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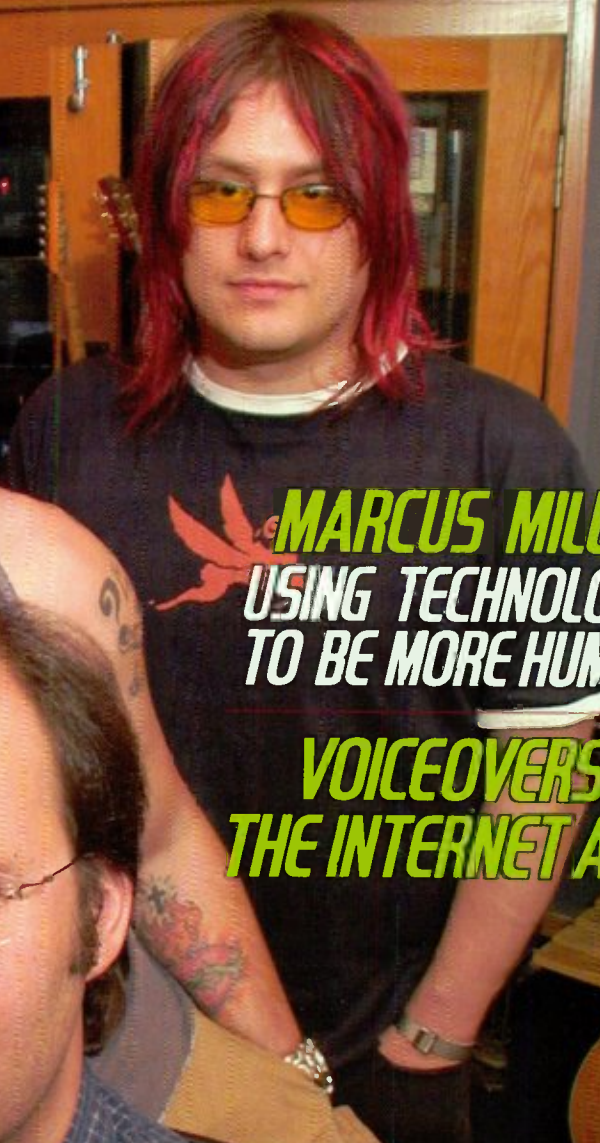
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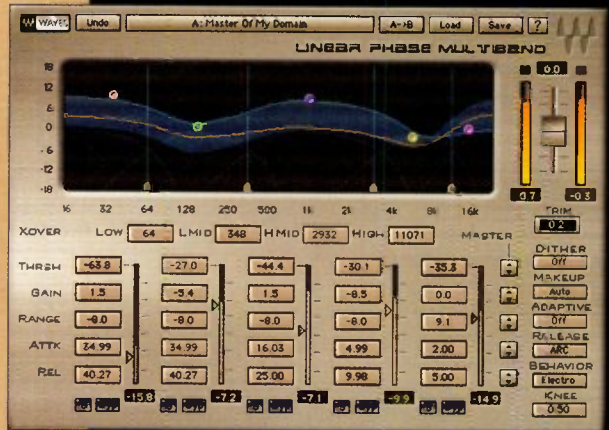
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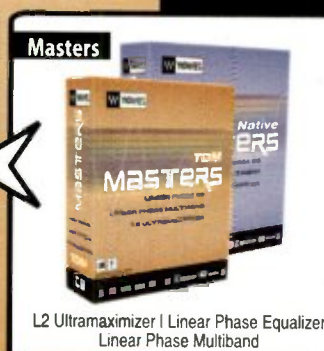
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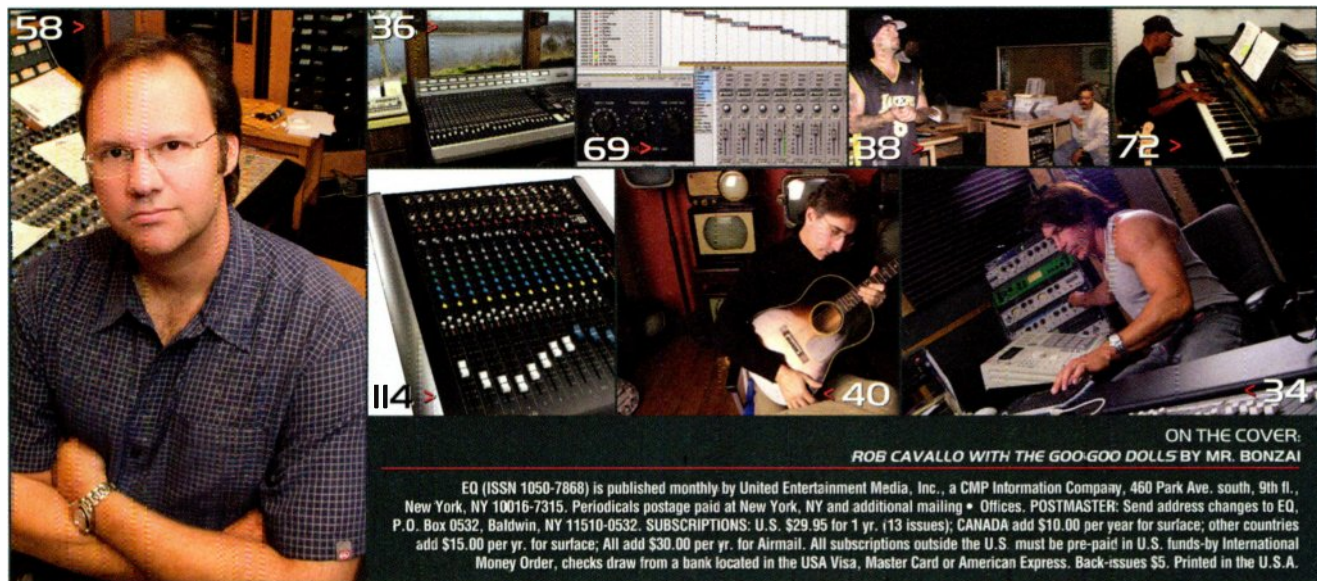


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ROB CAVALLO WITH THE GOO-GOO DOLLS BY MR. BONZAI

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The Ears Have it

As a recording engineer, producer, musician, or even as a music fan, what could be more important to you than your ears? Without healthy, fully functional ears, the audio-rich world we live, work, and play in becomes a much more dismal place.

I was first reminded of this at last fall's AES and this winter's NAMM shows; the House Ear Institute (a private non-profit organization) was offering free hearing screenings right at the shows. I know a lot of attendees took advantage of this service.

I was again reminded of the importance of healthy hearing by a press release the House Ear Institute distributed in late February — a release that summarized their findings at those screenings. No worries if you had your ears tested at the shows; the test results for each individual are completely confidential and private. What the HEI released is a summary of the results from the shows taken as a whole. And those results are pretty eye opening.

At the AES show, the HEI found that 15% of those screened exhibited mild to serious hearing loss. It was even worse at the NAMM show: fully 25% of those tested showed a hearing deficit. Folks, this is scary stuff. This is our industry we're talking about here. If that many musicians, engineers, and producers are losing their hearing, what hope does the world have for better sounding recordings?

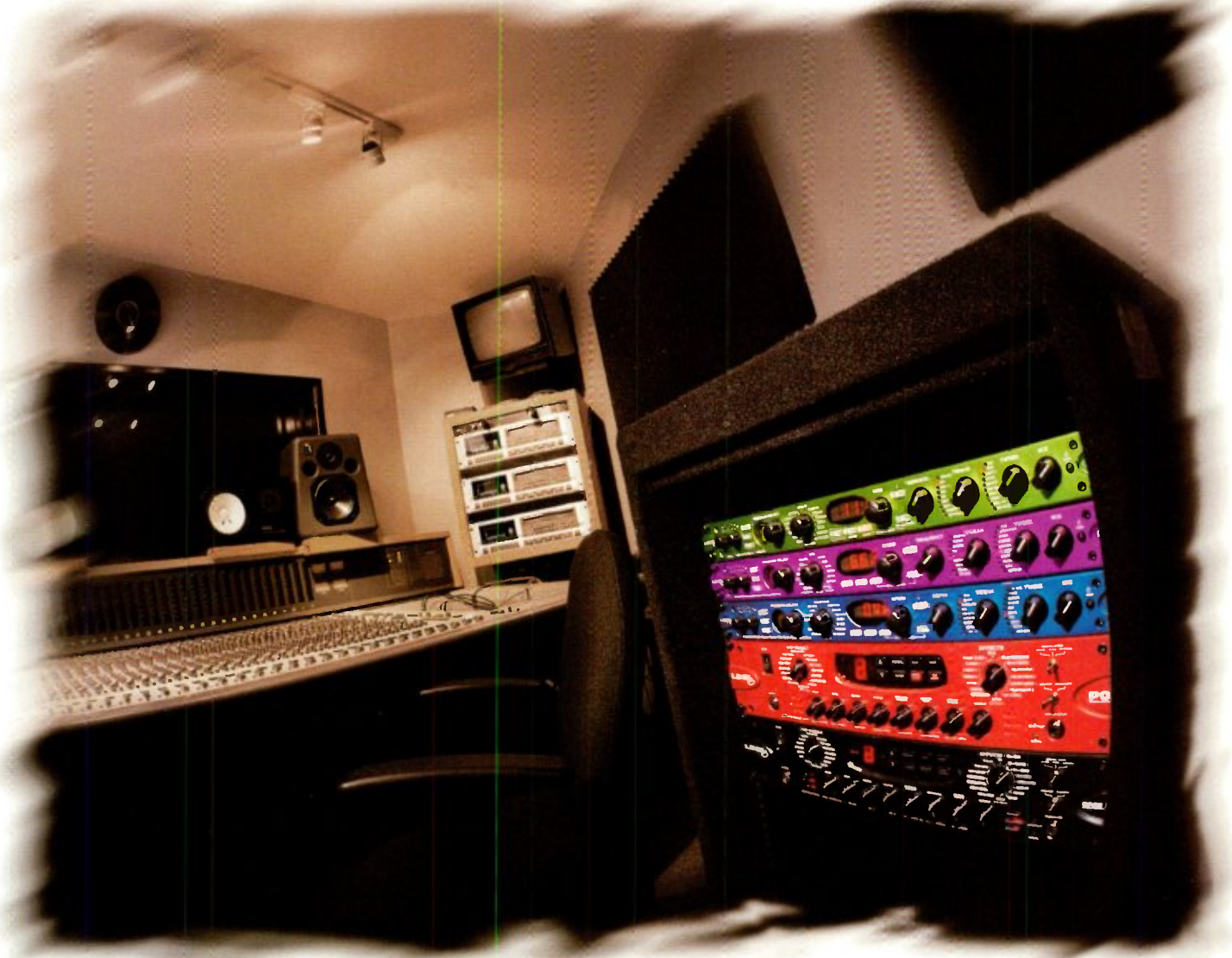
So, hard as it is to admit, mom and dad were right: All that loud music will make you deaf. It's time to take steps to ensure that your ears don't become part of the HEI statistics. Carry a set of foam ear plugs with you at all times — if things get too loud, pop them in. Make sure that you control the monitor level in your studio. Be conscious of how loud you're playing the stereo in your vehicle. If you use a portable CD, tape, or MP3 player with in-ear 'phones, be aware of how far you're cranking it up. If you play in a band, wear plugs and try to control the volume. And get your hearing tested on a regular basis so that you're aware of any hearing damage or problems you may have incurred.

For more information on the House Ear Institute and hearing loss, you can call 213-483-4431 or visit their web site at www.hei.org.

—Mitch Gallagher
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THE RETURN OF EQ on CD?

I've been a subscriber for almost 10 years, and I'm signed up for more. I'm in the military and getting ready to move back to the States. As you can imagine, 10 years of *EQ* (and other music periodicals) stacks up, and I'm simply at a point where I need to cut back on space and weight. Before I spend the next month scanning, cataloging, and burning back issue CDs, I wanted to ask if you'll be providing *EQ* back issues on CD anytime soon for your subscribers (even if it's for a nominal fee).

Darryl Leach
Germany

[At one time, we did offer a CD archive of the earliest issues of EQ, but those are long sold out at this point. We don't currently have plans to offer additional archive CDs for sale, but you will see more and more archival material on our newly re-designed Web site. Pay a visit to EQmag.com and see for yourself! — Mitch Gallagher]

MAKING YOUR MARK

The article in the December 2001 issue written by Jon Chappell concerning consistent miking of acoustic instruments reminded me of an incident very early in my career as a sound designer that illustrates the veracity of Mr. Chappell's article.

In 1987, we were transferring a musical (*Pal Joey*) from the Grand Theatre to the National Arts Centre in

"HEAVILY COMPRESSING MUSIC FILES BEFORE ENCODING THEM FOR WEB USE MAKES THEM SOUND WORSE, NOT BETTER."

—ROBERT AULD

Ottawa, Canada. In theater, the schedule is always tight, and, in a transfer situation, the time is even more critical because you've already done the show and management expects the remount to take no time at all — yeah, right! To save time, I was to stay with the production and do the front of house mix for the run of the show.

The schedule went something like this: Day 1 — LX [lighting] hang, four hours; set load-in and setup, four hours; LX focus, four hours. Day 2 — LX focus finish, four hours; sound load-in (band setup, soundcheck, band rehearsal), four hours; LX levels set, four hours. Day 3 — Tech TBA, four hours; actors on stage rehearsal, four hours; evening preview performance.

As you can see, the lighting department had the majority of the time allotted, but this isn't unusual in our industry, as sound is always the last thing on people's minds. Because we were using the house speaker system, the load-in went very well, and we were in great shape by the end of our call at 5 pm on Day 2. I still had to set levels on three or four SFX tape cues, so I arranged with the head of sound to come in the next morning to be ready for the rehearsal that afternoon. We decided that an hour would be lots of time to perform this little task, and we arrived at 11 am.

Since the actors hadn't changed, I knew the RF mic channels on the console would be close, so I was looking forward to a pleasant day in the theater. At 11 am on Day 3, we entered the backstage area and my heart skipped a beat as I noticed the grand piano was sitting in the wings, stage right. I had been told it would be tuned the night before and I couldn't believe someone had moved it. Not to mention that I was using a stereo pair of 451's in an X-Y array that had taken me a bit of time to place. In this show, the orchestra

was set up on stage, on a riser situated up center, and was an integral part of the production, so I was concerned to see what else had been messed with.

To my horror, the entire riser had been struck and all the gear had been moved to the upstage left corner. This included mic stands, cables, drum kit, music stands, monitors — everything. The snake had been disconnected and the gaffer's tape hadn't even been removed from the cables where we had taped things down. We were left with a pile of cable that was stuck together like a bowl of bad pasta. I quickly went over to the riser to see if anything had been spiked (a term we use to describe exactly what Mr. Chappell's article talks about, *i.e.*, marking every stand and chair leg with a piece of colored tape) and found nothing, not even a dust spot that would help us get things back to where they belonged. To put it mildly, I was upset. Not only at whomever had done this, but at myself for being so stupid. What had happened was that on the previous evening's LX cueing session, the lighting designer realized he had screwed up the focus on the upstage instruments and the only way to get the air ladder in position to reach those lights was to move the band gear off the stage.

The head of sound and I proceeded to break every rule in the union book to get the orchestra set up once again. Luckily, I am a drummer and I had been working with this kit for six weeks, so that part was pretty easy and we had made notes on all the mic positions. In the end we got things pretty close, and I only had one or two musicians ask why things had been moved.

After this episode I started to document everything, and it's something that has served me very well over the years. The more important lesson is that, whenever one works on a project, it is of the utmost importance

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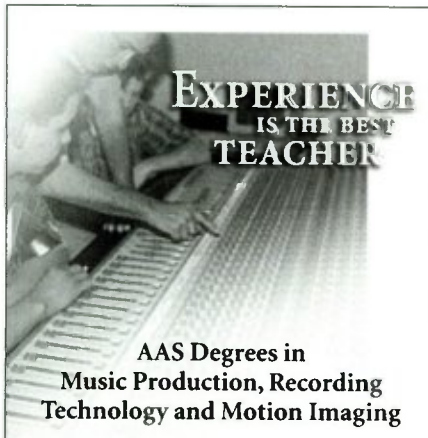


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I know that *EQ* is primarily a magazine that deals with music production, but you would be surprised at how often your articles have guided me in making choices, both technical and artistic.

Jim Neil
Stratford On Canada

SQUASH A RUMOR

In his article, "The Strange Art of Mastering For the Web" [February 2002], Craig Anderton says about preparing audio material for Internet use: "You'll get the best encoding if you start with a signal that has a really high average level, and spends most of its time in the very top (loud) end of the dynamic range." He then describes how to squash typical program material to meet this requirement.

In my experience, this is simply wrong. Heavily compressing music files before encoding them for Web use makes them sound worse, not better. I began to suspect this when I tried encoding files of classical symphonic music, which has a very wide dynamic range. Whether encoded for Windows Media Audio, Real Audio, or MP3, the soft passages of the music tended to sound better than the loud passages. I then set up a test where I took a high-quality recording of some jazz-pop music and compressed it by various degrees. When encoded, the files with no compression sounded the best, and the files with heavy compression sounded the worst.

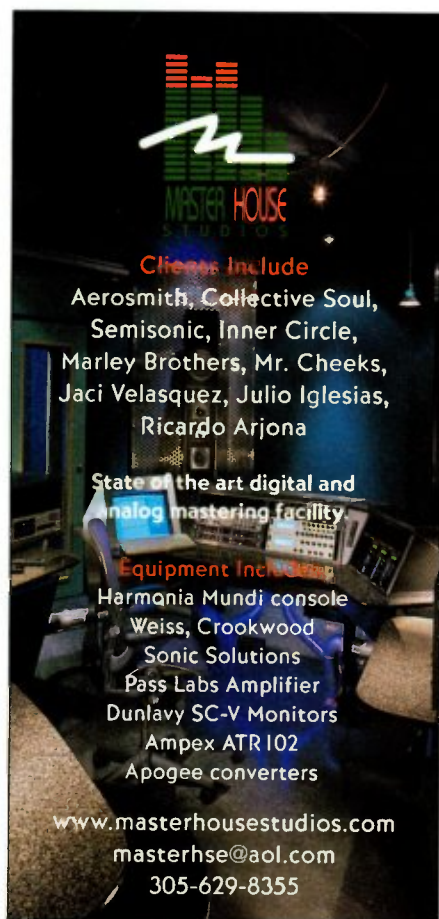
If we think about it, this is actually not too surprising. All of the Web audio compression codecs in common use are capable of producing 16-bit output in playback. For signal encoded at high bit rates, this means a dynamic range equivalent to the compact disc. At lower bit rates, such as those used for dial-up streaming, the dynamic range of each codec deteriorates some, but it is still better than what we get from broadcast radio. We should also note that codec designers often cope with very low bit

rate encoding by lowering the overall level of the signal. This is one way of reducing the number of bits needed to encode the signal, as the encoder interprets the lowered signal to have less dynamic range. Pumping up the volume of your source file can actually work against this aspect of encoding, as the codec is forced to allocate scarce bits to louder program material.

Robert Auld
via Internet

[Actually, except for one place where I mentioned that data compression should not be confused with audio compression, the term "compression" was not used in the article with respect to audio, nor is there any reference to benefits derived from "heavy compression." Personally, I feel heavily (audio) compressed material sounds pretty bad regardless of whether it's data-compressed or not. This is why I specifically recommended using plug-ins such as the Waves L1, or the level maximizers in mastering suites (not the compressors included in such suites), which work in a different way than standard compressors. They act more like limiters, in that they redraw peaks to lower them, and thus reclaim headroom without affecting the dynamics of signals below the threshold. This gives what, at least to my ears, is the best of all possible worlds for data-compressed signals: a high average level (do you really want to spend 10 dB or so on a few transients, forcing the rest of the material into a smaller dynamic range?), yet with decent dynamics. This is also why I recommended not going too nuts with level maximization (as that can get more into heavy-compression territory), and also said, "This doesn't mean you can't encode songs with wide dynamic ranges." You can, but paying attention to restraining rogue peaks to increase the average level dramatically has worked very well for me, especially when preparing files to stream at 8 to 20 kbps. Of course, as you get into broadband-type rates, source material dynamics become less of an issue overall.

—Craig Anderton]



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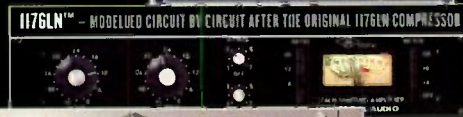
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CD-R AUDIO QUALITY VS. BURNING SPEED

Does a CD-R burner's speed compromise the audio quality of files? I know there is a noticeable difference when burning "audio" CD-Rs (i.e., playable on regular CD players) at different speeds, but what about when it's data (WAV, AIFF, or some other format)?

—Andre, Tokyo, Japan

The quality should not change regardless of burn speed. You're putting the same info on the disc, just at a different rate. The ideal speed is often 2x because of the laser affecting adjacent tracks (heat). You can burn at 24x if your computer, burner, and disc can support that speed.

—masterfool, Annapolis, MD

In my experience, burning at a higher rate increases the percentage of burned CD-Rs that wind up as coasters (either won't play, or are covered with digital noise). I've personally had good luck burning at 4x or slower, and bad luck burning at higher rates. It probably depends on your computer's processor, amount of memory, hard drive speed, CD-R drive, and other factors.

—DougP, Oakland, CA

My experience confirms what Doug said. Also, data CDs seem to be less critical as they are always read by computer drives, unlike audio CDs, which have to be read on any kind of cheap device. For general audio, I burn at 4x, for masters 2x, and for data as fast as I can — but always run the verify option and always clone everything.

—Emile, Montreal, Canada

My Sonic system has two of the old Sony CDW 900's for burning PCM

audio CDs. Two-times seems to sound best for the track (I'm told the laser burns hotter and there's less error correction needed). Single speed seems to be the best way to go if it's a pop mix with the vocals out front. (I don't know why.) Meanwhile, I have a Microboards 8x CD tower and I swear the 8x copies from a master CD sound better than the master (mastered at either speed) from which they were copied. I didn't believe it at first, but I love to see peoples faces when we're A/B'ing the CDs.

—bdbklyn, Los Angeles, CA

I've had no problems burning audio at 8x with my TEAC CD-R drive, nor have I had issues at 4x with my SCSI Panasonic. I think the best thing you can do is burn at the drive's optimal rate — if you have a 12x CD-R drive, then burn everything at 12x unless it's one of those "up to a certain speed" drives that depends on system factors. I've heard of people actually having problems burning at 2x with drives that support faster rates; the problems were corrected by increasing the burn speed.

—Dylan Walters, Portland, OR

The burning speed may influence jitter. Bob Katz wrote in a letter on his site www.digido.com: "...A large group of mastering engineers and critical listeners agree that CDs cut in different ways tend to sound different. The CD differs from other storage media in many ways, but the critical point is that the timing of the output clock and the speed of the spinning disc are related. The output of the CD player is a clocked interface, and the data are clocked off the CD disc in a 'linear' fashion, one block of data after another. A buffer is used, which theoretically cleans up the timing to make it regular again, and, for

the most part, it does.

"A lot of this is theory...no one has proved it as fact. And there may be more than one mechanism causing jitter taking place.

"To obtain jitter in the low picosecond region requires extremely accurate timing. Any leakage current (interference) between the servo mechanism controlling the speed of the spinning disc and the crystal oscillator controlling the output of the buffer may destabilize the crystal oscillator enough to add jitter to the clock signal. This does not change the data, by the way. If the servo is working harder to deal with a disc that has irregularly spaced pits or pits that are not clean, perhaps leakage from the servo power affects the crystal oscillator. It doesn't take much interference to alter a clock by a tiny amount.

"This jitter is 'ephemeral,' though, because you can copy this data (irrelevant to the clock) and then play it back again from a more steady medium...and make it sound 'good' again. This is not a permanent problem."

I think every disc burner has a certain speed where irregularity is minimized, but I don't know how to prove it.

—adebar, Wiesbaden, Germany

CELERON PROCESSOR FOR MUSIC?

I have to get a second laptop for Acid and Sonar to go along with my iBook. Celerons are cheaper [than Pentiums], and I'd only be running Acid, Reason, and Live. Comments?

—Nawledge, Santa Monica, CA

My main music computer has a Celeron 600 overclocked to 900 MHz. They are fantastic for music; their floating point math rivals the Pentiums easily. That said, you ought to put as much, if not more, stock in your motherboard. Check ABIT and ASUS for Celerons. I suggest you go over to www.prorec.com and check some of the "Roll Your Own" articles. I learned a bunch from them, and built the Celeron version a while back, which has worked out really well for me.

—Dave

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Yamaha is a registered trademark of Yamaha Corporation. All rights reserved. *Estimated street price **Dual stereo returns feature EQ but no dynamics

ON THE BOARDS

How critical is floating point math performance versus other factors in data throughput?

—Neil, Madison, TN

Floating point math is very important for DAWs, as that's what performs the calculations for DSP. I'd say your main upgrade path would be a newer CPU and motherboard. Check out www.advanceddesignky.com for tested overclocked combos if you're worried about frying a CPU. Again, I've noticed way more performance gains by having a cool motherboard than any other component.

—Dave

Celerons are fine for music, but if you want the best performance for your money, check out an AMD Duron or Athlon. The latest Celerons run at 100 MHz FSB, just like their PIII equivalents, so besides the smaller cache size, the processors are identical. But with the ridiculously low prices of AMD chips, I have a hard time recommending an Intel CPU.

—Dylan, Portland, OR

I have a Q Performance Systems computer from East Coast Music Mall, and it has an overclocked Celeron that runs at 840 MHz. It has been extremely reliable for me, and, yes, the motherboard is a crucial component. AMDs are fast and cheap, but I have heard some grumbles about using them for music not because of the chip, but because of dissatisfaction with the motherboard chip set. Anyone know anything about this?

—Craig Anderton, moderator

I've built five AMD systems at last count, and the only boards I've had problems with are the old Via boards which Via admitted contained many problems. The new AMD 760/761 Ali/Magik (revC+) and SiS are not only solid, but perform like champs. I'm currently building a new system based on a SiS chipset on a new \$50 board called the ECK7S5A. The SiS chipset is the only chipset that doesn't map its data path through the PCI bus, and benches higher in

PCI bandwidth than any chipset to date. The lesson here is, if you're going AMD, you have to build it yourself or pay a reputable DAW builder. If you do your homework though, you could build a solid screamer that blows away anything else for very little money.

The main reason AMD had stability issues in the past was because, until now, they didn't build and test their own chipsets as Intel did. They now have their own (760/761) and the third-party chipsets have more than grown up. However, Intel did up the ante with the unveiling of a 3-GHz P4 with a 500 MHz side bus that relied on Rambus RAM (R-DRAM), but did an about-face in announcing they were dropping Rambus by the end of the year and would be basing their chipsets on DDR instead. That move will keep AMD ahead for some time.

—AindIn, New York, NY

I just built my rackmount system around an ECK7S5A and Duron 1.2 GHz CPU; I got both for \$109 at Fry's. So far it's been working like a champ — not one lock up or crash! Craig, yes some of the earlier AMD and VIA chipsets had compatibility problems with various audio cards, but that's pretty much old news now. My last system was using one of these so-called plagued VIA chipsets, but I never had any problems with it using audio cards from RME, Echo, and M-Audio.

—Dylan, Portland, OR

Craig has mentioned in the past that it's possible to run Acid on a Mac under a Windows emulator. You're limited to stereo outputs, but Acid is not processor intensive, so it should work. I'm considering doing this also. It would at least let you experiment with the program before you have to throw down big bucks for a second computer. You can always export your Acid tracks to WAV files if you need multitrack capability.

—Dan South, Metuchen, NJ

FYI, Celeron 600's can be very easy to overclock with the right system, but not all CPUs are that easy.

—Roto, Seattle, WA

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The DM-24's features are usually reserved for super high-end mixers. With 24-bit/up to 96kHz digital audio, the DM-24 blows away the standards in sonic quality for affordable consoles. With its internal automation, you'll get more power at your fingertips than you would from those huge consoles in commercial facilities. With some of the finest spatial and modeling processing from TC Works™ and Antares™, you can create fully polished productions without ever going to the rack. With incredibly flexible routing, fully parametric EQ, machine control capabilities, touch-sensitive motorized faders, and lots of audio interfaces, you can integrate the DM-24 into any studio environment.

Whether you're working with standalone hard disk recorders, DAW systems, MDMs or analog tape, the DM-24 is optimized to be the very best choice in consoles designed for 24-track recording. Ready to get everything you ever wanted (and more) in a digital console? Get the DM-24 today at your authorized TASCAM dealer.



Two DM-24s can link together with optional Cascade modules to create a seamlessly integrated 64-channel super console. For larger studios operating on a budget, it's a no-compromise affordable solution for high-end digital mixing.



The DM-24's rear panel includes AES/EBU digital I/O, S/PDIF digital I/O, MIDI In, Out and Thru jacks, ADAT Optical input and output, external footswitch connector, time code in/out, GPI port, word sync in, out/thru, DTRS remote port, RS-422 9-pin control port, 24-channel TDIF I/O and more. Shown here with standard interfaces. Not luxurious enough? Customize your DM-24 with two expansion ports for extra analog, TDIF, ADAT or AES/EBU modules.

DM-24 DIGITAL MIXING CONSOLE

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LATE BREAKING NEWS

Just as this issue was going to press, Yamaha announced the 02R96 Digital Mixing Console, the long-awaited successor to the 02R. With more than five times the processing power of the original 02R, the new version represents a complete redesign of every aspect of the console. The new mixer combines the key features of the high-end DM2000, such as 24-bit/96 kHz audio support, surround monitoring, Studio Manager, and DAW control into the same size footprint as the original 02R. The control surface and user interface have been enhanced to allow for more analog-like operation, and there are 16 user-definable keys for assignable functions.

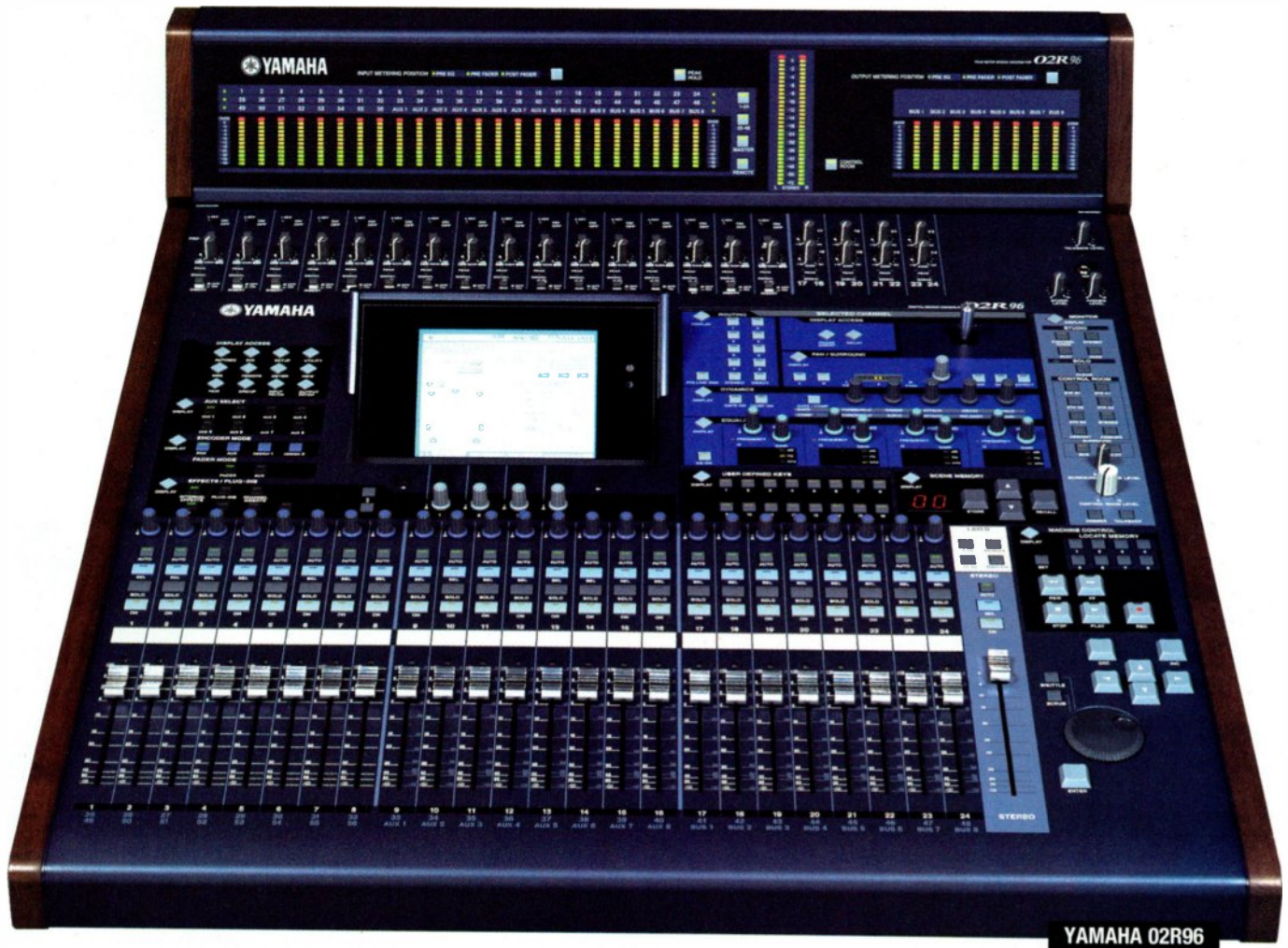
The 02R96 comprises 56 input channels with full 24-bit/96 kHz audio, 32-bit internal processing, and 58-bit accumulators. The unit also contains 96 kHz-compatible stereo effects, plus several effects designed specifically for surround applications. Up to four effects processors are

available simultaneously.

