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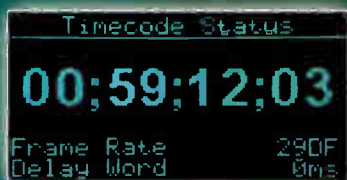
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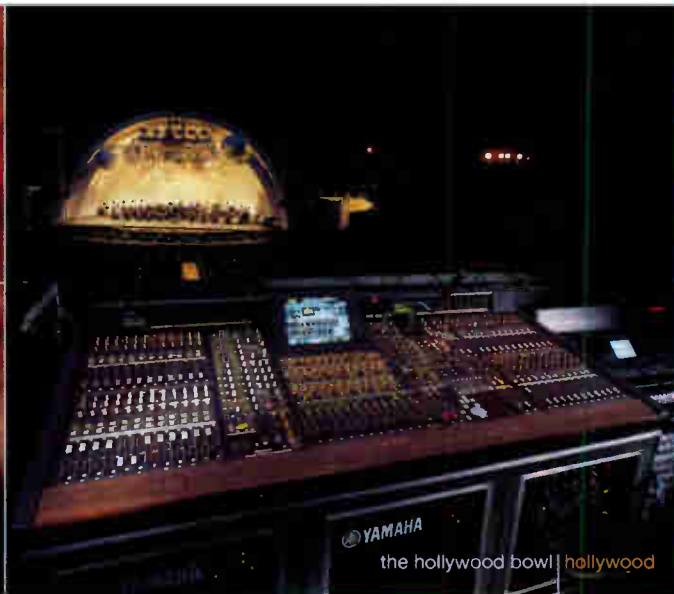
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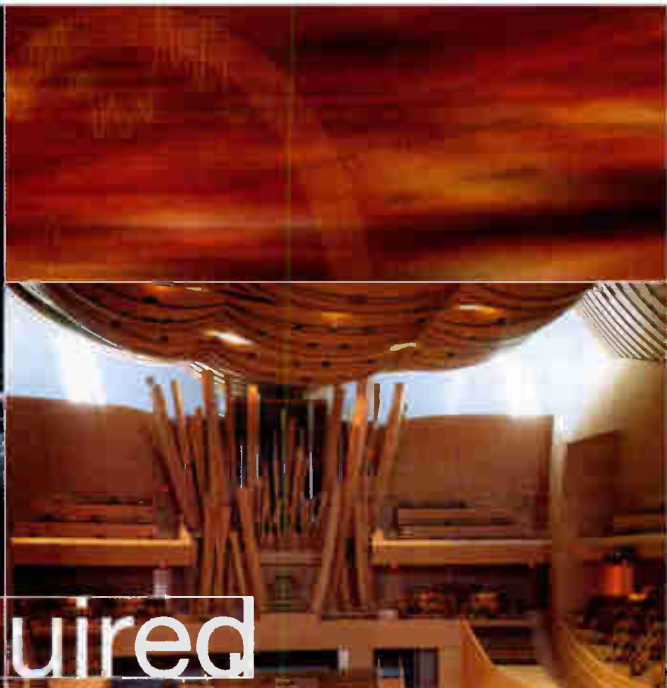
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"It keeps you on your toes," Ravitch says of moving each fader manually. "I find that the less you depend on automation, the more you think about the texture of the mix. You're constantly using your head and your ears. It's kind of retro, but I enjoy that."

R.E.M.'s onstage setup could also be considered retro in an era of programmed drums, prerecorded vocals and processed-to-oblivion guitars. "This band plays everything themselves," Ravitch says. "There's no sampling going on, no Pro Tools, just them playing their stuff. A few things [drummer Rieflin] plays are synthetic, but by and large, there's no looping going on at all."

Their intelligent, often controversial lyrics and jangly guitars that influenced hordes of modern rock acts since the 1980s poured out of a Clair Bros. I-4 line array system, one that Ravitch helped to develop with another R.E.M. live engineer, Joe O'Herlihy. The group toured with a total of 40 I-4 cabinets and 36 I-4Bs, but for the Shoreline date, Ravitch pared down the system to include four long-throw cabinets per side, four mid-throw cabinets, two short-throw and two 10' cabinets turned on their sides. The Clair Bros. i/O system controlled the P.A., which was powered by a combination of Crest and QSC amplifiers.

Ravitch's effects rack included two dbx 160 Series compressors for Stipe's vocals: one on his Shure Beta 58A microphone and another for his wireless setup. The dbx is also used on Mills' and Buck's vocals, as are an Eventide

Eclipse effects processor and TC Electronic D-Two and M5000.

The banjo, 12-string guitar and mandolin run through Manley compressors, while the rest of the drum kit runs through Aphex 612 stereo gates. The snare gets fattened up with a combination of Lexicon PCM70 and Yamaha SPX90 reverbs.

Ravitch chose the Shure Beta 58A as the group's collective vocal mic. "Michael is pretty hard on his mics," Ravitch explains. "We go through at least one a show with him, but we can field repair the Shures pretty easily."

All guitars were miked with Sennheiser 409s, and Ravitch added an Avalon U5 DI on acoustic six-strings. A Countryman Type-85 FET DI worked well on Mills' bass. Stringfellow's vintage organs were miked with Sennheiser 421s: two for the top and one for the bottom. On drums, Ravitch used an Audio-Technica AE2500. "We got loaned one for our European tour," Ravitch says. "I fell in love with it, so I got another one as a spare." He also used Shure SM57s for the snare top and bottom, Electro-Voice 408s for the toms, an Audio-Technica AT4050 for the overhead and an AKG 460 for the hi-hats. Rieflin's drum machine runs through a Countryman DI, while banjo, mandolin, and six- and 12-string guitars run through the Avalon DI.

BACK TO BASICS FOR MONITORS

Like Ravitch, Clair Bros. monitor engineer Frank Lopes adopted a rather old-school approach on this tour. Bypassing the i/O system, Lopes worked with popular Clair 12 AM crossovers and wedge monitors, powered by Crown amps. "It makes mixing fun," Lopes says. "It creates a really big, warm sound, and I don't have to fight feedback."

For this tour, Lopes decided on a 64-input Midas XL4 console. "I have all of the mixes in stereo," he explains. "In monitor world, it's easier for things to peak out. But this



Wilco's FOH engineer Stan Doty

way, I can pan things out and get more separation. It's been quite effective, but it requires more amplifiers, more speaker cable, more outputs and more EQ."

Lopes used a TC Electronic M5000 with Stipe's stereo wedge and in-ear monitor, which he uses simultaneously. Lopes also time-aligns the in-ear between six to 10 milliseconds higher than the wedge. "What would normally come out of the right wedge goes into his right ear, so he actually gets the stereo image," he says.

Both Stipe and Rieflin use Future Sonics ear molds—usually hot pink, green, black or another unusual color for Stipe—with the Shure PSM 600 transmitter and beltpack. The rest of the group relies solely on wedges.

On his first tour with R.E.M., the 32-year-old New Jersey native proved himself to be a confident engineer when he challenged Stipe's microphone etiquette by asking him to stop cupping the mic with his hand. "He's got it down now," Lopes says, "though we still put tape near the ball of the mic to remind him not to put his hand there. That's made our lives so much better."

LESS IS MORE IN WILCO WORLD

Newly configured, rootsy-rock quartet Wilco was a fitting opening act for the tour, both for sonic and personal reasons. They, too, lost a drummer (Ken Coomer) in recent years, not to mention co-founder Jay Bennett and their previous label, Warner Bros. Thankfully, Nonesuch Records picked up their latest



R.E.M.'s FOH engineer Jo Ravitch

album, *Yankee Hotel Foxtrot*, now hailed by critics as one of the group's most adventurous efforts to date. Wilco's tumultuous career later became a successful documentary for filmmaker/photographer Sam Jones, titled *I Am Trying to Break Your Heart*.

The current lineup of Wilco co-founder Jeff Tweedy (guitars/vocals), John Stirratt (bass), Leroy Bach (keyboards) and drummer Glenn Kotche took to the stage using little in the way of lighting or visual effects, playing a stripped-down, rocked-out set of familiar tunes such as "Box Full of Letters," as well as songs from their 2003 EP, *More Like the Moon* and new tracks from their forthcoming full-length disc. Wilco's current studio engineer and touring bandmate Mike Jorgenson contributed keyboard, guitar and computer-generated effects.

FOH engineer Stan Doty has ridden with Wilco on their roller-coaster career during the past three years, working on



R.E.M.'s monitor engineer Frank Lopes

everything from small club dates to expansive shed tours. The Windy City-based sound veteran has also worked with fellow Chicagoans such as Liz Phair and Veruca Salt, as well as Sub Pop acts such as REX and The Grifters. On this tour, Doty mixed on a Midas XL4 console. "They have some of the nicest preamps in the business," he says. "We run 39 channels for inputs and effects, including 10 for guitars. I use almost every inch of that board."

Effects include a TC Electronic M1000, two Yamaha SPX1000s and a dbx 166XL for occasional vocal compression. His

all-Shure microphone setup includes Beta 52As for kick and bass drum, SM57s on the snare, SM81s on the overhead, and Beta 98s for the toms. Doty mikes background vocals with Shure SM58s, while guitars and keyboard amps are miked with a 56A.

Monitor engineer Jason Tobias, also Wilco's drum tech and production manager, relies solely on the Midas XL3 console for gates and effects. After trying, and later tossing, in-ear monitors, the band switched to Clair Bros. 12AM

wedges. "They wanted to feel the air again," Tobias says, "so we went back to a more organic environment."

Both R.E.M. and Wilco seem to share an appreciation for generally unprocessed live sound environments. They've also both survived enough drama for one lifetime, and, experiencing an upturn in their careers, there's no end in sight.

Heather Johnson is Mix's new editorial assistant.



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CREST HP-EIGHT CONSOLE

Crest's (www.crestaudio.com) new HP-Eight console is an 8-bus board designed for use in install and portable markets. The console is dual-purpose—ideal for both FOH and monitor applications—and is available in 24 to 56 mono input channel configurations (plus five stereo line/effects returns), with 10 aux sends, fader flip, direct outputs, 4-band channel EQ (with sweep mids), 100mm faders, 4-channel scene muting and an internal power supply, plus provision for an optional redundant external power supply. A five-year warranty is standard. A 32-channel model is expected to retail around \$5,000; check www.crestaudio.com for updated pricing information.



DBX DRIVERACK 220I

Now shipping, the DriveRack® 220i from dbx (www.dbxpro.com) Professional is a 2-in/2-out system processor. In addition to providing EQ, bandpass filters, matrix mixing, dynamics and delay functions

required for loudspeaker control, the 220i also includes line/mic inputs (with phantom power), with de-essing, ducking and Advanced Feedback Suppression™. Setup/maintenance is handled from the front panel or a DriveWare PC-based GUI. Programs can be stored and recalled from the GUI, front panel or optional remote zone controllers that adjust output volume/mutes.

SHURE ANTENNA COMBINER

The PA821 active antenna combiner from Shure (www.shure.com) improves RF performance by reducing IM distortion. Compatible with Shure's PSM700, PSM600 and PSM400 personal monitor systems, this 8-in/1-out device handles up to eight PSM transmitters on a single antenna, thus reducing onstage "antenna farm" clutter and offering increased range when used with Shure's new \$360 PA805WB directional antenna. The PA821 retails at \$4,983.



INTER-M L SERIES AMPS

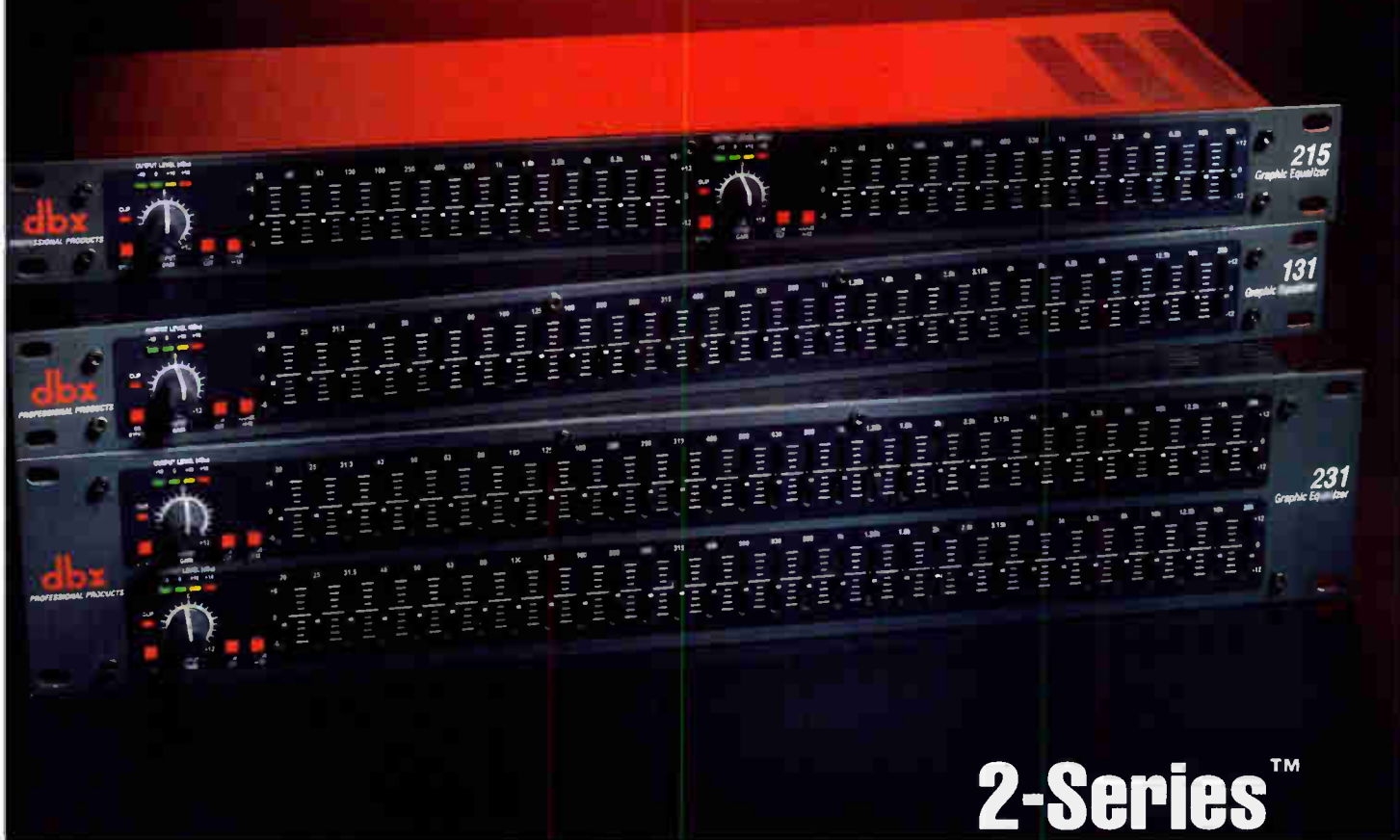
Ranging from 830 to 2,400 watts, the new L Series amplifiers from Inter-M Americas Inc. (www.inter-m.net) are lightweight, two-rack-space models. Features include a highpass filter switch (30/50Hz selectable), power-on muting, forced air cooling, defeatable clip limiting circuitry, and front-panel indicators displaying output levels, clipping, protective circuit activity and stereo parallel/bridged modes. Inputs are balanced 1/2-inch TRS or XLR, with binding post and Speakon outs.



G-AUDIO V-SMART ARRAYS

G-Audio (www.g-audio.net) debuts two new models in its V-Smart Rectilinear Array 700 Series. Usable as a mid/high cabinet or stand-alone, the VS-726 combines two 12-inch mid-bass speakers with twin 1-inch neodymium drivers mounted on a dual-exit 90°x10° line array horn for a smooth top end. Also available is the VS-736S, a matching double-18 sub that goes down to 32 Hz.

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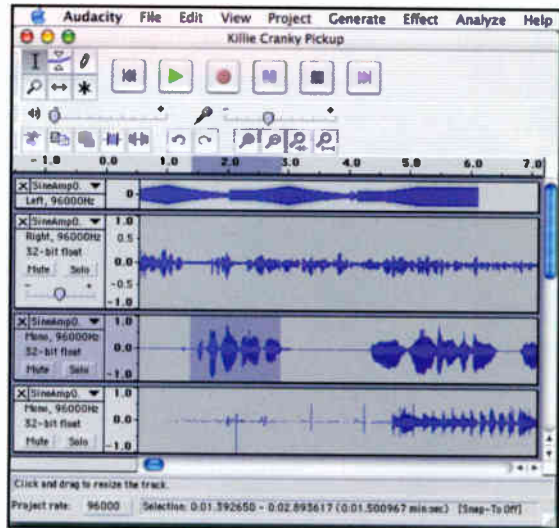
More Free Beer

Or, More Than You Want to Know About Open Source

It's December, and Santa has once again failed to take your request for a refurbished ATR-100 seriously. Well, I can't blame him, but I can continue our discussion of mostly free Open Source stuff that's useful to audio geeks.

Let's begin by assuming that we want to put together an Open Source audio workstation. Fine and good, but most current mouse jockeys recoil in horror when presented with a text-only user interface. Text only? Yup! Lurking underneath all modern, post-Macintosh operating systems is a purely text-driven computer; you see, a graphical user interface, or GUI, is for humans and certainly not for the poor microprocessor doing all of the work. There are many Open Source GUIs out there that lay on top of raw Open Source operating systems, including GNOME, a mature but homely choice, and KDE, a particularly nice, integrated environment.

Once you have a GUI, you can put together a workstation. Take your pick of Ardour, Audacity, ReZound, Snd and Sweep (i.e., the "big five"). There are also a bunch of simple sound file editors to noodle with, including DAP, GLAME, GNUsound, Kwave, LAMP, MiXViews and WaveSurfer. DAP is a RAM-based editor, while GLAME and Kwave are GUI-specific editors (for the GNOME and KDE environments, respectively), but the remainder are disk-based and independent of GUI. All of these editors run under Linux and offer several flavors of Unix, including BSD,



Audacity is a free audio editor from Apple.

IRIX and Mac OS. They vary as to sound card support, but that's primarily an OS and driver issue (see "Open Source Plugs" sidebar). These simple editors are largely butt-ugly, but the big five are fairly sweet and include some nice features, including visual analysis tools and object-oriented signal processing. Dave Phillips, author of *The Book of Linux Music & Sound*, suggests ecasound. "It's a text-based DAW, very complete and powerful. There's a nicely evolving GUI available for it, too, called TkEca."

Ardour, the number two editor in popularity, is a good example of an Open Source DAW that runs with RME or other quality hardware choices. Though Ardour is free, Paul Davis, the lead developer, also provides services such as turnkey systems that are built to order. Davis' take on an OSS-based DAW is that he has "...complete control over the OS when I use Linux. When I build a box to run my digital audio workstation, I don't have to accept whatever Apple or MS feels is the right kernel configuration. I can include additional third-party kernel patches, drop extraneous stuff, do anything I need to make sure that you get a box that is completely optimized for professional audio."

Of course, if you're good enough, you can do the same thing with OS X/Darwin, POSIX or BSD, but that's not Davis' point. He says, "Digidesign won't

Pedant In A Box

Recursive Acronym: a programming tradition, begun at MIT, to choose acronyms or abbreviations that refer humorously to themselves or other acronym/abbreviations. Very popular in the Open Source movement; GNU, Gnome, LAME and WINE are all recursive acronyms.

CLI: The Command Line Interface harkens back to before the Macintosh and before Windows, when a graphical user interface was still trapped in the labs of Xerox PARC. CLI tools, such as the Start > Programs > Accessories > Command prompt in Windows and the Terminal in UNIX variants (~/Applications/Utilities/Terminal in Mac OS), provide the most basic of high-level command and control tools for modern operating systems and behave much like an acoustically quiet version of the noisy, electro-mechanical teletypewriter ancestors from which they descend.

—Omas

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even certify most Wintel systems for use with Pro Tools, and every noncustom DAW maker recommends using a dedicated, stripped-down system for their products. People either can't afford or don't want to do that, and this contributes to the instabilities they face. Most audio practitioners make so little money that they can't afford not to fully utilize a relatively large capital expense."

Another less-obvious advantage of the strategic use of Open Source in your business is its potential for virtual immortality. Audio companies come, go and get absorbed by multinationals, but Open Source code is freely distributed, which allows for continued maintenance and development without its original creators.

Open Source Plugs

For audio geeks, one of the most crucial deficiencies of Linux-based audio workstations used to be the lack of standardized programming interfaces, both plug-ins and hardware. As with other operating systems, long and passionate discussions have led to different concepts for plug-ins, the most widely accepted being LADSPA, the Linux Audio Developers' Simple Plugin API. Our friends, the VST plug-ins, are also supported in Linux.

The AGNULA and PlanetCCRMA projects are good examples of what's available for download: system enhancements including a low-latency kernel, Java support in the case of PlanetCCRMA, and drivers for common hardware, synthesis engines, audio software development packages, simple editors, mixers and "CD managers," along with tool sets of various kinds, including applications for DJs, computer-assisted composition, lossy codecs, file serving/streaming and conversion, DSP, MIDI, music notation and speech processing. For hardware, Jack and ALSA, the Advanced Linux Sound Architecture, are the big kahunas of APIs.

—Omas

Though OSS includes a wide range of applications and development frameworks for all sorts of needs, there is a rich collection of audio stuff. The FreeBSD folks alone list 416 audio applications and utilities, and that's just FreeBSD! There's a wide array of software available, including editors and players for sound files and samples, MIDI utilities, lossy and lossless codecs, IIR and FIR filter designers, synths and public-domain sheet music, along with helper applications such as servers and asset management. If you're a fan of online file sharing, you can find OS clients for Audiolgalaxy and LimeWire, itself an OS enterprise. Then, of course, there's Gnutella, "...a network by the people and for the people." Da, comrade! The "GNU" in the name provides a hint of the founder's political leanings.

We all use MP3 players, and there are

several open efforts to create a substitute music database for Gracenote's commercial CDDB. One choice is Freedb, and another is MusicBrainz. These organizations maintain servers that enable audio CD and MP3/Vorbis players to download metadata about the music they are playing. Speaking of Vorbis, the folks at Ogg Vorbis maintain what is probably the most popular Open Source lossy codec package on the planet.

Sometimes, you may want to run a particular application and Windows is needed, even though you've converted your hardware to an Open Source OS. One solution is a double-boot arrangement, allowing you to pick a boot disk and accompanying OS. Another is a

hardware emulator (think virtual PC) like DOSEMU (DOS Emulation), or a "compatibility layer" such as WINE—which is an implementation of the Windows 3.x and Win32 software modules—or APIs on top of X11 and Unix. X11 is a graphical user-interface toolbox for Unix and WINE that allows you to run some Windows 3.1/95/NT applications without Windows. DOSEMU is a Linux emulation of DOS that runs many DOS programs. One caveat: Commercial DAWs won't run under either WINE nor DOSEMU.

For the record, OSS is not limited to wild-eyed zealots. RealNetworks has its Open Source Helix Universal Server, which streams Real Media, Windows Media, QuickTime, MPEG 4 and MP3 media, while the Darwin core of Apple's OS X is also Open Source. Old-school networking stalwart Novell has bought

Linux distributor Ximian, and there's speculation that Sun Microsystems, in its own bi-polar fashion, may offer a Sun-branded Linux distribution, as well.

Last month, I included the quote: "...contributing [to Open Source development] is simply way too hard" for most programmers. The same can be said of Open Source in general. On the user side, it's the same guts-and-glory thing that also drives those Windows users who need to feel a sense of mastery over an unwieldy and arcane knowledge. One thing I need to make clear is that, by and large, OSS is for those who are comfortable pushing bits around the old-fashioned way: in a Command Line Interface. Though modern distributions of Open Source operating systems are partly or completely wizard-driven, many Open Source utilities and applications are installed and configured under the guidance of a CLI. Also, for all computer users out there who have had a virus or spyware infestation during the past 12 months, or whose understanding of OS is as deep as an episode of *Friends*, you should probably stick with a commodity product.

Though many Open Source apps look and behave just like their commercial brethren (Mozilla and OpenOffice, for example), at this stage in its development, a large percentage of Open Source is still aimed at experienced, administration-level computer users. Programmer/musician Nick "The Piano Player" Porcaro opines, "Open Source stuff is great for the academic community because there aren't as many commercial pressures, and so, in theory, more people can contribute with a freer mindset. But in reality, lots of folks have some sort of agenda. By the way, I just blew off Linux for my Web server because it was much more time-consuming to configure than the Windows 2k server." Porcaro has been beating Unix into submission for many years! So, if you're good to go with the übergeek factor, don an apron, grab a terminal window and join me in the download trough for a free feeding frenzy. Happy holidays! ■

*Thanks to Dave Phillips for his suggestions. You can drop by www.seneschal.net for an extended mix of this column, along with links to all of the wares mentioned. This month's "Bitstream" was created while under the influence of Charlie Hunter Quintet's Right Now Move and Akira Kurosawa's stark, sassy *soba western*, Yojimbo.*

We are proud to announce our recent AES win of the **2003 TEC Award** for the **6176 Channel Strip** in the Mic Preamp category. The Combination of the 610 Mic pre with the 1176LN limiter has proven to be sonic dynamite! Thanks to Mix readers for making the 6176 another classic.

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Tools of the Trade



STORCASE INFOSTATION 12-BAY SATA/PATA ENCLOSURE

This new 12-bay InfoStation from Storcase (www.storcase.com) lets you store data on inexpensive and fast SATA or PATA drives and communicate it via a U160 SCSI port to the host. It includes a high-performance RAID controller that supports levels 0, 1, 0+1, 3 and 5. There is also a 5.25-inch peripheral bay that can accommodate a tape drive for backups. The unit exceeds today's drive manufacturers' power, cooling and rotational vibration requirements. Price: \$5,421.

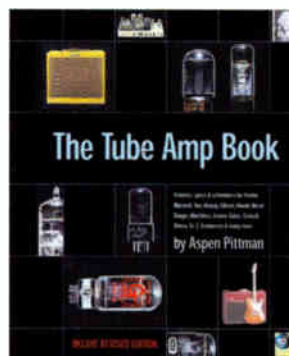
AVIOM DIGITAL AUDIO SNAKE

Aviom's (www.aviom.com) flexible, modular system uses a trio of products to build a 24-bit/48kHz (fixed) multichannel digital distribution line across a single standard Cat-5 cable. The AN-16/i Input Module, the AN-16/o Output Module and the A-16SB System Bridge use Aviom's proprietary A-Net protocol, which boasts less than one millisecond of latency from analog input to analog output. A maxi-

mum 64-channel audio transfer is possible in either direction and can be arranged in a number of creative configurations. Cable lengths between each system component can be up to 500 feet long, and the snake can be integrated into Aviom's A-16 Personal Monitor Mixing System. Price: AN-16/i Input Module, \$899.95; AN-16/o Output Module, \$899.95; A-16SB System Bridge, \$249.95.

THE TUBE AMP BOOK— DELUXE REVISED EDITION

Just in time for holiday gift-giving, the best-selling *The Tube Amp Book* by Groove Tubes founder Aspen Pittman is now available in an expanded edition. The 4-color, oversized hardback book has 400 pages of specs and info on classic tube



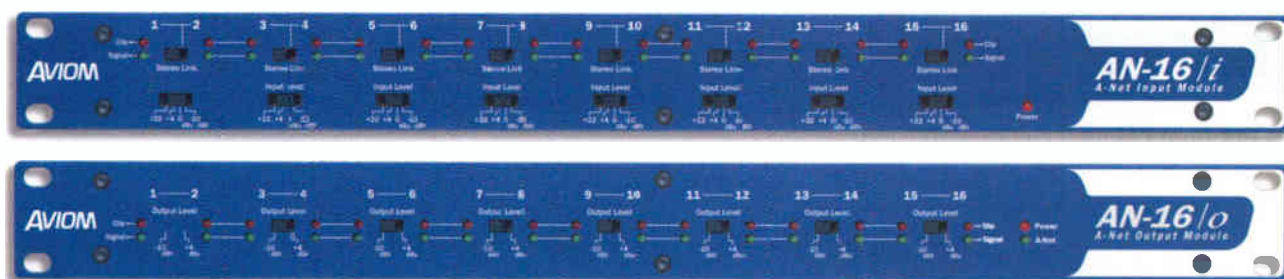
amps, a section of tech articles on nearly every aspect of tube amp design and operation, and hundreds of classic and modern amp schematics. Also included is a bonus CD-ROM with a database of 800-plus amp schematics in PDF format. Retail is \$49.95. For more info, visit www.groovetubes.com/product.cfm?Product_ID=2065.

BACKUP NOW! BACKUP 3 DELUXE SUITE

This newly upgraded software package from NewTech Infosystems (www.ntius.com) claims that the Backup 3 Deluxe Suite is currently the only software package providing full image and individual file/folder backup using virtually all CD or DVD recordable devices, as well as internal/external hard drives. Dynamic drive support lets the software confirm support for any CD or DVD burner, even if the device isn't registered in

NTI's drive support database. NTI's Live Update automatically optimizes the backup and recovery software to complement the device. To save space when backing up, NTI's on-the-fly data compression capability allows storage of up to 1.4 GB of vital data on a single CD or up to 9.4 GB on a single-sided DVD. The software also features a new, improved GUI; disaster recovery support for

Windows NT, 2000 and XP; and many other new features. Platforms supported include Windows 9x/NT/Me/2000/XP. Price: \$79.99.

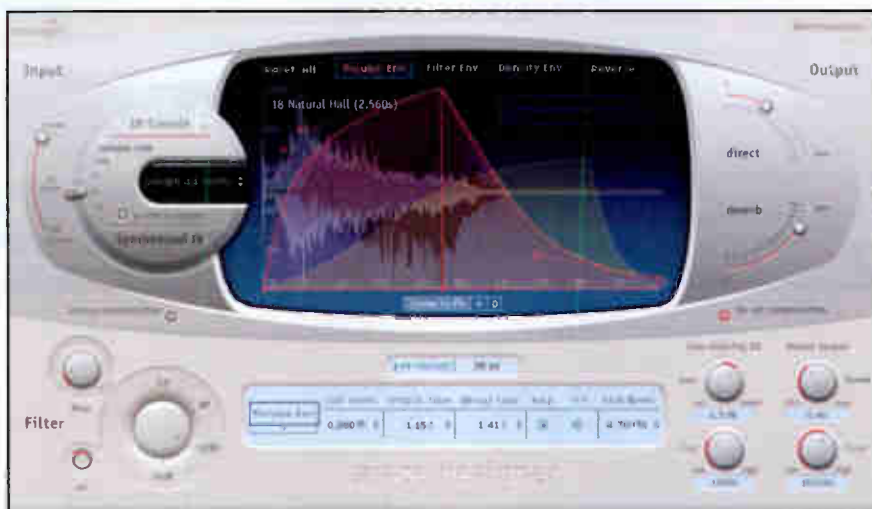


ASC ISO-WALL

Developed for the DIYer or contractor seeking to soundproof their audio workspace, the Iso-Wall system from Acoustic Sciences Corp. (www.acoustic-sciences.com) uses construction-grade, vibration-absorbing, visco-elastic Wall-Damp polymer tiles and isolation strips. Additional components include clamped resilient channels, perimeter gaskets, wall-bearing felt and construction-grade acoustic sealant. The Iso-Wall system is available at \$4 per square foot of surface area, and various kits are available to accommodate a wide range of room sizes. The Iso-Wall components can be shipped via UPS anywhere in the U.S. or internationally.

CALREC HYDRA AUDIO NETWORK

At the recent AES Convention, Calrec (www.calrec.com) unveiled an advanced networking and mic preamp system enabling I/O resources to be shared throughout the company's entire digital console line. Built on gigabit Ethernet technology, the Hydra audio network boasts a highly reliable, user-friendly system across a very high bandwidth. Connections between the digital I/O rack and the Gigabit Interface Unit allows up to 128 bi-directional channels between Calrec's Zeta, Sigma and Alpha 100 consoles.



EMAGIC SPACE DESIGNER

Emagic (www.emagic.de) recently unveiled the Space Designer plug-in for Logic 6, which features a real-time convolution process using reverberation samples to model any space's acoustic signature. In addition, Space Designer is equipped with a synthesis engine used to create custom impulse responses and can further alter the reverberation using envelopes for volume, filter and density. Space Designer ships with more than 1,000 impulse responses and synthesized settings, including real rooms and halls, as well as legendary classic and contemporary reverb units. Space Designer requires Logic Platinum, Logic Gold and Logic Audio 6.3 or higher.

GEFEN ADC/USB EXTENDER

The absence of noisy CPUs in today's audio workspace is a good thing, and Gefen's (www.gefen.com) affordable, low-profile extender helps make the quiet possible. Designed to be used with Apple's flat-panel display line, the extender relies on an active circuit cable to transmit power, as well as ADC display and USB signals, up to 16 feet. Adding another extender cable can double that distance. The extender requires no additional power supply or hardware to operate. Price: \$249.

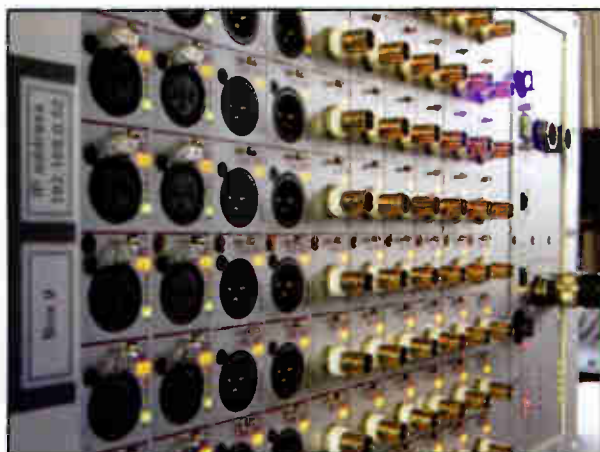
MACKIE DREAMVERB

Mackie (www.mackie.com) now offers DreamVerb, Universal Audio's flagship stereo reverb for the Mackie UAD-1, which allows users to build a virtual acoustic space from a list of different materials and room shapes. Features include a 5-band parametric EQ and level ramping for early and late reflections, creating sounds ranging from extremely realistic dynamic room simulations to lush reverb effects. Acoustic spaces can be further customized by blending different room shapes and surface materials and even varying the density of the air to simulate different room ambience. Price: \$149.



STEFAN AUDIOART EQUINOX HD600/580

Stefan AudioArt (www.stefanaudioart.com) introduces the Equinox HD600/580, a user-installable cable that replaces the stock cable for the Sennheiser HD600 and HD580 headphones. The handmade Equinox cable





uses a proprietary process to ensure maximum flexibility and offers superior durability over the stock cable. The manufacturer claims that the cable provides improved audio performance, including enhanced transparency and significant extension in the high and low frequencies. It is available in custom lengths with a variety of connector options. Price: \$189.

STEINBERG STUDIO CASE

The Studio Case from Steinberg (www.steinbergusa.net) bundles together five creative virtual instruments and Cubase SE, a streamlined version of the latest Cubase SL and SX digital audio sequencers. Apart from Cubase SE, the Studio Case includes Virtual Guitarist Electric Edition SE, Groove Agent SE Virtual Drummer, the Grand SE Piano, D'cota SE Synthesizer and the HALion SE Sampler. The package contains more than 700 MB of sounds, is upward file compatible with Cubase SL, SX and Nuendo, works on Mac OS X and Windows 2000/XP, and operates at 24-bit/96 kHz. Price: \$299.

LEXICON PANTHEON

Lexicon (www.lexiconpro.com) released the Pantheon reverb for Sonar 3 by Cakewalk. Pantheon includes 35 factory presets featuring six reverb types: hall, chamber, plate, room, ambience and



custom. Pantheon is being offered as a standard embedded feature of Cakewalk's new Sonar 3 Producer Edition software, as well as an LE version in the Sonar 3 Studio Edition.

CREAMWARE CHRISTMAS DEALS

Several CreamWare (www.creamware.de) products are now available as attractively priced Christmas deals from dealers worldwide, valid through December 31, 2003. The hardware synthesizer Noah and its expanded version, Noah EX, are available at reduced prices of \$1,395 and \$1,795, respectively. When you buy a Pulsar II at \$995, you will receive the Mix 'n' Master Pack and the Synths 'n' Sampler Pack at no additional cost. For \$1,995, the PowerPulsar system comes with both of these plug-in packs until year's end. Pulsar XTC retails at only \$695, and includes the new plug-ins OptiMaster, Vinco, PSY Q and MasterVerb Pro. The two software bundles—Mix 'n' Master Pack and Synths 'n' Sampler Pack—are available at \$595 each for existing Scope Fusion Platform users.

DAKING FET COMPRESSOR II

Geoffrey Daking (dist. by Transamerica Audio Group, www.transaudiogroup.com) introduced the FET Compressor II at this year's New York AES convention. The compressor, an updated version of the renowned Daking FET Compressor, features a new internal switch, allowing either a complete hard bypass of the unit or the compressor, while maintaining the ability to use the final gain stage. The unit embodies all-discrete transistor circuitry, transformer-balanced inputs/outputs and Class-A amplifiers. Attack times can be set from 250 microseconds to 64 milliseconds, while the unit's customized Neve

33609 Auto, A/D Complex Auto and Fairchild 670 #5 and #6 release settings are faithful to their vintage namesakes.

MBR CUSTOM ACOUSTICAL DESIGN

MBR Design Group (www.mbr-design-group.com) now offers a long-distance turnkey solution to acoustical design. The process involves three steps: MBR receives CAD schematics or digital photographs of the proposed space; MBR custom-engineers the correct room treatment; and then MBR provides a complete list of required products and installation schematics. In addition, there are more than 40 types of acoustically transparent fabric choices, letting users match their interiors and color designs.



CONTOUR DESIGN PERFIT MOUSE

Re-engineered to incorporate optical technology, improved reliability and increased functionality, the Perfit Mouse Optical from Contour Design (www.contourdesign.com) retains all of the ergonomic benefits that have made the original Perfit Mouse so popular, with an 800 dpi optical sensor providing increased cursor performance. The Perfit Mouse Optical comes in medium and large right-hand models, and sells for \$109.

ANTARES BUNDLES

Antares (www.antarestech.com) released two new plug-in bundles for Mac TDM and DirectX users. Each bundle includes



Waves SoundShifter is for anyone who wants to shift the pitch or shift the time of audio tracks. SoundShifter is a NEW processor that enables the manipulation of Time and Pitch while preserving the punch, groove and transients. SoundShifter is unmatched for clarity, timing accuracy, and a lack of artifacts and distortion.

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SoundShifter

TRANSFORM YOUR SOUND.

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UNMATCHED QUALITY Robust, high quality, independent time scaling and pitch shifting for "no hassle" processing and superior audio quality.

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GRAPHIC TOOL for time/pitch scaling with variable automated ratios.

REAL TIME TOOL for immediate no-hassle real time pitch shifting.

FOUR ALGORITHM MODES Sync, Smooth, Transient and Punchy for optimizing the processing to your specific audio needs.

INTEGRATION into the Pro Tools TDM "Time-Trimmer Tool" for seamless edit operation directly on your tracks.

CONTROL & DISPLAY OPTIONS Time, Tempo, Bars, Samples, SMPTE, Feet & Frames, Pitch, Interval, Frequency. Express the source and destination time and pitch the way you need to see them.

FOUR LINK MODES Unlinked, Time, Pitch, Strapped—allows you to easily define the relations between pitch and time manipulations.

WAVES-SYSTEM AUTOMATION allows extensive automation of time/pitch manipulations in real time and graphic modes.



- SoundShifter—Featured as part of the Waves Transform Bundle with:
- TransX—A transient designer—for edge control
- Morphoder—Vocoding and beyond
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(NORTH & SOUTH AMERICA) 306 W. Depot Ave., Suite 100, Knoxville, Tennessee 37917, phone: 865-546-6115, fax: 865-546-8445

World Radio History

Auto-Tune 3, Microphone Modeler, kantos 1.0 and Tube, and costs 40% less than purchasing all plug-ins individually. Price: Mac Pro, \$999; DirectX, \$599.

SMART LOOPS FREE LOOPS

Smart Loops is offering a tantalizing package of free loops lifted from its most popular retail titles. The Acid-compatible loops are optimized for programs that change audio tempo and pitch, such as Cakewalk's Sonar, Home Studio 2002, Project5, Plasma, Music Creator and Guitar Tracks Pro, as well as all Sonic Foundry Acid programs. A wide variety of drum, percussion, electric guitar and bass guitar loops may be downloaded at www.smartloops.com/Free.

DRUMS ON DEMAND

Created from contemporary studio recordings, Drums on Demand (www.drumsondemand.com) offers nearly 900 stereo, royalty-free loops (almost 700 MB) organized into 41 easy-to-use song sets. Multiple sets of verse, chorus, fill and bridge sections allow the user to create a believable drum track. The loops are offered in multiple time signatures, tempos (72 to 170 bpm) and styles including rock, pop, rim-based and brush loops. The package runs cross-platform (PC/Mac), is optimized

for Acid and Cakewalk programs and is compatible with all programs that read 24-bit .WAV files, such as Pro Tools and Digital Performer. Price: \$49.95.

SRS CIRCLE SURROUND VST PRO

SRS Labs' (www.srslabs.com) SRS Circle Surround VST Pro is a new surround encode/decode plug-in suite for Mac OS X or Windows XP VST-powered software apps, such as Nuendo 1.5 or Cubase VST 5.0 (or higher). Based upon patented Circle Surround technology, the plug-in encodes pro-quality, full-bandwidth (44.1/48/96kHz), 6.1-channel surround onto any 2-channel medium, with full stereo and mono compatibility. The package also includes a decoding plug-in for monitoring playback during production, allowing users to confirm that mixes are exactly what consumers will hear.

SYPHA DAW BUYERS GUIDE

SYPHA announced an all-new edition of *The DAW Buyers Guide* that can be accessed, free of charge, at <http://SYPHAonline.com>. *The DAW Buyers Guide* is the most comprehensive database of current professional digital audio workstation technology that exists in any medium. It covers every applicable product and all system types, including



turnkey systems, desktop DAWs, audio hardware and software packages, DAW controllers, disk-based multitracks and portable tapeless recorders.

TAPCO JUICE POWER AMPS

The new TAPCO (www.tapcogear.com) Juice power amps include the J•800, J•1400 and J•2500, featuring power output of 800, 1,400 and 2,500 watts, respectively (@ 4 ohms bridged). The amps include easily switchable mono/stereo/mono-bridged operating modes, as well as a third Speakon output provided for mono-bridged applications. A 30Hz subsonic filter ensures low-frequency speaker protection. All amps are two rack-units tall and include handles for easy transport, plus features such as front-panel control protection, defeatable clip limiter, front-panel signal and overload indication, and XLR and TRS inputs. Price: J•800, \$419; J•1400, \$549; J•2500, \$699.

