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DECEMBER 2004

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World Radio History

Talk Box

Vol. 15, No. 12
December 2004

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TO THE LIMIT

My wife and I recently sold our house, and with it, my studio space. (Long-time readers may remember that I have trouble staying in any given residence for longer than a couple of years. Must be Gypsy blood. . . .) The movers showed up bright and early, wrapped our lives in paper, and shuttled everything off to a storage space, where it will remain until our new place is ready.

In the meantime, we're hanging out in an extended-stay hotel. I kept just the bare essentials out of storage, including my laptop, an acoustic guitar, and a set of headphones. I've been truly amazed at how much power I have at my fingertips with such a compact system. Despite not being surrounded by racks of cool gear and multiple fire-breathing computers, I'm managing to be very creative . . . in some ways more so than when I have tons of toys at my disposal.

It reminds me a bit of my first "studio": a Commodore 64 computer, Casio CZ-101 keyboard, Yamaha DX100 keyboard and RX21 drum machine, and a 360 Systems MIDibass module. I ran everything through a mono Peavey XR600 PA head, which drove a pair of Radio Shack PA columns. A JVC cassette deck did the honors at mixdown. A Sholz R&D Rockman served as my amp "modeler." High-tech and fancy it wasn't. But somehow I managed to write a *ton* of music on that rig — it didn't seem all that limited to me. (Okay, the mini-keys on the CZ and DX seemed *very* limited, but aside from that. . . .)

Hopefully my new space will soon be ready, and I'll have all my powerful studio tools once again at my beck and call. But I'll be taking something away from this brief experience: Limitations can be a good thing — maybe not all the time, but every once in a while.

Being "limited" by your tools or your circumstances can remove option anxiety, force you to think outside the box, make you get the most out of your gear and yourself, and force you to focus on the task at hand, which is making music, not playing with equipment. These positive results can then be carried over to situations where you *do* have plenty of options and high-tech miracle boxes at your disposal.

Try it: Force yourself to do a project using just a few select pieces of equipment. I'm betting you'll be surprised how creative you can be.

—Mitch Gallagher

The BAND STAND

Given Editor At Large Craig Anderton's first-hand experience with the hurricanes in Florida, we thought the following Band Stand question was apropos: If you had to evacuate your house and could take only three things from your studio, what would they be?



Mitch Gallagher,
Editor

My Mac G5 would top the list. My musical life is on that thing, from DAW productions in-progress to notation of all my compositions. Second, my laptop; the rest of my life is on that thing. Number three would be the Strat-style guitar I built as a teenager, it's still my baby. . .



Craig Anderton,
Editor at Large

For me, this is not a hypothetical question! I ended up taking a box containing my removable hard drives and CD-ROMs (they contain most of my life's work from 1979 on), my cherished PRS signature series guitar, and a restored Minimoog signed by Bob Moog himself.



John Krogh,
Technical Editor

If I had help, I'd definitely move my Hammond C-3. But assuming I'd be left to fend for myself, I'd opt for my main Mac G4 computer, my Access Virus Indigo, and my Universal Audio 2-610 mic preamp.

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World Radio History



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International Music Software Trade Association Formed

Music software and soundware publishers, retailers, publications, and industry professionals have come together to form the non-profit International Music Software Trade Association. This advocacy organization's charter is to reduce software theft through education, and create awareness of the impact illegal software use has on the industry and technological advancement.

IMSTA carries its message with a carrot and not a stick, preferring to appeal to users on both moral and practical grounds — by buying the software they use, users will benefit by healthier software companies and, in turn, better technology and products without the need for cumbersome copy protection schemes. "The people who steal software and use it to make music need to be aware of the damage it imposes on the software industry," says Ray Williams, one of IMSTA's founders.

Illegal copying continues to be a major challenge for all software developers and publishers. In the music software and soundware industry, many observers estimate that for every legal copy of a software program sold, there are five illegal copies in use by potential consumers.

High software theft rates are dampening innovation by depriving many music software developers of the capital they need to further develop products and technologies, or even to remain in business. Software theft has remained morally unchallenged for a long time; many consumers simply do not realize that their decision to use stolen software has a direct, negative impact on the future of the software industry.