All A/D and D/A conversion uses 24/96 converters. The 02R96 offers four I/O expansion slots which accept the new range of 24/96-compatible Mini-YGDAI cards in ADAT, TASCAM, AES/EBU, and analog I/O formats, as well as Apogee's A/D and D/A cards, and the Waves Y56K effects plug-in card.

All 56 inputs feature independent compression and gating/ducking. A four-band parametric EQ offers a choice of "Type I" or "Type II" EQ algorithms, and a channel delay provides up to 453 milliseconds of delay.

Preset libraries for effects, compression, gating, EQ, I/O patching, and more can be recalled, created, and edited. Twenty-four 100-millimeter motorized channel faders can be layer switched to access any of the 56 inputs. All available inputs, outputs, effects, add channel inserts can be freely assigned to any channel or output using a digital patching system. A direct out function allows the signal from the 56 input channels to be



YAMAHA 02R96

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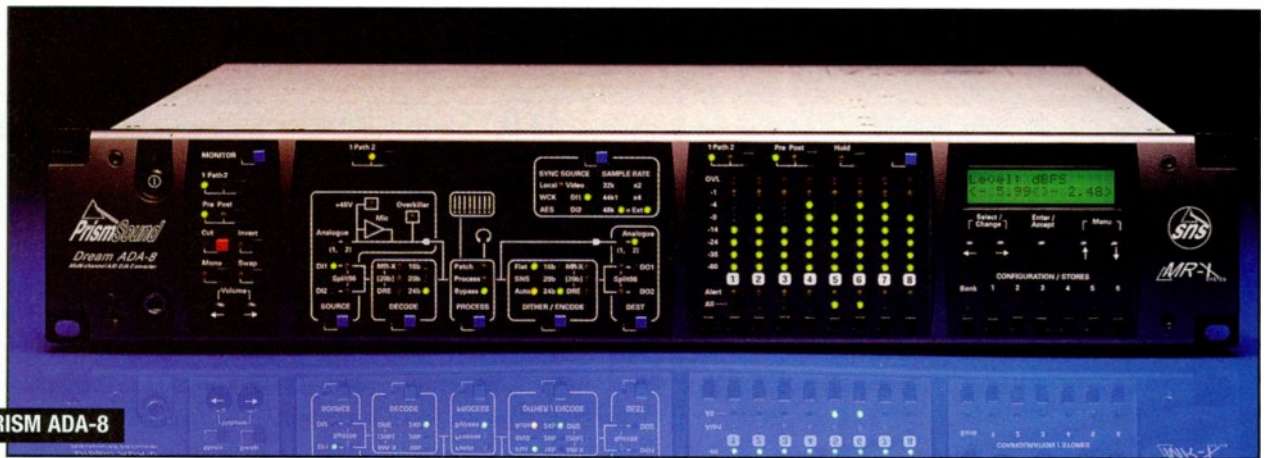
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routed directly to any output. Eight aux buses can be patched to anywhere in the system.

Designed to support surround mixing, the 02R96 includes surround panning, a joystick, surround monitoring, and bass management. The monitor section includes individual speaker muting and attenuation, level control for all monitor outputs, stem mix monitoring, and independent delays for speaker system setup.

Virtually every parameter on the mixer can be fully automated, and all automation data is recorded with 1/4-frame accuracy. The console is designed to integrate with Digidesign Pro Tools, Steinberg Nuendo, and support for Emagic Logic Audio is under development. Yamaha Studio Manager Software for Mac and Windows, which enable computer control over all parameters, is included with the 02R96. www.yamaha.com/proaudio



APOGEE'S *Mini•Me*.



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Mini•Me is a rugged, portable 2-channel microphone preamp/DI and 24/96 converter packed full of features. AES/EBU, S/PDIF and USB out are included, with built-in monitoring. *UV22HR* delivers superior 16- and 20-bit masters. The new *Push-IT* compressor/limiter, used in conjunction with *Soft Limit*, offers such powerful, innovative dynamic control that we've applied for a patent on it.

HARDWARE

Gefen has announced the Ex-Tend It VGA-to-ADC conversion box, which allows Apple's 17-inch Studio Display or 22-inch Cinema Display to connect to any G4 Macintosh with a VGA port (including PowerBooks). The converter box requires no software or drivers and supports any flat-panel display compatible with ADC or DVI connections.

www.gefen.com

A new version of the ADA-8 A/D and D/A converter/processor has been announced by Prism Sound. The ADA-8 may be configured for eight channels of simultaneous A/D and D/A or 16 channels of either A/D or D/A conversion. The new version allows direct control over input selection from within Pro Tools software, and it provides support for 16-channel input and output configurations from Pro Tools. Other new features include per-channel selection of analog or digital input, parallel output capability, and wider lock range to external clocks.

www.prismsound.com

The Type 4071 omnidirectional miniature condenser microphone from DPA Microphones is designed for television broadcast and film applica-



QUALITY TO GO.

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tions. Its frequency response is optimized for clarity in body-worn applications with a 4 dB soft boost at 4-6 kHz. To reduce low-frequency noise and rumble, the mic features a 2 dB lowcut at 100 Hz with a 3 dB/octave roll-off. www.dpamicrophones.com

Signex has introduced their Isopatch Bantam Pro series of patchbays. The 1U rack bays feature two rows of 48 balanced/unbalanced patch points with the connectors mounted on printed circuit boards to eliminate internal wiring and increase rigidity. The Isopatch design provides for half or full normalizing on every channel by soldering across special program pads on the PCB. The Pro series is available with direct solder rear connections or with rear 25-pin D-Sub connectors. www.isotrack.demon.co.uk

ADAM's P Series Analytical Monitors feature the company's proprietary DP (Dynamic Planar Array) high-frequency driver. The DPA technology is claimed to provide nearly 3-1 advantage in terms of diaphragm area, and 4:1 improvement in transient air pressure rise time compared to a conventional voice coil, electrostatic, or magnetostatic transducers. The new line comprises the P11-A, the P22-A, and a matching powered subwoofer. www.mccave.com

SOFTWARE

Voyager Sound introduced their GraphiMix 01 software, mix software that enhances computer control over MIDI-compatible consoles, sequencers, sound cards, effects, and more. GraphiMix is compatible with Window 95, 98, NT, 2000, and XP. The software pro-

vides graphic control over the Yamaha ProMix 01 and 01V mixers in stereo or surround operation. www.voyagersound.com

VocAlign Project is an entry-level version of Synchro Arts Limited's VocAlign automatic audio alignment software for Windows-based computers and Apple Macintosh. It can run as either a stand-alone applica-



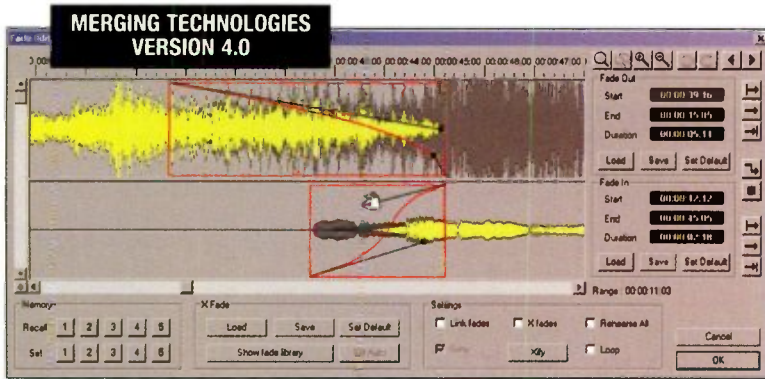
tion or as a plug-in within such applications as Cool Edit Pro, Sound Forge, Digital Performer, and Pro Tools. The software automatically "micro-edits" audio to align its timing with that of a guide signal. www.synchroarts.com

UPDATES

Native Instruments has announced FM7 version 1.02. The new version contains functions such as displays for CPU usage and the number of active voices. Other improvements include further optimized sysex import and more. The update is free to registered users. www.ni-fm7.com

Merging Technologies has released Version 4.0 software for the PC-based Pyramix platform. There are over 150 new features and enhancements in Version 4.0, including support for up to eight Mykerinos DSP cards, support for more I/O daughter cards, support for a new Dual I/O card offering four analog mic/line ins plus eight channels of AES/EBU I/O, the world's first commercially available DSD/SACD multitrack recording/editing/mastering option, and





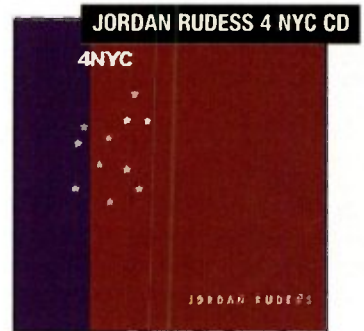
192 kHz operation. In addition, the Radical technology SAC-2K remote control surface is now supported, as are SDII format audio files from/to Mac disks, and eight multiple surround buses for multi-system mixing and monitoring. www.merging.com

Mackie released Version 2.0 of the UAD-1 operating software. The new version includes full support for Windows 2000 and Windows XP. Also included with the update is EX-1M, a monophonic version of the EX-1 channel strip plug-in, and the DM-1L stereo delay, which offers up to 2,400 milliseconds of delay per channel. New improved drivers for the UAD-1 card provide latency as low as 128 samples. www.mackie.com

INDUSTRY NEWS

Jordan Rudess has released his latest CD, 4NYC. The CD documents a benefit concert given by Rudess on September 25, 2001. The concert raised \$12,000 for the families of victims of the World Trade Center attacks. A part of the proceeds from the sale of 4NYC will go to the American Red Cross to help the families of the victims and the Heroes of September 11, 2001. www.jordanrudess.com

Audio manufacturing giants Marantz and Denon have announced their intention to merge. From May, 2002, both companies will be controlled by DM Holdings, a new company. Marantz and Denon will continue to operate as separate and distinct brands. www.denon.com, www.marantz.com



Bill Schnee, Grammy Award winning engineer, Owner of Schnee Studio, North Hollywood, CA.

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Digibid has teamed with Ebay to create an online pro outlet center for entertainment technology. The new center will enable manufacturers, dealers, and distributors of products, such as musical instruments, pro audio, video, DJ and lighting equipment to use Digibid's platform to reach eBay's 42 million registered users in a highly visible yet cost-effective and efficient manner. www.digibid.com

Engineer Ed Greene used Mackie Digital 8 Bus and a 32•8 mixers to help bring the sound of the Winter Olympic Games to more than three billion viewers around the globe. Originally, the Mackie gear was to be used for rehearsals, but Greene ended up using it for the final broadcasts as well. Greene also used the Mackies for the Olympic's closing ceremonies, featuring performances from Bon Jovi, Christina Aguilera, Harry Conick Jr., Charlotte Church, and Josh Groban, among others.

Digidesign has been appointed the distributor for the DUY line of plug-ins for the Pro Tools and Pro Tools LE platforms. The plug-ins include DSPider, SynthSpider, REDspider, and bundles comprising

DUYshape, DaDValve, DaDtape, MaxDUY, DUYwide, and the Z-room reverb for RTAS. www.duy.com, www.digidesign.com

Apple Computer was honored with a Technical Grammy by the National Academy of Recording Arts and Sciences. This is the first such award to a computer company, and is given in recognition of outstanding contributions to the music industry and the recording field. www.apple.com



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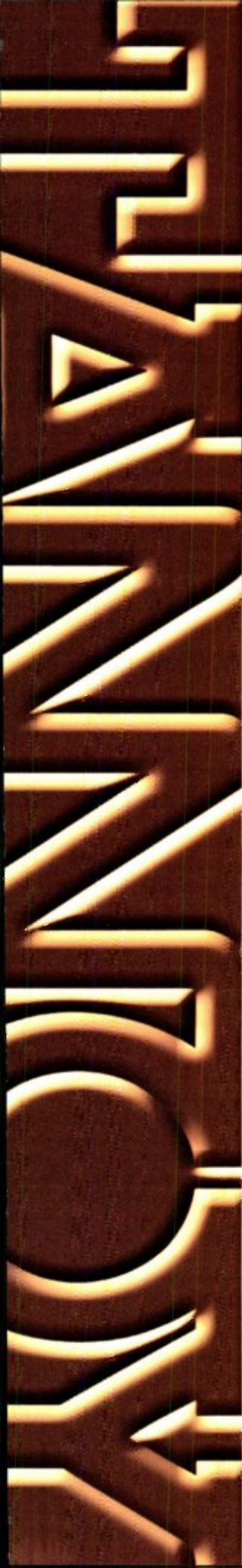
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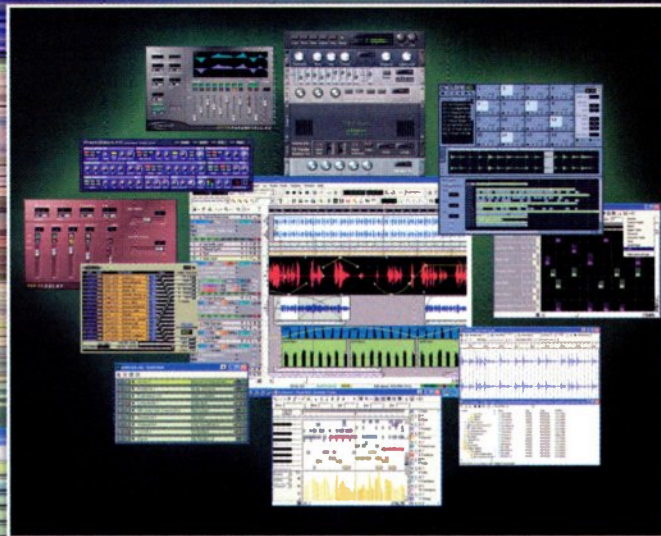
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The Tannoy SuperTweeter™ is designed to provide the extended high frequencies demanded by modern program material and sources such as DVD, SACD, and DVD-Audio. It not only resolves the fine detail of high frequency notes, but also effectively enhances the listening experience at lower frequencies. Music contains transient information and rich harmonics beyond the range of human hearing for pure tones. Even low frequency notes have leading edge transients reaching 30 kHz. By operating between the roll-off point of your existing speakers and 54 kHz, the SuperTweeter™ will accurately reproduce the leading edge of individual notes, allowing the listener to experience the full bandwidth of the musical instruments and effects.

The SuperTweeter™ has been designed to match a wide range of modern loudspeakers, matching sensitivities of 87 dB per Watt @ 1 meter to 95 dB per Watt @ 1 meter. Crossover frequencies of 14, 16 or 18 kHz can also be selected.

The addition of the SuperTweeter™ to any loudspeaker system provides increased impact, airiness, and improves system imaging - making music sound more natural and true to life.



By Craig Anderton

Cakewalk Sonar 2.0

One year ago, Cakewalk ended their Pro Audio line of software and introduced Sonar 1.0, a giant step forward for the company. Sonar was the first software to combine MIDI, digital audio, and on-the-fly, Acid-style looping in a single program. Furthermore, Sonar embraced Microsoft's WDM driver standard for ultra-low audio latency, and, for good measure, threw in a new user interface designed for a more efficient workflow.

Sonar 2.0 is another step forward. Perhaps the most important addition is compatibility with Propellerhead Software's ReWire spec, which allows music and audio software applications to share and transfer audio streams in real time, with sample-accurate inter-application synchronization. For example, the ReWire-compatible Reason and ReBirth programs can now run along with Sonar, with the audio outputs appearing as individual tracks in Sonar's mixer. Like other tracks, these can use automa-

tion and effects, as well as be driven from Sonar's MIDI sequencer. Of course, there are two ways to look at this: as adding Reason soft synths to Sonar, or adding Sonar's digital audio and looping capabilities to Reason projects.

Another major addition is the Cyclone DXi Groove Sampler soft synth. Based on phrase sampling, Cyclone DXi can import

Sonar Groove Clips or Acidized files; once imported, they can be divided into "slices" for reorganization and/or recombination with slices from other loops. It's possible to map one clip's "feel" to another's, and the edited result can be exported to create variations of existing loops. Speaking of exporting, Groove Clips can now be exported as Acidized WAV files for use in other time-stretching programs.

A Graphical Drum Editor allows "painting" notes and rhythm on a drag-and-drop drum grid. Other features include editable velocity tails, and re-mapping of drum parts in real time to multiple devices on multiple ports.

Some changes are more utilitarian. Sonar's audio filing scheme has been praised for its efficient storage of digital audio files, but criticized for making it difficult, if not impossible, to locate and extract individual files for separate archiving or use in other projects. That issue has finally been addressed with the addition of per-project audio folders, track/clip/project-based file names, and file linking, which allows the program to "point" to commonly used files, sound effects, and other audio libraries rather than copying multiple instances of the same material. Networked media support allows users to work on projects over a network.

Another useful addition is bi-directional MIDI control surface support, including dedicated support for the CM MotorMix and TASCAM U-428/U-224 controllers, as well as a Global Controller Module with learn mode and presets for dozens of control surfaces. Cakewalk promises support for additional control surfaces. There's also support for

► continued on page 133

CAKEWALK SONAR 2.0

WHAT IS IT? Digital audio + MIDI multitrack sequencer that includes on-the-fly time-stretching for loops, and accommodates DXi software synthesizers.

WHO NEEDS IT? Those wanting a full-function Windows sequencer that offers a complete virtual studio environment.

WHY IS IT A BIG DEAL? Sonar turned quite a few heads when it was introduced, so adding new instruments, supporting ReWire, enhancing the DXi implementation, cleaning up file management, and adding drum editing take the program to a whole new level.

SHIPPING: April 2002

PRICE: \$479; Sonar XL \$599.

CONTACT: For more information contact Cakewalk at 617-423-9004 or visit www.cakewalk.com.

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World Radio History





By Mitch Gallagher

Genelec LSE Series

Accurately monitoring the low end of the audio spectrum is often a problematic endeavor. Aside from the room's acoustic anomalies — which are always major concern — most “full-range” and satellite monitors aren't physically capable of being accurate in the lowest frequencies and don't have the amplifier headroom required to provide enough power to drive the lowest frequencies to adequate levels. Dedicated low-end monitors — also known as subwoofers — started proliferating on the scene a few years ago, mainly in response to multichannel audio applications, but also to reinforce the low-frequency response of smaller full-range and satellite speakers.

At the recent Winter NAMM tradeshow in Los Angeles, Genelec unveiled the latest in their subwoofer designs, the LSE series. Comprising four active (powered with built-in amplifiers) models, the new subwoofers include several unique features. The most immediately obvious of these is the physical shape of the cabinet. The LSE series is constructed using Genelec's proprietary LSE

{Laminar Spiral Enclosure) cabinet design, which is said to “virtually eliminate” acoustic non-linearities due to port turbulence, resulting in a smooth flow of low-frequency energy from the tuned enclosure.

Three of the models in the LSE series also feature built-in 6.1-channel

bass management capabilities. There are six input and output channels for connecting satellite speakers (left, center, right front and left, center, right rear), as well as a discrete LFE input with selectable 85 or 120 Hz low-pass filter. The built-in bass management system routes frequencies below 85 Hz from the six main input channels into the subwoofer. Adjustable sensitivity is provided for level-matching the subwoofer with the satellites, and a +10 dB gain switch is available for the LFE input. The LFE channel can be set for a bandwidth of 18–85 Hz or 18–120 Hz. In addition, frequencies above the LFE cutoff frequency can optionally be redirected to the front center channel output. Phase alignment and bass roll-off controls are also provided.

Other features in the LSE series include a built-in 85 Hz calibration tone generator and a multi-purpose RJ11 connector that can provide a remote overload

There are four models in the series: the eight-inch/70-watt 7050A (matches Genelec's 1029A and 2029A active monitors for stereo applications), the 10-inch/120-watt 7060A (complements the Genelec 1029A monitors in multichannel applications), the 12-inch/250-watt 7070A (designed for the Genelec 1030A and 1031A in stereo or multichannel applications), and the dual 12-inch/500-watt 7071A (complements Genelec's 1032A, S30D, 1037B, or 1038A active monitors in stereo or multichannel applications). Note that the 7050A is intended for stereo applications, and doesn't include multichannel bass management.

While specifically tailored to match various Genelec active monitor models, the LSE series can, of course, also be used with main and satellite monitors from other manufacturers. ■

GENELEC LSE SERIES

WHAT IS IT? Series of four new active subwoofers with built-in bass management.

WHO NEEDS IT? Anyone concerned with monitoring low end, anyone working with multichannel audio.

WHY IS IT A BIG DEAL? Unique form factor advances subwoofer design, built-in bass management can handle stereo through 6.1-channel speaker systems.

SHIPPING: First quarter, 2002

PRICE: 7050A; \$750, 7060A; \$1,595, 7070A; \$2,250, 7071A; \$3,500

CONTACT: For more information, contact Genelec at 508-652-0900 or visit www.genelec.com.

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By Craig Anderton

TASCAM Portastudio 5

TASCAM's original PortaStudio took advantage of improved tape formulations and electronic noise reduction to pack four tracks of reasonable quality on a standard cassette. The idea caught on, and we've seen eight-track cassette decks, multitrack machines based on MiniDisc, and even battery-powered portable recorders.

The Pocketstudio 5 is TASCAM's latest "PortaStudio." It records on Compact Flash cards (the unit comes with a 32 MB flash card; higher-capacity cards are available), resulting in an all solid-state recorder that you can carry around in your pocket. It also features a USB interface for transferring mixed stereo MP3 files over to a computer for editing or processing. (Although it's not designed to transfer individual tracks, you can do so by mixing only that track down to stereo.)

To circumvent digital audio's large memory requirements, the Pocketstudio 5 works with MP3-format files. This maximizes the flash card's memory, but also eliminates conversion when emailing files or posting on the Web.

Furthermore, the Pocketstudio 5 does double-duty as an iPod-type portable player, as you can blast MP3 files over from your computer and carry around your favorite tunes.

The Pocketstudio can run for two hours on six AA alkaline batteries, but an AC power supply is also included. The unit has a built-in condenser

mic for those times when you need to get an idea down quickly; a headset mic comes with the unit as well.

Like bigger digital recorders, there are typical editing options such as copy and paste for both audio and MIDI tracks, auto punch in and out, and track bouncing; edit points can relate to bars and beats.

One hundred included standard MIDI files serve as "instant backing tracks." Each set of files includes six standard song components (intro, verse 1, verse 2, fill 1, fill 2, and end), which can be arranged as desired (even into rough tunes).

There are over 100 internal effects (including guitar amp simulators and de-essers) created for specific instruments such as acoustic guitar, electric guitar, bass, vocals, and drums. You can apply reverb to all tracks.

The potential for collaboration is obvious, as it's easy to email mixes to collaborators. Furthermore, TASCAM offers a "Pocketstudio Network" on their Web site. Users can search for other Pocketstudio owners (even search by instrument), then collaborate with other Pocketstudio owners from around the world.

This degree of portability opens up other options. Suppose you've worked on a song in the studio, but the producer made changes, and now the vocalist wants to practice vocals that go with the new direction. Simply bounce the backing tracks to the Pocketstudio 5, and let the vocalist practice. And why not record the rehearsals? If one of them turns out to be *the* performance, bounce the vocal over to the multitrack. Yes, it's MP3...but if the part is that good, it can probably still convey emotional impact in spite of any data compression. ■

TASCAM PORTASTUDIO 5

WHAT IS IT? A portable four-track multitrack recorder, sound module, and MP3 encoder/player that runs on batteries or AC.

WHO NEEDS IT? Those who need to work outside the confines of a studio, or who need a portable audio sketchpad.

WHY IS IT A BIG DEAL? It's small, cute, lets you mix to MP3 and transfer to your computer via USB, and records to Compact Flash cards.

SHIPPING: April 2002

PRICE: \$599

CONTACT: For more information, contact TASCAM at 323-726-0303 or visit www.tascam.com.



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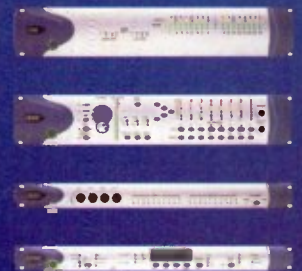
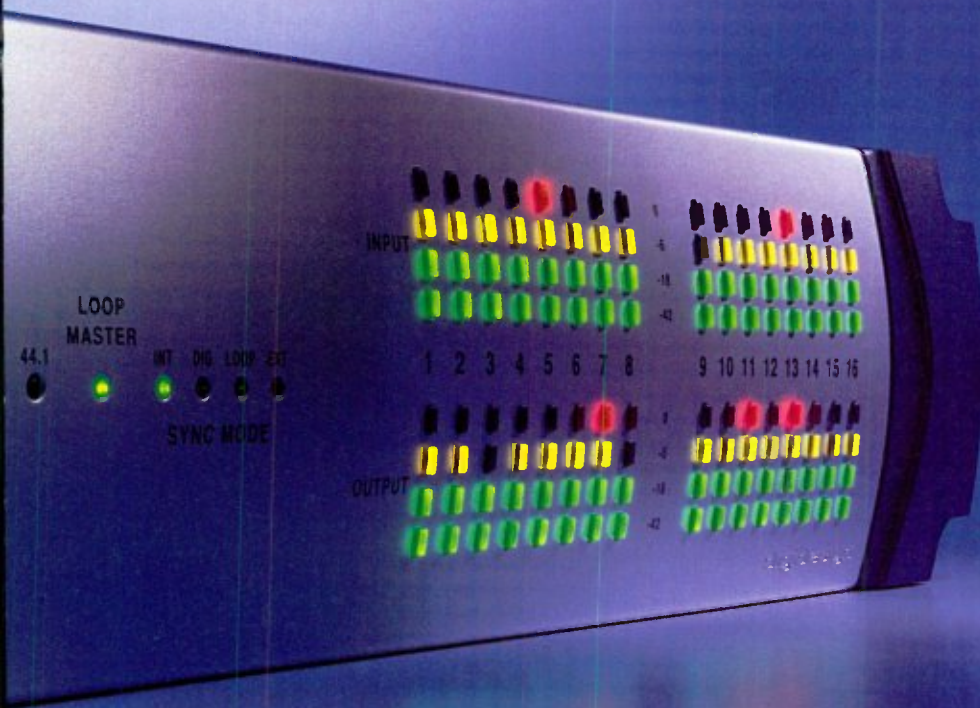
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ROOM WITH A VU



By Mitch Gallagher

Stonehouse

Guitarist
George Lynch
converts a
barn into a
studio

STUDIO NAME: Stonehouse

LOCATION: Auburn, CA

KEY CREW: George Lynch (owner), Dave Paulson (engineer)

CREDITS: George Lynch has recorded numerous albums as guitarist for Dokken and Lynch Mob.

MIXING CONSOLE: Mackie Digital 8-Bus

MONITORS: Hafler M5, TRM6, TRM8, TRM12

AMPLIFIERS: Hafler TA1600

RECORDERS: Alesis ADAT XT20 [2] with BRC, Panasonic SV3700

OUTBOARD: Peavey VCL-2 tube compressor [2], Joemeek VC1 compressor

EFFECTS: Lexicon PCM70, Alesis Q20 [2], Johnson J-Station, Line 6 Pod Pro

FAVORITE STOMPBOXES: Digitech Whammy 2, Mutron Bi-phase, Electro-Harmonix Electric Mistress, Ibanez Tube Screamer, Line 6 Filter, Fulltone Deja Vibe

MICROPHONES: Shure SM57, SM58, KSM32 [2], Beta 52, boundary, SM81 [2], AKG condenser [2], Alesis/GT AM61, AM62

MIC PREAMPS: Peavey VMP-2 [2]

KEYBOARDS/MIDI: Korg O1W, Akai MPC2000, MOTU MIDI Timepiece

COMPUTERS: Apple G4/400 with 1 GB RAM, Seagate 9 GB Cheetah hard drive [2] in Kensington rack

DAW: MOTU 2408, Roland VS2480

SOFTWARE: Emagic Logic Audio Platinum, Sonic Foundry Sound Forge, Acid; BIAS Peak, tons of plug-ins

CABLES: Monster Cable

AC POWER CONDITIONING: Furman

STUDIO FURNITURE: Argosy, Omnicor

ACOUSTIC TREATMENT: Auralex

STUDIO NOTES: "My brother Bobby and I gutted the old barn that's on my property. We floated the floor and erected interior walls, blew insulation under the floor, then covered it with hardwood. The most backbreaking job was hand-digging a 2x4x25-foot drainage trench along the uphill side of the building, waterproofing the foundation, and then moving 10 tons of gravel, one wheelbarrow at a time, to fill the trench. We did a lot of the work ourselves to save money and relied on expert help from friends and family.

"The fun part came with trimming the room out. We hung a lot of exotic East Indian fabric and quite a bit of Auralex foam on the walls, doors, and ceiling. I made extensive use of Auralex bass traps and diffusers, which are economical and effective. They also look cool."

EQUIPMENT NOTES: "My challenge is getting the sound in the room to translate to the recordings; getting drum sounds is by far the hardest to nail. I'm having good luck with the Shure Beta 52 for kick and, of course, SM57's work for almost anything else 75% of the time."

"The monitoring environment has a huge effect on my performance and my Haflers really are warm and smooth, which makes it much easier to get into a groove and creative space when I'm coming up with new ideas.

"I use a lot of old guitar pedals and some newer ones as well. I'll use these as inserts directly into the Mackie D8B to effect vocals, guitars, or whatever. ■

▶ **weblink**

Visit George Lynch online at www.georgelynch.com.

Truth is the most valuable thing we have. Let us economize it — *Mark Twain*

The truth about nothing but the truth.

The problem with most so called reference monitors is they simply can't reproduce the full range of audio frequencies needed for true representation of the sound, especially low frequencies. Today's most common monitors use a 2-way design with 8" woofers to cover the low frequencies, but they can't go down low enough to give you the lowest octaves that are essential to the character of so many instruments, like bass and drums.

Ported v sealed boxes.

Some designs use ported cabinets to help do the job woofers can't do on their own. While a port can extend low frequency capabilities, it can't deliver the transient response of a sealed box. At high levels, airflow through the port produces turbulence that reduces efficiency and actually causes high frequency noise. There's no getting around it—If you want a true reference, you need a sub-woofer.

The truth about the "hole" truth.

With the advent of 5.1 surround sound, the low frequencies have received much more attention. Many companies now offer subwoofers as add-ons for stereo monitors. But when components aren't designed to work together matters can get more complicated, and new problems are often created—such as an audible hole in the sound.

Introducing the world's first 2.1 system.

The Blue Sky 2.1 System is the first stereo

monitor to deliver full range sound without compromises. It is a true system in every sense. It includes two powered 2-way satellite speakers and a powered subwoofer with a 12" driver in a sealed cabinet. 2.1 Bass Management circuitry directs all the frequencies where they belong. It's a true integrated three-way system. Every component is optimized for the system. Our 2.1 system delivers coherent, seamless audio that is more accurate and more full range than even the most expensive alternatives.

Your room is a part of the system.

Because of its essential design, the 2.1 system allows the user to place the satellites for optimal imaging and the subwoofer for optimal bass response. The system design acknowledges the listening environment as a major factor in what we hear

2.1
©
integrated 3-way system

The Blue Sky BMC (Bass Management Controller) offers a total in-place solution for controlling any 5.1 system.*

With Blue Sky Systems, you get accurate, full range audio in a real room—your room. And the transition between subwoofer and satellite is totally seamless. It reproduces smooth, even bass response throughout the monitoring area.

5.1
integrated surround
SYSTEM

Why did we build such an amazing system at such an affordable price?

Because we can!

Blue Sky is dedicated to developing better solutions to improve the process of sound creation and reproduction. Our mission to develop innovative products that are not only technologically advanced, but affordable to the greatest number of serious people.

Blue Sky 2.1 and 5.1 systems have been field tested in some of today's most demanding rooms. They've earned the THX seal of approval and raves from some of today's most well respected audio professionals.



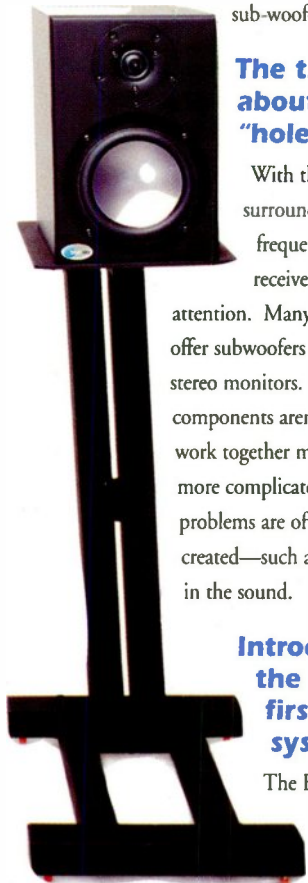
Visit us on the web at www.abluesky.com for more complete information on our products, company, philosophy, and technology—and see who's using and talking about Blue Sky.