UPGRADES AND UPDATES

SoundArt is now offering the Chromasonic Version 1.1 multi-effects processing application for the Chameleon single-rackspace reprogrammable DSP processor. Loaded via MIDI, the Chromasonic "soundskin" offers three simultaneous effects programs, including Auto-panner, Parametric EQ, Compressor/Limiter, Gate, WahWah and many time-based effects. The update is available free to Chameleon users via download at www.soundarthot.com... Digidesign announced that the latest version of Pro Tools software (V. 6.2 r2) will now support the Apple G5 1.6GHz and 1.8GHz single-processor platforms. For a free download of the new version, visit www.digidesign.com... Symtetric is now offering the 3.5 upgrade to the SymNet Designer application software. A free

upgrade available online (www.symtetricaudio.com), SymNet Designer 3.5 is backward-compatible with all existing SymNet Audio Matrix hardware. From a Windows PC platform, the Designer software is used to configure and tweak a SymNet system, on-site in real time if desired... Propellerhead Software (www.propellerheads.se) has announced that every new Digidesign Pro Tools system will now include the ReWire-infused Propellerhead Software, Reason Adapted, Ableton Live Digidesign Edition, and IK Multimedia AmpliTube LE, SampleTank SE and T-Racks EQ, in addition to core Pro Tools software... Native Instruments (www.native-instruments.com) released the FM7 1.1.1 update, which brings the legendary FM synthesizer to Mac and Pro Tools users on OS X and

Windows XP. The FM7 1.1.1 fully supports Audio Units, RTAS, VST and stand-alone operations with CoreMIDI and CoreAudio. The FM7 1.1.1 update is immediately available to all registered users as a \$29 direct download (\$49 for CD). The acclaimed "FM7 Sounds Vol. 1" preset collection, which adds 256 additional presets to the FM7, is downloadable in a special package, with the update, for \$59 (\$79 for CD)... Digigram (www.digigram.com) released a Linux driver under Open Source licensing for its miXart 8 and miXart 8 AES/EBU multichannel sound cards. The driver follows the most advanced audio standard for Linux called ALSA (Advanced Linux Sound Architecture) and is available for download at www.alsa-project.org. ■

Hear the difference.

Yorkville YSM1p Active Studio Reference Monitors

- Rugged 6.5-inch shielded 100-Watt woofer and shielded 1-inch silk dome tweeter arranged in a symmetrical, vertical configuration with drivers mounted slightly forward to minimize reflections off of cabinet face.
- Bi-amped power module that delivers 115 watts (85 Watts of power to the woofer, 30-Watts to the tweeter) and generates less than .05% distortion at full power.
- Specialized tweeter overpower limiting and woofer over-excursion limiting protect speaker components.
- User selectable EQ filtering ensures more flat frequency response, regardless of speaker placement. Dipswitches on the back of the monitor allow the engineer to select overall tone shaping for the cabinet.
- An additional user selectable high frequency filter has been added to allow further tweaking of the monitor to individual tastes.
- XLR & 1/4-inch TRS combi-jack balanced inputs are provided.

Feel the difference.

Yorkville YSS1 Active Studio Subwoofer

- 150-watt integrated power amplifier in a high density MDF cabinet loaded with a single 12-inch high performance speaker - ideal for any professional studio, project studio, or 5.1-surround mix station.
- A frequency response of 35 to 150Hz means the Yorkville YSS1 is capable of reinforcing the bottom end in virtually any mix situation. The power module controls include a variable frequency selectable crossover, tunable from 60 to 150 Hz, a volume control and phase reverse switch.
- A pair of XLR & 1/4-inch TRS combi-jack balanced inputs, as well as RCA unbalanced inputs are provided.

Easy to set up, easy to use.

The beauty of all active near-field monitors is the ease of use. Plug it in to the control room outputs of any mix desk, or to the audio output of any sound card, set the input levels and you're away. When it comes time to add the subwoofer, then it's as easy as literally plugging it in and turning it on. No crossover, no additional power amplifiers, no major re-wiring of your studio rack.

With a YSM1p / YSS1 system, all essential components are driven independently ensuring maximum efficiency, clarity and performance.



PETER HAMILTON, Producer, Engineer, Studio Owner



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Digidesign Digi 002 Rack

Power and Mobility in a FireWire DAW

Digidesign's Digi 002 Rack is the latest in the series that started with the PCI-oriented Digi 001, followed by the USB-connected Mbox, both intended for home studio use. The landmark Digi 002 came next, offering higher audio quality, a nice hands-on interface and FireWire connectivity. Catering to the "prosumer"—not quite home studio, but not Hollywood either—the 002 has great-sounding mic pre's, good converters and an eight-fader control surface to help old-school engineers feel at home. Now, the company extends the studio-in-a-box concept with the 002 Rack, bringing 002 features to a 2U rackmountable unit.

WHY THE RACK?

Digidesign created the Digi 002 Rack specifically for people like me, who already have a control surface but want quality audio and the reduced latency of the fast FireWire connection. I was initially doubtful of a sufficient market to support this product: Why wouldn't someone simply go all out and purchase the original fader-laden version? The answer: price. The original unit, at \$2,495, is a very good value, but the rack version, at \$1,295, is a truly excellent deal. If you already have your control surface, then you save \$1,200; the purchase of a Digi 002 Rack becomes a no-brainer. As for portability, FireWire connectivity turns your laptop into a remote studio with either solution.

With the addition of a large FireWire hard drive and an 002 Rack, a Titanium or Pentium 4 laptop becomes a very powerful studio, indeed. If you like to use the expensive mic pre's in your rig, then simply plug them in and run with it. The ability to take a Pro Tools system mobile for tracking and then return home for overdubs and mixing is very appealing, particularly for home recording enthusiasts.



Even in the strictly pro domain, though, it's nice to have mobility and then come back to the studio and mix on a TDM system.

THE SPECS

The 002 Rack features eight balanced ($\frac{1}{4}$ -inch TRS) analog ins and outs and eight channels of either ADAT or 2-channel S/PDIF via an optical I/O. The main (1 and 2) outputs are mirrored on two separate stereo outputs, balanced TRS $\frac{1}{4}$ -inch (with a dedicated front-panel level control) or unbalanced RCA at a fixed level. The unit sports four high-quality mic pre's, which sounded excellent with my condenser mic. Phantom power is available but, unfortunately, it's on the back of the unit, switchable in pairs. There is also an alternate source input (stereo RCA) for 2-track monitoring and a headphone jack with a dedicated front panel level control.

A/D and D/A conversion happens at 16 or 24 bits, and at 44.1, 48, 88.2 or 96 kHz. These are high-quality converters that sound very good. One disappointment is that the Core Audio driver does not allow the use of the Digi 002 Rack's digital outputs as the main system outputs for the Macintosh. It would be nice to be able to represent the Mac's system audio at the S/PDIF output.

RACK IT UP!

I loaded the 2U box in my rack and plugged it right into the available FireWire connection of my dual-processor 1GHz G4. The 002 Rack shipped with Pro Tools

LE Version 6.0, and I upgraded to 6.1.2 via downloads from Digidesign's Website. My initial test drive comprised plugging a nice tube condenser mic into the 002 Rack and recording a cappella vocals. It was easy to set up a session with a nice reverb and a little compression on the vocals. After an hour or two, I had built up a nice little piece. My rough mix in the Pro Tools domain sounded fine, but I wanted to hear how my Tascam DM-24 would do. I connected the 002 Rack's ADAT optical output to the ADAT input of my mixer, and then re-assigned the individual tracks to individual inputs. It was then very easy to do a more traditional hands-on mix with the Tascam console. Just for fun, I also did synchronized transfers to and from DTRS, and it was swimmingly simple.

FINAL WORD

The 002 Rack's FireWire speed allows for a low-latency, multichannel, high-quality Pro Tools interface with four excellent mic pre's. The included MIDI (1-in, 2-out) functionality is another nice touch. If you don't need a built-in control surface, then the Digi 002 Rack will turn your computer into a high-powered portable studio-in-a-box.

Digidesign, 650/731-6300, www.digidesign.com. ■

John McJunkin is the chief cook and bottle-washer for Avalon Audio Services in Phoenix, and is currently pondering the idea of techno remixes of West Texas Swing music.

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ADAM Audio S2-A Powered Monitors

Innovative Design, High-Tech Materials, Small Package

The ADAM Audio S2-A is a 2x150-watt (RMS) powered monitor with a 7.5-inch HexaCone Woofer and a 71-cm² Accelerated Ribbon Technology (A.R.T.) tweeter. The manufacturer claims a wide bandwidth response (35 Hz to 35 kHz, ± 3 dB), THD less than 0.6% (above 80 Hz) and maximum output of 109 dB (@ 1 m). Their size is compact at only 9x15x13 (WxHxD) inches, with weight about 28 pounds. The back panel includes a balanced XLR and a power switch. On the front, along with the bass port, there is a standby switch, input gain and three controls that allow users to tune the output for their listening environment. A High Gain control cuts or boosts the tweeter amplifier 4 dB and two Room EQ controls that are 6dB cut/boost shelf filters for above 6 kHz and below 150 Hz.

Dropping words like "HexaCone," "Accelerated Ribbon Technology" and "Speed Transform Ratio," the manufacturer's spec sheet uses some pretty impressive terminology. HexaCone is a composite of Kevlar bonded to Nomex. Kevlar is used in bulletproof vests, and Nomex is used in fire suits. (Okay, I'm impressed: If a client doesn't like the mix, we can actually shoot the monitor and not kill it.) HexaCone is supposed to be stiffer and lighter than conventional paper or polymer cones. The resulting combination of less weight and greater stiffness is supposed to produce a tight, smooth low- and mid-frequency response. Accelerated Ribbon Technology is radically different from coil-based transducers that are basically pistons moving air. The A.R.T. ribbon uses folded strips that squeeze air with the alternating current of the audio signal. ADAM Audio claims that the A.R.T. principle causes air to move in and out of the folds 4x faster than the folds themselves are moving (i.e., 4:1 speed transform ratio). The design is supposed to reduce mechanical resistance and provide improved transient response. Additionally, the ribbons' larger surface area (as compared to

dome tweeters) should allow smaller movement for a given sound pressure level and enable the tweeter to operate more efficiently without introducing dynamic compression.

Two simple questions: What is the loudspeaker capable of, and how well does a mix hold up when played on other loudspeakers? My tests had two parts: First, I took my SIA-Smaart test gear and a pair of S2-As to the Vanderbilt University acoustic research laboratory and borrowed their anechoic chamber (a specially designed room built for testing pure loudspeaker performance). There, I executed some basic frequency response tests to check their performance against the manufacturer's spec sheet data. Then, I went to Ocean Way Nashville's Studio A, remixed a 24-track master of a blues/rock band I cut a few years ago, and took that mix and played it on anything I could find to ensure the mix's viability and the speaker's performance reliability.

TESTING, 1, 2, 3

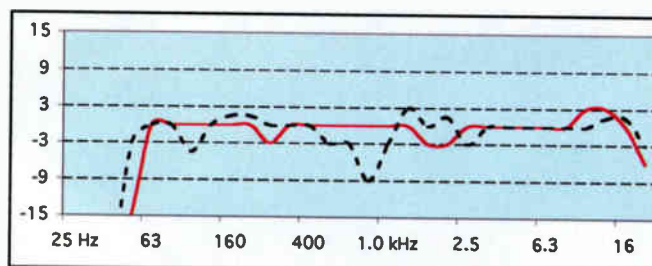
My goal in the anechoic chamber was to determine what effect the front-panel controls have on the signal, and if they would allow the loudspeaker to be tuned to produce a flat response across the audio spectrum. I placed a B&K calibrated test microphone one meter in front of the loudspeaker and performed 11 test sets, including a pair for each of the three front-panel controls: One had controls set to flat (the "0" setting) and one using the controls to try to produce a true flat response across the spectrum. With the con-

controls in the "0" position, the S2-A's output wasn't exactly flat. However, it was within the manufacturer's specification of ± 3 dB variance. On the bottom end, the overall response dropped off sharply below 55 Hz, a bit above the listed claim of 35 Hz. On the upper range, the A.R.T. tweeter was still kicking with no drop in signal, whereas my test gear stopped at 24 kHz; they claim response to be out to 35 kHz—we'll give 'em that one. Overall, there was a rise of a few dB at 80 Hz, a little dip between 1.6 and 4.0 kHz, and another bump in output around 15 kHz. The High Gain control tended to cut at a lower frequency than it boosted, and the Room EQ Above 6 kHz control created a 6dB peak centered at about 10 kHz, rather than a true shelf that should continue above the turn frequency. I did find that the controls allowed me to tweak the response curve

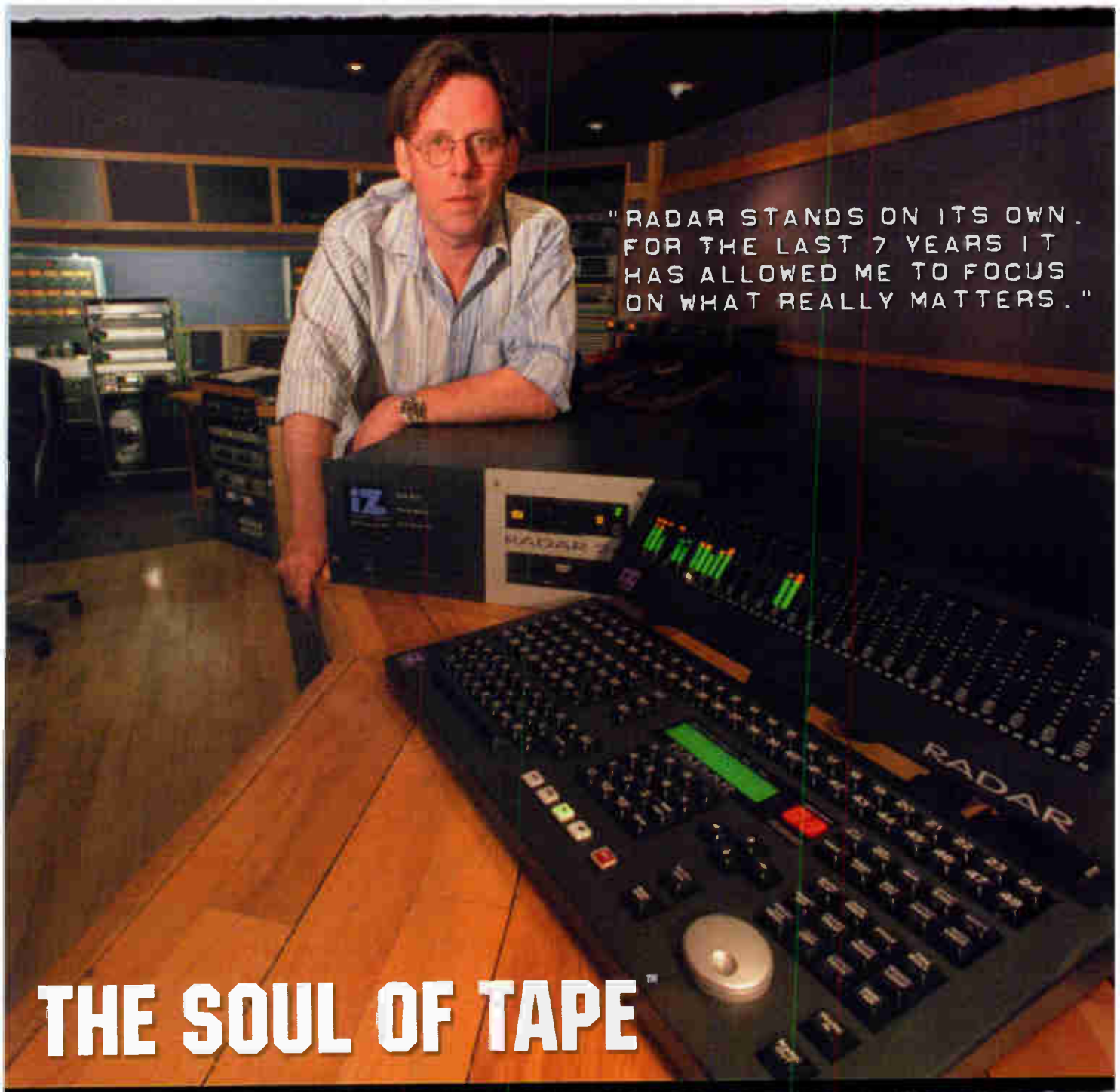
and get it fairly close to flat in the chamber (refer to red line in the graph).

IN THE STUDIO

At Ocean Way Nashville, I used my Nuendo/MOTU workstation as the source and placed the monitors at standard position over the Neve meter bridge, about two meters from the sweet spot. After positioning the monitors, I



Response curves of the ADAM Audio S2-A in the anechoic test chamber (red) and above the console meter bridge (black) at Ocean Way Nashville's Studio A control room.



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Web <http://www.acousticsfirst.com>

calibrated each to a listening level of 85 dBA and used the front controls to tweak the response to the best possible curve. The graph shows the result at the listening position: Note the dip at just below 1 kHz. I managed to get the top and bottom tweaked in pretty well, but it would've been nice to have a third Room EQ control to tune the midrange more accurately.

My first task was listening to familiar CDs from my collection: Sting, Bonnie Raitt, Yes and 10,000 Maniacs. I was immediately impressed with the clarity on the top and the tightness of the bass response. I can honestly say that my CDs have never sounded better. In fact, they sounded so good that my first thought was, "Okay, my mix will sound great here and terrible everywhere else." However, when I started mixing, I found it unusually easy to EQ the instruments for blend. The kick drum and bass were tight and clear, and the top end was smooth and easy on my ears. In fact, I didn't notice the dip in the midrange, and for the first time, I didn't feel like I needed to EQ the toms and electric guitar to make them fit into the mix. In short, I was able to get a good reference mix after only about two hours, and it seemed to come fairly easily.

I took my CD reference anywhere I could. On the low end, I listened on two sets of multimedia computer speakers: one in my office at home and the other in my office on-site at Altec & Harmon. For a midrange comparison, I listened to Tannoy and Yamaha monitors at Belmont University; on the high end, it was JBL, KRK and Genelec (all self-powered) in the studios' control rooms on Belmont's campus. Okay, I *am* impressed. I can honestly say that everywhere I listened, the mix transferred surprisingly well. In short, I like 'em.

CONCLUSION

The S2-As performed exceptionally well even though my tests did not reflect results that were quite as good as the manufacturer claimed that they would be. Even so, if you're looking for a high-end small studio reference monitor, the S2-As hold up with the best products currently on the market. For ADAM Audio, the combination of innovative design and high-tech materials has paid off quite well.

ADAM Audio, 805 413-1133, www.adam-audio.com. ■

Dr. Wesley Bulla is a freelance audio engineer and an associate professor in the Curb College of Entertainment and Music Business at Belmont University (Nashville).

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World Radio History

MOTU HD192 High-Definition I/O Core System

Superb I/O Box With Onboard Mixing for DAWs

MOTU's new flagship DAW I/O box, the HD192 High-Definition I/O, is available as part of a core system (\$1,895; reviewed here) that includes the company's PCI-424 I/O card and AudioDesk™ software. (The Mac-compatible AudioDesk is a stripped-down version of MOTU's Digital Performer (DP), and omits the latter's MIDI functionality and advanced digital features.) Alternatively, the HD192 can be bought as an expansion-I/O box (\$1,595) that users can add to an existing PCI-424 system.

The 2U rackmountable HD192 offers 12 line-level analog I/O, AES/EBU I/O (one each), comprehensive Word Clock I/O and high-resolution LED-ladder metering. A single AudioWire port on the HD192 connects to one of four identical ports on the PCI-424 card using a 15-foot FireWire cable; the cable shuttles proprietary- (not FireWire) format digital audio between the HD192 and the PCI-424 card.

The PCI-424 card's four AudioWire ports can be used with any combination of MOTU PCI-based I/O boxes, including the newer 2408mk3 and 24 I/O, and legacy interfaces such as the 1296, 1224, 24i, 308, 2408mkII and the original 2408. Routing assignments are accessible for each box in turn via a drop-down menu in the included MOTU PCI Audio Console software or DP's Configure Hardware Driver window. The four AudioWire ports can accommodate up to 96 I/O when used with four MOTU PCI-based 24-channel boxes, or up to 48 I/O when used with four HD192s. A single ADAT 9-pin sync port graces the PCI-424.

The biggest breakthrough of the PCI-424 system is its integration of hardware with the included CueMix DSP™ mixing and monitoring software. The PCI-424 card and CueMix DSP software together provide near-zero-sample-latency monitoring—no matter what buffer settings you use—via the outputs of any connected I/O boxes. (MOTU times the round trip through the PCI mixer at seven samples.) Although this system might forego the need for a hardware-based mixer and/or patchbays for some, I found that it inte-



grated extraordinarily well with my Yamaha 02RV2 digital mixer. Keep in mind that this system only slashes latency for audio signals that are routed directly through the PCI-424 card, as when using DP's Direct Hardware Playthrough mode. It cannot, for example, reduce latency in virtual instruments or for tracks played through plug-in effects. According to MOTU, the PCI-424 system is compatible with all major Mac and PC audio software applications.

TAKE ME HIGHER

The HD192 distinguishes itself from MOTU's other I/O boxes in a number of ways. First, it's the company's only 24-bit PCI box that can currently pass 176.4- and 192kHz digital audio, in addition to accommodating 44.1, 48, 88.2 and 96kHz sampling rates. Whatever sampling rate you choose, the HD192's A/Ds and D/As can each carry 12 audio channels. The HD192's dynamic range is specified to be 120 dB (A-weighted), greater than that offered by other MOTU boxes.

Analog I/O is via 24 servo-balanced (+4dBu nominal) XLRs (12 ins and 12 outs) found on the unit's rear panel. Two additional XLRs serve as AES/EBU input and output, respectively. Because the HD192 only accommodates 12 input channels at once, the only way to get a stereo AES/EBU signal into the HD192 is by selecting the AES/EBU input port (using included software) to temporarily replace a chosen pair of analog inputs. However, you don't lose analog outputs when you *output* AES/EBU signals; you simply choose which analog output pair you wish the AES/EBU output to mirror, and whatever goes out those analog outputs will also be multed to the AES/EBU output. The HD192's AES/EBU output can

also mirror any pair of the unit's analog *inputs*, providing, for example, a convenient 2-bus return path to a digital mixer. The HD192 can resolve to SMPTE timecode arriving at any of its analog inputs, and can generate SMPTE at any standard frame rate and send it (at an adjustable level) out any analog or digital out.

Three BNC Word Clock connectors are on the rear panel. Two are system-wide Word Clock I/O that externally sync the unit's A/Ds and D/As when they're not locked to internal clock or the AudioWire bus' clock. (Only one I/O box in a multi-box PCI-424 system can sync directly to external clock. That box then passes Word Clock on to the other boxes via the AudioWire bus.) The third BNC is a Word Clock input that syncs the HD192's AES/EBU I/O, allowing this section to resolve to a different sampling rate than the analog section. Independent AES/EBU I/O sample rate converters let you seamlessly merge audio from the analog and AES/EBU sections. You can even simultaneously operate the HD192's converters, AES/EBU input and AES/EBU output at three discrete sampling rates.

Two dozen 19-segment LED ladders show analog I/O levels for the HD192. These outstanding peak-hold meters are more highly resolved toward the top of their range. At the top of each LED ladder are two red LEDs that indicate digital "overs." One of these LEDs is relegated to peak level readings, and the other is a dedicated clip LED. I noticed that the HD192's over LEDs routinely lit at levels a hair below that needed to light DP's various clipping indicators.

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FIELD TEST

THIS IS YOUR CUE

The HD192 Core System's included CueMix DSP software provides a virtual mixing board (dubbed the CueMix Console), complete with a fader, pan pot, clip LED, and solo and mute switches for each input channel currently in use in your system. CueMix DSP lets you route any combination of inputs to multiple pairs of stereo outputs across all interfaces in the PCI-424 system, without imposing any load on the CPU. This allows you to create as many stereo cue feeds—each having totally independent mix settings—as you have stereo buses in your system. You can name, save, recall and copy/paste different mix setups. Unfortunately, you can't hide inputs in the CueMix Console, making it a bit unwieldy on large projects. [MOTU says a software revision now lets you name inputs for easier navigation—Eds.]

However, DP users don't even need to use the CueMix Console to take advantage of the PCI-424's near-zero-latency monitoring, because DP's Mixing Board window (i.e., all of its virtual faders, pan pots, and solo and mute switches) also control Direct Hardware Playthrough monitoring. The output of DP's Mixing Board combines with that of the CueMix Console.

I used the HD192 Core System on a project in which I simultaneously tracked drums, bass, guitars and keyboards for several weeks, using Digital Performer Version 3.02 running on my dual-processor 867MHz G4 PowerMac. During all tracking sessions, I kept DP's buffer setting at 1,024 samples (greatly minimizing the hit on my CPU and improving stability) and could not perceive any latency in the monitor mix. I routed all musicians' cue feeds in Direct Hardware Playthrough mode using DP's Mixing Board window, never once opening the CueMix Console. I simply routed all audio tracks (both live and prerecorded) to pairs of ADAT Lightpipe outputs on my legacy 2408, which were, in turn, routed to my Yamaha 02RV2 mixer. Now I had the best of all worlds to work in: I could exclusively use premium outboard mic pre's, compressors and A/Ds (including the HD192's A/Ds) to record all tracks, completely bypassing my mixer. In addition, my 02R's "tape" inputs supplied my own monitor mix, and the 02R's aux 5 and 6 faders sent an independent (near-zero-latency) pre-fader mix to the musicians' headphone amp. Furthermore, this setup provided me with access to the mixer's EQ and talk-back mic for the cue feeds. Perfect!

CONVERTER COMPARISONS

The HD192's A/Ds sound dramatically superior to any other outboard ADCs (including the Apogee AD16) that I've heard in this price range. Upping the ante, my much pricier Apogee Rosetta 96's A/Ds sounded a bit warmer (less edgy) and smoother (exhibiting a flatter frequency response) than the HD192's A/Ds when each converter set was slaved in turn to its own internal clock.

The HD192's D/A converters presented a flat spectral balance, devoid of the typical peaks and blurriness in the upper bass and low mids that inexpensive converters routinely manifest. Compared to a Benchmark DAC-1, the HD192's D/As exhibited less depth and nuance, and the DAC-1 sounded warmer and fuller. But keep in mind that Benchmark's DAC-1 is six times more expensive than the MOTU unit on a per-channel basis and lacks most of the HD192's potent functionality. Despite this tough comparison, the HD192's D/As add a lot of value to what is already an extremely cost-effective and impressive package.

Considering the HD192's rock-bottom price, any sins of omission are easily forgiven. That said, I wish the unit featured both a headphone output and calibration trims. The HD192's A/Ds are calibrated such that +4 dBu equals -14 dBFS, an excellent level for most tracking applications. However, I ran into headroom problems with the HD192 when tracking drums using preamps and high-sensitivity mics that don't offer pads.

THE VERDICT

These are minor issues considering all that the HD192 Core System has to offer vis-a-vis its incredibly low list price: numerous, flexible and expandable I/O; excellent A/D converters and metering; serviceable D/As; onboard sample rate conversion; SMPTE reading/stripping; near-zero-latency, multi-bus monitoring; and multichannel computer interfacing (which you *don't* get with most outboard converters). For discriminating engineers who want to use a highly specified front end to track to a DAW but who can't tolerate any perceptible latency, the HD192 Core System is a dream come true at a much lower price. I'm sold.

Mark of the Unicorn (MOTU), 617/576-2760, www.motu.com. ■

Mix contributing editor Michael Cooper is the owner of Michael Cooper Recording, located in beautiful Sisters, Ore.

If We Had To Pick One Word To Describe KRK's New E8T Monitor, It Would Be...



"More"

You're looking at a monitor that takes your mixes as seriously as you do. With its impeccable accuracy, technical superiority and remarkable imaging, the new E8T has all of the heart and soul of the legendary E8, only now, there's even more to get excited about. Like KRK's new Titanium Oxide dome tweeter for extraordinary high frequency detail and clarity. The high temperature voice coil and optimized venting alignment of the woofer gives you incredible bass extension and dynamics without compression. And, as far as power goes, the E8T has a 260 watt Class A A/B discreet bi-amp design with separate 24dB/octave filters and a delay for seamless driver integration and dispersion.

More you say? Okay, the E8T's high frequency attenuation control allows for perfect integration into a wide array of

listening environments. An inert MDF enclosure with optimized geometry virtually eliminates diffraction and resonances. We even matched the driver and systems to within 1dB for imaging that is simply unparalleled.

More performance, more power, more of what you're looking for in a monitor. So, if you're serious about your mix, the E8T is seriously worth your investigation.

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Peavey Kosmos Pro

Professional-Level Subharmonic Enhancement

Kosmos Pro is an expanded version of Peavey's original Kosmos subharmonic enhancement system. Now with +4dB electronically balanced XLR I/Os and S/PDIF digital I/O, Kosmos Pro makes its entrée as a truly professional all-analog unit with control over four processes, including a subharmonic synthesizer called Quake; Thud, a low-frequency "sculpture" tool; a high-frequency and stereo image enhancer named Xpanse; and Stratos, a dynamic HF effect. I tried Kosmos Pro on drums, bass, guitars and full mixes with excellent results—results not achievable by any combination of existing analog processors.

UP AND DOWN KOSMOS PRO

Internal construction is good with surface-mount components, a THAT VCA chip for dynamics processing, internal AC power supply and a Crystal Semiconductor chip set for the S/PDIF I/O. The S/PDIF I/O parallels the analog connections and locks to incoming digital feeds up to 48 kHz.

Front-panel controls include a Global Bypass button, a switchable LED meter and two input/output level pots (center detented at unity gain). The pots feel a bit flimsy, but are noise-free and work well. Each provides up to 10 dB of extra output level.

A "Cut Sub-Bass From Main" button splits all LF enhancements from the stereo output and routes it to a mono subwoofer jack (¼-inch TRS). This feature separates a stereo signal's normal bass content for recording just the subharmonic effect to a separate track. This output is distortion-free, with plenty of level and wide dynamics.

IN THE STUDIO

The Quake control sets the level of a synthesized bass signal one octave lower than the input source. This signal tracks the input dynamically and operates within a defined range, up to about 100 Hz. The active LED indicates the presence of usable source information. Quake works well on kick drums, tom tom tracks, and overhead and room mics. I connected the unit on a stereo send and return as I would a reverb, so that I could set differ-

ent amounts on a multitracked drum kit. With this unit in your rack, there is no excuse for thin-sounding kicks and toms. I especially liked pumping up the low end of drum room mics. Kosmos offers good, clean subharmonics: There is no mistaking, and it is quiet and clean.

The Dynamics control could be thought of as a damping adjustment that controls the envelope release time of the synthesized Quake signal. You can go from a tight, fast-responding subsonic signal to a looser, boomier-sounding effect. On kick drum, I adjusted the sub note's "hang time" with Dynamics. On a solo acoustic guitar, using Quake with longer Dynamic settings is like adding a bass player: Every time my guitar player made a percussive "thump," an octave-lower note was produced.

Thud is like a multiband compressor that tracks the input signal and dynamically boosts a band of frequencies from 100 Hz to 350 Hz. It operates at roughly an octave above Quake's output (i.e., the source's original octave). Both Quake and Thud processors' outputs are phase-coherent. Thud was useful on a thin-sounding acoustic guitar track when adding an octave wasn't appropriate. Thud acts like a dynamic bass EQ and is good for instruments and vocals. The Deeper button changes the center frequency range of Thud to narrow the frequency difference between it and Quake.

Xpanse is a collection of stereo filters that dynamically modulates phase, time and frequency domains. However, according to Peavey's Lloyd Trammell, "The phase shift angle of the left/right channels does not change by the same amount; it may be a +3° shift on the left, while the right has a -7° shift. It depends on the input signal's frequency content and amplitude." A Baro-

metrics knob controls the range of frequencies that Xpanse works on. At the counterclockwise Dense position, it works on the widest range for maximum phase manipulation, while at the clockwise Thin setting, Xpanse acts on a much smaller range with less phase manipulation, sounding more like a special high-end boost.

I tried Xpanse on an acoustic guitar recorded with two mics on two tracks. Normally, when these two tracks are panned hard left/right, this recording sounds like a wide mono guitar track. Using Xpanse produced a wide stereophonic effect, and when collapsed down to mono, it revealed some phase cancellation, mostly a small reduction of low frequencies.

On bass guitar recorded on two tracks (DI and amp), Xpanse produced a stereo bass, with a superwide footprint that you have to hear to believe. Xpanse also works well on drum overheads or most stereo pairs, throwing the left/right channels outside the edges of the speakers. Meanwhile, turning the Barometrics knob toward Thin brightened everything, reducing the width.

Stratos adds high frequencies above Xpanse's range, using modified TransTube technology from Peavey's guitar amp line. Stratos was a pleasant-sounding, super-high "air" EQ that was especially useful on acoustic guitar tracks. Stratos is also dynamic, so there's little boost in track hiss and noise, like a regular EQ would have added.

I highly recommend Kosmos Pro. Far from being a "one-trick pony," this is a valuable recording, mixing and live sound tool with four unique, easy-to-use processors. It's versatile and a bargain at \$599.

Peavey Electronics, 601/483-5365, www.peavey.com.

Barry Rudolph (www.barryrudolph.com) is an L.A.-based recording engineer.



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Apogee Electronics Big Ben Master Clock

Jitter Reduction and Warmth, With Format Conversion Thrown In

Apogee Electronics' Big Ben is a revolutionary master digital clock that does much more than preclude clicks and pops from tainting your audio tracks. Unlike other Word Clock distribution boxes that achieve only subtle reduction in jitter artifacts, Big Ben will make your converters sound dramatically warmer and smoother. Another bonus: Big Ben can even perform digital audio format conversions.

Big Ben owes its impressive clocking

S/PDIF co-ax jacks accommodate 44.1 to 192kHz rates. The Toslink optical connectors support S/PDIF optical, ADAT, S/MUX 2 and S/MUX 4 formats at up to 192kHz rate. Pull-up and pull-down rates are available when Big Ben is synched to its internal clock or an external video signal. Big Ben constantly sends digital black out all audio output jacks when the unit is slaved to its internal clock. When locked to an external clock that's embedded in a digital audio signal, Big Ben routes that signal

comparison of two A/D converter sets (Apogee Rosetta 96 and MOTU HD192) using various clocking schemes. For this test, I made multiple stereo recordings of acoustic guitar to Digital Performer with DPA 4011 mics and a Millennia HV-3D/8 preamp, and monitored the results through a Benchmark DAC-1, Hafler P3000 Trans•Nova power amp and D.A.S. Monitor-8 monitors.

The sonic differences between recordings made with the HD192 A/Ds when



performance to proprietary technologies: Apogee's Direct Digital Synthesis process—an all-digital alternative to traditional phase-lock loop circuitry—generates clock frequencies with virtually immeasurable jitter. When synched to an external reference, Big Ben uses Apogee's Adaptive Loop Filtering to recondition the clock source and reduce jitter. (I found the improvement here to be audible, but subtle.) Thanks to SureLock technology, Big Ben continues to output clock signals at the last valid frequency received by an external reference signal that subsequently drops out, purportedly guaranteeing a fail-safe lock.

I/O AND SUPPORTED FORMATS

All of Big Ben's I/O connectors are found on the unit's rear panel. These include AES/EBU inputs and outputs (two each, for a total of four), S/PDIF coaxial and Toslink optical I/O, and one video/Word Clock input and six Word Clock outputs on BNC connectors. Big Ben provides a slot for an optional card to accept emerging formats; a FireWire I/O card (\$695) will be available by year's end. An IEC receptacle rounds out the rear panel.

Big Ben's AES/EBU I/O supports both single- and double-wire formats and sampling rates up to 192 kHz (and as low as 44.1 kHz in single-wire mode). The

(with clock) to all digital audio outputs and converts between AES/EBU, S/PDIF, optical and option-card formats.

Big Ben's internally terminated video/Word Clock input will accept either TTL Logic (Word Clock) or video black burst (PAL, NTSC or B&W) signals, depending on the unit's front-panel settings. Two of Big Ben's six Word Clock outputs can transmit a clock at fractions or multiples of the sampling rate; available rates include fs/4 (¼ times the sampling frequency), fs/2, fs x1, fs x2, fs x4 and fs x256. Intuitive front-panel controls make the selection of digital audio formats and clock rates a breeze. Also on the front panel are a series of LEDs that indicate whether each of the six Word Clock outputs sense over-termination or no termination on their slaved device. I found this feature to be somewhat a white elephant, however, when used with converters that don't comply with the 75-ohm termination standard.

SMOOTH OPERATOR

Before I began any critical-listening tests, I knew my digital audio converters were performing much better when synched to Big Ben, because my recordings sounded extraordinarily warm and smooth. The acid test, however, was a blindfolded

comparison of two A/D converter sets (Apogee Rosetta 96 and MOTU HD192) using various clocking schemes. For this test, I made multiple stereo recordings of acoustic guitar to Digital Performer with DPA 4011 mics and a Millennia HV-3D/8 preamp, and monitored the results through a Benchmark DAC-1, Hafler P3000 Trans•Nova power amp and D.A.S. Monitor-8 monitors.

Removing Big Ben from the equation for a moment, an A/B comparison of my Rosetta 96's converters to the HD192's A/Ds (with each converter set using its internal clock) revealed the Rosetta to be a bit warmer and smoother-sounding. The recording made with the HD192 slaved to Big Ben's internal clock, however, sounded a tad silkier in the highs (yet a little less open and flat, spectrally) than that made using the Rosetta (which necessarily was synched to its internal clock, as it does not have Word Clock input). Yet another A/B test revealed Big Ben's clock to be clearly superior to Rosetta's.

Big Ben is competitively priced at \$1,495 list. This groundbreaking box gets my highest recommendation. You'll be amazed!

Apogee Electronics, 310/915-1000, www.apogeedigital.com.

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De Medio DME103 Mic Pre

Modern Design in a Vintage Box

The DME103 Microphone Preamp is manufactured by Frank De Medio, who has a long history of circuit and console design. In the late 1960s, he partnered with Wally Heider to design and install numerous consoles in Heider's Los Angeles and San Francisco studios. His console at Sunset Sound in L.A. is one of the best-sounding that I have ever heard. With this in mind, I was very interested to hear his new outboard preamp.

Microphone preamplifiers seem to come in two flavors these days: modern designs with lots of bells and whistles (such as EQ, dynamics and A/D converters) and vintage designs, which tend to take a more minimalist approach. The DME103 falls firmly in the vintage category with its large knobs, simple chrome switches (for phantom power) and very familiar-looking VU meters. However, the DME103 is not a replica of any other preamp. It is a modern design delivered in a vintage box.

The 103 uses a Jensen input transformer and a differential output. It has a maximum output of 28 dBu (i.e., 24 dB of headroom above "console 0"). The frequency response of the amp is 10 Hz to 50 kHz, ± 1 dB. The unit I reviewed has a maximum gain of 67 dB. It has a four-position stepped attenuator, providing 0, -10, -20 and -30 dB of input padding. However, based on feedback from his clients, De Medio has added two more attenuation positions at -40 and -50 dB. It has a variable level controller with 14 dB of gain. One nice "modern" accent is the LED illumination of the meters—no more replacing incandescent bulbs.

Operating the 103 is simple: Set the attenuator and gain control so that the VU meter is operating in its normal range, and you're done. The first test I put the DME103 through was at Sunset Sound. Unfortunately, the room with the De Medio console was undergoing cosmetic renovation, so I was not able to compare the new preamp to the console preamp. Working on Studio 2's 8088 Neve, I set levels and EQ on drummer "Little John" Roberts' overhead mics and got a pretty



nice sound; how can you go wrong with a pair of C-12s and a Neve console?

When I changed over to the 103 preamp, the first word out of my mouth was, "Wow!" I was particularly impressed with the smoothness of the upper midrange. When I went back and forth, the Neve preamps sounded as if they had sandpaper in them. Don't get me wrong, I liked the sound I had dialed up with the Neve pre's, but the 103s sounded much clearer and more transparent. I also noticed that I was able to back off the high-end EQ that I was adding to the Neve mic preamps. Because the DMEs already sounded cleaner, I didn't need as much EQ to "open up" the mics.

De Medio claims that he designed his preamp to be completely transparent, no matter where the input attenuator is set, and that it does not color the sound in any way. With the help of a nimble-fingered assistant, I listened to different settings on the 103, each time matching the volume (with different pad settings) as quickly as possible. The DME103 input pad is the first I have heard (or not heard) that did not sacrifice audio quality when engaged.

Additional listening tests involved recording a cello and a violin with a matched pair of Microtech Gefell 296s placed as closely to each other as possible. The preamps were then level-matched and recorded directly to Pro Tools | HD at 192 kHz. I recorded multiple passes, each time comparing one channel of the DME103 to one channel of a GML, a Millennia STTI and a Mastering Lab mic pre. The STTI (set on vacuum tube and transformer input) was more pronounced in the upper mids. The GML was a little warmer or fuller, and the Mastering Lab

seemed a bit more colored, albeit in a good way. All of these microphone preamps are top-quality units, and the 103 compared very well to them. If I made the analogy that preamps are like windows through which you view the sound of your mics, I would even go as far to say that De Medio's preamp is like a window without the glass.

Some things I would like to see on this unit are phase invert switches and an overload indicator. Although the aluminum case is certainly strong enough, the unit is quite light and a beefier case wouldn't hurt.

De Medio calls his preamplifier "nondigital." The 103's frequency response goes well beyond the limits of the brickwall filters used in A/D converters when operating at standard sampling frequencies. It is designed to faithfully reproduce and amplify analog signals well beyond the normal audio frequency range of 20 to 20k Hz.

De Medio describes himself as belonging to the old guard. "We listen to the high end," he says. "It has to be clear, it has to be there and it has to be clean." After listening to his DME103, I have to agree that his preamp has achieved those goals.

The DME103 has a suggested list price of \$2,500.

De Medio Engineering, 818/768-2296, www.demedioengineering.com. ■

Erik Zobler grew up in New York, partied in Boulder, Colo., demonstrated in San Francisco and eventually migrated to Los Angeles, where he learned the ancient art: "The Way of the Tonmeister." You can meditate with him at ezobler@socal.rr.com.

"Brilliant!"

Tony Romo, Front of House, Diana Krall

"I got a pair of SCX-25 mics in Diana's piano in July 2007 and they haven't come out since. These are the best piano mics I have ever heard—Brilliant!"
Billy Banata,
Front of House, Diana Krall

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William Cookley, Sound Designer,
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Richard Salt,
ELECTRONIC MUSICIAN

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Lee Bradley, Engineer/Producer,
Mark Haggard

"I essentially just get the mic up, bring up the fader... and just sit back and enjoy the mix."
Pete Harris, Harris Audio

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Merby Peters,
RECORDING MAGAZINE

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"IN A WORLD SUDDENLY CROWDED WITH CHEAPLY MADE STUDIO CONDENSER MICROPHONES DESPERATELY TRYING TO OUTWARM AND OUTSHINE EACH OTHER, AUDIX HAS MANAGED TO PUSH FORWARD WITH THE SCX-25. A COOL-LOOKING AND INNOVATIVE MICROPHONE THAT CAPTURES DETAIL VERY ACCURATELY WITHOUT SOUNDING ABRASIVE OR HARSH, THE SCX-25 HAS A GREAT FUTURE IN THE DAY TO DAY WORKINGS OF ANY STUDIO."

ANDREW GILCHRIST, ENGINEER, ANI DIFRANCO

"With more microphones emerging than ever before, the cream always rises to the top. Enter the SCX-25. The warmest mic off axis I've ever heard, no proximity effect here! I have recorded acoustic bass, tuba, violin, clarinet, guitar, piano, and vocals—all with unsurpassed clarity."
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Grammy Award Winning Engineer,
David Grisman Quintet

"The SCX-25 is my go-to mic for acoustic guitar. It adds a gentle presence boost that makes my acoustic sound better, and its lack of proximity effect makes the bass more natural than other mics I have used."
John Gatski, PRO AUDIO REVIEW

"Two SCX-25s in a Baby Grand and my work is done! There's just nothing else like it."
Pat Lucortato, Audio Engineer,
The Tonight Show

"My first choice in Grand Piano. Easily one of the finest acoustic guitar mics ever! The size and unique design make them very camera-friendly. I love them for the sound—television directors love them for their looks."
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"...destined to become a classic."

