. It was since sold again, in 1999, to New York City-based Quad Recording owner Lou Gonzales. Putnam, who opened a new studio in Memphis in 2000 specifically to develop and commercialize that city's R&B legacy, did a string session on Quad's SSL 9000 J console for R&B veteran Jerry Butler. ■

Send your Nashville News to danwriter@aol.com.

—FROM PAGE 197, SESSIONS & STUDIO NEWS

and **Sean Slade** pushed the faders on **The Go-Go's** forthcoming release for Beyond Records; **Matt Lavella** was in to assist. Roadrunner artists **Anyone** were also hanging out at Sound Image. The group was in recording their debut effort with producer/engineer **Andrew "Mudrock" Murdock** and assistant **Aidan Flax-Clark**.

NORTHEAST

G. Love & Special Sauce were in at **Indre Studios** (Philadelphia) adding final tweaks and tucks to their forthcoming album; **Chris DiBeneditto** was tapped to produce the effort. **Marah** were also in working on potential material for an upcoming Artemis Records release. Producer/engineer **Paul Smith** and Indre's own engineer, **Michael Comstock**, pushed the faders with **Matthew Milner** assisting...An eclectic group of artists have been cruising through the doors at **Sound On Sound Recording** (NYC). The Grammy-winning **Brooklyn Tabernacle Choir** spent some time in Studio C cutting their latest release with producer **Michael Archibald** and engineer **Richard Furch**. Vocalist **Linda Eder** worked on her new album, *Christmas Stays the Same*, in Studio A with producer **Frank Wildhorn** and independent engineer **Devin Emke**. Atlantic producer **Arif Mardin** and engineer **Michael O'Reilly** also stepped in to work with Eder on one additional song in Studio C. Producer/engineer **John Holbrook** booked Studio B to mix RCA artist **David Mead's** new album...Out at **Shelter Island Sound** (NYC), producer **Steve Addabbo** has been laying down some fresh cuts with Delaware-based **Love Seed Mama Jump**; the effort is set for release on Plump/Artemis Records; **Matt Kane** was in to engineer. Mix engineer **Bill Emmons** and producer **Dan Petty** were in mixing a new release for artist **Michelle Lewis**, and producer **Don Fleming** and Kane were in mixing a new record for indie rock act **Blackfire**.

NORTHWEST

At **Dead Aunt Thelma's Studio** (Portland, OR), artist **Tom Grant** cut some new tracks for a future release with **Mike Moore** engineering. **Nicole Campbell** continued tracking on her new project with **Tony Lash** producing and **Jeff Saltzman** engineering. **The Baseboard Heaters** are working on their next CD with **Luther Russell** producing and Moore behind the desk...Out at **Whiskey Ridge Recording** (Marysville, WA), the new group

www.thesaltmine.com

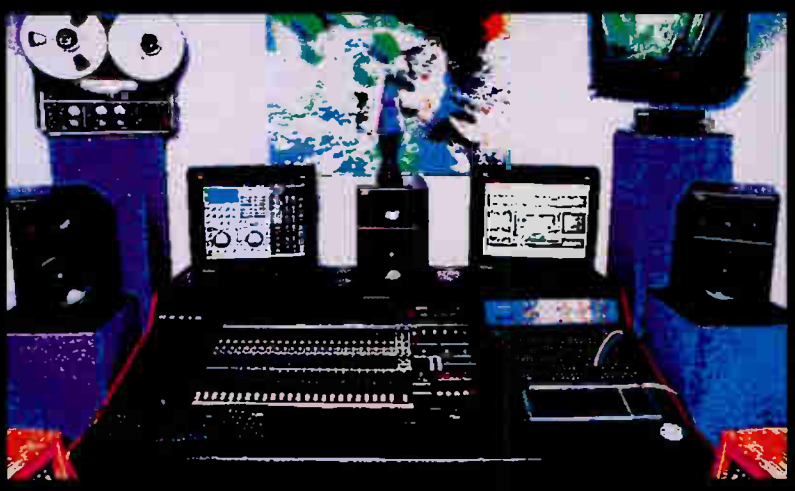
THE SALTMINE Studios

Classic and Modern Recording

Mesa, Arizona

- *36-channel vintage custom Neve desk*
- *10 iso rooms with a "Killer" live drum room*
- *24-track Studer A-827, 2 inch analog recorder*
- *33 Classic compressors/limiters (Neve, Urei, etc.)*
- *64-voice Pro-Tools 24 Mix/Plus (G4 Mac with 164 GB)*
- *90 microphones, 50 classic guitars, 25 guitar&bass amps*
- *56 tracks of 20 bit ADATs, BRC, Lynx II, MOTU, Digidesign Sync*

For Booking Info
Don Salter
Owner/Manager
480.892.6585



Visiting producers and artists include:

Toby Wright and Soulfly,
Warren Riker and Sunny Ledfurd
Bill Kennedy and Megadeth,
Rick Rubin and Sheryl Crow,
Chino Moreno of The Deftones,
Tom Araya of Slayer, Sean Lennon,
George Lynch, Michael Schenker,
Kool G Rap, Boyz 2 Men,
Corey Taylor of Slipknot,
Larry MacDonald of The Wailers,
Al Sutton, John Hampton, Dito Godwin

"An Audio Oasis In The Desert".

Visit us @ www.thesaltmine.com

945 East Juanita Avenue, Mesa, Arizona 85204 office 480.892.6585 studio 480.545.7850

Sour Dan was in working on a project slated for release later this year. Artist David Bottomeller is tracking acoustic guitar for a folk/inspirational project, and Michele Brown continued work on her CD of country/gospel originals...At Jackpot! Recording (Portland, OR), the Washington, DC-based band Dismemberment Plan dropped in while on tour to record a Christmas song with Larry Crane engineering. Crane also mixed the new Fernando album, began work on the latest Pinehurst Kids release (titled *Burn It Clean*), started a new album with Stephanie Schniederman (with Chris Murphy producing) and completed an album for the punk rock outfit One Last Thing...New York-based a cappella group, The Persuasions, put the final touches on an album of Grateful Dead tunes titled *Might as Well...The Persuasions Sing Grateful Dead* at Paul Stubblebine Mastering (San Francisco); Stubblebine and Mike Cogan engineered the sessions.

SOUTHEAST

Producer/engineer Greg Droman was in Sound Kitchen's (Franklin, TN) Studio A mixing Brooks & Dunn's seventh studio album...George Jones strutted into Emerald (Nashville) with producer Emory Gordy Jr., engineer Justin Niband and assistant Jason Piske. Tracy Bird was also in cutting some new material; producer Billy Joe Walker Jr., engineer Julian King and assistant Cobble were in to make the magic happen. Lonestar was also hanging around doing some tracking for a forthcoming RCA release; Dann Huff was in to produce with engineer Jeff Balding and assistants Hackle and Bickel...Artist Michelle Malone locked out Studio A at The Zone Recording Studio (Atlanta) to work on an upcoming release with producer Rick Beato and Billy Hume. Brit pop outfit Film cut some tracks for the independent film *Losing Grace*. The band also worked with engineer Julian Whisperlink on a song for the 99X Christmas album...At The Warehouse Studios (Miami), Jewel camped out to work on both a new album and a movie soundtrack. Producer Cesar Lemos was at the helm with Silvio Richetto engineering. Heat Music Inc. artist Marty Cintron was also getting some sun in Miami while working at The Warehouse with producer Dennis Dellinger and engineers Charles Barwick and Norman Smith...Faith Hill mixed her Thanksgiving Day special at Seventeen Grand Recording (Nashville) with producer Byron Gallimore, mix engineer Buford Jones and assistant Chris Scherbak. Also at Seventeen, Gary Pacasoa was in mixing an upcoming Dolly Parton project. Producer Steve Buckingham also sat in on the session, and Thomas Johnson assisted...112 stopped in at Doppler Studios Inc. (Atlanta) to work on overdubs for a future Bad Boy Entertainment release. Ralph Cacciurri engineered the session with the assistance of Jason Rome and Steve Fisher. Keeping their momentum going, Fastball were also hanging out at Doppler tracking some new cuts with producer Russell Carter, Cacciurri, Fisher and assistant engineer Jason Block.

Lindsey Markel, left, and producer/studio owner Mark Blas at Up On the Roof Recording, Lombard, Ill.

MIDWEST

At Pogo Studios (Champaign, IL), Kansas City group Shiner recorded their latest release with engineer Paul Malinowski. Also, Phineas Gage recorded and mixed at Pogo with producer Mark Rubel...Cleveland-based This Face Down has been hard at work on an upcoming release at Immortal Productions Studios (Canal Fulton, OH), with producer Cal Moore. The punk/pop outfit Five Seconds Late was also in at Immortal mixing their debut release *One Night*; Moore was again at the helm...Up-and-coming teen diva Lindsey Markel has been at Up On the Roof Recording (Lombard, IL) with producer/studio owner Mark Blas. Her album is slated for release this spring.

STUDIO NEWS

Rhyme, Rhythm and Reason Recording Studio (East Rutherford, NJ) recently acquired a Trident 80C console (outfitted with Uptown moving fader automation) and Sony APR-24 2-inch machine that was formerly owned by Butch Vig and Smart Studios...Phase 1 of the new Zupano Audio Complex (Atlanta) recently opened its doors. Jim Zumpano and Michel Eber of Eber Design designed the new facility, which boasts two Pro Tools suites, a mastering suite and an analog tracking room featuring a Rupert Neve-designed Amek 9098i console... Soundtrack Recording (NYC) has upgraded its Studio F with the installation of a new Solid State Logic Avant digital post/film console. ■

Send your sessions and studio news to robert_hanson@intertec.com.