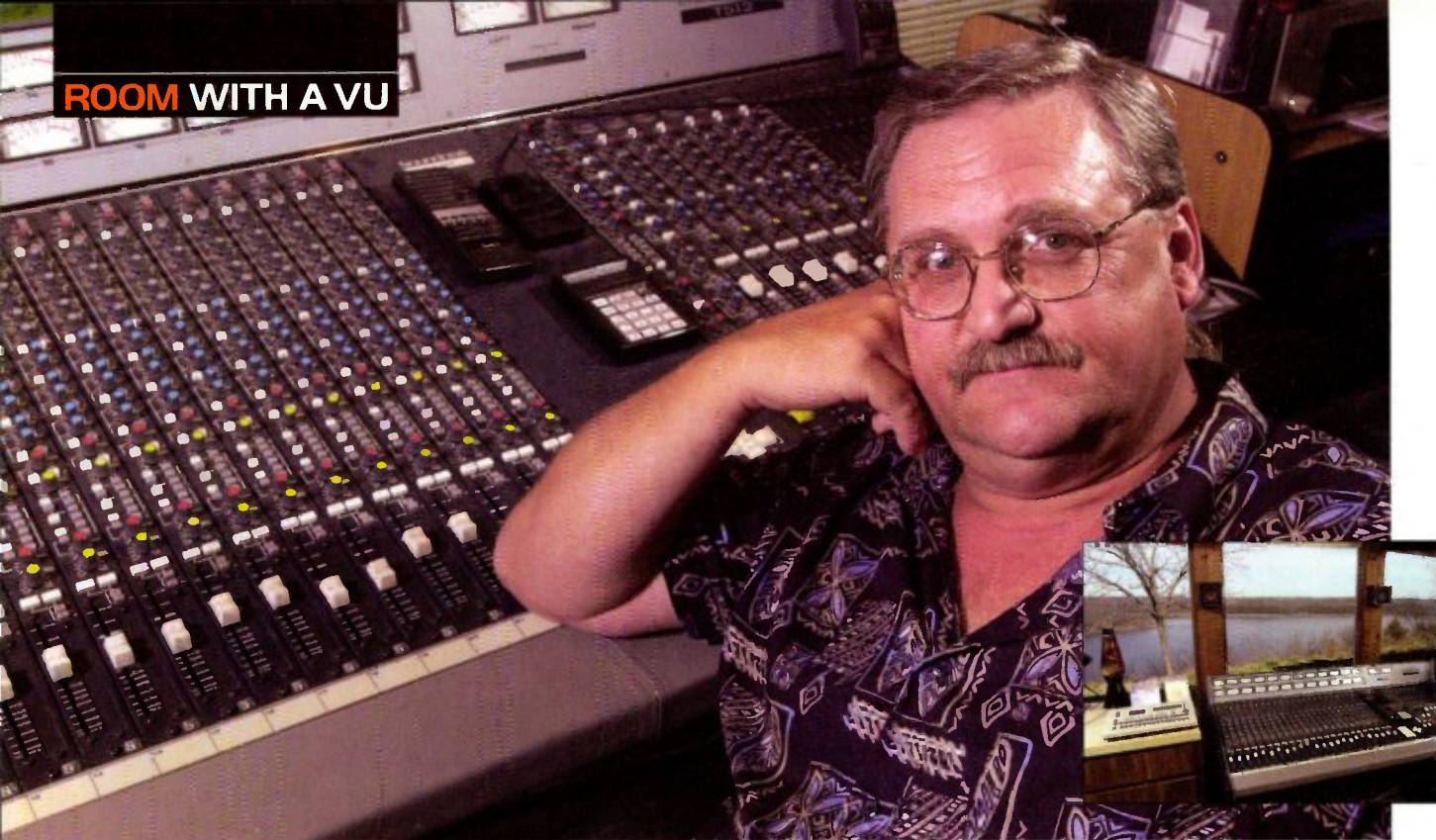
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By Steve La Cerra

Window on the World

A 40-foot window gives this room a real view

STUDIO NAME: Cedar Crest Studio
LOCATION: Northern Arkansas
KEY CREW: Bob Ketchum, engineer, producer, owner; Chris Patton, second engineer
CREDITS: Bob Ketchum's credits include Freddy Fender (*Wasted Days and Wasted Nights*), Krokus (*Headhunter, The Blitz*), The Mojo Factory, JAW, and M.R. Keck. Bob's solo album, *New Tricks From An Old Dog*, is available on the HYPE label.
MIXING CONSOLES: Soundcraft TS-12 w/FAME automation; TASCAM M-520, Yamaha MC1202, Fostex 2050, Mackie 1202
MONITORS: JBL 4312, Auratone 5C, Custom Altec 15, Fostex T-20 headphones
AMPLIFIERS: Pioneer SPEC-4 Class A, Crown DC-300A, DC-150; BGW Model 100 (headphones)
RECORDERS: TASCAM MSR-24, MS-16, Model 52 1/4-inch; TEAC X-700R, C3RX, X1000R cassette deck; Sony A7 DAT, PSG CD-R w/4 GB HD, Nakamichi MR-2 [2]
OUTBOARD: Gatex and OmniCraft GT4A gates, dbx 160VU [2], 166x [2]; Roland RE-501, EXR Exciter, Aphex Type C Aural Exciter, Compellor; MXR dual 15-band, 10-band graphic EQ; BiAmp EQ 270A 1/3-octave EQ.
EFFECTS: Lexicon MPX-1, Alex; Yamaha

SPX90, ART DR1 [2], Alesis MicroVerb 4, MidiVerb, MidiFex; Orban 111B spring reverb, MXR "blue face" digital delay, Roland SDE-100 delay

MICROPHONES: Røde Classic, AKG C414EB, C451EB [2], D1000E [2]; Beyer M101, Altec "salt shaker" [2], Electro-Voice RE20, PL76, PL80, RE55, 664, 636 [2]; RCA 77DX, Sennheiser MD421 [5], Shure SM58 [6], SM57 [2], SM59 [2], 556S, 515SB, Green Bullet; Sony ECM56P, ECM64P [2]; TEAC ME-120 [2], Numark UC965.

MICROPHONE PREAMPLIFIERS: ART Pro MPA

MIDI: Ensonic Mirage DMS-8, Opcode Studio 3. TASCAM ES-50, Yamaha PTX8 percussion module w/Dauz pads, KAT triggers, Roland SPD-11, TR-707; Pitchrider Mark II guitar/MIDI interface w/hex pickup

KEYBOARDS: 1934 Hobart M. Cable upright piano, Hammond A-100 w/18C Leslie, Leslie 120 [2], Roland JX-8P, ARP Odyssey, Univox MiniKorg K2

COMPUTERS: Pentium II/333 MHz w/256 MB RAM, 9 GB HD; Amiga Toaster 4000 w/128 MB RAM, NewTek Flyer Video Card, Warp Engine Accelerator, 40 GB of SCSI A/V storage, DPS TBCIII Card, Iomega Zip drive [2], Zip 650CDR

SOFTWARE: Sonic Foundry Acid Pro 3.0e, Vegas Audio, Sound Forge 5.0; Soundprobe 2.5 Audio Editor, Syntrillium Cool Edit Pro,

▶ continued on page i26

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 Visit the Cedar Crest Studio Web Site at
www.Qznet.com/cedarcrest

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Take a deep breath. You're in control now.

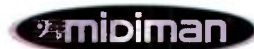
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Oxygen 8 Features:

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By Lisa Roy

DJ Muggs Drums

Behind the beats with the hip hop producer/artist

"This isn't a straight-ahead drum tracking session," states mega hip-hop producer/artist DJ Muggs from his new studio in Burbank. "On this track I started it off and rode everything in the drum machine...all my programs into MPC. Then I had Scott come in and play over it. I have sections where some are live and some are out of the drum machine. All the choruses are live drums. The verses are out of the MPC. The breaks — one is live drums, and one break's another drum program. We've got different drum sounds and different patterns on this one." Muggs is the sonic auteur behind the critical and popular success of Cypress Hill. Now he lays his signature style of bumping beats merging hip-hop and rock, analog and digital, drum machine and live drummer, on his new solo effort with the help of his engineer Troy Staton.

SIGNAL PATH

"On Scott's kick drum I've got a [AKG] D-12 and a Neumann U 47 FET," shares Staton. "I put a Shure 57 on the snare top and bottom. I used four Sennheiser 421's on the toms and AKG 414's on the overhead. I run the overheads through an [Universal Audio] 1176 and it sounds really good. I also use [Universal Audio] LA2A's and the board compression. I'm running that through the SSL

4000G and we're tracking to both Sony MCI analog multitrack on Quantegy tape and into the Steinberg Nuendo."

MIC POSITION

"The D-12 is inside the kick about an inch off the beater," explains Staton. "Outside, I put the U 47 FET that I usually cover with a blanket to give it a nice beat. I've got it right off the hole of the skin about an inch off the outside pointed upright. It's pretty simple — it's still good sounding though. On the snare I used the Shure 57, top and bottom. The top 57 is horizontal with the skinhead. I put it real close without getting it too close where Scott beats it. The bottom snare 57 is straight up — very close to the edge on the [kick drum] beater. For the toms I put Sennheiser 421's right down, close to the skins. I position them right in the middle on the top edge off the rim of the drum, but not touching the rim. The AKG 414's are about three feet above the cymbals, which gives a nice little effect.

"This room is a good sounding room, so we put the drums on the carpet right in the middle and arrange the mics around it. No baffles"

PROCESSING

"I EQ, but I'm not really a heavy compressor," Staton confides. "I'd rather go for mic positioning, and gain structure, and stay away from as much compression as possible until I need it. But when I'm going for a nice, round, fat kick I'll do a little board compression...usually a very

DATE: March 5, 2001

STUDIO: Muggs Recorders

LOCATION: Burbank, CA

ARTIST: DJ Muggs

PROJECT: DJ Muggs solo — Epataph Records

TRACK: Scott Abels playing drums on "All I Want"

PRODUCER: DJ Muggs

ENGINEER: Troy Staton

minimal setting. On this I used 1176's and LA2A's. I also used a combination of both, a little board compression and dbx 160 on the toms and kick. I use the minimal setting about 2:1, zero threshold or less, and about +2 or +3 at most on gain output. There is a small plate setting on the [Lexicon] 480L that I used for the snare room effect. I used the EQ on the SSL very minimally. I tracked everything the way we wanted it to sound. We try to make soup in our little kitchen, so when we want to make soup we want to start with the right ingredients. Once the soup is made, it's okay. Once we put this song out, we put all our faders at zero, and that's the way it sounds...on the CD that's the way it's going to sound. So, if you try to recall it, you can't. It's just a classic."

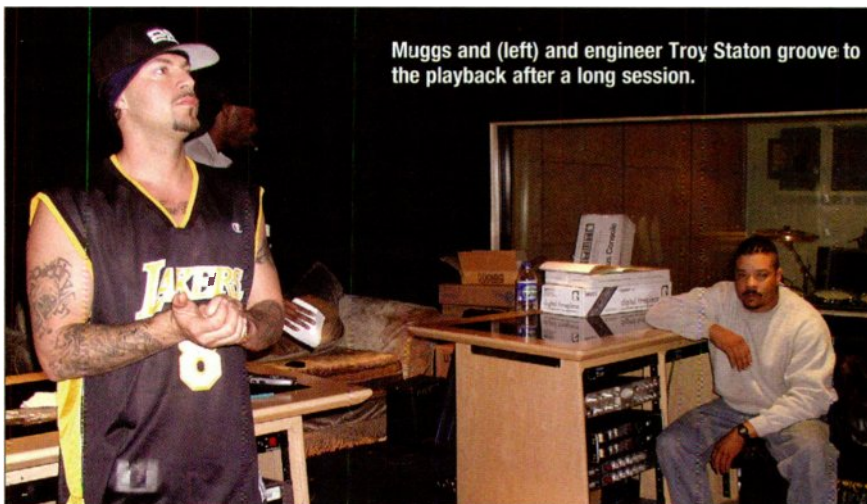
TRACK NOTES

"Cypress was just hip-hop...when we started adding live drums I still approached it from the way I make hip-hop records," states Muggs of his *tour-de-force* productions. "Every time I produce a rock band they kinda look at me sideways because they aren't used to making records with both drum

machines and live drummer. It's a lot of combined and mixed things, a lot of sequencing as well as live drums. For this project, I sampled the live drums and put it back in the drum machine and put other kicks and snares over them and then I dump them back. I make a loop, I slow the loop down so it sounds a little wobbly, throws it off. I slow it down about 10 BPM [beats per minute]. I put some kicks under it and make some hi-hat accents and that's

the song. I'm messing around with it in Nuendo, which I lock up with analog at the same time...everything working at the same time.

"On this track Scott is good," concludes Muggs. "He's quick. He locked in, he played a loop like a drum machine. Anything I ask for, he's like that [*snaps fingers*], the take's done. I am meticulous but I don't need every snare to be perfect. If it feels right and it's tight, it's good for me." ■



Muggs and (left) and engineer Troy Staton groove to the playback after a long session.

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John Leventhal's essential recording elements

Taste, Clarity and Tone

by Rich Tozzoli

At a recent show in a buzzing New York City venue, I was able to absorb some of the elements that make guitarist John Leventhal shine: taste, clarity, perfectly placed notes, and tone — pure tone. The Grammy award-winning producer/songwriter/multi-instrumentalist, whose credits include Shawn Colvin, Rosanne Cash, Willie Nelson, and Marc Cohn, possesses the rare ability to translate those same components to the records he makes.

EQ: Your recorded guitar tones are always unique. How do you achieve that?

JOHN LEVENTHAL: I generally try to avoid classic or stock guitar sounds. I don't try to be weird just for the sake of being weird, I simply try to add that little mystery to it. I try to find a cool guitar sound, one that you maybe haven't heard quite that way before. However, on this new record I'm making with Rosanne [Cash], my wife, I've actively tried to be more direct with my sounds. The "layered" thing I do, that some people like and some don't, I've tried to avoid on this new project.

How do you place the guitars in your mixes?

Part of the process is making sure each little thing has its own sonic space, which I think every good producer does. That "thing" of finding the space may mean trying a couple of guitars and a couple of amps, or maybe changing a part or approach if need be.

What amps are you using?

Lately I've been using a Fender Princeton Reverb, Fender Tweed Deluxe, and a Top Hat, which has kind of an [Vox] "AC-30ish" sound. I would use my AC-30, but you have to get it so loud, and I can't in my small studio space in New York!

What is your setup for recording guitars?

I wish I could say I use a bunch exotic mics and setups, but I don't. I have tried different mics on different amps, capturing them close and far away, but, for the most part, I try to keep it simple. In the last couple of years I've settled on a multi-amp setup, generally using one or two amps, three at the most. I like small amps with an [Shure] SM-57 in front of each one, mixing and matching them as needed to fit the song. I also compress the guitars a bit going to tape, usually

with an [Universal Audio] 1176. This setup took me years to figure out, and I've settled on this for right now. I know there is a seductive quality to spending a lot of time going nuts on sounds, but it's just not the place I choose to go to put my energy. The place where I put my energy is in writing the song or making arrangements. I'm also determined to start using more fuzz tone.

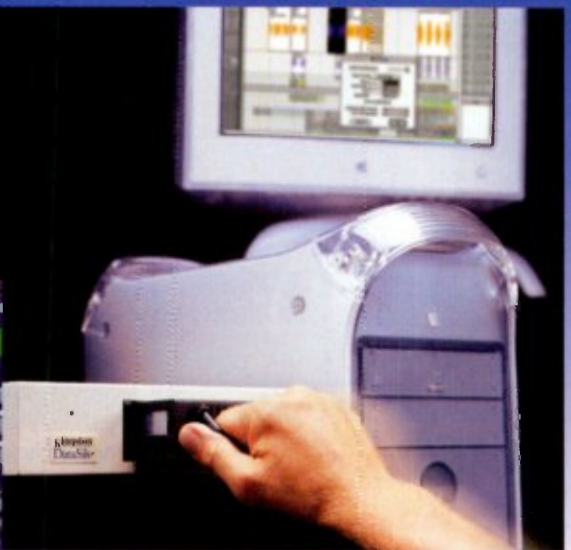
Do you co-write a lot of the material you work with?



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If they will let me! Particularly the material with Shawn Colvin, I have. Writing is really my first love. I think I would be happy just writing songs. I like making records, but writing a song is the biggest buzz.

When you're writing a song, are you hearing the production as you're going along?

Yes. Particularly when I write, I'm just zapping directly to the concept of the record. It's immediate, and I can't help myself. It's part of the excitement for me. Lately, though, I'm forcing myself to try

group, you can have the vocal back for the sake of the vibe or the groove. In some ways that may be easier to mix than having the vocal so hot. The challenge for the kind of records I make is having that vocal dominate, but then making sure the track has some compelling detail to it.

What do you look for in a vocal mic?

I try to find clarity and warmth, with no hyped high end. You really want that definition up there. A lot of contemporary mics seem to have a hyped quality that I don't find musical. You have to search

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having to combine two-inch and ADAT information, I have it all in one location.

How do you check your mixes?

Probably like everybody else. I have a pair of small Radio Shack speakers at my studio and will check it on those. I also have this boom box at my house that I've grown accustomed to, that I think is a pretty good representation of the "everyman" system. I definitely check my mixes on that, as well as the [Yamaha] NS-10's on my home stereo system.

What are your thoughts on mixing with reverbs?

I'm a fan of natural reverbs, if they are attainable. I really like the EMT plate, and if studios have real acoustical chambers, that is amazing for me. Clearmountain has a great little chamber that he built out at his place. It's hard to find that in New York since real estate is so expensive. I've done all sorts of wacky stuff when it comes to that, creating chambers in bathrooms, showers, and stairwells to add character. I've tended to veer away from digital reverbs, and when I do roughs or any recording, I'm mostly working without effects. I do like delays and will process them with EQs and/or compression. I may even put a delay through an effect or a stomp box for character. I'm not saying I won't use digital reverb, I just don't automatically grab for it when I want some kind of ambience. I'll think about some alternatives first. Sometimes I will just put a reverb in mono, particularly on vocals. A lot of those great classic records don't have stereo reverb on them, it's mono. Mono reverb really has an evocative quality to it.

Do you go through different phases of production?

Yes. Up until recently, I feel I've sort of been on one path, maybe trying to perfect one little approach that I had. For some reason, something told me I needed to stop and re-evaluate everything I was doing. On this new record with Rosanne, I stopped doing a lot of the things I would naturally do on past records. The hard part for me is sometimes I start relying on things that I know will work, and I'm forcing myself not to do that now. Hopefully, in the end, I can take listeners on a little journey, take them to a moment of surprise, then bring them back. I want to trust that the song and the singer are going to take you there, and I don't have to do anything. Did I mention I'd like to use more fuzz tone? ■

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Process large numbers of files more efficiently

Batchin' It with Wavelab

By Craig Anderton

There's nothing like batch processing when you need to process a large number of files, as I found out when having to prepare hundreds of samples for my *Technoid Guitars* sample CD. But you don't have to create sample CDs to need batch processing; batch processing is a great way to convert libraries of files to MP3 format, or from 24-bit resolution to 16-bit. If you use sample CDs, batch processing can help compensate for problems such as inconsistent levels or differences in loudness maximization. Or consider what happens when you receive a bunch of tracks that all have the same response anomaly, and you need to fix this on all the tracks. Why sit there and do each file by hand when all you need to do is set one up as desired, then have your computer apply those characteristics to all the files?

BASIC BATCHING

The concept behind batch processing is pretty simple. Although this article focuses on Wavelab, I've also used batch processing with Syntrillium's Cool Edit and Sonic Foundry's Sound Forge. While the details are different, the overall process is similar:

1. Select the files to batch process.
2. Set up the processes you want to apply (normalization, EQ, etc.).
3. Set up characteristics of the files to be processed (what directory they go in, whether you want to overwrite existing files or create new ones, etc.).
4. Click on "Run," and let the computer do its thing.

WAVELAB'S BATCHING

Here's a typical example: you have

several files open on screen, and want to normalize them. The procedure is:

1. Go File > *Batch Processing*
2. Add the files you want to process. Wavelab has a great shortcut: click on the "Add File Already Open In Wavelab" icon (the one to the right of the "Add all Files From Folder" icon; hold your mouse over an icon to see its name). This brings up a list of all currently open files. Select those you want, or click on "Add All" (see fig. 1).
3. The screen now shows the list of files. Click on the Output tab and choose the destination folder, whether to add a prefix or suffix to the processed files, output format (here's where you would convert to MP3 or change bit resolution; see fig. 2), etc.
4. Set up the batch plug-ins by clicking

on the "Edit Batch Plugins" icon. By default, it will include whatever plug-ins are currently in the master section. Check or uncheck the plug-ins you want; select additional plug-ins by opening up the folders in the right pane of the Processor List window, then dragging the plug-ins you want to apply over to the left "Sequence" pane. You can modify the order of plug-ins by drag-and-drop.

5. Note that there is a Normalizer plug-in, which is not listed under VST or Wavelab plug-ins, but is only accessible from this list of plug-ins (see fig. 3). To normalize all the files you've chosen, drag this into the left pane, then click on OK.
6. Click on run, and let your computer do all the work.

There is one caveat: if you want to undo the operation on the open windows,

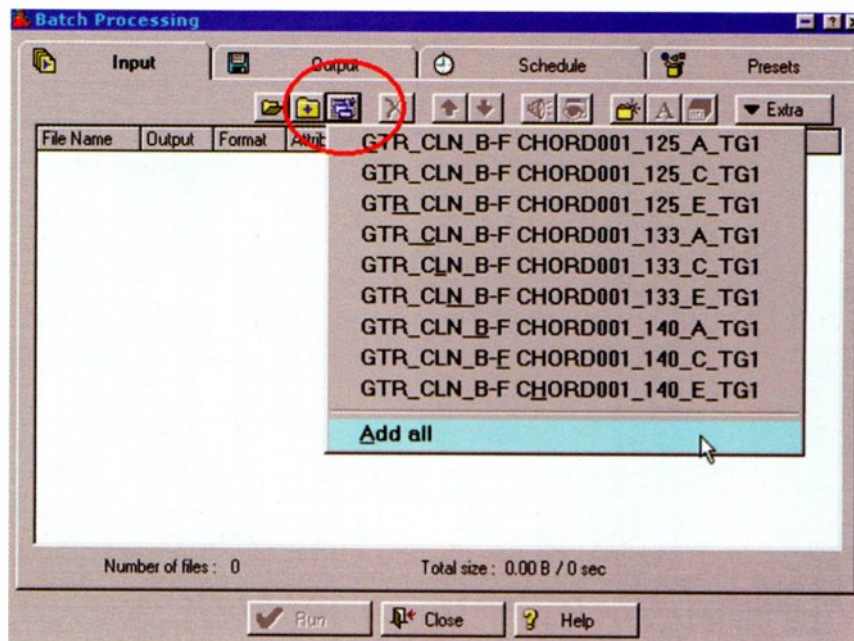


FIGURE 1: The "Add File Already Open in Wavelab" option (circled in red) is a quick way to add everything on screen to the batch processing list.

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We could go on about how the rhythm guitar tone is created through judicious use of the EZbus's on-board EQ and compression. Or how fully user-programmable mixes—recalled via footswitch—make it super easy for the band to use custom settings for each song in their set. Or how...

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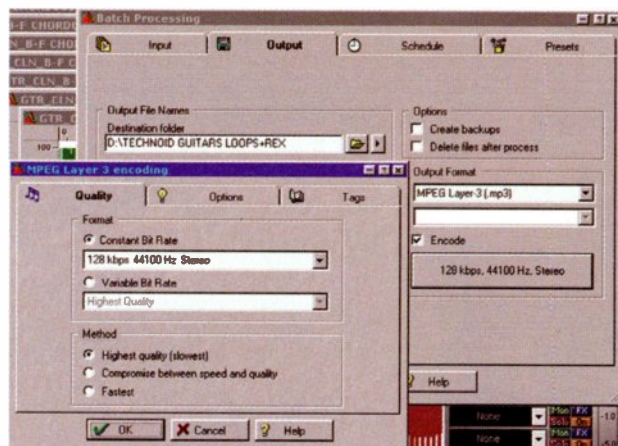


FIGURE 2: The selected files now have an output destination, and will be converted to MP3. Clicking on the box below the Encode check box brings up the MP3 encoding characteristics for editing, which are then summarized in the box.

there is no batch undo; you have to select each file and undo individually.

EXTRA TIPS

That's the basic idea behind batch processing, but let's drill down one more level with some tips.

- If you save to the folder from which the files originated, as with any other editing process, the new versions aren't saved permanently until you either save them from the file menu, or close the file and click on "yes" when you're asked if you want to save.
- Concerned about overwriting a critical file by mistake? Check the "Create Backups" box under Options (in the Output menu).

- Checking the box "Delete Files After Process" deletes the original files after processing. I strongly recommend that you never check this box, because there is no undo if you do something like choose the wrong batch process. Remember, when you batch process, you're affecting a lot of files. If you screw up, you screw up big time.

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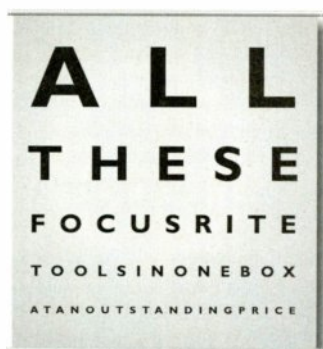
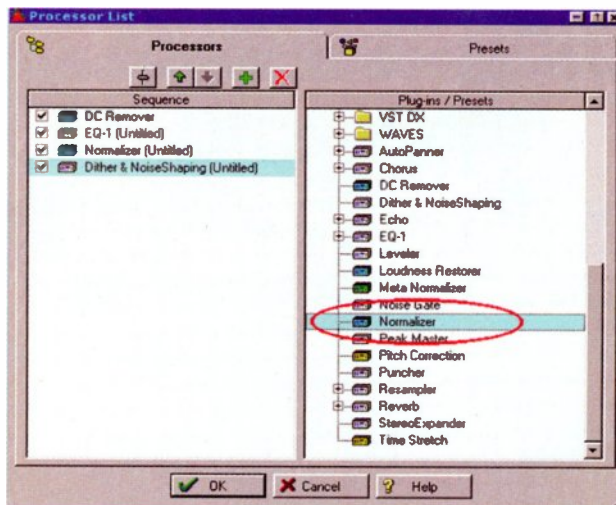


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- If you add a file name suffix or prefix, you don't have to worry about overwriting original files no matter what you do.

- The Presets option can be very handy if you do a task repetitively, like converting to MP3 from WAV, or converting WAV to AIFF. However, using presets isn't very intuitive, so here's how the process works: Type a name for the preset in the field above the Load, Add, Delete, and Update boxes. Click "Add" after entering

FIGURE 3: The normalize function lets you normalize all selected files. You can't choose this from the list of plug-ins for master section slots; the only way to access it as a plug-in is through batch processing.



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the process name, which adds the name to the list of presets in the column on the left. If at some point you want to change the preset, adjust your parameters as desired, then click on the preset name from the left-hand column. This does not load the older version of the preset unless you click on Load; instead, click on Update, and the new preset version will overwrite the old one.

- In addition to dragging over individual plug-ins to determine how the batched files will be processed, you can also choose any master section preset and just drag that over. Thus, you have two ways to batch process using presets: choose one from the master section, or create your own preset within the batch process function.

- The "Extra" drop-down menu on the Input page has a number of useful functions, such as allowing you to sort the batched files by size, bit resolution, number of channels, etc. You can also check the file format of an individual file by clicking on it and selecting "Raw File Format" from the Extra menu, or show just the file name without all the path info cluttering up the screen.

Batch processing may not be the most glamorous signal processing option in the world, but when you need to process a lot of files in an identical way, the amount of time it takes to set up the batch process is negligible compared to how much time you would have to spend applying each process individually. Once you become familiar with the batch processing procedure, you might be surprised by how many times it comes in handy. As they say, "Life's a batch!" ■

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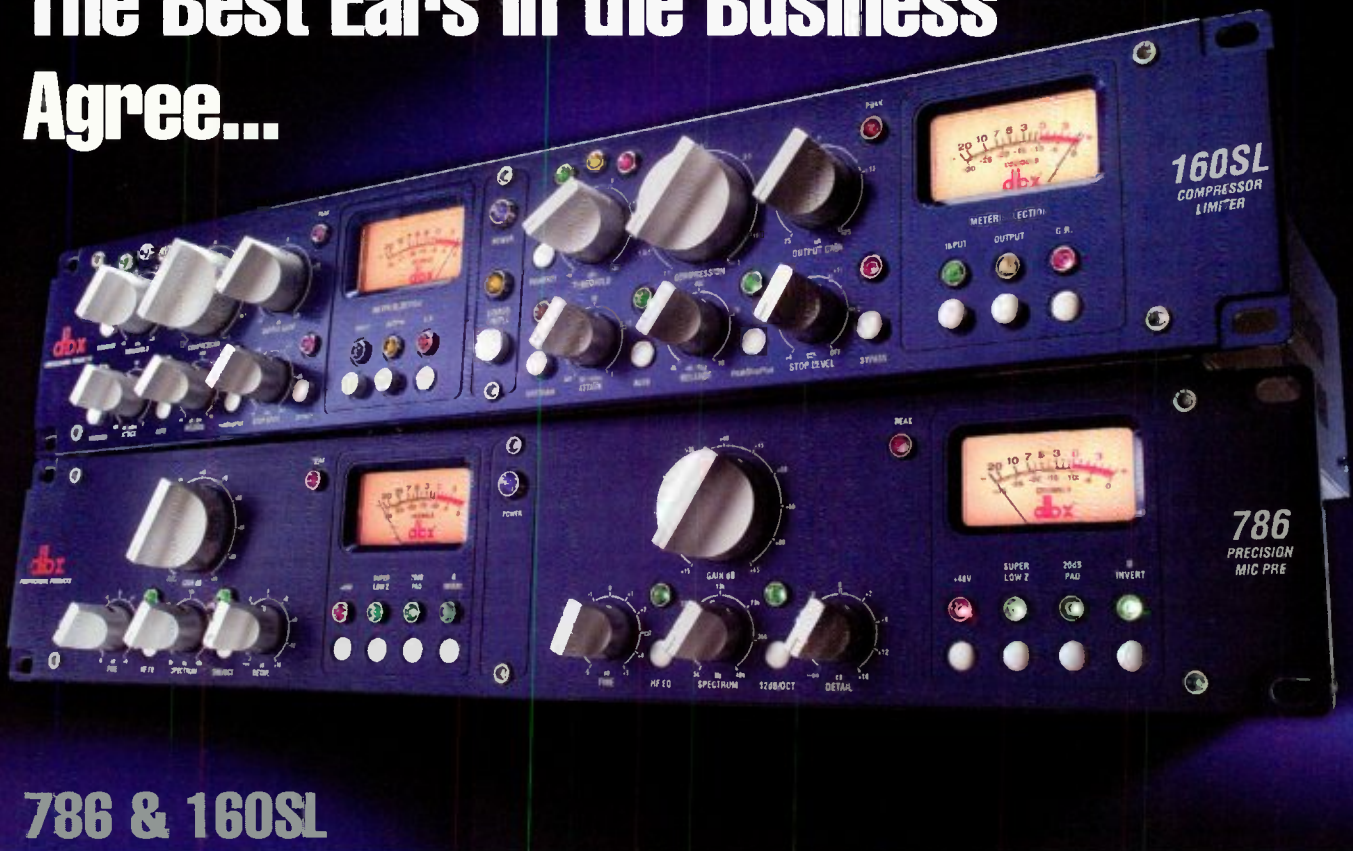
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Add audio-for-video services to your bag of tricks

Audio for Video Tips

by Craig Anderton

The gear required to create videos continues to get simpler, more powerful, and less expensive (see sidebar, "Essential Gear for Budget Digital Video"). I've taken advantage of this to add video services to what I do, from short promo pieces designed for the web to multimedia files for CD-ROMs. Following are some audio-for-video tips that have served me well; I hope you find them useful, too.

FORGET THE CAMCORDER MIC

Your camcorder's built-in mic is useless for anything other than home videos with lousy sound. It's likely there will be an input jack for adding an external mic, but now you're stuck with a cable that goes from whatever's being miked to your camera — and rule number one of video productions is: If there's a cable, someone will trip over it (and probably take your camera down in the process).

Shotgun mics are one option, but I've found a better solution. I record the audio on a MiniDisc recorder, using a lavalier mic. The MD is small enough to fit in the person's pocket, so there are no trailing wires. I still leave the camcorder mic running, though. During the editing process, I dump the video into Vegas Video (which also creates an audio track that has the camcorder mic sound), then dump the MD contents to a separate audio track. I then line up the two — easy when you zoom way in, and match peaks — so that the two sounds are perfectly synched.

By the way, you don't have to worry about having the two synched together through time code or the equivalent when recording or dumping. Both the camcorder and MD will

be crystal-controlled, and, even during long videos, drift will be negligible. If you do experience any drift, it's simple enough to make a cut in the audio, and move subsequent sections ahead or behind until they match up again.

LOOPING BACKGROUND PADS

One of the most disconcerting things

that can happen in a video is if you have music going in the background, then all of a sudden it disappears. For example, I've shot quite a few video demos of musical gear, and I like to start off with music from the gear being demoed. Then the narrator/demonstrator comes in, so it's time to duck the music way down, then fade it out.

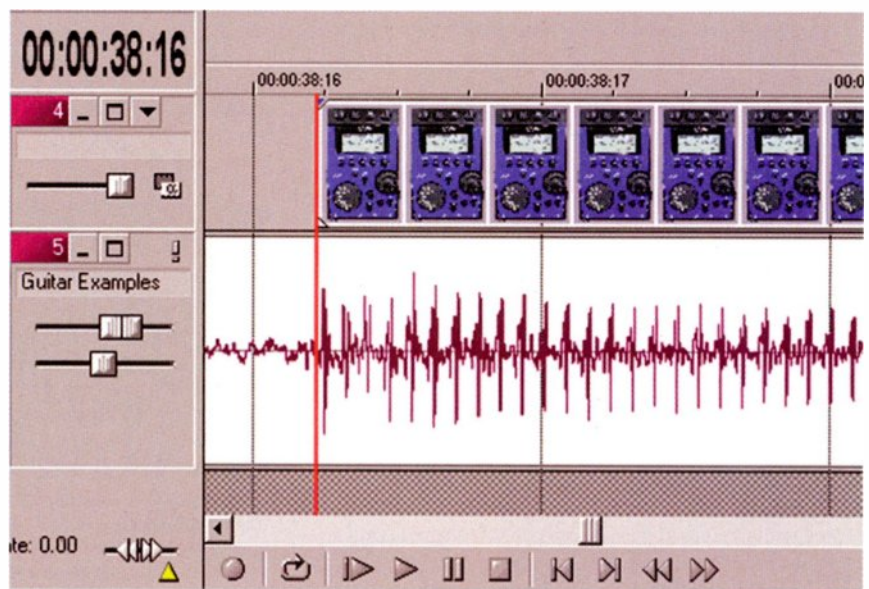
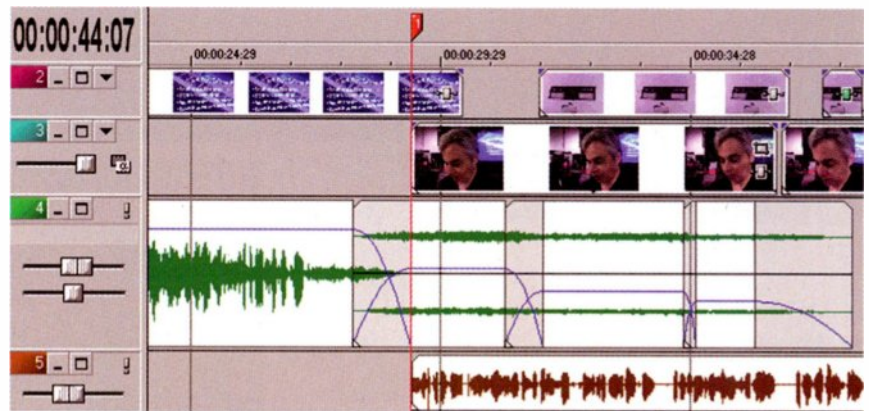


FIGURE 1: Taking a segment of music and looping it can provide a smooth fade while the narrator comes in.