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Neumann Celebrates 75 Years

Ni-Cad Batteries to Classic Microphones

For the past three-quarters of a century, the Neumann name has been synonymous with excellence in audio, but the influence of company founder Georg Neumann goes far beyond the famed microphones that bear his name.

Among Neumann's first products was a record-cutting lathe. Rather than the belt-driven mechanisms so common in other lathes of its time, the 1931 AM31 instead employed a direct-drive design, where the motor itself was an extension of the platter's spindle. In 1933, a portable lathe followed, which simplified the process of making location recordings of speeches and music concerts outside of the studio confines.

Besides its record lathes—which set the world standard for half-a-century—Neumann also produced reference playback turntables, cinema gongs, radio station ID code signal transmitters, electro-acoustic measurement devices and the first factory-produced logarithmic level display chart recorder. Neumann's non-microphone innovations continued into the 1980s and beyond, with products such as the VMS Series (widely considered the best record lathes ever made), the DMM (Direct Metal Mastering) disk mastering process, and studio and broadcast consoles, both analog and digital.

Ironically, the Georg Neumann invention that made the greatest impact on the world was not audio-related at all: In 1947, he created a process to make nickel-cadmium batteries without the excessive formation of gas, allowing the production of sealed, leak-proof designs. Even today, Ni-Cad batteries are found in every conceivable type of electronics, a lasting tribute to the genius of Georg Neumann.

Neumann classics throughout the years, left to right: CMV3a "Bottle" mic (with interchangeable capsule); U47 (the first switchable-pattern condenser); the new, anniversary edition of the M149 (the first transformerless tube mic); and Solution D, the company's first digital microphone system



MICROPHONES!

Ni-Cad batteries aside, microphones were and always will be the most loved legacy of Georg Neumann. The story starts 105 years ago. Born in 1898 in a small town outside of Berlin, Neumann apprenticed at Mix & Genest and did amplifier research for AEG. When AEG lab director Eugen Reisz created his own company, Neumann joined him and looked into ways to improve carbon microphone technology. Neumann stretched a tight rubber membrane over a marble slab containing powdered carbon and two electrodes. The resulting "Reisz marble block microphone" was fairly flat from 50 to 1k Hz, with a 10dB peak at 4 kHz, and was -15 dB at 10 kHz. Hardly impressive by modern standards, this 1923 model encouraged Neumann to look at other ways to improve mic performance.

In the mid-1920s, as radio gained popularity and record companies switched over to the "electrical recording process," microphones suddenly became a major link in the audio chain. Excited by the idea of building capacitive (condenser) mics, Neumann left Reisz and, with Erich Rickmann, founded Georg Neumann & Co. in Berlin in November 1928.

The first mass-produced condenser mic—Neumann's CMV3—debuted in 1928 and remained a standard for years, both in studios and in live broadcasting. By 1932, Neumann unveiled the CMV3a, which featured interchangeable heads (cardioid, omni and figure-8). The mics stayed in




Founder Georg Neumann

production until after World War II and are still in use in studios worldwide.

With World War II escalating, Berlin was a major target for Allied bombing. In 1943, the Neumann factory in central Berlin was struck by incendiary bombs. Searching for a safer site to relocate the plant, Neumann drove south of the capital and, according to legend, stopped in Gefell, the first place where he didn't see bomb craters. In 1944, Neumann moved into this small village with most of his workforce and the manufacturing equipment salvaged from Berlin.

After the war, Gefell was in a U.S.-occupied zone, but with the 1945 Potsdam Conference, the area was turned over to the Soviets. With the growing uncertainties about East and West, Neumann moved back to Berlin under the new name "Georg Neumann GmbH." The Gefell company continued supplying components for Neumann until 1953, but with the establishment of the East German



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World Radio History

state, commerce became increasingly difficult and all commercial ties between Gefell and Neumann were severed. Gefell continued making mics on its own, mostly supplying broadcasters in the Soviet bloc, and today, with the fall of the Iron Curtain, now creates studio, live and measurement mics for a world market.

The postwar Neumann factory in Berlin was definitely moving forward. Besides Neumann's 1947 sealed Ni-Cad cell, that year, the company introduced the U47, the first switchable-pattern condenser mic. The microphone that began the age of modern studio microphone technology, the U47 featured a high-performance VF14 tube and the dual-diaphragm M7 capsule, essentially back-to-back cardioid capsules that could be combined to create an omni pattern or used singly for a cardioid pickup. Due to distribution issues with Telefunken and post-war production snags, the U47 officially debuted in 1949. Eight years later, the U48—a cardioid/figure-8 switchable version—was added to the line.

The success of the U47 was followed by a number of "firsts": The M49 (1951) was the first mic with a remotely switchable pattern; and the M50 (also in 1951) featured a small-diaphragm, pressure-gradient capsule embedded in a perspex (acrylic) sphere to provide a very smooth upper-end response. The onset of stereo in the mid-'50s led to Neumann's SM2 (1956), the world's first stereo microphone. The 1987 RSM 190-S was the first stereo shotgun mic. Three years later, the M50 concept was revived in the nickel-membrane TLM50, a transformerless, low-noise, solid-state design, and in 2000 with the M150, featuring a low-mass titanium diaphragm and the same tube electronics developed for the large-diaphragm, multi-pattern M149: the first mic with transformerless tube electronics.

In all, Neumann has released some 90 microphones during its 75-year history, and going through the design specifics of each one would take a book. Models such as the solid-state U87 and U89, the tube U67, the KU80/81/100 "Fritz" binaural dummy head, the KM84/184 small-diaphragm condensers, the TLM103, M147 tube and KMS105 handheld have certainly joined other Neumann models in the category of audio classics. Fortunately, for those seeking more, Neumann offers archives of current and vintage models on its Website. Additionally, a wonderful 290-page book detailing the company's products and history is now available from www.neumann.com.

DEFINING ITS FUTURE

For decades, the Neumann facility stood on the edge of Western Europe near the Allies' "Checkpoint Charlie" between East and West Berlin. With the fall of the Berlin Wall in 1989, the company's plant was suddenly in the center of Berlin. Rents soared and the building was slated for demolition to be replaced by a skyscraper.



Fireworks lit the sky over Berlin as hundreds of audio pros from around the world attended Neumann's gala 75th anniversary celebration in September.

Very expensive to manufacture, Neumann's line of superb analog and digital consoles proved unprofitable. Meanwhile, a growing CD market spelled the end of Neumann's profitable record lathe business and plans for a mechanical CD lathe (DMM CD) fell short, because, unlike DMM for vinyl production, the copper blanks for CD prep had to be 100% pure, as even the tiniest microscopic flaw or void in the blank would create havoc on a CD master. Also at the time, Neumann's heirs—who owned the company since Georg's death in 1976—wanted to sell their share. The company's future was uncertain, to say the least.

In January 1991, after talks with a number of potential buyers, the Neumann family turned the company over to Sennheiser Electronics, a similarly structured, family-owned business based in Hanover, a few hours from Berlin. The plan was to move production to a new "Neumann" section of the Sennheiser plant, while Neumann's engineering, mar-

keting and repair facilities would remain at a new complex in Berlin. Company founder Professor Fritz Sennheiser had known Georg Neumann for years and was quite familiar with the Neumann operation. In many ways, the change offered the best of both worlds: Neumann would have access to modern, world-class electronics manufacturing, while the "old-world" processes—such as the meticulous hand-assembly of capsules—would be done under clean room conditions.

There's no doubt that Neumann—once infamous for long production backlogs—is far better equipped to handle modern production demands under Sennheiser's ownership; further products, such as the popular TLM103 (a \$1,000 mic that combines ultralow-noise 7dBA electronics with a single-diaphragm version of the K67 capsule from the U67) simply could not have existed under the old Neumann system. Other companies might have been tempted to buy Neumann and then cash in by flooding the market with cheap products with a famous name—we've seen that scenario many times before—but Sennheiser remains committed to maintaining the Neumann quality and reputation for excellence.

The Sennheiser-Neumann relationship has gone well beyond mere words or shared production conveniences. The companies collaborated on the 2003 TEC Award-winning KK105S, a handheld wireless transmitter that combines the performance of Neumann's acclaimed KMS105 capsule to Sennheiser's SKM 5000 UHF wireless rig. Both are also working on new mics for on-air broadcasting, with the new BCM 104 kicking off the series. And Sennheiser supports the development of new approaches, such as Neumann's Solution D digital mic system, which defines the future direction of microphone design.

Besides the innumerable hit records made using Neumann mics—from Sinatra to the Beatles and beyond—the accolades for Neumann products have been many. The company garnered an unprecedented seven TEC Awards for microphone excellence, and received a Technical Grammy® Award in 1999 for the company's contributions during the years. Georg himself would be proud of those products that bear his namesake.

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Mix editorial director George Petersen is both a mic collector and creator of Crazy Campsongs (www.crazycampsongs.com).

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In business vernacular, my business is not the desirable model: too many different products are serviced, the chief cook and bottle washer are easily distracted and there are no employees. I don't think my company has the exclusive rights to these claims, but on the upside, diversity keeps the workflow consistent while providing ample material for this column. The downside is the laundry list of things not done. (I know I'm not alone there.) At least the new year is right around the corner. This month, I want to follow up on the past year's research and open some neglected packages.

ANALYZE THIS WITH THAT

Since reviewing NIT's Minitlyzer (www.nt-instruments.com), its countenance has appeared in so many "Tech's Files" columns that George Petersen started making comments about the crude screen captures. Well, goodbye to awkward pix and hello MiniLINK, NIT's hardware interface and visualization software that links Minitlyzer (and Digilyzer) to a PC. Surely, images like Fig. 1 will make "Tech's Files" easier on the eyes.

Minitlyzer is an affordably priced assortment of essential audio tools in a compact package. Aside from the obvious level-measurement capability, I find its spectrum analyzer a lifesaver when trying to differentiate between noise and distortion. The Minitlyzer could easily claim to be the audio Swiss Army Knife of the test equipment world.

Installing MiniLINK required removing the battery cover, inserting a plug-in board (with USB interface), snapping on a new back cover (for the USB connector and cable) and installing the software/drivers and registration, all of this taking less than 10 minutes. The software automatically upgraded the firmware (at least two revisions' worth so that the unit is now also an SPL meter with an optional calibrated mic). Pretty impressive and dang easy.

Like countless other digital products, Minitlyzer has many more features than its simple face implies. And, like *any* piece of test equipment, Minitlyzer's performance is sensitive to interconnection; in this case, the USB connection may introduce ground current noise from the computer. Fortunately, the 'lyzer

family can store measurements for later download via MiniLINK, making it easier to explore the full potential of both the Minitlyzer and the Digilyzer.



Figure 1: MiniLINK "capture" of Minitlyzer data

CURVE BALL

Far from being exclusive to surround sound, my series on bass management included an emphasis on the proximity effect of directional microphones. I urge anyone interested in learning more about their fave mics to collect versions of the frequency response charts that include proximity curves. Electro-Voice (www.electrovoice.com) picked up on this thread and created three mics' worth of detailed images that can greatly minimize the guesswork during critical moments when EQ decisions must be made. Figure 2 details E-V's N/D868 mic intended for kick drum.

FRAYED KNOT

From the high-maintenance department comes a power supply tip. When a Sony 3000 Series console power supply appeared at my doorstep, I could hardly get it into my house, let alone lift it up onto the workbench. This supply delivers four voltages: 24 volts, ± 18 volts and 48 volts. (The first three outputs are protected by 20-amp ceramic fuses.)

The internal harnesses comprise unlabeled black wires terminated with crimp connectors at the bridge rectifiers and filter caps. Crimping without soldering is a no-no in high-current applications, as the heat generated at each junction gradually weakens the crimp

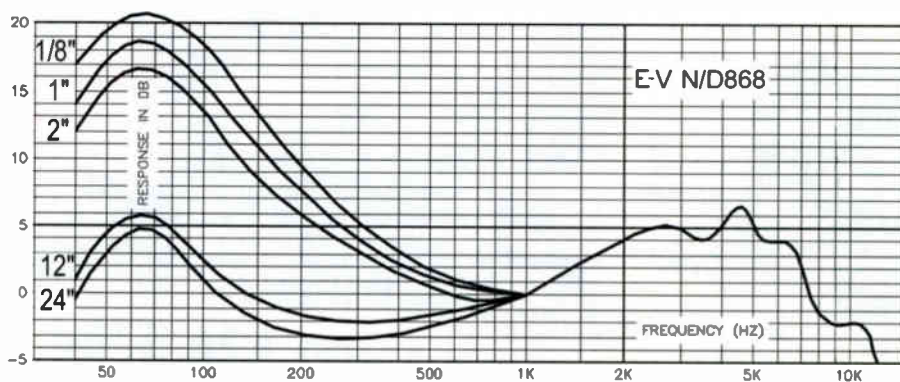


Figure 2: Proximity curves of an E-V N/D868 "kick drum" mic

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The QUAKE sub-harmonic generator analyzes the source material's bass frequencies, then generates additional low frequencies an octave lower without muddying the sound. THUD provides an additional bass boost an octave higher than the original bass track to fill in and fatten the low end, while XPANSE

intensifies the left-right stereo image to add improved separation, atmosphere and clarity.

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and oxidizes the wiring to the point that it creates more heat and accelerates the insulation aging process (see Fig. 3). Fortunately, in this case, there was enough extra transformer wire to prune back four inches of funk and still reach the rectifier.

Other issues included a fried 48-volt phantom supply. This was most likely due to insufficient insulation in two places: Behind the regulator board was a thin sheet that was easily punctured by PCB component leads; and on the other side of the sheet, there were three massive heat sinks mounted to the chassis via insulators. Further investigation revealed that the pass transistors were mounted sans thermal insulators, making each sink electrically "hot." In addition, the PCB was mounted at each end with metal brackets, which did not include enough slop tolerance to prevent accidental shorting to nearby components and PCB traces.

UPGRADE THAT 1272

All the way from Down Under comes an upgrade for the Neve 1272 module that turns the 1272 into a full-fledged mic pre-amp (www.jlmaudio.com). The kit includes a circuit board outfitted with a ro-

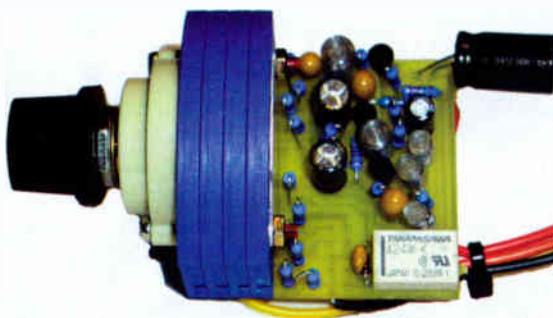


Figure 4: the 1272 upgrade PCB

tary gain switch, the necessary transistors and relay to provide the full range of gain offered by the 1066 and 1073 modules (see Fig. 4). Making these old modules functional is not too difficult, but unless acquired for a song, completely restoring them to like-new condition is prohibitive. The most obvious sources of funk—the pots and the switches—are both costly and labor-intensive to replace.

Using contact cleaner may be effective in the short term, but it can never completely turn back the clock for 30-something electronics. The 1272 has only one pot, and that is removed for this upgrade. I'd rather have one reliable mic pre without EQ than a funky one with.

BUDGET ACOUSTICS

Improving my control room's acoustics has been a slow process, but the acquisition of MiniTraps (www.realtraps.com) has simplified the project. Four inches of Type-705 Fiberglas is pre-cut and fitted into a 2x4-foot metal frame with easy-to-attach mounting holes. The Fiberglas alone can be purchased without the frame, and then wrapped in an acoustically transparent, decorative material for easy drop-in installation for a standard ceiling grid. I recommend MiniTraps for people who do not like handling Fiberglas.

Although MiniTraps are intended for corners to control boundary-related, low-frequency buildup, I suspended them parallel to the ceiling, down a few inches and about two inches from each other. Placing them directly over the engineer's position improves imaging by absorbing early reflections caused by a low ceiling.

Popping balloons on one side of the room while listening on the other revealed resonance coming from Sheetrock™-covered ductwork. Thinner, homemade traps were applied over these areas as dampers, although a real solution would be to rip them out and start over. (Treating the windows while preserving the incoming light is another challenge.) Wavelab's decay analysis feature documents the before and after. Look for results in the new year. ■

Eddie Ciletti is hoping to finish his control room, produce an instructional video, build a few mic preamps and compressors and lose 20 pounds in the year 2004. Check out Eddie's site at www.tangible-technology.com.



Figure 3: High current combined with insufficient ventilation and nonsolder crimp connections added up to crispy wiring.

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PHOTO: WALLY SEAWELL

THE SAM COOKE REMASTERED COLLECTION

MUSIC WORTH CELEBRATING

By Barbara Schultz

A magnetic performer with a soulful and sometimes silken voice, the face of Adonis and total dedication to the power of music: That was Sam Cooke. He was also a songwriting genius, and a fine producer and businessman who cared to help young artists. Yet, with the exception of a few hits collections, Cooke's legacy has never been cele-

brated properly. This year, Abkco has gone above and beyond to offer a definitive Sam Cooke reissue series: all of the original albums, plus a career-spanning retrospective that collects tracks from all of Cooke's labels and styles for the first time, complete with incisive liner notes by Peter Guralnick. All of these glorious discs are hybrid SACDs, the format that producers Jody Klein and Teri Landi broke major ground with when they released Abkco's Rolling Stones reissues last year.

"While finishing up the Rolling Stones remastered series," Klein recalls, "Sam Cooke came to mind instantly as our next project, as his recordings have truly never been well-represented, sonically or historically. Naturally, we knew that Sam Cooke would be released on hybrid SACD. Besides the superior fidelity of these discs, there is the 'secret element' of SACD: It has an ability to play surround sound. So, of course, our thoughts turned to *Sam Cooke at the Copa*—it being a live performance—and how we could take advantage of surround sound. With *At the Copa*, we wanted to take the listening experience to a higher level, and the 5.1 surround sound SACD enables us to do that."

So when the Stones project was completed, Klein and Landi had some pretty well-formed ideas about the way a Cooke collection could be presented. But they had to first find the master tapes. That research was largely performed by

—CONTINUED ON PAGE 132

Steve Rosenthal (left) and Teri Landi at the Magic Shop



PHOTO: JENNIFER ZLEN

OUTKAST

TWO NEW VIEWS FROM STANKONIA

By David John Farinella

Engineer John Frye is taking a breather from the year-plus recording and mixing sessions for OutKast's acclaimed new two-CD release, *Speakerboxxx: The Love Below*. Considering that the outfit's main brains—Big Boi (Antwan Patton) and Dre (Andre Benjamin)—had up to 60 songs apiece to record for the double-album, along with the requisite overdubs and vocals, Frye deserves the week away from Stankonia Recording in Atlanta.

Though bringing so many songs to the recording dates is nothing new for OutKast, Frye reports that Big Boi and Dre have never been this involved in an album before. "Once they got to the second album [the 1996 *ATLiens*], the two have taken on more of a leadership role in production and finalization of their albums, but I think that this is the most they've ever done," Frye reports. "If somebody else did a track, I think there were over-



dubs and production and finalization of it by these guys. They would take it and run with it on their own. I haven't seen them this creative."

The bulk of the two-CD set, one done completely by Big Boi and the other by Dre, was recorded in their own Stankonia studios. The A room of the two-room facility boasts an SSL 4080 G console with Augspurger monitors and Bryston amplification. Tracks were either recorded to a pair of Studer A-827s or Pro Tools 5. Eventually, all of the tracks went into Pro



OutKast are Big Boi (left) and Dre

Tools, either via a handful of Digidesign 888s or an Apogee SE800. Stankonia's list of A room's outboard gear includes the usual suspects, from Avalon to Eventide, Neve to Summit, API to UREI. The studio's second room is a Pro Tools suite with more Augspurger monitors and Bryston amps. (The studio is also open for hire, and a range of clients such as Lil Jon & The East Side Boyz, Sevendust, Goodie Mob and Cee-Lo have worked there.)

Frye's first sessions for the OutKast release were with Dre. (The two artists split time with the engineer, who has worked with them since 1994.) "Dre, especially, is into the technology, so we'll try a lot of different things," Frye explains. "More than likely, he's got some basic pattern of a beat, maybe with a few key lines that he's possibly done at his home studio and brought in to embellish upon. He'll tweak those out with some sounds and then we'll start adding some vocal parts, maybe some melodies, or he'll bring in some guitars."

The key, Frye adds, was to always be prepared. "Dre would spend a lot of time checking out different elements, and often we'd find that we'd recorded many tracks of overdubs of guitars, maybe vocals, basses, different sounds, and we'd

try to get it all down while he's in the creative mode, and then more or less weed it out later," he says. "A lot of times, he'd end up deciding that something didn't quite fit the track and he'd try something else. But the trick was to stay ready and get as much recorded as possible and not miss any of that magic. A lot of it was live playing, as well, so we had to be ready with microphones and what have you for anything that would come through, whether it be piano, B3, organs, vocals, guitar amps, directs, congas, whatever. We kept it all set up."

Big Boi's sessions were driven more by a drum machine. "He produced an awful lot on his own; even if some other producers brought in a beat, he'd often take it to the OutKast level with whatever he was feeling or talking about," Frye explains. "Big would add elements very much the same way [as Dre did]. Sometimes, it was a complete thought from the moment he walked in; other times, we tried a few things. We'd put down three different bass lines with maybe three different people, and sometimes we mixed and matched for no better reason than to try different things to see what would come of it."

—CONTINUED ON PAGE 135

IN THE STUDIO WITH SAM COOKE

By Blair Jackson

(Editor's note: The following was adapted from our October 1997 "Classic Tracks" column about the recording of "Bring It on Home to Me.")

In 1960, with several hits already under his belt, the Mississippi-born and Chicago-raised Sam Cooke signed with RCA Records, which marks the beginning of his fruitful association with staff producers Hugo Peretti and Luigi Creatore and engineer Al Schmitt. Schmitt, who was already a 10-year veteran, says, "Sam was the best. He was the easiest person I ever worked with. He and [Henry] Mancini. Just a fabulous guy. We became really good friends. Everybody loved him. And he was a total professional, too."

By the time Peretti, Creatore and Schmitt began working with Cooke, the elements of his sound were fairly well fixed. Rene Hall wrote many of the arrangements, which were often lush, string-filled affairs. Once Cooke started recording at RCA in Hollywood, Schmitt says, "Luigi ended up doing most of the production because Hugo didn't fly, and he lived in New York. If he was going to come, he'd have to take the train out, so we didn't see that much of him."

Schmitt believes that some of his own famously calm studio demeanor comes from working with Peretti and Creatore: "One of the things about them is they were very patient about things. Luigi was this great guy, with a wonderful sense of humor, and he was very relaxed. He always knew it was going to get done, and he didn't panic. He wasn't a screamer. He didn't curse. Unfortunately, some of the producers were like that; they were just maniacs. I worked on dates where a .32 automatic would be sitting on the producer's desk. And working with Sam was cool, because he was so relaxed most of the time, so there wasn't any tension. Everybody had a job to do and knew what

they were doing and did it well, and that was it."

Though Schmitt notes that Peretti and Creatore would make some suggestions from the control room, "Once we got our sounds, Sam pretty much produced himself. He wrote most of the songs; he knew what he wanted. He

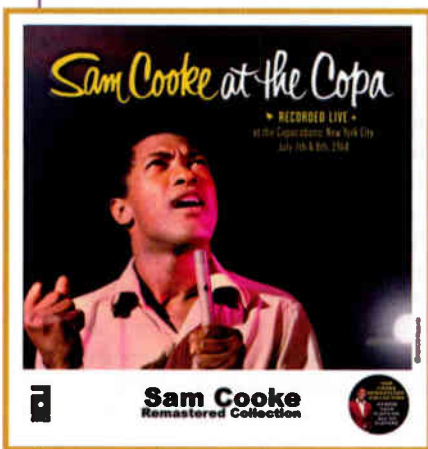


had a vision in his head of the way these things should be, and that was pretty much it. He worked fast in the studio. We'd do three and sometimes even four songs in three hours, and then we'd usually choose the best take and that was the record."

In the early '60s, RCA's main studio was equipped with a custom console that had 16 inputs: "four groups of four," Schmitt says. "But there was no EQ on the board and no limiters at all. I had one limiter that I'd patch in on something if I wanted it. So since I didn't have much limited or EQ, I had to rely on microphone techniques to get the sounds I wanted."

For Cooke's vocal, Schmitt always used a tube Neumann U47. "For drums, back then it would vary; sometimes just one or two mics, three at the most. That Altec 'salt-shaker' was a mic a lot of us out here in California used at that point. It was good as an overhead. I also remember using a little 8-ball kind of microphone on the kick. I don't even remember what it was; it was a cheap \$25 mic in those days. But then you could buy a Telefunken for \$300! When I was in New York, we used a lot of tube mics, and when I first arrived in California, I was surprised that not a lot of tube microphones were being used. But I used them all of the time, as many as I could scrape [together]. It took a while for people out here to get away from dynamic mics."

Typical of most artists of that day, Cooke's recording sessions were cut completely live, including lead





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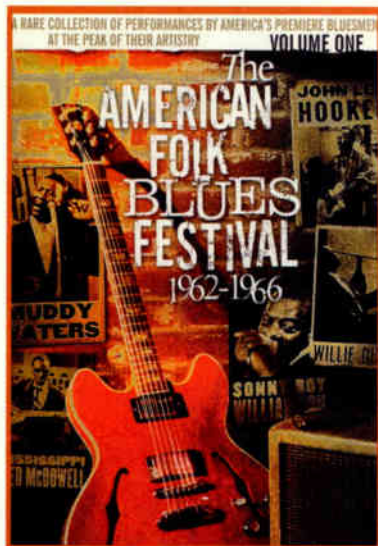
ALWAYS A SOUND DECISION

Cool DVD Spins

The Mix Staff Members Pick Their Current Favorites

Various Artists: *The American Folk Blues Festival (1962-1966), Vols. 1 and 2* (Hip-O Records)

How appropriate that the so-called "Year of the Blues" ends with the release of these extraordinary DVDs, culled from long-neglected early and mid-'60s European televi-



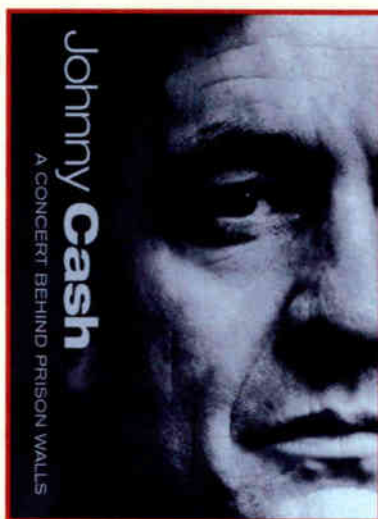
sion programs based around the annual American Folk Blues Festival tours that were organized by a pair of German blues enthusiasts, Horst Lippmann and Fritz Rau. This is the real stuff: some of the greatest blues artists America ever produced, playing at their best, captured in crisp close-up (in glorious black and white) with *incredible* sound. If you love the blues, it doesn't get any better than this; what a gold mine! The highlights are many and varied. *Volume One* starts out with a pair of tunes shot in 1962 on an imaginative "Southern" stage set: T-Bone Walker and Shaky Jake wail on "Call Me If You Need Me" outside a humble housefront as a young woman sits nearby, knitting; then, Walker turns a "corner" and introduces Sonny Terry and Brownie McGhee, who perform "Hootin' the Blues" for a crowd of dancing, casually dressed black couples in front of an elevated porch—it's sort of a country blues American Bandstand; wonderful stuff! Most of the other performances are taken from more formal concert settings, but there's still a very relaxed air about the proceedings, as the legendary Sonny Boy Williamson intro-

duces Lonnie Johnson, Victoria Spivey introduces Otis Spann, Big Joe Williams introduces Willie Dixon, etc. Personally, I was most blown away from seeing Sonny Boy Williamson (whom I'd never even seen on film before): He has a completely captivating presence that's hard to describe. But every second of both discs is mesmerizing: Howlin' Wolf gets his due with three songs; Mississippi Fred McDowell shows his mastery of fingerpicking in a 1965 performance; Otis Rush's spine-tingling "I Can't Quit You Baby" predates Led Zeppelin's stab at that song by three years; John Lee Hooker's "Hobo Blues," shot almost entirely in extreme close-up, is the blues at its most primal; and on and on, 18 tracks on each disc. All in all, it's an astonishing pair of discs. I can't recommend them highly enough!

Producers: David Peck, Jon Kanis, Janie Hendrix, John McDermott. Audio restoration: Eddie Kramer —Blair Jackson

Johnny Cash: *A Concert Behind Prison Walls* (Eagle Rock Entertainment)

The opening scene of this 60-minute DVD shows a huge, foreboding Victorian-era prison and shots of cells, guards with guns and barbed-wire, while a voice intones over



a growing rumble of tympani: "And now, from the gymnasium of the Tennessee State Prison—behind prison walls—our special guest star, Johnny Cash." Immediately, the scene cuts to a rather slick concert stage

—CONTINUED ON PAGE 137

vocals and strings. "RCA was a great room for strings," Schmitt notes. "There was almost never any overdubbing with Sam, unless he was going to do his own backing vocal or something. And when I did 'Bring It on Home,' that was Lou Rawls with Sam and that was live; they sang it together."



SAM COOKE REMASTERED

FROM PAGE 128

Landi, who meticulously discovered and authenticated the original source masters for each recording.

"It was a treasure hunt, without a doubt," Klein says, "because in the '50s and '60s, they operated with the idea that they were making *pop* music that was disposable. They were not thinking that these were historically important recordings. The tapes go here, they go there. The recordings made outside of RCA Studios were a real adventure to find."

"Part of authenticating is just getting the original releases," Landi explains, "whether they were on Specialty or Keen or SAR or RCA, and making sure that we have the exact performance, because sometimes you'd have two or three versions of one song, and you want to make sure you have the one that got used. The single version and the album version sometimes did differ—a lyric here, a bass part there, or a mono vs. a stereo mix. You have to use your ears, because often these tapes have no information on them."

Landi had a good deal of help from Steve Rosenthal, who works in his own Magic Shop Studio in New York City. Rosenthal is certainly no stranger to this type of work: In addition to recording projects with artists such as Björk, Lou Reed and Sonic Youth, in 2001 he opened a restoration and archive facility within the Magic Shop, where he oversaw the archiving of the Stones reissues, as well as Rounder Records' entire Alan Lomax collection (nearly 100 CDs), some Frank Sinatra reissues and the John Phillips archive.

"To play back the master tapes," Rosenthal explains, "we spent quite a bit of time making sure that the alignments were correct, and that's a real challenge, because sometimes we have tones and sometimes we don't. Sometimes, we found a very specific alignment format



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they used for a short amount of time, and it was a real challenge to find out how the alignment curve worked. One such alignment curve was called AME.”

“That actually involved more than getting the alignment tape,” interjects Landi. “We had to acquire the physical cards for the machine designed for AME. We had to hire a retired RCA technician to make them, but he did it, and it worked, and it’s a good thing, because that was a big chunk of RCA material from the early ’60s.”

Playback for *At the Copa* was done on Abkco’s Mike Spitz-refurbished ATR-102 with Aria electronics. “It contains 3- and 4-track heads,” Landi explains, “but almost all of Sam’s stuff was recorded 3-track.”

original producer on the album; Sam’s brother, L.C. Cooke; and Allen Klein, Cooke’s longtime friend and manager. Klein, a founder of Abkco, was at the club every night of the Copa engagement and, in the intervening years, has been the ongoing keeper of the flame, as far as maintaining Cooke’s place in music history.

“The idea I had was that the listener would be sitting at the front table,” Rosenthal says. He has particular insight into the nightclub scene, as he is the owner of The Living Room, the New York City nightclub where Norah Jones and Jesse Harris were discovered. “I don’t know if you’ve seen *GoodFellas*, but there’s a scene when Henry walks into

We re-created not only the performance that was on original vinyl, but the setting in which it was performed. So we did a tremendous amount of research into the acoustics of the Copa, the size, where the musicians were.

—Jody Klein

As soon as the tracks were playable, Rosenthal employed a three-tiered backup system. “We transferred these tapes to three different formats,” he says. “One was an analog bump from 15 ips ¼-inch to 30 ips ½-inch. We also did it to the new DSD format [SACD], and we made a 24/96 Sonic Solutions backup of each particular tape. I feel confident that in the next 50 years or so, this music will be in great shape.”

Not exactly glamorous work, but the engineer and producers’ attention to detail illustrates their commitment to historical accuracy and to the lasting beauty of the recordings. The *Sam Cooke at the Copa* is an excellent case study in their dedication to this material. *At the Copa* is a classic live album recorded when Cooke performed at the Copacabana for two nights in July of 1964. “Because of the technology, one is tempted to create a new record,” Klein explains. “We re-created not only the performance that was on original vinyl, but the setting in which it was performed. So we did a tremendous amount of research into the acoustics of the Copa, the size, where the musicians were. They also consulted with a number of the people who were familiar with Cooke’s live performances: Al Schmitt, the

the room and he pays everybody \$20 bills and ends up sitting in the front watching Bobby Vinton Jr. playing Bobby Vinton. So, I wanted to know the room geometry. Oddly enough, there weren’t that many photos of the inside of the Copa; there were photos of people onstage, but there were very few photos of what the room treatments were. So, I spent a lot of time trying to find out what the distance from the stage to the back wall was, because I was not into the idea of just using reverb in a sort of ad hoc way. After a lot of research, we found some answers, and I developed the surround sound mix according to those ideas, principles and numbers.”

The Copa performance includes a range of musical styles—ballads such as “When I Fall in Love,” the gospel standard “This Little Light of Mine,” the popular folk song “If I Had a Hammer,” and a medley of “Try a Little Tenderness,” “For Sentimental Reasons” and “You Send Me”—all brightened by a big band accompaniment. Rosenthal’s mix is nothing short of remarkable: The vocals, the horns, the ambience, the *vibe*—it’s all there. Rarely will you hear a live album that succeeds so well at being live.

“This may seem a little abstract, but



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the whole idea was really to re-create the space, not create an arbitrary space," Rosenthal continues. "*The Copa* was a 3-track recording, so it's a much more difficult situation than if you're taking a 24-track master and making that 5.1. The producer Al Schmitt and the engineer Bernard Keville did an amazing job of balancing the record on the original multitracks. In those days, they were 3-track live recordings, so you have only one crack at it."

Rosenthal mixes on a 30-year-old 56-input Neve. He uses mostly analog gear: LA-2As, Pultecs, Neve compressors, EMT stereo plates, and monitors on ATC 50s and Genelec 1031As. "These are analog recordings, and they deserve to be mixed on an analog console," he says. "And then we go back to the Sonoma; that's what the final 5.1 mixdown goes to. I think that for the first time with Sonoma and our Meitner filters and DSD technology, we've finally got this digital thing right. When we A/B analog sources to what comes back from the Sonoma workstation, we're delighted. And then it travels to the wonderful Bob Ludwig. Bob is a genius. He brings an incredible, deep knowledge of music to every mastering project. His input is invaluable."

To introduce the *Sam Cooke Remastered Collection* to the public, Abkco held old-fashioned listening parties in key cities, where the albums were presented in surround on the same ATC speaker system used during the mix. It's all part of a mission to get people excited, not just about Cooke's magnificent catalog, but about music in general.

"Most of the public is playing MP3s, so they're going in the opposite direction," says Rosenthal. "They're listening to degraded audio, and we're trying to make integrated, more high-quality audio. So, this is a tough road we're on to get people into listening to music again in a high-quality way. I think the idea of offering them both layers [CD and SACD] at the same time goes a long way in helping the listener find this new audio format.

"What's happened is the experience of listening to music has changed. It's now part of your multitasking world. But when we had these listening parties, people sat there and actually found themselves listening to music again. Not sending two ways, not driving—actually listening to music. And when we got to *At the Copa*, people were just taken aback. In Chicago, they stood up and danced. It's about the music again." ■

OUTCAST

FROM PAGE 129

While recording the vocals, Frye relied mostly on a Neumann M149 through an Avalon 737 pre straight to Pro Tools. (Occasionally, a Neumann 87 through a Neve 1073 or a UREI 1176 was used, depending on how they sounded during the day.) "We tried to get as clean a signal to tape on this record because it was shaping up to be a little drier and in-your-face than in the past, [where] we had added more effects at times to some of the vocals," Frye explains. He notes that there were situations where some Waves plug-ins were added to vocal tracks.

I think the music was living before it was recorded. I'm trying to get it as true to whatever recording means as it could. —John Frye

On the musical side of things, Frye attempted to keep the sounds as direct as possible. "I think the music was living before it was recorded. I try not to change it much," he says. "If a sound is coming from the house or from a drum machine, I'm not trying to EQ it or change it much. I'm trying to get it as true to whatever recording means as it could. If we chose to manipulate it later, then we'd take that step. But there's very little of that. We'd play with it a little bit, and we'd find a sound either with a machine or through the EQ or a subtle effect and run with it. Choices were made pretty quickly. I don't think we really made any mistakes."

For samplers and drum machines, Dre used the Akai MPC3000 and an E-mu SP1200, while Big Boi's primary machine was the MPC2000XL. "Although they have every version of every one of them ever made, those were the sequencers and drum machines to start," Frye says. "Occasionally, there was an odd piece that had some kind of rhythmic pattern in it that we'd lock in, but often a lot of things were triggered via the MPC3000 or 2000XL."

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While the usual assortment of OutKast cohorts (Debra Killings, Sleepy Brown, Killer Mike, the Organized Noize production team and Mr. DJ) contributed to this album, Frye reports that hard drives were locked in the Stankonia vaults until guests were recorded at other studios. Dre performed additional recording at Tree Sound in Atlanta to track the songs "She Lives in My Lap" and "Hey Ya"; Norah Jones recorded at Enterprise in Los Angeles for the song "Take Off Your Cool"; and they worked extensively at Larrabee Studios in Los Angeles. Also joining the fray were Jay-Z, Cee-Lo, Goodie Mob, Rosario Dawson, Bun B, Konkrete and Lil Jon & The East Side Boyz. "They really put a lot of thought [into] who would be on what song," Frye reports. "It's not necessarily something that's done just on the spot. They'll really seek somebody out for a particular reason, because of the way something feels or sounds or what they heard on it. On this album, there are actually fewer guest appearances than ever before."

Asked to describe the recording of a specific song, Frye points to "She Lives in My Lap" on Dre's disc. "It started as a guitar-oriented thing, and when we were laying the original track, it started to take off on its own. One cool thing is that we reversed the multitrack and got the beat to do something else in reverse. So it became a different song, as well," he says. "Vibrate" was the song that came out of the "She Lives in My Lap" jam. Frye reports that this type of thing is not new to OutKast, noting that the smash hit "Ms. Jackson" from the 2000 release *Stankonia* was born from a similar situation. "We will try anything," Frye says. "My biggest thing with being in the room with them is that no matter what they say, the answer is yes. So, 'Ms. Jackson' started as one track and we threaded the tape upside down. We're always looking for new textures and sounds to see what things are going to do."

In addition to engineering, Frye handled most of the mixing within Pro Tools for both albums. Given how Dre and Big Boi worked, much of the mixing took care of itself. The songs on Big's record, Frye reports, went through about four stages: original tracking, vocals and overdubs, a rough mix and the final mix. "We did have to visit the songs a couple of times because the overdubs might be too loud and when you're doing the vocals and hooks, they would be a little more prominent. So, we'd have to simmer it down into the soup that became the real song." ■

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Cool DVD Spins FROM PAGE 132

setup and the Man In Black launches into a spirited performance of his classic Sun Records hit, "Folsom Prison Blues." Carl Perkins, a former Sun Records label-mate of Cash's, helps out with lead guitar duties. Throughout this 1977 concert Cash is in his element, clearly having a great time as he throws himself into a medley of "Hey Porter" and "Orange Blossom Special," romps through "A Boy Named Sue," dances around the stage, plays harmonica and tosses out a humorously cocky monologue about a run-in with the law. Roy Clark hams it up on "Rolling In My Sweet Baby's Arms" and shows off his considerable chops as a guitarist and banjo picker; Foster Brooks delivers the concert's low point with a tedious drunk-man comedy routine and stiff singing. Besides Cash, this DVD's highlights are provided by Linda Ronstadt, who turns in excellent performances of "You're No Good," "Silver Threads and Golden Needles," "Love Has No Pride" and "Desperado" in front of a crack band that includes Andrew Gold on lead guitar and piano. The latter two tunes alone are worth the price of the DVD. Ronstadt's cute country girl look and criminally short miniskirt and Mary Janes must've driven the inmates crazy. All in all, *A Concert Behind Prison Walls* captures a wide range of country-related talent and offers a great reminder that Cash was a lot more than the stony, dark persona that was his trademark. Cash fans will find this a worthwhile addition to their collections.

Producers: Jim Owens and Charles Ison Jr.
Director: Dick Carson. Audio: Doug Decker Audio.
Remix: Michael Davis, Digital Audio Post & Emerald (Nashville). Technical Facilities: Pacific Video, Opryland Productions, Northstar Studios.

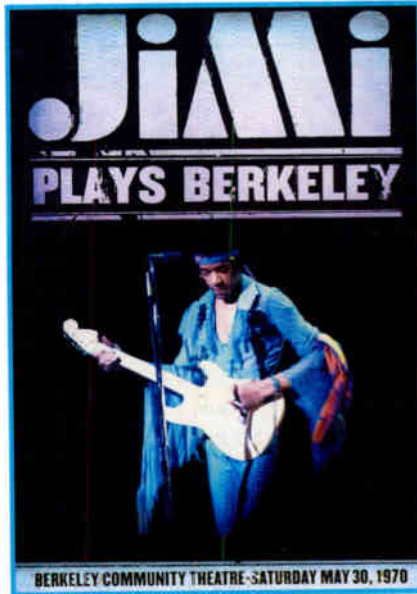
—Rick Clark

Jimi Plays Berkeley (Experience Hendrix)

At just 49 minutes, most of it not particularly well shot, this slight 1970 Jimi Hendrix concert film—out on DVD for the first time—nonetheless deserves its cult popularity: It captures Hendrix on a very good night, when the guitarist is both full of fire and also feeling spacey and expansive. There are great versions of "Johnny B. Goode," "Hear My Train A-Comin'," "I Don't Live Today," "Voodoo Child" and, most impressive of all, "Machine Gun," which is intercut with footage of riots on the UC Berkeley campus. The sound for the concert portions was mixed by Eddie Kramer and is crisp and clear. A bonus is that the DVD also contains a superb audio-only track of one of Hendrix's two concerts in its entirety that night in Berkeley. Probably for Hendrix hardcores only, but still cool.

DVD production: Janie Hendrix, John McDermott. Engineering: Eddie Kramer at Clinton Recording (NYC) and NRG Recording (North Hollywood). Mastering: George Marino/Sterling Sound (NYC).

—Blair Jackson



Monk in Paris: Live At the Olympia (Telonious Records)

You'll find this one in the Monk section of your local record store, as it's mainly a fine live album of Monk in Paris from March 1965, with the brilliant pianist/composer fronting a group that includes tenor player Charlie Rouse, bassist Larry Gales and drummer Ben Riley. The quartet moves easily from Monk originals to standards, with solos passed around generously, but Monk is clearly in charge. The set-closing "Epistrophy" is a knockout. A special bonus



DVD shot a year later with the same group in Oslo, Norway, lets us see Monk and Co. in action on three songs (none of them on the Paris set), including a fine take on "Blue Monk." It's wonderful seeing Monk's idiosyncratic style in full flower on the nicely realized and well-mixed DVD. A great double-shot of one of the greats of modern music.