"Most people want to do the right thing," says Johanna Devaney, IMSTA's Executive Director. "I believe that if we stick to the message of 'Buy the software you use' it will have a positive impact, even if the results won't be seen for many years. The point is we have to start this education now."

For more information, or to apply for membership, visit www.imsta.org.



INDIE WORLD: The Fading Collection, *Stems: The Remix Album*

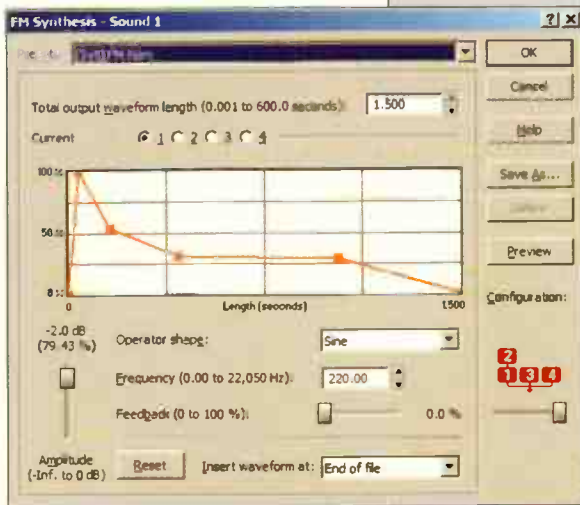
Stems, from the Seattle-based electronic group the Fading Collection (Matt Frickelton, Sarah McCulloch, and Jeremy Hill), consists of remixes of the songs from their debut album, *Interactive Family Radio*. Mastering engineer Steve Turnidge notes that "Matt provided 'stems' — typically eight separate submixes of each song — to the participating musicians. Each remixer took a different approach, from using only the provided tracks, to replacing nearly all of the content. These were created in every level of studio, from low to high end."

Commenting on the remix of "Blood Red My Breakbeat," Alethea Eichhorn of Beehive notes that "We used Cubase VST 32 and Reason 2.5, with Absynth and Novation V-station for the synths." As to Electron Love Theory's remix of "The Prince," Jeff Leisawitz says, "The song was tracked on a dual G5 running Pro Tools 6.0 on an 002. Sounds were generated from a live bass performance, along with sequences from an E-mu Proteus 2000 and an XL-1 with a Planet Phatt card. The track was mixed by Don Gunn on a dual-533 Mac G4 in Logic Pro 6 with a TC Powercore card, TASCAM FW-1884 controller, and a pair of ADAM S2.5A monitors."

Matt adds, "'Fire' was recorded and mixed in Pro Tools for Windows on a Digi001. I used several soft synths (mainly Reaktor 4, Sampletank 2, and Reason's Malström), a Korg EA-1 for bass parts, Neumann U87 on the vocals, and Lexicon PCM-70 for reverb and general effects. We actually did a mix of it on an SSL, but found the ease of both mix and plug-in automation in Pro Tools made the mixing process go more smoothly."

Interestingly, the album was released in Weed format prior to pressing, so revenue started coming in before the first CD hit the shelves. Hear these tracks at

www.weedfilegarden.com/def.html#thefadingcollection.

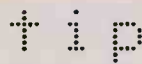
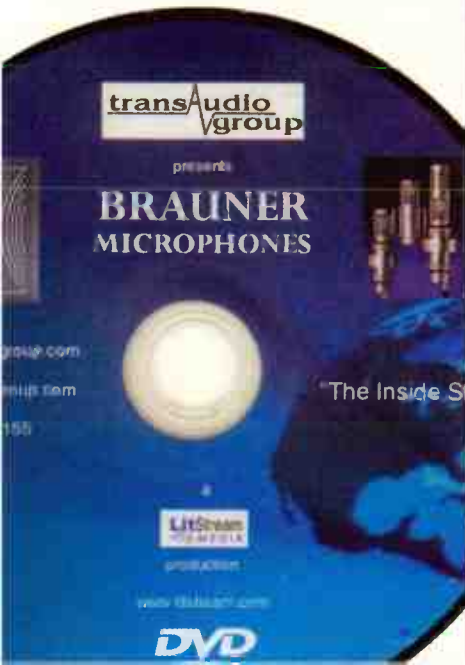


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www.transaudioelite.com,
www.brauner.com



TIP: CREATING SOUND FX WITH EDITORS

Yes, there are zillions of soft synths, including spiffy modular versions that let you create just about any sound imaginable. But if you want to generate some really whacked-out effects, one of the most interesting and least expensive options is to use the synthesis functions that already exist within certain digital audio editing programs.