Producer/engineer Greg Droman, seated, and Ronnie Dunn at Sound Kitchen's Studio A

SYSTEMS INTEGRATION

EXPO 2001

Pre-Expo Education: March 5-7
Exhibition Dates: March 8-10
Orange County Convention Center
Orlando, Florida

Register Online at
www.nscaexpo.org
or contact us today for more information
800-446-6722

Join the evolution.

- **Over 500 Exhibits**
- **Over 400 hours of technical and business management education**
- **NSCA Business Solutions Pavilion:** Helping business owners better run their enterprise
- **Product demo rooms for further hands-on inspection of gear**
- **And much more!**

If you are a traditional electronic systems installer or you are in the business of converging technologies, the NSCA Systems Integration Expo™ is a "must attend" event.

Join us in 2001 for the wide array of today's hottest convergence products showcased at the NSCA Expo - the only event exclusive to the designers and installers of commercial electronic systems. See more working technologies than anywhere else, including: audio, video, telecommunications, data cabling, security, lighting, and many others.

Please send me registration information!

☐ I'm interested in attending. Please send registration material.
☐ I'm interested in exhibiting. Please send floor plan and pricing.

Name _____
Title _____
Company _____
Address _____
City _____ State ___ Zip _____
Phone (____)_____
Fax (____)_____
Email _____
Ad Code MIX12

Please fax this completed form to **1-319-366-4164**
or mail to: **NSCA 625 First St. SE, Suite 420 Cedar Rapids, IA 52401**

NSCA™

Ad Index & Advertiser

PAGE	PRODUCT INFO NUMBER	ADVERTISER
215	140	Acoustic Sciences Corporation (ASC)
161	092	Acoustic Systems
64	031	Acoustical Solutions
148-49	084	ADK
33	017	AKG (C414B/ULS)
127	069	AKG (C4000B)
37	019	Alesis
65	033	Amek
188	•	American Federation of Musicians
99	055	Antares
91	049	Aphex Systems
55	025	Apogee Electronics
210	133	Argosy Console
123	067	artistpro.com
103	059	Audient
209	130	Audio Affects
183	106	Audio Precision
213	137	Audix
128	070	Avalon Design
216-17	141	B & H Photo-Video
71	035	BBE Sound
89	047	Behringer
73	036	beyerdynamic
98	054	BLUE Microphones
129	071	BSS Audio
101	058	Burlington/Maxell
192	118	Burlington/BASF
146	081	CAIG Laboratories
165	095	Carvin
152	086	Classic Sound
54	032	Conservatory of Recording Arts & Sciences
41	021	Creamware
6-7	004	dbx Professional Products
195	121	Denon Electronics
119	065	digibid.com
39	028	Digidesign
79	•	Digital Media Online (DMO) #1
181	•	Digital Media Online (DMO) #2
180	103	Disc Makers
IFC	001	Dolby
154	088	DPA Microphones
155	089	Dreamhire
23	010	dsp Media
161	093	EAR Professional Audio/Video
182	105	Earthworks
171	097	Eastern Acoustic Works (EAW)
163	094	Electro-Voice (EV)
35	018	Emagic
25	014	Euphonix
96	052	Europadisk
177	099	Focusrite
211	134	Full Compass
49	024	Full Sail
11	005	Genelec
63	030	Glyph Technologies
156	147	Grace Design
210	132	Grandma's Music & Sound
159	091	HHB Communications #1
175	098	HHB Communications #2
134	075	Institute of Audio Research
214	•	Internet Audio
42-43	022	iZ Technology
BC	146	JBL Professional
78	039	KRK Systems
143	079	Lexicon
200	•	Los Angeles Recording Workshop
153	087	M Audio
28-29	016	Mackie (SR1530)
85	044	Mackie (HDR24/96)
IBC	145	Mackie (D8B)
80	040	Manley Laboratories
15	006	Mark of the Unicorn
209	131	Markertek
191	117	Medéa
193	120	MediaFORM
88	046	Merging Technologies
121	066	Microboards Technology
187	111	Midiman/M Audio
75	038	Millennia
137	077	Miller & Kreisel Professional
135	076	Minnetonka Audio Software
184	•	ModernRecording.com
185	109	mSoft
113	063	Musician's Friend
186	110	MXL Professional Microphones
180	•	NAPRS
97	053	Nemesys
90	048	Neumann/USA
199	122	Neutrik
207	•	NSCA
125	068	Peavey
66-67	034	PMI Audio Group
179	101	Professional Audio Design
57	027	ProSoundWeb.com
151	085	QSC Audio Products
53	025	Quantegy
200	124	Rane
188	113	The Recording Workshop
139	078	RØDE Microphones
130	072	Rosati Acoustics
84	043	Royer Labs
189	114	Sabine
62	029	Sabra-Som
117	064	SAE Institute of Technology
205	128	Saltmine Studios
201	•	Sam Ash
83	042	Shure
190	115	Simon-Kaloi Engineering
1	•	Solid State Logic (SSL) #1
145	•	Solid State Logic (SSL) #2
105	060	Sonic Foundry
61	028	Sonomic
9	•	Sony Broadcast and Professional Company
93	051	Soundcraft #1
167	096	Soundcraft #2
184	107	Sound Devices
20-21	009	Steinberg
147	082	StorCase Technology
87	045	Studer
47	023	Studio Audio Digital Equipment (SADiE)
100	057	Studio Consultants
19	008	Sweetwater Sound #1
202	126	Sweetwater Sound #2
237	143	Sweetwater Sound #3
238-39	144	Sweetwater Sound #4
133	074	TAD/Technical Audio Devices
3	003	Tannoy
27	015	Tascam (DA-98HR)
111	062	Tascam (MX-2424)
2	002	TC Electronic #1
74	037	TC Electronic #2
16-17	007	TC Works
92	050	TransAmerica Audio Group
157	090	Universal Audio
100	056	Walters-Storyk Design Group
190	116	Wave Distribution
107	061	Wave Mechanics
192	119	West L.A. Music
131	073	Z Systems
203	127	Zaxcom

MARKETPLACE

224	283	American Duplication Supply
219	253	ATR Service Company
221	266	Boutique Audio & Design
220	257	Cal State Northridge
223	277	Crane Song
220	259	Crystal Clear Sound
223	278	D.W. Fearn
222	270	Demeter Amplification
219	252	DigiDoc Productions
220	258	Digital Domain
220	260	Disks Direct
224	282	Earth Disc
224	280	Etymotic Research
223	273	Fleetwood Multimedia, Inc
222	271	Funk Logic
221	264	Gefen Inc.
220	255	Ground Support Equipment
223	276	Lonely Records
222	268	Marathon Computer
222	267	Marquette Audio Labs
219	251	Media Services
224	281	Multimedia Recording Systems
221	265	Neato, LLC
222	269	Pendulum Audio
223	275	Progressive Music
222	272	Rainbo Records and Cassettes
219	250	Reliable Music
221	261	Shimad
224	279	Shreve Audio
220	256	Sound Anchors
221	263	Sound Technology
220	254	TerraSonde
221	262	Universal Recording Supplies
223	274	Vintage King

Product Information

More information about products and services from *Mix* Advertisers.

1 Circle the Product Information numbers on the card which correspond to the ads and product announcements that interest you. ➡

2 Complete all information on the card. Please check ONE answer for each question unless otherwise indicated. ➡

3 Mail card postage-free!

IMPORTANT NOTICE TO READERS: Reader service inquiries are mailed directly to the advertiser, who is solely responsible for sending product information. *Mix* does not guarantee advertiser response.

www.mixonline.com

MIX PRODUCT INFORMATION CARD

Issue: February 2001 **Card Expires:** May 1, 2001

NAME/TITLE

COMPANY

ADDRESS

CITY STATE COUNTRY

PHONE # FAX# E-MAIL#

❶ Your company's primary business activity (check ONE):

01. ☐ Recording studio (including remote trucks)
02. ☐ Independent audio recording or production
03. ☐ Sound reinforcement
04. ☐ Video/film production
05. ☐ Video/film post-prdn.
06. ☐ Broadcast/radio/TV
07. ☐ Record company
08. ☐ Record/tape/CD mastering/manufacturing
09. ☐ Equipment manufacturing (incl. rep firm)
10. ☐ Equipment retail/rental
11. ☐ Contractor/installer
12. ☐ Facility design/acoustics
13. ☐ Educational
14. ☐ Institutional/other

(02)

❷ Your job title or position (check ONE):

15. ☐ Management—President, owner, other manager
16. ☐ Technical & Engineering —Engineer, editor, design engineer, etc.
17. ☐ Production & Direction— Producer, director, etc.
18. ☐ Sales & Administration— Sales rep, account executive, etc.
19. ☐ Artist/Performer— Recording artist, musician, composer, other creative
20. ☐ Other

❸ Your role in purchasing equipment, supplies and services (check ONE):

21. ☐ Recommend the purchasing of a product or service
22. ☐ Make the final decision or give approval for purchase
23. ☐ Have no involvement in purchasing decisions

❹ Your company's annual budget for equipment, supplies and services:

24. ☐ Less than $50,000
25. ☐ $50,000 to $149,999
26. ☐ $150,000 to $249,999
27. ☐ $250,000 to $499,999
28. ☐ $500,000 or more

❺ Purpose of inquiry:

29. ☐ Immediate purchase
30. ☐ Files/future purchases

❻ Where your audio-related work takes place (check all that apply):

31. ☐ Commercial (public) production facility
32. ☐ Private (personal) production facility
33. ☐ Corporate or institutional facility
34. ☐ Remote or variable locations