Music disc producer: Joel Dorn. Mastering: Gene Paul/DB Plus Digital Services. DVD Producer: Victor Sheldrake. DVD Authoring: Randy Hudson at Broadness (NYC).

—Blair Jackson ■



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L.A. GRAPEVINE

by Maureen Droney

Upstairs from Hollywood's Cello Studios, I found new-guy-on-the-block Ted Greenberg, fresh off his TEC Awards win ("Remote Production/Recording or Broadcast") for mixing and production on the soundtrack to *Standing In the Shadows*



Ted Greenberg settles into L.A. life in his Neve-equipped studio, Fluid Productions.

of *Motown*. Although Greenberg, who also nabbed two Grammys for the project, has had a studio and office suite—dubbed Fluid Productions—in the bustling Cello complex for more than a year, he's finally made the full transition to Angeleno life. When I rang him two days earlier, he was at home unloading a truck filled with household goods that he'd just driven cross-country from Philadelphia.

No newcomer to the music business, Greenberg's been a studio owner and gear collector since 1979. Big Zone Recording, his Philadelphia facility, hosted such notables as Bon Jovi, The Roots, Joan Osborne, 311 and Wyclef Jean. A multitasking musician himself—bass, drums, guitar, keyboards, French horn and more—he has a degree in Music Performance. His real chops, however, were honed while drumming on the Atlantic City show circuit at venues like the Playboy Club, the Tropicana and Harrah's.

"That's how I made the money to buy all of this," he says with a laugh, gesturing to the Neve 8014 and BCM 10 consoles, Studer A800, Pro Tools and racks of vintage outboard gear in his orderly control room. "I'd work a showroom with sets at 8 p.m. and 10:30 p.m. When you're the house drummer, sometimes an act comes in with their own drummer and you just have to play the 'on.' After the 8 o'clock show, I'd run down the boardwalk to a lounge gig, then run back to play another 35 seconds at 10:30. There were times I'd leave my car with the flashers on in the loading dock of Harrah's, run in—in my tux—do a bit, get back in the car and drive back to my gig at Playboy."

That kind of experience gives Greenberg the ability to understand, at least somewhat, the lifestyle that the legendary Funk Brothers, stars of *Standing In the Shadows*, lived. How he came to produce and mix the soundtrack for the film, however, is a story in itself.

As Greenberg tells it, "I started as the drum roadie on the project. Alan [Slutsky] asked me to bring my drum set and roadie for one of the drummers, and also to be his interface with [Record Plant Remote's] Kooster McAllister, who recorded the shows." Actually, the story goes back even further; Greenberg played drums on several cuts on the instructional CD that accompanied the *Standing In the Shadows* book, which preceded the film.

Okay, but how'd he jump from drum roadie to soundtrack mixer? "They had a box of tapes," Greenberg explains matter-of-factly, "and I had a studio in Philadelphia with an API console." In reality, of course, the saga was much more complicated. The project's first edit list,

—CONTINUED ON PAGE 141

NASHVILLE SKYLINE

by Rick Clark

Way back in the early '80s, there was a brief stretch when I was brought onboard to play keyboards for an Atco Records pop band called the Wilson Brothers, featuring Steve and Kelly Wilson. My time with the Wilson Brothers was in support of an album they did with producer Kyle Lehning. It was a fine-sounding production that did a good job of enhancing the brothers' style of melodic pop, which fit nicely alongside artists such as the Michael McDonald-era Doobie Brothers, Todd Rundgren and Toto. Lehning cut some of the album at Cherokee in Los Angeles and in the office of Johnny Cash's dentist, Dr. Billy Burkes. Burkes, who was also quite a phenomenal jazz accordionist, had an MCI 24-track and a 400 Series MCI console in a section of his office.

Before the Wilsons' album, Lehning had enjoyed success producing huge '70s hit records by England Dan & John Ford Coley, and later went on to produce Firefall, Kenny Rogers, Tammy Wynette, George Jones, The Derailers, Ronnie Milsap and, most famously, Randy Travis, which represents one of his longest and most successful collaborations. In fact, Lehning has recently been in the studio with Travis recording an album of bluegrass gospel hymns called *Faith and Worship*.

I recently hooked up with Lehning at Ocean Way Recording, where he was co-producing with Paul Worley (Dixie Chicks, Martina McBride) for a new 13-year-old Warner Nashville pop/country artist named Alexis Ebert. In the studio, the atmosphere was very relaxed as some of Nashville's finest session players worked their way through a pop ballad penned by the youngster.

Lehning told me that he is also working on spec with artists he really believes in, including Joy Lynn White, who actually had put out some major-label Music Row records that Lehning didn't believe captured her singing and songwriting

strengths. "Sometimes you get a little tired of record companies trying to decide what they want to do," says Lehning. "You should just do it yourself. This is alt-country, and there is plenty of steel guitar and lots of Joy's attitude on the record. There are only about three outside songs; it's primarily her songs."

Lehning's other labor-of-love-project is a jazz blues-type album for singer/Hammond B3 organist Moe Denham. "I think that Moe's sort of an unappreciated local great," Lehning enthuses. "He's one of those old-school guys who kicks pedals and has a great feel and great sound. We're probably going to do Les McCann's 'Listen Up,' which he does a great version of. And he's got a couple of unique arrangements, including one tune called 'Song for Eleanor Rigby's Father' that segues from 'Song for My Father' into 'Eleanor Rigby' and back into 'Song for My Father.' I may shop it, but we may put it out ourselves. It's going to be fun."

A few days after my Ocean Way visit, I headed over to Lehning's Green Hills home studio, The Compound, and met with Kyle, his sons Jason and Jordan Lehning and assistant engineer Casey Wood. The Compound is equipped with an automated 80-input Soundcraft DC-2020, a 24-track MCI JH-24, two RADAR II units, Mackie HUI, Pro Tools HD and an Ampex ATR-102. Room designer Gary

—CONTINUED ON PAGE 142

NEW YORK METRO

by David Weiss

Whether listeners were excited, annoyed, intrigued or bored by The Strokes when they arrived in 2001, they had to admit at least one thing: The New York City group's debut CD, *Is This It?*, sounded completely different than any other major-label release that year. Exacting in their low fidelity, the unapologetically raw production values were the ideal vehicle for The Strokes' futuristic spin on classic rock and pop arrangements.

Besides the group themselves, the main person to credit or blame is producer/engineer Gordon Raphael, who was behind the board for *Is This It?*—hailed as one of the year's best by *Billboard*, *CMJ*, *NME*, *Time* and *Entertainment Weekly*—as well as the group's new release, *Room on Fire*. A musical nomad who crossed back and forth for years between the industrial sounds of Seattle and the basements of New York City looking for great bands to play with and new sounds to record, Raphael has discovered the rewards of a hit album.

"People really appreciate my work where I go. I can work less and charge more," says Raphael, whose easygoing nature comes drifting over the phone from his latest home base, London. "Also, if I do like a band, labels will take me seriously, listen and maybe sign them."

All of which is good for assuring Raphael's happiness as a producer and engineer, as well as an indie label owner (www.shoplifterrecords.co.uk). One thing his success with *Is This It?* didn't guarantee him, however, was a gig producing The Strokes' second record. That job was initially slated for Nigel Godrich of Radiohead fame. "I wondered why, but I didn't want to ask," Raphael recalls of being informed of the deci-



PHOTO: CHRIS FARM

Producer/engineer Gordon Raphael contemplates the power of lo-fi.

sion in late 2002 by Strokes frontman Julian Casablancas. "Whether it was the record company or because Radiohead had gotten so much great publicity, I really thought that when they got into the studio with Nigel Godrich, The Strokes would have a revelation on how drums can sound and how big guitars can sound. I thought that they'd liked me and now my time with them was over, even though Julian looked me in the eye and said, 'I have a feeling we'll be back. This is just a test.'"

After two attempts to record a three-song set with Godrich, the test was over. The Strokes split amicably with Godrich and reunited joyously with Raphael, who can only speculate on what made him uniquely qualified to do the project. "Generally speaking, there's a palette of tones that The Strokes have come to associate with their band, and they're not the standard of professional recording: They're a little dirty and a little slurred," he says. "This time, they felt like I was the one that could grab that. The next time, they may do the same routine. I take it moment by moment, and I'm happy to be a part of the story right now."

The first order of business was getting into a studio, and because Raphael's Lower East Side basement facility, Trans-

—CONTINUED ON PAGE 145



PHOTO: RICK CLARK

Producer Paul Worley (left), up-and-coming pop/country artist Alexis Ebert (center) and Kyle Lehning

SESSIONS & STUDIO NEWS

NORTHEAST

Jarvis Studios (NYC) welcomed guitarist Bill Frisell and producer Hal Willner in to track with Don Alias, Steve Bernstein, Briggan Krauss and Curtis Fowlkes; sessions were engineered by Noah Simon. Also in session were The Mavericks and the group Nine Days, who stopped by to mix their latest album...Loho Studios (NYC) hosted punk poet Patti Smith and engineer Emery Dobyns for Smith's forthcoming album on Columbia Records; also in to record were Sony artist Sweetback (engineered by Bob Brockman) and artist Amy Bartle (produced/engineered by Neil Dorfman; Pro Tools engineering by John Kaplan)...Sound on Sound's (NYC) Studio B found Capone-N-Noreaga (Def Jam) mixing with producer Just Blaze and Dave Hyman. Petey Pablo and Nick Cannon (Jive Records) worked with engineer Brian Stanley...Eric Schilling mixed and produced new artist Anthem's debut (Sly Dog Records) at Bennett Studios (Englewood, NJ)...Tony Visconti produced David Bowie's latest, *Reality*, at Allaire (Shokan, NY) and Looking Glass Studios (NYC); the latter was also his chosen location for mixing Hugh Cornwell's (The Stranglers) solo release.

NORTHWEST

Hollcraft Studios (Pleasant Hill, CA) completed two new classical efforts from Bay Area musicians: *Three Sonatas for Solo Violin* (Bach) by James Greening-Valenzuela, and San Francisco Symphony's assistant concertmaster Mark Volkert, violinist Geraldine Walther and cellist Jan Volkert recorded their CD, *Delectable Pieces*...Numerick Lab (Seattle) mixed and produced the theme song for the CBS drama *Navy NCIS*...Nettleingham Audio (Vancouver, WA) mastered releases for bands Ruby Red, Chec Stadium, Diggabone and Triclops (PDX). North Carolina-based Deep Elm Records brought two of their bands, Lock and Key and Burns Out Bright, in for mastering...Elliott Bay Recording Company (Seattle) finished their latest recording with the Seattle

String Quartet; owner Scott Ross produced and engineered the sessions. Also in with Ross was San Francisco rock quartet Finding Stella, who worked on tracks for their first full-length CD.

SOUTHEAST

Masterfonics' (Nashville) engineer Benny Quinn finished the Rascal Flatts single "I Melt," adding mastering touches to their live bonus CD. Also in the studio with Quinn was Kenny Rogers, who recorded *Back to the Well* (Dreamcatcher Records); the effort was produced and mastered by John Guess and Joe Chemay...Fullersound (Miami) installed a Cube-Tec AudioCube 5 system, networked with their existing AudioCube 4-II system; the AC 5 is configured with 32 Cube-Tec VPIs, the 24-bit/192kHz mastering and restoration tools exclusive to the AudioCube platform...Bogart Studios (North Miami) announced the launch of their new site, www.bogartrecording.com; the studio's client list includes Dashboard Confessional and Hootie and the Blowfish.

SOUTHERN CALIFORNIA

Ed Cherney was at the Record Plant (Hollywood) to complete audio mixes for the Stones' four-DVD boxed set...Robin Pitigliano worked on her new al-



Jerry Vivino (center), saxophonist for the Conan O'Brian Band, recorded at Shanghai Jazz (New Jersey) and was aided by engineers Larry Gates (right) and Phil Ludwig.

bum at Studio C & C (West Hills) with owner/drummer Chet McCracken engineering the effort...Hollywood Sound Recorders (Hollywood) hosted the first session since their remodel, tracking and overdubbing artist Chronic Future (Interscope). Sean Beavan produced and engineered; Aleks Tamulis assisted...The Village (L.A.) has hosted a range of talent lately, including Dido, Guster, Café Tacuba, Usher, R.E.M. and Rickie Lee Jones.

SOUTHWEST

Houston-based rock quartet Pale completed two songs at SugarHill Recording Studios (Houston); Dan Workman produced and Steve Christensen engineered...WexTrax Mastering Labs (McKinney, TX) recently mastered tracks for artist Edgewater's (Wind-Up Records) new release; Eric Delegard produced/engineered and Rob Wechsler mastered. Wechsler and Andy Timmons produced Christian musician Susan Gray's debut CD: Rhythm tracks were recorded at Luminous Sound (Dallas) with drummer Dan Wojciechowski (LeAnne Rimes, Backstreet Boys) and bassist Mike Daane.



At The Village (Studio D), KCRW DJ Nic Harcourt gets a gift from Dido (center), whose CD he helped break. Ariana Morgenstern, Morning Becomes Eclectic producer, looks on.

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compiled to the film footage's best visuals, used various sections of numerous 48-track takes that had been recorded onto Tascam DA-98s. It took Greenberg a month just to get it all loaded into Pro Tools. When he did and began assembling the edits, he was shocked to realize that the selected sections—recorded without a click track by musicians who hadn't played together in 28 years—in many cases just didn't match up. "I went into a panic," he recalls. "I literally got cardiac arrhythmia trying to put it together. I couldn't make it work. I didn't want to be known as the guy who ruined Motown, so I quit the project."

But after another person tried the same edits with the same result, the project came back to Greenberg. This time, he insisted that the soundtrack be based on the best music, not the best visuals. That route, after six months of work, led to the final mixes. "It ended up being a compromise," he says. "Some things were fixed in Pro Tools. But I don't use a grid, or Beat Detective, or quantize, per se. I do it by ear."

Obviously, that ear is pretty good. Greenberg's Grammy and TEC statues now adorn the Dynaudio BM15A speakers in Fluid's control room, where he's been working on a number of new projects with songwriter/guitarist Padraic Coursey. Several of those projects have been recorded, with the help of Cello chief engineer Gary Myerberg, at high-resolution 176.4k in Pro Tools.

Working at Fluid with Greenberg and Coursey recently have been singer/songwriter Katie Morris, rock 'n' roll "wild child" Trina Renae, sultry songstress Ashley Arrison, hard rockers Harley Krishna and "The Angela Project," which comprises songwriter/pianist/flute player Angela Falco and friends. "It's a really positive time for us," says Greenberg. "We're doing artist development with a lot of really terrific talent, which we plan to shop to labels both major and indie."

A few blocks east of Cello, things were jumping at Tribune Studios, where such shows as *Judge Judy*, *Candid Camera*, *Family Feud* and *The Sharon Osbourne Show* are produced. The Tribune complex juxtaposes history with cutting edge: The studios' 10-acre lot, also home to KTLA-TV, was the original home of Warner Bros. Pictures, where, in 1927, the very first "talkie"—Al Jolson's *The Jazz Singer*—was filmed. They're also undergoing a \$10 million renovation aimed at creating the first all-digital studio lot in the United States. As part of the revamp, the facility has taken delivery of two 96-channel, 5.1 surround-

capable Euphonix Max Air digital consoles.

Jim Toten, Tribune director of engineering and technology, gave me a tour of the lot and its seven sound stages, along with a description of the renovation process, which began in 1996. Because Tribune Studios is a for-hire facility with a constantly changing stream of shows and outside engineers, designed-in flexibility was key to the renovation's success. Hence, the Max Airs, one of which replaces a Euphonix System 5 console that Toten says was originally purchased for Control Room 2 because, "the Max Air didn't exist yet. The System 5 [automation] was a bit overkill, but none of the other digital consoles did what I wanted. I had a lot of requirements, but the main reason for going with the modular Euphonix platform was that we need the ability to change things: We need to easily add faders or mic preamps and to be able to separate modules for different uses without having to get someone from the fac-



Jim Toten, director of engineering and technology, in Tribune Studios' control room B

tory down here to reconfigure. None of the other systems allowed me to do that.

"In a TV facility, we don't do multitrack recording," he explains. "Instead, we record across tape machines. If there are eight videotape machines with four channels of audio, that's 32 channels to record. There are numerous submixes: maybe a stereo mix of 12 pre-fader and pre-compressor audience mics, and another audience post-fade, post-compressor mix. They'll have host mics and a guest mic submix where there are 15 guest mics, but only three are used in a certain segment. They'll need a pre-fade mix of those three, plus a post-fade mix. It gets very complicated.

"Other manufacturers court the big leagues of film," Toten notes. "Euphonix really seems to care about servicing broadcasters. The other day, *The Sharon Osbourne Show* had Wynonna Judd in with

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her band, requesting 40 inputs over and above the show feed, which is already 48 mic pre's. Euphonix was able to supply a set of 24 additional preamps and a set of 16 additional channels of faders. They got that to us, with a smile, in about 30 minutes. I don't think there's any other manufacturer that could have done that."

Being able to use a MADI (AES-10) standard was also a plus when it came to interfacing the consoles to the overall routing. "The machine room for Studio 6 is separated from the control room by about 40 feet of cable. I didn't want to put a million tielines in between, so we established the MADI line from the audio console to the tape room. I've got 56 channels of AES available in the tape room, plenty more than I need, and I can easily expand without trenching and running additional cable. And MADI is a standard that is quickly becoming commonplace in the audio industry.

"We used to have a patchbay with a couple hundred cords in it. Now, for even a complex game show like *Family Feud*, we hardly need any. We're built to go from one show to the next to the next.

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NASHVILLE SKYLINE FROM PAGE 139

Hedden assisted Lehning in fine-tuning the comfortable facility, which also boasts a considerable array of mics and outboard gear. The monitor setup includes ATCs, NS-10s, Genelec 1032As and some JBL Hartsfields that Lehning's uncle owned when he listened to jazz as a child.

As we chatted, it became clear that Lehning had been giving his children opportunities to learn about and work in recording studios since they were young. Jason's studio experience started when he was allowed to program drum parts for a Dan Seals record called "Bop," which was a big country hit in the mid-'80s. When I mentioned to Kyle that it was probably an empowering time for Jason, he noted, "It was a Number One record! We didn't pay him and he didn't ask for it either." To which Jason replied, "I didn't know you got paid to do that stuff." Kyle responded with a laugh, "Still don't!"

Most recently, Jason engineered Randy

Travis' vocal tracks for *Faith and Worship* in Santa Fe, N.M. "The Randy Travis sessions were great fun," Jason says. "We had slated five days for Randy to sing 21 songs, but he sang the whole thing in two days! We used the third day for some fixes, but came home early after that."



Checking in at *The Compound*: Back row, l to r: Casey Wood and Kyle Lehning; seated are Jordan and Jason Lehning

Jason set up his own, still-unnamed facility just south of downtown Nashville. "When I first put my studio together, I started thinking of names, but [recording artist and friend] David Mead said, 'Don't name it!' Ever since then, I've asked whomever I'm working with to name it

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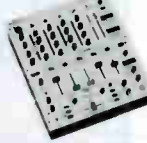
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COAST TO COAST

for that particular project, and that's been way more fun," says Jason. His studio is based around a Sony DMX-R100 console: "I've had it for about a year-and-a-half, and I love it. It's still the only digital console I've heard that actually has character, and it's also a lot of fun to mix on."

While I was at his studio, Jason played me some tracks from the new Lee Townsend-produced solo album by Viktor Krauss—upright bassist for Lyle Lovett and others—that Jason engineered and mixed for Nonesuch Records. The album features a tremendous supporting lineup, including Steve Jordan (drums), Bill Frisell (guitar), Jerry Douglas (dobro and lap steel) and sister Alison Krauss (vocals). The Krauss project was later mixed at Different Fur in San Francisco and mastered by Greg Calbi at Sterling Sound in New York.

I also got to hear tracks that Jason recorded with pop songwriter Daniel Tashian, who just inked a publishing deal with Windswept/Thorn in L.A., and whose song "Lifestyle" has recently been getting quite a bit of airplay on WRLT Lightning 100 in Nashville. Additionally, Jason produced the forthcoming record for Tashian's band, The Bees. The material on The Bees' unreleased album is rich with the kind of melodies and arrangement smarts that Jeff Lynne's best recordings have always possessed.

On a very different note, Jason has also been busy completing the mixes for Erasure's next record at Union Street Recording in Brooklyn, N.Y. "They re-recorded some of their older songs for this," Jason says. "So many of their older songs were surrounded by electronica that showcasing the song was not necessarily the first order of business. Andy Bell, the singer, is actually hugely influenced by country music, so there are a lot of acoustic instruments on this album, with the exception of a pedal steel guitar." The still-untitled Erasure album, produced by Steve Walsh, is slated to come out later in 2004 on the Mute label.

As if the production and engineering output of Kyle and Jason Lehning weren't impressive enough, Jordan (at 19, the youngest son) played me demos of his original category-defying music. All in all, the Lehnings create and produce an impressive amount of work, and it was an enjoyable stretch of days watching them encourage and support each other as a family. ■

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porterraum was no longer in existence, the winner was the extremely relaxed confines of TMF Studios near New York City's Union Square. "They'd always complained that most of the studios in New York City just have a totally professional, mercenary feeling that doesn't make them want to play their rock," Raphael says. "I noticed that when I had recorded [Shoplifter artist] Regina Spektor there that TMF was intelligently put together, and I was able to get an amazing sound between their live room and preamp selection."

Of all the factors, the size of the live room was the most critical in selecting the studio and shaping the sound for *Room on Fire*. "Julian equates roominess with reverb, and it's something he likes to avoid in any of his recordings," comments Raphael. "The live room at TMF was slightly larger—with a higher ceiling and further-apart walls—than my original studio. The dimensions at TMF are perfect for most bands, but this did work slightly against us because I couldn't use as much room miking on this album."

To set the mood for the sessions, Raphael oversaw extensive decorations in the studio, which included psychedelic lighting, purple velvet drapes and a massive ceiling-mounted disco ball. Raphael knew from the first time around that, contrary to their image as nonchalant East Village slackers, The Strokes would be extremely exacting about the sound and placement of every note, beat and slice of space on the record. What he and TMF engineer Toshi Yoshioka didn't know was that the band would be even more driven for perfection this time, turning the project into a three-month-plus marathon with extremely late nights and very few days off.

"Every sound has to sound like it comes from the same palette, like it's dancing together in the same room," Raphael says. "If one thing sounds like it comes from a different mood, they immediately identify it and say, 'This one thing is not dancing in the same room as its friends!' I was mostly relying on preamps like Neve for drums, API for guitar, and for the voice, Avalon, to make The Strokes' sound. There's a big SSL board at TMF, but I'm very suspicious of SSL boards; I've just instinctively never noticed them adding. In fact, Julian invented a sound in the mixing process. He would say, 'Can we please de-SSL-ify the sound?' One thing we used to do that was the Millennia tube EQ, since it added a lot of dirt and burning distortion on the high end."

The recording medium was also decidedly digital, not analog, as the band's

retro colorings might suggest. "Just like the first album, we used Logic software tied into Pro Tools Mix Plus hardware," says Raphael. "The main plug-ins were the McDSP FilterBank and the Bomb Factory plug-in in the LA-2A, which we used almost exclusively and all over the place."

"All of the bands I worked with up until The Strokes were overjoyed to hear their music on tape, and I tried up until the first day to convince The Strokes to use tape. We spent an afternoon getting the tones of the instruments the way we wanted using tubes, mic pre's and compressors, and when all was perfect, we ran the first song to tape. After one playback, Julian exclaimed, 'Why did we spend all day getting all these great tones just to get this machine to change them all and ruin them?' Which was the last we heard of tape."

For vocals, Casablancas shunned the studio's Neumann collection for the same Audio-Technica 4033A he used on *Is This It?* "He's very open, and we tried several mics and preamps, then went back to the A-T for the voice channel after trying everything else in the studio," Raphael reports. "This time, we had it going into the Avalon, and also used a real LA-2A compressor, as well as a series of plug-ins that were on every single vocal channel and the same on every song: three times the FilterBank—three EQs in a row, on top of each other—one fake LA-2A and one real LA-2A."

Drummer Fabrizio Moretti slightly evolved the setup for his kit. "This time, I miked the drums a little more closely and a little more carefully," Raphael says. "I rely on really nice-sounding preamps that add old character and rock 'n' roll warmth, which are Neves and Avalons. I put room mics up, with one of my main condenser mics three feet in front of the kick drum, low enough to not pick up the cymbals but the rumbly part of the drum kit, and add compression so it's a really dirty, nasty supplement to the sound that the rest of the mics pick up."

With The Strokes' musicianship and studio prowess noticeably improved, Raphael had a new challenge recording *Room on Fire*. "The big lesson for me was that one can go slowly and carefully and spend endless hours working on music without it getting meticulous or dry, which was something I was always afraid of in the past. I always thought that capturing the spontaneous magic that music creates meant going very quickly, but now I know I have more patience and that great results can be found by taking extra time." ■

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—FROM PAGE 24, ON THE ROAD AGAIN

cold dark room poured in to smother me instead. I was shivering uncontrollably as I looked up to see tubes and wires coming down from the ceiling and going into my arms and face and chest. I became aware that I was in dire straits, in an acutely life-threatening condition as teams of doctors sliced me up and stitched me back together while asking me questions. One doctor came over and pulled my hand up in front of my face and said, "You have dislocated fingers that need to be put back. Do you mind if I do them now while we prep you for your head?" And here, dear friends, is my hot tip for the day: if a doctor ever says to you, "by the way, you have some dislocated fingers, do you mind if I fix them now?" say... *no!* Don't say okay. I said okay. It was quite something.

What still chills me is that I didn't even know I wasn't riding, yet there I was in this emergency room with the helicopter long landed and the blades still. They had been working on me all this time, talking to me, trying to reach down and pull me back—and I thought I was riding. I heard them all right, those annoying ghostly passengers who kept in-

terrupting every perfect sweeping turn.

I cannot shake this extremely disturbing event, this switch of reality. Strangely, it's the thing I like the most in science fiction movies and video games: alternate reality. But it's something else when it's real. Quite a different proposition.

I spent four days wired up in Shock/Trauma, and then as is the way of modern medicine, they gave up and said they couldn't pin any bone in my body because I didn't have a single piece big enough to be pinned, so I was kicked out with a month's supply of morphine. I spent one month after that in a chair at about a 60-degree angle, 24 hours a day, 7 days a week, in one position, living on massive doses of morphine every four hours. They would take me away every couple of days to twist me and break me and X-ray me and bring me back so they could do it again the next day. I lost 20 pounds the first three weeks.

Unfortunately, on the second day nerve damage in my chest caused hiccups. These came every three to four seconds and lasted for almost four days. Well, with broken ribs and a collapsed lung, each hiccup was like being shot in the

chest with a .45. I did not make it through those days conscious.

During the last week of my Matrix Month, the morphine began twisting my soul, and I found myself in a limbo between reality and unconsciousness that had all its own laws of physics and values, each one more tortuous, depressing and overpowering than the last. Because of that, and the fact that the morphine was now making me too sick to turn my head, I quit. I am now in my fourth day of withdrawal.

Well, friends, I have had a lot of time to think. I have seen things in my career that I could not see before. Things that you might see in yours...

So next month, if I can find somebody to dictate to, I will tell you why I have put you through all these details. There actually is a point to all this. There will also be a bonus X-ray for your entertainment. And after that I will return to real audio columns and even review some very, very cool tech toys. ■

From a big shot to an immobile blob. If that don't straighten your ass out I don't know what will.



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Malcolm

—FROM PAGE 28, *THE DOCTOR IS IN THE HOUSE* that Jacob said works even when we're blindfolded—goes away. The result is reduced clarity and intelligibility.

The saddest part of all this, which Jacob didn't state outright but was easy to infer from his speech, is that the concept of tripartite sound systems—perhaps unavoidable in huge arenas—has trickled down to small clubs and halls where they may not be at all appropriate or even necessary. His presentation included a video of short interviews with a number of working musicians, all of whom had nothing good to say about most amplified performance situations. As one artist said, "You're playing to the speaker," as opposed to the audience or the other players, "because that's all you can hear." But no one has yet offered an alternative, especially one that can handle relatively loud music.

Bose's approach to solving this problem is pretty radical, and at the same time surprisingly simple. It involves nothing less than, as they put it, "changing the fundamental properties of loudspeakers," and yet the idea, once it's explained, seems obvious.

The company's new product is called the Cylindrical Radiator Loudspeaker. Two dozen or so (we weren't allowed to peek inside the units) small drivers are arranged vertically in a flagpole-like structure about 3.5 inches in diameter and seven feet high, which is set into a floor stand. The arrangement of the drivers is designed to eliminate all vertical dispersion: The sound is projected forward and in a 180° arc horizontally, but there's nothing projecting above the top of the column and nothing bouncing off the floor.

The most obvious effect is that, in theory at least, the sound is transferred to the room much more efficiently than with a standard spherical-front speaker. In fact, we were invited to walk directly toward the speaker from across a large room while a guitarist played, and observed that the difference in sound level as we approached was remarkably small, even when we put our ears right up to the speaker. Therefore, musicians can play at lower levels and still fill a space. Vocals sent through the system can be loud enough to project, but the potential for feedback is greatly reduced.

Extrapolate a little bit, and even more advantages become apparent. Because there's no sound projecting upward, reverb from ceiling reflections is eliminated.

The system is compact enough that each performer (or at least each section) can have his or her own speaker nearby, restoring the perceptual correlation between sound and image for the audience. As long as no one goes behind any of the speakers, the mix is relatively uniform at any point on the stage, except that each player gets to hear a little more of his or her own sound—and that means separate monitor mixes are no longer necessary. In fact, monitors themselves can go away: If the speakers, as they are designed to be, are placed behind the performers, pointing at the audience, then a single set of speakers serves as backline, monitors *and* house. The musicians and the audience hear exactly the same thing from the same speakers.

Is it loud enough? Bose's demonstration featured a seven-piece funk/blues band in a nightclub-sized room—at some very respectable levels. Jacob said that the systems were operating nowhere near capacity, and that they have tested them with rock bands in 400-seat theaters with 100-foot throws. Bose anticipates that these systems will be used primarily in smaller venues, although Jacob did say that they would also be appropriate for a larger hall in a hybrid setup. The band and the audience close to the stage could benefit from the Bose system, while another conventional system, pointing away from the stage, would project the sound to the rest of the audience.

Bose priced the system so that working musicians can afford it. A single "pole" and stand, and a remote control with level and tone controls, starts at \$1,699. Built into the stand is a simple 4-channel mixer, including mic preamps and effects inserts on two channels, as well as three 275-watt power amps. The stand's control panel lets you select from among 100 equalization presets to complement a wide range of instruments and voices.

The small drivers in the columns mean you're not going to get a lot of low end, but if you want more, you can buy one or more separate bass modules for \$300 each. The system automatically re-equalizes itself when you plug the modules in, so that the sound remains tonally consistent but louder. Each of the members of Bose's demo band played with a bass module, except the bass player, who had six of them.

The system is designed for portability: The 7-foot pole breaks down into two sections, and the heaviest parts—the 2-foot-diameter floor stand and the bass

poles—weigh in at 35 pounds and 28 pounds, respectively. From a strictly personal point of view, I'd love to see the company come up with an even smaller version that could be used by street performers. Although one engineer laughed at my suggestion of a battery-powered version—"Those puppies use a lot of juice"—Jacob said that he's interested in "extending the technology in both directions"—that is, bigger and smaller.

So will Bose's Cylindrical Radiators do what the company claims they will to clean up live music? It's going to take a lot more than an antiseptic demo in front of a bunch of aging audio scribes to convince the musical world that these things can put up with the vagaries of travel: the dank, smoke-filled rooms they'll be asked to perform in, and the unpredictable musical and social behavior of musicians and fans alike. But from this old rocker's point of view, as a way to get back to those days when I was the only one responsible for how the music I played sounded, the concept makes a lot of sense.

Certainly, schlepping a 7-foot column collapsed into something the size of a trombone case, a couple of bass modules and a good effects/amp-simulator pedalboard seems a small price to pay for regaining complete control over my sound, especially when you compare it to the alternative: hauling around a Marshall stack whose sound will only end up getting funneled through a single SM57, into some club's beer-soaked mixer and a pair of grungy cabinets whose best days were before they left the factory, all under the control of an engineer who would much rather be at home watching football.

Whether the company's intriguing idea of using the system as a "room within a room" for larger venues is practical, or if it will pass muster with professional sound companies that, after all, are used to doing things quite differently, is still far from clear. But for smaller venues like clubs, theaters, school auditoriums, function halls and the like—and let's face it, there are a lot more of those than there are Shea Stadiums—and the musicians who play in them, Dr. Bose and his crew may have come up with something worth looking at and listening to. Once they get this flagpole up, we'll see if anyone salutes. ■

Paul Lebrman's measure of a great music club is whether they have two-for-one dinner specials. And the music shouldn't be too loud.

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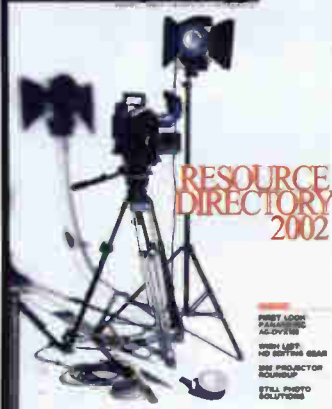
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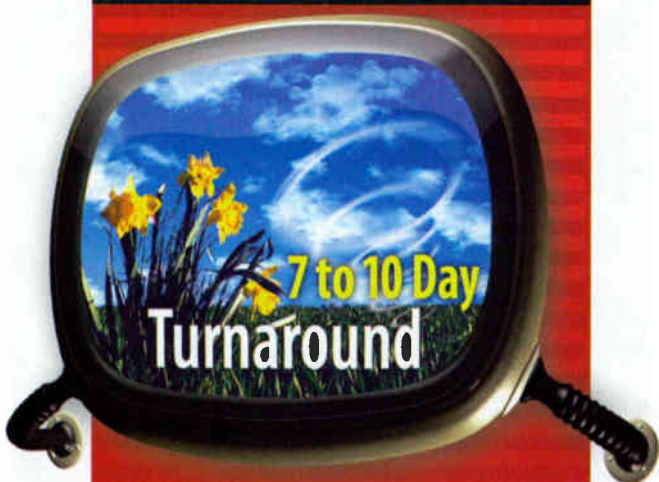


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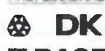
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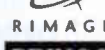
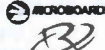


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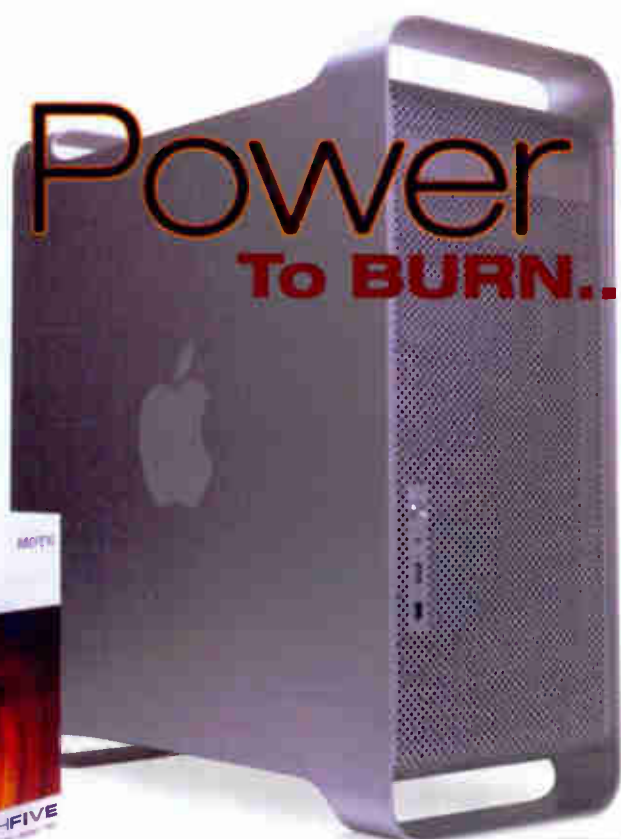
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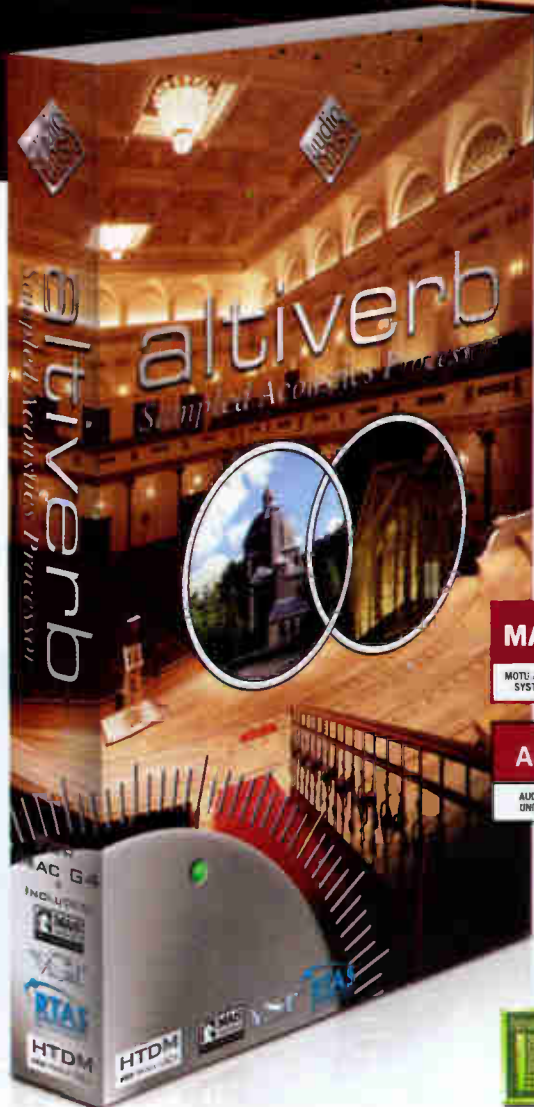
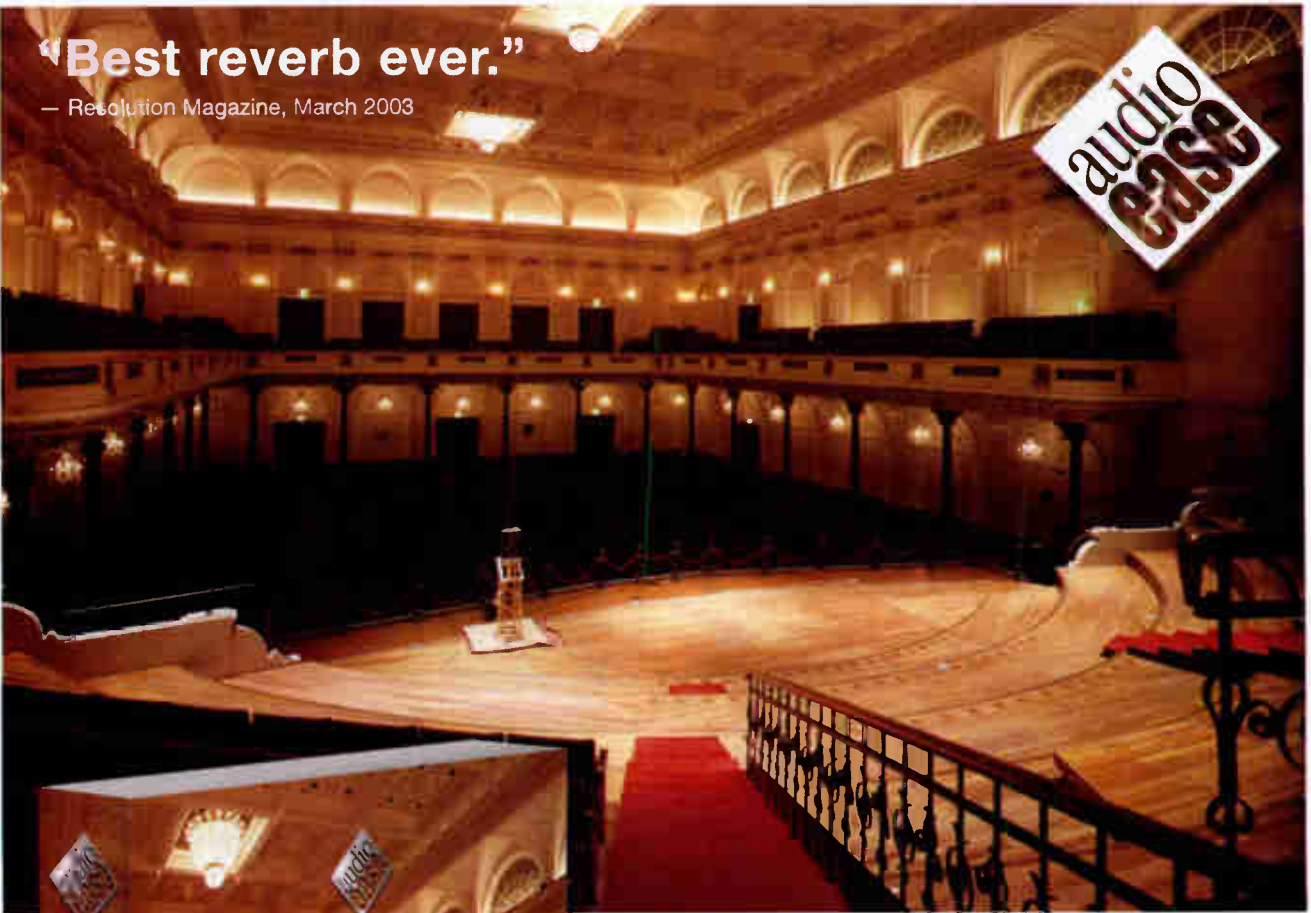


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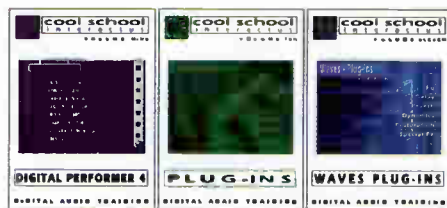
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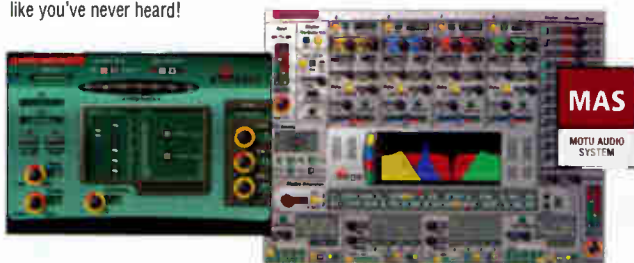


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Native Instruments B4

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

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



Mackie UAD-1 Powered Plug-ins

Accelerated effects processing for DP4

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



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TC Electronic Restoration Suite

Ground-breaking audio restoration plug-ins for DP4

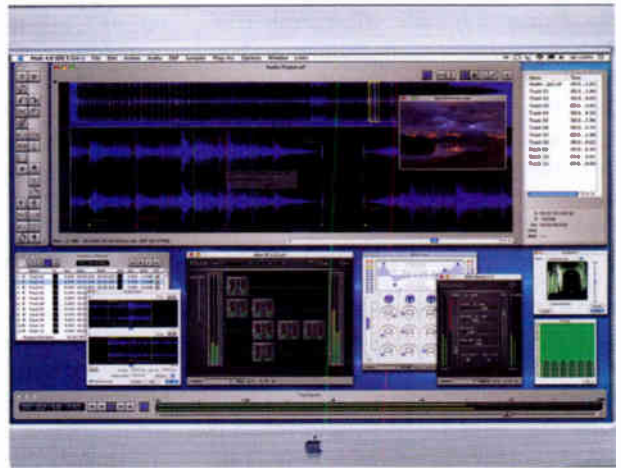
TC Electronic revolutionizes audio restoration with the new Restoration Suite for the PowerCore platform. Powerful, fast and easy to use, this bundle of hi-end restoration plug-ins provides descrambling, denoising and declipping for the most critical applications in audio restoration. The descrambling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



BIAS Peak 4 — 4 Is More

The ultimate waveform editing companion for DP4 and MachFive

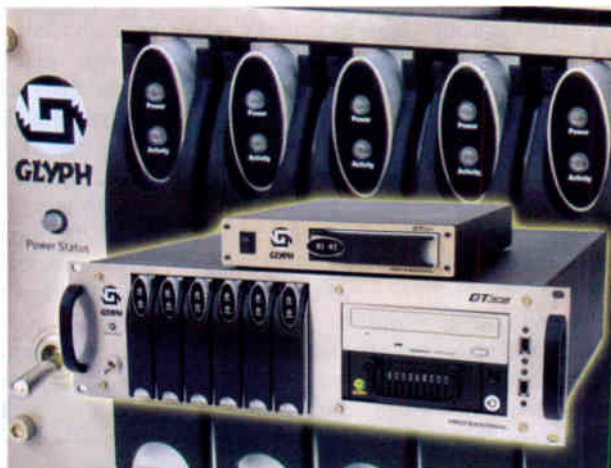
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Glyph Technologies GT 308

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ADAM Audio P11A Studio Monitors

Two-way shielded active monitors for your MOTU studio

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BIAS Peak 4

Tweaking ImpulseVerb, Key Shortcuts and More

Besides getting a new look, the latest version of BIAS' 2-channel, Mac-only audio editor, Peak 4, includes a number of useful features, such as multiprocessor support, the ability to loop QuickTime movies and record audio while a movie is playing, and the ability to perform disk-at-once CD burning directly from the playlist or any audio document window. But let's move beyond the basics to see what else this program can do.