FIGURE 2: The video event in the upper track starts exactly on the beat indicated by the line (shown in red for emphasis) in the lower audio track.

The reviews are in and the message is clear:
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ESSENTIAL GEAR FOR BUDGET DIGITAL VIDEO

If you want to start working with video, it's neither particularly difficult nor expensive. Here's what you need to get started.

MINIDV CAMERA. These are available from many manufacturers; I tend to like the Panasonic models, but that may be because I cut my audio-for-video teeth in a studio that used Panasonic camcorders, and they worked great. Then again, so has my MiniDV. You can get a more than adequate unit for well under a grand; just make sure it has a FireWire connection for transferring video to your computer. Also check that you can send video info back into the camera, as tape remains the most cost-effective backup medium for digital video (at least until DVD-RAM gets real cheap). Most newer cameras can do this; some older ones can't.

FIREWIRE CONNECTION FOR YOUR COMPUTER. All newer Macs, as well as a sprinkling of PCs, now have FireWire ports built-in. If your PC doesn't, FireWire cards are available from \$25 on up (use Windows 98SE or later, though, as that's when Windows became more video-savvy). Many include bundled video editing software, and surprisingly, it's often good enough to at least get you going. Don't forget a cable to patch the FireWire card to the MiniDV camera.

BIG HARD DRIVE. Video consumes enormous amounts of data, dwarfing what audio requires. It's a good idea to get a separate, high-capacity drive just for video; if it's a FireWire drive, you can hook it up to one of the spare ports on your FireWire card, or into your Mac's second FireWire port.

VIDEO EDITING SOFTWARE. Sonic Foundry's Vegas Video is by far my favorite audio/video editing tool. The video editing is fast and painless, while the audio section is built on the original Vegas Pro application (which is no longer being sold, having been replaced by Vegas Video — yes, even for audio-only applications). It handles plug-ins, effortless audio editing, and can render in just about any format you're likely to need.

Sonic Foundry also makes a "light" version called Video Factory that's designed more for consumers, but retains much of Vegas Video's power at a far lower cost. It's available from places like Circuit City and CompUSA. These aren't by any means the only audio/video editing software out there, but in my opinion they have an interface which most audio people will find very familiar — this is essentially an audio program with video editing added on, not the other way around.



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Sometimes, though, the music doesn't continue long enough to allow that. Looping to the rescue: find a part of the music that lends itself to repetition, copy the piece several times, and create a loop. Fig. 1 gives a good example of what I mean; track 3 has the demonstrator, track 5 (the one at the bottom) contains the narration, and track 4 has the music. The blue lines on track 4 show the volume envelopes for each music clip. Before the narration comes in, the music level is fairly high. It then crossfades with a pad, which is at a much lower level. The pad repeats two more times, each at a successively lower level, so that it becomes quieter and ultimately, comes to a fade out. This creates a far smoother transition than just having the music disappear.

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This is where being a musician with digital audio editing experience comes in really handy: I can zoom in on the audio waveform to see something like a kick drum hit, or other indicator of the beat's exact location.

Vegas Video has a really nice short-cut that lets you align video precisely with audio. Click at the point on the audio where you want to align an image, and Vegas Video deposits a flashing line at that exact point. Now, you can take the cursor, grab a piece of video, and move its beginning toward the line. As the video gets closer to the line, at some point its beginning will "snap" to the line. Now the video segment's start point is aligned with the audio you selected (fig. 2).

These tips are just the tip of the iceberg; there are many subtleties involved in the proper processing of narration, using electronic noise reduction, and other techniques. Hmm, maybe this video thing is getting to me — I'm starting to think about a sequel! ■

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BY LISA ROY • PHOTOS BY MR. BONZAI

A

RECORDING THE GOO GOO DOLLS *GUTTERFLOWER*
WITH PRODUCER/A&R MAN ROB CAVALLO

A REAL RECORD GUY

ROB CAVALLO IS ONE OF OUR INDUSTRY'S MORE FASCINATING YOUNG MAVERICKS. HE CUT HIS TECHNICAL TEETH WORKING FOR AUDIO WIZARD GEORGE MASSENBURG, GOT HIS A&R CHOPS FROM LENNY WARONKER, RUSS TITELMAN, AND MO AND MICHAEL OSTIN AT WARNER BROS./EPPRISE RECORDS. AND BROKE ONTO THE PRODUCING SCENE WITH GREEN DAY'S 15-MIL-LION SELLING *DOOKIE*. "I'VE SEEN ROB LITERALLY AND FIGURATIVELY GROW UP IN THE BUSINESS," STATES MASSENBURG. "HE'S BEEN IMMERSSED IN IT SINCE HE WAS A BABY. THERE'S NO SIDE OF IT HE HASN'T SEEN, AND DAMN FEW THINGS HE HASN'T DONE. ALL OF THIS AND HE'S ALSO DETACHED ENOUGH TO NOT TAKE HIMSELF TOO SERIOUSLY. HE HAS ALL OF THE MAKINGS OF THE KIND OF GUY WE DON'T SEEM TO HAVE ANYMORE: A CLIVE (DAVIS), A MO (OSTIN), A BOB KRASNOW... A REAL RECORD GUY."

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A REAL RECORD GUY

A RECORD GUY & A BOY NAMED GOO

In 1988 when Johnny Rzeznik, lead singer of the Goo Goo Dolls met his future producer, Cavallo was the fresh new face at Warner Bros./Reprise. On this particular evening Rob wasn't searching for his first signing to WB. In fact, he was tired and all he really wanted was to go home to bed. A friend, however, persuaded him to stop by the Coconut Teaser in Hollywood at 2 am to hear the punk band that was headlining. The band was, of course, Goo Goo Dolls and Cavallo — of course — loved what he heard. At the time the band was signed to Metal Blade Records, so with the blessing of the WB brass he just went ahead and signed the whole label in a move that insiders used to call "Farm Teaming." He explains, "Back in that day, Warner Brothers Records had this philosophy, the Farm Team Philosophy. What it meant was that there are certain specialties, there are certain types of

music that we don't know how to necessarily A&R and market, but we want to be involved in. So, to get that expertise, we would give an entire label a deal."

Although this venture proved to be what Cavallo terms a "miserable failure" it was certainly not a total loss, because the young producer/A&R executive formed a relationship with Goo Goo Dolls that would extend far into a successful future. Seven years would pass before Cavallo would work with the Dolls again, this time as their full-time A&R guy resulting in the multi-platinum *A Boy Named Goo*. In 1998 he took the reins as their producer delivering the Dolls smash *Iris*. Cavallo admits he never forgot what Rzeznik asked him that first night at the Coconut Teaser: "He asked me point blank what I was all about. And I said, 'The truth is...I'm about the music.'"

Rob Cavallo (left) and Capitol's Ken Allardyce





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A REAL RECORD GUY

HISTORY 101

The fascination with music began at a very early age for Cavallo. His enthusiasm was nurtured by his father, music industry titan Bob Cavallo, who influenced his son's musical tastes by playing him endless hours of Beatles records. "When I was about 12 I had this little plastic ukulele that I would tune every day to different Beatles songs and try to actually emulate the sounds. Then I got the *Beatles Complete Book*, which has every song in it, and most of the guitar tabs, and I finally got a cheapo acoustic guitar. I was able to drop the record on and strum along. That was how I learned to play guitar and really got into music. I thought, 'How do they do that? How do they make me want to jump around the room? How can they make me feel so much?' " He

continues, "To me it was certainly about the lyric and the melody, but also the sound of the record used to just do it for me. Even when there was no singing I would get crazy. I was absolutely inspired and I wanted to know how to do *that*."

Cavallo trained under George Massenburg at The Complex Studios in West L.A. Like any "third engineer," Cavallo was doing a lot running for food and coffee, but he praises Massenburg for including him on some high-profile sessions where he was able to soak up knowledge.

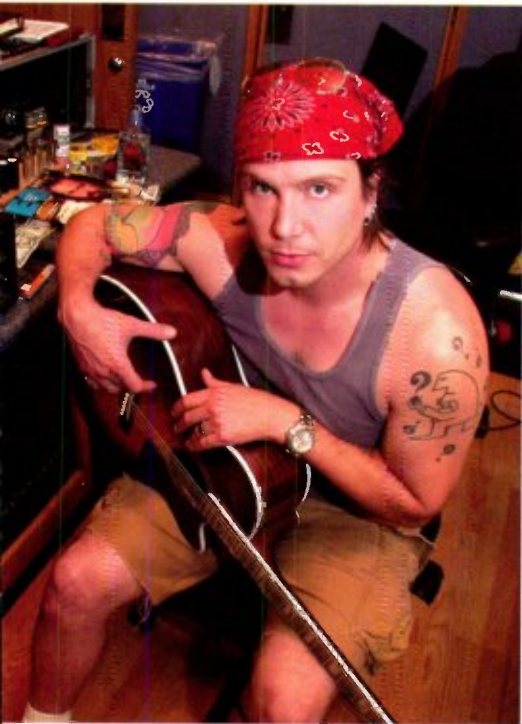
"George was great," enthuses Cavallo. "While I was running he would invite me into his sessions and I would sit there watching him do really cool things, like when he was recording horns for Earth, Wind and Fire, or a great Jackson Browne track, or the Nelson Riddle Orchestra for Linda Ronstadt's first 'standard' album." Massenburg also got the young Cavallo involved with his GML

gear. "I got to learn electronic engineering from George. I would do some of the wiring on his GML consoles," explains Cavallo. "He taught me a lot about electronics and recording." Cavallo also attended Dick Grove School of Music where he began to hone in on music theory, develop his musical tastes, and explore his creative side.

Cavallo's proverbial "break" could have come straight from the daydreams of any aspiring music business student: In 1987, only two years out of school, Cavallo landed the (aforementioned) A&R gig at Warner Brothers alongside Lenny Waronker, Ted Templeman, and Russ Titelman. "They were the greatest, and I owe so much to all of them because they gave me this chance. The story goes...I was looking at a little band called Rhythm Corps out of Detroit and Warner Brothers was kind of looking at them, and I happened to meet their manager at a party. I knew that Warner Brothers didn't

At Ocean Way (l-r): Allen Sides, Robby Takac, John Rzeznik, Rob Cavallo, and Tal Herzberg.





The Goo Goo Dolls' John Rzeznik

necessarily want to sign them, so I said, 'You guys need a new demo and I've got some time in the studio.' So I got to produce my first demo and I took it into Warner Brothers and they basically said to me, 'You know, this tape is pretty good, we figure that you could probably go and get signed somewhere, it's good enough to get signed.' Then they asked 'What do you think of it?' and I said, 'Actually, I think it's good enough to get signed, but I'm not going to shop it, I'm going to let them shop it.' They said, 'That's good because it shows loyalty to them. We'd like to hire you because we think if you can do that well with this little band, then we should put you on the A&R staff.' I think what they liked about me was that I was discerning about it. So, in a way, I was a combination A&R guy and producer guy. I was able to say, 'Well yeah, this is really good, I don't know if I want to make it my first signing, but there was something there.' So it's weird, you know, they passed on the band but they signed me!" [Ed. note: *Rhythm Corps* eventually signed with Pasha/CBS selling 250,000 on their first release.]

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The WB men that had so much faith in Cavallo continued to throw him more and

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more things to produce until Cavallo asked to be given the opportunity to focus his energies entirely on learning the business side of the industry. This would prove a wise decision as his career path flourished to where he is today Senior Vice President of A&R for Hollywood Records, Disney's rock label. Of his evolution as a producer/A&R man he says, "I did those five years at Warner Brothers without producing, which was A&R training. Then starting around '93 I started to produce hard-core, but I still was active as an A&R guy. I let the A&R slip a little bit and for the next five years I barely left the studio. Then when I got to Hollywood Records they kind of wanted me to do both — even Warner Bros. back then wanted me to do both." He recalls the difficulties in juggling the two. "I was able to adjust to going to the senior staff meeting on a Monday morning, thinking about how are we going to market records, how are we going to move records, how do we evaluate the quality of records. Then I would basically go to lunch, divorce myself from all that and switch gears completely — forgetting about the music business side of it because you really have to — and then go into the studio and say, 'all right guys, forget commerce, forget marketing, forget all that kind of stuff. How are we going to express ourselves today, how are we going to move people with music, what's going to be the best thing for this song?' That was the hard thing at first, to take the business hat off and put the artistic hat on."

Regardless of which hat he happens to be wearing, he's quick to admit to holding true to one hard and fast rule revealed to him years ago by his friend Richard Perry. The fundamental element of this "Cavallo Rule" is simply "surround yourself with good people," which Cavallo does in spades. He credits his assistant Cheryl Jenets with keeping all of his label duties and session activity organized, which allows him more time to be creative.

"She leaves no loose end untied, that is for sure," he praises. In addition to an excellent office staff, when he goes into the studio he makes sure he has the best possible room for the project as well as the best engineers to make his records sound sonically superior, often employing Allen Sides and Ken

TRACKING THE DOLLS

Walking into a Rob Cavallo session is entering a musician's nirvana. *EQ* stopped in on the producer during the first days of tracking in Capitol's Studio B and found a harem of exotic guitars (Cavallo's and Rzeznik's), a decadent array of vintage microphones (compliments of Ocean Way) and a slamming drum sound dialed in by recording guru Allen Sides. Cavallo explains that on the first day of tracking, Sides got the ultimate drum sound, and he knew that's where he had to track Goo Goo Dolls' *Gutterflower*.

FAST HARD SOUNDS

"In the case of Goo Goo Dolls, we had a very tight schedule," remembers Sides. "We started on a Monday and I was leaving the following Tuesday on another project. Rob said we had to cut the whole record, but we have to complete the four singles sufficiently that we can have good rough mixes done because the entire Warner Bros. promotion and A&R staff were coming down. We basically cut all the tracks in five days with drums, rough guitar tracks, and then I worked with Johnny on vocals. Got it all in and then I did rough mixes. So when the WB staff walked in we were ready... so that went fast."

DOLLS DRUMS À LA Sides

"I setup Mike Malinin's drums in the center of the right-hand wall in Studio B," explains Sides. "I brought my own mics and used a pair of original AKG C12's for the overhead, which I refer to as my overhead or overall drum mics. I don't necessarily consider them cymbal mics because they're part of my overall kit sound. What they do for the toms and snare is as important as what they do for the cymbals. I put a pair of AKG C12A's on the toms, one per two toms about six inches away. I use a Sony C55P on the hi-hat and a Sony C55P for the under-snare mic with an old silver Shure 545 for the top mic. I print the top snare and under-snare separately because, in the mix, I want to send the under-snare to the reverb, which I can't do if I combine them. For the kick I use a [AKG] D-112 inside, about eight inches from the head, off-axis to the center. On the outside I use a [Neumann] U47 FET with a windscreen. In regard to the room mics, I had a pair of [Neumann] M50's, original tube on the M50's single capsule for the main room mics. I put up four [Shure] 57's aimed at the floor set in a square at about eight feet by eight feet about eight feet above the floor. Two are channeled to the left; two are channeled to the right. So I had two sets of ambient and then I took the 57 set and muled off a set and did a compressed pair so I had that pair of uncompressed and compressed print in Pro Tools."

"I ran the kick and bass through [Neve] 1073's. I used the console's Neve 8068 preamp for the snare and under-snare; both with API 550A EQ's patched across them. I also used the 8068 mic pre's for the left/right overhead left/right toms with API EQ's, and on the left/right overheads. I also used the console's 8068 for the left/right room mics with API EQ's across them and used the board [8068] on the 57's. So basically Capitol's 8068 console is a very good board."

With the killer drums in place courtesy of Allen Sides, Cavallo brought in another longtime favorite engineer, Ken Allardyce to lay down those famous Dolls guitar sounds.

GOO GOO GREAT GUITARS

"Johnny [Rzeznik] is a real sort of a natural player," praises Allardyce. "He plays in all these totally different tunings. He'll tell you it's because he can't really play, but that's absolute bulls**t! He says he does it this way to facilitate his thing. He finds a tuning that works for the song. So all of his guitar parts have this sort of unusual characteristic. He's rarely into standard tuning. He's great! So between that and Rob — who is really great with guitar sounds and gets very involved with choice of amplifiers and even with Johnny with choice of fingerings — I kind of basically do my thing."

"We had about four different cabinets permanently miked up and we had a slew of others set up where we could route any of these amps through any of these cabinets and that gives you untold combinations. We had a Marshall 4x12 and a Bogner 4x12, a Bogner 1x12 and a High-watt 4x12. With the 4x12 cabinets I used two Shure 57's each pointed at a 45° angle so that the diaphragms met at a right angle pointing at the middle of the speaker. That's the brighter end of the guitar sound. Then I used a Royer 121 to sort of fill it out. On the 1x12 we used a 57 and a [Sennheiser] 451. On the Bogner we used two 57's and a [Neumann] U87. As far as EQ goes I keep it pretty flat. I find that just between the blends of the microphones I can pretty much attain what I'm after. I would however drop back the Royer or drop it out altogether when we were going for a more midrangy, aggressive sound. I would add a little bit of EQ to the 57's just to make them speak a little more on a few tracks."

"For Robby's [Tajac] bass guitar, he uses an Ampeg SVT. I'll split the signals to an Avalon direct box. Then I send it out to an 8x10 cabinet from the SVT. We used a Shure 57 and a [Neumann] U47 FET. I use the FET to get the bottom-end sound from the speaker and I'll use the 57 to go for the edgier thing. Rather than using EQ I'll use the balance between the two microphones. The 57 is what I use to get an attack and the growl going, the bite of the bass. I'll lay that fairly toward the middle of the speaker to get a real brightness. I put the FET a little bit off-axis, just to get a slightly warmer, fuller sound, less bright; that mic's taking care of the bass and the 57's going more for the aggression."



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A REAL RECORD GUY

Allardyce. "I actually have this theory that if you're really going to do a service to the band, you should supervise the engineering and check the sounds, but not actually do it yourself because your main concern as a producer is the music, arrangements, and performance. And you don't want to have to worry or take your brain off of those elements because you're fumbling around in a mic closet trying to find something."

Rzeznik, who joined our interview to

register his praise of his long-time producer, confirms this fact stating, "Rob is an incredible guitar player, he's a musician, he understands music theory, and he's really creative. I feel a lot more comfortable working with a guitar player/musician in the studio rather than some other producers that are more like engineers and they don't know as much musically in theory and stuff like that. He already knows what's going to work musically and what's not, so that makes it a lot easier. At

the same time, he is really good at finding the great engineers."

TRICKS AND TREATS

But there wasn't an engineer on the planet who could have saved Rzeznik from the potentially harmful blooper that can be heard on the final track, "Think About Me," on *Gutterflower*. Knowing that no recording session is safe from crazy SNAFU's, Cavallo shares their incident with a smile. "Johnny was singing and he was next to the board. We were talking and something was out of phase with itself, and right before the solo in that song you're going to hear him in the background go 'Wow!' and he screams...he's yelling! It sounds like he's yelling because he's excited that hey, here's the solo break. But no, it's actually because he touched the board with his hand and then his mouth hit the microphone and I swear to God I saw a lightening bolt go between his face and the microphone! He got shocked so bad, but it was so awesome that we had to leave it in!"

Not all vocals for the sessions were done in such unorthodox (or life-threatening) fashion. They set up a pretty typical vocal chain for Rzeznik when he sang from the studio. At times he used an [Shure] SM7 through a [Neve] 1073 into an [Universal Audio] LA2A but alternated that with a [Telefunken] 251 through [Neve] 1071 through a dbx 160 compressor.

Cavallo will say that he's not technically savvy, and that he leaves that end of things to his engineers, but he clearly knows his way around a studio. Getting drum sounds is a particular passion of Cavallo's and he readily shares some tricks of this trade.

"I have a couple of tricks. The first thing is actually the perception of the drums, which is that the drums are one instrument. It's not a kick, snare, hi-hat — it's not a seven-piece instrument, it's one instrument. The great drummers will play them as a complete sound and that's so much more moving. Let's say you're just talking about a snare, a kick drum, and a hi-hat. If you're listening to a great drummer, the relation of how hard he's hitting the hi-hat to how hard he's hitting the kick and the snare drum



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will move. If he hits the kick and snare drum really hard and he's letting the hat just percolate and groove, but not be loud and obnoxious, that's going to make you feel like you're getting slugged in the chest with every kick and snare. If he starts playing the hi-hat really loud and fast, you're going to get this more frantic, frenetic energy. So the first thing you've got to do is figure out what your drummer's trying to communicate and then mic accordingly."

Drum miking techniques and the importance of the right room were other areas Cavallo weighed in on. "Close mics on drums are great and I'm a fan of that, but one must put them together in such a way so that you're actually representing what the drummer played as a whole instrument. So, to me, the first thing is the philosophy of it. I like to pick a great room. As a producer, the first thing I do is listen to the band and I think, 'Which is the right room?'" Cavallo explained that he feels strongly that the backbone of any record is the rhythm section, especially the drums, so he places utmost importance on the studio selection process. "The first thing I

▶ continued on page 127



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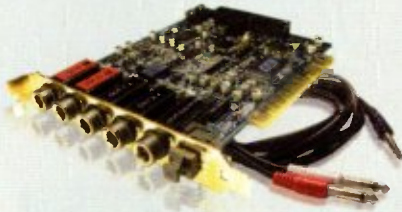


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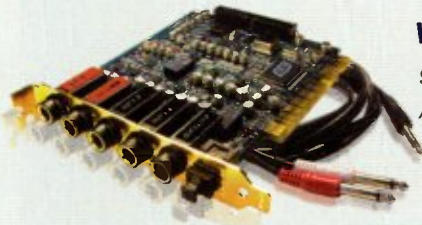
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World Radio History

Remote

By David Bryce

Control

How to record voice-over tracks from the comfort of your own home

Although music is my primary area of artistic expression, I really enjoy voice acting. Voice jobs have always managed to find their way into my life — I've done character voices for video games, various radio spots, and narrated a few industrial projects. But thanks to technology, voice-over (VO) gigs are slowly changing from a once-in-a-while proposition to a fairly steady second career. Here's the story.

GOING REMOTE

I started doing remote VO work because I mentioned in the Keyboard Corner forum at MusicPlayer.com [*Dave is the forum's moderator — Ed.*] that I was an aspiring voice artist. One of the other forum participants, the character animator for a Web project, was desperately in need of voice talent. Although he's in North Carolina and I'm in Southern California, technology managed to overcome that geographic obstacle.

First, he emailed me animations for each of the characters that he needed voiced, along with ideas that he had in his head about what they should sound like. Next, we spent some time on the phone matching my voices with his concepts. Then, I captured some takes in MOTU's Digital Performer, converted the files to WAV format, and emailed them to him. He listened to what I had done, and either called or emailed with specific notes and corrections; we eventually managed to nail the voices for five characters. It took very little time, and we never even laid eyes on each other. (If you want to hear the results, go to www.solitaire.com.)

THE NEXT STEP

I'd wanted to get into more voice work, but there are already quite a few excellent voice artists in Southern California. Many of them are also union members (I'm not), and so I was understandably reluctant to try and break into doing voice work in L.A. However, I wondered about exploring some of the smaller markets around the country, where voice talent might not be so readily available.

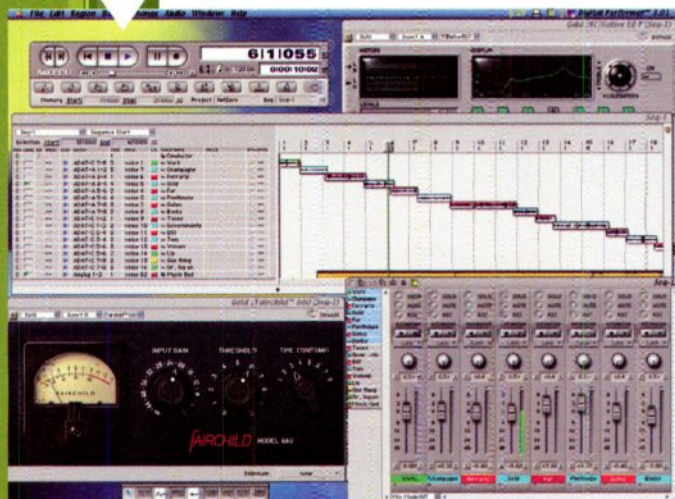
The first step was to put together a demo that was representative of some of my various voice styles and characters. Next, I ran off a bunch of CDs using my Alesis Masterlink. Then, a friend of mine and I used various desktop publishing tools to assemble a nice-looking promo package.

The Internet made it simple to locate talent agencies in various markets around the country, and I sent them my packets. Fortunately, there were some positive responses, so I'm now represented in several markets.

THE WORK FLOW

How I get work varies, but, typically, one of my agents either calls or emails about a potential job. I audition for the job,

A digital audio sequencer, such as MOTU Digital Performer, offers multitrack recording, editing, and plug-in capabilities that make it an ideal tool for voice-over production. Here, various parts of the dialog are recorded as different character voices and tiered on top of each other to occur in rapid succession. A music bed also runs underneath the dialog layered on top of a music track.



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usually by recording a line of text, which has been emailed or faxed. Then, I convert it to MP3 and email it back to my agent. If I get the job, he then either emails or faxes the full body of the text copy to me. He and I speak on the phone about what he thinks the client might be looking to hear. We then set up a "session," where my agent and the client conference call me on the speaker phone, and we proceed to cut the tracks as if we were all in the same room. I record everything that I do during these sessions.

After the session is over and the client is satisfied, I usually edit and normalize the takes, convert them to whichever format he or she wants (usually MP3), and then email them off to my agent. It's important to be able to deliver work in just about any format — email, upload to an FTP site, or "hard copy" on CD, DAT, or tape.

There are other ways to go remote — some VO artists have home studios equipped with ISDN lines, and do similar sessions by tapping their home rig directly into the studio where the client and the producer are located. I may someday upgrade to that capability if the need arises; however, right now, my current method works fine. The bottom line is that now I am able to appear on the radio in San Francisco, on a TV spot in Philly, or on an Internet site (which can be viewed anywhere in the world) without having to leave the comfort of my own home. Technology, when properly used, can be a beautiful thing.

David Bryce is an L.A.-based independent musician and voice-over artist. He was educated at Boston University's School of Fine Arts and the New England Conservatory of Music, and toured as a keyboard tech with Miles Davis. Dave is the North American distributor for ADAM studio monitors, as well as operating his own digital recording studio. Recent projects include CD-ROMs for Ford and State Farm, as well as his first solo CD, *UltraMaroon* (www.cdbaby.com/bryce).

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 You can reach David Bryce at
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The ALESIS logo is displayed in white, bold, sans-serif capital letters on a red rectangular background in the top left corner of the advertisement.The background of the advertisement is a close-up, slightly blurred photograph of the ADAT HD24 digital recorder. The device is dark-colored with a prominent digital display in the upper right showing '00:00:38:88', '501: 4024', and '00:06:13:20'. Below the display are several control buttons and knobs, including 'INPUT MONITOR', 'CLOCK SOURCE INT', and 'SAMPLE RATE'. A row of five circular buttons is visible below the main control panel. In the bottom right corner, a smaller, clearer image of the ADAT HD24 unit is shown, highlighting its front panel with a level meter, transport controls, and a digital display.

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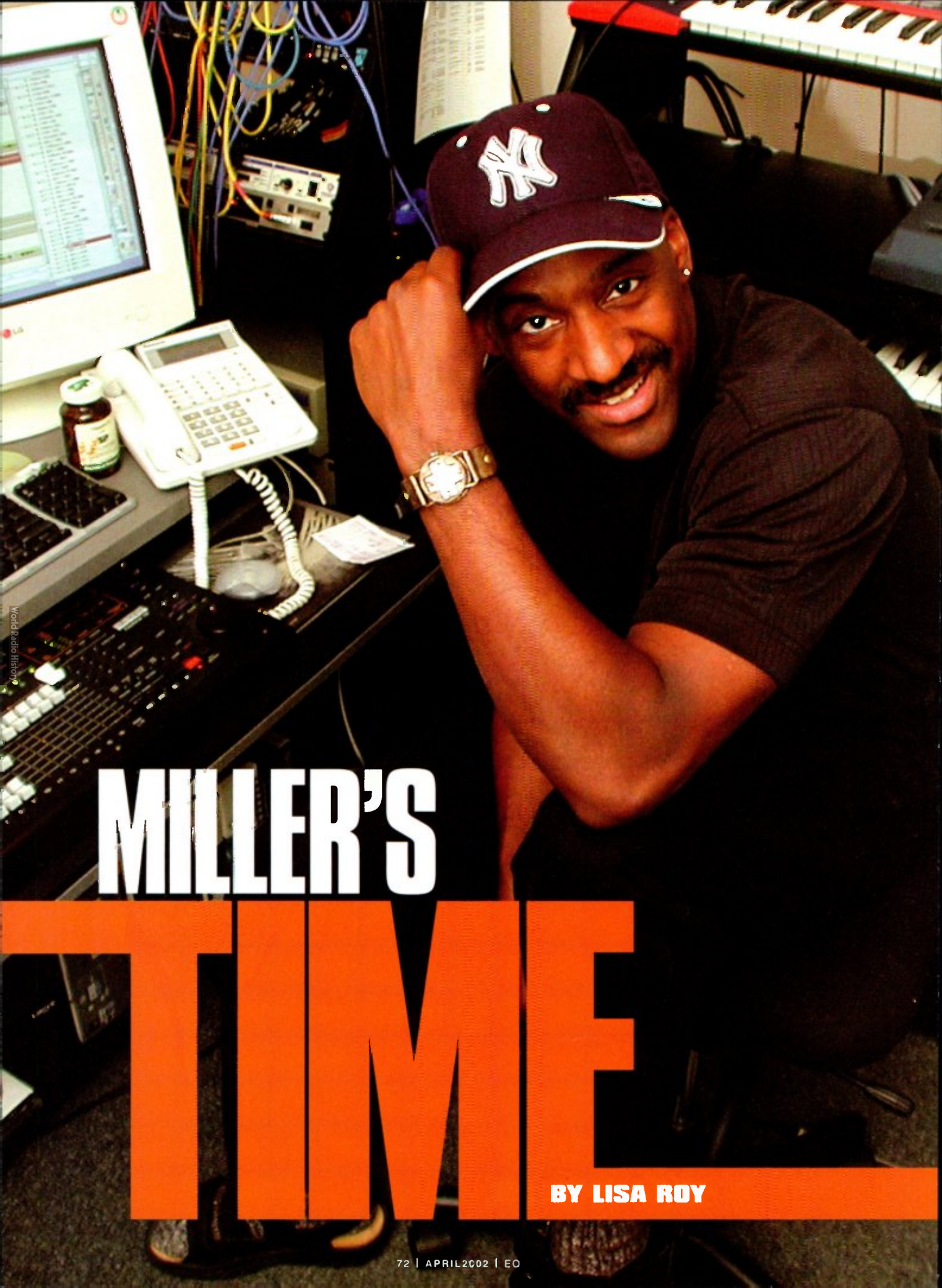
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MILLER'S

TIME

BY LISA ROY



Unquestionably, Marcus Miller is one of the 21st century's supreme modern jazz and R&B Renaissance men. He's a pioneer of startling bass techniques, a prolific songwriter, an accomplished film composer, and is equally comfortable with producing, engineering, and programming. "Anytime I do interviews, they always say, 'You wear so many hats.' I'm like, 'I don't wear any hats,'" muses the diverse Miller. "I imagine a song and I do whatever I have to do to get the song to the people. I studied music all my life, so I can arrange. I know theory, so I use all those tools. It's just about using what you've got."

This "Superman of Soul," as he's been dubbed, has been using what he has since his early beginnings in the music business. He was an important part of Miles Davis's band from 1980–81. He continued working with Davis throughout the '80s, and collaborated with him in 1986 on *Tutu*, *Music from Sista* in 1987 and *Amandla* in 1989. He's also worked with David Sanborn, Donald Fagan, Mariah Carey, Luther Vandross, Paul Simon, and Elton John, to mention a few.

Most recently, Miller produced Take 6 and his new solo effort, *M²*, at his studio, Hannibal, located on the west side of Los Angeles. In the midst of an ongoing tour and finishing up mixes for Take 6, Miller invited *EQ* to Hannibal for a chat and an afternoon filled with soul. It seemed appropriate that this interview took place in Hannibal's lounge, seated on a buttery-yellow leather sofa with a large painting of Miles on the wall looking down at us.

EQ: Why did you name the studio Hannibal?

MARCUS MILLER: I played on a record date for a trumpeter named "Hannibal" Marvin Peterson once. I asked him about his name, and he told me the story of Hannibal the Conqueror from Carthage. I was impressed by the story, and the next day I wrote a tune called "Hannibal" that Miles eventually recorded. We named the studio Hannibal to connect with that story.

How did you make the transition from a home studio to a very sophisticated studio?