001	045	089	133	177	221	265	309
002	046	090	134	178	222	266	310
003	047	091	135	179	223	267	311
004	048	092	136	180	224	268	312
005	049	093	137	181	225	269	313
006	050	094	138	182	226	270	314
007	051	095	139	183	227	271	315
008	052	096	140	184	228	272	316
009	053	097	141	185	229	273	317
010	054	098	142	186	230	274	318
011	055	099	143	187	231	275	319
012	056	100	144	188	232	276	320
013	057	101	145	189	233	277	321
014	058	102	146	190	234	278	322
015	059	103	147	191	235	279	323
016	060	104	148	192	236	280	324
017	061	105	149	193	237	281	325
018	062	106	150	194	238	282	326
019	063	107	151	195	239	283	327
020	064	108	152	196	240	284	328
021	065	109	153	197	241	285	329
022	066	110	154	198	242	286	330
023	067	111	155	199	243	287	331
024	068	112	156	200	244	288	332
025	069	113	157	201	245	289	333
026	070	114	158	202	246	290	334
027	071	115	159	203	247	291	335
028	072	116	160	204	248	292	336
029	073	117	161	205	249	293	337
030	074	118	162	206	250	294	338
031	075	119	163	207	251	295	339
032	076	120	164	208	252	296	340
033	077	121	165	209	253	297	341
034	078	122	166	210	254	298	342
035	079	123	167	211	255	299	343
036	080	124	168	212	256	300	344
037	081	125	169	213	257	301	345
038	082	126	170	214	258	302	346
039	083	127	171	215	259	303	347
040	084	128	172	216	260	304	348
041	085	129	173	217	261	305	349
042	086	130	174	218	262	306	350
043	087	131	175	219	263	307	⬆
044	088	132	176	220	264	308	⬆

Circle number 350 and we will send you a subscription application, or use subscription form in this issue of Mix.

MIX PRODUCT INFORMATION CARD

Issue: February 2001 **Card Expires:** May 1, 2001

NAME/TITLE

COMPANY

ADDRESS

CITY STATE COUNTRY

PHONE # FAX# E-MAIL#

❶ Your company's primary business activity (check ONE):

01. ☐ Recording studio (including remote trucks)
02. ☐ Independent audio recording or production
03. ☐ Sound reinforcement
04. ☐ Video/film production
05. ☐ Video/film post-prdn.
06. ☐ Broadcast/radio/TV
07. ☐ Record company
08. ☐ Record/tape/CD mastering/manufacturing
09. ☐ Equipment manufacturing (incl. rep firm)
10. ☐ Equipment retail/rental
11. ☐ Contractor/installer
12. ☐ Facility design/acoustics
13. ☐ Educational
14. ☐ Institutional/other

(01)

❷ Your job title or position (check ONE):

15. ☐ Management—President, owner, other manager
16. ☐ Technical & Engineering —Engineer, editor, design engineer, etc.
17. ☐ Production & Direction— Producer, director, etc.
18. ☐ Sales & Administration— Sales rep, account executive, etc.
19. ☐ Artist/Performer— Recording artist, musician, composer, other creative
20. ☐ Other

❸ Your role in purchasing equipment, supplies and services (check ONE):

21. ☐ Recommend the purchasing of a product or service
22. ☐ Make the final decision or give approval for purchase
23. ☐ Have no involvement in purchasing decisions

❹ Your company's annual budget for equipment, supplies and services:

24. ☐ Less than $50,000
25. ☐ $50,000 to $149,999
26. ☐ $150,000 to $249,999
27. ☐ $250,000 to $499,999
28. ☐ $500,000 or more

❺ Purpose of inquiry:

29. ☐ Immediate purchase
30. ☐ Files/future purchases

❻ Where your audio-related work takes place (check all that apply):

31. ☐ Commercial (public) production facility
32. ☐ Private (personal) production facility
33. ☐ Corporate or institutional facility
34. ☐ Remote or variable locations

001	045	089	133	177	221	265	309
002	046	090	134	178	222	266	310
003	047	091	135	179	223	267	311
004	048	092	136	180	224	268	312
005	049	093	137	181	225	269	313
006	050	094	138	182	226	270	314
007	051	095	139	183	227	271	315
008	052	096	140	184	228	272	316
009	053	097	141	185	229	273	317
010	054	098	142	186	230	274	318
011	055	099	143	187	231	275	319
012	056	100	144	188	232	276	320
013	057	101	145	189	233	277	321
014	058	102	146	190	234	278	322
015	059	103	147	191	235	279	323
016	060	104	148	192	236	280	324
017	061	105	149	193	237	281	325
018	062	106	150	194	238	282	326
019	063	107	151	195	239	283	327
020	064	108	152	196	240	284	328
021	065	109	153	197	241	285	329
022	066	110	154	198	242	286	330
023	067	111	155	199	243	287	331
024	068	112	156	200	244	288	332
025	069	113	157	201	245	289	333
026	070	114	158	202	246	290	334
027	071	115	159	203	247	291	335
028	072	116	160	204	248	292	336
029	073	117	161	205	249	293	337
030	074	118	162	206	250	294	338
031	075	119	163	207	251	295	339
032	076	120	164	208	252	296	340
033	077	121	165	209	253	297	341
034	078	122	166	210	254	298	342
035	079	123	167	211	255	299	343
036	080	124	168	212	256	300	344
037	081	125	169	213	257	301	345
038	082	126	170	214	258	302	346
039	083	127	171	215	259	303	347
040	084	128	172	216	260	304	348
041	085	129	173	217	261	305	349
042	086	130	174	218	262	306	350
043	087	131	175	219	263	307	⬆
044	088	132	176	220	264	308	⬆

Circle number 350 and we will send you a subscription application, or use subscription form in this issue of Mix.

Fill out and send the attached card for FREE information on products advertised in *Mix*! See other side for details.

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST-CLASS MAIL PERMIT NO 705 PITTSFIELD MA

POSTAGE WILL BE PAID BY ADDRESSEE

MIX

PO BOX 5069
PITTSFIELD MA 01203-9856

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST-CLASS MAIL PERMIT NO 705 PITTSFIELD MA

POSTAGE WILL BE PAID BY ADDRESSEE

MIX

PO BOX 5069
PITTSFIELD MA 01203-9856

—FROM PAGE 18, BIGGER BYTES

ic, that have joined Apple's patent pool, that charge is waived.) Originally, Apple wanted to charge much more, but in the face of competition from Intel's USB 2.0, according to some sources in the industry, they backed down. It was a good political move, to say the least.

Unlike USB, which was really created to replace mouse and modem ports, 1394 was designed from the ground up for media applications. Already, as we saw last month, USB is being pushed to its limits, and even consumers are catching on: As one source told me, USB-powered speakers are "failing miserably" in the marketplace. Even in the simplest of environments, USB systems can easily get overloaded—I spent a couple of hours with a client last month beating my head against a wall trying to figure out how to get her new iMac-based MIDI system working, until I realized that the fancy USB hub she had couldn't supply enough power to run her scanner, her fax modem and her MIDI interface at the same time!

Also, unlike USB, MIDI events sent over a 1394 cable have a guaranteed time of arrival, so the stopgap measures to make up for USB's problems and prevent MIDI timing slop and jitter, like Mark of the Unicorn's "MIDI Time Stamping" and other proprietary schemes, are not necessary. According to Jim Wright of IBM, chairman of the working group of the MIDI Manufacturers Association that's dealing with advanced data transport, MIDI and audio data over 1394 are tightly coupled when it comes to timing so that you can get perfect synchronization between them, at least with a reasonable number of audio streams.

Trying to get manufacturers to understand this has not been easy. According to one company, "We're hitting a brick-wall with the multimedia giants. They don't understand anything less than a millisecond—or even a frame." I just finished working on a DV/FireWire-based film in which getting the audio and video to stay in sync has been a constant struggle. But, hopefully, this problem won't last as more developers get involved.

One of 1394's chief advantages to audio users is that devices using the protocol are "hot-swappable"; unlike with SCSI (but like USB), you can plug and unplug devices without turning anything off—although personally, I've been hot-swapping SCSI cables for years and never had a single equipment failure. (But I live dangerously.) So when you need to find that old file on a Zip disk but you forgot to connect the drive, or you want to add a new FireWire-based signal processor to your rig, you don't have to shut the whole system down. (I have encountered one area, however, where hot-swapping 1394 equipment didn't work: In the project I just finished, using a popular PC-based editing system, we discovered that an external video deck won't be recognized unless it's plugged in at the time you power up the system. Well, nobody's perfect.)

1394 cables are inexpensive, in that they consist of little more than a couple of twisted copper pairs, and yet the amount of data that can go down them is staggering. It may be a while before we find out what FireWire's limits are in terms of simultaneous audio and MIDI streams. But implementing it in hardware is not quite so cheap: You can find FireWire PCI cards for under $100, but one manufacturer says that putting 1394 into a typical audio processor, mixer or synthesizer would raise the cost by about $100, compared to a MIDI or even a USB port.

One of 1394's chief advantages to audio users is that devices using the protocol are "hot-swappable"; unlike with SCSI (but like USB), you can plug and unplug devices without turning anything off.

"It's not even on most motherboard makers' radar," according to one synthesizer manufacturer. But Apple (of course) already has it on its desktop models and some iMacs, and Sony has put it on its Vaio model PCs so that users can hook up their (presumably Sony) video cameras directly into the computer. And, as we've seen many times, once a new technological fad takes off—and 1394 is doing just that, as it will soon be showing up in everything from home appliances and security systems to factory automation to automobile "entertainment systems" (what, dodging SUVs and talk-

ing on your cell phone isn't entertaining enough?)—everyone wants in on it, and the price nosedives.