IMPULSIVE PROCESSING

One of the most exciting new features in Peak 4 is ImpulseVerb, a convolution-based reverb that allows you to load impulse responses sampled from real 3-D spaces. Convolution is not new to Peak, but for use as a reverb, BIAS optimized the process to take advantage of the G4 and G5's AltiVec velocity engine.

Consequently, you can use ImpulseVerb as an expanded convolution algorithm rather than just a reverb plug-in by loading in files other than impulse responses. For example, you can select a small portion of a steady-state sound such as a drone or a gong roll.

To do this, copy a portion of the audio that you want to use as the "impulse" into the clipboard (short clips work best); make sure that the document you wish to apply the impulse to is selected. Choose ImpulseVerb from the DSP menu. Then, hit the Preview button and adjust the Wet/Dry slider while it's playing. Whether you're modifying a drum loop or a vocal part, the results can be surprising. But you're not done yet.

You can tweak things further by modifying ImpulseVerb's shape characteristics using the Space Envelope. Simply click on the line to create handles and mold it into any shape that you want.

If you've got the time to troll for sounds, then take your unusual impulse file and convolve it against a large number of target files using the program's batch processor. Many of the processing chores in Peak 4 can be done in batches, and this is a great way to look for new and unusual sounds en masse. New life for libraries!

MARKER TEMPLATES

Let's say that you have a project, such as a radio spot or a news feature, with markers in specific places, and you want to use the file as a template for future projects. Peak 4 allows you to copy the names and positions of the markers from one file to another.

Select the area in the file that has the markers where you want them and then select Copy. Go to the document in which you want to place the markers and do a Select All command. Then, hold down Option and choose Paste from the Edit menu. This will paste the markers onto the second file without overwriting the audio portion.

VERTICAL LOCK

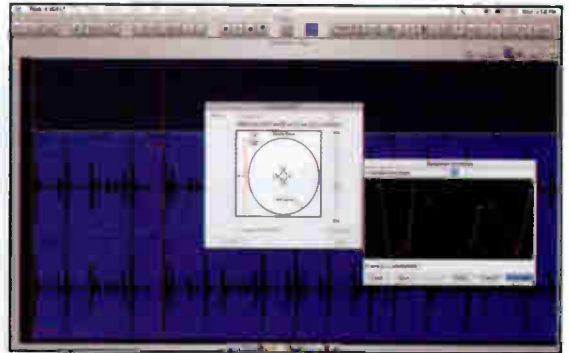
Another feature new to Peak 4 is a Vertical Lock button. This is a time-saver when you have, for example, a live recording that has no gap times and you want to adjust where the IDs will appear when it's time to burn a CD.

Begin by dropping standard reference markers where the index markers should be. Then, add beginning and end markers. Now, hit Select All and choose Markers to Regions from the Action menu. This will substitute region markers for the standard reference markers.

Where regions are back-to-back, click over the two markers that butt up against each other. Next, click Vertical Lock. The two region markers will now move in sync, allowing you to simultaneously adjust where one region ends and the next one begins.

OVERLOOKED KEY SHORTCUTS

There's nothing like having a few dozen key shortcuts under your fingertips to save time. Remarkably, all of the key commands in Peak 4 are completely customizable. Go to Preferences, select Shortcuts and Toolbar, and you'll see a list of the functions that can be assigned new keystrokes. You can also adjust the size of toolbar icons or save



BIAS Peak 4 includes a number of useful enhancements such as ImpulseVerb, a convolution-based reverb that offers more than just spatial effects.

your shortcuts as text for later reference.

If you've worked with Peak often enough, then you probably already know that the greater-than (>) and less-than (<) keys (aka, the Shift-comma and Shift-period keys) allow you to shuttle the cursor point backward and forward through a file. However, if you want to move the cursor in smaller increments, then hold down the Option key while shuttling. If you zoom in as far as possible, you can move the cursor at the sample level.

The Tab key moves you forward through a file to each marker and selects the space between it and the subsequent marker. Hold down Shift and Tab together to select the audio between the next two markers while maintaining the previous selection. To back out of your audio selections incrementally, hit Option and Tab.

Command-Shift-minus sign places loop points around anything that you have selected in the audio waveform. To create a new region based on the loop, hold down Command-Shift-R. If you're doing a remix and you want to create a playlist behind the scenes at the same time, then hit Command-K. This creates a region from your selection and drops it into the playlist automatically. Now you're ready to burn a CD of your work when you're done. And thankfully, you can do it from within Peak 4. ■

Laura Pallanck is a Bay Area-based sound designer.

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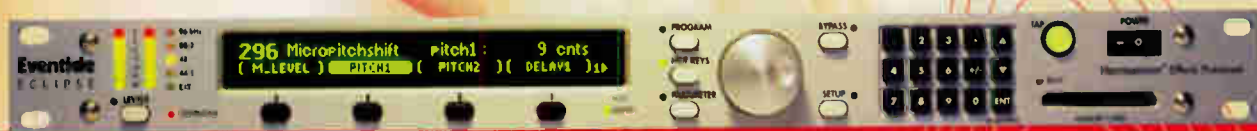
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This is not just another mic, its a **WORLD FIRST!**

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While RØDE can rightly claim to be pioneers in the modern microphone category, the NT2000 is destined to change how the industry views all studio microphones, regardless of category.

STARTING WITH THE HEART

The heart of the NT2000 is the Australian designed and manufactured HF1 capsule. Named in honor of my late father, Australian audio engineering legend, Henry Freedman.

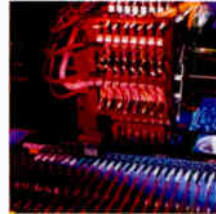
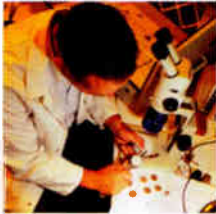
These 1" transducers are hand assembled in the fashion of a fine Swiss watch using the best components money can buy.

Machined by computer accurate lathes and mills to tolerances approaching the limits of modern technology.

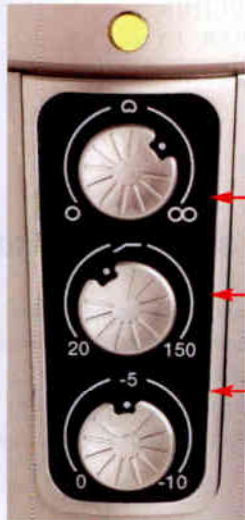
Once processed the acoustic back plates are polished flat to within one thousandths of a millimeter then cleaned in custom made ultrasonic baths.

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TRANSPARENT ELECTRONICS

A superb transducer must be complemented by the best electronics. To ensure transparency and the highest fidelity, my brief to our engineers was, "I demand nothing!" RØDE's electronics designers set about designing a circuit that coupled the HF1 capsule in such a way as to add nothing. To pass the output of the capsule without coloration or distortion. I believe we have achieved that aim.

A WORLD FIRST IN TOTAL CONTROL

The NT2000 is the world first superlative class 48 V FET microphone to have totally variable polar response, totally variable pad and totally variable filter all incorporated within the body of the microphone.

DEMAND RESULTS

All this information is meaningless unless it delivers the promise. In the end its all about the sound, I am putting my reputation on the line here.

I am saying without fear of contradiction, the NT2000 is the best sounding and most versatile 1" FET studio microphone on the world market today, regardless of cost.

We broke new ground in 1990 with the release of the NT2, the NT2000 will revolutionize the industry again.

Peter Freedman
President
RØDE MICROPHONES
Sydney Australia

THE HF1, HEART OF THE 2000

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MIX

PROFESSIONAL AUDIO AND MUSIC PRODUCTION
December 2003, VOLUME 27, NUMBER 13

features



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30 "Master and Commander: The Far Side of the World"

Sounds of the Sea, the Creak of Ships

When acclaimed director Peter Weir wanted to capture the sounds of life on the high seas, harrowing storms, and fierce cannon, gun and sword battles for this epic film, he called upon a crew of top professionals from America, England and his native Australia. *Mix* senior editor Blair Jackson visits with the film's post crew on a Fox soundstage in Los Angeles and brings back a full report.

44 Monitoring the Monitors

What's New in Studio Loudspeakers

Some would argue that there are few equipment choices as important as selecting the right monitoring system for a studio. And with the varied choices on the market, finding that exact match can be, at best, a bit tricky. To help you get started, *Mix* provides this list of monitors introduced in the past year, including near, mid and far-field models; passive and active; those with internal DSP; and systems with separate subwoofers.

54 The State of 5.1 Mastering, 2003

Years ago, it was just a number. Now, 5.1 has come of age, and engineers are adapting for surround formats. In fact, many audio pros are rebuilding not only the way they work, but also the environment in which they work. Paul Verna chats with Bob Ludwig, Stephen Marcussen, Media Hyperium's Herbert Waltl and Ted White, the Magic Shop's Steve Rosenthal and JamSync's KK Proffitt about what's in their DVD-Audio and SACD hopper.

62 TEC Awards Photo Wrap-Up

The engineers, producers and other audio professionals behind Sheryl Crow's hit record *C'mon, C'mon* and the blockbuster film *The Lord of the Rings* were among the many winners at the 19th Annual Technical Excellence & Creativity Awards. A sell-out crowd also witnessed the induction of legendary producer/engineer Eddie Kramer into the TEC Awards Hall of Fame by Janie Hendrix, sister of Jimi Hendrix, and John Storyk; and the announcement of the Les Paul Award to Bruce Springsteen. Peruse this year's photo spread of the winners and sponsors of the Mix Foundation's annual event benefiting hearing health and awareness.



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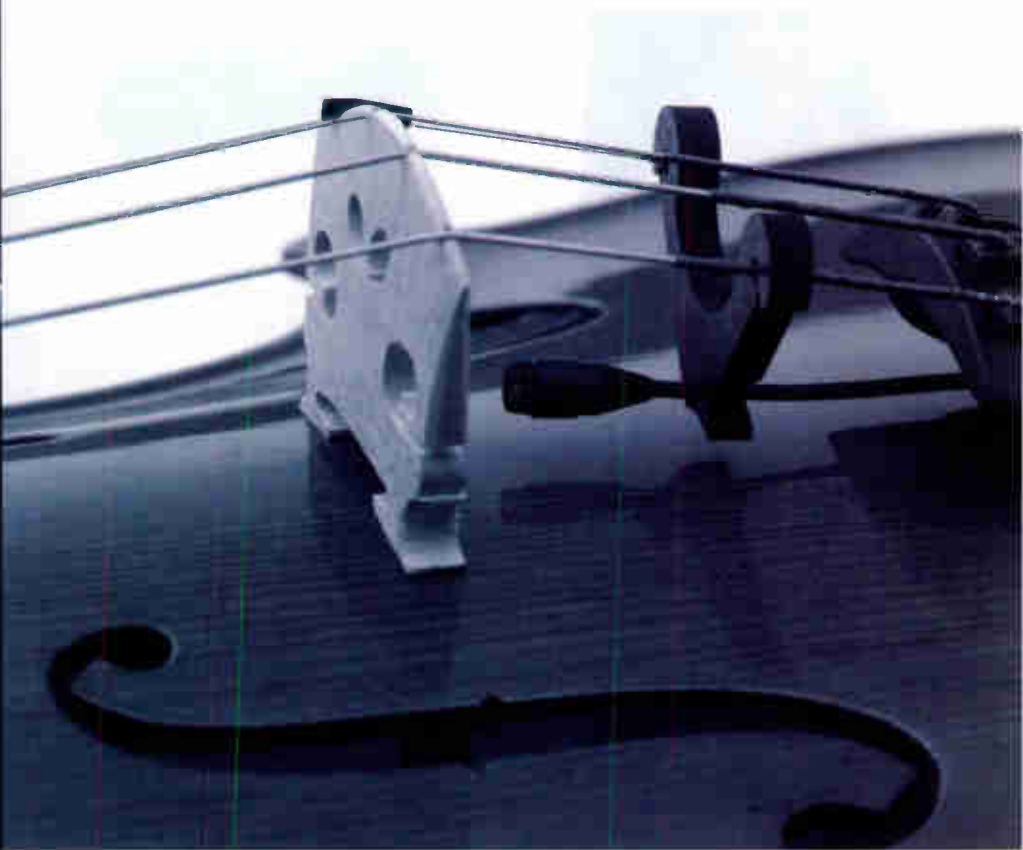
On the Cover: The new Studio K at POP Sound (Santa Monica, Calif.) was designed by Boto Design and features a 96k-capable AMS Logic MMC console, Pro Tools|HD and Quedsted Q210 monitors in a 6.1 configuration. **Photo:** Mr. Bonzai. **Inset photo:** Courtesy Twentieth Century Fox.



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So Where's the Excitement?

If you haven't noticed by now, I'll clue you in on a not-so-secret secret: DVD-Video releases are hot. Hollywood has certainly noticed, especially with revenues from DVD sales eclipsing the overall take from theatrical releases. Consumers love the new format and are thrilled with the idea of accessing deleted scenes, director commentaries, cast bios, multiple-language playback, subtitling options, surround sound and all the other frills. And new DVD releases are accompanied with an unending amount of excitement and marketing-driven hoopla. Today's kids might not be able to recite the capitals of every U.S. state, but they can sure tell you the street date for new mega DVD releases such as *Finding Nemo* (November 4) and *Pirates of the Caribbean* (December 2). People pre-order online; some even wait in line to buy copies the first Tuesday out.

However, in the audio world, the outlook is a wee bit different, and the amount of excitement about new SACD and DVD-A releases could fit in a thimble, with plenty of space left over. I would surmise that a majority of consumers don't even know these formats exist! These are the same people who revel in the experiences of multichannel cinema at their local bijou—and may even have a multichannel playback system connected to their home DVD player—but mention SACD or DVD-A and you'll probably get a blank stare.

Meanwhile, there is one new audio format that consumers have accepted, or at least heard of. The launch of Apple Computer's iTunes and iPods has been phenomenally successful. In a brilliantly staged (and demographically targeted) marketing blitz of TV spots, billboards and print ads, Apple has defined the technology as hip, convenient and cool; and now, cross-platform. Sure, it's lo-fi, but all those people in those ads are having soooo much fun that it's gotta be great.

You see, Apple understands what the record industry has forgotten: Music is for consumers. And to reach consumers, you have to "sell" to consumers. You have to reach out and tell people what makes you different. There's little difference between Colgate and Crest, but toothpaste makers will spend millions convincing you that there is. Ford and GM? Tide and Cheer? If the world is willing to pay for lo-fi downloads through sites such as iTunes and the "new and improved" Napster, how much creative genius would it take to convince consumers to pay a bit more for hi-fi?

This month, there's a flood of new DVD-A and SACD releases coming just in time for the holidays. Unfortunately, more than three years after the launch of these formats, market awareness is so bad that nobody's likely to care.

Can the situation turn around? Sure. But please don't ask the record labels for help; they're way too busy busting kids and suburban soccer moms over illegal downloads to spend time (or money!) educating the public about the benefits of decent sound.

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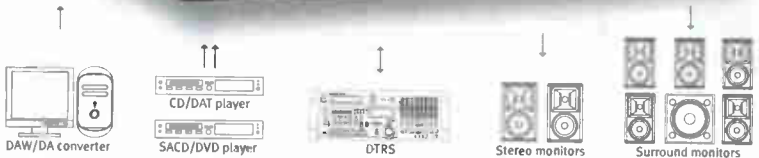
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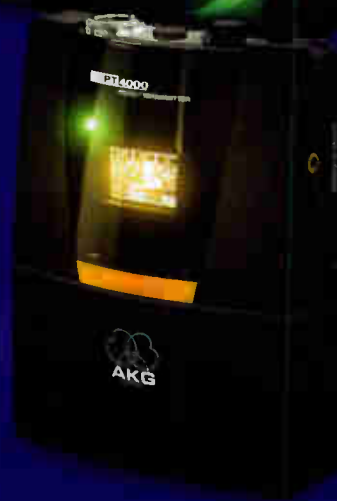
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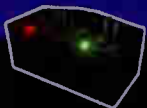
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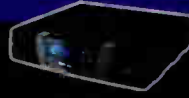
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Letters to Mix



SEX AND SOUND

I enjoyed David Weiss' article on *Sex and the City* [September 2003], but I'd like to point out one omission and one error [in it]. One of the headings in the story is "Maintaining Clarity in Production Dialog." That clarity begins with the production sound mixer's work. T.J. O'Mara and his crew do a great job on an exceptionally difficult show. I wish he received some credit in the article. As for the error, Bob Chefalas is quoted as saying, "We take a lot of pride in the fact that the same production and mixing crew have been on the show from the start..."

It's been a few years now, but I was the production mixer for the first season along with my crew: George Leong, boom; and Richard Murphy on cable and radios. We were on another movie when HBO picked up the show for a second season, so we couldn't go back. It was a rough decision, but that is the nature of our freelance lives.

William Sarokin

ONE MORE TIME

As a production sound mixer in film and television, I appreciate all of the "Sound for Picture" articles that *Mix* publishes. One thing that I never understand, though, is why the sound mixers on the set and their teams are rarely mentioned by name. In the *Sex and the City* article, for all the discussion of the difficulties of recording production dialog in the streets of New York, that difficulty feels minimized and marginalized. Whether this is due to the author's or the post-production team's oversight isn't clear, but it happens frequently. I hope you make a stronger effort to include the production team in future articles. For the record, on *Sex and the City*, the crew comprises T.J. O'Mara, production sound mixer; Joe White, boom operator; and Kim Maitland, additional boom and utility sound.

Mathew Price, C.A.S.

BERLINER VS. COGAN

Jim Cogan's October piece lauding Bill Putnam was a delight, but somewhat misleading. Milton, as I always called him, not only did not create the concept of reverb, but he also didn't conceive of how to integrate it into a mixing console.

Reverb was first added to phono records by Harry Bryant, the founder of L.A.'s Radio Recorders, for years the world's foremost independent recording studio, which recorded discs and transcriptions of radio shows years before Putnam got into the business. And, yes, Harry put a speaker and a mic in the men's room, but not with the unexpected results that Bill later laughed about when he tried it.

Milton mixed a session for me in 1958 in Hollywood—using the console depicted on page 36 [in that article]—at Universal Recording. In my opinion, it was Universal that signaled the demise of Radio Recorders. Harry Bryant was quick to agree.

I take great issue with Cogan's characterization of recording as the "ne'er-do-well of film and radio." What rot! As the grandson of the inventor of the microphone and the gramophone with its disc record, Emile Berliner, I beg to point out that records entertained folks decades before film and radio. In fact, the first recordings of soundtracks were on records in 1925; cylinder recording was invented in 1856; and grandpa introduced the disc in 1887. Ne'er-do-well? I don't think so.

Oliver Berliner
Tropicana Records

THE LAST FRONTIER FOR PLUG-INS

I have read [Paul Lehrman's "Insider Audio"] October column twice and been reduced to tears of laughter each time. However, he left out two important mastering plug-ins ["The Stuff You Wish You Could See at AES" column].

MUI (pronounced: "moo-eee"): This interface was developed on a ranch, by ranchers for ranchers. It gives any recording, including any slick, urban production, that "down-on-the-farm" laid-back, easy feel. And, as a bonus, it gives the recording medium a leather-tough durability.

PUI ("pee-u-eee"): Because we now have a plethora of NLE software for video (eyesight) and audio (hearing), the sense of smell is obviously the next frontier. The PUI can replicate the following smells: coffee, perfect for those who record/mix/master in the early AM; and burning marijuana—the Jamaican community demanded this one.

Ken Wheelock, guitarist
Tucson, Ariz.

A BUSINESS MODEL THAT YOU CAN STAND BEHIND

I wanted to thank and commend you for including the "Go Phish Online" segment in your "Notes From the Net" section in *Mix* ["Current" October 2003]. Besides having a strong personal interest in their music, I am quite pleased to see that their business structure is coming to light. Though we've read all about the problems regarding online downloads and people getting music for free, we don't often hear about the positives and success stories.

I don't know how much you have ever dealt with the Grateful Dead and Phish's "tape trading" on the Web, but there is a surprisingly aware, conscious and self-regulating (for the most part) community that has evolved around this music, with a strong focus on high-fidelity archiving and documentation of live recordings. As one who personally chooses not to download "illegal" music, I am proud to see sites such as Furthurnet that promote the free trade of live music—for bands that allow it—and to see them maintain very high standards of quality audio. This is one of the first sites I've found that offers a full .WAV file as an alternative to a compressed MP3 or other glossy format; the .WAV files often contain a "Do Not Convert to MP3" message in order to preserve the recordings and community as a whole. These sites introduced me to uncompressed music downloading via "Shorten" (SHN), .WAV, FLAC and other higher-fidelity formats.

In an online world where downloads simply can't be stopped, bands such as Phish are finally presenting some valuable solutions to ways that the Web and audio files can work for us. The fans have really taken charge and have become digital audio and CD archiving activists; many, including myself, have [provided] hundreds of hours of live recordings that we want to preserve in the longest-lasting format possible. I cannot recommend a style of music as having a better following than another, but I see that the "phans" of the Grateful Dead and Phish have been archiving with this intensity for more than 30 years, and I hope that their innovative work will continue to heal some of the rifts caused by this new age of music distribution. I would urge anyone interested in these issues to check out Etree.org or Furthurnet.com for a closer look into what these communities are doing, and perhaps their audio ethics can be transferred to other areas of file sharing on the Internet.

Thanks and keep up the great work!
Corey Walthall
Neilson Clyne Inc.



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World Radio History

NEW STUDIO OPENINGS: Marching to the beat of the same drummer, studios gear up for a revitalized music scene with these new rooms dedicated to music recording

SAN FRANCISCO SOUNDWORKS

Wanting to revitalize the recording music scene in San Francisco, studio owner Tony Espinoza has opened San Francisco Soundworks (<http://sfsoundworks.com>), which offers four control rooms built around Pro Tools|HD: The main room has Pro Tools|HD and a 9072 SSL J Series, and the other three are designed for project development.

According to Espinoza: "The vision here is to experiment with various artists and music styles to help define a new sound. For established acts, they no longer need to migrate out of the area to mix their projects; for new acts, our goal is to work with artist management and bring talented artists to the Bay Area."



Recently in at Soundworks were Vanessa Carlton (left) with mixer Joe Chiccarelli (right), producer Stephan Jenkins (center) and engineer Sean Beresford (not pictured).

BLACKBERRY HILL, EUGENE, ORE.

Justin King (justinguitar@hotmail.com) celebrated Blackberry Hill's grand opening.

Although Blackberry is a traditional for-hire studio, King is recording demos and tracks for his upcoming album.

Facilities: 1,300-square-foot tracking room, two large iso rooms, machine room, 500-square-foot control room. **Gear:** 60-channel analog Amek Media 51 board; Studer A80, MCI JH24 2-inch 24-track machines; 12-channel Neve 5106 sidecar; Pro Tools|HD; vintage, state-of-the-art mics; numerous outboard gear.

BOSTON SKYLINE STUDIOS

Boston Skyline Studios' (www.bostonskylinestudios.com) two-room, million-dollar renovation included acoustics design by Andy Munro (Munro Associates Ltd.). **Monitors:** Munro-designed Dynaudio M4+ mains, Yamaha NS-10M, Genelec 1031 and 1030. **Console:** SSL 4064 G+ 56-channel board (from Bearsville Studios), 96-channel Yamaha DM2000. **Gear:** Studer 2-inch; Pro Tools|HD 6.0 TDM with Digidesign 192 converters; Neve pre's; UREI, Teletronix outboard; Neumann mics; Yamaha Baby Grand.

Founders Pete Peloquin (pictured, right) and Todd Harris recently hosted Johnny A, who was in recording his new album.



Justin King (left) and studio manager Jesse Fittipaldi at the Amek board

BURST@CREATIVE BUBBLE

New York City-based Burst@Creative Bubble opened its third custom-designed Pro Tools|HD3 audio suite. **Gear:** Control|24 mixing console; Avid Unity; Tascam DA-88, DAT and CD; two soundproof vocal booths; network receiver for remote voice-overs.



Burst's new mix suite (above) and new-hire audio engineer/sound designer Scott Persson

BLUE JAY RECORDING, CARLISLE, MASS.

Nearly 200 people joined Backstreet Boy Kevin Richardson and producer/writer Marcus Siskind at their grand reopening party for Blue Jay Recording (www.bluejaystudio.com).

"We're just thrilled to introduce the new studio to the industry and keep the New England scene vibrant," Richardson said.



Kevin Richardson (left) and Marcus Siskind are excited about their new studio.

THE PHARCYDE HIT THE THRESHOLD



The Pharcyde have taken up a residency of sorts at Threshold Sound + Vision (Los Angeles), where they are currently mixing their upcoming release, *Humbolt Beginnings*, with engineer Claude Achille and assistant Jason Powell in the Neve room; the studio's chief mastering engineer, Stephen Marsh, is handling mastering duties. Pictured, from left, are Achille, Powell and Pharcyde's Booty Brown in the 8078 mix room.

ALL FUN AND GAMES IN CHICAGO



Coldplay were in Chicago Recording Co.'s Studio 4 for three weeks working on songs for an upcoming album with producer/engineer team Ken Nelson and Mark Pythian, supported by Mike Pierce and Mat Lejeune. L-R: Nelson, Pythian, guitar tech Matt McGinn, Lejeune, vocalist Chris Martin, guitarist Johnny Buckland (supported) and staff assistant Mike Pierce

DAVID KIMM, 1962-2003



David Kimm led a professional career that spanned two decades. He began by working at Morgan Sound in Lynnwood, Wash., in the early 1980s, where he learned sound system design and general audio and recording technology.

He worked at JBL Professional in the mid-'80s as director of sales for Soundcraft U.S., where he led distribution and product management efforts. As director of recording and broadcast markets at JBL, his efforts resulted in the launch of JBL's award-winning LSR studio monitor series. During this time, Kimm received his MBA from Pepperdine University. In 2000, David left JBL to become president of Apogee Electronics. His most recent career move was back to Pepperdine University as a faculty member in the MBA program. He truly enjoyed teaching and sharing his knowledge with others.

Friends and colleagues remember Kimm's prodigious grasp of the complexities of every subject to which he turned his attention. He was known for his encyclopedic

knowledge of products, market data and technical details. Just for fun, he studied lighter topics such as logic and mathematics, all the time coupling his voracious appetite for knowledge with an uncanny talent for critical thinking and vision. He was truly brilliant.

Kimm was universally admired, loved and respected. His many friends and colleagues remember him as a kind soul, possessed of a cheerful determination and an intellect that was unmatched. He will be dearly missed by all of his friends and family.

David, wherever you land, I hope there's a well-stocked library close at hand. Sail on, my friend.

—Ken Lopez

SOUNDCRAFT 1983: PRO AUDIO'S A-TEAM



During AES, a number of current and former Soundcraft staffers held an impromptu reunion dinner. Attendees included (front row) Apogee Electronics' Betty Bennett; (first row, l-r) Minoru Kobayshi, MXL/Marshall's Wayne Freeman, Mix's Erika Lopez, Focusrite's Phil Dudderidge; (second row, l-r) SSL's Phil Wagner, Soundcraft co-founder Graham Blythe; (back row, l-r) SC Canada's Jean Daoust and DiGiCo's Shane Morris.

ON THE MOVE



Who: Bob Tudor, president of SaneWave Inc.
Main Responsibilities: herd cats (engineers), create exciting pathways for people to go down, negotiate contracts

Previous Lives:

- 1995-2001, director of digital technology, Mackie Designs Inc.
- 1990-1995, VP of product development, Resnova Software Inc.

The one profession I would least like to try would be a...ballet teacher
 The moment I knew I was in the right profession was...when it required taking apart a TV in my hotel room to fix a trade show prototype the night before.

The last great book that I read was...*Debugging the Development Process*.
 Currently in my CD changer: U2, Dave Matthews Band, Creed, Pink Floyd's *The Wall*

When I'm not at work you can find me...playing ice hockey, riding my motorcycles, and enjoying time with my wife, Rachel, and our animal critters.

NOTES FROM THE NET

Battling for PC Attention

Apple CEO Steve Jobs couldn't have said it better: "Hell may have frozen over." In mid-October, Apple unveiled its iTunes Music Store for Windows; at that time, Apple reported that more than 13 million songs had been sold on the iTunes Music Store—and that's without 95% of the market being able to access the music. In addition to iTunes' current features—such as the ability to burn CDs and rip files from CDs to MP3s—the Windows version supports Rendezvous file sharing, i.e., users can access each other's playlists whether they are on a Windows or a Mac.

To boost consumer acceptance, Apple announced a partnership with America Online that will give some 25 million AOL users one-click access to the iTunes Music Store from the AOL Music site. Apple will, in turn, offer original AOL content (such as Sessions@AOL and BroadBAND Rocks!) through the iTunes Music Store. Continuing its sweeping campaign, beginning February 1, 2004, Pepsi will print codes to 100 million free songs—available only in the iTunes service—on its Pepsi, Diet Pepsi and Sierra Mist soft drinks.

Also offering \$0.99 downloads/\$9.99 for most albums (without a subscription) on a PC is Musicmatch's Downloads service, which boasts content from all of the majors and a slew of indies. Downloads are provided as Windows Media files, which the user can burn to CD. www.musicmatch.com

And back from the dead, the revamped Napster 2.0 (PC only) launched on October 29 by parent company Roxio, and offers \$0.99 downloads/\$9.95 an album of more than 500,000 titles; a subscription plan is also available for \$9.95 a month, which offers unlimited listening/downloading, 40 commercial-free interactive radio stations, and community features such as e-mailing tracks to friends and sharing playlists with other Napster users. Tracks and albums can be burned to CD and transfer music to a portable device (including a co-developed family of portable devices with Samsung Electronics). Napster 2.0 will be the featured music service on Microsoft's Windows XP Media Center Edition 2004; later this year, Gateway will be the only PC manufacturer to ship Napster and 150 songs preloaded on every desktop.

DIGITAL MIXING CLARIFICATION

Mix wishes to clarify the following statements found in the Dangerous Music review (October 2003, p. 118).

We stated: "Digital mixing and summing inside your DAW to stereo outputs requires that you do not overload the internal digital mixing bus by lowering all the mixer faders." According to Digidesign's documentation, the Pro Tools mix bus has 48 dB of internal headroom available above 0 dBFS. It is possible for Pro Tools to sum 128 tracks of coherent, full-level signals, with all faders set to maximum gain (+6 dB) and the internal mix bus won't overload. In this case, to get a clean output, the user would simply install and set a master fader to just below -48 dB, and the result is a clean, full 24-bit output.

Next, we stated: "When any track fader's level is internally reduced, its digital resolution is also reduced." Digidesign states that the mixer inside Pro Tools is 48 bits wide, with 24 bits (144dB dynamic range) reserved for the normal range of signals. Another 8 bits (48 dB) of headroom is reserved for signal levels above 0 dBFS, and a final 16 bits (96 dB of dynamic range) reserved for the lower-level signals that result from attenuated channels. This makes the total dynamic range 288 dB. It is possible for a single channel fader to be pulled down to somewhere near -90 dB and still be contributing a full 24-bit signal to the mix bus.

Finally, we stated: "Spreading out a mix over many stems and direct outputs lets you maintain hotter digital levels for higher resolution, resulting in a better-sounding mix with increased depth, image width and headroom, and less distortion." In reality, the 2-Bus' distortion spec is listed as 0.005% with the noise floor at -80 dBu (no weighting specified). The 192's DAC distortion is 0.00056% and the noise output is -94 dBu (-118 dB "A" weighted down from +24 dBu), which means that passing the 192's output through the Dangerous 2-Bus increases the distortion nearly 10x while adding 14 dB to the noise floor.

Digidesign has addressed these and other issues of digital mixing in a white paper series. Visit www.digidesign.com.

INDUSTRY NEWS

Relocating to the U.S. from Japan, Nick Higashino is the new president of Otari USA Sales Inc. (Canoga Park, CA)...Recently serving as Denon's (Pine Brook, NJ) senior VP of sales and marketing, Stephen Baker is now the company's president...Warren Lieberfarb joined Sirius' (New York City) Board of Directors...The new CEO of the Stanton Group (Hollywood, FL) is Dave Froker; he will also act as president of Stanton Magnetics...DTS (Agoura Hills, CA) promoted Patrick Watson to senior VP of strategy and business development and has hired Brian Towne as VP of consumer...Scott Persson joined the audio staff at Burst@Creative Bubble (New York City)...New QSC Audio (Costa Mesa, CA) appointments: Paul Kenlin, senior technical trainer; and Shawn Watts, systems specialist of installed sound...Baton Rouge, La.-based PreSonus has added Brad Zell to its staff as professional products manager...DAW manufacturer SADiE (Nashville)

brought in Ed Thompson, U.S. director of sales...hsr/ny (New York City) named John Levy, who stepped into the newly created position of executive sales directory...LOUD Technologies (Woodinville, WA) stepped up its sales organization with the addition of David Christensen (director of international sales) and Kurt Metzler (director of sales for installed sound market in the U.S.)...Kord Frederick Taylor will serve Wave Distribution's (Ringwood, N.J.) reseller and end-user clients from San Jose, Calif., to Vancouver, Canada, as well as Idaho, Utah, Montana and northern Nevada as the northwestern regional sales manager. In other Wave Distribution news, the company will exclusively represent SRS Labs' (Santa Ana, CA) Circle Surround VST Pro Plug-In...On the other side of the U.S., Joe Sciuilli was appointed eastern regional sales manager for Sennheiser Communications (Old Lyme, CT).

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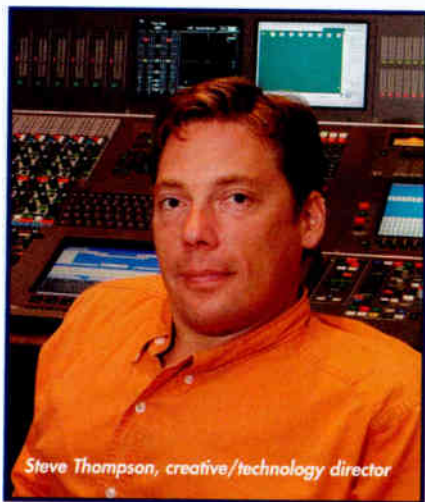
POP Sound

By Maureen Droney

Throughout its 10-year history, POP Sound has stayed in the forefront of creative audio post-production by emphasizing both talent and cutting-edge technology. An all-digital mixing and re-recording facility in Santa Monica, Calif., POP Sound now encompasses 12 studios providing one-stop audio services for commercials, film, television, radio, cinema restoration and multimedia.

In 2003, POP has been busier than ever, running 24 hours a day in the past quarter. High-profile projects including commercials for such companies as BMW, Nike, UPS and Mini Cooper, Academy and Emmy Award-nominated documentaries, and prestigious film-restoration projects like the *Indiana Jones* series have occupied the daylight hours, while remixing and DVD mastering for an eclectic roster of home-theater projects keep the night shift humming. In addition to maintaining a constant stream of work, in September, POP completed a yearlong upgrade, which, along with significant improvements to its infrastructure, has also resulted in two new, built-from-the-ground-up studios.

"We have two departments," explains POP managing director William Feil. "The commercial area covers television and radio commercials, as well as longer-format projects. Those include film documentaries such as the Academy Award-winning *Twin Towers* and Oliver Stone's *Commandante*, and work for television like the soundtrack for NBC's reality program *Crime and Punish-*



Steve Thompson, creative/technology director

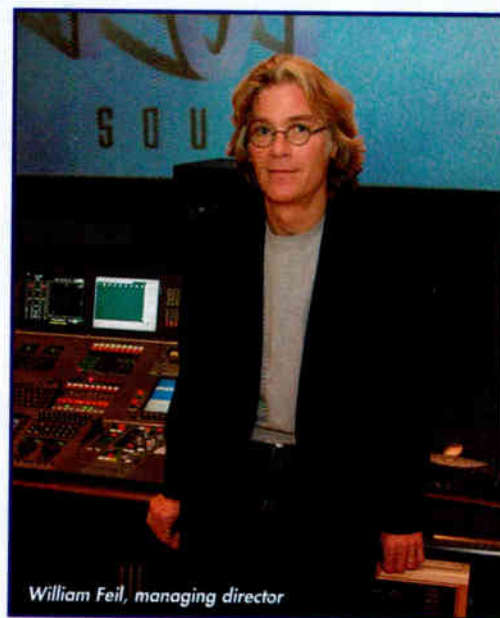
ment. We also do sound design on short-form music videos. Meanwhile, home theater is something we've had as a department from the very beginning. We were actually one of the first companies doing it, and with the success of the DVD format, we've had a lot of growth in that area."

"A lot of our work is driven by DVD," agrees creative/technology director Steve Thompson. "We do feature work for major studios, creating new archival film soundtracks for theatrical release and/or high-definition television. Depending on the budget, the creative goals of the client and the available elements, this can range from simple cleanup to complete restoration with a new 5.1 or 7.1 soundtrack. Our work isn't always mixing, however. Often, we're conforming the audio to picture. We also do some film scoring. It's all a natural outgrowth; our home-theater department extends into many areas of multichannel audio."

The home-theater department is headed by Grammy Award-winning mixer Ted Hall, well-known for his high-quality work on projects from *Saturday Night Fever*, *Chinatown* and *Breakfast at Tiffany's* to Eric Clapton's *Unplugged* and The Band's Robbie Robertson-produced, Martin Scorsese-directed *The Last Waltz*. POP Sound is also home to award-winning mixers Stephen Dickson, Mitch Dorf, Zac Fisher, Chris Johnston, Michael Miller, Peter Rincon and Tim West.

"We've been digital and multichannel from the beginning," notes Thompson. "That's true of the people here, as well. With Ted, we've bred a staff of really talented mixers who are technically astute with the format. We also have a support staff with expertise in all of the ancillary mechanics: from encoding and data compression for various formats to multiple-format dubs, conforming transfers, digital satellite mastering and much more."

The two new studios, dubbed K and M and designed by the facility's original architectural firm, Boto Design of Santa Monica, will be staffed by POP's multiple award-winning commercial mixers Rincon and Dorf. Both studios are fitted with 96k-capable AMS Logic MMC consoles, which also offer seamless compatibility with POP's other studios. The new studios feature dedicated voice-over



William Feil, managing director

booths, Quedest Q210 monitors (in 6.1 theatrical configuration), TC Electronic M6000 multi-effects processors, Pro Tools|HD workstations, and 12-foot, 16x9 video projection systems with high-definition DLP projectors.

"The MMC consoles' 96k capabilities, along with their enhanced DSP processing power, were among the reasons we chose them," comments Thompson. "They're supported [in the rooms] with a number of [different format] digital workstations, as well as translation software, so that we can accommodate any format a client requires."

The POP expansion has added a new operations and scheduling area to the complex, along with a new client area, a new transfer/dubbing and data-management system, and upgrades to its other 10 mixing studios. Also part of the improvements is a Fairlight V-Motion Professional networked nonlinear video system.

In 2002, POP became a member of the Ascent Media family, but the distinctive POP culture and creative identity remains unchanged. "The people who work here are what set us apart," states Feil, "from the talent of the mixers to our production department, client services, reception and the valet parkers. Since its inception, POP Sound has been dedicated to providing our commercial and home-theater clients with the best in terms of talent and digital technology. We've remained, and will continue to be, a solid and growing creative company. We wanted to capitalize on this success and expand in terms of space and technology." ■

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On the Road Again

The Fast Lane Takes Its Toll

I grew up believing in two things: gasoline and women. Now, those values might seem a bit simplistic and even offensive to some, but let me elaborate before you move on to Lehrman's column.

Gasoline was power—figuratively and literally. More gasoline allowed me to get my bike farther out in the desert, farther away from school and work and closer to whatever it was that I wanted that day. Even as a kid it was clear that everything that man did was aimed at the acquisition of gasoline and women. And even the gas was just part of the acquisition of women. You certainly got more women if you had gasoline than if you didn't. That much was obvious.

And so life was simple, and it stayed that way for decades.

By 14 I was racing dragsters for money (for gas) and women. It was insanely dangerous; it made me alive, and it damn near made me dead. At an outlaw dragstrip in Arizona, I raced a dual-engine Triumph motorcycle against a rocket-powered car—and lost. You don't want to lose a race to a rocket-powered car because flame comes out the back. *Lots* of very loud, hot flame. So you kinda want to stay in front.

In the hospital a friend told me there was a better way to get women, with less bleeding: music. When I got out I followed his advice, and it turned out to be true, though I was disappointed to discover that it was only *slightly* less bleeding.

Eventually I came to love music itself. Strangely, I had to then live in Europe to discover L.A., where my Arizona surfer values were a perfect fit (as can be seen today anywhere on the west end of the Sunset Strip). Then I got an ocean-front home in Laguna Beach and things got way upscale...but the values never changed.

I was at the top of my world, with simple dysfunctional values that worked well. A true long-haired rock 'n' roll bad boy with all the benefits that come with the position. More power than any actor, more power than any president. Anything I wanted was mine. My life was exactly what I had wished for. Even the fastest and most powerful cars on Earth were not enough, so someone was always there to make them faster and more powerful. I was never alone. Yes, it was all very simple.

But around the time of the 9/11 terrorist attacks, my life had begun to unravel as I went through a series of personal disasters. I lost my fortune in the market, I lost my health to cancer, all my cats died, and a tree fell through the roof of my house and crushed it to rubble—while I was in it.