I picked up the phone and called David Isaac. I said, "Man, you need to build me a studio, let me know when it's done." [*Grins.*] No, what I really said was I basically want to work the same way I've been working at home, really overdund intense. I wanted to be able to do movies and I needed a couple of rooms. First thing I did once I found the raw space was to go around and identify where certain things should be. I wanted to have a main mix room as well as a room that was more of a MIDI room where I could do my composing and arranging. I also needed a lot of storage for my cases.

I noticed your road cases on the way in — looks like you're ready to hit the road.

Exactly. We're going to hit the road soon. The other concern was we've got people on either side of this room and it was tricky soundproofing it. Luckily, on my right side is Patrick Leonard, who's a producer, too, so that wasn't such a big deal.

Was there any piece of gear in particular that you built your studio around?

Yes, the Euphonia CS2000. We knew that was going to be the thing we built the studio around. It's a great board, really flexible, but it was a little difficult to learn initially.

You made some interesting choices for your MIDI room. Why did you

MARCUS MILLER TALKS ABOUT PRODUCTION, HIS STUDIO, AND MORE

MILLER'S TIME

choose the Mackie D8B and the Ensoniq PARIS digital audio workstation?

I was looking for a board that was small and really flexible. Dave said, "You really need to check out this Mackie, because it can do a lot of what you're looking for." It turned out to do more than I'm actually taking advantage of. I have two D8B's linked together. I do most of my work in the PARIS. I have an MCI JH24 — it hasn't been turned on in nine months. We also have two TASCAM MX-2424 hard disk recorders. What we've done in PARIS translates well. Khaliq, my engineer, does a digital transfer over a mix and it maintains the exact same sound that we had become used to.

Why do you favor the PARIS system?

The thing that's important to me is the sound. All these workstations have interesting features, but the thing that impresses me with the PARIS system is that I don't have to go through a lot of crazy converters to make it sound great. People often tell me, "Man — that sounds like tape." They clearly designed this for musicians, knowing what we need to do.

You've done some very sophisticated projects at Hannibal. What are you doing for maintenance?

We have three guys that alternate. Khaliq knows all the gear, so he can



HANNIBAL CREW:

RAY BARDANI

"I met Marcus in 1981 on a session I was producing and engineering for David Sanborn titled *Backstreet*. Marcus came in to play bass, and we just hit it off. We've worked together off and on ever since," shares Ray Bardani, the native New Yorker who also mixed Marcus's *M²*.

After completing mixes for Dr. John and Luther Vandross, another long-time client, Bardani headed back to Hannibal to work with Marcus again, this time mixing Take 6. In between mixes, Bardani shared a few of his hit-making techniques.

"Marcus arranged and played the instrumentation very sparsely to allow space for what Take 6 does. I want the vocals to sound big and full range, but I also want the accompanying music to fill up the spectrum. I want the whole thing to be a full-range record, and yet keep it intimate at the same time. It's challenging that there are a lot of voices, and each part is important. You have to make sure it's a wonderful blend.

"I'm using a lot of the EQs, compressors, and gates within the Euphonix CS2000 because they're good. The console is great: it's clean, quiet, and clear.

"Although it varies from song to song, there's about 28 tracks of vocals involving all the layers and parts. I'm basically using the compression, EQ, and filters in the Euphonix for the vocals, but I'm also using API and GML equalizers. I'm putting the mixes through an SSL stereo outboard compressor.

"I approached the mixes for Take 6 by putting things up to see what the arrangement is and to get a feel for the song. I get a basic setup, just a straight blend of the vocals, and then I turn that off and start getting into the track, then the ambiance, the reverbs, and the delays. As I'm doing that, I keep putting that record's blend in so I'm always hearing what's going on.

"Once that's done, I hone up the track and start on the vocals. I balance every track left and right, and then the inner balances within the group. There're overall rides within each section for the whole group as a blend. After the work is done, which can take as long as two days, I work on the lead vocals. Once the full picture's ready, that's when Marcus comes in. He listens to make sure the blend is nice and the level of the vocals is great for the track. We may tweak a little bit in the music here and there. We put it down very late at night, and it sounds really great. I think what Marcus did as a producer was really cool. It was very special because of the way he treated the grooves in the track and left so much space and air so that Take 6 can be featured. It's a very intimate-sounding album."

KHALIQ GLOVER

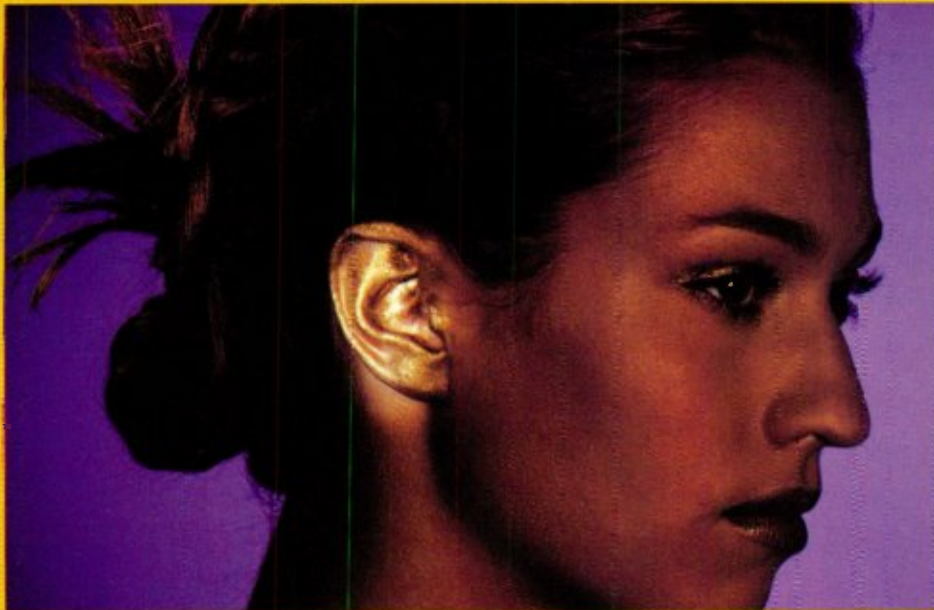
At the head of the Hannibal team is Khaliq Glover, often referred to as Khaliq-O-Vision. He helped construct Hannibal, has been known to repair a faulty cable or two, and is often manning the Euphonix. He has engineered for Marcus as well as David Benoit, Jeffrey Osborne, and, most recently, Take 6. Khaliq-O-Vision shares his recording technique for the premiere a cappella group.

"We recorded everything here at Hannibal. With a group like Take 6, the challenge was separation and keeping the sound focused — not having a lot of sound bouncing off the walls. The best tools that I had were the Acoustic Sciences Tube Traps. I used those to partition off the room.

"To record the vocals, I selected my favorite microphone, which is the Sony C800G. Every voice that I recorded through it, including Lalah Hathaway, who is a guest vocalist on this album, sounded great. For lead vocals, I used the AMEK Channel In A Box, designed by Rupert Neve, which is a preamp, EQ, and compressor. I also used some Focusrite EQs and the [Empirical Labs] Distressor. For the background vocals, when we approached recording everybody as a group, I used either the Mackie or Great River preamps straight into the PARIS digital audio workstation.

"Marcus brought in Vinnie Colaiuta to play drums. The trick with this record was to not make anything as big as the group, so I recorded Vinnie with just four microphones. I used a Shure Beta 52 for the kick, a Shure Beta 57 for the snare, and a pair of Royer 121's for the overheads. It just captured the sound in the minimalist way, but it was very nice and still out of the way."

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MILLER'S TIME

basically fix anything. He's been really helpful in taking care of that end for us.

As a studio owner, what's been your biggest challenge?

Just trying to stay on top of it and setting parameters, because there's always something else you can buy. I know so many studio owners, man, they're like addicts. [Laughs.] They have to buy something as soon as it comes out. We've become really focused on what we want to get done. Every time there's a new piece of gear that comes up for question, we debate the pros and cons of it and ask if this is something that can really help us become more efficient. We know it'll help us have more fun, but will it help us get to the final product faster?

When first opening a studio, most people would do a test run with a friend on a demo or some overdubs. However, that wasn't the case at Hannibal. Your first project was for an installation at Paul Allen's Experience Music Project in Seattle, titled *The*

***Artist's Journey*, which you produced and mixed in 7.1.**

[Big smile.] Yeah, that was our first project here. A lot of the tracks were recorded at Capitol Studios and at the Forum, but they brought it here to mix in 7.1. So this studio got a trial by fire.

So no pressure?

[Nods.] It was all good, though. We knew the basic equipment would work. The thing we didn't know was how the mixes would translate and sound outside the studio.

How did you deal with that?

After we did the mixes, I made CDs for everybody, and we would listen to it everywhere. We decided that the bass was a little low on one system and it was a little more in my car than we thought we had in the studio. There was a lot of good communication with the other people involved.

What were some of the technical challenges you faced dealing with the differences from stereo to 5.1 to 7.1 with the Experience Music Project?

I think the jump from 5.1 to 7.1 is not as

big as the jump from stereo to 5.1. There are still so many issues with bass management, and, because it's still so new, there really isn't a standard. It's kind of like the wild, wild west in terms of how you're going to make it work. Even with 5.1, the medium you deliver on is up for grabs. So bass management was an issue with this project. We weren't bashful about calling people and getting as much information as we could. Sometimes the information was contradictory.

How did you decide on which approach would work for you on this mix?

Well, we knew that the ultimate playback area was going to be in the museum. We felt like we were going in blind because we had never seen or heard the room. I had somebody go up there and describe the room, telling me exactly where the speakers were placed. Some speakers were above your head, some were on the side, and some were in the screen. I felt if I knew where the speakers were, I'd know what to put where. I

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mean, with the speakers on the side, you're not going to put a lot of sensual rhythmic music there. Deciding where everything was going to be based on that specific application was important.

I understand you did the 7.1 mixes on your Mackie D8B consoles.

Exactly. Mackie said that surround sound mixing was one of the features of the D8B, and the Euphonix CS2000 wasn't especially designed that way. So we said let's figure this out. We used the Mackie's and the Z Systems Digital Matrix to send the musical signals to the different speakers. It was great.

Who was the 7.1 mix team?

Khaliq Glover, Paul Mitchell, David Isaac, and myself.

It takes a village to build a mix.

Absolutely. We conferred on the mix concepts because there were going to be hundreds of people in the museum with a lot of talking going on. Everybody still has to hear the mix, no matter where they are located in that room. We approached it basically thinking about what has worked



all the time. We all know about stereo, so we started with stereo and began building a multichannel mix. It would be very bold to put the reverbs over here and move it all around, but you can't get too crazy with that stuff. We realized that if there's a room full of people and they're at the back near the rear speakers, they're hearing effects blasting right in their ear and can't hear the full balance. I mean, we were mixing performances by James Brown and Herbie Hancock with David Sanborn, Chaka Khan, and Rufus and Dr. John. So we mixed it so, no matter where you were in the room, you still got a basic sense of what was going on.

How would you describe the final outcome?

It came out sweet. It sounds like James Brown. Also, with this kind of music, it wasn't a movie atmosphere, it was funk. We didn't want to spread it out too much, because then you'd lose all that thrust. The whole point was like everything coming from the same place — that's what made it really funky. We were careful to separate the things that were kind of flavor, as opposed to the essentials. Catfish's guitar came right from the front — we're not putting Catfish in the back. Catfish has to be in your face. Chaka's got to be right there. It was cool.

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MILLER'S TIME

Another project you just completed in Hannibal is *M²* for your new label, 3 Deuces Records [marketed and distributed by Telarc International], your first studio project as a leader since 1994. Congratulations...great sounding record, great bottom end.

Oh thanks. Yeah, I played bass, so the bottom end was really important. I feel this record is a product of the studio. We started from scratch with the equipment writing the songs...everything was

started right here!

I noticed that you used programmed drums as opposed to live drums on some of the tracks. What was your reason for that?

It's just sound. If you listen to the album, it's half-and-half actually. But the first song that hits you over the head is definitely coming out of my MPC2000. It's just because I use a lot of R&B elements in my music. That's the sound. It sounds different from a

real drummer. I'm not trying to replace a drummer. There are other songs on the record that need to have a guy jamming

How did you approach recording the basic tracks — analog or digital?

Most of the live tracks were recorded to the MCI JH24. Then we transferred it into PARIS. Any manipulating or overdubbing that I did was in the digital domain in PARIS. After the basic tracks, I had a string section come in and we recorded that straight to PARIS. Once we got everything into PARIS, it was about making a record.

Any unique moments during the making of *M²*?

Taking the discs to Herbie's [Hancock] house on a little laptop, a Digi 001 system that David Hampton set up in Herbie's living room. He had the piano miked and was playing while Khaliq was looking at the laptop to be sure it was being recorded. It's pretty cool, you know what I mean? It makes you realize that, man, stuff is finally happening.

Not exactly the typical studio session.

No. [Chuckles.] I told Herbie to call me when he was ready to go. He called me at 1:30 AM and said, "Man, we're ready. We're wrapping something up so come on over." I came over.

But, the thing that's nice is that we're getting to the point where the technology is helping us sound more human as opposed to the technology making the music sound like technology. You hear the song, you don't think about technology when you hear it. You think about life. Man, it sounds beautiful. Technology was just there to help us get it done, but we weren't focused on it. We were focused on the music, and that's the part I want to get to: Where the music is not overwhelmed by the technology, it just helps you get it done.

What did you learn from Miles Davis that you still apply to your own recordings, musically and technically?

You know what Miles did? He always said, "I did that last time, I'm not doing that again." Musically, he was always pushing, really driven to do that, so I tried to take that from him.

People say, "It would be nice if you made an album like you did in 1980," and I'm like, "Man, you have to buy that

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MILLER'S TIME



record, because I've got other places to be." I learned that from Miles.

Technically, if you listen to Miles's records from the '50s, especially now that they're reissuing them in a clearer format, you can tell that it was recorded in an absolutely brilliant manner. The mic was everything; the room was everything. His records created such ambiance. When I was working with Miles, we never were concerned with the technology. The engineers did their job before we got there. By the time we walked in, it was all about the music. The only time we were ever aware of the technology was when the engineer would say, "Hold on, we have to switch reels." And that was only because Miles was such a cat — he was a cat who would do his best things while you were switching reels. The engineers started having two machines going, and they would start one right when the other one was winding down.

They said, "No way Miles, you're

not doing that to us again." Other than that, it really wasn't about technology. Now you'll see musicians are more concerned about the technology. A studio cat knows that, with an acoustic guitar, you have to get a certain sweet spot on the mic. The job as an engineer was to make it so that the musician could do whatever they wanted. Miles used to walk around in the studio playing the horn. We couldn't mic him because every time he played something sweet, he was off the mic. The engineer took a PCM and put it on the window in front of Miles. He also used a standard mic, but anytime Miles went off the mic he just brought the PCM up to capture the phrase. In that way, he used technology to help Miles be more human. The engineer allowed Miles to be Miles.

That's what we try to do here at Hannibal. I think that's where technology's really going to be helpful, just to allow you to be a little better. ■

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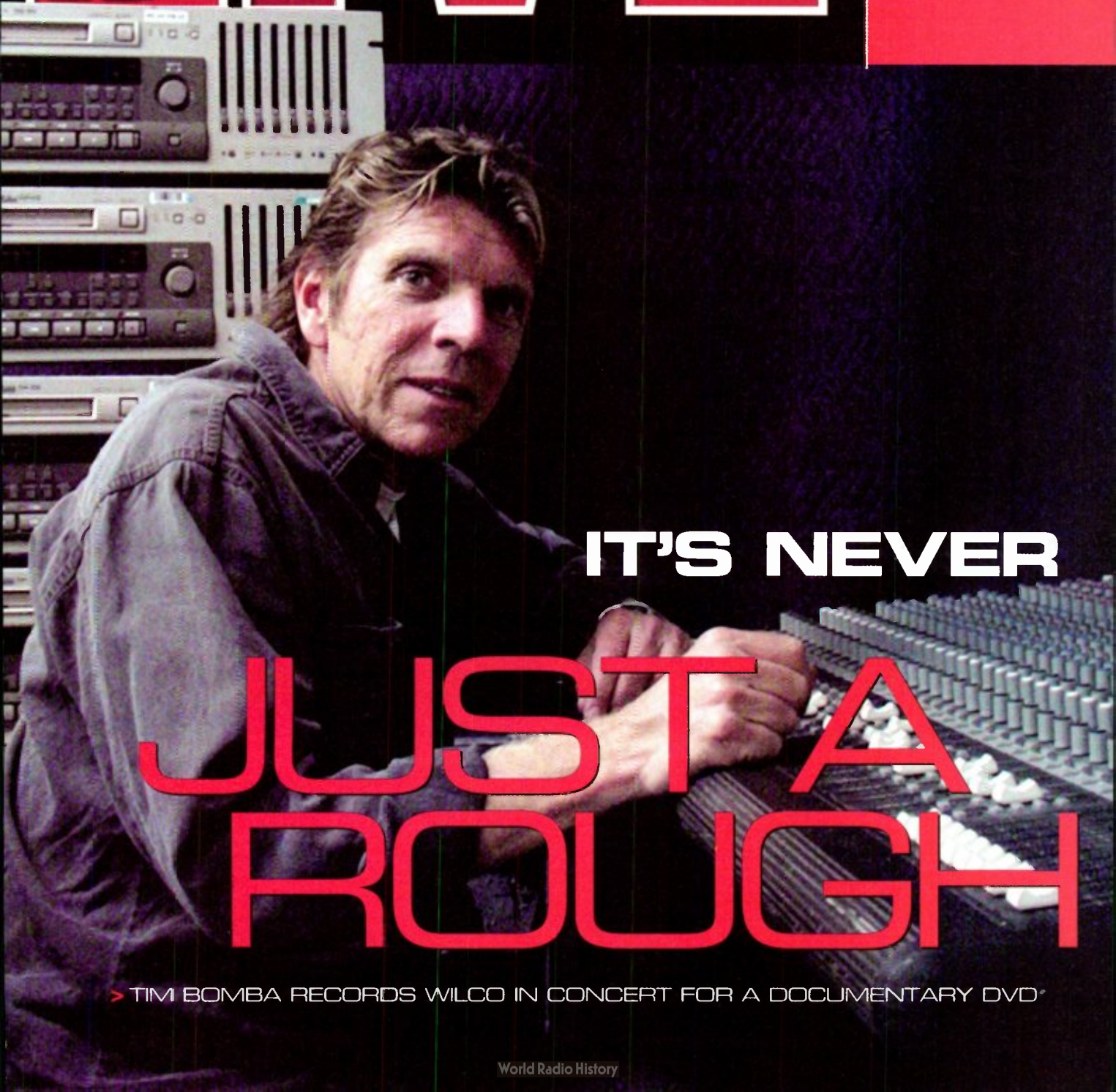
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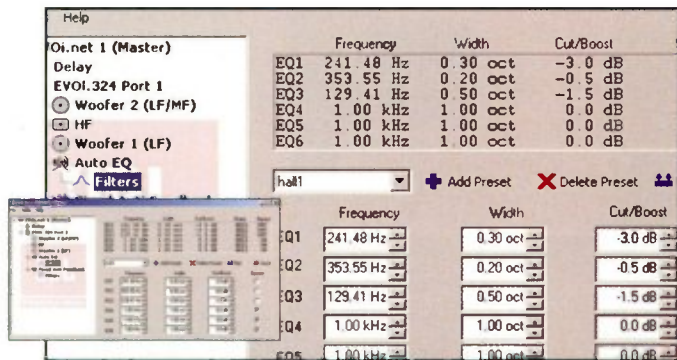


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CONTACT: JBL Professional at www.jblpro.com



QSC 1850HD

THE BASICS: RMX series two-channel power amp

THE DETAILS: QSC's latest power amplifier is the RMX 1850HD, a two-channel unit designed to provide exceptional value and performance to performing musicians, mobile DJs, and anyone needing a portable PA system. The 1850HD offers 360 watts per channel at eight ohms, 600 watts per channel at four ohms, and 900 watts per channel at two ohms. Each channel has an independent low-frequency filter that can be adjusted from 50 Hz for full-range systems to 30 Hz for subwoofers. User-defeatable clip limiters are also included. Inputs are on 1/4-inch TRS, XLR, and barrier strips, outputs are on binding posts and Neutrik Speakon connectors.

CONTACT: QSC Audio Products at www.qscaudio.com



MH4

THE BASICS: Live performance console

THE DETAILS: The MH4 is Soundcraft's first foray into triple-mode mixers. The console can serve as a front of house desk, a monitor mixer, or can perform both functions without compromise. The new mixer has eight group buses and 12 aux buses in FOH mode, or 16 monitor buses (eight mono and four stereo) in monitor mode. The MH4 will be available in 24, 32, 40, and 48 input frames, with 56 inputs available later. There are eight VCA and eight mute groups with snapshot automation, true LCR panning, a 20x8 matrix, and integrated control over dbx DriveRack and BSS VariCurve processing.

CONTACT: Soundcraft at www.soundcraft.com



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BY STEVE LA CERRA

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RDL (Radio Design Labs) has introduced two new pieces of handheld audio test equipment. Intended for analog audio system analysis and testing, the PT-AMG2 audio monitor generator and the PT-ASG1 analog signal generator may be powered via AC adapter for bench use or via batteries for use in the field.

Built in a compact, handheld chassis, RDL's PT-AMG2 features an audio oscillator, precision level meter, phase indicator, and monitor speaker. Audio may be output from the AMG-2 via balanced XLR connector or unbalanced RCA jack. The XLR output may be switched at the front panel for mic or line level, while the RCA output operates at -10 dBV. An internal, bench-accurate oscillator generates a 700 Hz test tone for easy use in any audio system, without causing the listening fatigue associated with 1 kHz oscillators. The PT-AMG2's output network produces equivalent output level into low-impedance (200 ohms), as well as higher impedance (greater than 1,000 ohms) mic preamps, facilitating 50 dB mic-to-line gain setup of any RDL module or other professional-quality mic preamp.

Audio input to the PT-AMG2 is via balanced XLR jack (switchable for mic or $+4$ dBu line level) or unbalanced RCA jack at -10 dBV. Either of

these inputs can be used to feed the PT-AMG2's metering circuit, which references "0" to the audio input being used. For example, when using the balanced input, the meter indicates 0 dB at a signal level of $+4$ dBu. When using the unbalanced input, 0 dB is equivalent to -10 dBV. Backlit LEDs are provided for easy reading in light or dark environments, with indicators at -20 , -10 , -3 , -1 , 0, $+1$, $+3$, and $+10$ dB. Although the line-level I/O reference is factory set to $+4$ dBu, it may be changed to $+6$ dBu via a switch located in the battery compartment. When either front-panel level switch is set to "mic," the associated XLR is referenced to -46 dBu (50 dB below $+4$).

The PT-AMG2 may also be used to verify phase integrity from input to output in an audio system (or cable) through use of the "in-phase" indicator, which illuminates when the oscillator output and metering input are in phase (0 dB level or greater).

A monitor speaker with volume knob located on the front panel allows a user to listen to the input signal. The PT-AMG2 may be powered using two internal 9-volt batteries, or by an external DC supply of 12 to 30 volts.

For situations where a remote oscillator is required, the PT-AMG2 can be used in conjunction with RDL's PT-ASG1, which contains the same ultra-stable 700 Hz tone generator employed in the PT-AMG2, along with balanced mic- or line-level output via XLR connector and -10 dBV unbalanced output via RCA jack. The testers may be used separately or together to set system gain mic-to-line, line-to-mic, mic-to-mic, or line-to-line at professional or consumer levels. Both devices are constructed from extruded aluminum and steel enclosures. Test leads and a bench-top stand are included. An optional carrying case and AC power adapter are available. ■

RDL PT-AMG2 and PT-ASG1

FIRST LOOK

RDL PT-AMG2 and PT-ASG1

- **WHAT IS IT?** Audio test equipment that may be used for bench or field use.
- **WHO NEEDS IT?** Sound system contractors, touring sound engineers, audio bench techs.
- **WHY IS IT A BIG DEAL?** The PT-AMG2 and ASG1 both feature a precision, 700 Hz oscillator, and may be operated at mic or line level.
- **SHIPPING:** April 2002
- **PRICE:** PT-AMG2, \$306; PT-ASG1, \$216
- **CONTACT:** For more information, contact RDL at 800-281-2683 or visit www.rdlnet.com.

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World Radio History

IT'S NEVER JUST A ROUGH

TIM BOMBA RECORDS WILCO IN CONCERT FOR A DOCUMENTARY DVD by **Steve La Cerra**

Approximately one year ago, director/producer Sam Jones began filming a documentary on the band Wilco entitled *I Am Trying to Break Your Heart*. Since that time, the band has experienced many exciting developments, the latest of which include being signed to the Nonesuch label, and a sold-out, three-night stand at the Fillmore in San Francisco. As part of his documentation of Wilco, Jones filmed the Fillmore concerts. With an eye and ear toward the Plexifilm DVD release, Jones turned to record producer/engineer Tim Bomba to supervise multitrack recording of the shows.

Of course, multitracking any live event would be easy with a remote recording truck, but this was not to be the case with Wilco at the Fillmore. "Honestly, we tried to use a truck," laughs Tim. "I had a truck lined up with Bob Skye out of San Francisco who had recorded at the Fillmore many times in the past. Well, the night

before we're set to leave for San Francisco, we get a call from the Fillmore saying they can't accommodate the truck due to parking restrictions: there's only room enough to park the band's bus and van, and that's it. End of story. Reality sets in! Forget the budget, it's all about the parking!

"I called Mark Napier at Audio Affects in Burbank, CA, thinking I could rent enough gear to set up a control room in an empty dressing room at the Fillmore. After presenting this idea to the Fillmore, their answer was, 'We can't do that. You'll have to set up next to the front-of-house engineer.' Okay, scratch the amp and monitor speakers. I changed the gear requirements several times and the guys at Audio Effects were right there with me. I decided to bring mic preamps, TASCAM DA-88's, and a Mackie 32•8 mixer for monitoring. Luckily, the FOH platform was just big enough (about



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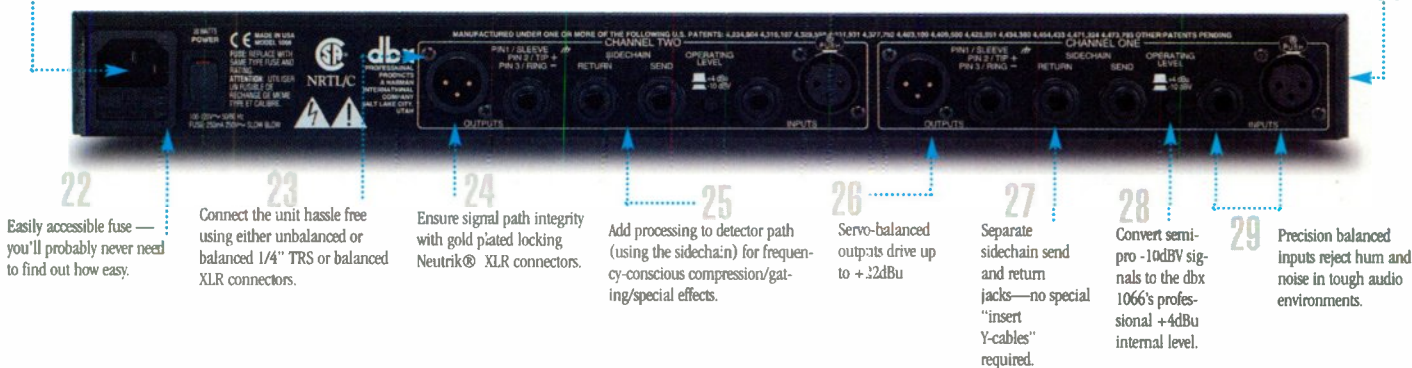
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IT'S NEVER JUST A ROUGH

15x15) for me to fit my gear up there with the house console next to Stan Doty (Wilco's FOH engineer)."

Tim spec'd 40 channels of Aphex 1788 microphone preamps, which he describes as "amazing. First and foremost, the mic pres have to sound good — which they do. Second, these preamps fit eight channels in a two-space rack unit, and have the ability for remote control (which I didn't use). I own Hardy, Neve, and some of the original Universal Audio mic pres, but to put them all in a rack and get them on the road is a pain. So I took five Aphex 1788's. George Edwards from Sound On Stage (San Francisco, CA) rented us a transformer-isolated mic splitter. I was hoping for a transformer-isolated power system at the Fillmore, but it wasn't possible."

Load-in for day one at the Fillmore was at 1 pm, allowing Bomba four hours to get his "control room" up and running for a 5 pm soundcheck — which was critical in light of the fact that the soundchecks were also being recorded for the documentary. "When I got to the Fillmore, the house engineer Mary Alafetich was all over it," explains Tim. "She hooked up the mic splitter before I even asked. The entire setup was pretty basic, but if one connection was screwed up, we'd be hunting around forever to find it. There were cables everywhere, but we plugged in everything once and it all came up where it was supposed to."

To avoid complicating the stage, which would also be accommodating opening acts for each show, Alafetich and Bomba located the isolated split next to the front-of-house console (a Crest Century X). Mic feeds from the stage came to front-of-house, were patched to the split, and then from the split to the mic inputs on the house desk, as well as the mic inputs on the Aphex 1788 mic pres. Outputs from the 1788's were patched directly to the five TASCAM DA-88's on which the shows were recorded. "There was no EQ'ing or compression," says Tim, "though I personally would like to have taken some processing with me. But, being a documentary, the budget

didn't allow for outboard. The XLR outs of the 1788's were connected to XLR-to-DB25 breakout cables that directly fed the analog inputs of the DA-88's. Then the DA-88 outputs were fed into the Mackie's 32 tape return inputs using DB25-to-1/4-inch breakouts. Since the Mackie had only 32 channels and I had 40 tape tracks, I used a few of the stereo returns for the last eight tape tracks. All I really needed was to know that the tracks were being recorded cleanly, so some of the tracks (for example, the tracks from the room mics) were patched into the stereo returns."

During the show, Tim monitored

**“THE ENTIRE
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FOREVER TO
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WERE CABLES
EVERYWHERE...”**

the recording using a pair of Sony MDR-V2 headphones. When asked if he could actually hear anything in the cans, Bomba replies, "Oh yeah. When they started the soundcheck it was more technical: I'd solo each channel to make sure it was coming through correctly and that the signal was clean. I recorded a board mix one night, but I didn't take anything with me to record a live stereo SMPTE timecode DAT mix from the Mackie. To be honest, I was more

concerned with DA-88 and preamp levels. You always set up conservatively in a soundcheck because the band plays a little louder during the show and there are peaks. You don't know what's going to happen the way you do when you're doing a record. In the studio, you might do two songs a day and keep the drum heads fresh...well, we're doing 30 songs in two and a half hours per night. By the end of the night, the snare drum sounds different from what it sounded like in the first song. Things like that had to be watched, and that was more important than doing a live mix."

Microphones for the recording and FOH feeds were identical, chosen by Stan; there was no double-miking of instruments (see sidebar for mic listing). The only additional mics Tim had were a pair of AKG C460's for the audience. "It's not like walking into a recording studio where you have all these great vintage mics and you think, 'Okay, which of these will sound the best?' In some cases, isolation is more of a concern. 'Which of these mics will isolate the instrument from the rest of the stage?' This came up regarding Wilco drummer Glenn Kotche. He is an amazing player, and along with his kit he has melodic percussion like vibes and a xylophone. At first I thought there was a percussionist in the band, but then I found out that Glenn could play a groove (kick, snare, and hi-hat) with one hand, and play a melody with his left hand. When he uses a hard mallet there's no problem getting enough level to the mic, but when he uses a soft mallet it's tough to get anything between the room noise, the rest of his kit, and the other instruments on stage. When you open up that mic for the glock, it's all the hi-hat you'll ever need!"

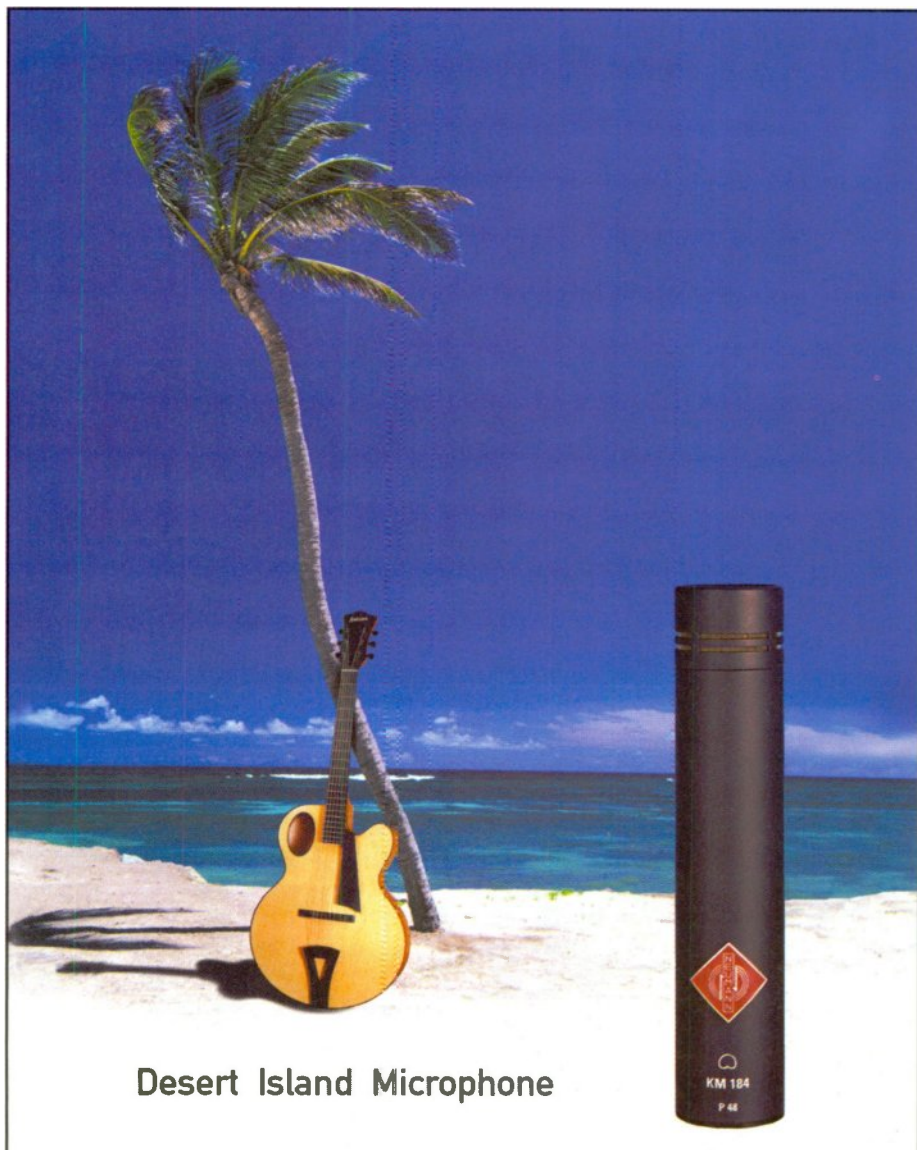
Fortunately for Tim, monitor leakage was minimal due to the fact that the entire band uses Shure PSM700 in-ear monitors (though Glenn also uses a floor wedge for the low-end factor). This also allowed excellent pick-up of Jeff's lead vocals. "There are only going to be a certain number of songs used for the documentary," Bomba continues, "so if they pick a

song where the recording on a particular featured instrument is not 'right,' we might re-do the part in the studio (if Sam and the band feel it's necessary). If it is going to be a highlight on the screen, then it also has to be a highlight to your ears."