Wavelab, Adobe Audition, Sound Forge, and similar programs have functions that let you generate a variety of waveforms (sometimes with more precision than you can obtain with any hardware synthesizer), as well as ways to modulate them. Once created, you then have the option to access these programs' rich array of signal processing options, or warp the sounds beyond recognition with plug-ins.

(l to r) Propellerhead founders Peter "Pelle" Jubel, Ernst Nathorst-Böös, and Marcus Zetterquist.



Propellerhead Software's First Decade

They created a file format (REX), started the trend to virtualizing vintage gear with ReBirth, established the ReWire industry standard, and changed the world with their award-winning Reason virtual studio. What's more, they treat their customers well, and they're nice people.

So, we're more than happy to raise a virtual toast to Propellerhead, and congratulate them on their 10th anniversary in this wildly competitive business. Here's to ten more, if for no other reason than to find out about the secret project they're working on right now. Does it *really* have something to do with anti-gravity and atomic particle acceleration? Guess we'll find out. www.propellerheads.se

What's a party without music? Gaffaman and several others gave musical props to the prop heads. (photos: Kurt Kurásáki)





Who's Using What?

Wilson Phillips used Sennheiser's Evolution Wireless Series RF microphones and personal monitoring systems on their latest tour. "They've been using the EW300IEM-G2 system," reports Jeff E. Adams, tour manager and occasional monitor mixer for the threesome. "We're also using Ultimate Ear UE-10 ear buds." He claims the MD935 capsule on the SKM300-G2 handheld transmitter was the best match for the girls' voices, and picks up sufficient background noise so that none of the three needs any additional on-stage ambience fed into their personal monitors. . . . Currently touring to support her *Afterglow* album, singer/songwriter **Sarah McLachlan** is using the Neumann KMS150 hypercardioid microphone matched with True Systems mic pres. McLachlan also vocalizes via a Neumann KMS140 cardioid vocal microphone at piano position. Out front, FOH engineer Gary Stokes mans a Midas XL4 console and delivers the live mix via a Meyer Sound MILO line array system. Monitor engineer David Pallett mixes on a Yamaha PM1D digital console and relays them to the band with 12 Sennheiser EW300IEM transmitters. McLachlan's in-ear mold of choice is a Sensaphonics Soft 2X.



Forum Exchange

MusicPlayer.com Forum Watch

Don't you just love it when people divulge their secrets? Here are some of the "greatest hits of mixing tricks" from MusicPlayer.com.

Original question posted by RhythmInMind: What are your favorite techniques and tricks for mixing? My latest processing addiction is PSP's VintageWarmer for percussive acoustic guitar tracks. It seems to add the right amount of compression and bite.

where02190: I typically track bass direct and miked. Before mixing, I time-align the two tracks visually, as the miked cab will be slightly behind the direct feed by a millisecond or two. Correcting for this increases clarity and presence in the mix. But with drum tracks, the timing differences between close mics and overhead (OH) and room mics create a sense of dimension. I start by getting the best sound I can with just the overheads, then add the room mics, and fill in what's lacking with close mics. My drum mix usually involves no more than 5-6 tracks (in order of importance): overheads, room, kick, and snare.

Matt.Hepworth: When you're doing a mix and really like some effect you're trying, or love how full something sounds with "x" amount of reverb, lower the amount by 2-3dB. You'll thank yourself in the morning.

where02190: I work reverb effects just the opposite. I get them where I like them and turn them up a couple dB. While they may stand out in the studio, they quickly get lost in the real world.

Lee Flier: A lot of this depends on your mixing room, and the quality of your clock and D/A converters. Reverb tails can get swallowed up if you have any jitter.

where02190: Actually, this often relates to background noise that is not present in the studio, but is in "real life." We've spent much time and effort to tune the control room properly, and I've used this same method in many other (properly tuned) rooms as well, with excellent results every time.