I wrote a 9/11 column, "Yellow Brick Road," because my whole world had collapsed and I was left

with almost nothing. Everything that made me what I was had disappeared. Even my physical appearance was gone. No more fast life. No more weekends at Hefner's. I stood with my life behind me and an empty road ahead. Circumstances had terminated my ride...But at least I had a road. More than 4,000 New Yorkers didn't.

This wasn't one of those epiphanies that's gone on Monday when the beer wears off. It changed my life. It caused me to re-evaluate every aspect of who and what I was, and I've been doing this every day since. Those silly Rodeo Drive values evaporated real fast.

Well, more things have happened since then. The last of my cats died at 19 (cat owners understand, others can't even pretend to), my primary relationship

Everything that made me what
I was had disappeared. Even
my physical appearance was gone.
I stood with my life behind me and
an empty road ahead.

ended and I went through more cancer surgery. Man, this crap is friggin' relentless!

But I did have two things left: I still played guitar and still rode Harleys.

On October 6 I was riding a pumped up 750-pound Harley bagger north on a small road just under the Pennsylvania border, a couple of hours from home. The south lane allowed left turns onto a road that I'd to my right. Two cars stopped to my left, as I had the right of way. As I approached the intersection the leading car (a minivan) stopped, and the woman driving watched me, waited for me, and as I got to the intersection she pulled out and crashed into me. There are more details, but I'm not sure what they are. You see, I tell this story as it has been told to me: I have no memory of the accident. In fact, I have no memory of riding at all. I have no memory of even thinking of riding that day, the day before or the day before that. So I can only go by the eyewitness and police reports.

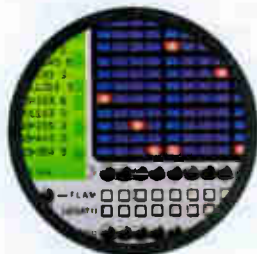
I was ripped off the bike and slammed face-first into the van, carving a very nice *Pirates of the Caribbean* scar from my hairline down my forehead, across my left eye, and down over the bridge of my nose—all

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deep into my skull. Very cool looking. The nerve that controls movement of my left forehead and eyebrow was severed, leaving that eyebrow an inch lower than the right. Every time I look up now I look like The Rock doing his trademark single-eyebrow lift.

This cosmetic alteration also managed to turn my lights off big time for several hours, making me miss Act II.

Then my bike came to visit and kissed me headlight first on my back, affectionately pinning me against the van. This broke three ribs on my left upper back; three more on my right upper back; eight ribs in my chest; disconnected the insertion points on my solar plexus; shattered my left scapula into 20 pieces; broke my neck at C7; broke my right tibia; and crushed my left arm along with the ulnar nerve, elbow, wrist and hand. And just to make sure that I would not be playing any more guitar, it also broke my wrist and dislocated two fingers in that hand. Several internal organs were no longer operating exactly as designed at this point. And there was that pesky punctured and collapsed lung...

I was air-evacuated from the Pennsyl-

vania border to the Baltimore Shock/Trauma hospital and had several CT and MRI scans (along with many other unpleasant things) while unconscious. I was finally awakened by someone who kept asking if I knew where I was, and of

Just to make sure that I would not be playing any more guitar, it also broke my wrist and dislocated two fingers in that hand.

course I didn't. He told me I had been in an extremely serious motorcycle accident and then asked again if I knew where I was. I didn't, so he told me again and became alarmed. It was an indescribable moment. I was certainly in pain (you know, that annoying pain you get from 37 fractures and a collapsed lung), but the pain was not the most disturbing thing. The most disturbing thing was this matrix-

like transition from one reality to another.

I was on a motorcycle in my reality—not the same ride, but another ride in another place on a sunnier day. And while I was riding, I would pass people on the road who would say, "Be careful, you could be in an accident," and then there would be somebody on the back leaning over and saying, "You've been in an accident." I remember answering "What do you mean? I'm riding out here in Western Maryland and it's beautiful. And they would say, "No, you've been in an accident," and I would say, "Leave me alone." This happened four or five times, and each time they would say more urgently that I'd been in an accident. I just kept repeating to this mystery person on the back, "Leave me alone. I'm having a great time." And then the image changed and I was standing by the road looking at my bike, and a guy said, "You've been in an accident." I remember responding with an irritated, "That's not my bike, I haven't been in an accident."

But as I turned and looked up to see who this jerk was, that beautiful blue sky and warm breeze disappeared and a cold,

—CONTINUED ON PAGE 146

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The Doctor Is In the House

A New Approach to Live Sound From a Surprising Source

Does anybody remember life before sound systems? Once upon a time, when music was played by unamplified instruments, the instruments' construction determined what the music sounded like, and what the musicians heard was just what the audience heard. Even after the era of electric music began—like during the period from when I started playing rock 'n' roll in the mid-'60s until I sequestered myself in my home studio in the early '80s—what was being produced onstage was still what went out to the listeners.

We had no huge mixers, stacked cabinets or directional horns. We played our instruments through our amps and balanced the music with our own volume controls. When I started, at a typical gig (like a high school dance), we'd run vocals through a Fender Twin Reverb, and if we were lucky, we had a second cabinet to spread the sound out. If we were *really* lucky, somebody brought a little Princeton amp that we could use as a vocal monitor. Later, when I graduated to clubs and theaters, I sang through Peavey, Tapco or Shure "Vocalsmasher" (as we fondly called them) systems. With that much horsepower added to our stage amps, we could play to 300 or so people with no problems at all, and we still didn't need an engineer, because we knew that the audience was hearing the same thing we were.

But around 1965, everything changed for the big acts. When The Beatles played Shea Stadium that year, nobody could hear any of the music. The band's stage amps (although they were a lot bigger than ours) couldn't possibly compete against tens of thousands of screaming fans, and the Fab Four might as well have not bothered to plug anything in. A few more concerts like that and they stopped touring altogether. (After their final concert in San Francisco, George Harrison said, "Well, that's it. I'm not a Beatle anymore.")

Bose Corporation also remembers life before sound systems, and for the past 10 years, the company has been working on trying to recapture how music was presented to audiences before the age of megawatt amps, 18-inch subs and flying tweeter arrays. Recently, the company announced a product that just might be the answer for a lot of people at concerts—both players and listeners—who find themselves asking, "Why does the sound suck?"

It's a question upon which entire companies and careers have been built, and it's also one of the questions I posited when I first started writing "Insider Audio" for *Mix*. (Check out my May 1996 column on www.insideraudio.com.)

Now when you think about live sound reinforce-



Bose's Cylindrical Radiator Loudspeaker

ment systems, Bose is not always the first name that comes to mind. Dr. Amar Bose and his eponymous company are much better known for their unusual and often innovative products in consumer and industrial audio. Once upon a time, a set of Bose 901s on their stylish little pedestals in someone's living room was a sure sign that they had taste and/or money. Today, the Bose name on an automobile sound system tells the buyer that the carmaker thinks seriously about audio. Bose noise-canceling headphones have become a common sight on airplanes, and if you glance up at the walls and ceilings of restaurants and snooty clothing stores the world over, you'll see the name printed on speakers of many shapes and sizes.

But you won't find many Bose speakers in recording studios, music clubs or concert halls. The company doesn't put on a big show at AES, NAB or NAMM. In fact, they don't show up at all. Their products aren't reviewed in *Mix* or *Electronic Musician*. What forays the company has made into the live sound world have been in the form of installed systems in places like churches and small, portable auditorium-sized systems more suited for high school pep rallies than heavy metal festivals. But that's about to change.

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corporation invited a couple of dozen audio journalists to its Boston-area headquarters to introduce a new product line aimed expressly at professional musicians and the venues where they play. "Research outcomes," said Dr. Bose to the group, in a rare public appearance, "are usually small steps. Very seldom do you get a big step. But they do occur occasionally, and this announcement, in my opinion, is such a big step."

Bose, both man and company, have long prided themselves on putting a premium on research. "Research lowers the balance sheet: You've got outflow without income for a long time," said Dr. Bose. "Many of the things you do in research will turn out to be impossible, but there's often fallout that's useful in other directions." When Kenneth Jacob, chief engineer of the company's professional systems division, told Bose that his group wanted to work on concert sound, and of the new approach they wanted to take, "I told him, 'Go ahead,' even though it meant that we'd have to find budget resources outside that division," Bose said.

No stranger to the AES organization, Jacob served as either chair or co-chair of

the society's Technical Committee on Acoustics and Sound Reinforcement for 10 years. His presentation to the group went quickly through the history of live sound and stopped at some key points.

Jacob also pointed to The Beatles' Shea Stadium debacle as a watershed event. The concert showed that radical changes had to be made if really large rock 'n' roll venues were ever going to be practical. By the end of the 1960s, those changes had been made and a new paradigm had taken over, which the Bose engineers today call the "triple system" approach: guitar/bass/keyboard amps on the back of the stage; monitor speakers with their own mix and power amps pointed at the band; and big cabinets pointed at the audience.

But this approach, as all of us know, can lead to big problems. The primary dilemma is that none of the three systems necessarily sound the same. So while the band may think that they sound okay, the house sounds terrible, or vice versa. Rarely is everyone in the band happy with their mix, so they turn themselves up, which results in everyone else turning themselves up, too. "It gets to the point

where musicians and members of the audience are compelled to wear earplugs," said Jacob, "which means that something is terribly wrong."

There are plenty more disadvantages, which Jacob elaborated on, and which any of us who have dealt with concert sound are familiar with. Artists are forced to either travel with a huge amount of equipment—which must be set up, connected and tested at each site—or rely on an unfamiliar rented or house P.A. Live sound systems are so complex that small failures, like a bad cable or a shorted switch, can cause gigantic problems that take hours to track down and fix. High SPLs create lots of reverb, particularly in clubs and halls that often have poor acoustics to begin with, which can overwhelm the direct sound. Loud stage monitors can make the situation worse, because there's a constant slap delay when their sound bounces off of the back wall and heads back into the house.

When multiple sound sources are mixed, our ability to sort out sounds by their arrival times relative to our ears (aka, the "cocktail party" effect)—something

—CONTINUED ON PAGE 147

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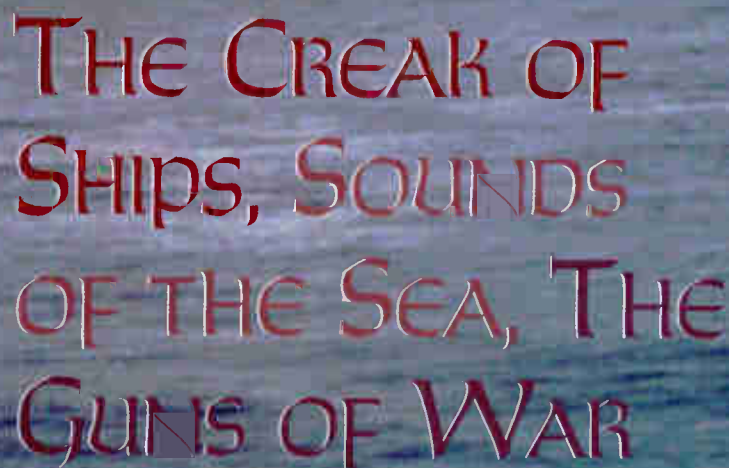




&COMMANDER: THE FAR SIDE OF THE WORLD

THE EPIC sea adventure is as old as film itself, spanning from the silent years up through various remakes of *Treasure Island* and *Mutiny on the Bounty*, the unforgivable turkey *Cutthroat Island* and last summer's surprise smash hit, *Pirates of the Caribbean*. But there's something remarkably fresh and different about Peter Weir's latest film, *Master and Commander: The Far Side of the World*, which is adapted from Patrick O'Brian's beloved series of books and stars Russell Crowe in his first major role since *A Beautiful Mind*.

By Blair Jackson



THE CREAK OF SHIPS, SOUNDS OF THE SEA, THE GUNS OF WAR

MASTER & COMMANDER

Yes, the film contains the requisite cannon battles, gruff lads, claustrophobic quarters, a savage storm at sea and a

the O'Brian *Master and Commander* series (all 20 books!) to loosely adapt books one and 10 to create this film.

On the early October day I visited the John Ford Theater on the Fox lot in Los Angeles, Weir and the post team are tweaking the final mix for reel 6, a climactic battle scene involving the *Surprise* and its French nemesis, the *Acheron*. (This takes

Richard King, who roams the stage and cuts sweeteners from his Pro Tools rig at the back of the room; music editor Simon Leadley, who sits at Massey's left at a Pro Tools station; ADR editor R.J. (Bob) Kizer, whose Pro Tools rig is behind the console; and picture editor Lee Smith, a one-time sound designer who knows every frame of the film and also knows director Weir's inclinations on most technical matters: This is his eighth film with the director, and they clearly have the sort of intuitive telepathy that comes in the best director-editor relationships.

Weir drifts in and out of the room, listening attentively to the adjustments and making suggestions. At one point, he asks if there is a way to bridge the gap between the last cannon shot of the battle scene with the subtle music cue that foreshadows the imminent collapse of the mast. Hemphill brings in some ominous, almost inaudible LF rumble and that seems to do the trick. Then, Weir thinks the celebration of the British troops after the mast falls sounds "too controlled," so Kizer is called upon to provide some wilder crowd elements from his vast storehouse of ADR and production sound elements. He finds a lusty, celebratory "huzzah!" and Massey artfully blends it in with the existing track.

There is an easy camaraderie among these consummate professionals, and the hard work is peppered with lighthearted joking and, in keeping with the spirit of the film, unending nautical references and puns. Weir seems to be as popular with his crew as Aubrey is with his—to a man, the



PHOTO: MAUREN DRONEY

Left to right, front: music editor Simon Leadley, re-recording mixer Paul Massey, director Peter Weir, supervising sound editor Richard King. L to R, rear: ADR editor Bob Kizer, re-recording mixer Doug Hemphill, picture editor Lee Smith

good, bloody flogging. But Weir's take on the genre also steers clear of many of the clichés, while providing a realistic, almost documentary approach to life at sea, the cruelty of ship battles, and the courage and compulsions of explorers, mercenaries and seamen of every stripe. From the opening shot to the film's conclusion, there's barely any time spent on *terra firma*: You can be forgiven if you don't have your land legs after two-plus hours aboard the *HMS Surprise*. It's a hard, harrowing voyage.

Weir is an imaginative storyteller and a master character portraitist, with a diverse body of work that is alive with humanity and passion, as witnessed by such gripping films as *Gallipoli*, *The Year of Living Dangerously*, *The Truman Show*, *Witness*, *Fearless* and *The Mosquito Coast* (as well as the charming comedy *Green Card*). All of those films share at least one thing in common: They are about outsiders, literally or figuratively, and *Master and Commander* fits neatly into that oeuvre. The main character, Captain Jack Aubrey, is a classic sea hero, comfortable on the ocean, awkward in port, truly only himself when he's at the helm of his ship. Clearly, that facet of the Aubrey character resonated with the Australian director, who says he was sufficiently captivated by

place during the Napoleonic wars at the beginning of the 19th century.) It's a stunning action sequence, with lines of cannons aboard the two ships firing broadsides at each other at extremely close range; their ordnance screaming and whizzing through acrid, obfuscating smoke, smashing (with subwoofer-rattling force) into decks and masts; and sending a hail of splinters, shrapnel and bodies flying. Musket fire and the shouts and screams of the crews add to the overwhelming chaos. There is a moment of near silence, where the firing has stopped and the damage aboard each vessel is no doubt being assessed, and then comes the chilling *craaaaaack* of the *Acheron's* mast. In a long shot through hazy, swirling smoke worthy of a J.M.W. Turner painting, we see the French ship's mighty main mast toppling sideways into the water as the British sailors cheer. This surely signals the beginning of the end for the *Acheron*, though much more is in store for the crew of the *Surprise* when Aubrey leads a boarding of the crippled ship.

Across the length of the Ford stage's huge Neve DFC console, re-recording mixers Paul Massey (dialog, music) and Doug Hemphill (effects) make minute adjustments to the scene, occasionally consulting with supervising sound editor



PHOTO: JOHN FAGAL

Richard King firing a Hotchkiss gun in a canyon near L.A.

mixers and editors speak admiringly of Weir, and he, in turn, has the utmost confidence and respect for his post sound team.

During a break in the action, Weir and I retire to his office off the Ford stage to talk about his sonic approach to the film: "I wanted to do something a little different with this dusty genre, which hasn't really been touched much in recent years other than *Pirates of the Caribbean*,

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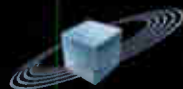
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though that belongs in the branch of sea films that is more on the fantasy, less realistic side," Weir says. "To do something



PHOTO: RICHARD KING

On a sound-collecting expedition off of the coast of Southern California

like this film, which is true to the detail, you probably have to go back to something like *Das Boot*, which was quite inspirational, though not particularly relevant, of course. I wanted it to have its own unique sound. I also wanted the music to be used sparingly so the audiences' ears would have lots of time to adjust to the sounds of the ship. If you put music from one end of it to another—and that would be an easy thing to do—you wouldn't get to know the sounds of the ship."

How did Weir form his own views on shipboard sounds? Is he a sailor? "No, I'm not a sailor, but before I made this film, I took two cruises on the Endeavor, which is probably the most accurate re-created vessel there is from this period: the 1770s. It was Captain Cook's vessel. I spent three days on one voyage, four on another, and you work the ship. It's not just museum-accurate on the top; it's also accurate below, so you sleep in hammocks and everything is as it would have been in the time of Cook. What I learned on those trips became the foundation for everything I did from then on—the script through to the shoot, to the post—and I made extensive notes about the sounds I heard. Everything was always moving, including the timbers of the vessel. A lot of times, you couldn't even identify what the sounds were; you couldn't determine what was rubbing against what. But there's almost always this great creaking and groaning

and noises of indeterminate origin.

"Then, out on the top deck, you've got all of the sounds of the rigging and the sails and, of course, the water. I'm fortunate in that Richard King is a sailor, as are Paul [Massey] and Doug [Hemphill], so they're particularly sympathetic to the sounds of the sea. I really wanted this to be a *sea* film. It opens at sea and ends at sea, and there's no architecture in it at all or the usual frames of references to settle into: the barrel on the quay, the carriage pulling up, the crinolines of the young lady saying goodbye to her officer. I didn't want any of that. I wanted the viewer to have the unique experience of joining the voyage and really being a part of it, because that was my favorite experience of reading O'Brian. I loved the books that dealt with the longer voyages because you got lost in them more. That's what I was after: the feeling of being *at sea*."

Principal photography took place over a five-month period in Ensenada, Mexico, using the same mammoth sea "tank" that James Cameron employed for *Titanic*, except this time around, there was a full-size working replica ship, the *Rose* (which became the *Surprise*), as well as another ship on a gimbal and other portions of ships on gimbals on soundstages. Weir is a stickler for authenticity, and he had a series of notebooks filled with pertinent information for various crew members. "He had one pertaining to sailing, another to armaments, all different subjects," says King. For ADR editor Kizer, the loose-leaf binder included a list of cannon commands, an English-French sailing dictionary, charts on sabre combat, historical background on the period of the film, and a 26-page glossary so he'd never mix up a "clew" with a "leech" or a "luff." Even the right-hand wall of the Ford Theater was adorned with a giant schematic of the deck and interior of the *Surprise*.

Only a portion of the production sound from the shoot was usable, says Kizer, "because you have scenes like the storm sequence where they're using giant engines to get the wind and water going. Another problem is that everybody had radio mics, but they didn't respond that well to humidity or water, so sometimes you only got half of the words, and even

then you could only hear one or two over the din." Well over half of the dialog had to be looped later at studio sessions in London, Vancouver and, in Russell Crowe's case, Australia. "A lot of it was group ADR," Kizer says. "We had these loop groups of 12 in England, and we'd have them choking each other and fighting to get the mayhem we needed." It was also a very Foley-intensive film, with Gary Hecker supervising that aspect—which also included considerable swordplay—over at Sony in L.A.

When it came to effects, Weir wanted realism over Hollywood bombast, noting, "Fortunately, O'Brian is very detailed in his descriptions of the sounds of the ships and the battles, and, of course, there are some re-created vessels. So we had a good starting place, but then Richard [King] went to some extraordinary lengths," he says with a laugh.

ORIGINAL EFFECTS RECORDING

Indeed. King and effects recordists Eric Potter and John Fasal ventured far and wide to capture authentic sounds for the film. One excursion found them in the snows of Michigan in January recording cannon fire on Zaxcom Deva 24-bit 4-channel recorders, stereo Nagra and DATs (see "Fun With Cannons" sidebar). Muskets and other guns required a whole other recording environment.

"We did several musket sessions in this small but contained canyon out near Santa Clarita [outside of L.A.]," King says. "We did some Blunderbusses, which have the flare out of the muzzle, a seven-barrel vol-



PHOTO: MAUREN BRONKY

Keeping the *MMR's* humming in the machine room were, standing, l to r: Tim Gomillion and Tim McCole. Seated: Dennis Rogers

ley gun and a Hotchkiss gun, which is like a small cannon. We also recorded .75-cal and .45-cal black-powder muskets firing live rounds. As far as machines, I ran two machines, Eric Potter ran two more—distant—and John Fasal shot onto three machines close to the weapon. I had mics in different spots in the canyon, including a

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set of Schoeps maybe 100 yards away from the guns, facing away toward the hills. After every shot, I'd go back and listen to a little of each one to hear how it was coming out, and we found that the machine that had the two Schoeps facing away sounded so great. At one point, I went over to check to see exactly how the mics were positioned, and it turns out that the mic stand had fallen over and the mics

were flat on the ground! But it gave the sound this great low end; maybe, it was from the sound traveling along the ground. You sometimes get those kinds of weird accidental acoustics. In general, though, we found that the best stuff was from 50 yards away and up. You need the close mics for the detail of the flash and the crack, but you get the boom from farther away."

Many of the shipboard sounds came from a number of sailing expeditions the trio made aboard the *Rose* off of Ensenada and on two other tall ships out of L.A. "We'd go out when it was calm or just a light swell, and that was great for getting

all of the creaks and groans we needed," King explains. "We got some amazing discrete sounds. Eric had the Deva below deck—4-channel, which is how it is [mixed] in the movie—and it really puts you in the room. You have a creak in the right front and it will move to the right surround; you really feel like you're inside of something. We did all of the sail drops and raising of the sails and the rigging; we did that for three days. I also wanted to go out on a day that was really windy, so we picked a day when there were 12-foot seas and small-craft warnings. We got great thundering crashes and waves smashing against the side of the boat and so on; it was very dramatic."

Yet another effects adventure took King, Potter and Fasal to the desert north of L.A., where they recorded "discrete sail movement and wind over sails, without all of the water noise and atmosphere," King says. "We borrowed some sails from the *Rose* and rigged a mast in the desert." They also went to great lengths to record some unusual wind sounds in the desert for the film's incredible storm scene (see "Creating the Perfect Storm" sidebar). And for more human shipboard noises, "After shooting wrapped, the *Rose* was made available to us. I sent Eric Potter down to San Diego, where the ship had been moved. Eric recorded 4-channel recordings on Deva of the crew walking, running and moving about on deck."

As post work progressed, other challenges presented themselves to King and Hemphill. "We were looking for sounds to augment the cannon shot flying by," King says. "I was looking for a low-end component to convey *weight*—that's from O'Brian's descriptions of hearing the hum of a cannon ball passing over deck. So I got some crossbow arrows and fired those over mics and pitched them down significantly and that was perfect. It was this very organic sound."

"We also didn't feel like we had strong enough impacts; they didn't have enough *splinter* to make them visceral," he continues. "So we spent two or three days firing a sling shot filled with various pieces of wood—dowls, cut pieces, jagged pieces and other objects—over a microphone. In the end, we probably had 20 to 25 separate effects predubs: The cannon shot is one predeb, the ordnance passing through the air is another, hitting the ship is another, splinters is another, the sound of splinters dropping onto wooden surfaces is another. We had as many as six 32-channel Pro Tools running when Doug and I were doing the effects predeb together."



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CREATING THE PERFECT STORM

The *Surprise* encounters a fierce storm as it rounds Cape Horn at the tip of South America. Richard King: "We wanted the sound of gale-force winds, but after doing some research, we decided that we were going to have to make the stuff up. So we built this big wooden frame with these cross-members on it, and 1,000 feet of 1-inch and half-inch hemp line up and down and around it, tightened with turnbuckles. Then we rented a pickup truck, put the frame five or six feet above the cab, and drove that truck at 70 miles an hour into a 30-mile-an-hour wind up in the Mojave Desert, with a directional stereo mic laying in the bed of the truck, which had been dampened with sound blankets and foam.

The mic was shooting up into the rigging so we didn't get any of the truck sound, and we ended up recording all of these really interesting, weird, organic noises to the 24-bit Deva. We also had this 'wind harp,' a lyre with gut strings, that we'd de-tuned and stuck out in the wind on the truck.

"Later, when we mixed the storm sequence, we did add some sampled vocal elements. When you read descriptions [in O'Brian's books], it says that a storm could sound like 'a thousand animals being tortured.' So we took off from that, too.

"Also, at the big tank in Baja a couple of days after the shoot wrapped, we had production position two huge water tanks above the ship. We miked the entire ship—from the rigging, below decks, etc.—and then dumped several tons of water on deck; we got some incredible recordings—huge hull/water crashes—which we used for the storm scene."

Doug Hemphill: "Peter was very intent on the wind changing character when the ship changes course [as it goes around the Horn]. We used a variety of low-frequency and high-frequency



PHOTO: ANDREW BOCK

material; very pitch-oriented. Then, there's another component as you're going around the Horn. It's not just rain, it's *freezing* rain, so you have to have that stinging, brittle water hitting you, and that's very frequency-oriented, too. The challenge was to make it all into an organic whole: a big, single monster storm, instead of specific moments. Years ago, I worked with a director on a huge battle scene and he told me something I've never forgotten. He said the more detail you put in, the *smaller* the event begins to seem. So that's the paradigm for the storm. There are instances when you *want* to hear the detail and you focus on something, but the way you make it more of a whole piece is to make it more impressionistic, staying away from the fine detail." ■



PHOTO: ANDREW BOCK

In the desert, the crew also recorded discrete sail flaps.

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While King was collecting, assembling and fine-tuning effects, music supervisor Simon Leadley was hard at work recording the unconventional score at The Village in L.A. "I was sort of composer wrangler in a way," says the genial Aussie, best known for his work as supervising music editor on *Moulin Rouge*, "because there were three of them working and each is very different from the others, and they all

had equal input into the score. There's Iva [Davies], who was in [the Australian band] Icehouse. He was classically trained and became a pop star. Then you've got Christopher Gordon, who's more of a regular film music person, and Richard Tognetti, who's the artistic director of the Australian Chamber Orchestra. You've got these three different strains coming together in really interesting ways. There are a lot of high strings mixed with synths, and lots and lots of percussion: taiko drums and bells and various metallic things that are very interesting tonally.

"Peter didn't want a traditional score," Leadley adds. "That's been done to death.



PHOTO: RICHARD KING

FUN WITH CANNONS

Supervising sound editor Richard King: "At first, we couldn't find any large-bore cannons—12-pounders and 24-pounders—that could fire live rounds. Then, through one of the technical consultants, we found these historians and collectors in Michigan who had [the cannons that we needed] and also had a relationship with a National Guard base in northern Michigan that has a howitzer range. It was January, and the base was basically closed for the winter, so John Fasal, Eric Potter and I flew to Michigan for four days and we fired cannons. If you read back in the history, you find that they fired all kinds of things out of the cannons: not only round shot, but also chain shot, bar shot, grape shot. These collectors did the research to find out how the shot was constructed and then they actually made it for us; they spent a month casting shot. They were really into it.

"For every shot, we had up to six machines rolling. We had a Deva 4-channel 24-bit machine and several DAT machines and an analog Nagra because we were curious to see what kind of crunch we could get by really hammering [the analog machine]. With loud sounds like weapons, you can sometimes get good analog distortion. So we had the Nagra and a couple of DAT machines set up close to the guns and various mics—some large-diaphragm mics, some PZMs—set up at different distances. Eric would be down-range 300 or 400 feet, and he had mics set up in the line of fire and then very long cables back through the snow.

"I was on a snowmobile with a portable DAT rig and a Neumann 190 stereo mic. I drove around getting distant shots to get that low end. Later, we went back to the cutting room and we lined up the [recordings of each shot] in Pro Tools and got this incredible range of colors: from the crack from the close mics to the great, deep boom from my roving half-a-mile-away mic, and the shots going overhead from Eric's mics. The scream-bys are amazing. And the bar and chain shot whizzing through the air at various speeds is something most people have never heard. It's very powerful." ■

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He wanted something that would convey urgency and spirit. That's why anytime there's an inference of going to battle, there are 'war drums,' if you like. People probably expect a certain kind of music in this sort of film, but they're not going to hear it here."

So instead of string swells, there is shakuhachi and drums and Richard King's strange winds, and also fairly long stretches with no music at all: "Peter wanted to

allow plenty of space to let the film breathe," comments Massey. "This is not a film where the audience is pulled along by a constant barrage of effects and music. It's a film where the director wants the audience to sink into it and become part of the world—sort of documentary-ish in style—and live the day-to-day aboard the ship."

Widely regarded as among the top re-recording teams in L.A., Massey and Hemphill have collaborated on a few dozen films since first working together at Todd-AO in the early '90s. A few years later, they plied their trade at Sony, opening up the William Holden Stage there. Then, in 2000, they moved over to Fox when the



From left: Richard King, Paul Massey and Doug Hemphill, with HMS Surprise schematic in the background

John Ford Theater opened. "Even though we're still independents, I feel like we need to have a room we're familiar and comfortable with," Massey says. "I like the boutique feel at Fox." And though he says he has some "operator issues" with the Neve DFC, "overall, I love the sound, particularly of the EQ and compression."

Of his working relationship with Hemphill, Massey notes, "My approach and Doug's approach is always, 'What can we take out? What can we clear so that we can hear everything we need to hear?' It's so easy to get too busy and to think that you have to have a sound for everything that's going on. As a mixer, you can't allow that to occur or you end up with this big mono mush. So the challenge becomes highlighting the effects you want to hear, the dialog you have to hear, letting the music do what it needs to do, and take everything else out."

"As mixers," Hemphill notes, "we're thinking, 'What are we asking the audience to sit through?' In this film, there are three set pieces in a row that are combat—big battles. And in the final one, we ended up going more for the general impression of what's going on, because it's just overwhelming otherwise. In a couple of scenes, we even lowered our cannons a bit because we decided that you aren't gaining anything story-wise to make them that big. On one hand, we're mixing for the drama and the pacing, but on the other hand, we're saying, 'What can the audience take?' I've got to tell you, where I live in Montana, people are always saying, 'Why do movies have to be so loud?' You have to rein it in every once in awhile."

"And, actually, some of the stuff I'm most proud of in the film are the backgrounds Richard put together and the way we mixed it," Hemphill concludes. "It all becomes part of the story. The ship 'responds' to the characters. Telling a story is always paramount to me, and Peter is the same way. I think that's one reason this all went so smoothly. We're all on the same page. We all want to use our sensibilities to tell a great story."

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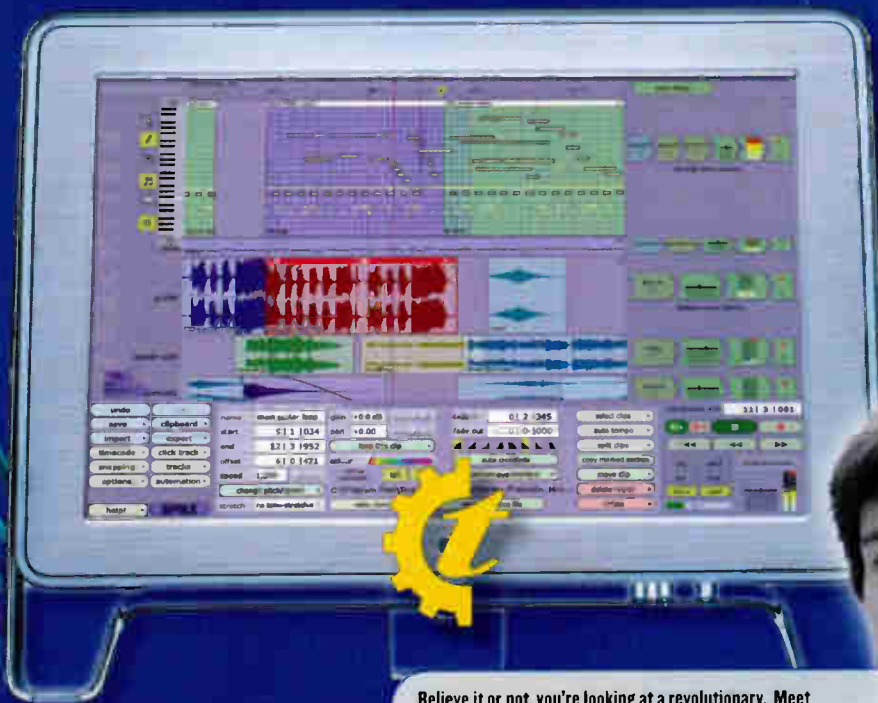
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The monitor selection process begins by determining your needs. Do you require near, mid or far-field monitors? Are passive or active models more appropriate? Perhaps you need sophisticated monitors with internal DSP or a system with a separate subwoofer(s). The pathway to finding the right monitors for your situation is not necessarily an easy one, as once you've pared down the field and settled on a basic system type that fits your goals—and budget—you're still left with myriad models and choices. So, read along and we'll kick a few tires along the way.

GET CLOSE TO GET ACTIVE

Starting out the active near-field group is the latest offering from **Behringer** (www.behringer.com), the Truth B2030A. These bi-amplified speakers feature a 6.75-inch LF driver and fluid-cooled HF driver. A 75-watt amp powers the LF driver and a 35W for the HF driver. These magnetically shielded speakers also have separate overload protection limiters for each driver.

EMES (dist. by X-Vision Audio, www.xvisionaudio.com, www.emes.de) offers several active near-fields, including the Black TV HR Active, a two-way coaxial system with a 7.5-inch LF driver and 1-inch HF driver. EMES' Blue TV HR Active features two 8-inch LF drivers and a 1.25-inch HF driver. Its Violet HR Active sports a single 8-inch LF driver and 1.25-inch HF driver. All three of the EMES monitors use a 120W amp for lows and 100W amps for the highs.

Event Electronics (www.eventl.com) has the most offerings in terms of active near-fields. First and foremost is the new Studio Precision™ 8, with an 8-inch LF driver powered by a 200W amp and a 1-inch HF driver powered by an 80W amp. The Tuned Reference™ Series includes 5 6 8-inch LF driver configurations. The TR 8XL offers more power than the standard 8. Event's venerable 20/20bas model gets a facelift and a new amplifier design with the updated version.

Fostex (www.fostex.com) has a new active near-field



Event Studio Precision 8



Blue Sky Big Blue



JBL LSR6328P



Griffin Audio Griffin 2



Linn 328A



Tapco S-5

with the PM0.5, which features a 5-inch LF driver and 0.75-inch HF driver. The LF driver gets 40 watts, and the HF driver receives 30. The magnetic shielding enables usage in close proximity to video monitors.

JBL Professional (www.jblpro.com) has just announced its latest active near-field monitors: the LSR6328P and the LSR25P. The LSR6328P sports an 8-inch LF driver supplied with 250 watts and a 1-inch HF driver powered by a 120W amp. One important distinction is the Room Mode Correction (RMC) system included with the LSR6328Ps, which enables precise tuning to the listening environment. A powered sub is optional. The LSR25P features a 5.25-inch LF driver and 1-inch HF driver with 150 watts of power.

Klein+Hummel (www.khna.com) offers two active near-field models, the O 110, with a 5.5-inch LF driver and 1-inch HF driver; each receives 50 watts of amplification. The O 300 D is a three-way, tri-amplified system with an 8-inch LF driver, 3-inch midrange and a 1-inch HF driver. The LF driver is powered with 150 watts, and the mid and HF driver each get 65 watts.

Linn (www.linn.co.uk) offers two of the most sophisticated (and only four-way) active near-field monitors examined here: the 318A and 328A. The 318A has a single 8-inch LF driver with a 500W amplifier, and the 328A has two 8-inch LF drivers with one 500W amplifier each. More

importantly, both models feature Linn's proprietary driver array, which houses midrange, high and superhigh-frequency drivers, with a total of 500 watts of amplification for all three.

M-Audio's (www.m-audio.com) Studiophile LX4 2.1 System combines two passive satellites and a subwoofer containing an active crossover matrix and internal amplification for both the 2.1 and 5.1 systems. A Studiophile LX4 5.1 Expander package adds three more LX4 passive satellites that connect to the LX4 2.1 subwoofer to make a complete 5.1 system. The sub has an 8-inch woofer powered by 60 watts; the expanders have a 4-inch woofer and 1-inch mylar HF drivers powered by 27 watts to each satellite.

Roland's (www.rolandus.com) active near-field, the DS-30A, has a 5-inch LF driver and 1-inch HF driver that share 30 watts of amplification. These monitors feature 24-bit 96kHz digital inputs; the elimination of line hum makes the DS-30As' digital inputs desirable.

The newest offering from Tapco (www.tapcogear.com) by Mackie is the S-5. This speaker features a 5.25-inch LF driver and 1-inch HF driver, each with a 60W amplifier. Published LF response goes down to 64 Hz.

The final active near-field monitor spotlighted here is Yorkville's (www.yorkville.com) YSM1p, with a 6.5-inch LF



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driver and a 1-inch HF driver. The LF driver gets 85 watts, and the HF driver receives 30. These monitors are made of 0.75-inch MDF with mag shielding; a defeatable limiter is included, as well.

ACTIVE IN THE MIDDLE

The first of two active mid-field models is Blue Sky's (www.abluesky.com) Big Blue, which has two 8-inch LF drivers, one 4-inch midrange and a 1-inch dual-diaphragm tweeter. Although it's a three-way system, there are four 100W internal amplifiers, one for each driver. It can be combined with Blue Sky's 12-inch subwoofers. Monitor stands and a 5.1 system controller are optional.

The other active mid-field is the Klein+Hummel O 500, another three-way system sporting a 12-inch LF driver, a 3-inch mid and a 1-inch HF driver. Copious amplification is provided: 400 watts going to the LF, 230 watts to the mids and 290 watts to the HF. The manufacturer's published frequency response is 30 to 20k Hz.

OVER THE HILLS AND FAR AWAY

There is only a single active far-field model to report, the brand-new S5V-A from ADAM Audio (www.adam-audio.com). This four-way system has 12.5-inch and 9-inch LF drivers, and ADAM's proprietary Accelerated Ribbon Technology midrange and HF drivers. The 12.5-inch LF driver is provided 500 watts and the other three drivers each receive 150 watts.

ACTIVE LITTLE ONES

Although Behringer's MS16 is small—with a 4-inch LF driver and 1.75-inch HF driver—it's bi-amplified, with an 8W amplifier for each driver. This mag-shielded monitor also features RCA, 1/4-inch TRS and 1/8-inch TRS inputs.

EMES' Pink TV Active features a 5-inch LF driver and a 1-inch HF driver. Each has its own 70W amplifier. It's shielded for use near video monitors, and the manufacturer claims a healthy 58 to 20k Hz response.

POWER PUNCH

In the final "active" category are subwoofers. There are six models to report here, compared to only one single passive unit.

EMES' offerings in the active subwoofer domain comprise the Amber Ac-

tive and the Amber HR Active. Both units feature a 10-inch LF driver with dual ports and dual 140W amps. The distinction between them is the enclosure: The HR version has a significantly larger cabinet, resulting in a 38Hz LF response with a 42Hz bottom end in the smaller unit. Another significant feature is phase control: five steps from 30° to 150° in the case of the HR, and 12 steps from 0° to 360° with the smaller Amber.

Event offers a 15-inch sub to complement its 20/20" near-field monitors. The 20/20 S250 features a 250W amplifier that powers the LF driver to provide a frequency response from 28 Hz to 120 Hz. With pass-through inputs to accommodate five channels, it's ready for 5.1 systems.

JBL Professional introduced its LSR6312SP active sub, intended to complement the new LSR6328P near-fields. A 260W Class-A/B amplifier powers the 12-inch LF driver. JBL's Room Mode Correction system is included, enabling precision tuning of the monitors within the environment. Its response is 28 Hz to 80 Hz.

Klein+Hummel's active sub is the O 800, which sports a 10-inch LF driver powered by a 120W amplifier. The stated



Klein+Hummel O 110

frequency response is 30 Hz to 90 Hz, and the sub is intended for usage with Klein+Hummel's O 110, O 300 D or O 500 monitors.

NHT Pro's (www.nhthifi.com) addition to the active subwoofer world is the new S-80. This large cabinet features two 12-inch aluminum-cone LF drivers that are mounted opposing each other, which has the effect of "canceling," and thus eliminating, physical vibration in the horizontal plane. As with NHT's M-80, this is strictly a passive device, but ships with a rackmountable crossover/amp combina-

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tion that provides 250 watts of power and also allows stereo LF operation.

The final active subwoofer is Yorkville's YSS1. This is a 12-inch LF driver in a high-density MDF cabinet powered by a 150W amplifier. The system yields a 35 Hz to 150 Hz frequency response. As this sub is intended for use with Yorkville's near-fields, stereo pass-throughs are provided.

UP CLOSE AND PASSIVE

While active monitors generally use high-quality amplifiers, some professionals prefer a special amplifier that they know and trust.

The first passive near-fields are Applied Research & Technology's (www.artroch.com) SLM1s. These mag-shielded speakers have a 6.5-inch LF driver and a 1-inch HF driver. The 2-inch cylindrical port enables low-frequency response as low as 40 Hz. Power handling is rated at 70 watts.

ATC (dist. by TransAmerica Audio Group, www.transaudiogroup.com) has announced the SCM12, a passive three-way near-field that features a 6-inch LF driver mechanically coupled with a 3-inch midrange driver. A 1-inch HF driver provides the high end. ATC manufactures its own drivers, and reports a frequency response of 62 to 20k Hz and power handling of 100 to 300 watts.

Bag End's (www.bagend.com) M6 passive near-field is equipped with a 6-inch LF driver and a co-ax 1-inch HF driver. The published frequency response is 60 to 20k Hz.

Behringer's passive near-field offerings are the Truth B2030P and Truth B2031P. The B2030P has a 6.75-inch LF driver and 0.75-inch HF driver. Its power handling is rated at 100 watts. The B2031P sports an 8-inch LF driver and a 1-inch HF driver with a power rating of 150 watts. The larger speaker has a response of 55 to 21k Hz. The smaller one yields 75 to 21k Hz, according to the manufacturer.

Earthworks (www.earthwks.com) now offers a new version of its Sigma 6.2. The new 6.3 adds a second 6.5-inch LF driver, but maintains its famous time alignment and 40kHz high-frequency response. The low end of the published response is 40 Hz. It's magnetically shielded, and rated to accept 150 watts continuously and 400 watts at peak.

EMES offers the Orange HR monitor,



New Audio Spatial One

with two 8-inch LF drivers, two 4-inch mid drivers, a single 1.25-inch HF driver and a stated response of 38 to 20k Hz. Multiterminal connectors enable multiband amplification, and the power rating is 240 watts continuous, 400 watts at peak. EMES' other offering is the Mini OWL. This unorthodox system enables reproduction of stereo audio from a single passive enclosure with two 5.25-inch LF drivers and two 25mm HF drivers.

Event now offers a passive version of its new 20/20bas. Like its powered counterpart, this monitor had a facelift, and features an 8-inch LF driver and 1-inch HF driver. The published response is from 50 to 20k Hz, and the power handling is rated at 150 watts continuous, 200 watts at peak.