The MIDI Manufacturers Association has adopted a "MIDI-over-1394" specification, which, in turn, has been ratified by the 1394 Trade Association, so there shouldn't be any confusion about how MIDI is going to travel over a 1394 cable or how it will get along with its cablemates. (The MMA's early participation in the 1394 development process is one major reason why MIDI performance over 1394 is not going to be the problem that it is over USB.) The MMA's spec has also been incorporated into mLAN, Yamaha's nonproprietary extension to the 1394 protocol, which deals specifically with audio issues and is the first serious attempt to get an audio "layer" onto the FireWire spec. mLAN is now, or will soon be, available on a number of Yamaha and Korg products, and it will be interesting to see how the MIDI implementation of these products works.

Under a new high-speed spec, a MIDI system could for the first time be truly bidirectional. Musical devices could query and communicate with each other and with the host computer automatically.

There's no reason why a 1394 cable can't carry thousands of MIDI channels, with or without audio. And this opens up a door to something that not long ago we dared not speak its name: a MIDI 2.0 specification. The original MIDI spec allowed only a very limited number of channels on a cable, mandated a data rate that by today's standards is ridiculously slow and only permitted data to flow in one direction. Although it has expanded radically over the years, it has always had to work within those limitations. If the spec could be rewritten with 1394 in mind, then the potential improvements are staggering.

Of course, you could have 1,000 or 5,000 MIDI channels, but you could also have 1,000 controllers per channel and new types of controllers that are much more data-intensive than the current 7-bit ones, like, for example, 1 million levels of pitch bend, covering 10 octaves. The old MIDI spec allows for 14-bit controllers, but no one uses them because of fear, ignorance or simply economy. When bandwidth limitations go away, these could become commonplace. The speed of the MIDI line could also be increased by a factor of 10 or 1,000 or even made variable to suit different needs. And, instead of a dozen cables emerging from a multiport interface to power a dozen individual devices, there wouldn't even *be* a need for a specific "MIDI interface" anymore. A production system would simply consist of a daisy-chain of hot-swappable MIDI (as well as audio and video) devices that connect directly to the master computer or directly to each other *without* a computer in the middle. (Try *that* with USB!)

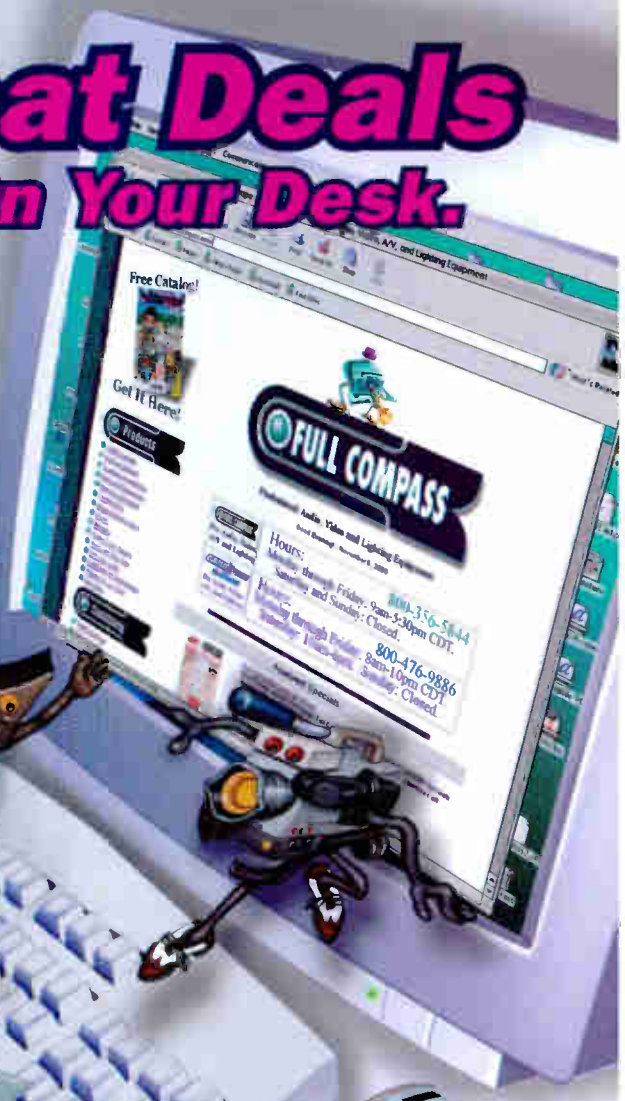
And, under a new high-speed spec, a MIDI system could for the first time be truly bidirectional. Musical devices could query and communicate with each other and with the host computer automatically—no more dealing with OMS or MediaPlayer setup files, because the system would reconfigure itself (and reconfigure your software, too) automatically every time you added or took away a piece of gear. In Jim Wright's words, "MIDI 2 would mean never having to read Sysex again."

MIDI 2.0 would, of necessity, be backward-compatible with MIDI 1.0—meaning, older devices would be accommodated, both physically and in terms of the data stream—and converters and breakout boxes with 1394 inputs and MIDI ins and outs would be hot-ticket items for some time to come. And the recent (well, almost two years old now) addition to the MIDI spec that allows multiple devices to be addressed in a Standard MIDI File would become the rule, rather than the exception. With hundreds of devices attached to a front end, the idea of limiting file exchanges between platforms that are limited to 16 channels will seem positively quaint, if not downright dumb.

Wright says he would be in favor of a MIDI 2.0 spec that represents a "broadbased effort, one which will involve manufacturers, musicians, academics and other key stakeholders." He favors an "'open-spec effort, similar to Linux's open-source." It's a fine idea, worthy of a community that started out by an unprecedented show of coopera-

Find Great Deals
...Online or On Your Desk.

Mics, Amps, Mixers, Speakers, Keyboards, DJ Gear, Video, Software and More!



Call for the best catalog in the business!

800-356-5844

FULL COMPASS

AUDIO • VIDEO • A/V • LIGHTS

608-831-7330 • Fax: 608-831-6330
8001 Terrace Ave. • Middleton, WI 53562

COMPASS XPRESS

The Xpress order division of Full Compass.
Call 800-476-9886 from 8 a.m. to 10 p.m. CST weekdays and 10 a.m. to 6 p.m. CST weekends!

Check www.fullcompass.com for the latest sales and closeouts!

CIRCLE #134 ON PRODUCT INFO CARD

tion among competitors and has continued to grow in that spirit.

Before I close this discussion on the future of MIDI, I have to mention a sour note. It's relatively old news, but it's something that has made a lot of people in the MIDI world, including me, very angry and continues to do so. While the development of MIDI demonstrated how cooperation between companies, and the executives, engineers and marketers within those companies, could create a multibillion-dollar industry, this item demonstrates the opposite: What happens when a company that doesn't give a rodent's patootie about a significant aspect of the music-production community—its developers or its customers—gets its corporate fingers into it?

One year after Gibson president Henry Juszkiewicz publicly apologized for "the lack of information on the current situation at Opcode and the current short fall [sic] in tech support," and stated, "It is our sincere intention to improve this situation as soon as we are able," absolutely nothing has happened. Pleadings, petitions and, reportedly, offers of all kinds notwithstanding, Opcode Systems, which had the first working MIDI sequencing program on the Macintosh, introduced the first and still the most-used multiple-device driver software for the Mac, created the first MIDI-plus-audio sequencer on the Mac and whose software had fervent adherents at all levels of the industry all over the world—and taken over by Gibson in 1998—is dead.

There is still a Web site where you can download 18-month-old versions of Vision and Studio Vision (www.opcode.com, but *not* just "opcode.com," which takes you to Gibson's front page), and Gibson will be happy to take your Mastercard number, but it's not at all a sure bet that the software you get will work for more than 30 days. That's when you will need to enter a "response" to the company's copy-protection "challenge," because no one seems to be home at "Opcode" to send the responses. The single individual doing tech support for the products has had his or her e-mail account shut off.

OMS, its device driver software, despite a huge movement that has included thousands of individuals and hundreds of companies, like Digidesign, Emagic and even NBC, to get Gibson to place it in the public domain, remains in limbo. According to one former employee, "They could regain an enormous amount of goodwill by releasing the source code in such a way that it can be maintained. It could be open-sourced, given to Apple or the MMA, or to a developer willing to make a commitment to keep it an open standard that benefits all of the platforms' developers and users." It was a no-lose situation for Opcode. It would have cost Juszkiewicz nothing—OMS hadn't been generating revenue for years—and it would have made him a hero (well, at least he'd no longer be Cruella DeVille) among the computer music community. But it ain't happened yet, and time is running out.

If the company felt that it really needed to somehow get its investment back, then a year ago there were plenty of people willing to buy pieces of Opcode's other technology. But the longer Gibson waits (and the real story behind the legal wranglings in this case is even uglier than the Florida ballot counting debacle), the less that technology is worth. By now I'd bet that most of it would barely be worth putting on Ebay. (Although the Audio-to-MIDI and vice versa feature is still pretty damn cool.)

I've been using Vision and its variants for almost 10 years, and I plan to keep using it, tech support or no tech support, until either I am forced to go to a system that simply won't run it (I'm told it behaves itself under OS 9, but under OS X, all bets are off) or I need new features that other programs offer that will never find their way into this moribund program. It will be the third MIDI-sequencing program I will have had shot out from under me, because, once again, stupid business decisions have forced a perfectly good musical tool to disappear from the face of the Earth.

Opcode was just the latest in a series of synthesis and computer technologies that Gibson has destroyed—Oberheim and Zeta Systems being the two best-known. Why they do this is anybody's guess; perhaps they think that somehow it will help guitar sales. If so, then maybe they should have a little chat with Yamaha—one of the most successful guitar makers in the world—about being able to have it both ways. Whatever the reason, shame on Gibson. It makes me even more eager to find some other manufacturer who has figured out how to make a really good clone of an ES-335. ■

"Insider Audio" columnist Paul D. Lehrman doesn't plan on missing Sysex one bit, so to speak.

your studio sound. on stage.
the new audix vx-10. believe it.