DOES ANYBODY REALLY KNOW WHAT TIME IT IS?

In light of the fact that Jones was filming and not videotaping, Tim

used 30 frames per second (fps), non-drop SMPTE for the DA-88's: "I formatted blank DTRS tapes ahead of time. I also pre-stripped SMPTE code on the #1 tape of each set of DA-88 tapes with a unique SMPTE start time for each show," notes Bomba. "Every show ran approximately two hours and fifteen minutes (longer than the 113-minute DA-88 tapes), so every show consisted of two sets of five tapes for a total of 40



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IT'S NEVER JUST A ROUGH



Once the recordings were finished, the mixes were done on a Soundcraft Spirit Studio console.

tracks. We didn't film show one, but I pre-stripped the first tape of this set with a start time of 01:00:00:00. The SMPTE start for show two was 03:00:00:00, and the third show started at 06:00:00:00. Soundchecks were filmed on day two and day three, running about an hour and a half. To keep it simple, day two sound check timecode started 09:00:00:00 and day three soundcheck started at 11:00:00:00. Each tape had a SMPTE 'pre-roll' of two minutes (*i.e.*, SMPTE start for show one was 00 hours, 58 minutes, and 00 seconds).

"In effect, I was the 'house' sync generator. The only time my SMPTE code stopped transmitting was between the encores because the show ran past the 113-minute tape length (when the encores came, I'd change the tapes and then start running code from the new tapes). When we began filming, I'd start my DA-88's and feed the pre-stripped SMPTE out from DA-88 machine one into a radio transmitter. That signal was picked up

by a receiver attached to a SMPTE slate board for each camera operator. With no cable connection needed from the DA-88 SMPTE feed to the camera slates, the cameramen could roam anywhere they wanted within the building. When the cameras started to run, the first thing they'd shoot was the SMPTE slate board being fed from my DA-88. This process allows the film transfer person to see my SMPTE timecode on film, so they can line up the film frame to the SMPTE numbers, keeping the film in sync with the music during the film transfer and 'film post' process."

When asked why he used 30 fps non-drop timecode as opposed to the film frame rate of 24 fps, Tim volunteers, "There are basically two types of SMPTE frame rates used in the United States: 30 fps (the standard used when shooting film with a 24 fps camera), and 29.97 fps (the standard used when in the video realm). Both SMPTE rates are available in either a 'drop' or

'non-drop' mode. When shooting film intended for release in theaters, the time code used is normally a 30-frame rate, non-drop type on accompanying audio recording gear. Prior to editing, the film must go through 'Telecine' — the process of converting film to video (or DigiBeta) — for editing on the Avid system. During that process, the film speed actually gets 'pulled down' by 0.1% (one-tenth of one percent), and — because it's now in the form of video — is referenced to a SMPTE rate of 29.97 fps (the video frame rate standard).

"Most film editing is actually done in the video realm with a video reference. Because the film speed is 0.1% slower, the corresponding music tracks must also be slowed by the same percentage. If you take a 30-frame-per-second SMPTE rate, and slow it down by 0.1%, the resulting speed is 29.97. You can either 'pull down' the audio on the DA-88's, or you can mix to a timecode DAT

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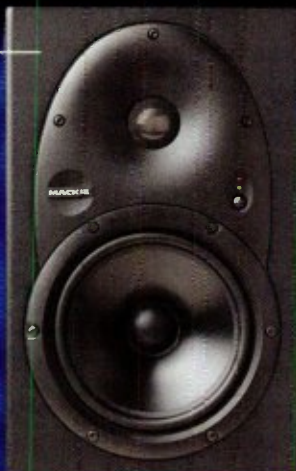
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IT'S NEVER JUST A ROUGH



TASCAM DA-88's were the recording format of choice for Wilco's live performances.

machine that's SMPTE-locked to the DA-88's, and then pull down the DAT. No matter where you do the pull down — whether on the DA-88's or on a timecode DAT — always make sure that you lock to a blackburst video reference (similar in concept to the word clock used to stabilize and sync digital recording gear). Doing the pull down will change the speed of the machine (the change in pitch is barely noticeable), but the only way to get the machine absolutely into sync at 29.97 is by using a blackburst generator as a reference."

A ROUGH COUPLE OF DAYS

Back in Los Angeles after the recordings were finished, Tim got a call from Jones requesting some rough mixes to feed into the Avid system, so that audio could be heard while the video was being edited. "David McConnell donated his studio for the rough mixes," acknowledges Bomba. "He gave us six and a half hours per day for two days (plus set-up time) at his home studio to mix on a Soundcraft Spirit Studio, which is a great little console (if you push them the right way, they sound amazing). I had 28 songs per show plus soundchecks to mix, so I got a Sony SMPTE DAT machine and pre-stripped the DAT tapes with the same SMPTE code numbers as I had on the DA-88's. I then locked the DAT to the SMPTE on the DA-88's, still using 30 fps, non-drop.

When I say I did three minute rough mixes, I mean...do an initial pass, adjust a couple of levels, and then record the mix. I didn't have time to rewind and think. So these were some very rough mixes.

"When the mixes were done, we had rough mixes on DAT with identical timecode as on the DA-88 masters. When they did the Telecine film transfer, they pulled down the DAT's from a 30 fps rate to 29.97, creating a DigiBeta tape with audio and video that would then be loaded into the Avid system for editing. Fast-forward two weeks, and a decision is made to include a two-song DVD advance of the film along with the record release. So I started figuring out a budget to do some real mixes. Wrong! They're using my three-minute rough mixes for the DVD advance release, so people are going to hear these rough mixes next to the studio mixes on the record. The moral of that story is that it's never just a rough!"

Sam Jones's documentary on Wilco is currently in the editing stage, with an expected release mid-summer 2002. The album, through Nonesuch Records, is set for an April 2002 release. Visit the Wilco Web site for developments at www.wilcoworld.net. Information on the film is available at www.wilcofilm.com or www.plexifilm.com. Tim Bomba may be reached via email at lalabomba@earthlink.net.

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Having survived the late-'80s/early-'90s multi-effects box onslaught (21 effects at once, anyone?), these days I find myself looking for processors and plug-ins that do one thing, and do it well. When I want a box that does a particular reverb, I know which one to reach for. When I want EQ, I reach for something else. The new Studio Modeler series of processors from amp modeling mavens Line 6 are great examples of this approach. Each of the three Studio Modelers is focused on one type of effect: Echo Pro does various flavors of echo and delay effects. Filter Pro does synth- and filter-type effects. Mod Pro focuses on modulation-based effects such as chorus, flange, phase, and rotating speakers. Simple, on first glance, but Line 6 has packed these units with power.

OVERVIEW

Physically, the three units are nearly identical — all that differs are the colors and the front-panel labels. The front panels are made of the same classy-looking sculpted brushed aluminum as the Pod Pro and Bass Pod Pro. On the left are input and output level controls, and stereo LED ladder-style level meters. Next to these are buttons for saving presets, accessing MIDI and system parameters, and bypass. A program select knob and display are next. This knob is velocity sensitive; the faster you spin it, the faster you'll jump through the presets. The next knob, surrounded by indicator LEDs, is used to choose the active effect model. To the right of this is an area dedicated to controlling delay time (on the Echo Pro), filter speed (on the Filter Pro), and modulation rate (on the Mod Pro). Speed, rate, and time can be displayed in seconds or Hertz; the units can automatically calculate note divisions (*i.e.*, eighth-note triplet delays) for you based on tempo. The velocity-sensitive Time/Speed knob adjusts delay times or mod or filter rates. A Global button lets you override the time/rate setting stored in each preset with whatever is on the front panel. Tap tempo lets you manually "play" in a tempo, great for live performance.

Next up are the "Tweak" and "Tweez" controls, which give you control over varying parameters depending on the Studio Modeler and effect model you're using; in each case, Line 6

▶ LINE 6 STUDIO MODELERS

MANUFACTURER: Line 6, 29901 Agoura Rd., Agoura Hills, CA 91301. Tel: 818-575-3600. Web: www.line6.com.

SUMMARY: If you're a vintage effect junkie, but you're not into expensive, noisy, high-maintenance gear, these modelers are exactly what you've been waiting for. But even if you could care less about "vintage," these boxes still deliver tons of processing power and new sound creation capability. Plus, they're a blast to play with!

STRENGTHS: Great sounding effects. Easy to master user interface — learn one, you've learned them all. Cost-effective compared to buying all the vintage effects they comprise. Tap tempo and MIDI clock sync. Friendly manuals. Excellent MIDI implementations. Outstanding real-time control, with no zippering or glitches.

LIMITATIONS: Some knobs feel flimsy. No digital I/O. Only a few effect parameters per model can be edited.

PRICE: \$699.99 each.

has selected the two parameters they feel you'll get the best use from. I found it hard to dispute their choices, which are labeled on the front panel and indicated with LEDs. Rounding out the front panel are the wet/dry mix control and power switch. Depending on how you're using the units (*i.e.*, with a guitar amp or in a console's send/return loop), you can globally override the mix setting stored with each preset. All in all, the front panels are easy to navigate, and there's plenty of flashing lights to tell you what's going on and to liven up your studio.

Around back you'll find an AC power connector, MIDI in and selectable out/thru, an expression pedal input, and stereo I/O on both balanced XLR and unbalanced 1/4-inch connectors. The units can handle levels ranging from guitar to +4 dBu. No digital I/O is provided.

ECHO PRO

The Echo Pro Studio Modeler is oriented toward echoes and delays; there are 16 models included (see sidebar), with most of them based on vintage effect boxes. I found the re-creations to be uniformly excellent — minus the noise and hiss. Line 6 has even included wow and flutter control for the tape-based delay units — cool! There's tube and

solid-state models, tape and analog delays, even the unusual Binson "platter"-based Echorec. There's a low-resolution digital delay and clean 24-bit delays. All sound great, and I found many uses for them. Favorites include the tube Echoplex, the dynamic "ducking" delay (a TC 2290 standard), and the analog delay, which accurately captured the sound of my old Boss and Ibanez stompboxes. There are also "special effect" delays, such as reverse (backward delays), and auto-volume (which adds volume swells to the dry signal). I found less use for those, but they may be right up your alley.

GETTING LOOPY

I love looping delays, and the Echo Pro's Loop Sampler model is especially nice. It lets you record up to 60 seconds of audio (120 seconds in half-speed mode), and overdub additional layers on top of it. It even has an additional, independent echo/delay that you can add to live parts when you're playing over a loop.

You can control the Loop Sampler functions (record, play, stop, overdub, play once, half speed, and reverse) using MIDI continuous controllers, MIDI notes, or MIDI continuous controllers. I did find that the program changes listed in the manual weren't exactly the right ones for all the specified operations. Once I'd figured out the right program changes, I was in looping heaven: I set up a sequence to output a click and to remote control the looper. In no time, I had Robert Fripp/David Torn-style loop-based music happening.

A few notes on the Loop Sampler:

You can overdub as many layers as you want, but the earlier layers are reduced in volume as each new one is added. You can have half-speed and reverse playback at the same time, and you can record while in the half-speed and reverse modes — this is great for sped-up, octave-higher reversed sounds when you switch back to normal/regular-speed playback. You can even change playback modes during loop playback without a glitch or click — outstanding!

Looper wish list: control over level/muting of each layer. Even more important, it would be nice to be able to off-load loops when you're finished with them. As it is now, as soon as you select another preset or power-down the unit, your loop is gone. Even MIDI Sample Dump transfer, slow as it is, would be a big help in this regard.

FILTER PRO

I tend to associate filter effects with dance music. However, as I dug into the Filter Pro, it became clear that there was a lot more to it than just dance effects. The first two models are based on old guitar synths; the Roland GR700, and Korg X911. The third is based on vintage synthesizer modules. As with the originals, the results you get with these "synths" will depend on what you put through them. Playing clean monophonic guitar lines, you can get convincing synth lines with a variety of timbres and envelopes. Put chords or non-pitched sounds through, and you'll get everything from attractive sounds to raucous noise. Also included are Mutron III envelope filter effects, talk box simulators, and a model that re-creates a wah-wah pedal

held in a fixed position. (Michael Schenker with UFO, anyone?) I was highly enamored of the Z-Vex Seek Wah model. The Seek Wah is a filter box that contains an eight-stage sequencer controlling the filter cutoff point; it creates lovely "burbling" effects. This effect is especially nice when locked to a tune's tempo.

The wah/anti-wah model (two wahs operating in opposite directions from each other), which Line 6 says was inspired by EQ's own Craig Anderton, works okay, but I found little use for the over-the-top "Comet Trails" and "Octisynth" effects; likewise, "Growler," which combines a GR700 with a Mutron III didn't do much for me. Your mileage may vary.

MOD PRO

As with the Filter Pro, I wasn't expecting all that much from the Mod Pro; choruses, flangers, phasers...we've all heard it before. But as with the Filter Pro, I was convinced once I started using the unit. A turning point was the awesome Tri Chorus, which is based on the old rackmount Tri-Stereo Chorus unit preferred by many first-call studio guitarists. The MXR flanger and phaser, Roland Chorus Ensemble and Dimension D, and A/DA flanger further made up my mind: This is a powerful processor. Two rotating speakers are included, the Fender Vibratone (as used by Stevie Ray Vaughan), and the Leslie 145. The Leslie's overdrive was a bit too fuzzy for my taste, but I like how realistically the rotors speed up and slow down when you change from fast to slow. For me, the vibrato, ring modulator, and auto-panner weren't that useful, but you may find more



THIS YEAR'S MODEL

The Echo Pro, Filter Pro, and Mod Pro all feature numerous models of sought-after vintage effects processors. Here's the rundown:

ECHO PRO: Maestro (Echoplex) EP-1 tube tape echo, Maestro (Echoplex) EP-3 solid-state tape echo, Roland RE-101 Space Echo, Echoplex with sweeping filter effect, Boss DM2 analog delay, Electro-Harmonix Deluxe Memoryman analog delay/chorus, low bit resolution digital delay, 24-bit digital delay, 24-bit digital delay with modulation, Binson Echorec "Echo Platter," true stereo delay, ping-pong delay, reverse delay, TC Electronic 2290 dynamic digital delay ("ducks" the volume of delays when audio is being inputted), auto-volume echo (volume fade-in swell on dry signal, plus tape-style delay), loop sampler

FILTER PRO: Roland GR700 guitar synth, Korg X911 guitar synth, Synth-O-Matic (based on Moog, Oberheim, Sequential Circuits, Arp, and Studio Electronics analog synth modules), Mutron III, fixed wah pedal, Oberheim SEM filter module, auto vocoder/talk box with Mutron III, auto vocoder/talk box, Z-Vex Seek Wah, Oberheim Voltage Controlled Filter, Electrix Filter Factory, Wah/Anti-wah, Comet Trails (proprietary filter effect), ring mod/VCO/vibrato, GR700 with Mutron III

MOD PRO: 1965 Fender Deluxe Reverb opto tremolo, 1960 Vox AC15 bias tremolo, MXR Phase 90, Mutron Bi-Phase, Ibanez Flying Pan, Uni-Vibe, Fender Vibratone (rotating speaker), Leslie 145, MXR Flanger, A/DA Flanger, Boss CE-1 Chorus Ensemble, Roland Dimension D, Song Bird/DyTronics Tri-Stereo Chorus, Boss VB-2 vibrato, ring modulator, auto-panner

applications for them.

MIDI CONTROL

In addition to MIDI control over the Echo Pro's Loop Sampler (as

described above), all three Studio Modelers have excellent MIDI implementations. Program changes with patch mapping capabilities are

supported for preset selection, of course. From the front panel you can access 99 presets; using MIDI gives you an additional 16. You're also given MIDI control over all parameters using continuous controllers. Any MIDI controller can be routed to control any parameter.

The factory continuous controller assignments are similar for the Echo Pro and Filter Pro. (The "Tweak" knob is controlled by CC#68 in both units, for example.) However, the Mod Pro's controller assignments don't follow the same pattern. This easily changed, but it would have been nice if the Mod Pro came from the factory with the same controller assignments. In addition to accepting MIDI control, the knobs and buttons on the Modelers output MIDI messages as well; it was no problem to "perform" a passage from the Mod Pro's front panel, record it to a sequencer, and play it back.

In use, the Studio Modelers are simply outstanding under MIDI control. I hit the Echo Pro, for example, with five heavy continuous controller streams at once, and it still played back audio with nary a glitch or click, and without any zippering noise: Impressive! In fact, the unit is so stable as parameters are changed that I was able to crank down the delay time setting while audio was playing to simulate guitar whammy bar-style swoops and dives — it's that smooth.

You can sync the tempo in all three units to MIDI beat clock, or you can control the Tap Tempo button with a continuous controller. All three units locked right up to sequencers and Pro Tools, and had no problems following a constantly changing tempo map.

POWER ON DEMAND

With the Studio Modelers, Line 6 has created three powerful boxes — perhaps deceptively so. I have to admit that while I was interested in checking all three out, I wasn't expecting all that much — after, all what we've got here are echo, filter, and chorus/flanger boxes, right? And to be honest, Line 6 doesn't help this impression with their guitarist-centric manuals. But that impression is incorrect. There's a

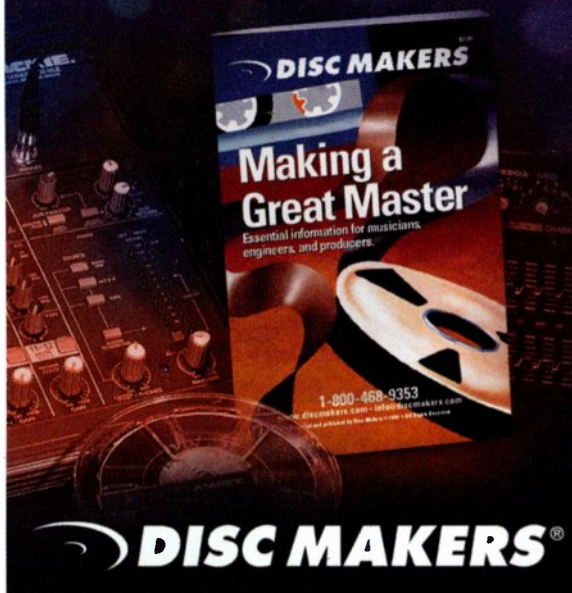
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great deal of versatility to each box, and their solid controllability takes them to another level, making them as well suited for studio processing and sound design as they are for guitarists (if not more so).

While all three boxes have a lot to offer, initially I was the least taken with the Filter Pro. I could appreciate its power, but for the work I do, filtering isn't that big of a deal. However, as I dug deeper, and started trying it on various tracks, I was sold. I was especially enamored of the Q-Filter fixed wah model and the Z-Vex Seek Wah, but I found uses for many of the presets.

I was in love with the Mod Pro as soon as I played a clean guitar track through the excellent Tri Stereo chorus and Dimension D models. This feeling only grew as I used the Leslie (excellent with Native Instruments B4 Hammond organ simulator), choruses, phasers, and flangers on various tracks.

Likewise with the Echo Pro: Line 6 did

“THERE'S A GREAT DEAL OF VERSATILITY TO EACH BOX, AND THEIR SOLID CONTROLLABILITY TAKES THEM TO ANOTHER LEVEL, MAKING THEM AS WELL SUITED FOR STUDIO PROCESSING AND SOUND DESIGN AS THEY ARE FOR GUITARISTS (IF NOT MORE SO).”

a great job of re-creating the various vintage delays, and I loved the Loop Sampler, especially when I put it under MIDI control and used it as a composition tool.

Naturally, I have a wish list: I'd like deeper control over effect parameters, even more capability in the Echo Pro looper, and digital I/O. But these are minor complaints compared to the positives these three boxes bring to the table.

You'll drop a pocketful of cash if you go for all three; the total may seem steep for “single-purpose” processors like these. But if you add up all the vintage gear you'd need to purchase to equal them (let alone the investment in time in keeping all that old stuff running), and things begin to seem more cost-effective. Plus, if you compare what you'd get buying a \$2,000 multieffects box versus these three units, things come more into perspective. I expect I'll see the Echo Pro, Mod Pro, and Filter Pro in a lot of racks and studios. ■

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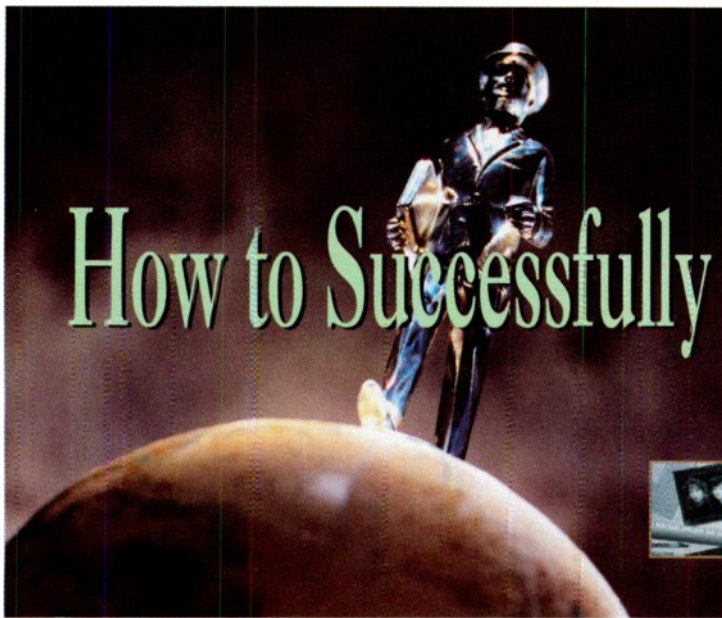
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Grace Design Model 201 Microphone preamp

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Boulder, Colorado's Grace Design has been chasing the fabled "invisible link" between microphone and recorder for more than 10 years. The Model 201 preamp is one of the results of their efforts.

AT FIRST GLANCE

If you appreciate industrial design, you'll find the Model 201 to be a real visual treat. The rack ears and enclosure of the unit are finished in black, while the thick sculpted front panel is shiny polished aluminum with smoothly machined aluminum knobs and black lettering and detailing. Photos simply don't do justice to how gorgeous this preamp looks in person.

The 201 is a dual-channel unit, with a separate independent set of controls for each channel. According to the company, the unit uses a

▶ GRACE DESIGN MODEL 201

MANUFACTURER: Grace Design, P.O. Box 204, Boulder, CO 80306. Tel: 303-443-7454. Web: www.gracedesign.com.

SUMMARY: Two-channel microphone preamp. It sounds every bit as great as it looks!

STRENGTHS: Round, dynamic sound quality. Extremely clean. Plenty of gain for most situations. Generous headroom.

LIMITATIONS: No reference markings on gain and trim controls makes repeating level settings difficult.

PRICE: \$1,995

transformerless design, with a Class AB "transformerless" amplifier circuit. No electrolytic capacitors are used in the signal path, and the preamp is capable of driving cables up to 1,500 feet long.

Regardless of what's under the hood, the manufacturer's quoted specifications border on perfection, with frequency response extending from 20 Hz to 300 kHz with only ± 0.2 dB of deviation from flat — using a 3 dB variance, response extends from 4.5 Hz to 1 MHz! Other specs, such as the -130 dB noise spec, are similarly impressive. We all know that specs are a side issue at most; what it's really all about is the sound quality a unit provides — if the sound isn't there, the best specs in the world don't matter — but these numbers are eye-catching nonetheless.

LEVELS

The 201 uses a dual-knob input gain control set-up. The larger knob on each channel is the main gain control, offering a range of 18 to 64 dB in 2-dB steps. For most applications,



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MANUFACTURER SPECIFICATIONS

Frequency Response	20 Hz to 300 kHz @ 40 dB gain, ± 0.2 dB; 4.5 Hz to 1 MHz @ 40 dB gain ± 3 dB
THD+N	Less than 0.0015% @ 40 dB gain, +20 dBu output
Intermodulation Distortion	Less than 0.0025% @ 40 dB gain, +25 dBu output
Noise (referred to input)	-130 dB @ 60 dB gain, 50-ohm source
Phase Deviation	Less than 2°, 50 Hz to 20 kHz
Crosstalk	-109 dB @ 40 dB gain
CMRR	80 dB @ 60 dB gain, 1 kHz; 97 dB @ 60 dB gain, 10 kHz; 60 dB (output)
Maximum Output Level	+28 dBu (balanced); +22 dBu (unbalanced)
Input Impedance	1,600 ohms
Output Impedance	150 ohms
Minimum Load Impedance	50 ohms
Gain Range	18-64 dB, 2 dB steps

this control works just fine for setting levels. But, if you really want to make fine adjustments or ride levels while recording, the smaller Trim control offers 10 dB of continuously variable attenuation.

Unfortunately, there are no reference lines or markings provided for either control, so repeating settings can be difficult. With the Gain control, you can count the number of steps you've turned the knob, but with the Trim control, you'll have to eyeball it — not a very accurate solution.

For extremely high-volume situations, 20 dB attenuator switches are provided for each channel. I rarely needed these switches, but they came in handy for one track, which required miking up a Les Paul through a screaming Mesa Boogie MK IIB amp with a 4x12 Marshall cabinet.

Each channel also has a polarity reverse switch and a +48v phantom power switch. The polarity reverse, phantom power, and pad switches all light up (green, red, and yellow, respectively) when engaged, giving you easy visual feedback of their status. The only other controls on the 201 are the front-panel power switch and the rear-panel audio ground lift switch.

METERING

The metering on the 201, provided by a multi-color LED peak indicator, is utilitarian. The indicator glows green when -14 dB signal is present, and turns red at +16 dB, which the manual says is 12 dB before clipping in balanced operation (6 dB before clipping when operating unbalanced). If you're hyper-tweaky and want to customize

the green/red threshold levels, the manual details the procedure — but there's really no reason to do so. I found that when used as a front-end for my Pro Tools Mix system, the 201's green/red meter levels were fine. And with 12 dB of headroom, there's little danger of pushing the unit into clipping unless you're *really* driving it hard. (In which case you'll probably be distorting something downstream anyway....)

THE SOUND

As mentioned above, the most awesome technical specifications in the world are meaningless if the sound isn't there. With the Grace Design Model 201, you've got both: outstanding specs and equally outstanding audio quality. The 201 falls into the "accurate, uncolored" philosophical design camp — transparent and clear are two adjectives that come to mind. But don't infer this to mean that the 201 is "sterile" or "dry" sounding. Quite the contrary; I found the 201 to be round and live sounding — yes, I'd even use the rightfully abhorred word "warm" to describe it, although not "warm" in the sense of fuzzy or lacking detail. Rather, I'd use "warm" to mean real sounding in this case.

Because of this "warmth," "accuracy," "realism," or whatever you want to call it, the 201 is easy on your ears. In fact, I recorded the same source using the same mic five times with the various microphone preamps in my studio. Settling in for extended and repeated listening I found myself drawn back to the 201 track again and again, simply because it was the most naturally

dynamic, least harsh, and most real sounding.

I employed the 201 on numerous sources, and failed to find one that it didn't complement. If there was a case where a track called for a different preamp, it was never due to fault in the 201 or its sound quality, rather, certain sources simply asked for a different tone color than the 201 provided. But that's exactly the reason many studios and engineers end up collecting a number of preamps, so that a variety of tone colors are available. And while this is the ideal — to have a variety of preamps at your disposal — if you are going to be limited to one preamp for whatever reason, you'd be hard-pressed to find one that sounds as universally good on as many sources as the Grace 201 does.

CONCLUSIONS

I truly enjoyed my time with the Model 201. While choosing the best preamp for a particular sound source is always a subjective proposition, I failed to find *anything* that didn't sound excellent when run through the 201.

The real question with Grace Design preamps isn't whether you should buy it, it's "How many channels do I need?" The two-channel Model 201, at a manufacturer's suggested list price of \$1,995, sits at the high-end of the company's cost-per-channel range, coming in at around \$1,000 per channel. The eight-channel Model 801 carries a list price of \$4,795, or around \$600 per channel for a similar preamp design. If all you need is a pair of preamp channels, the 201 is a great buy, but if you need more inputs, then consider bumping up to the 801 for even more outstanding bang-for-the-buck.

Regardless, you really can't go wrong with the Grace Design preamps. It's often been said that gear-wise, a recording chain is only as good as its weakest piece of equipment — and that's certainly true. But it could also be said that there's a similar limiting factor on the other end: A system can only perform as well as its *best* piece of gear. Given that maxim, adding the 201 to your equipment list is a sure way to improve your studio and your recordings. ■

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Sonic Sense SoniCorder High-Resolution Portable Recording System

Take your recordings on the road with this full-featured system

As location recording experts, the folks at Sonic Sense have developed the SoniCorder as a turnkey, high-resolution (24-bit), portable hard disk recording system. Housed in the company's proprietary SoniCase, the SoniCorder system includes a Sony Vaio compact PC, Benchmark AD2K+ A/D converter, Grace Design Lunatec mic pre, Digigram VX Pocket audio interface, and Eco-Charge battery system. Also included is an extended battery for the Vaio and a set of premium audio cables. All you need to begin recording is microphones. The SoniCorder reviewed here employed the Eco-Charge Gamma Pro battery system (consisting of a GP-90 battery and a GC-121 charger) to power the AD2K+ and the Lunatec. Sonic Sense has since switched to an Electrovara Powerpad 160, which powers the devices for six to eight hours and reduces weight by approximately eight pounds.

COMPONENT FEATURES

The Grace Design Lunatec is a two-channel microphone preamp that can be powered via AC or 12-volts DC. Front-panel controls for each channel include gain, trim, 48-volt phantom power on/off, and a three-position low-frequency roll-off switch (off, 50, 75, 100, or 125 Hz, at 6 or 12 dB per octave). An on/off switch is provided, as are LED's for power on and low-battery.



► SONIC SENSE SONICORDER

MANUFACTURER: Sonic Sense, 2755 South Gilpin Street, Denver, CO 80210. Tel: 877-324-4463 or 303-753-0201. Web:

www.sonic sense.com

SUMMARY: Turnkey, portable hard disk recording system

STRENGTHS: Excellent sound. Turnkey system. Very stable OS. Can record on internal drive.

LIMITATIONS: Heavy. Cable arrangement is somewhat awkward. Components get hot during extended operation.

PRICE: Varies upon configuration. List price for system reviewed is \$7,850. Other turnkey systems start at \$3,000.

Balanced XLR line outputs from the Lunatec feed XLR analog inputs to the Benchmark Media Systems Sonic AD2K+ A/D converter, which operates at fixed or variable sample rates from 44.1 to 96 kHz with a resolution of 16, 20, or 24 bits. The S/PDIF out of the AD2K+ is fed to the S/PDIF input of the VX Pocket VX. As of this writing, there is no PCMCIA digital audio interface supporting 96 kHz, but when it becomes available, the rest of the SoniCorder system is ready.

The review Sony Vaio was built around a 600 MHz Crusoe TM5600 processor and included 128 MB SDRAM as well as Sony's PCGA-BP54 high-capacity battery pack for six hours of operation. The Vaio employs a single hard drive partitioned into three sections: 4 GB allocated to the operating system, 2 GB to SoniCorder, and the remaining 22 GB to audio. Drives with capacity of up to 48 GB have recently become available. The VX Pocket fits into the Vaio's PCMCIA card slot, providing balanced analog XLR I/O, S/PDIF I/O, and a dedicated SMPTE input. Sonic Sense can also customize pre-existing computers for digital audio use.

To charge the Eco-Charge BP-90, you simply connect the battery to the

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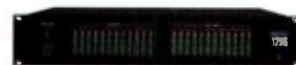
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GC-121 charger and plug it in. The LED lights red, indicating that charging is in progress; when the battery is fully charged, the LED turns green. My experience showed that one BP-90 provides power for just under six hours.

With a fully charged battery connected to the Lunatec and AD2K+, recording is simple. Sonic Sense provides a useful quick-start guide to get you up and running quickly. You don't have to install software or configure anything within the Vaio. The only caveat to observe is the clock source for the VX Pocket. If it's set to external and the AD2K+ is not powered up, Sound Forge will give you an error message. Sonic Sense recommends setting the VX's clock source to automatic to avoid this problem.

IN USE

The first time I used the SoniCorder was simply as a mixdown "deck" for some two-track mixes. I connected the S/PDIF output from a Yamaha 02R to the VX Pocket's S/PDIF input, turned everything on and booted the computer. I'll admit up-front that I'm not a big fan of using PC's for audio — I'd much rather use an Apple machine — but Sonic Sense made using the bundled Sonic Foundry Sound Forge software pretty painless the first time out. Pressing "record" initiates a prompt to choose a drive for recording. Initial recordings were made on the internal drive. I later also used a 54 GB external Firewire drive. Everything worked without a hitch, and the recording sounded excellent.