Miroslav: With reverb, I guess I'm a bit "old-school" . . . and when in doubt, stick to the "less-is-more" approach. I'm more into just setting up one reverb for everything, and then maybe highlighting one or two tracks with just an added bit of another verb. But the 1-verb thing seems to be more along the lines of old-style '50s-'60s recording. This gives everything a nice cohesive sound, like everyone played in the same space at the same time.

Lee Knight: For lead vocal FX, instead of setting a delay timed to a certain value, make a copy of the lead vocal track and time shift that to the value you want (1/8, 1/4, 1/8T, etc.). Now treat the delayed copy differently for different sections. Mute where appropriate, use amp/cab sims on certain bits, reverse sections, pitch shift -10 and +10 cents and pan wide, etc. The effects are organic to the song, yet can be as far out as you want or need.

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» Today's Active Topics «

Welcome to our newest members: The Magician

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EQ Magazine Forums				
<p> David Frangioni: Studio Tech Project Studio Connection: Design/Gear/Computers/MIDI/Pro Tools</p>	4155	32866	<p> Mac CPU Upgrade/Bus Question. (Roger Foote) 03-04-2004 09:58 AM</p>	David Frangioni, EQ Editor
<p> Ethan Winer: Acoustics Forum Here's the place to discuss the ideal acoustic environment for tracking and mixing, and how to attain it.</p>	34	230	<p> Did I do the right thing? (E-Class) 03-04-2004 10:07 AM</p>	Ethan Winer
<p> Phil O'Keefe: The Project Studio Whether the sound just hit the mic, is coming out of the speakers, or is</p>	28	305	<p> Lone wolf recording considerations (Kendrbt) 03-04-2004 11:47 AM</p>	Phil O'Keefe

Reality Check

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Jeff Rona (film composer; "Traffic," "Black Hawk Down")

"I'm surprised and excited by the tonality of the BX8s. Unlike most speakers I've checked out, they have a nice open middle quality to them—along with the bonus of a smooth low end and not-too-shiny top. I added M-Audio's subwoofer and was really impressed with what it contributed to the mix."

David Kahne (Grammy-winning producer; Paul McCartney, Sugar Ray)

"I have to go between analog and digital all the time and the BX5s have become my workhorse."

Terry Howard (Grammy-nominated engineer/producer; Ray Charles)

"The M-Audio BX8s are the best sounding powered monitors I've heard among those built on 8" drivers and costing less than \$1000 a pair."

Home Recording, April 2003



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Studiophile BX5
75-watt bi-amplified
studio reference monitors



Studiophile DX4
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Studiophile SBX
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w/ stereo bass management



Studiophile LX4 System
2.1 reference monitor's
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M-AUDIO



Surround and the Joy of Sax

Revered as one of the world's best mastering engineers, 2004 Technical Grammy Award-winner Doug Sax has opened a new 2-room studio facility in Ojai, California (he also still maintains his Mastering Lab facility in Los Angeles).

As Sax explains, "What's unique about the room is that there's no console between you and *any* of the speakers, including the rears. If [there's] anything between you and the speaker it's going to cause acoustic problems. [And] psychologically it really helps you concentrate, as you're not looking at knobs and meters and all the stuff that might take you out of just listening." It was while working with engineer James Guthrie on the critically acclaimed surround remastering to SACD of Pink Floyd's *Dark Side of the Moon* that Sax first got the idea to remove the traditional console from between the listener and the speakers.

The surround monitoring system (five ATC SCM150A loudspeakers and an ATC 15" subwoofer for the LFE channel) is installed in a unique front wall; the front three speakers are soffit-mounted rather than free-standing. As Sax reports, "The soffit is not the full height of the room. We came up with this half-wall. It's a unique design and we're really happy with it . . . the room feels large, and the speakers are really allowed to do what they do. I've certainly been happy with the ATC speakers."