The new VX-10 condenser vocal microphone has been designed by Audix with but one task in mind. To deliver a sound so pure, so transparent and so sonically neutral it's like having your studio mic on stage. Nothing is added, and more importantly, nothing is lost.

The elegantly designed VX-10 features a uniform cardioid pick-up pattern throughout its entire frequency range, provides ultra-high sensitivity and is able to handle extraordinarily high sound pressure levels. If it's in your performance, the audience will hear it.

If you've been searching for studio quality sound reproduction on stage, you've just found it. Believe it.

AUDIX
PERFORMANCE IS EVERYTHING

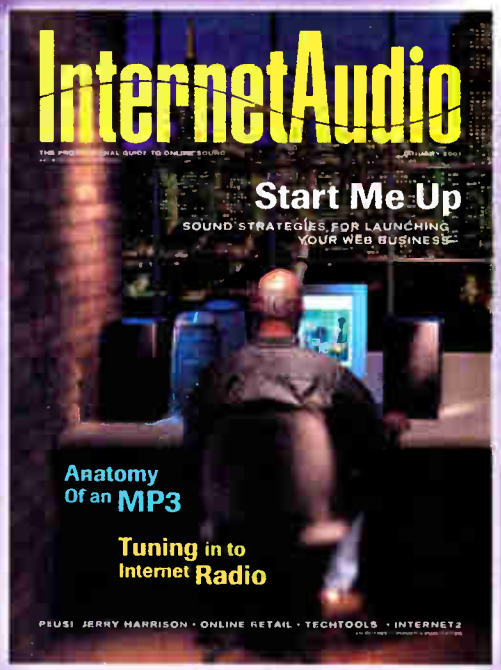
FOR A DEALER NEAR YOU CALL: 800-966-8261
TEL: 503-682-6933 FAX: 503-682-7114 www.audixusa.com

Audix Corporation PO Box 4010, Wilsonville, OR 97070 In Canada, Cabletek Electronics LTD, 604-942-1001 fax 604-942-1010

CIRCLE #137 ON PRODUCT INFO CARD

Internet Audio is *Mix*'s new quarterly magazine focusing on Web–based audio production and delivery. *Internet Audio* is designed to educate the audio production community in making sense of emerging technologies while offering insight and perspective to this expanding market.

Editorial content of *Internet Audio* includes step–by–step guides to putting audio files online, examination of the shifting face of music distribution, exploration of Webcasting and profiles of Internet innovators who are creating great sounds online.



Subscribe FREE at

www.mixonline.com/internetaudio/intaud.cfm

InternetAudio™

—FROM PAGE 10, FEEDBACK

tained a review of the new TC Electronic System 6000 effects processing system. Toward the end of the review, the author implies that one of the reasons the TC system is enticing is that, unlike Digidesign's Pro Tools MIX systems, you can create more complex algorithms: "Because Digi's DSP structure does not include a high-speed, interchip communication bus, a single algorithm can't run across multiple DSP chips."

This statement is incorrect, so I'd like to set the record straight. Digidesign's TDM systems all have a high-speed, built-in interchip communication bus (that is one of its key features). Our TDM bus supplies a 256 time slot, 24-bit data bus, and interchip communication can be supported. Currently, the system does not support inter-DSP communication for large-scale, single algorithm, plug-in processing, but there is no hardware limitation that prevents this. (It is currently a software limitation.) In fact, this capability may well be added in the not-too-distant future.

Dave Lebolt
Digidesign

BONUS BUCKS

The article on Bob Irwin in the December 2000 issue of *Mix* ["Producer's Desk"] hammered home a fact many overlook: Excellent quality remastered CDs don't just happen by accident. To produce a new (digital) master that faithfully captures the spirit and feeling of the original analog release (record) is an arduous labor of love. Many producers miss their mark, ending up with a fat, overproduced product that barely resembles the original. Not Bob Irwin.

I recently bought a group of nine Sundazed CDs, which are 100% faithful reissues of Buck Owens' first nine albums, plus two bonus tracks per CD. I was blown away by every one of the 126 tracks. I am a musician with a digital home studio and am extremely familiar with Buck's original recordings. It was immediately apparent to me that Irwin had created the perfect mix—definitive classic Buck—and I also realize how difficult it must have been to do so. I have hundreds of remastered CDs of music originally recorded as far back as 1917 through the '60s. Few faithfully represent the original material to the high level Sundazed does.

I am continually amazed at how much a good producer can squeeze out of the old original masters. We are lucky to have producers of Bob Irwin's talents and drive who are willing to devote their time and effort to saving and bringing back music from bygone eras so that it might be enjoyed forever.

D. Larry Patterson
Via e-mail

LOW-PRICED CONVERTER

Your article in the December 2000 issue on "Top-of-the-Line Analog-to-Digital Converters" was informative and well-presented. I appreciate all of the work that went into it, and I think the timing was right. Many of us, who perhaps don't work for a big studio on the coast but still make a portion of our living doing recording work, are discovering the vast improvement in sound quality we can attain when we move up to higher quality converters than those in our MDMs and other portable digital recorders. Though I still know several engineers that run their $1,500-per-channel preamp outputs right into their ADAT's built-in converters, I chalk this up to the fact that they just haven't had the opportunity to hear what better conversion can do for their sound.

I was disappointed to see that one high-quality, and I would assume fairly popular, converter was left out of your article. This converter, the Swissonic AD96 has been in my live choral-recording rig for the last few months. This 4-channel converter not only sounds great but offers a lot in the bang-for-the-buck category. It allows me the flexibility to record to my ADAT-XT in a variety of sample rates and bit depths, and performs flawlessly every time.

I did a lot of research and listening before purchasing the AD96, and I have not regretted my decision, even as new gear has come on the market.

Marg Herder
Softsound
Indianapolis, Ind.

While our digital converter article focused on top-of-the-line models, such as Swissonic's 8-channel AD8 unit, most of the companies in the story also make 2- or 4-channel units that offer similar performance in a less pricey package, such as the AD96 you are using.

—The Editors

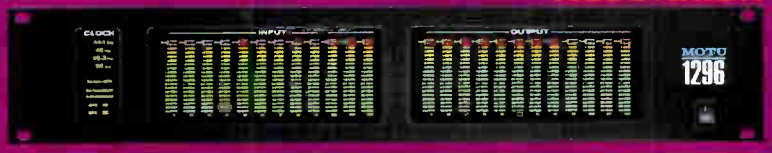
Send Feedback to Mix
via e-mail
mixeditorial@intertec.com.

Detail

Character

Confidence

Resolution



Control

Maximum Potential

Deliverance

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:
800.947.5508

In NYC:
212.444.6698

On The Web:
www.bhphotovideo.com

The Professional's Source For All Of Your Pro Audio Equipment Needs

CIRCLE #141 ON PRODUCT INFO CARD

ProTools|24 Mix Plus Station

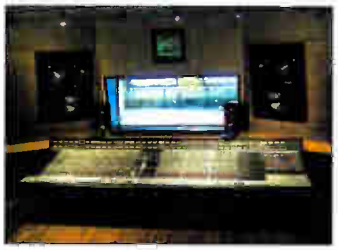
Interactive Studio Monitor Shootout

STUDIO SHOWCASE

Artisan Recorders Mobile

P.O. Box 70247
Ft. Lauderdale, FL 33307
(954) 566-1800; Fax (954) 566-3090
e-mail: mobile red@aol.com
www.artisanmobile.com

For over 20 years, Artisan Recorders has been providing excellence in remote recording and broadcast. Along with an extensive array of equipment in a comfortable aesthetic environment, our "Mobile Red" studio boasts an expert staff of technicians with a love of music and a desire for perfection. Currently touring with ABC's *Tom Joyner Morning Show*. When you rock, we roll.



Engine Studios

1644 N. Honore
Chicago, IL 60622
773-772-6200; Fax: 773-772-4716
studiomanager@enginestudios.com
www.enginestudios.com

Engine is a full service recording facility located in the heart of Chicago's Wicker Park/Bucktown neighborhood. Our 6200 square foot complex houses what we think is the best recording facility in the city of Chicago. We offer first class amenities and are within walking distance of over 50 music related stores, nightclubs and restaurants. Whether you need a tracking, mix room or both, we know we can meet the demands of your project and schedule. Engine is now doing professional audio rentals, offering a wide selection of digital and vintage analog equipment.

NPR

635 Massachusetts Ave., N.W.
Washington, D.C. 20001-3753
(202) 414-2482; Fax (202) 414-3033
e-mail: rgi@npr.org
www.npr.org/studios

Located in downtown Washington, D.C., Studio 4A offers a spectacular recording environment well-suited to all music genres. Studio 4A, at 2,600 sq. feet, is one of the largest recording facilities on the East Coast. We offer digital and analog multitrack recording, an extensive mic collection, digital editing suites and CD mastering. NPR also offers satellite uplinking, fiber-optic and ISDN capabilities worldwide.