Next I recorded a few live concerts, the first featuring tenor Danny Rodriguez of the New York City Police Department. I used a Beyer MCE 82 stereo condenser mic out in the hall. A rear-panel vent in the case provided easy access to the Lunatec's mic inputs. After opening a new record window in Sound Forge I was ready to go. This 16-bit recording was stored to the internal drive. At one point, I got the "battery low" indicator on the AD2K+ which necessitated a carefully timed swap of batteries. The swap caused a digital pop in the sound file because unplugging the weak battery killed power to the AD2K+ — which was also delivering clock to the VX Pocket (this

was easily edited out later). With the new battery in place, the rest of the concert was recorded uneventfully.

Next I used the SoniCorder to record a Christmas concert featuring the St. Bernard's Choir in New York. Microphones were a matched pair of Blue Dragonfly condensers. Since this recording will be released on CD, I decided to run a 16-bit DAT in addition to the SoniCorder at 24-bit (both at 44.1 kHz). Connection was easy because the AD2K+ has the ability to output multiple bit depths, so I just patched a cable from the AD2k+'s aux digital output to the input of a Sony DTC-700 DAT deck. I used the external Firewire drive, and I'm happy to report that adding the Firewire drive really was a plug-and-play procedure (something I don't expect from PC's). While the 16-bit version of the recording sounded very good, the 24-bit recording was excellent, with the depth and realism of being there. This was particularly noticeable in the room sound, where the 24-bit version captured smoother reverb tails and more detailed ambiance. A freshly charged battery easily handled the entire session, including a warm-up with the choir, and the two-hour concert.

To test battery life, I left the system running after the concert ended. After approximately five hours and 40 minutes of operation, the AD2K+'s low battery indicator came on, followed by the Lunatec's indicator. I suggest changing the battery at the earliest sign of a low battery indication because after the indication, there isn't more than about 10 minutes of reserve. If you are using the BP-90's, don't expect to be able to switch from one battery to another quickly. The only way to fit two batteries in the bottom of the SoniCase is nestled head to toe — which positions one power outlet at the front, and the other at the rear of the SonicCase. You'll have to remove the connector and flip the battery positions to put the fresh one up front.

CASE FILE

The minor gripes I have with the SoniCorder have to do with the packaging, which I found to be a bit kludgy. For example, if you remove one of the

BP-90 batteries, then the shelf above it sags (this issue is eliminated when using the Powerpad 160). Since the extended battery for the Vaio attaches to the bottom of the computer, it throws off the balance of the computer on the top shelf. A contoured piece of foam is fitted around the part of the VX Pocket which protrudes from the computer's slot, helping balance the Vaio on the top shelf and also protecting the card from getting banged around. But quite frankly, at this price it's an inadequate solution and won't prevent the VX Pocket from taking a hit. Attaching the Vaio's AC adapter for charging or AC operation is also rather awkward: you have to pull open the right side of the SoniCase, typically causing the Velcro that holds the second shelf to detach. The shelves should be permanently attached to the case, or perhaps Sonic Sense can come up with a more dedicated Pelican-style case with more structure and comparable weight. Also in the interest of reducing weight, it'd be nice if the VX Pocket *didn't* have analog XLR I/O's. In a system of this caliber, they're not going to be used anyway, so all they really do is add weight and clutter. The SoniCase is very light and comes with both shoulder and waist straps allowing you (in concept) to gather sounds for Foley on location while wearing the affair on your back. Realistically, most people will probably move the system, unpack it, and set it up in a fixed place.

CONCLUSIONS

Reservations about the SoniCase aside, the SoniCorder is a great tool for location recording. The SMPTE input to the VX Pocket is invaluable for recording audio for video. The Windows 2000 OS proved to be very stable (I experienced only one crash), even when recording on the internal drive. Some of the editing functions proved to be a bit slow when using Sound Forge. For example, cutting a six-second piece of audio took more than two minutes. Note that Sonic Sense has since switched to Wavelab, which they say is quicker for these purposes and is designed for complete CD mastering applications. Most important, the SoniCorder sounds great, particularly when used at 24-bit resolution ■

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Aardvark Direct Pro Q10 PCI Audio Interface (Windows)

Ten ins and ten
outs, with *no*
latency

Digital audio manufacturer Aardvark has been creating fine audio interfaces and studio essentials such as word clock generators for a number of years now. The latest in their line of computer-based is the Q10, part of the "Direct Pro" series of interfaces. The Q10 combines lots of connectivity (including hardware inserts and mic pre-amps) with excellent latency-free monitoring and built-in sync/MIDI capability to provide everything you need to base a small studio around.

OVERVIEW

Hardware-wise, the Q10 rackmount breakout box is straight-ahead; its simplicity belies its power. The front panel features eight XLR/1/4-inch TRS combo connectors. The XLR portion of these is used for mic-level signals. If you're using -10 or $+4$ line-level sources, they'll have to be plugged into the 1/4-inch jacks. The first four XLR's have switchable phantom power for use with condenser mics. XLR's 4-8 will only work with dynamic mics or condensers through an external phantom power supply. Inputs 7 and 8 can be switched to accept high-impedance guitar or bass signals eliminating the need for an external direct box. These jacks also feature Aardvark's E.F.R. (Enhanced Frequency Response) technology, which is said to "create a warm, rich tone that will sound great in your mix." While E.F.R. seems to reduce the dry, sterile sound of direct guitars, it's no replacement for an amp or amp simulator. There's no way to turn off the E.F.R. processing if you don't want it on your guitar or bass signal.

Rounding out the front panel are the monitor output level control and headphone output level control and 1/4-inch connector. Having both of these available is a tremendous bonus, and truly allows the Q10 to function as the centerpiece of a studio without need for an external mixer.

On the left of the back panel are four 1/4-inch TRS -10 insert jacks. These work in the analog domain and are hardwired to the first four inputs. Next to these are eight $+4$ balanced 1/4-inch outs. Using the Q10 Control Panel software, these can be switched to carry outputs from your software, duplicates of the monitor outs, a calibration tone, or digital silence, among other signals.

Next up are the stereo 1/4-inch monitor

▶ AARDVARK DIRECT PRO Q10

MANUFACTURER: Aardvark, 202 E Washington, Ste. 306, Ann Arbor, MI 48104. Tel: 734-665-8899. Web: www.aardvarkaudio.com.

SUMMARY: Expandable 10-in/10-out computer audio interface with eight mic pres, two high-impedance guitar inputs, MIDI and word clock I/O, and separate monitor and headphone outs. The high bang-for-the-buck Q10 is one of the few computer interfaces that can serve as the centerpiece of a studio without need for an external mixer.

STRENGTHS: Sounds great. Extremely flexible. Separate level controls for monitor and headphone outputs. Hardware-based direct monitoring of all inputs eliminates latency during recording. Eight microphone-/line-level inputs, four of these with phantom power. First four inputs have hardware insert points. Inputs 7 and 8 switch to guitar level with EFR processing. Stereo S/PDIF I/O. Up to four Q10's can be used in a computer for 40 in/out. Word clock I/O. Built-in MIDI interface.

LIMITATIONS: No MIDI signal indicators. Can't turn off E.F.R. processing on guitar-level inputs. XLR inputs are mic level only; must use 1/4-inch TRS for line level ($+4$ or -10).

MINIMUM SYSTEM REQUIREMENTS: 233 MHz Pentium or better, Windows 95/98/2000/NT/XP, 64 MB RAM (128 MB recommended), free PCI slot
PRICE: \$999

outputs, followed by coaxial S/PDIF in and out, word clock I/O on BNC connectors, MIDI in and out, and a multipin connector for hooking the rack box up to the PCI card. Conspicuous by its absence is an AC power connector — the Q10 rack box doesn't require external juice; the PCI card supplies its power.

SOFTWARE

The Q10's Control Panel software (see fig. 1) gives you control over level and routing for the unit's I/O. At the upper left are gain controls and meters for the front-panel inputs. At lower left is a mixer for direct monitoring the inputs without sending them through your computer/software; doing this eliminates latency problems when overdubbing or using external effects. At the upper right are VU meters for the monitor outs, switches for the routing control window (not shown), an "LED" that indicates when phantom



power is on, a control for the brightness of the power light on the rack box, and a clock source selector. At the lower right is a mixer for controlling levels of outputs from your software to the monitor outs.

The Q10 comes bundled with a full version Cakewalk Pro Audio 9. Because I was using a PC running with Windows 2000 Pro, I was unable to use this. Instead I used Steinberg's Nuendo with the Q10 for this review.

IN USE

I downloaded the Windows 2000 drivers for the Q10, dropped in the PCI card, hooked up the rack box to the card, and fired everything up. The system sprang immediately to life, no problems. I hooked up the monitor outs to a pair of powered monitors, and plugged a set of headphones in.

The first thing I did was to record backing tracks into Nuendo — easy as pie; so far, so good. Next I switched input 8 to guitar level and plugged in my Strat. After selecting that input in Nuendo, I immediately heard the familiar delay effect of latency. Turning off Nuendo's monitoring, I opened the Q10 Control Panel and adjusted the gain, pan, and levels until I heard the guitar the way I wanted it — but without any latency thanks to Q10 directly routing the input to the monitor outs. Sweet! As a bonus this works on all 10 inputs at once; some interfaces with direct monitoring only support a couple of inputs at once.

While the direct guitar sounded okay, I wanted more of an overdriven amp sound, so I connected my Pod Pro to the 1/4-inch connectors on inputs 7 and 8. Happy with the sound, I recorded several rhythm guitar tracks.

Next I moved to vocals. I recorded lead and backing tracks, using both condenser (Shure KSM44) and dynamic (Shure SM57) mics. While the SM57 worked great, I had trouble attenuating the preamp input level enough to handle the KSM44 — to prevent clipping, I ended up using the preamp at the line-level setting. The Q10's discrete transistor preamps sound great — clean, clear, and nicely detailed. I wouldn't hesitate to use them to record serious projects.

To help control the consistency of the vocals, I connected a hardware compressor into an insert point on the Q10's



FIGURE 1: The Q10's software control panel.

back panel. Having this capability available right on the box — without having to go through an extra D/A and A/D conversion and any accompanying latency — was an excellent bonus.

Having laid down the tracks for my burgeoning masterpiece, I moved into mixdown. I wanted to apply stereo delay to the lead vocal instead of reverb. Rather than use a plug-in, I grabbed the Line 6 Echo Pro delay modeler reviewed on page 98. I used Q10 outputs 7 and 8 to connect to the Echo Pro's inputs, and brought the delay outputs back to Q10 inputs 5 and 6. Popping over to the routing window of the Q10 Control Panel, I set up outputs 7 and 8 to take their signal from output bus 2 in Nuendo. Because I was returning the delay into Q10 inputs, I was able to monitor the delay inputs without latency. Note that when you do this, you have to mute the Q10 Control Panel software playback outputs corresponding to the software buses you're using for sends, or you'll hear the send signal mixed into the monitor outputs.

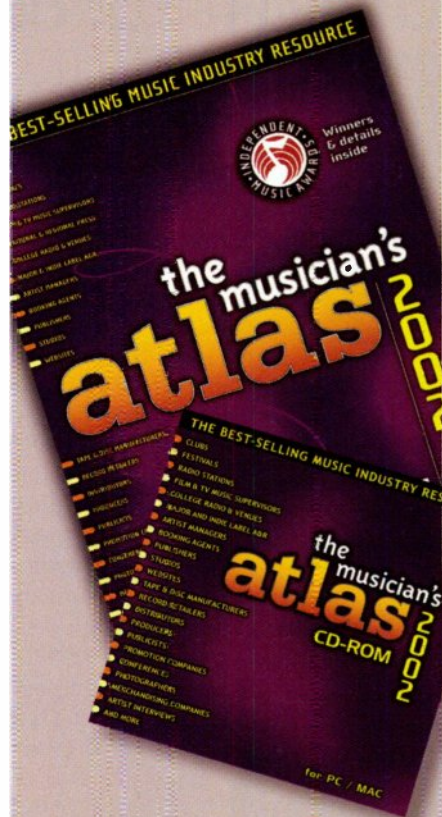
Once I had the mix tweaked the way I wanted it, I hooked a DAT machine up to the Q10 via S/PDIF and recorded the finish stereo mix off to tape.

CONCLUSION

The Direct Pro Q10 did exactly what it was supposed to do: It made recording and mixing audio using my PC an easy task. The benefits of its zero-latency direct monitoring and flexible routing capabilities can't be overstated. This is one computer interface that truly can take the place of a mixer in a small rig — and if you have a bigger rig, you can add three more Q10's to your computer for a total of 40 ins and 40 outs.

If you're shopping for an audio interface, give the Aardvark Q10 a good long look; you'll be hard-pressed to find more ease of use, better sound quality, and more bang for the buck. ■

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Soundcraft Spirit M8 Small-Format Live/Recording Mixer

Get into the spirit of mixing with the Soundcraft M Series.

The Spirit M Series from Soundcraft comprises three small-format mixers: the M4 (four mono/four stereo channels), the M8 (eight mono/four stereo channels) and the M12 (12 mono/four stereo channels). All three models may be used console-style or rack mounted, and since all input and output jacks are located on the top panel, rack mounting the unit doesn't hinder user access to any of the connectors. While the M Series mixers are natural for club/bar PA systems and house of worship sound reinforcement, they incorporate a number of features that facilitate recording — most notably their direct output jacks, and the S/PDIF main output jack, which is unusual for a board of this price point and type. For this review, Soundcraft sent me the Spirit M8.

The Spirit M8 is very easy to get around on. Inexperienced users will find the manual a valuable tool, as it includes system wiring diagrams, cable configuration drawings, and a glossary of related terminology. Experienced users will find that the

► SOUNDCRAFT SPIRIT M8

MANUFACTURER: Soundcraft USA, 1449 Donelson Pike, Nashville, TN 37217. Tel: 615-360-0471. Web: www.soundcraft.com.

SUMMARY: Small-format, multi-channel mixer with mono and stereo channels.

APPLICATIONS: Live sound, project recording.

STRENGTHS: Versatile signal routing. S/PDIF output. Extremely user-friendly. Direct outs on each mono channel.

LIMITATIONS: Effects returns employ RCA jacks. Global phantom power switch. No polarity reverse on input channels.

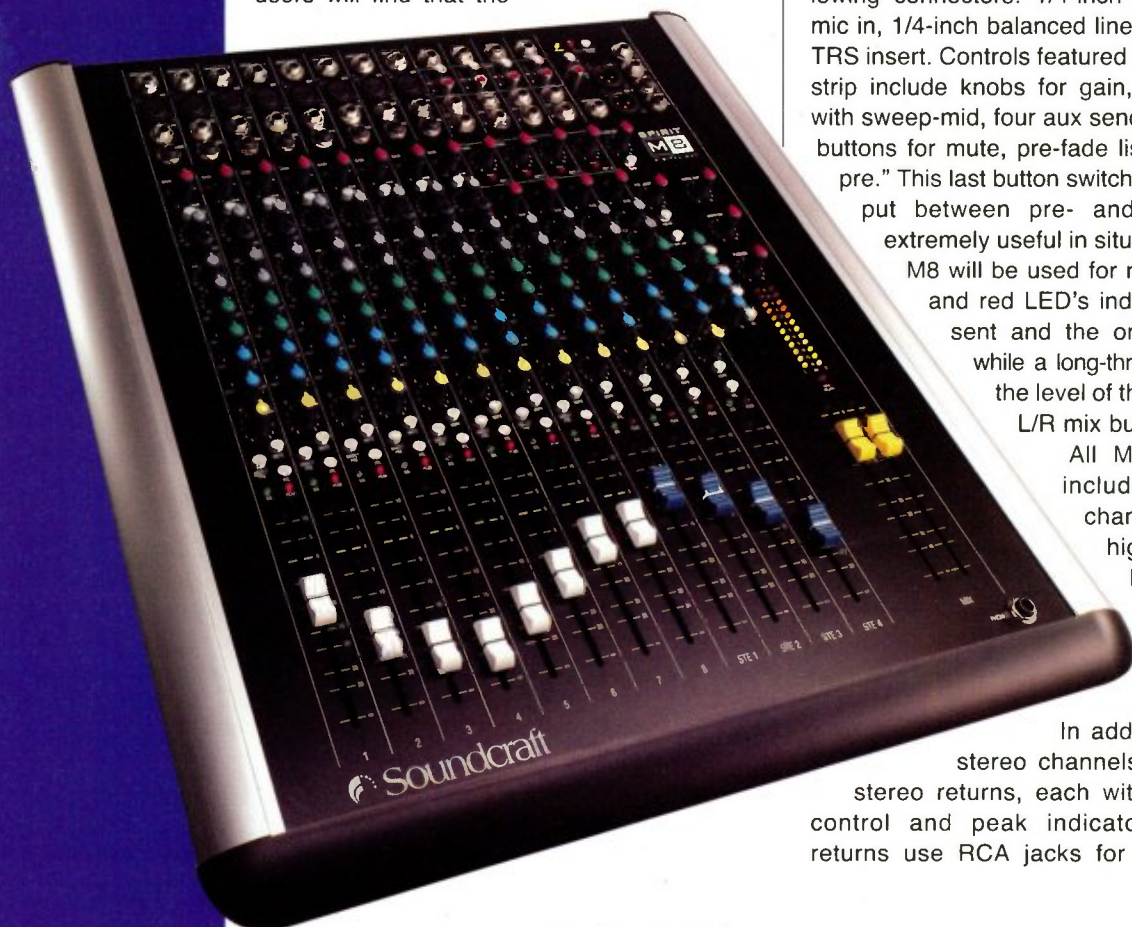
PRICE: Spirit M4: \$559.95; Spirit M8: \$719.95; Spirit M12: \$849.95.

top panel of the M8 is so clearly labeled that there's really no need to crack open the manual. In fact one of the things I liked about the M8 right off the bat was that — in spite of its compact size — all of the control labels are easy to read.

Each mono channel of the M8 has the following connectors: 1/4-inch direct out, XLR mic in, 1/4-inch balanced line in, and 1/4-inch TRS insert. Controls featured on each channel strip include knobs for gain, three-band EQ with sweep-mid, four aux sends, and pan, and buttons for mute, pre-fade listen, and "direct pre." This last button switches the direct output between pre- and post-fader — extremely useful in situations where the M8 will be used for recording. Green and red LED's indicate signal present and the onset of clipping, while a long-throw fader controls the level of the channel to the L/R mix bus.

All M Series mixers include four stereo channels with gain, high-and low-shelf EQ, four aux sends, balance control, PFL, mute, and 100-millimeter fader.

In addition to the four stereo channels there are four stereo returns, each with a rotary gain control and peak indicator. The stereo returns use RCA jacks for input; to avoid



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Aardvark Pro Q10

Direct Pro Q10 is a computer based digital multi track recording solution from Aardvark. Powerful DSP-based virtual mixing software eliminates the need for an external outboard mixer.



Zoom MRS-1044CD Digital Multitrack

The MRS-1044 is a digital multi track workstation, featuring 10 audio tracks, a programmable stereo drum track and a programmable bass track and built-in CD burner.



Roland VS2480CD 24 Track

The VS-2480 is the first self-contained recording workstation to offer 24-track/24-bit digital recording with 64-channel digital mixing, onboard effects processing, CD burner & 80 gig drive.



Roland

Yamaha Motif-8 88-Note Workstation

MOTIF combines the best features of a number of recent Yamaha products into an all-in-one music production workstation that will revolutionize the way music is made.



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T.C. Electronic Voice Prism VoicePrism offers revolutionary detailed craft & creative control over vocals!



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Mackie MDR24/96 Digital Multi Track

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Avalon VT-747SP



The Avalon VT-747SP combines a creative STEREO tube-discrete Class A spectral-opto-compressor with a musical six band program equalizer, L-R output level and gain reduction metering and internal regulated power supplies in a 2U space.



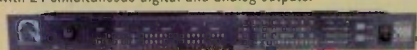
Focusrite ISA-430

The ISA 430 is truly a "Producer's Pack", which combines the best of analogue and digital technologies, the first Focusrite product to include a range of different classic Focusrite modules in a single unit!



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Noise	less than 84 dBu (22 Hz to 22,000 Hz)
Frequency Response	20 Hz to 20,000 Hz \pm 1 dB (any input to any output)
S/PDIF Out	44.1 kHz/16-bit
EQ	
High	12 kHz \pm 15 dB
Mid	240 Hz to 6 kHz \pm 15 dB
Low	60 Hz \pm 15 dB
Total Harmonic Distortion	less than 0.008%

having to use adapters I'd prefer 1/4-inch jacks.

I used the Spirit M8 as the main mixer for a series of club sound reinforcement gigs. Naturally I didn't read the manual, opting instead to unpack the unit at the first gig and learn it on the fly. Soundcraft did their homework on the front-panel layout of the M8. Not only are the board labels easy to read, but important routing options are indicated on the front panel as well. For the first gig I needed three discrete monitor mixes and a single effect send. Each of the four sends is labeled for pre- and post-fader operation; I used two pre-fader sends and one post-fader send for monitors, and the last (post-fader) send for the effect. It'd be wonderful if one of the sends was switchable for pre- or post-fader operation, but I'm sure this would add to the cost of the unit. In any case, setup was simple and easy, making for a happy band. I used a stereo channel for the effect return, which allowed a bit of reverb to be easily added into the lead singer's wedge mix.

One of the cool features of the M Series is the playback input. In addition to a level control there's a button labeled "P/B Replace Mix" which automatically mutes the input channels and substitutes the playback source. This is an invaluable feature for set breaks where the band runs a CD or tape player, or for playback of a stereo "board mix."

When you press PFL on a channel, the L/R bus LED meters indicate PFL, making input gain adjustment easy. As with most live mixers, PFL doesn't affect the signal sent to the L/R mix bus, but does solo a channel to the headphone and the monitor outs (smart). I like the fact that when using the M8 to record a small ensemble,

you can set optimum gain structure at the L/R mix bus, and then use the monitor output level control to adjust the volume of a pair of monitors.

Some of the features included in the Spirit M Series were unexpected at this price point. First, all of the mono channels have a 1/4-inch TRS insert

THE "DIRECT PRE" SWITCH IS AN AWESOME FEATURE FOR RECORDING, SINCE WHEN IT IS ENGAGED THE POSITION OF THE CHANNEL FADER DOESN'T AFFECT THE LEVEL AT THE DIRECT OUTPUT CONNECTOR.

with tip = send and ring = return (a legend is screened on the rear panel). The inserts as well as the line inputs and direct outs use metal jacks as

opposed to plastic. The "direct pre" switch is an awesome feature for recording, since when it is engaged the position of the channel fader doesn't affect the level at the direct output connector. In fact, when you switch on "direct pre," you can mute a channel in the L/R mix and the direct out will still be active. Although the four stereo returns don't have individual mute switches, there's a single return master level control with mute switch, which simultaneously mutes all four returns. This is a definite plus when using the returns for effects, and you want to mute delay and reverb when the band addresses the audience in between songs. Each mono channel has a 100 Hz low-frequency filter, which was very good for cleaning up rumble from vocal mics, but was a bit steep for use on more full-range program material.

It's obvious that Soundcraft took a lot of care when designing the Spirit M8. It's a well-thought mixer that's at home in a small club or house-of-worship system, yet can also function effectively under recording circumstances for bands that are honing their skills with an eight-track recorder, and need a mixer that can do double duty as the front end for a rehearsal PA. This versatility (along with its ability to be rack mounted) makes it a great choice for rehearsal studios. The signal path is clean, and when you count the returns, you can have a total of 16 simultaneous inputs (eight mono and eight stereo). Add the S/PDIF output for direct connection to a DAT, CD recorder or DAW, and you have one very cool mixer at a very reasonable price. ■



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TC-Helicon VoicePrism Plus Vocal Processor/Harmonizer

Vocal magic at the touch of a button

No matter how many electronic toys get used in music production, nothing beats the human voice. But no law says you can't combine way-cool toys with voice, and that seems to be the premise behind VoicePrism Plus (VPP for short). The VPP is a 2U processing strip with preamp, EQ, and dynamics, supplemented by effects, a four-part harmony generator (courtesy of IVL, pioneers of realistic harmony generation), and voice modeling that can create entirely different vocal characters.

GOZINTAS AND GOZOUTAS

The VPP is a mono-in, stereo out device with rear-panel 1/4-inch TRS jacks for left/mono out, right out, aux in (for effects processing only — no modeling or harmonies), and line in with -10/+4 selector switch. The Plus version includes the Voicecraft Expansion Card, which not only provides voice modeling, but adds coax S/PDIF and AES/EBU I/O (which makes the S/PDIF from the original VoicePrism, still located on the back panel, somewhat redundant). Other connections are 1/4-inch footswitch jack, MIDI in/out/thru, and AC line cord socket. The unit can be set to work from 100 to 240V.

The mic input, which offers phantom power, is sensibly located on the front panel. Dominant front panel features are the LCD, four programming knobs, a large data wheel, four level controls, headphone out with level control, and numerous programming buttons.

The VPP has 24-bit in, out, and internal signal path, at 44.1 or 48 kHz, and can dither down to 8, 16, or 20 bits.

PLAYING WITH BLOCKS

There are four main processing blocks: *Pre-Effects* condition the vocal signal with a compressor (threshold, ratio, attack, and release),

▶ TC-HELION VOICEPRISM PLUS

MANUFACTURER: TC-Helicon, 742-A Hampshire Rd., Westlake Village, CA 91361. Tel: 805-373-1828. Web: www.tc-helicon.com.

SUMMARY: Almost too creative for its own good, this box stands alone as the most comprehensive vocal processor on planet earth.

STRENGTHS: Genuinely novel voice modeling technology. Useful "standard" effects for vocal processing. Realistic harmony lines track vocals well. Excellent MIDI implementation. Understandable user interface and clear documentation. Aesthetic design. Fulfills unique function that nothing else provides.

WEAKNESSES: The further the variation from the original sound, the more synthetic the quality. Relatively expensive. Processing latency is reasonable, but noticeable in some situations.

PRICE: \$1 898

gate (threshold, attack, release), and two stages of EQ, connected in series. Each has a selectable shape (high shelf, low shelf, parametric, highpass, and lowpass). From here, the vocal signal splits into a *Voice Modeling* block (this used to be the Lead Processing block with the original VoicePrism) with all kinds of sexy modeling options, along with a *Harmony Processing* block that provides the four-voice harmonies. The compression and both EQs can feed just the Lead block, just the Harmony block, or both.

There are two *Post Effects* blocks. The first offers chorus, flanger, and six types of delay (mono, stereo, ping pong, mono tape, stereo tape, and ping pong tape). The second offers the same delay options as the first block, along with five types of reverb. Each has parameters for pre-delay, decay time, high damping, and roll-off. Parameters for the other effects are fairly minimal — for example, chorus has depth and rate, while flanging has depth, rate, and regeneration — but the



sounds are good, and as one would expect, work well with vocals.

Routing to the two post blocks occurs through level controls. Block 1 can pick up signals from the lead and harmony sections, as well as the aux input. Block 2 has the same options, but can also be fed from the Block 1 out. Thus, you could feed, for example, just the harmonies through reverb, but the modeled lead signal through chorus, with or without reverb depending on whether you feed the first block to the second one. Furthermore, a separate mix section sets the main mix (the balance of lead, harmony, chorus, and reverb levels) as well as the voice mix of the four synthesized harmonies.

Two other functions round out edit-land: Vocals, where you set the harmony-related parameters (more on this later), and Step, where you can program a playlist of presets for live use, which you then step through from the front panel or with an optional footswitch.

Editing is simple. I was able to find my way around initially without even cracking the manual; menu tabs select pages, the wheel selects functions within the page, and the four programming knobs change parameters. TC has always had good interfaces; the VPP is no exception.

FINDING PRESETS

The 128 presets, which can be user-overwritten, are well-chosen and easy to select. A separate Browser uses five buttons to choose a preset category (shift, scale, manual, chord, and effects). If none is selected, the data wheel steps through presets one at a time.

Before getting to the star of our show, let's look at the remaining front panel buttons. Bypass works as expected, +48V provides phantom power (although it seems a



little too easy to hit accidentally — maybe it would be better to have to double-click it to avoid dealing with the Phantom Menace), while Utility sets up functions such as MIDI, preferences, tuning, anti-feedback, bass rejection, “ess” sensitivity, sample rate, and dither. Harmony simply turns the harmony section on and off, Store saves programs, Mic On selects between the mic and line ins, and Preview provides a demo mode based on the onboard samples.

There's also a context-sensitive Help button, which is actually useful. I've seen this in other TC products; why are other manufacturers not doing this? Surely they have a few extra bytes left over in their PROMS...

THE WORLD OF MODELS

The harmony functions in the VPP are pretty amazing, but they've arguably been upstaged by the modeling possibilities offered by the Plus update. Here's an idea of what the various modeling effects do.

Lead: Thickens the sound and offers detuning.

Spectral: Changes the vocal's frequency balance.

Warp: This changes the formant structure of the vocals, thus allowing for male-to-female and female-to-male gender-bending. Yes, you can have high female vocals accompanying your manly vocals, or vice-versa.

Glottal: Applies effects like breathiness, growl, and rasp.

Inflection: This includes options such as scooping, which adds slight (or huge, your pick) pitch changes after periods of silence.

Pitch: Here you add vibrato, but not like a synth LFO — these vibrato characteristics are modeled after actual singers and sound very convincing.

So the bottom line is, if you want to sound like a crusty old blues guy with super-heavy vibrato who got a sex

change operation, go for it. And if you want to layer harmony lines from the Backstreet Boys and Dolly Parton on top of it, read the next section.

LIVING IN HARMONY

If you've worked with any of the Vocalist series of machines, the harmony section will be relatively familiar, including the ability to generate harmonies by playing notes from a MIDI keyboard. (Speaking of MIDI, the implementation is particularly rich — just about all the important parameters can be controlled via continuous controllers). There are also many harmony “flavors” — smooth harmonies that work in parallel (usually used for detuning/thickening effects), stepped parallel harmonies that are pitch-quantized, as well as smooth and quantized scalar harmonies. The latter require giving the unit key and scale information so it knows which notes to add to the analyzed vocals.

The harmony parts do not all have to be same; each voice can be tweaked for gender, panning, pitch, and so on to the point where you can have male and female backups singing simultaneously. Random timing and detunings can be added, as can different scoop depths and scoop randomness. And, you can still double your voice in addition to all this.

GIMMICK OR GREATNESS?

I have to be careful here, because this box knocks me out. Subjectively, it goes perfectly with my voice and the styles of music I play, but objectively, this box is not for everyone. I often process my voice to make it more synthetic sounding so it blends in better with the synths and weird guitars that are generally in the background, and in that context, the VPP shines like a diamond.

For more traditional musicians, as long as the VPP is used for support, it's great. If you isolate the formant or

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dbx Quantum II Digital Multi-Band Processor

Multi-band processing for recording and mastering

Mastering plug-ins may be a hot topic, but they're not without their disadvantages. Most are single-function devices, so it's hard to keep a consistent signal path among products from different manufacturers. Furthermore, adjusting a bunch of parameters with a mouse — especially with something complex like a multi-band compressor — can tax the patience of any engineer.

As a result, hardware mastering boxes remain not only viable, but, in some ways, the preferred method to do mastering in today's digital environment. dbx's contribution to the genre is a honey: the Quantum II has great sound, superb functionality, and an easy-to-navigate interface. But it's not limited to mastering; it also sounds great with individual tracks and mixes. In this review, though, we'll look at it mostly from a mastering context, as that's probably the single most demanding application for devices such as this.

The Quantum II handles sample rates up 96 kHz, bit resolution to 24 bits, and has 48-bit internal signal path resolution, but, like better digital gear, the parts equal more than their sum. For example, you can use it as a sample rate converter, to add dithering to existing high-resolution files, or as A/D and D/A converters for 96 kHz systems, and not even touch the processing functions.

FRONT AND BACK

The front panel is a balanced combination of real knobs (separate gain controls for the left and right analog inputs and outputs, along with a data wheel for programming), LED metering for input, output, and the tape saturation emulation function, and 15 buttons for programming parameters. An expansive LCD is your window to the Quantum II's functions, and provides additional metering for gain reduction, peak/average levels through the system, and simple meters that monitor whether signals have exceeded thresholds. For example, the compressor and limiter indicate whether the signal is below the threshold, in the "over easy" range, or over the threshold; the de-esser

▶ DBX QUANTUM II

MANUFACTURER: dbx, 8760 S. Sandy Parkway, Sandy, UT 84070. Tel: 801-568-7660. Web: www.dbxpro.com.

SUMMARY: Multi-band processing unit for analog or digital signals, including high-resolution digital. A workhorse of a product, with needed functions and remarkable ease of use, especially given the large number of parameters and button-driven user interface.

STRENGTHS: Wonderful sound quality. Excellent complement of modules. Convincing tape saturation mode. Comprehensive metering. Intelligent use of LCD. Sample rate conversion. Includes dithering with noise-shaping. Flexible I/O, both analog and digital.

WEAKNESSES: No Mac version of the editor software. TSE works only with analog inputs. Returning to an edit function doesn't necessarily return you to the page you were last using.

PRICE: \$2,799.95

one-stage meter shows whether this effect is being applied to the signal or not, and the gate meter just shows above/below gate. These meters are extremely helpful for getting a general sense of how much a processor is being "worked."

The rear-panel connections are designed to accommodate a wide variety of signals, analog or digital, from -10 to +4 (balanced or unbalanced). Here's the rundown:

- Left and right 1/4-inch line-level and XLR in/out jacks
- AES/EBU XLR jacks
- S/PDIF coax jacks
- Word clock in/out on BNC connectors
- RS232 port (for computer interfacing)
- MIDI in and out/thru
- IEC AC cord receptacle

PROGRAMS AND ALGORITHMS

The various processors are arranged in algorithms that offer 12 stereo and two mono signal chains. Furthermore, there are 100 programs (all user-programmable) based on combinations of these algorithms, and user setups can be saved within the programs. The algorithms



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include multi-band and "broadband" processors; some include de-esser, ambience (a process that brings up low-level signals, not something like reverb), post-EQ, etc. Note that the Quantum II also offers MS encoding (derives middle and side signals from the left and right channels), and these can also be processed.