As Sax begins to bring the brand new facility online, he comments, "Only a handful of clients have been up so far, and they've been extremely positive. They all feel that it's the best surround setup that they've heard." www.themasteringlab.com

Dues of Disc, DVD Duping Drops

Disc Makers has announced price reductions, ranging from \$300 to \$1,000 per system, on their Elite Series of automated duplication systems. It's now possible to purchase a 2-drive CD Elite that can automatically duplicate and print 30 CDs an hour for under \$3,000 — formerly the cost of a single-drive duplicator. Elite Series duplicators are available as units that attach to a PC or Mac, or as an ElitePro version that includes a built-in PC, and comes with monitor, keyboard, and mouse. 2- and 4-drive versions are available.

www.discmakers.com/duplicators



Surfboard

As we peruse the inner recesses, nooks, and crannies of the web, we're constantly flagging sites, news items, and useful tidbits that we feel will be of interest to you. Such as:

<http://www.hitsquad.com/smm/>

There's a huge selection of shareware (and sometimes freeware) here, although it's worth remembering that some of these haven't been quite as rigorously tested as the offerings from the "big guys." Nonetheless, you'll find some extremely useful programs here, some with no commercial equivalents, as well as discussions and news.



<http://www.izotope.com/products/audio/vinyl/>

How about a free vinyl simulator? iZotope's Vinyl uses 64-bit processing and modeling to simulate the effect of audio being played on a record player with variable scratches, crackles, etc. Version 1.7 supports MAS and Audio Units on the Mac, as well as Windows (HTDM, RTAS, AudioSuite, VST, and DirectX).



<http://www.shure.com/booklets/techpubs.html>

Get educated with these free, downloadable educational booklets. Titles include *Cleaning Microphones*, *Microphone Techniques for Drums*, *Impedance Matching for Microphones — Is it Necessary?*, *Audio Transformers*, and *Phantom Power and Bias Voltage — Is There a Difference?* There's even one called *MP3: Getting Your Music from the Garage to the Web*. Good stuff.



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*DP-01 street price may vary. The weather may vary. It's all relative in the cosmic scheme of things. Considering this sort of thing too closely just postpones recording a potential hit on your new DP-01 or DP-01FX. ©2004 TASCAM All Rights Reserved. All specs are subject to change without notice.

World Radio History

DJ/PRODUCER

Tool Box

BY KEVIN MADDEN



Behringer MS16

2-Way active personal monitor

Behringer's **MS16 Active Monitor Speakers (\$69.99/pair)** are designed for home studios, multimedia applications, and keyboard and vocal monitoring. They include 4" woofers, high-resolution tweeters, dual power amps, magnetic shielding, and controls for volume, bass, and treble. Parallel inputs (stereo RCA and 1/8" TRS) allow mixing two sources, and a 1/4" TRS mic input is also available. The 1/8" TRS headphone connector provides an auto-mute loudspeaker function

Behringer, www.behringer.com.

Elemental Audio Neodymium Compressor/dynamics processing plug-in

Neodymium (\$159) is a compressor/dynamics processing plug-in that employs sophisticated techniques to provide greater control of audio levels. Additionally, Neodymium introduces a visual approach to compression that makes it easy to optimize compression parameters and ensure effective compressor use. Neodymium is available for a limited time at an introductory price of \$139, and may also be purchased bundled with Elemental Audio EQ plug-ins Firium and Eqium. It's Mac OS X/Windows-compatible, and supports RTAS, Audio Units, and VST plug-in formats. Neodymium is available online directly from the company.

Elemental Audio, www.elementalaudio.com.



Digidesign Smack! Compressor/limiter plug-in for Pro Tools

Smack! (\$595) and **Smack! LE (\$395)** are designed specifically for music applications, but can accommodate virtually any kind of audio material. Smack!, which supports AudioSuite, RTAS, and TDM plug-in formats, features three compression modes, unique compression ratios, and harmonic distortion ideally suited for achieving a wide range of sonic variations and colorations. It supports both Digidesign and Avid software, side-chain processing, multi-channel track types, and the full range of Pro Tools sample rates. "Smack! LE" offers AudioSuite and RTAS versions, and supports Pro Tools LE and Avid software at a reduced price.

Digidesign, www.digidesign.com.