Four Seasons Media Productions

1919 Innerbelt Business Center Drive
St. Louis, MO 63114
(314) 423-4767; Fax (314) 423-4867
e-mail info@4smp.com
www.4smp.com

- 48 input API Legacy w/ moving faders
- SSL 4056 G+SE w/ Total Recall
- Quested 5.1 surround monitoring
- Russ Berger designed
- 3 Pro Tools Mix Plus
- Studer A820 24tk w/ SR, Studer A80 ½" 2tk
- Huge selection of vintage & state-of-the-art outboard gear & microphones
- Spacious tracking rooms w/ natural light
- Steinway Model B, 1957 Hammond B3 w/ Leslie 122
- Experienced, professional staff

Hollywood Masters East

27 Hanse Ave.
Freeport, NY 11520
(800) 387-3748 or (516) 623-0555
Fax (516) 623-4531
www.hollywoodmasters.com

Located 15 minutes east of NYC, Hollywood Masters East has been providing New York with quality mastering since 1992. Our newly designed mastering room provides a superb listening environment and quality mastering tools to achieve the clarity and magical sparkle that is so desirable. Hollywood Masters East uses the Manley "Massive Passive," the highly acclaimed Variable-MU, nightpro, Dynaudio, TC Electronic and an extensive list of software plug-ins. Call today for your next mastering project.

Studio Atlantis

1140 N. Western Ave.
Hollywood, CA 90029
(323) 462-7761; Fax (323) 462-3393
www.studio-atlantis.com

- Neve VR 60 with Mad Labs CP-4 upgrade and Flying Faders
- 48-track Studer analog
- Pro Tools|24 digital recording and editing
- 5.1 surround sound by George Augspurger
- bau:ton designed
- Excellent selection of vintage and state-of-the-art outboard equipment and microphones
- Private lounges and restrooms
- Secured indoor parking
- Experienced and professional staff
- Creative and harmonious vibe

MARKETPLACE

MARKETPLACE

MARKETPLACE

MARKETPLACE

CIRCLE AD NUMBER 273 ON PRODUCT INFO CARD

CIRCLE AD NUMBER 276 ON PRODUCT INFO CARD

CIRCLE AD NUMBER 274 ON PRODUCT INFO CARD

CIRCLE AD NUMBER 277 ON PRODUCT INFO CARD

CIRCLE AD NUMBER 275 ON PRODUCT INFO CARD

CIRCLE AD NUMBER 278 ON PRODUCT INFO CARD

MARKETPLACE

CIRCLE AD NUMBER 279 ON PRODUCT INFO CARD

CIRCLE AD NUMBER 280 ON PRODUCT INFO CARD

CIRCLE AD NUMBER 282 ON PRODUCT INFO CARD

CIRCLE AD NUMBER 281 ON PRODUCT INFO CARD

CIRCLE AD NUMBER 283 ON PRODUCT INFO CARD

CLASSIFIEDS

MIX *Classified Ads are the easiest and most economical means to reach a buyer for your product or service. The classified pages of* Mix *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.* Mix *shall not be liable for the contents of advertisements. For complete information on prices and deadlines, call* ***(800) 544-5530.***

Acoustic Products

SEE OUR AD IN MARKETPLACE pg. 221

Employment Offered

dts

DTS is the leading provider of premium quality, discrete, multichannel audio for entertainment, including motion pictures, DVDs & CDs. DTS is located in sunny so. California, 10 mins from the Malibu shores & 25 mins from Los Angeles.

We presently have exciting career opportunities for Digital Hardware/Firmware Engineers & for Licensing Engineers.

Hardware/Firmware Engineer

Designs Hardware/Firmware for use in recording &/or encoding/decoding systems. Assignments include design, dvlpmnt, prototype & test of hrdw products & professional sound applications.

Min. of BSEE degree & 5 yrs. exp. including embedded systems, FPGA, PLD, Micros, plus fixed & floating point DSPs. Cinema and/or recording knowledge a plus. Must have good oral/written communication skills.

Licensing Engineer

Provides technical support to all DTS licensees, while interfacing with Engineering Department. Provides tech support to DTS consumer product licensees. Develops technical documentation. Conducts certification of licensed products. Assists at trade shows, conferences, & customer visits, as needed.

College graduate with B.S. in Electrical Engineering. Background in DSP, Digital Audio Applications preferred. 2-3 yrs. of industry experience.

Other opportunities include:
Screening and Management Engineers (United Kingdom)
Subtitling Engineers (United Kingdom)
Technical Marketing and Program Managers
Technical Sales Manager (Professional Audio Division)
Technical Sales Manager (Broadcast Services Division)

DTS offers an excellent benefits package, which includes: Stock Options, POS Health plan (HMO/PPO benefit), Acupuncture and Herbal Medicine, Dental, Vision, Life, Long-Term Care, Long-Term Disability.

Interested candidates can send resume with salary requirements to:
dts, Inc.
5171 Clareton Drive, Agoura Hills, CA 91301
Attn: Human Resources
E-mail: mfernandez@dtsonline.com or fax (818)706-1868
Visit our Web site at: www.dtsonline.com.

AUDIO POST ENGINEER
Atlanta area post facility seeks Engineer for radio & TV spot production. Dual room facility with relaxed & creative atmosphere. At least 2 yrs post experience required. Pro Tools chops a plus.
Send resume to:
AMP, PO BOX 1936
Decatur, GA 30031
amp_studios@yahoo.com

Equipment Financing

Equipment For Sale

SEE OUR AD IN MARKETPLACE pg. 220
SEE OUR AD IN MARKETPLACE pg. 223

visit us on the web @ http://www.doucets.com

NEW AND USED GEAR

•Manley •Presonus
•Summit •Vintech Audio
•ADL •Sytek
•Langevin •Purple Audio
•John Hardy •A.D.A.M. Monitors
•Daking •Acoustics First

DOUCET'S Studios and... AUDIO SALES

toll free 1-888-923-0123

Audio Hard Disks

Premium Storage Systems for:

MOTU 2408 - Digital Performer - Cubase VST
Digidesign ProTools / Digi001 - Logic Audio

SCSI - IDE - Rackmount - Removable

Complete Turnkey Mac & PC
Computer Audio Systems

Plugins- Software- Hardware- Backup

877-244-3472 bigdisc.com

NEVE VR CONSOLES
FOR SALE
Any size, any configuration
Flying Faders or GML
Contact Gary Belz
House of Blues Studios
(818) 990-1296

Coles 4038
RCA 44s & 77s
(800) 798-9127
Call Wes Dooley

---

masterpieceav.com
blank media
cd-r recorders
microphones
studio gear
digital audio workstations
impeccable customer service
call aaron & jamey toll free
(888) 776-2835

EXCLUSIVE FACTORY AUTHORIZED RESELLER

www.UsedSSL.com

PROFESSIONAL AUDIO DESIGN, INC.
(781) 982-2600

Buy. Sell. Trade
New or Used
Package Deals
vintage king audio
See Our Ad in Marketplace

SEE OUR AD IN MARKETPLACE pg. 223

THE MIC SHOP
TUBE MICROPHONES
BOUGHT/SOLD/SERVICED
Mic Power Supplies & Cables
Bill Bradley: (615) 595-1717
Fax: (615) 595-1718
www.micshop.com

Pre-Owned Professional Audio
and Video Gear.
Call for our latest For Sale List.
DA-88s, ADATs, Sony 3348s
The Enterprise Group
www.enterprisestudio.com
(818) 840-8480

CLASSIC MICS
FROM RUSSIA

VINTAGE TUBE & FET
Telefunken, NEUMANN
AKG, LOMO, OKTAVA, etc.
TEL/FAX: 011-7-095-299-1161
E-mail: aeg210268@mtu-net.ru

MISTY HILL AUDIO

VINTAGE

NEUMANN • NEVE • AKG • STUDER
API • TRIDENT • AMEK • UREI • RCA • SSL • TELEFUNKEN

Buy/Sell - We pay top dollar - FAX us your list
Worldwide Shipping • Visit our website

VISA MasterCard AMERICAN EXPRESS

512.338.6777 • http://audio.home.texas.net

HARBOR SOUND

HUGE SELECTION OF
USED, VINTAGE &
NEW GEAR

Consoles, Mics, Recorders,
Buy & Sell vintage NEVE & API
modules, Pultecs, tube mics.
New equipment in stock. Credit
cards accepted.

Ph: (781) 231-0095
Fax: (781) 231-0295
www.harborsound.com

Equipment Appraisal
Facility Liquidation

Hamilton Brosious
Associates
(203) 268-8433

ITC Cart Recorders
Parts & Service
Now At

SEQUOIA ELECTRONICS
TEL: (800) 848-4428
FAX: (408) 363-0957

Every major brand of everything.
Millions of dollars of
musical gear in stock.
ALTO MUSIC.
Guitars, recording,
keyboards, amplifiers, drums,
pro sound, new & used. One
of the largest selections in the
country. We ship everywhere!
(914) 692-6922•680 Rt. 211,
East Middletown, NY 10940
www.Altomusic.com
Ask for Uncle Freddy—He loves ya!

AVALON DESIGN

PURE CLASS A MUSIC RECORDING SYSTEMS

www.avalondesign.com

tel: 949-492-2000 fax: 949-492-4284
email: avalon@avalondesign.com

---

www.popfilter.com
e-mail: info@popfilter.com
voice/fax (800) 252-1503
or (914) 255-3367

POPLESS VOICE SCREENS

UPGRADE YOUR VOCALS

LOOKING FOR
BETTER SOUND?

Component-level upgrades for mixing consoles, tape machines, mics & all outboard gear. Also, high-speed, high-quality mic preamps.

AUDIO UPGRADES
6410 Matilija Ave.
Van Nuys, CA 91401
(818) 780-1222
Fax (818) 886-4012
www.audioupgrades.com

Switch between any combination of two computers. (PC and Mac)

800-545-6900
www.gefen.com

ex•tend•it mini PC/Mac

GEFEN, INC.