THE MODULES

The broadband versions use the same basic parameters as the multi-band types, except, of course, for those that

pertain to multi-band operation. (There are some other differences, such as the broadband compressor working in stereo or dual mono.)

Multi-band Compressor — This has four bands, which are adjustable individually or as a group. When adjusted as a group, scaling is preserved — for example, if the thresholds are offset for the different channels and you want to bring them all down a bit, the offsets will remain the same. Taking them all to maximum or minimum "resets" them to all the same

value. There are the usual parameters for each band (threshold, ratio, gain, attack, hold, and release) as well as over easy and auto attack/hold/release. Navigation is dead simple, requiring only three buttons and the data wheel. Furthermore, the LCD displays the dynamics curve, updating it as you make changes.

Multi-band Gate — The navigation is similar to the compressor; parameters are threshold, ratio, attack, hold, release, and maximum attenuation.

Multi-band Limiter — Again, same easy navigation, same LCD graph, etc. Parameters are threshold, attack, release, over easy, and auto timing.

Crossover and Parametric EQ — A crossover setting defines the bands referenced by the multi-band processors. You can set the three crossover frequencies, as well as choose a 6-dB or 18-dB/octave slope; the LCD gives a graphic indication of the crossover points and slopes. The same button that selects the crossover can also select the parametric EQ, which has high and low shelving stages along with three fully parametric sections. These all offer the expected parameters, but there are also several placement options for EQ.

Normalize/Output — Normalize lets you set level, ceiling, and type (soft or hard), with the LCD showing peak levels and clip counts. The output section specifies the target bit resolution (8–24), three dithering algorithms (or off), and noise shaping on/off.

Additional functions include Type IV conversion on/off, stereo adjust (balance and M/S), de-esser (frequency, amount, type, and width), and ambience (amount, width, threshold). There are also several utility functions that control clock, MIDI dumps, A/D calibration, etc.

THE WIZARD

A wizard function makes it easy to get started using the Quantum II and to make sense out of the wealth of parameters. It walks you through a series of

► continued on page 126

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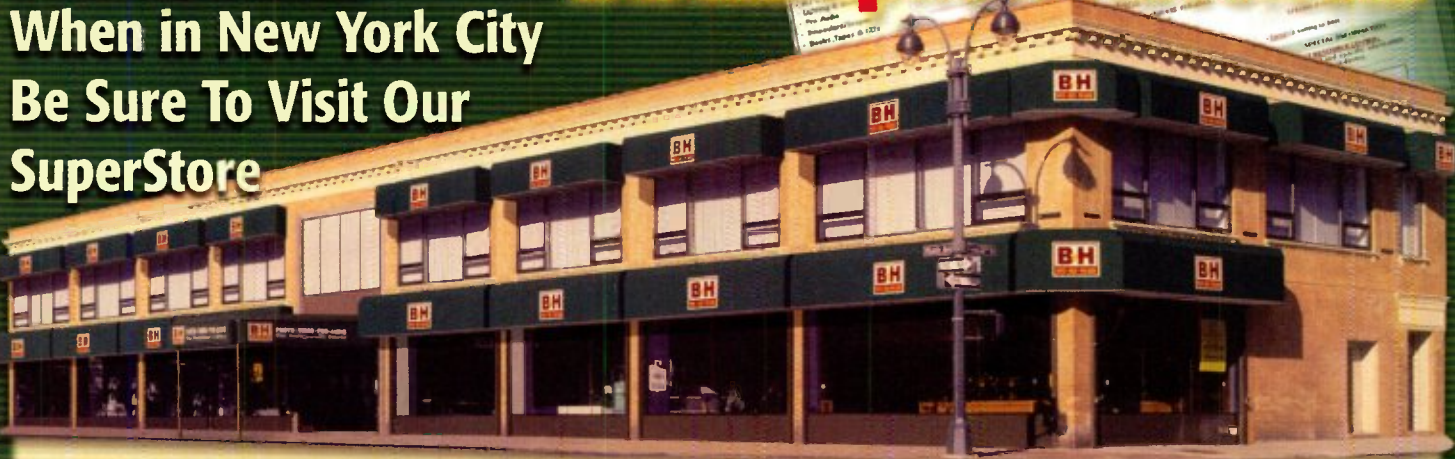
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Sample CD Reviews



PRODUCER'S TOOLBOX

G&E Music

(www.producerstoolbox.com)

This two-CD set presents the same material in audio and AIFF format. 270 MB of each CD is effects — hits and stings (which often end in a big reverb thud), swooshes, twinkles, beds, and drones. They're heavily produced and processed, synthetic-sounding, and are clearly designed to be plug-and-play. I particularly like some of the beds, which are complex and sometimes haunting.

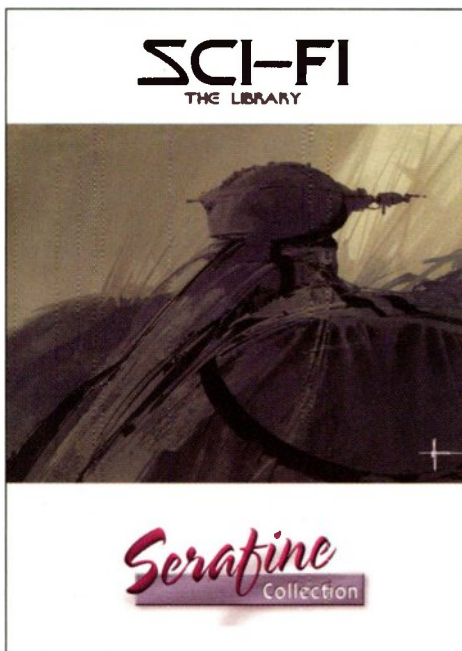
269 MB is Beats and Treats, with 42 themes in various styles that use a blend of electronic and acoustic sounds. Each has three versions: beats with music, just beats, and just music. All are edited for easy looping, but the documentation gives no tempo or key info (nor does it give times for the effects). But for short themes, these loops really hit the mark for video productions.

It's obvious that a ton of work went into producing the sounds, and legally, you can use them in your own productions on a buyout basis. Overall, this package offers a well-produced, and very useful, combination of abstract effects and practical loops. \$249.

SCI-FI: THE LIBRARY

Frank Serafine (www.frankserafine.com)

This library of five audio CDs is a mind-blowing collection of beeps/tones/noises, destruction/creatures, industrial/environment, sci-fi transportation, and weapons/whooshes. Despite the title, some sounds are conventional (jets, motorcycles, etc.),



so this is a more well rounded effects library than it might seem initially.

These are pro-level sound effects, recorded mostly dry with little processing, to allow maximum flexibility when customizing sounds. Each CD is loaded, the documentation has detailed timings, and the whole production is a class act (check out the Syd Mead artwork). And, as the sounds go by, you may recognize some effects you've heard before — the motorcycles in *Tron*, the transporter in *Star Trek* — which also makes you realize just how many movies have Serafine's sounds in them.

Short of standing at the end of a runway freezing your butt off and recording jet fly-bys, or having Hollywood people pay you big bucks to create cool sounds, this is the most direct route to a satisfying library of sci-fi sounds. The price won't seem high after you've sat through the over four-and-half hours of astounding sound effects. \$599.

IN YOUR FACE FX

Cakewalk Loops

(www.cakewalk.com)

Okay, you don't want to spend \$599 for the Serafine collection, and don't need the beats part of Producer's Toolbox. This WAV file CD has 601 MB of sound effects, from the standard (environments such as restaurant, bar, traffic, water, and birds; machine sounds; human sounds; and transportation sounds, jets, subways, helicopters, and cars) to more abstract FX (DJ scratches, hits, loopable synthetic sounds, etc.). The recording quality is varied on the outdoor sounds, but definitely good enough to layer in as background for video work, serve as accents in dance tunes, or whatever. In general, the sounds tend toward a more raw aesthetic than toward a smooth, processed sound.

This CD isn't a complete sound effects library by any



means, but it contains a good cross-section of useful sounds, and some are downright inspired. Unfortunately there's no documentation or list of timings, but at this price you can't go wrong — there's major bang for the buck here. \$69. (\$49 to registered Cakewalk users.)

STARK RAVING BEATS Ilio Entertainments (www.ilio.com)

Stark Raving Beats has four CDs featuring high-energy, funk/rock-style grooves based on acoustic drums. Each groove comes in multiple formats: as mixed WAV files for auditioning with "full mixes" (including percussion and wild electronic effects) and "small mixes" (basic drum parts); complete sampler setups with mixes and the individual track loops on various keys; "groove control" versions of a complete mix; and a groove control "elements" version. There are also individual hits.

Groove control uses the same concept as ReCycle: slice up the audio into individual sounds, then trigger them with MIDI. You can speed up and slow down the parts without changing pitch, because the slices just move closer together or further apart. The "elements" version is the most complex, as it contains all elements used to make up the groove, with each in groove control format. All necessary MIDI sequences for all groove control

options are included.

This is confusing until you load a complete set of variations and see the differences between them. Then it all makes sense: you can mix and match grooves, parts of grooves, change tempos — it's all very flexible. If you're looking for hot grooves that you can deconstruct and reconstruct, this is a well-recorded, well-played, versatile collection. Akai or Roland CD-ROM, \$199; audio CD (no groove control, of course) \$99. ■



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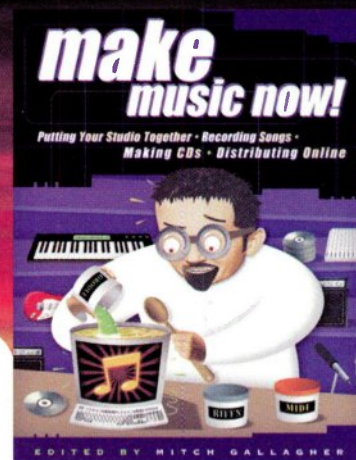
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Edited by Mitch Gallagher, Editor in Chief of EQ

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EQ0202

CEDAR CREST STUDIO

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Propellerhead ReBirth

STUDIO NOTES: "Having a 40-foot window to the outside world helps artists get in contact with their creative side and relax in a more natural setting than the usual sterile recording environment," explains Bob Ketchum. "Room with a VU" takes on a new meaning when you look out over a beautiful wooded lake and two counties. The combination of natural stone, wood, and the irregular control room shape affords a clean, sweet mix spot. I have a natural acoustic environment for the drums with a sectioned ceiling and rock slab floor. The adjacent pool room — with its tile floor and paneled walls — is a perfect live room for guitars, vocals, or horns. The pool room opens to the downstairs den, with a natural rock fireplace and overstuffed furniture — an acoustically dead room which lends itself well to vocals.

"Our Black Lab, 'Bear,' is on a majority of recent sessions because he wanders in on vocal sessions and barks if he likes what he hears! Many times they decide to leave him in. So far he hasn't yet asked for session wages...."

PRODUCTION NOTES: "I generally use Acid for creating soundtracks to accompany video projects, because it's easy using loops to create a mood. It saves search time with production libraries and saves the client money for creation of a custom soundtrack. It's also easier to make perfectly timed radio and television commercials using Acid, and then I get the occasional assignment of dropping in sound effects and 'one hits' to music tracks after the fact." ■

DBX QUANTUM II

► continued from page 122

steps, starting with the main task (mastering, mixing, or tracking). Suppose you choose mastering. From there, you can choose from 14 musical genres. The Wizard then takes you to EQ, where you choose from six presets (bright, light, warm, dark, smile, and none), then gate, compression, and limiting (all with choices of heavy, medium, or light). When you're done entering the data, the wizard sets up the appropriate effects chain and settings you requested.

I can just see veteran mastering engineers shaking their heads (or perhaps wrapping duct tape around their heads to keep them from exploding): now people are just going to push the buttons, and consider themselves mastering engineers. That's one way to look at it, but I prefer to see the wizard as something that gets you in the ballpark. If you rely solely on the presets, you're in trouble. The mark of a quality mastering job will be how someone tweaks those starting points so that the mastering, or any other application involving the Quantum II, fits the music like a glove.

The interface is easy to use and obvious, with only one small complaint: if you leave one processor to work on another, you always return to the processor's first page. I'd rather be dumped back to where I left off, in case the two processors I'm tweaking interact and require tweaking as a pair (e.g., compression gain and limiter threshold).

MONITORING

It's possible to monitor not just individual bands (as well as the main L/R out), but also to monitor after the crossover — but before any dynamics processing — to zero in on which frequencies you want to process, or to monitor post-processing to hear how the sound has changed.

BUT WAIT, THERE'S MORE....

We've hit the highlights, but there are other points worthy of mention. One of the most important is the Type IV conversion system, which provides headroom beyond typical converters by creating a logarithmic response to input signals in the top 4 dB of dynamic range. Thus, you can hit the input harder without distorting the peaks. You can disable this if desired, but enabling it also allows use of the Tape Saturation Emulation option, which does a very credible job of re-creating that "magic" sound of hitting tape hard — but unfortunately, only when driving the Quantum II from the analog ins.

You can enable look-ahead operation (called Transient Capture Mode), change the width of a stereo mix, use sidechain EQ, disable word clock termination, and take advantage of the extensive MIDI controller mapping.

There's even a Windows-compatible editor (which hooks up to a COM port) that basically duplicates the LCD user interface, except that you can do things like see the compression curves for all bands at once. It's a thoughtful addition.

To top it all off, the manual is comprehensive, useful, and clear; appendices cover such topics as MIDI Sys Ex definitions, analysis of noise shaping, and more. It's one thing to say a unit is for professionals; it's another to provide the information needed by those professionals, and dbx delivers.

The Quantum II is powerful processor that combines clean, high-definition sound, an essential complement of modules, easy navigation, solid documentation, update-ability, innovative features that steer clear of gimmickry, and even a computer editor. dbx clearly did their homework about not only how to produce a quality multi-band processor, but, perhaps even more importantly, what functions today's mastering and recording engineers really need. ■

TC HELCION

► continued from page 119

harmony voices, you can detect their synthetic origins. In other words, if you're a guy and you've written the ideal country and western song but it needs a girl singer, the VPP will not replace your vocals with Reba. What it will do, though, is give you some great girl backup singers, and a convincing diva to double your vocals.

In general, the less radical the changes, the more convincing the results. There's a "boy band" setting that does some subtle formant shifts, and I had to do a double-take: it shaved years off my voice. The vocal stood up perfectly in isolation; you wouldn't know it was processed. Then again, you wouldn't know it was me, either. That's quite an accomplishment.

The presets will give you a good idea of what the VPP can do, and some of them are downright spectacular. The fact that TC-Helicon has been able to take voice processing to this level is astonishing. I'm frankly surprised that someone hasn't taken this box and turned it into a signature sound. Hmm, maybe I should before anyone else catches on....

At almost \$2,000, the VPP isn't cheap. Some will hear it and go "interesting toy, but I think I'll pass." Others will set a world speed record reaching for their credit cards, dash out of the store, and immediately make some of the coolest vocal sounds you've ever heard. But one thing's for sure: you can't help but be wowed when you plug in a mic, strap on some headphones, and browse the presets. This is a highly impressive piece of technology that, in the right applications, provides functions nothing else can touch at any price. ■

A REAL RECORD GUY

► continued from page 67

do is figure out what room in town is going to interpret, and be the most exciting for, the band and the tempo that they play at. I look at the decay of the room, what the early reflection sounds are like of the room, how long the decay is or short it is." He admits to a serious love affair with Ocean Way-L.A. Studio B for this reason. You can hear evidence of this, he says, on the record *Brain Stew* he did for Green Day. "That kick and snare are lighting up

that room, so you put the appropriate room mics and close mics together and you have to make sure that the close mics and the room mics fit together, that they meet somewhere. They shouldn't be just two sounds that have nothing to do with each other, and you shouldn't just compress the crap out of a room sound just because that's what everybody else tells you to do. Sometimes it's better not to compress the room sound so much, and slide it in behind the close mic. Sometimes it's better to let the room mics, like in a Led Zeppelin-style, actually be the main sound. The far mics are actually in some ways more important than the close mics, and they got that sound to really work as the main sound. Look at the Chili Peppers' record; they don't put very many mics on those drums and look how slamming they are. The secret is to just actually figure out what kind of band you're recording, what kind of drummer you're recording, and then make all the choices along the line pulling in the same direction."

Another technical issue that Cavallo isn't afraid to register an opinion on is that of tape versus Pro Tools. Like many, his sonic preference is tape but

he's reluctant to use it until the mix due to power and flexibility that Pro Tools provides. "I know that tape sounds better than Pro Tools now, but once it gets to a 16-bit CD, and when you hear it with the noise floor on the radio and what happens in people's houses and everything else, for the majority of the listeners it sounds totally fine. Although I'd like to hear it better and I'd love everybody to experience 24-bit, sure. But that's just not the way our system works at this time. So, on Pro Tools I can support the artist, be lightning fast and make them feel more comfortable, never lose a take and have editing capabilities that with tape you just don't have. I go into the latest 24-bit version of Pro Tools and I stay there until the end," he continues. "I still truly believe in tape. I still think you need that glue sound; you need that tape compression sound. There is something that tape does that I think our human ears like. We all know what it sounds like and that's why I love the sound of hitting 1/2-inch tape at the mixdown. Everybody knows what it sounds like if they've heard something actually hit tape." ■

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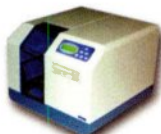
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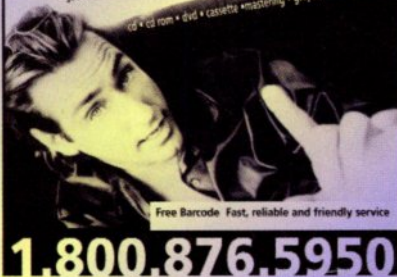
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ROGER NICHOLS

► continued from page 138

difference. "Not there, that was a 6/4 bar. You punched two beats early!" Just drag the new region over two beats to the right and everything is back to perfect.

SAMPLE RATE CLOG

You can't call Roto-Rooter for this one! If you want to record at 96k or 192k, you are going to be limited to the number of tracks you can work with. The problem is bandwidth. You can only get stuff on and off the hard disk so fast with PCs and Macs. If you have a Sun workstation or a Cray mainframe, then no problem. Geordie Hormel is the only guy I know with a Cray, and he won't let me borrow it.

Remember when Pro Tools required two hard disks and half of the audio got recorded on each one? Well, "They're back!" Even with 160 GB drives turning 15,000 rpm, you can't get all of the data on and off of one drive. This means extra housekeeping nightmares when you do backups. On restoring, files have to be split back up onto at least two drives. If you want maximum tracks at 192k, you have to split things up among four hard drives. *Mama Mia!* What if the files were 192k 8-bit files? Then you could brag about recording at 192k, and still get everything on one hard drive. Good idea, huh?

I think higher sample rates are being pushed upon us not by hi-fi gurus who want us to improve the sound of our recordings, but by hard disk manufacturers who want to sell us four times as many drives as we bought last year. And because of all of this, 50 GB tape backup systems are a joke. We have to spend more money on the next generation of backup systems and spend another fortune on backup tapes.

Ya know, maybe I won't make backups. It will be 20 years before someone wants to re-release some of this stuff, and by then I will be selling snacks out of my converted container on some lonely beach in the Bahamas. Who cares?

Roger got the container, had windows installed, and is currently checking on prices to ship it to Grand Bahama Island.

CAKEWALK SONAR 2.0

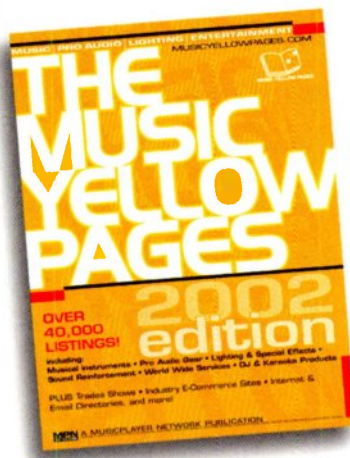
► continued from page 26

Yamaha's Open MIDI Plug-in Technology Panels, which allows real-time control of MIDI hardware devices from within Sonar; and soft synths are now integrated with a "synth rack" that allows patching synth outs directly to track inputs. Even better, DXi soft synths support multiple outputs.

Sonar bundles quite a few extras, including several third-party DXi soft synths, DirectX 8 automatable

effects, real-time MIDI FX plug-ins, over 400 audio loops, and SoundFont libraries from Sonic Implants. The 2.0 version of Sonar XL adds the FXansion DR008 DXi drum sampler, Sonic Timeworks Mastering EQ (features stereo 64-bit precision, automation, 30-band spectrum analyzer, and a phase meter), and Sonic Timeworks Compressor X (64-bit, mastering-quality, automatable compressor with hard and soft knee compression and no-clip brick wall-style limiting). ■

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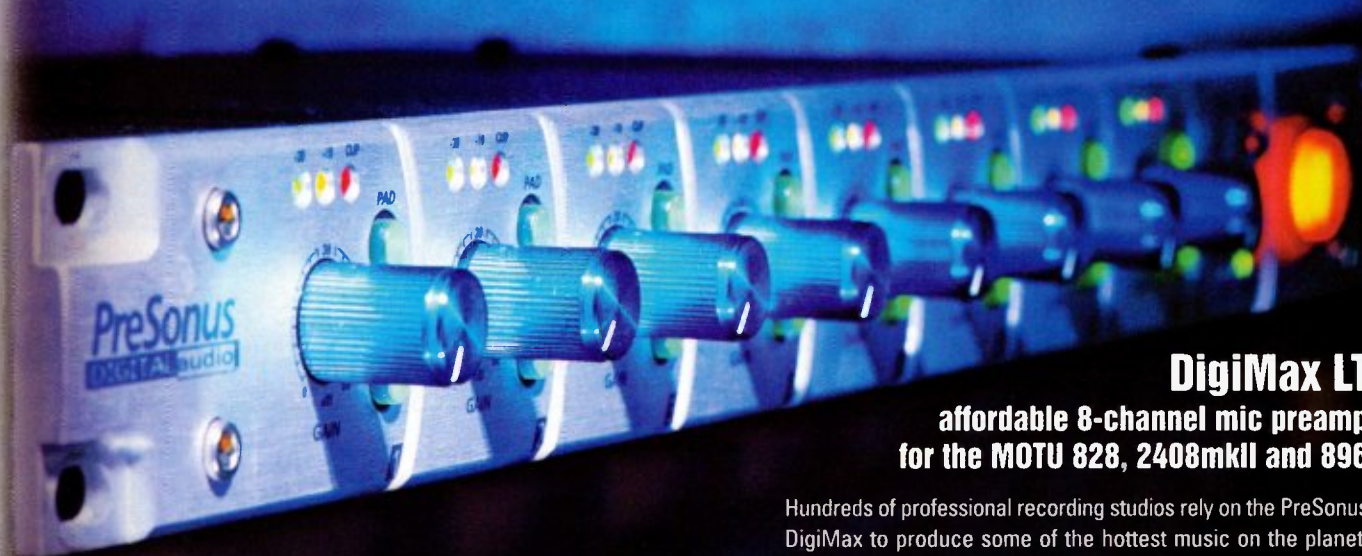
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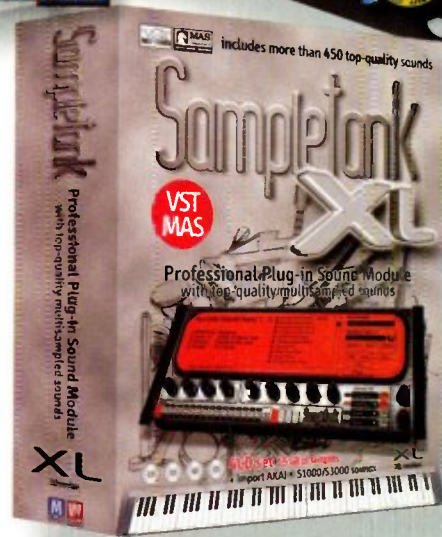
SampleTank has taken the Digital Performer virtual instrument scene by storm with its rock-solid compatibility with Digital Performer and a huge library of samples that it puts right at your fingertips. Not only does SampleTank sound incredible, it gives you lightning-fast access to hundreds of sounds, complete with 20 high-quality DSP effects with



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four assignable per instrument. The result? You spend more time creating and less time fiddling. Import your AKAI S1000/S3000

sample libraries, or choose from a growing number of SampleTank libraries from the top names in soundware development, such as IK Multimedia, Sonic Reality, Masterbits and the Advanced Media Group. New titles include Vintage Voltage ST™, Trance Grid™, Techno Grooves™, Loop Soup™, Terminal Head™, and many more. Use up to eight separate outputs per module for completely flexible mixing within Digital Performer's 32-bit virtual studio environment. Enjoy 128-note polyphony that is fully optimized for your G4 processor. Available in two versions: SampleTank L and the fully-loaded SampleTank XL. Call Sweetwater today.



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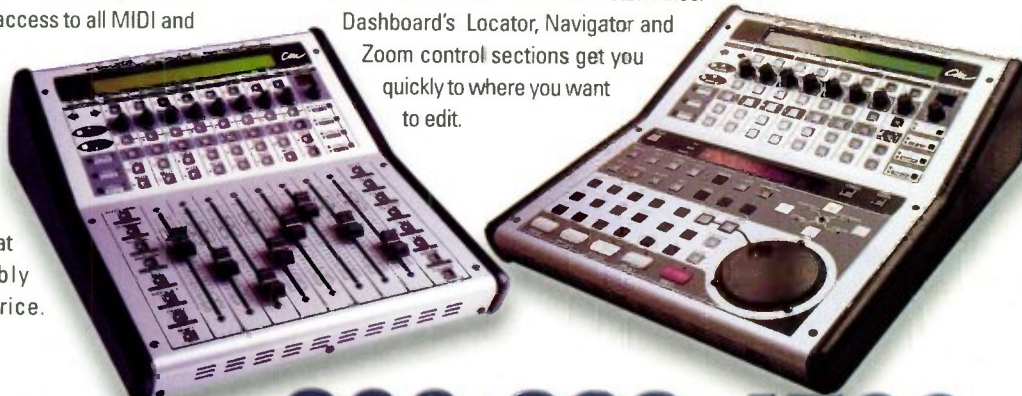
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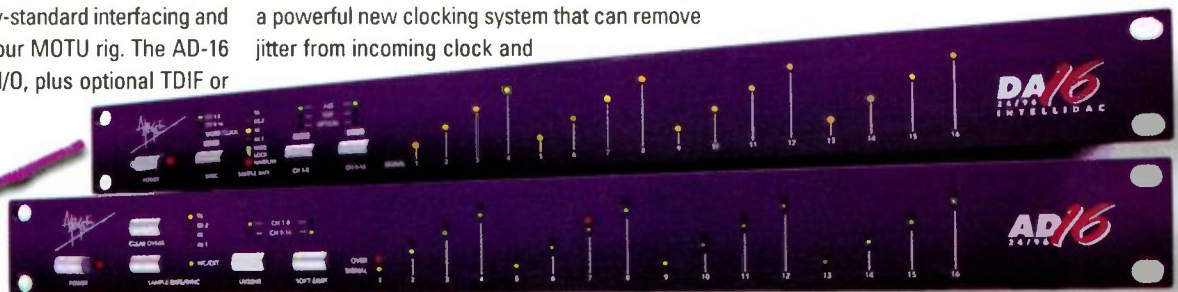
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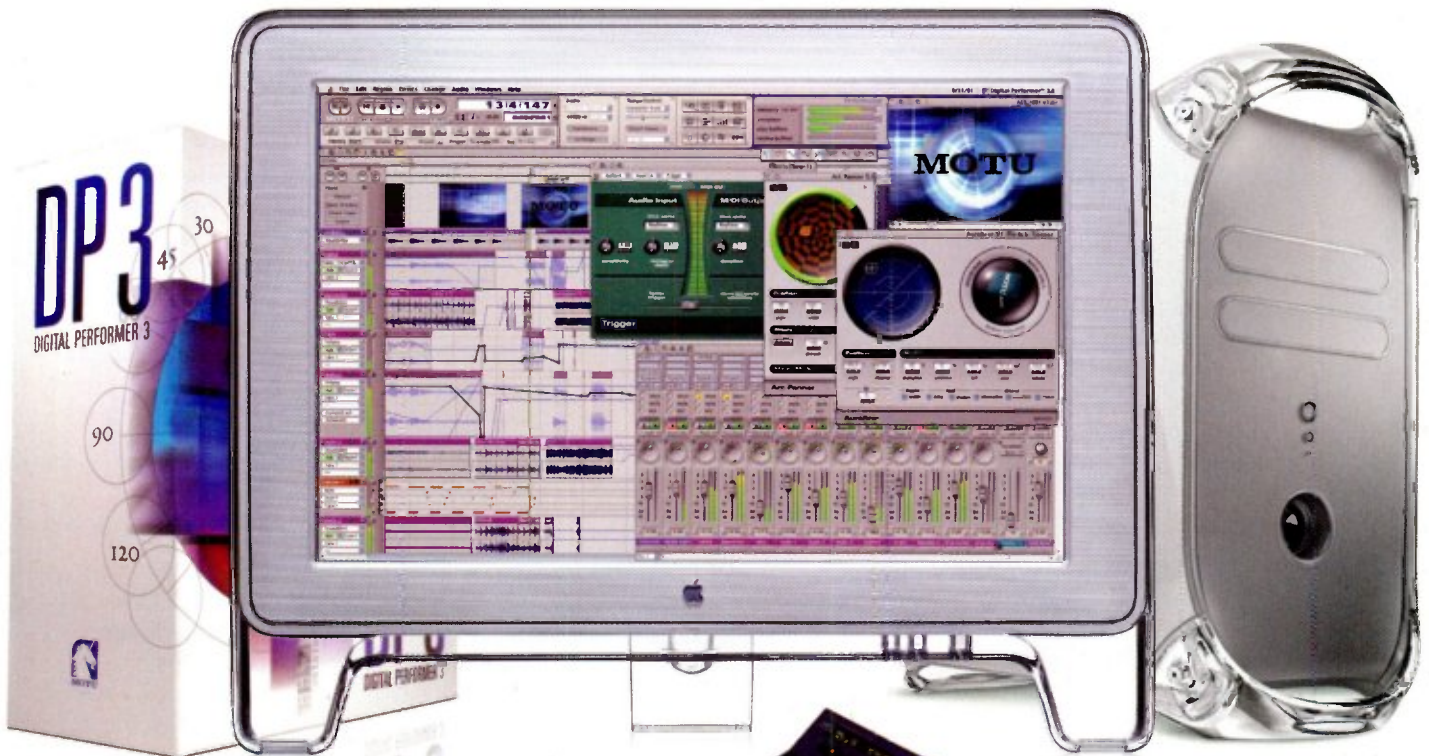
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These days it's all about hard drives

Where's The Tape?

Yet another album project to do, and not a tape machine in sight — recording directly into Pro Tools. Actually, except for Steely Dan projects, everything I have done in the past three years has been directly to some form of hard disk recorder. At this moment in time, all professional 24-track and 48-track machines have ceased production. So if you don't get used to hard disk recording soon, you probably won't be recording on anything.

STEELY DAN

The 2000 Steely Dan concert tour was recorded to a pair of Mackie HDR 24/96 machines locked together by timecode and word clock. We recorded 17 shows. Each show was a little over two hours long, but fit nicely on a single hard disk per machine. The recording process worked flawlessly. I used the analog I/O cards in the machines and fed them from the direct outs on the Yamaha PM4000 console mic preamps. The direct outs were after the input trim, but before the fader, so that fader movements on the console did not affect the levels going to the recorders.

DIGITAL PERFORMER

A friend has a small studio in his house. His recording software preference is MOTU Digital Performer. I have mixed previous projects at his studio, but this time he wanted to record. We recorded bass, drums, keyboard, and electric guitar directly into DP 3.0 without a hitch. We recorded about eleven takes of one song, all in the same session. After the last take, it was easy to go get pieces from earlier takes to piece together the master. Another job well done.

RANDOM ARTISTS

I have been working on another tribute project. A bunch of artists playing their favorite songs from one artist. The last three artists were recorded directly into Pro Tools. They included LA Express (Tom Scott, Max Bennett, and Robben Ford), Phoebe Snow, and Toots Thielemans. The producer was worried about possible system crashes during

the recording. He said, "LA Express hasn't recorded together since 1976. I want to make sure I get this session recorded!" I told him that things were pretty bulletproof these days, and, if there was a crash, we could get back in just a couple of minutes. Afterwards everyone was very pleased with the results — perfect recordings without so much as a burp.

DAVE BRYANT

I recorded an album for Dave Bryant (Ornette Coleman's keyboard player) last December. Pro Tools was the medium of choice. We recorded the entire album as one big long Pro Tools session document. Because of the time pressure, we did not have the time to close one session and open another. During overdubs, we just went to the marker for that song and pressed Record. We never had to worry about needing "just one more track."

TRACKS TO BURN

Speaking of tracks, the days of running out of tracks are over. Never again do I have to bear the wrath of the lead singer yelling, "Find me one more track on that tape or I will get somebody in here who can!" Ouch! Even if your system only has 64 voices, you can still mute some tracks temporarily, record more passes, and then sort things out later. Even with the Digidesign 001 limit of 24 tracks, you can do a submix, open a new session, and record 22 more tracks. When you are done recording, take it to a studio with a bigger system and import all the tracks for mixing.

Most DAW systems have "quick punch" for punching into record on the fly. What actually happens is that, while playing, the new track is being recorded even before you punch the button. When you get to the actual punch-in point, there is an edit performed just as if you pasted a new region over the old one. After the recording, you can change the region boundary earlier to use that great lick the guitar player played just before the punch.

If you punch early or late, it makes no

▶ continued on page 133





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