KRK's (www.krksys.com) passive near-fields are the ST6 and ST8. The ST6 features a 6.5-inch aluminum LF driver and a 1-inch HF driver. The ST8 is essentially identical, with the exception of an 8-inch aluminum LF driver. The manufacturer publishes a top frequency response of 20 kHz and 52 Hz for the ST8, and 62 Hz for the ST6.

Probably the strangest of these passive near-fields, appearance-wise, is the New Audio Spatial One from Australia (dist. by Sound Control Room, www.soundcontrolroom.com). It's a two-way system with a traditional 6.5-inch LF driver, but the HF driver is where this speaker departs from convention: An "overhang" at the top of the cabinet has the HF driver mounted underneath, firing nearly straight down into a diffusor/reflector. Very interesting! The published frequency response is 59 to 18k Hz.

British audiophile manufacturer ProAc (www.proac-loudspeakers.com) now of-

fers the Studio 100, a compact two-way system with a 1-inch fabric-dome tweeter and a 6.5-inch woofer in a 16-inch, 24-pound ported cabinet. Response is said to be 35 to 30k Hz.

Tannoy's (www.tannoy.com) only new passive near-field monitor is the Reveal X, a dedicated center-channel complement to Tannoy's Reveal speakers. It features two 6.5-inch LF drivers and a 1-inch HF driver. Usage is not limited to just the center channel: A pair can be used for stereo operation. Stated frequency response is 65 to 20k Hz.

Designed by John Oram, Trident Audio's (www.oram.co.uk) LS101 features two 5-inch low/mid drivers, a 1-inch dome tweeter, and an internal mag shielding and dual gold-plated speaker terminals for bi-wiring. Response is said to be 30 to 22k Hz. Retail is \$799/pair.

Triple P Designs' (www.triplepdesigns.com) Pyramid offers an admittedly low-fidelity solution. In the spirit of the venerable Auratone Cube, this monitor intends to simulate the lo-fi performance of a typical television or transistor radio speaker. The enclosure is triangular in shape, and features a single 3x5.4-inch driver. Power handling is 30 watts, and the frequency response is 80 to 18k Hz.

Finally, Westlake Audio (www.westlakeaudio.com) offers an upgraded version of its three-way, passive near-field BBSM-6, which features two new 6.5-inch LF drivers, a new 3.5-inch midrange and a 1-inch HF driver. These drivers mount in a totally redesigned cabinet with turbulence-reducing port buffers and a new midrange trim ring.

THE REST OF THE PASSIVE FIELD

Griffin Audio's (www.fmdesign.com/fmgriffin.htm) Griffin 2 is a two-way system that features two 8.66-inch LF drivers and a ribbon HF driver. The published frequency response is 40 to 25k Hz (± 1.5 dB). The design is similar to the landmark Griffin monitor, and features a beveled cabinet that solves reflection issues normally associated with more traditional enclosure designs.

JBL Professional's LSR6332 is a two-way system with a 12-inch LF driver, 5-inch mid driver and 1-inch HF driver. The published frequency response is 60 to 22k Hz, and 35 Hz is represented at 10 dB down with the 12-inch LF driver. These monitors can be paired with JBL's LSR6312SP subwoofer.

Finally, NHT Pro offers the M-80, a passive three-way mid-field system featuring two 8-inch LF drivers, two 2-inch mid drivers and a single 1-inch HF driver. The pub-

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lished frequency range is 35 to 25k Hz. Although it is strictly a passive monitor, the M-80 ships with a 300W rackmount amplifier to provide power.

The only reported new passive far-field is EMES' Cyan HR. This is a three-way system with four 8-inch LF drivers, two 5-inch midrange drivers and a 1.25-inch HF driver. A multichannel connector enables tri-amplification, and the pub-

lished response is 36 to 20k Hz. Passive subwoofers are becoming rarer and the only reported new model to report is EMES' Yellow HR. This unit features two 15-inch LF drivers, each in their own isolated cavity, enabling true independent stereo operation. Power handling is rated at 200 watts continuously, 400 watts at peak and the published frequency response for the bass-reflex system is 38 to 1k Hz.

There is but one miniature passive: the Miller&Kreisel CR2401. This mag-shielded speaker is intended for use in a video monitor environment. It sports two 4-inch LF drivers and a single 1-inch HF driver,



NHT Pro M-80

and can be used with M&K's CR-480 subwoofer. Power handling is rated at 200 watts, and the frequency response is 80 to 20k Hz.

THE NEW VANGUARD

About 15 years ago, the powered studio monitors market began to form. Ground-breaking models from Genelec (www.genelec.com) and Meyer's (www.meyer-sound.com) HD-1 led studio users to the advantages of internal amplification, dynamics processing, equalization and time alignment delay. It was only a matter of time before a manufacturer came up with the idea of including more complex digital domain processing within the speaker cabinet. In particular, this idea has come of age as a result of multichannel monitoring. Phase relationships, specifically, have become much more of an issue because most rooms now have five or seven speakers, typically combined with a sub(s). Here are five new monitors that feature sophisticated internal DSP.

Alesis (www.alesis.com) offers two models: the ProLinear 720 and the ProLinear 820. The physical distinction is fairly obvious: The 720 sports a 7-inch LF driver and the 820 has an 8-inch LF driver, powered by an 80W amp in both cases. Both are mag-shielded models with a 1.25-inch HF driver powered by a 40W amp. The DSP handles the crossover tasks and enables speaker emulation and modeling via equalization, with eight factory and eight user presets. RS-232 serial ports are provided on each speaker for daisy-chaining and connection to a computer. Via this mechanism, up to 16 speakers can be controlled by a single computer. An LCD on the front of the speaker provides visual operation information.

Dynaudio's (www.dynaudioacoustics.com) AIR 20 is a three-way active near-field system with a 10-inch LF driver, 5.5-inch mid driver and 1.1-inch HF driver. All

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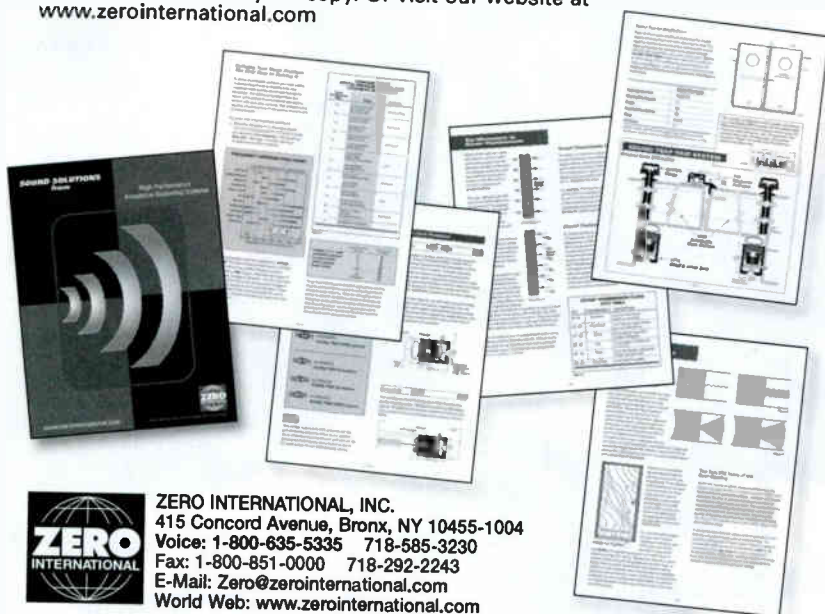
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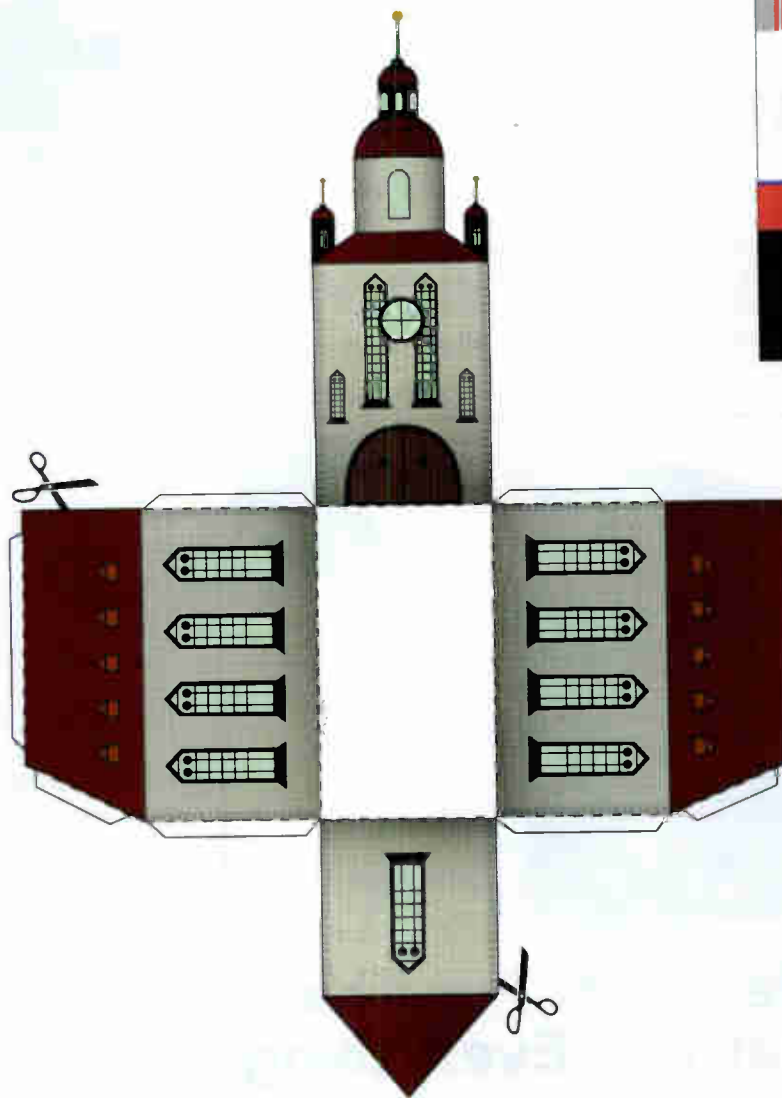
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Monitoring the Monitors

three drivers are powered by two 200W amplifiers. High-resolution (192kHz) digital input is enabled via Dual Wire. The DSP handles crossover with selectable crossover points. Presets allow the user to store favorite settings, and levels can be aligned within 0.1dB accuracy. Each monitor features parametric EQ and delay, which are accessed via computer. Each of the monitors communicates with the cen-

tral control, but they are also interconnected for single-point control of playback volume levels.

Focal's (www.focal-america.com) SM11 monitor is an active three-way system with an 11-inch LF driver (and 11-inch passive radiator), a 6-inch mid driver and a beryllium-dome HF driver. The LF driver receives 250 watts, the midrange gets 150 and a 100W amp powers the HF driver. The speaker features direct digital inputs and has an internal 24-bit/96kHz converter. The most significant distinction, in terms of the DSP, is that Finite Impulse Response (FIR) algorithms are used, nearly eliminating the



Tannoy Ellipse iDP

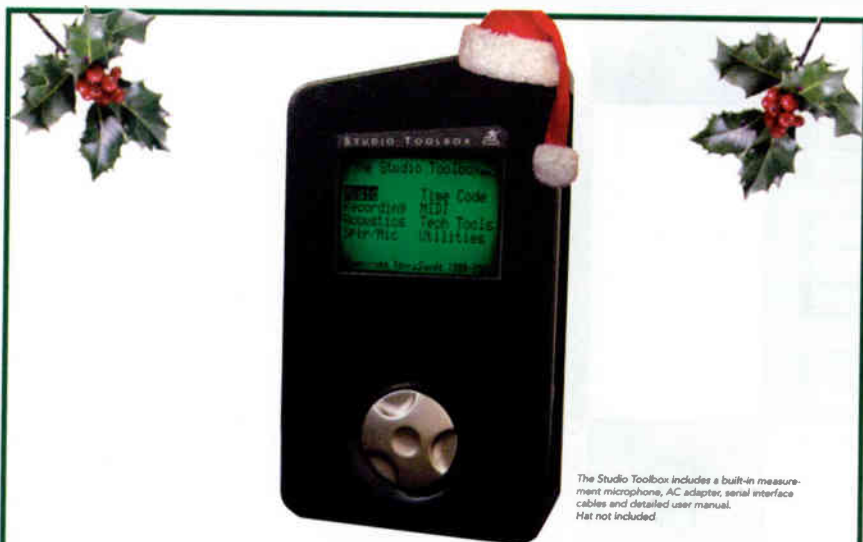
phase difficulties associated with IIR algorithms. Focal's PDA-based remote control enables storage of many user-generated presets. The DSP also features an algorithm to fine-tune the "sweet spot."

KS (www.cap-audio.de) has updated its ADM 2 bi-amplified near-field monitor to 24-bit/96kHz resolution. This monitor sports an 8-inch LF driver and 1-inch HF driver, each provided with 200 watts of amplification; the DSP factors in with the crossover. KS uses FIR algorithms to virtually eliminate any phase difficulties normally associated with IIR or analog crossovers.

Finally, Tannoy's latest are the iDP™ versions of its Ellipse 8 and Ellipse 10. The name says it all: The cabinets are virtually elliptical. They are three-way active monitors with dual-concentric LF/HF components. Both drivers in the Ellipse 8 receive 150 watts, and the Ellipse 10 drivers get 200 watts. All models sport a Super-Tweeter™ with its own dedicated 30W amplifier. Now part of the TC Electronic group, Tannoy has access to advanced DSP technology, resulting in Interactive Digital Programming (IDP), which incorporates powerful DSP into these speakers. Levels, equalization and other parameters are now controlled digitally. Delay lines allow these speakers to be "moved virtually," enabling for instance-correct ITU or Dolby Digital Surround placement in a room where it would otherwise be physically impossible.

CHOICES, SO MANY CHOICES

With the huge array of products available, you'll certainly be able to acquire monitors that fit the bill for you in terms of qualities and price. Hopefully, this roundup helps illuminate the latest technology to the extent that you'll be able to narrow your search's focus. Figure out what your needs are, and then above all else, go out and *listen*. All of the specifications and numbers in the world will tell you nothing like listening will.



The Studio Toolbox includes a built-in measurement microphone, AC adapter, serial interface cables and detailed user manual. Hat not included.

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The State of 5.1 Mastering 2003



ADOPTING FORMATS, BUILDING ROOMS, CARVING NICHES

by Paul Verna

When mastering engineers began working in the 5.1-channel domain in the mid- to late '90s, they had few tools at their disposal and little experience from which to draw. Tales abound of jury-rigged systems, chain-linked pairs of processors that didn't necessarily function as a unit, and vast amounts of experimentation with speaker placement, bass management, DVD authoring and other aspects of post-production.

We've come a long way, baby. Today, the availability of state-of-the-art, purpose-built tools for mastering in discrete surround is equivalent to the momentum behind the formats that deliver the final product to the consumer: DVD-Video, DVD-Audio and Super Audio CD.

REBUILDING ROOMS FOR SURROUND

Those who have been pushing the surround envelope since the introduction of 5.1 have an especially deep appreciation for the evolution in the medium and in the tool set used to create material for it.

Gateway Mastering & DVD owner/engineer Bob Ludwig (see photo above) recently rebuilt his control room to better accommodate multichannel projects, adding an SPL MMC 1 surround console and a Z-Systems signal router/digital patchbay. "Going from stereo to 5.1 used to take me three to four hours, and it was nonbillable time," Ludwig says. "With this new setup, I can re-

configure the room with the click of a mouse." Ludwig's speakers—Eggleston Works Ivys—also used to take hours to set up, but with the equipment upgrade, the control room's physical redesign allows the speakers to live in closets when they're not in use. For 5.1 sessions, they can be rolled into position within minutes.

The reconfiguration of Ludwig's room illustrates the extent to which mastering engineers are factoring 5.1 into the equation. Los Angeles-area veteran Stephen Marcussen has also shifted into surround mode recently. "I've been literally in 5.1 mode for five to six weeks solid," says Marcussen, noting that he's mastered projects for the likes of Shania Twain, Ben Harper and the Rolling Stones. "In the past [financial] quarter, we have been solidly doing DVD-Video. There was a point when I didn't do a [stereo] album for two weeks."


Marcussen adds that as 5.1 formats have matured, the quality of the work he's receiving for surround mastering is improving. "The stuff is sounding better and better," he says. "People are really mixing for it and doing a great job. People are paying close attention to the soundfield and not doing odd things like having a triangle going from left to right behind the listener. It's settled into a place where it's more about the balances and the effects than about gimmicks."

Although audiophile engineers like Ludwig and Marcussen are working on an increasing volume of DVD-A and SACD releases, they acknowledge that the lion's share of the surround



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The State of 5.1 Mastering

mastering work is still in DVD-Video, which requires lossy compression to deliver six discrete channels. "Lately, it's been more DVD-Video," says Ludwig, "in spite of the fact that there's quite a lot of action in the SACD thing, now with Universal putting out releases in both DVD-A and SACD." Marcussen agrees, saying, "The common denominator is video. I see the value in any hi-res system, but does the world at large see the value in a hi-res system? I don't know if they see it today, but because I've always believed in quality, I think that in the future, both SACD and DVD-A may co-exist or one may go away, but there will be at least one hi-res system out there."

FOCUSING ON SPECIALTY MARKETS

While the various formats compete for public acceptance, each has built enough momentum to spawn niche businesses catering to specific areas. For instance, Herbert Waltl of L.A.-based Media Hyperium has distinguished himself as a lead-

ing SACD transfer and mixing expert. In fact, Media Hyperium has been recognized by Philips as a reference SACD studio.

"We've done a huge project for Concord Records here where they've reissued 30 albums on SACD," says Waltl. "We've done a lot of transfers and mixes, mostly from analog sources, some of which had to be baked. It was mostly 16- and 24-track, 2-inch tape, except for one that was 32-track analog—with two 16-track decks synched together—and a couple that came in on 3348 and Pro Tools |HD."

Waltl and his chief engineer, Ted White, mix through an API Legacy console using state-of-the-art analog processors, converting through Meitner and dCS converters into linked Merging Technologies Pyramix systems. "The Pyramix can sync up with timecode, so we run systems together and lock them to sync," says Waltl. "It works beautifully. From a professional point of view, the system suits our needs best because it allows us to work like a regular studio. It makes DSD feel like a real-world system, rather than an ultrabeta, supersecret system."

Another facility that has carved a



KK Proffitt of Nashville-based JamSync

niche for its SACD premastering expertise is New York's Magic Shop, where owner Steve Rosenthal built a new room, the Blue Room, to accommodate SACD transfers for the Rolling Stones' recent Abkco reissue program, as well as other work for Abkco, the Alan Lomax library and other clients. Rosenthal says that he decided to create the Blue Room last year after spending time at the SACD booth at the 2001 AES show and being impressed with the sound of DSD. "I just fell in love

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with how SACD sounded," says Rosenthal, "so I decided to delve into it. I figured, if we want to get people interested in music again, it might be good for music to sound good again." His suite features a Sony Sonoma DSD workstation with Ed Meitner converters, a Sonic Solutions 24-bit, 96kHz system with Mytek converters, and a customized Ampex ATR-102 analog mastering deck.

While music-intensive reissues like the Concord catalog and Pink Floyd's classic *Dark Side of the Moon* represent one side of the 5.1 remastering universe, there's an increasingly wide range of audio projects that have less to do with music than with sound-for-picture. One facility in Nashville, KK Proffitt and Joel Silverman's JamSync, has made a specialty of remastering, remixing and restoring recordings from clients outside of the mainstream music industry.

"We don't work much with major labels," says Proffitt. "We didn't want to compete with the studios that are geared for that part of the pie, so we decided to go after markets that others wouldn't go after, like independent filmmakers, electronic press kits, and corporate, educational and vanity projects; basically, any video projects that need audio."

Among JamSync's clients are the Nashville Regional Transit Authority, for which the facility did audio sweetening and post-production; the Sudekum Planetarium, which hired JamSync to create show DVDs and sound system tuning; and Zenith, which used the company's services for a 5.1 demo for its HDTV line. "Some of the projects we get are fascinating and they require a lot of audio attention," says Proffitt. "On some of the restoration-oriented projects, we learn a lot about archiving formats."

A hallmark of JamSync's success is that the facility has doubled its bookings every year since it opened in 1998. "In today's industry, that's a difficult thing to do," observes Proffitt. "But we've managed to pull it off by taking a broad-based approach. I've always considered myself an audio engineer, and I'm willing to deal with audio of any kind; it doesn't have to be music."

Like other mastering and post-production studios, JamSync has also broadened its offerings to include DVD authoring. Bob Ludwig's Gateway Mas-

tering & DVD was among the first to go the authoring route, and other prominent audio facilities that offer authoring services include New York's Masterdisk, Boston's DVD Labs and New York's Sterling Sound (through its authoring affiliate, Metropolis DVD).

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Steve Rosenthal, of New York's Magic Shop, built a new room for SACD transfers.

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variety of tools to achieve their results.

Ludwig's choice processors include the TC Electronic System 6000 multichannel processor; the Z-Systems z-Q6 and z-CL6 multichannel EQ and compressor/limiter, respectively; and Weiss Engineering digital EQs and de-essers. In the analog domain, Ludwig gravitates toward GML, Avalon, Manley and other manufacturers of reference-grade processors. Although Ludwig finds himself using more and more plug-ins in various workstations—including Digidesign Pro Tools, Steinberg Nuendo, SADiE and Sonic Solutions—he still prefers hardware to software when it comes to processing.

By the same token, Marcussen relies on a combination of vintage analog and next-generation digital tools. For DVD-Video and DVD-Audio projects, he has no qualms about using PCM processors, both in the stand-alone hardware and software domains. However, Marcussen's console is a custom-built analog model, reflecting his desire to keep his options open until there is some consensus on

high-resolution digital formats.

While many engineers lament the slow pace with which manufacturers are introducing advanced multitracking, editing and processing software for DSD, Marcussen finds the paucity of digital tools refreshing. "Working in DSD, because of the limited arsenal of digital tools, I have to rely on my chops as opposed to a peak limiter," he observes. "I've gotta get into the music, wrap my head around it, and say to myself, 'The choruses have to take off and the bridges have to take you to the moon.' It's like the days of vinyl. It makes you a better engineer."

CREATING SURROUND: REAL-WORLD SITUATIONS


Marcussen is not a fan of extracting surround information from stereo sources. In fact, you won't find many audio engineers who enjoy that process. However, in the real world, situations often arise when multichannel extrapolations are necessary.

"It comes up quite a lot," says Ludwig. "Ninety-nine percent of the time, when you're dealing with a discrete mix, some element will need to be added at the last



Herb Wahl, SACD transfer and mixing guru at L.A.-based Media Hyperium

second that there's no 5.1 for. Welcome to the world of video! Very often, a video person did all of the editing without regard to audio, and the audio person did all the mixing without regard to video. Suddenly, reconforming those things becomes our job. There might be a piece of applause that never got mixed and it needs to be in there, so those are times when we need to make a fake 5.1. A little thing like that, which might last only



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The State of 5.1 Mastering

20 seconds, could take an hour-and-a-half to create." Ludwig's favored tools for multichannel extrapolation include the TC Electronic UnWrap algorithm and the Z-Systems z-K6 processor.

Another real-world scenario that comes into play in high-end mastering suites is the need to monitor a multichannel mix in an alternate environment. For that purpose, Ludwig built two listening rooms: One is equipped with

smaller versions of his professional Eggleston monitors, while the other features a consumer-level Bose home-theater setup.

How often does Ludwig take his surround material into the Bose room for a monitoring check? "Always," he says, "and I underline that 'always.' Most of the time, things translate beautifully between the big room and that system, and we've calibrated the Bose as best as we can for that room. But there are times when I'll be mastering something in my room and then bring it into the Bose room and find that the low end sounds different. A lot

of this is a function of what the mixing engineer has done with the LFE. If it's a blend of other channels, the Bose reacts a certain way; if it's discrete, like the kick and the lower end of the bass guitar and toms, it reacts differently. The beauty of the Bose, as well as other systems from JBL and others, is that it's so severely bass-managed it'll give you a good idea of how those systems are going to treat that info. The bottom line is, I wouldn't think of doing a surround session without checking it in that room."

Although the Bose system is relatively inexpensive, customizing it to accept uncompressed multichannel signals was costly, according to Ludwig. "You've got to have three dCS sample converters, which are in the neighborhood of \$6,000 to \$7,000 apiece, as well as a professional Dolby encoder in the chain in order to feed, say, a DSD source into it," says Ludwig. Still, he is known as an engineer/studio owner who will spare no expense to achieve the best sound. If



Stephen Marcussen (right) with pals Ed Cherney and Don Was (background), working on the Rolling Stones SACD project.

taking that extra step to hear it through a consumer-level system can result in even the slightest adjustment in the bass content, Ludwig is all for it.

Other engineers share Ludwig's determination to push the envelope in 5.1-channel sound. Media Hyperium's White says, "As an engineer, I feel strongly that my job is to serve the artist and the client with the best available tools. I'm not going to tell somebody that PCM 44.1 is not that much different from DSD or high-sampled PCM, because people can hear for themselves that it is. This is not the emperor's new clothes. We're really trying to make a difference."

Paul Verna is a longtime professional journalist.

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HIGHLIGHTS FROM THE



Nearly 650 audio and music professionals turned out for the 19th Annual Technical Excellence & Creativity Awards, held on October 11 at the Marriott Marquis in New York City. The evening's highlights included the induction of engineer/producer Eddie Kramer into the Hall of Fame by Jimi Hendrix's sister, Janie Hendrix, and studio designer John Storyk; and the presentation of the Les Paul Award to Bruce Springsteen by Les Paul and mastering engineer Bob Ludwig. Proceeds of the ceremony will assist the hearing conservation efforts of the House Ear Institute and H.E.A.R., and scholarship funds for students of the audio arts and sciences.

For a complete list of winners and more pictures of the evening's festivities, visit www.mixfoundation.org.



Trina Shoemaker accepts one of two TEC Awards for her work on Sheryl Crow's C'mon, C'mon (Outstanding Record Production/Album) and "Soak Up the Sun" (Record Production/Single or Track).



Nashville was represented by engineer Chuck Ainlay and Universal South's Tony Brown.



Producer "Eddie F" Ferrell (r) and SIA Acoustics founder Sam Berkaw (background) present the TEC Award for Microphone Technology/Sound Reinforcement to Shure's Rick Frank.



Mastering engineer Bob Ludwig (l) accepts the Les Paul Award and a custom-made Les Paul guitar on behalf of Bruce Springsteen from Les Paul and chairman and CEO of Gibson Musical Instruments Henry Juszkiewicz.

19TH ANNUAL TEC AWARDS



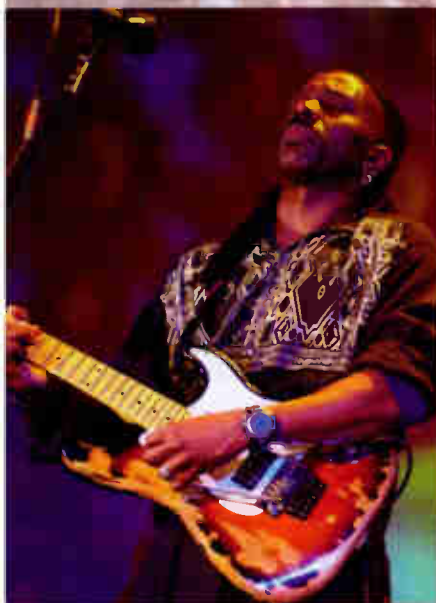
Studio designer John Storyk (l) and Janie Hendrix present Eddie Kramer with the Hall of Fame Award.



Producer Jimmy Douglass (l) and Mix magazine's George Petersen (r) present SSL's Rick Plushner with the TEC Award for Large Format Console Technology for XL 9000 K Series.



Bass players TM Stevens (l) and Will Lee proved to be a lively start to the evening's proceedings.



Ronny Drayton paid tribute to Hall of Fame inductee Eddie Kramer with his rendition of Jimi Hendrix's "Fire."



AMD's Charlie Boswell, Senior Member of Technical Staff, CPG Workstation Marketing, and Les Paul check out the new Gibson/AMD Opteron guitar.



Ted Greenberg (l) and Kooster McAllister accept the TEC Award for Remote Production/Recording or Broadcast for the highly acclaimed Standing in the Shadows of Motown.

Jack Clement

Memphis and Nashville Memories

Not too many people can claim to have worked with a range of artists that includes legendary rocker Jerry Lee Lewis, singer/songwriter Townes Van Zandt, jazz icon Louis Armstrong, Country Music Hall of Famer Charley Pride, polka king Frank Yankovic and socially conscious Irish rockers U2. But producer/songwriter/artist and all-around character Jack Clement can.

Born on April 5, 1931, just south of Memphis in an unincorporated area called Whitehaven, Clement got his first serious break in 1956, when Sam Phillips hired him to work at his Sun Records label after hearing Clement's production of rockabilly artist Billy Lee Riley. While at Sun, Clement worked with Jerry Lee Lewis, Johnny Cash, Carl Perkins and a host of others.

After a brief time recording hits at a studio he started with a partner in Beaumont, Texas, Clement moved to Nashville and began a long career, producing 20 albums for Charley Pride over a six-and-a-half-year stretch. Clement also produced many key recordings by Waylon Jennings, Cash, John Hartford, Doc Watson, Sheb Wooley (and his alter-personality Ben Colder), among many more.

As a songwriter, Clement's compositions have been covered by artists such as Garth Brooks, Ray Charles, Cash, Hasil Adkins, John Prine, Cliff Richard, Richard Thompson, Roy Orbison, Gerry & The Pacemakers, Foghat, Chicken Shack, The Move and too many more to list here.

Clement also released a solo album (*All I Want to Do in Life*) in 1978, which gener-

ated three charting country singles. In 1969, Clement launched Jack Clement Recording, which for years was one of the most desirable recording facilities in Nashville. (Currently, the studio's location is home to Garth Fundis' Sound Emporium.) After Clement sold his studio, he set up shop at his house and christened the facility the Cowboy Arms Hotel and Recording Spa.

During the interview at the Cowboy Arms Hotel,

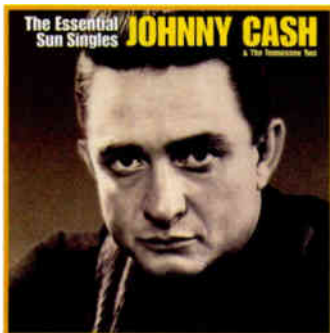


PHOTO: RICK CLARK

Clement regaled me with enough entertaining stories to fill a book. He started off the interview getting his cat Eugene to perform tricks, including pulling his finger and motivating Clement to activate stereo fart machines. A one-time Arthur Murray dance instructor, he broke out of chatting and began to demonstrate how to dance to a waltz, illustrating how many musicians miss the emphasis on the beat. Clement also shared his enthusiasm for his latest project, Cowboy's Ragtime Band. This assemblage of some of Nashville's finest has played a number of gigs at the Country Music Hall of Fame. When we walked upstairs to the studio, I noticed that the stairway walls were covered with a large mural of Johnny Cash standing on clouds with a guitar, with spaceships figuratively hovering around him. But the highlight of the visit was hearing a revelatory (and unreleased) version of Louis Armstrong singing the Youngblood's Summer of Love anthem "Get Together." Needless to say, it was quite a hang.

You got your start in music production working for Sam Phillips at the legendary Sun Records label in Memphis during the '50s. How did you book up with Phillips?

I first went to see Sam to audition for him as an artist. He was very nice and he gave me a really good audition. He spent an hour or so with me and listened to everything I did and concluded that I was a little too smooth. [Laughs] I played a lot of bluegrass and a lot of other stuff. I was pretty good, but I wasn't singing rock 'n' roll: I was singing Jim Reeves and Marty Robbins and all that kind of stuff. That would've probably been in 1955.



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Then about six months after I did that audition, I went to work for Sam in June of 1956. I had produced a record with Billy Lee Riley called "Rock With Me Baby"; "Trouble Bound" was on the back side. I took it to Sam to master. He heard the record and wanted to put it out on Sun. He asked me what I was doing, and I said I was going to college here and that I was working at this building supply place and not making very much money. He said, "Well, maybe you ought to come work for me." I thought maybe I should, and a couple of months later, I did. He gave me my first job in the music production business.

Remember, we are in the
fun business, and if
we're not having fun, then
we are not doing our jobs.

I would imagine that Sam Phillips was quite a mentor.

Sam encouraged me to go out there and be different. There was never any talk of trying to sound like someone else. Get wild. Get crazy. Do everything wrong. Whatever! It was a thing where we could do things wrong and sometimes they would work out, and if they didn't, it was no big deal. So I started off with a guy who is an experimenter, and so I became more of an experimenter, and I still do it. I'm always looking for that different sound.

Sam was big on rolling lots of tape, wasn't he?

Yeah, and so was I. Let her roll; tape is cheap. Sometimes, we used to get the tapes that people sent to us with their songs on them and [we'd] re-use them. [Laughs]

You and Marty Stuart and Kenny Vaughn performed at Phillips' memorial service.

We did a Rolling Stones song called "No Expectations" and this song I wrote called "Ballad of a Teenage Queen," which was a hit for Johnny Cash. I also read some stuff from my unfinished book.

Sam always hated "Ballad of a Teenage Queen." He never did say why. It was kind of too cutesy for him, I guess. The fact that it was a big million-plus-seller hit didn't matter to him. Sam bitched about that song for the rest of his life and it got to be kind of a joke, really. He told me

one time that he actually went home and prayed, "Oh Lord, don't let it come to this!" The thing about it was that everyone around there loved it. One day, I remember he came in and said, "You know, the more I hear that thing, the less I like it." But he put it out, and it was a big hit.

Sam was always saying that he was looking for something different. He wasn't necessarily going for correctness or any of that stuff. He wasn't trying to compete with Nashville. He knew he was in a place that was sort of isolated in a way from Nashville and all of the slick stuff. He knew that he had to come up with his own thing, and that was always the theme.

Sam liked to work with musicians before they got too good, like while they're learning, because [that's when] they're experimenting and you get that benefit of the experimentation. You don't get that sort of freedom from superpolished musicians. He favored working with people who weren't too seasoned. That's what recording is about: When you do it right and let it all hang out, you get lucky. You stay in the studio until you get what you want.

It seems like many records are afflicted by too much thinking.

There is too much thinking, too much tuning and too much trying to make things absolutely slick and perfect. There is a big difference between being smooth and being slick. Smooth is cool. Slick is like shit. Have you listened to the radio recently? There is nothing smooth about it.

There are a lot of people in the record industry now who don't seem to understand anything about capturing the moment and that "semi-translux" state you have to go into when you record. When it comes time to record, you've got to throw it away.

Louis Armstrong demonstrated that to me when I was producing an album with him in 1970. The first time he went to the microphone, he sat at the piano next to Larry Butler, and they ran over the songs a little bit. He kind of learned them halfway and went to the microphone and started singing. The first time I heard him, it sounded awful. I thought, "Oh Lord, what have I gotten myself into?" The next time he ran it through, he nailed it. I realized that he had done something that I had always done, which is to play around and do it all wrong and get it out of your system, and then you can do it right.

Jerry Lee Lewis always amazed me at how he would go into any room and



PHOTO: BILL DIBBLE

Clement kicks back in his Elektra Asylum throne, after being signed in 1977.

throw it away. If there was a piano and an audience of one or more people, he would give you a whole show and not hold anything back.

You recorded a lot of the classic Jerry Lee Lewis/Sun recordings.

The first one we did was a song called "Crazy Arms," which had been a big hit for both Ray Price and the Andrews Sisters. What we did was kind of an audition tape, really. Sam [Phillips] was in Nashville at a disc jockeys' convention that day, which was a Thursday. I was in there with Jerry Lee, Roland Janes and Billy Lee Riley, and we cut two or three things and I asked Jerry Lee if he knew "Crazy Arms." He said he knew a little of it, so we cut it. Billy Lee [Riley] was in the bathroom and he thought we were just messin' around, and he was supposed to have been playing the bass. The only thing the record had on it were piano and drums. At the very end, Riley strolled in, thinking that we were goofing off and picked up an electric guitar and hit a little off-chord at the very end and that stayed on the track. When Sam came back the next Monday, I played it for him and he flipped and did the lacquer right there in the studio control room. Dewey Phillips added it on the

air that night on his radio show, and by that Thursday, we had records. Those were the fun days. You could cut a record on Thursday and have it in stores the very next week.

"Whole Lotta Shakin'" was a one-take deal. We had cut a whole bunch of other stuff that day, and we were working on a song I wrote called "It'll Be Me." I got tired of it and walked out of the studio and said, "Let's get off this for a while and get back to it later." Jerry Lee's bass player, J.W. Brown, said, "Why don't we do something else? Hey Jerry! Why don't we do that song we've been doing on the road that everybody likes so much?" He said, "Okay." So I said, "Let me go turn the machine on." I hit Play and Record, turned around and sat at the desk and they did ["Whole Lotta Shakin'"] in one take without a dry run—nothing. Blam! There it was! We didn't overdub or do anything to it. In fact, we didn't even play it back for a while.

[Laughs] We started getting back into "It'll Be Me" or something. Later on that evening, we started playing it back and we just played it all night. It's fun to be able to cut a record and just hear it after one take.

Your relationship with Johnny Cash began during those days at Sun.

Yeah, Johnny grew up in about the same area where I grew up. He was over in Arkansas, but not that far away, whereas I was over in the south of Memphis. Johnny and I would sit around and sing a lot of songs we knew and liked. We wouldn't have any guitars or anything; we would just sing. The thing that people don't know about Johnny Cash is that he could sing just about anything. We both knew a whole bunch of songs.

The best thing about Johnny was that he never lost his urge to pick. And that was true right to the end. Over time, a lot of players get jaded and they just don't want to whip out their guitars and pick. Waylon would still play, but not like Johnny Cash. Cash would whip out his guitar anytime and play with anybody.

I saw him a couple of days before June [Carter, Cash's wife] passed away [in June 2003]. Johnny was pretty calm, and I

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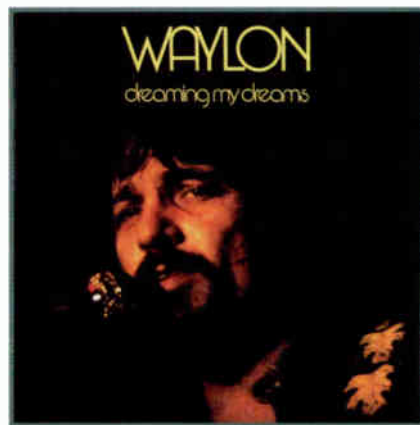
could tell by the look in his eyes and what he was saying that he was going to get right back into recording. A week or so later, he called me and said, "Come on out and play." The last time I saw him, I was playing dobro with him for a session. Marty Stuart was there. Rick Rubin has been systematically cutting tracks out there for several years now and he was cutting songs for a box set. I've only met Rick Rubin once before. He came over to the studio one day. I really like him, and I respect what he did for Johnny Cash.

After you left Sun and spent some time in Beaumont, Texas, you settled in Nashville and began quite a string of successful productions, including Charley Pride, the first—and to this day only—major African-American to become a serious country music star.

There was a PR guy for Cedarwood Publishing named Jack Johnson who I would hang out with when I got to Nashville. One night, we were on Music Row at a place called The Professional Club, which was right across the street from Cedarwood. It was a place where a lot of songwriters and people on recording session breaks would hang out. People brought guitars there all of the time. If you wanted to write a song and then sing it to somebody, you could be singing it to Tom T. Hall or Kris Kristofferson, 'cause they'd all be there. Anyway, Jack Johnson had been telling me about this guy named Charley Pride, and he talked me into going over to Cedarwood to hear this tape. So we went back over to The Professional Club after that and had a few more cocktails, and I said, "Get him in here, I'll record him and I'll pay for it." A month or so later, here's Charley. I played him about six or seven songs and I gave them to him and he picked out these two songs.

Back when I was working at Sun, I talked about wanting to find a black guy who I could get to sing country. I worked with one guy who wasn't that good, but when I heard Charley Pride, I knew I didn't have to teach him anything. Charley and his whole family listened to the *Grand Ole Opry* on Saturday nights, just like I did. He loved Hank Williams and he really could sing it. I'll never forget when I first heard his voice in that RCA studio: Wow! It was magnificent! The word got out around town about this session, and the next time we recorded, the control room was full of people. Charley loved that. He liked an audience.

I wrote his first Top Five record, "Just Between You & Me." I co-wrote "Does My



Ring Hurt Your Finger?" I could do an album on Charley in a week or so. It wasn't a whole lot because it was mostly 4-track. I ended up doing 20 albums with him over the course of six-and-a-half years. He was the biggest seller on the label, and it took him only a couple of years to do that.

It is still highly unusual to see a black artist doing country music.

It is still unusual, isn't it?

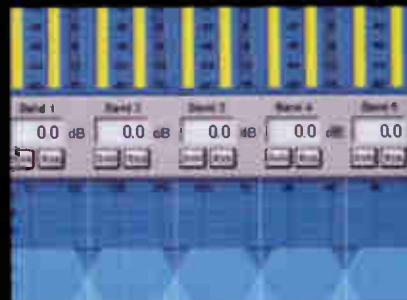
I can only imagine what it was like almost 30 years ago in Nashville.

RCA, to its credit...I'm still amazed that, back then, a corporation had enough wisdom to decide that they should just release Charley as a new country artist and not even bring up the racial thing. Here is this guy who sounds good. When radio stations started playing Charley, they didn't know he was black. The label wasn't trying to keep it a secret. They just said, "Hey, here is a great singer, let's put it out." I've always thought that was a time when a corporation waxed wise. I'm not saying that there might not have been a little trepidation for some at the label, but we just didn't mess with it. We just rocked on. Charley told me that there has never been a racial incident in his whole career. *You were instrumental in introducing Townes Van Zandt with your productions of some of his most important albums.*

I produced the first several Townes albums, including his first album called *For the Sake of the Song*. We got along really well. He would always call me up from the road and tell me some joke. Townes was always funny. One time, he came back from Europe and brought me this CD that had 26 versions of "La Paloma." It had every single kind of way you could think of doing "La Paloma." [He sings the melody.] We were really close. I loved him. *One of Waylon Jennings' finest albums, Dreaming My Dreams, was produced by you.*

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Waylon always said that it was his favorite album. The record did really well and it actually turned out to be his first million-seller. It took us six months to make and we argued a lot, but we were proud of the results.

You built Jack Clement Recording back in the '70s, and it became one of the most popular studios in Nashville. You sold that and, during the past 20 years, you've operated out of a home studio. What were some of your considerations when you built your own room?

When I had my studio down the street, I had two curtains on the studio side of the control room window. An artist could close it if he wanted to. One of the curtains was kind of see-through sheer and the other one closed things off completely. If you did not want anyone staring at you, you had the option of shutting them out and having some privacy. I've thought about it over the years and don't see the point in having a control room window. You just don't need it.

When an artist or musician out on the floor is trying to perform and looks in that window and sees the engineer or other people laughing and cutting up or looking bored, it's a distraction. I've seen terrible misunderstandings happen because somebody is seeing something on the other side of the glass, but they're not hearing it. That was true of a couple of instances with Waylon.