SEE OUR AD IN MARKETPLACE pg. 221

Neikirk Audio
Has **Soundscape R.Ed,**
Mixtreme & all your
other recording needs

www.neikirk-audio.com
toll-free **(866) NEIKIRK**

---

www.rackittm.com

Modular, stackable media furniture
holds all formats and equipment
Free brochure (please mention Mix)

Par Maker Design

(800) 821-4883

Sweetwater
music technology direct

1-800-222-4700
www.sweetwater.com

PERFECT FOR PRO TOOLS OR ANY DAW
SRM80

- Mix down or dub between any 4 stereo devices
- Monitor the output of any 4 stereo devices
- Switch between 3 speaker sets
- High powered headphone amp

FURMAN

Equipment For Sale

Equipment For Sale

The Marketplace

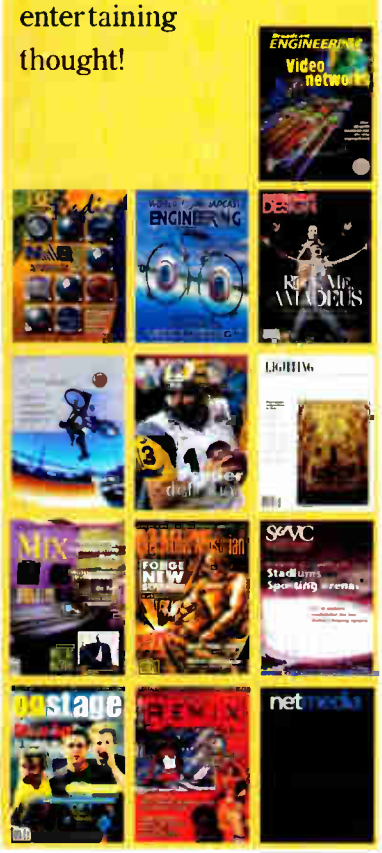
Equipment Rentals

Equipment Wanted

Instruction

Discover the technology behind entertainment

Think entertainment. Picture technology. See the future. Know Intertec. Intertec's Entertainment Division is the leading information source in entertainment technology. Our informative, award-winning publications and timely events influence more than a quarter million key decision-makers around the world. In Lighting. Sound. Video. Film. Music. Broadcast. Your business is our business—so put us to work. What an entertaining thought!



Wherever there's entertainment technology, there's an Intertec publication.

PRO AUDIO	TELEVISION / RADIO	CINEMA / VIDEO / INTERNET	DESIGN	EVENTS
Mix Electronic Musician Sound & Video Contractor Onstage Remix Internet Audio	Broadcast Engineering World Broadcast Engineering BE Radio	Millimeter Video Systems NetMedia	Entertainment Design Lighting Dimensions	LDI DTV Conference Studio Pro Broadway Lighting Master Class

www.intertec-entertainment.com

more essential gear for MAS

MOTU AUDIO SYSTEM

Expand your MOTU audio workstation with these essential tools.

PLUG-INS EXCLUSIVELY FOR MAS

Nautilus Bundle™

Nautilus is the latest ground-breaking audio effects processing technology from Netherlands-based Audio Ease, the leader in plug-ins designed exclusively for the MOTU platform. Like its namesake from the timeless Jules Verne novel, Nautilus takes your audio below the surface, into exotic sonic seascapes you never could have imagined. From Deep Phase Nine, a syncable 24-notch true phaser, to RiverRun, the world's first real-time granular synthesis plug-in, to PeriScope, an AltiVec-turbocharged 32-band phase coherent equalizer, Nautilus launches your creativity anew. Mitch Gallagher, Editor of EQ magazine, says: "Nautilus is anything but another set of me-too plug-ins. Recommended for those looking for inspiring, unique audio processors."

audio ease

WAVES 3.0/MAS — NOW SHIPPING

Gold Native™

New processors, new features, new interfaces, higher resolution. More capabilities in every box, such as 88/96kHz support for many native processors. And no more dongle. It's all new, from the Gold to the Renaissance Collection, featuring our brand new Renaissance Reverberator, including the Renaissance EQ and Compressor. And the Native Gold Bundle contains everything, including the award-winning C4 Multiband Parametric Processor.

Waves pushes the edge, again, so you can sound your best. Call sweetwater today and find out why so many have said you simply gotta' get Waves.

WAVES

AFFORDABLE HANDS-ON AUTOMATED MIXING

MotorMix™

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: cmlabs.net.

CM Labs

PRISTINE MIC PRE-AMPLIFICATION

DigiMax™

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 directly to your MOTU system in pristine, 24-bit digital glory.

PreSonus [audio electronics]

Sweetwater

music technology direct

800-222-4700

www.sweetwater.com

CIRCLE #143 ON PRODUCT INFO CARD

MOTU AUDIO SYSTEM

THE LATEST NATIVE REVERB TECHNOLOGY

RealVerb™

On the heels of their ground-breaking RealVerb 5.1™ surround reverb plug-in, Kind of Loud Technologies presents RealVerb™, a new stereo reverb plug-in for MAS. RealVerb uses complex spatial and spectral reverberation technology to accurately model an acoustic space. The bottom line? Great sounding reverb with the ability to customize a virtual room and pan within the stereo spectrum. RealVerb even lets you blend room shape, material, and size according to the demands of your mix. And RealVerb was designed from the ground up for automation: adjust controls in real-time without distortion, pops, clicks or zipper noise. You can even morph between presets – in real-time. Don't rely on your old standby – let RealVerb bring new quality and space to your recordings.

AUTOMATED WORKSURFACE

HUI™

The Human User Interface (HUI) from Mackie is unmatched for advanced, yet affordable control surface technology for audio workstations. HUI is so tightly integrated with Digital Performer, it's like placing your hands on Digital Performer itself. Sculpt your mix with HUI's silky-smooth motorized faders. Tweak effects parameters with firm, yet responsive V-Pot rotary encoders. You can even call up plug-ins on-screen directly from HUI. Keypad and transport controls let you locate Digital Performer's main counter instantly, just like the familiar keypad on your computer keyboard. HUI is a complete hardware workstation console, with the user-friendly ergonomics that Mackie mixers are known for. Boost your productivity through direct hands-on control.

MACKIE.

MICROPHONE EMULATION

Microphone Modeler™

Now the microphones you own can sound like the microphones you wish you owned. Mic Modeler allows any reasonably full-range microphone to sound like virtually any other mic. Using patented Spectral Shaping Tool™ (SST) technology, Antares has created precise digital models of a wide variety of microphones, from historical classics to modern exotics, as well as a selection of industry-standard workhorses. Just select which microphone you are actually using and then select what mic you want it to sound like. You can further fine-tune the sound with modeled tube saturation, proximity, windscreen effect, and more. Mic Modeler is an easy, cost-effective way to extend your existing mic collection, or to obtain that classic, vintage sound — without the excessive price tag.

The Antares Microphone Modeler has just won the prestigious Mix Magazine Technical Excellence and Creativity (TEC) Award for Outstanding Technical Achievement in Digital Processing

ANTARES
REALLY COOL STUFF FOR MAKING MUSIC

TEC AWARD
TECHNICAL EXCELLENCE & CREATIVITY
WINNER

EVERPACK BUNDLE

From tube warmth to stereo enhancement to the new Z-room reverb, there's no other way to get the smooth sound produced by these classic MAS plug-ins. For more info: www.duy.com.

DUY

CIRCLE #144 ON PRODUCT INFO CARD

more essential gear for MAS

MOTU AUDIO SYSTEM

Bomb Factory

BIG KNOBS. BIG SOUND.

NEW BOMB FACTORY PLUG-INS FOR MAS

Pultec EQP-1A

The Pultec equalizer provides smooth, sweet EQ and an extremely high quality tube audio signal path. Use Bomb Factory's meticulously-crafted replica anywhere you'd use the original: on individual tracks, critical vocals, or even across a stereo mix for mastering applications.

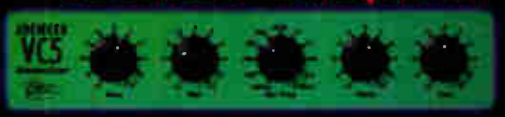
Fairchild™ 660

Re-introducing the undisputed champion in price, weight and performance: the $35,000, 100-pound, Fairchild compressor. Bomb Factory's no-compromise replica captures every nuance of the studio classic. But unlike the original, it's affordable enough that actual musicians can afford to own one. Heck, run a dozen at once — even in stereo.

JOEMEEK™ Compressor

Add a little magic to your mixes with the JOEMEEK SC2 Photo Optical Compressor. In use by top producers the world over, JOEMEEK compression is the secret weapon that gives your sound the character and excitement it deserves!

JOEMEEK™ Meequalizer



Joe Meek prototyped musical circuits in tiny tobacco tins. One of them was a treble and bass circuit used in conjunction with a sweepable mid control. The Meequalizer recreates the exact circuit used by Joe Meek, offering simple controls and incredibly warm, musical results. Use it on mono or stereo tracks!

moogerfooger™ Analog Delay

The moogerfooger Analog Delay is simply the coolest (and warmest!) delay in the digital domain. Due to component shortages, fewer than 1,000 "real world" versions exist! Bomb Factory snagged serial #1 and, as always, meticulously modeled every detail of Dr. Moog's classic analog design. Wait until you hear it!

moogerfooger™ 12-Stage Phaser

The moogerfooger 12-Stage Phaser combines a 6 or 12 stage phaser with a wide-range variable LFO. Start with subtle tremolo or radical modulation effects, then crank the distortion and resonant filters for unbelievable new tones—all featuring classic MOOG® sound.