My first goal when I consider creating a recording space is to come up with something that musicians will like and feel comfortable with. My first thing is to create a place where people like the sound of the space. My studio upstairs may be a little dead, but people seem to like it. A place like this is more conducive to relaxing and feeling at home than a regular studio. Everybody who has ever worked here has enjoyed the atmosphere. *Do you have some thoughts on what you consider to be a good production?*

First of all, I don't see how you can have a good production without a certain amount of freedom. You should try to go in there and get it right and throw it away. Remember, we are in the *fun* business, and if we're not having fun, then we are not doing our jobs. Here are my three universal truths: Number One: All people from Memphis speak in parables. Number two: Women don't like steel guitars. Number three: If you throw enough shit against the wall, somebody will see a picture in it. [Laughs] Somebody will see a picture in *anything*. ■



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Jim Roberts' Brandon Productions

Big Sounds From the Basement

Jim Roberts was one of the lucky dot-commers: His Internet company was bought out before the big Web crash in the late 1990s. However, like thousands of other Web entrepreneurs, he still took a financial bath when the bottom dropped out, but he didn't lose everything. So in 2000, he took his leftover earnings and built a house—including a basement for music production—in Somers, N.Y., about 40 minutes from Manhattan.

Roberts played keys in various bands during high school and college, and later played in one group that was briefly signed to Atlantic Records. But with a family to support, the budding musician turned to the security of steady (i.e., nonmusical) income. Yet, "music was still my passion throughout my career in the business world," Roberts explains. After investing some \$125,000 in studio equipment, the Institute of Audio Research grad's basement project became Brandon Productions (www.brandonpost.tv), and he has since built up a private list of well-known clients.

"My partner and I set up a business for Kansas drummer/manager Phil Ehart with a 1-900 [contest/promotions] number for the band's fans to call, and it went really well. We had a great relationship with the band, and before long, I was doing mastering work for them. [Kansas lead singer] Steve Walsh also asked me to play keyboards on a track for their new album, which was pretty amazing. This was a band I'd looked up to as a little kid, and now I am playing with them."

Soon after the studio was up and running, Roberts found himself working on late Who bassist John Entwistle's last live album, *Left for Live Deluxe*.

"The Entwistle project came at almost the exact same time as his death in 2002," Roberts says. "I'd met Steve Luongo, a studio musician and Entwistle's drummer. Steve liked my rig at Brandon Post, and we agreed to work together in the future. Nothing happened for a year. Then Steve called and asked if I'd like a crack at mixing the album. We went through 60 24-track performances, but we got it done." Later, Roberts worked with Mountain guitarist Leslie West on Koch Records' George Harrison tribute, *Songs From the Material World*.

Brandon Productions' equipment list encompasses both state-of-the-art and vintage gear. "I like the blend of old and new school," Roberts says. The main system is Pro Tools|HD4, paired with a 32-channel Digidesign ProControl unit and three 96k interfaces. "We record all-digitally, yet I have a nice big room to record drums, a separate vocal booth and a collection of analog gear." The studio includes API 512C preamps and 550 and 560 EQs, Focusrite ISA 110s, a Vin-



Jim Roberts at his ProControl/HD setup.


tech 1272, Universal Audio LA-2A and 1176 compressors, Manley Enhanced Pultec EQP-1A EQ and dozens of TDM plug-ins. Among the instrument holdings are a 1949 Hammond BV and Hammond B3 vintage organs, as well as a couple of Kurzweil synthesizers, a Clavia Nord Lead II and a Yamaha Recording custom studio drum kit.

However passionate he is about classic rock and vintage gear, Roberts has his eyes and ears set firmly on the future. During the past three years, Brandon Productions has recorded the theme to *ABC World News Now*, as well as spots for *Good Morning America*, *World News This Morning*, *Dateline* and others, due to a lucrative partnership with JoEd Tracks, a music house in nearby Ossining, N.Y.

"I don't want to run a fully commercial studio," Roberts says. "The studio is in my house, after all. I'm looking for a blend of corporate and private clients. Things in the music business are shifting to independents. I have a great band I'm working with called Torque, and I'm handling the project as a record company might: full packaging, duplication, the works." Roberts is also negotiating development deals with new artists, working with some on spec and others with firm commitments.

Though his background is one of traditional 2-inch-format recording, he's adapted to the ever-changing world of modern techniques. "I'm not willing to look back," he says. "You have to look forward to keep current and competitive." ■

Josh Max is a Manhattan-based writer and performing songwriter and musician whose work appears in the New York Times, Newsweek, the New York Daily News and assorted magazines and newspapers. Visit www.JoshMaxsOutfit.com.



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“Heartworn Highways”

A DVD Tribute to Outlaw Country’s Pioneers

By Rick Clark

During the early 1970s, while rock music was shooting for the arenas and pop was entering a seemingly committed phase of disposable one-hit wonders, there was a group of singer/songwriters fueled by the creative explosion of the '60s, and yet with a deep connection to the American roots music forms of traditional country, folk and blues.

Movie director James Szalapski caught on to this emerging movement at the time and, through introductions made by a young stand-up bassist named “Skinny” Dennis Sanchez, began an odyssey that would lead him from L.A. to Austin, Texas, to Nashville. Along the way, Szalapski would meet Guy Clark, Townes Van Zandt, David Allan Coe and a host of other characters. Charged by what he saw, Szalapski eventually hooked up with Graham Leader in Paris, who became the producer for *Heartworn Highways*, the best documentary ever made to chronicle the early days of some of the most important and influential artists of what many people now call Americana.

In a 1996 interview with Thomas W. Campbell, Szalapski (now deceased) stated that what made making this movie a compelling idea was the observation that there were all these singer/songwriters and musicians who had gone to L.A. and

New York and “discovered it wasn’t where they belonged. Their roots were in the South, and they had an emotional connection to their grandparents’ generation there.” Szalapski pointed out that Nashville’s Music Row, at the time, was “very rigid” and “all of the songs were sounding the same,” while these young renegades were looking back to a time and a sensibility that wasn’t invested in formulaic music.

A number of these young artists were also gravitating to Austin. From Szalapski’s point of view, “Austin kinda became the capital for this new music.” The highway between Austin and Nashville is a thread that runs through the film, primarily courtesy of David Allan Coe’s tour bus and concert footage with Charlie Daniels.

“It is a generous film that is intimate and quiet in its own way, and it lets the music and the characters speak for themselves,” says producer Leader. “In terms of the music and the musicians, the film really wears its heart on its sleeve.”

The movie was originally supposed to be titled *New Country*, but before the release, the media was inundated with an



ad campaign for a yogurt called New Country. So the film was momentarily renamed *Outlaw Country* before settling on *Heartworn Highways*. The word “heartworn” was coined by film editor/assistant director Phillip Schopper.

The production came together in a loose, organic fashion, recalls Steve Young, who was about to record his solo debut for RCA at the time. “It was very casual, as everything was at the time. Somebody just announced to Guy [Clark], ‘You know these guys from Europe... they just want to shoot some film while we sit around and do what we usually do. We’re going to invite some people over, so why don’t you come over?’” says Young. “It just sort of got started that way and took its own life and gained some momentum.

“For this lost group of which I am always considered to be a part of, there were these sort of home fronts—you might call them—that popped up from time to time,” Young adds. “The main one was Guy and Susanna Clark’s little house out in Mount Juliet, Tennessee. They had that old, family-like home-and-hearth fire-

—CONTINUED ON PAGE 76



David Allan Coe and band making a pit stop on their way to a Tennessee penitentiary performance

“Roy Orbison’s Greatest Hits” Career-Spanning Performances on DVD

By Barbara Schultz

The late engineer/producer/rock 'n' roll pioneer Sam Phillips said, “There’s music in voice. If you feel it and it’s a part of your spirituality, there is nothing as beautiful as the human voice.” Certainly, it’s hard to think of anything more beautiful than the voice of Roy Orbison, one of Phillips’ discoveries in the days of the Memphis Recording Service. Orbison’s career spanned more than four decades, and his voice just seemed to get better and more poignant as the years passed.

“No matter what period of his life he was in, he just had a voice like a bird,” says engineer Noa Lazerus, “and all of the live performances are so impressive because he’s so present, with that mysterious operatic voice that he had in rock.” Lazerus is one of the engineers at Chace Productions, where the audio for *Roy Orbison’s Greatest Hits* DVD was recently produced. The disc includes film of performances dat-

ing back to the '50s and on through Orbison’s career, culminating in the '80s with footage from the artist’s famed *Austin City Limits* appearance and the *Black & White Night* live album

produced by T-Bone Burnett. The performances are interwoven with tape of Orbison speaking to a camera, relating tales and memories from his career. It’s

—CONTINUED ON PAGE 79



The Chace Productions crew, from l to r: David Hunter, stereo programmer; Michael Werckle, project coordinator; Greg Faust, mixer; and Noa Lazerus, restoration mastering engineer

Facility Spotlight

Scorpio Sound—Off the Beaten Track

By Maureen Droney

Tucked away in the hills above Hollywood on a winding street in Laurel Canyon is Scorpio Sound, a boutique music and sound design shop involved in everything from games to feature films.

Just off the crunch of a project for Atari’s *Terminator 3: Rise of the Machines* game, owner Greg Hainer took some time out to explain the myriad services the company offers. The *T3* sessions are a good example; for the game’s introductory cinematic sequence, which showcased at this year’s Electronic Entertainment Expo, the company handled sound effects and design, voice-over recording and editing, Foley and final mixing. Scorpio also did SAG casting, recording and editing for *T3*’s in-game dialog voice-overs.



The Mesa Room, one of Scorpio Sound’s two Mackie-equipped 5.1 suites

Hainer, who’s garnered four Golden Reel Awards, including for Disney’s animated feature *The Hunchback of Notre Dame*, Sony’s *Black Hawk Down* and

Paramount’s *We Were Soldiers*, was working as a freelance sound designer when he founded Scorpio Sound. Now, the facility encompasses two main stu-

dios, lounges, and several design and editing suites, all housed in three structures, one of which was originally built in the 1920s as a weekend hunting lodge for Hollywood's elite.

"Building the studios was a big risk," Hainer admits. "When I moved in, there was light coming through the holes in the



Scorpio Sound's owner/creative director Greg Hainer (left) and composer Henri Yonet

roofs, no air conditioning or heat. But I liked the funky vibe. I also liked the fact that, while, strategically, it's only a few minutes to both the Valley and Hollywood, creatively, the environment feels very far away. Laurel Canyon is pretty historic, musically speaking; musicians from Jim Morrison and Jimi Hendrix to Joni Mitchell have lived here. And there's lots of local talent—many of them our clients—right in the neighborhood."

Original music composition is Scorpio's main focus, but voice-over work is also a mainstay of the business. Something unique the company offers is a package that includes booking, union paperwork and payroll for sessions. "It's often difficult for companies to get consistent voice-over talent," Hainer comments. "Often, they don't understand all the logistics and paperwork involved. We have access to the greatest voice-over people in Hollywood, and as a SAG signatory, we can process the paperwork and take care of the headaches for them. That also helps our relationships with the talent."

One of the studio's recording spaces was designed with Foley in mind, with a floating floor and multiple floor surfaces. "We do larger Foley sessions on the big stages," Hainer explains, "and just bring it back here for editing. The smaller sessions we do here. We often fight to get Foley on our sound design projects because it adds such character. Clients often think it's too expensive, but that's something we can help with. Doing it

here, we can keep the quality up but also be economical."

Scorpio's business comes from many sources, from overall game producers to audio producers, agencies, production companies, composers and sound editors. "A lot of boutique sound design companies have been wiped out by all of the recent consolidations," Hainer notes. "Our attitude to other companies is to show how they can outsource to us. We can work with them rather than compete with them. Things have changed dramatically in the film, advertising and music businesses, and in the past year, big changes have hit the gaming industry, as well. We've banded together and created new alliances with people who work both on- and off-site to keep the workflow up."

The various rooms in the complex are tied to each other and to Scorpio's sound library via a central server. Although Pro Tools and Logic Audio are part of the setup, from the beginning, Mackie equipment has been central to the studios. Both main studios are fitted with Mackie D8B mixing consoles, HUI controllers, HDR 24/96 hard disk recorders and Mackie 5.1 THX-approved surround speaker systems. Hainer notes: "We designed the studios to be able to switch very quickly between writing music, recording sessions, creating sound effects, mixing and synching to all kinds of picture."

Besides *T3*, other recent gaming projects for Scorpio have included original music and sound design, voice-over, editing, orchestral recording and 5.1 mixing for the cinematic sequences in *Brute Force*, 40 original hip hop and funk music cues for Sony's upcoming *NBA ShootOut* and voice-overs—featuring the original cartoon cast—for the *Rugrats Meet the Wild Thornberrys*.

"Our goal is just to do good work and hope that clients keep asking us to do more," Hainer concludes. "We're not the guy in the garage and we're not the corporate guy, but we're a bridge between them and we provide solutions for the corporate side. There's an obvious synergy going on between media these days. Our talent and experience position us right at the center of the recent convergence of records, film, television and games."

"Heartworn Highways"

FROM PAGE 74

place kind of thing going on, where you kind of felt, 'I might not be a part of anything else but I'm certainly a part of this.' There might have been a lot of self-destruction and a lot of addiction, but still, there was some kind of warmth in there. I do think that it was truly an artistic bohemian kind of thing, and it was sort of the opposite of Music Row and any corporate endeavor."

Compared to much of the stuff that Music Row was cranking out at the time, the music on *Heartworn Highways* shows that this group was pulling out many songs that would later become classics. Twenty-five years later, the chasm between commercial mainstream Music Row and Americana music's insurgent upstarts looks and feels just about the same.

"We were all doing the best that we could. We were trying to make [songwriting] more than moon, June, spoon," says Clark, who in many ways was a focal point for the movie.

Besides presenting the original film, the DVD has extensive bonus material, including stellar footage of performances by Van Zandt, John Hiatt, Clark, Charlie Daniels, a rail-thin Steve Earle and the often overlooked Richard Dobson.

"I think that the storytelling talents of some of these writers is spectacular, like Guy Clark," says Leader. "His performance of 'Desperadoes Waiting for the Train' may be the best thing on the whole DVD. If you really listen to 'Desperadoes' and what that song is about, it absolutely breaks your heart. There is so much great stuff in this movie throughout, and the musicianship is fantastic."

When the opportunity came to restore the movie for DVD, Schopper realized that if they waited any longer, the film might be too deteriorated to save in color.

"The colorist and I judged this 35mm negative as already suffering some serious fading," he says. "If we hadn't done it now, we both thought that in about two years, it would just look so bad that there would be no alternative but to just do black-and-white. We caught it just at the right time. The DVD has sort of saved the movie forevermore."

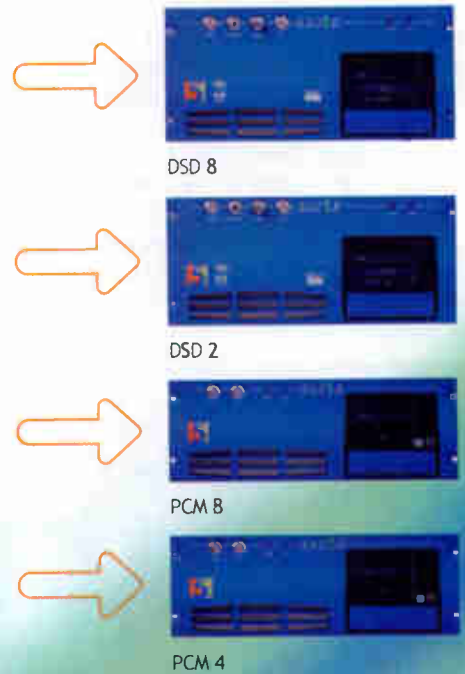
"We had begun restoration at the end of January 2003, but we had to go down to Nashville and dig through the cans of the original 16mm material," he adds. "One of the hard parts these days is finding an editing room where you can real-

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ly work on film. Nowadays, you work on an Avid machine or Final Cut Pro and you edit on computer and don't touch film anymore, so it is kind of hard to find the film equipment. Fortunately, I did."

The audio elements of *Heartworm Highways* include stereo and mono interviews and performances. Renowned feature film audio mixer Lee Dichter (*The Hours*, *Bowfinger*, *The Shipping News*, *Men In Black*) of New York-based Sound

One originally did the mix in 1978. At the time, Dichter was mixing commercials at his father's facility, Photo Magnetics Sound Studios.

"I mixed this project on a mono console, so we jerry-rigged it up to do stereo," says Dichter. "We hung two speakers and did a discrete left/right mix. It wasn't mixed through the Dolby left/right system, so we had more separation, and when you hear this, you really hear dif-

ferent parts of the instruments coming out of the different speakers. It is stereo, but in some places, it folded into mono because we didn't have stereo material. We tried to do it as smooth as we could have at the time.

"There was one recording studio scene early on in the movie, where they cut to the control room, and the mixer behind the console [a young Brent Maher] pushes some cue buttons. We actually cut from stereo to mono and then back to stereo again," Dichter says with a laugh. "It is probably something that we would never do now, but it was so early in my training as far as stereo was concerned. We broke the rules. It was fun. We did what we could with what we had. Some of the interviews were stereo, while some were mono. For the mono, we tried to stereo-ize it by splitting the equalization into different speakers to get more of a stereo feel. When we couldn't do that, we stuck with mono. Most of the performances we had were stereo tracks, but we somehow rigged it up to where we could get different instruments moving around the speakers to widen things up."

Concerning the film's ongoing exposure, Leader states, "We're aiming to do a



Film editor/assistant director Philip Schopper recording Townes Van Zandt's neighbor (and drinking buddy) blacksmith Seymour Washington

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fairly major screening at South By Southwest [music conference], like the one that we did at the museum in Nashville. We are hopefully going to do a concert with all of the musicians in the film later on next summer. The idea of this film is that it should be like a sustained release and not just, 'Let's just hit the stores before Christmas and grab what we can.' This is really a valid historical document and a film worth seeing that has been long buried."

In the meantime, anyone who loves Americana music, great outlaw country or smart folk-influenced singer-songwriters will find *Heartworn Highways* a consistently rewarding  DVD to have in his or her collection.

Roy Orbison

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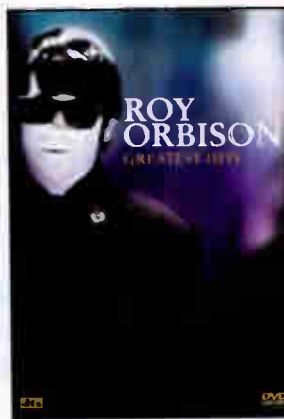
a fan's dream but a post engineer's nightmare: Sources ranged from multigeneration dubs of kinescope tapes from the '50s, to Elliot Scheiner's surround remixes of multitrack music, and most everything in between.

One of the elements the team at Chace had going for them was the spoken-word footage. "It tells a great story," says Chace president Bob Heiber, "but it separates the musical numbers. Your ear is allowed to enjoy each cut on its own and not have to worry about taking a cut from 1960 and having it segue right into something Elliot mixed from 1985."

However, individual tracks still posed their own challenges, especially a performance of "Blue Bayou" that the DVD producer, Cass Paley, first brought to Chace in the late 1990s. "He had some concert footage that had been shot in Australia on PAL and been converted to NTSC," recalls Heiber. "And it was very flawed with a very serious amplifier hum throughout the recording, which actually modulated with the movement of Roy Orbison on the stage. If he moved his guitar, it changed frequency. So, five years ago, we did a test and we were modestly successful in removing the hum. Within Sonic Solutions, we did a very extensive mapping of the different primary frequencies of the hum and then its harmonics.

"We set up a filter set for the different portions, depending on where the hum was most intense," he continues. "But they were not dynamically tracked filters, so they didn't change with the frequency. We

identified about 50 key frequency notes, and you could change the filter set from one setting to another, but in that small portion where it actually morphed—you might say, 52 to 53 Hz—you really couldn't capture it. But five years later, when we had the technology to resolve it, we had this road map, if you will, of the problems we needed to solve."



This job fell to Lazerus, who uses Cube-Tec's AudioCube workstation—which combines Steinberg Nuendo and Cubase technology with WaveLab's virtual music recording mastering tools—to clean up tracks. A former music-recording engineer whose credits include a Grammy™ for his contributions to Donald Fagen's *The Nightfly*, Lazerus relishes the op-



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portunity to work on music for picture. However, he, too, says that "the 'Blue Bayou' buzz was horrendous. It starts with the low 'vvvvvvv,' but then rises enharmonically, being constantly affected by whatever changing electrical and lighting situations were taking place onstage. And they have these breaks where the whole band stops because there's a little background vocal part, and then the band starts again. In that hole, all you hear is 26 tones of buzz.

"With the AudioCube, I did a wide number of passes at these sections, and then I focused on the quiet sections where you could hear it so strongly," he adds. "I tried to do a little bit at a time, slowly chipping away at it. I suppose an analogy would be like archaeology: You find the skeleton, but you don't just whip it out of the ground; you slowly uncover it and remove it. I used a broad amount of tools, and the moment I felt like the track was suffering, I backed away and tried to think of another way to approach it. If you're trying to remove midrange buzzing, that's also probably going to affect a voice. I feel like I had good fortune and was able to clean it up so you can't hear the buzz in those quiet sections."

From Lazerus, the various tracks were transferred to engineer Greg Faust, who created 5.1 mixes on Chace's Sony DMX-R100 console. His room, across the hall from Lazerus', is equipped with THX-approved Apogee surround monitoring. He says that he took different approaches to the surround mix of different tracks to be respectful to the original material. "Making a 5.1 mix is not just about adding reverb," he says. "We don't change things to make them sound like they took place in a bigger room or try to make older recordings sound modern." On the Scheiner mixes, only a moderate amount of EQ was done to match levels.

"If you listen to Scheiner's mixes of 'Claudette,' it's a really active 5.1 mix," Heiber says. "It's really rockin'." His mix of 'Oh Pretty Woman' is more conventional: 'You're in the audience, we're up on the stage' kind of thing. Elliot experimented with different styles of how 5.1 music should be presented for DVD-Video. Then you have us at Chace, who have to come in to mix some stereo and some mono material and come up with an aesthetic presentation that fills a room. Yet we don't want to be gimmicky, swinging around the room and having it pop around to different speakers. Not that we couldn't do it. It just doesn't seem to play properly. The sound has to support the picture." ■

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World Radio History

Sex Pistols



Sex Pistols frontman John Lydon

Photo and Text by Steve Jennings

Marking the 25th anniversary of their American invasion, the Sex Pistols played San Francisco's Warfield Theater. Interestingly, their last show before breaking up was in San Francisco at the historic Winterland Auditorium. At FOH mixing the band is Jimmy (Hootsie) Huth.

"I've got an XLR mixer with 16 inputs. It's so straightforward, it's my favorite thing. These guys are all on wedges; they're pretty old-school with the sounds. It's the smallest backline setup I've had in years, with two Marshall cabinets, two bass cabinets and a four-piece drum kit."

Huth's miking scheme comprises Shure Beta 58A with a wireless UHF unit for John Lydon's vocal and 58s down front for left and right backup vocals. Drums are miked with a Shure Beta 91 and Beyer M-88 on kick, 57s for snare (top and bottom), and Audio-Technica

ATM25s (toms), 4047s (overhead) and 4033 (hi-hat). Kick and toms also have Aphex 9000 Series gates. Huth only uses a Summit DCL200 compressor on the vocals, a few effects units, delay, reverbs and a couple of Yamaha SPX990s.

"We're carrying a full Showco monitor rig, but we have no FOH racks and stacks, so every day is a rental. I get everything out there, mostly V-DOSC and VerTec gear lately."

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Six-time TEC Award-winner Robert Scovill has done thousands of shows and recordings for acts such as Def Leppard, Rush, Matchbox 20, Jackson Browne and Tom Petty & The Heartbreakers. Visit his record label at www.backstage-records.com and recording studio at www.musicanvas.com.



"Here's a useful tip for FOH or monitor engineers (especially with in-ear mixes), as well as broadcasters.

Take your trusty noise gate (switched to ducking mode) and insert it in-line with the audience mics you're sending to the performer's in-ears or blending with your nightly 2-track recording or broadcast. Now, set up a mix that's primarily the band and use an aux bus to send it to the unit's key input. Set the gate's key source to 'external' and make sure it's set to 'duck,' not gate. You may have to 'exercise' the switch; it's probably never been used! Use medium to slow attack and release time and set the range to about 6 to 9 dB. This results in an extra pair of 'hands' that drops the audience level 6 to 9 dB in your in-ear mix (or recording) by decreasing the level *only* when the band's playing and raising it when the band *stops*. It's no different than you would do manually while mixing, but the speed and depth of the moves are automatically dictated by the attack, release and depth controls."

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News



Izzard brings razor-sharp timing and Sennheiser's 300 Series mic to the stage in Sexie.

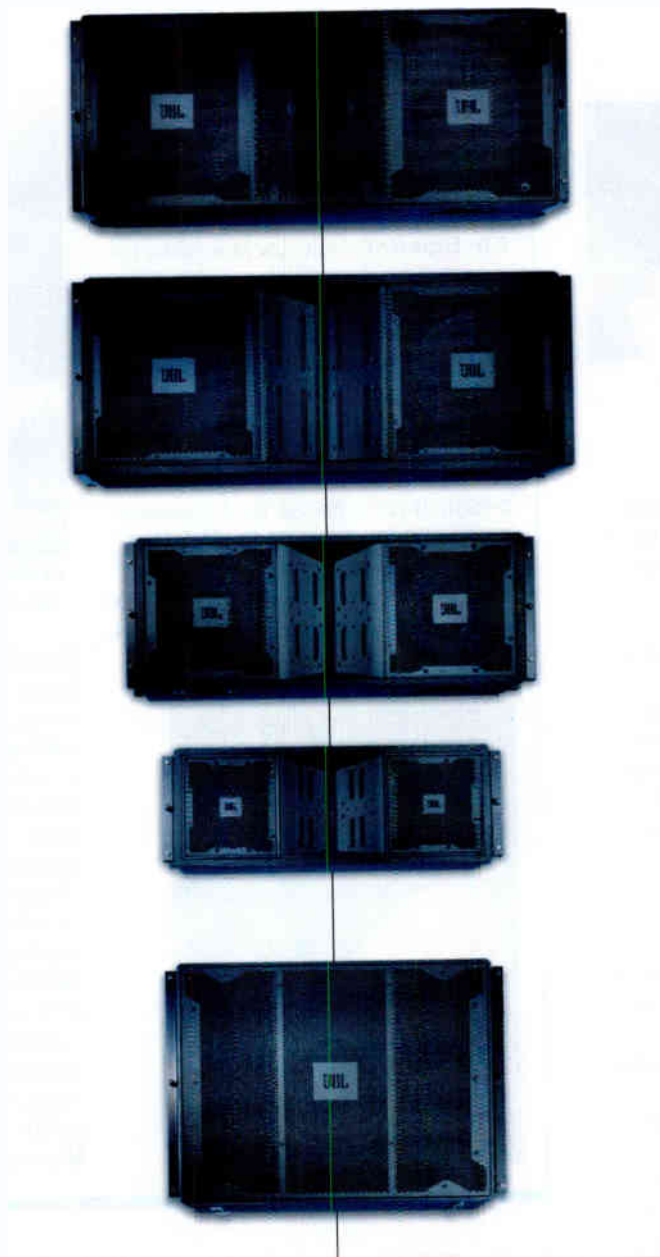
Comic **Eddie Izzard** hit the road on a world tour with his new one-man show *Sexie* using a **Sennheiser Evolution Wireless 300 Series** mic with an **865** capsule...In preparation for its upcoming centennial celebration, Chicago's **Orchestra Hall** purchased two new **Soundcraft** consoles: a 32-channel **k3**

Theatre (FOH) and 40-channel/20-bus **SM20** (monitors). The new gear will reinforce the venue's sound during seasonal pops and jazz events...The **KROQ** crew outfitted this year's Inland Invasion event (Devore, CA) with a **Midas Heritage 3000** and **XL4** using **Crown 5002** amps (FOH); a **Yamaha PM4000M** and a **Midas Heritage 3000** (monitors) with **Crest 7001, 4801, 4601** and a **QSC PL 2.6** rounding out monitor world...The **Grand Ole Opry** (Nashville) will receive a new **ATI** custom-manufactured, 64-input **Paragon II Production** console by Gaylord Entertainment Center...The **Actor's Playhouse at the Miracle Theatre** (South Florida) installed a 48-input **Allen & Heath ML5000 27-bus**

VCA console...Just in time for mixing a **Hank Williams Jr.** and **Trace Adkins** show, **Custom Audio & Lighting Inc.** (Abbeville, SC) purchased **18 L-Acoustic V-DOSC** line array loudspeakers, **12 SB218** subs, four **dV-DOSC** cabinets and **20 LA Series** amps...**Zumanity**, **Cirque du Soleil's** latest production, used **LCS' CueConsole™ 2** and **CueStation™ 4**. The system was installed by **Pro Sound** (Las Vegas).



Actor's Playhouse head audio engineer Alexander Herrin operates their new **Allen & Heath console**.



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PHOTO: STEVE JENNINGS

On the Road

Maxie Williams

This Mississippi native has engineered monitors for the likes of Staind, Guns N' Roses, Marilyn Manson, Stone Temple Pilots and countless others.

After Staind, was working with Seal a juxtaposition?

It was different, but nothing I couldn't adjust to. There were no live instruments onstage at all with Seal. The only thing you could hear was his vocal. It was quiet, amazingly quiet. On the live shows in Europe, I mixed on a Heritage 3000 a good portion of the time. But in the U.S., I was changing consoles every day.

It took a lot of concentration on my part, because he listens to a mix that includes his band and a lot of Pro Tools. That was fun and challenging.

With that kind of staging, I assume you were using in-ear monitors.

I had Seal on a Shure PSM700 system with Ultimate Ears UE7s. The band had four stereo mixes on PSM600s, also using UE7s. With Shure's new PA821, I could combine the output of all the transmitters with a single antenna.

You have a reputation for pleasing tough acts. How do you do it?

When I do soundchecks, I walk the deck and see, hear and feel what the artist does. He or she may not hear a lot of ambience, but there are other things: the feeling of the guitar rig, or drums and cymbals bleeding through. Once I understand their world, I know what to do in mine.

What do you do when you're not on the road?

I live on six acres in Canton, Miss. When I come home, the cell phone gets put aside and the motorbikes come out. I have four dirt bikes, a '93 Harley-Davidson Low Rider and an '03 custom chopper.

Now Playing

Norah Jones

Sound Company: Audio Analysts
FOH Engineer/Console: Lee Moro/Midas Heritage 3000

Monitor Engineers/Console: Brett Dicus, Ryan Cecil/Midas Heritage 3000

P.A./Amps: 16x Meyer Sound MILO, 4x M3D subs, 4x 650P subs, 6x M1D, 6x CQ2

Monitors: Audio Analysts 12 FR, Sennheiser SR300 IEM

Outboard Gear: BSS Soundweb, Varicurve, DPR901, DPR201, DPR404 Quad Compressor; Drawmer DS 201, 6 Pack; TC Electronic M5000; Lexicon 480L; Eventide H3000; Summit DCL 200
Mics: Neumann KMS 105, KMS 140, SKM5000 with KK105, TLM193, E865, E602, E604, Sennheiser Evolution 500 Wireless Series



PHOTO: STEVE JENNINGS

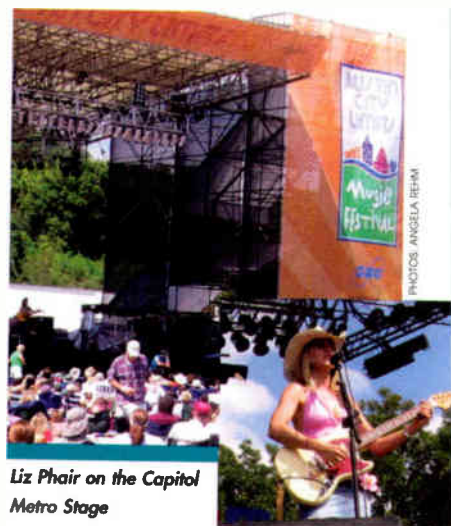


PHOTO: ANGELA REINA

Liz Phair on the Capitol Metro Stage

Austin City Limits

Sound Company: Big House Sound, Dallas Backup, LD Systems, Music Lab

FOH Engineers/Consoles: Rod Nielssen, Bobby Filorwicz, Adam Fortin, Brian McCrory, Chris Payeur/Soundcraft Series 5, MH3; Mackie 40.8; Yamaha 3500, GA32

Monitor Engineers/Consoles: Chandler Merritt, Brendan Ryan, Mike Mizell, Norman Stallings, Jeff Tucker/Soundcraft SM20; Yamaha 3210 II, 3500M

P.A./Amps: Crown Macro-Tech

Monitors: Adamson MX12i wedges, MH225/B218 sidefills; Big House Sound BH12-2; EAW SM-200i

Outboard Gear: BSS Soundweb, VariCurve with remote; Yamaha 990 and Rev7; TC Electronics D2 and N1

Mics: models from Shure and Sennheiser

L.A. Philharmonic Hosts Grand Opening

Celebrities and socialites celebrated Hollywood-style at the long-awaited October opening of the Walt Disney Concert Hall in Los Angeles. Recording the L.A. Philharmonic with conductor Esa-Pekka Salonen for the three-night gala was Dave Hewitt's Remote Recording Services. Programs—which ranged from the "Star Spangled Banner" and Stravinsky's "The Rite of Spring" to a pops extravaganza—were emceed by Tom Hanks and Catherine Zeta-Jones and featured the themes from *Close Encounters of the Third Kind*, *Planet of the Apes* and *The Magnificent Seven*. The performances aired in simulcast on NPR radio and were later re-broadcast on KCET public television.



Behind Remote Recording's Neve VR console were (l-r) Pro Tools operator David Channing, engineer Bill King, producer/engineer Jay Saks, chief engineer David Hewitt and stage assistant Tim Boot. Not pictured: tech manager Phil Gitomar and studio manager Karen Brinton

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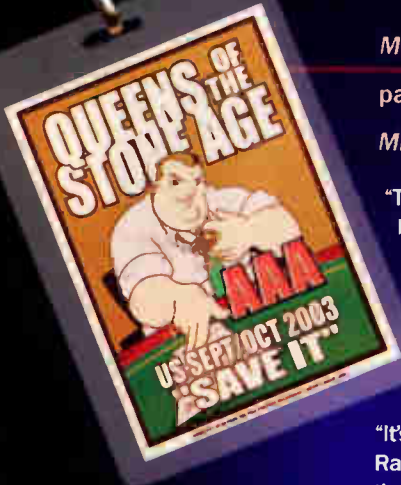

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QUEENS of the STONE AGE

Mix caught up with Queens of the Stone Age when they hit California's Warfield to a packed houses of new and old fans. The band was in high gear and so was the audience.

Mix spoke with FOH engineer Hutch and monitor engineer Matt Field about the show.



"The Queens are one of the best rock bands on the planet. The source of my sounds are great, and that makes my job a lot easier. The P.A. we're using is provided by Rat Sound," says FOH engineer Hutch. "It's V-DOSC with front-loaded Rat cabinets with two 18s in them for our low end. We have been playing a wide variety of venue sizes, so the amount of boxes really changes. We're 'bottom feeders,' and I usually double the low end provided in most house rigs. We're extremely loud onstage and I need infield fills to give the kids something other than guitars. Rat makes a great low-profile

horn that really kicks butt. Four of these across the front make a big difference.

"I'm using an old Midas board with 30 inputs, half-a-dozen effects, subs and infields on auxes; it's pretty straightforward. I'm not a book-smart engineer: I'm really the anti-tech. I'll try things for the sake of trying, even if it's not common practice. Sometimes, you discover new things this way.

"Across the front end, I'm using a Fatso Jr., vocals get Distressors; I have an old [DeltaLab]

Effectron with jammed buttons that gives me a great vocal double; Eventide for my tripped out effects; TC stuff for echoes; my reverb is a Demeater Spring, [dbx] 1066s for drums, [dbx] 160s for bass; and on my guitars, Little Labs' IBPs: They're an amazing sweepable phase adjustment, and when double mics are used, it allows you to find the sweet spot without physically moving the mic."

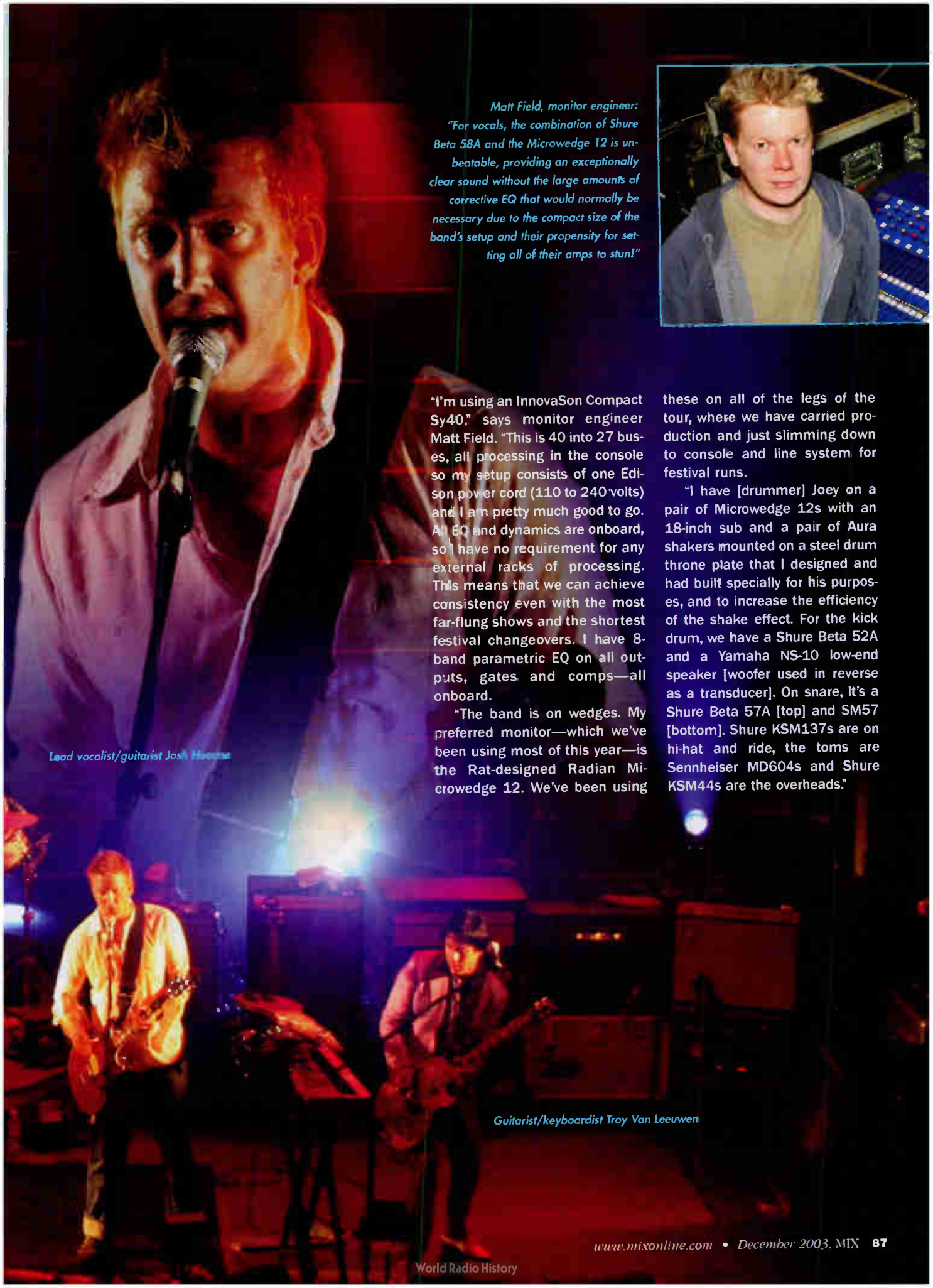


FOH engineer Hutch



Drummer Joey Castillo

Bassist Nick Oliveri



*Matt Field, monitor engineer:
"For vocals, the combination of Shure Beta 58A and the Microwedge 12 is unbeatable, providing an exceptionally clear sound without the large amounts of corrective EQ that would normally be necessary due to the compact size of the band's setup and their propensity for setting all of their amps to stun!"*



"I'm using an InnovaSon Compact Sy40," says monitor engineer Matt Field. "This is 40 into 27 buses, all processing in the console so my setup consists of one Edison power cord (110 to 240 volts) and I am pretty much good to go. All EQ and dynamics are onboard, so I have no requirement for any external racks of processing. This means that we can achieve consistency even with the most far-flung shows and the shortest festival changeovers. I have 8-band parametric EQ on all outputs, gates and comps—all onboard.

"The band is on wedges. My preferred monitor—which we've been using most of this year—is the Rat-designed Radian Microwedge 12. We've been using

these on all of the legs of the tour, where we have carried production and just slimming down to console and line system for festival runs.

"I have [drummer] Joey on a pair of Microwedge 12s with an 18-inch sub and a pair of Aura shakers mounted on a steel drum throne plate that I designed and had built specially for his purposes, and to increase the efficiency of the shake effect. For the kick drum, we have a Shure Beta 52A and a Yamaha NS-10 low-end speaker [woofer used in reverse as a transducer]. On snare, it's a Shure Beta 57A [top] and SM57 [bottom]. Shure KSM137s are on hi-hat and ride, the toms are Sennheiser MD604s and Shure KSM44s are the overheads."

Lead vocalist/guitarist Josh Hoveine

Guitarist/keyboardist Troy Van Leeuwen

R.E.M. AND Wilco

Request Lines Open for Long-Awaited Tour

When college rock trailblazers R.E.M. wrapped up their last tour in 1999, it was almost the end of the world as *they* knew it, to paraphrase their apocalyptic radio hit. Despite selling more than 40 million albums in their 20-plus-year career, lead vocalist Michael Stipe, bassist/key-

his work with industrial band Ministry, joined the original threesome and multi-instrumentalists Ken Stringfellow (The Posies, Big Star) and Scott McCaughey (Young Fresh Fellows, Robyn Hitchcock) for a 22-song set culled from their past 13 albums, including two new tracks from *In Time*: "Bad Day" and "Animal."

For this tour, fans could submit song requests through www.remhq.com, which the band later used to determine each night's set list. As a result, the chilled, but appreciative crowd at Shoreline Amphitheatre in Mountain View, Calif., heard a hand-picked mix of well-worn radio favorites ("Losing My Religion," "Man on the Moon") and more obscure cuts ("Welcome to the Occupation," "Country Feedback").

Engineer Jo Ravitch, a 23-year Clair Bros. veteran, held the FOH position after working as the band's system tech since 1989. Ravitch was joined by Clair Bros. monitor engineer Frank Lopes, and together, they took an organic, "less is more" approach when mixing the show.

Ravitch, whose credits include stints with U2, Rush and Elton John, worked on a 48-input Midas XL4 console. "It's a very warm, clean-sounding analog

board," Ravitch says. He used 40 channels for instruments, eight for effects. He also bypassed the Midas' automation system in favor of a more hands-on approach. "I enjoy being able to just lay my hands on the board, twist the knobs and do it." Ravitch says. "The band has more than 120 songs, and if I had to scroll to a setting for every one of those songs, that could take [awhile] and we don't have a lot of time.

boardist Mike Mills and guitarist Peter Buck nearly called it quits, bogged down by intraband tension and the 1997 departure of drummer Bill Berry. But rather than sever all ties with one another, the trio reconciled, recommitted and, most recently, set out in support of their greatest hits compilation, *In Time: The Best of R.E.M., 1988-2003*.

Drummer Bill Rieflin, best known for

Wilco vocalist/
guitarist Jeff
Tweedy is miked
with Shure SM58
(vocals) and
56A (guitar).

R.E.M. vocalist
Michael Stipe