Tel-Ray™ Variable Delay

In the early 1960's, a small company experimented with elecronics and technology. When they came up with something great, they would 'Tell Ray' (the boss). One invention involved a tuna can, a motor, and a few tablespoons of cancer-causing oil. The creation: an "Electronic Memory Unit." A technology, the were sure, that would be of great interest to companies like IBM and NASA. Though it never made it to the moon, the killer technology that gives Tel-Ray its unique sound was licensed by most every major guitar amp manufacturer. Ad-N-Echo™ to any voice or instrument using the Tel-Ray™ Variable Delay. It provides lush delay, amazing echo, and warms up your tracks and mixes.

Sweetwater is an authorized Apple VAR and MOTU specialist.
From your Mac, to your MOTU audio system,
to free lifetime tech support, we make it easy for you.

800-222-4700

OTARI RADAR II

TIPS & TECHNIQUES

When audio recording went digital, the one thing I wouldn't give up was the way I liked to work—that is, having an autolocator with transport buttons and locate points in front of me and artists on the other side of the glass that can make eye contact with me (if they wanted to). The Otari RADAR II gives me those capabilities and more.

TRACKS, TRACKS, TRACKS

If I'm tracking vocals and don't know how many tracks I'll need (when do we ever?), then I copy my session project and print a quick reference mix. Now I can track onto 22 tracks, assemble a comp, drop it into the original tracking project and go. Need to track more? Just do it again! However, a lot of copying and pasting tracks from project to project simultaneously (for instance, moving a drum take) can tax RADAR's Undo buffer memory. I've had some lock-ups when asking the machine to remember too many edits between too many projects across too many tracks. Here, the solution is simple: Temporarily reduce the number of Undos to two or so. Alternatively, you can purge the Undo memory by reducing each project Undo Level to zero and then putting it back to your standard setting.

SWAP, PLUG, PLAY!

I often work with a producer who has several RADAR II units, and this allows me to do things that would otherwise interrupt the session flow. If a song has been tracked onto one of his machines, then I can swap drives, plug his drive into my machine and access the music just tracked for editing, while he moves on to the next song. Meanwhile, I can compile edited tracks, rearrange the track layout, make backups and have the latest version available for him the next time he goes back to the song. And as all of the session setup information lives with the audio files on the removable drive, it's plug-and-play from machine to machine.

TRANSFER AND EDIT

If the edit requirement goes beyond the abilities of RADAR II, then a digital transfer to another platform is accommodated by multiple I/Os and sync options. The fact that a hard disk recorder derives its wordclock and SMPTE from subdivisions of the same clock source (the crystal clock of the host computer) requires some special care. If a SMPTE frame rate gets out of step with the wordclock rate, then the resulting confusion will cause snatting and drop out. Because the math performed by both computers involved is the same, if one has agreement between wordclock and SMPTE, then the other will too. So the standard "the audio source machine is the wordclock and SMPTE master" approach works. In situations where RADAR II must be the SMPTE source on transfer back from the editing platform, we have to resolve the fact that it's looking for external wordclock (embedded in the digital input) that will agree with its internal SMPTE. By synching both RADAR and the editing machine to a third external and independent wordclock source, the SMPTE math usually makes sense at both ends. It's the same principle as house video sync. If your word sync scheme involves the use of RADAR's rear panel BNC connector, then be aware that RADAR II has a Preferences menu setting for the sync output of Word Clock or Thru.

SLAVES & CLONES

Besides using RADAR as my main multitrack recorder, I use RADAR II when I need an additional slave or want to archive tracks from another platform. And even on an all-analog session, a RADAR II slave copy of an analog reel allows the original tape to sit on the shelf until mix. I've used it to print stem mixes for projects that require 24-bit split-outs for film or surround. I've used it as an easily portable multitrack when I've had to record an orchestra and then bring the tracks back to a project studio. The sync features on RADAR II will allow reliable use in any application if you think through the clocking scheme of the setup.

DESIGNER FUNCTIONS

RADAR II's user-programmable macro keys allow me to string up commands from the extensive menu lists in the machine. Commands such as Mute Tracks can be accessed with a single keystroke. Complex sync setups can be made easy to execute. I try to create macros that keep me from looking like a computer operator during tracking sessions. ■

BY DAVID CHANNING

A Los Angeles-based recording engineer and programmer, David Channing misses the smell of analog tape.

"REASONS NOT TO BUY A MACKIE D8B...ZERO." —Roger Nichols, EQ Magazine

PLUS 3 MORE REASONS TO GO FOR IT.

OS Version 3.0 NOW SHIPPING!

Download direct from www.mackie.com

1 FREE UPGRADE! NEW OS 3.0 ADDS OVER 30 NEW FEATURES!

Our Programming Department has been chugging the double lattés to create Mackie Realtime OS™ Version 3.0, packed with more new features and enhancements than you can shake a mouse at. Here's just part of what 3.0 adds to the already amazing D8B.

- **New key (sidechain) inputs** for all 48 onboard dynamic processors featuring soft knee architecture and single band 20-20k parametric EQ for frequency dependent processing such as de-essing
- **3rd-party plug-ins** via our new UFX card. Up to 16 simultaneous plug-ins on the first 48 channels, pre or post DSP, pre-fader via up to 4 UFX cards. Each plug-in is available twice — once when tracking, and again at mixdown!
- **Multiple Undo List** — 999 levels!
- New **Snapshot libraries**.
- Externally or internally accessible **inserts across Mains and Buses** plus **channel inserts pre and post DSP**.
- **Updated GUI** including 48-channel fader bank view screen.
- **Time Offset** (delay) adds a delay of up to 255 samples to the signal at the pre-DSP (dynamics / EQ) point in the signal path.
- **New surround capabilities** including depth-of-center control (LCR mixing with divergence), multiple surround panner window, individual LFE channel level control.
- **Multiple direct outs** per channel.
- **Optional level to tape** fader control.
- **Assignable, bidirectional MIDI control** of all parameters.
- **Cross patching** allows substitution of channels between various banks.

The list of top engineers and producers who use the award-winning Mackie Digital 8 • Bus is growing daily. For info on the D8B, new UFX and Optical • 8 cards, 3rd-party plug-ins and how D8B owners can get their free OS upgrade, visit www.mackie.com or call your local D8B dealer.

MACKIE. Digital Systems

DIGITAL MACKIES AT OUR FACTORY IN WOODINVILLE WA. USA

www.mackie.com • 800/258-6883

2 DSP PLUG-INS!

Antares' Auto-Tune for the D8B uses advanced DSP algorithms to detect the incoming pitch of a voice or solo instrument as it's being tracked and instantly pitch-correct it without introducing distortion or artifacts. Fully automatable.

Massenburg Parametric EQ. MDW 2x2 High-Resolution Parametric Equalizer plug-in from Grammy-winning engineer/producer George Massenburg. Mono/stereo EQ at 96kHz sample rate for unprecedented clarity and high frequency smoothness.

Drawmer ADX100 includes their industry standard frequency conscious gating, plus compression, expansion and limiting.

IVL Technologies' VocalStudio provides real time vocal doubling, multi-part harmonies and pitch correction in an easy-to-use interface. A free demo is built-into the Digital 8 • Bus. Just add a second MFX card to own this innovative plug-in from a world leader in vocal processing.

TC Electronic Reverb (bundled with the D8B UFX card) provides Reverb 1 and Reverb 2 algorithms from the renowned TC Electronic M2000 Studio Effects Processor.

3 1999 TEC AWARD WINNER!

Normally we don't name competitors in our ads. But in this case, Mix Magazine published the other nominees for the 1999 TEC Award for Outstanding Technical Achievement in Small Format Consoles: Allen & Heath's GS-3000, Digidesign's ProControl, Panasonic's WR-DA7, Spirit's Digital 328 and Yamaha's 01V. Thanks to all who helped us win this prestigious award.

CIRCLE #145 ON PRODUCT INFO CARD

Limited Time Offer*

$100 Back On A Pair of LSR25Ps
$300 Back On A 5.1 LSR System
(5 LSR25Ps and 1 LSR12P Sub)

When L.W. Ran Into S.P. At JFK, Their THX® Approved LSR25Ps Gave Flight To New Creativity.

As you can see, the all-new THX® Approved LSR25P powered monitors are really taking off. That's because key industry professionals are discovering one very simple and indisputable fact: the LSR25P consistently outperforms any other monitor in its class. As a result, it's gaining popularity in all critical monitoring applications, from digital workstations and near field stereo to 5.1 mixing. In fact, the LSR25P is as comfortable on the road as it is on the meter bridge.

A talented musician, successful composer and recognized producer, Lenny White is considered one of music's real innovators. He's played with such greats as Miles Davis, Chick Corea and Stanley Clark, and has also collaborated on some of the most recognized and influential music of the past three decades, including the new CD *On the One*, with Sammy Peralta.

Every LSR25P incorporates JBL's revolutionary Linear Spatial Reference (LSR) performance characteristics, assuring a mix that sounds consistent from room to room. What's more, the two-way 5.25", bi-amplified LSR25P also features 150 watts of linear power as well as purpose-built transducers with JBL's most current thinking and designs. This last point has earned the entire LSR family of monitors continual critical acclaim for more than three years.

Sammy Peralta loves music. That pure and simple fact comes through strikingly clear as he sits at his keyboard tinkering with half-written tunes. Sammy's background includes work with talents including Tito Puente and Willie Bermudez. "I have to be careful because I can get so lost in the music, I sometimes forget I have a family that would like a little of my attention too".

One last point: Sammy Peralta's new CD ***On the One*** featuring Lenny White was mixed entirely with LSR monitors.

LSR.

For More Information:
www.jblpro.com/lsrrebate11
CIRCLE #146 ON PRODUCT INFO CARD

JBL PROFESSIONAL

H A Harman International Company

*Offer valid 11/1/2000 thru 2/28/2001. At participating dealers only.