Submersible Music DrumCore

Loops, fills, hits, and kits of legendary drummers

DrumCore (\$249) is chock-full of enough loops, fills, hits, and kits of legendary drummers to keep you and your hard drive busy for quite a while. The two DVDs include the application and content (in both audio and MIDI formats), with over 8GB of signature grooves from such drummers as Alan White (John Lennon, Yes), Jeff Anthony (Sheryl Crow), John Bishop (Ernie Watts), Ben Smith (Heart), Tony Braunagel (Bonnie Raitt), Ned Douglas (Dave Stewart), DJ Syze-up (Ultra Nate), and Michael Shrieve (Santana). DrumCore provides a search engine for easily finding content, a MIDI drum module for playing the drummers' sounds via MIDI, ReWire/Core Audio support, and a way to easily export content to popular applications including Pro Tools, Logic, Digital Performer, and Cubase/Nuendo.

DrumCore, www.drumcore.com.

Yamaha Magicstomp Acoustic

Guitar effects pedal

Yamaha's famous stompbox technology is now available to acoustic and acoustic/electric guitar players, thanks to the debut of the **Magicstomp Acoustic** Guitar Effects Processor (**\$299.99**). Features include a total of 198 sound programs (99 factory and artist presets, 99 user preset), automatic feedback eliminator, integrated chromatic tuner, mic/amp/speaker simulations, interactive software editing, and full programmability. In addition to a line of new effects, the Magicstomp Acoustic includes sounds from Yamaha's classic DG, AG, and UD Stomp pedals, as well as a number of digital effects from the Yamaha SPX processor family. 24 bit/96kHz audio keeps the signal clean and clear, while 32-bit DSP processing maintains the integrity of multiple effects chains. The user-friendly interface contains a sturdy metallic gold and brushed aluminum housing, easy-to-read LCD display, master volume control, three sturdy foot switches (increment/decrement and on/off), and three multi-function, top-mounted parameter knobs. Magicstomp can also interface to both Windows and Mac computers.

Yamaha, www.yamaha.com or Magicstomp, www.magicstomp.com.



Marshall MXL V12

Microphone

Handheld, solid-state condenser mic

The V12 (\$299) is the first in a series of what Marshall is calling "Silicon Valve" solid-state mics. The goal is a mic that convincingly produces the warmth and clarity formerly associated solely with vintage tube microphones. The V12 has a 1" diaphragm, and transformer-balanced output.

Marshall Electronics, www.mxlamics.com.



Phonic PAA2

Handheld audio analyzer

The PAA2 (\$469.99), a highly accurate handheld audio analyzer, features the tools needed to help sound engineers fine-tune and perfect acoustic environments. Features include a 31-band, 1/3-octave realtime spectrum analyzer, SPL meter, line level meter, selectable weightings, internal selectable noise generator, EQ analyzer, microphone calibrator, and speaker phase checker.

Phonic Corporation, www.phonic.com.





Princeton Digital Space Station Effects plug-in for Pro Tools

The legendary Ursa Major Space Station has been recreated as a Pro Tools TDM plug-in, the **SST-282 Space Station (\$499)**. Princeton Digital joined forces with Chris Moore, the SST-282's designer, to create a plug-in true to the original — from its retro user interface to its complex delay modulations. The SST-282 supports sample rates of 44.1/48/96kHz. System requirements: Pro Tools 6.0 or higher, Mac OS X 10.2.4 or later, and HD or Accel hardware.

Princeton Digital, www.princetondigital.com.



Native Instruments Battery 2 Drum sampler

The **Battery 2 (\$229, upgrade \$119)** drum sampler sports a new sampling engine, enhanced sound shaping and modulation capabilities, a revised user interface, 256-voice polyphony, support for hard disk streaming, and a new sample library with over 3.5GB of drum and percussion samples (arranged as 23 drum kits — from recorded acoustic drums and percussion to electronic drum sounds). An updated, optimized version of the popular Battery 1 library is also included. Advanced sample playback features include polyphonic voice groups with overlap, release trigger, advanced "cell activation" options, and a new visual mapping editor. There's also a dedicated import browser for convenient file import of several sample formats, including Kontakt, GigaSampler, and Rex 1 and 2. Available on DVD-ROM only.

Native Instruments, www.native-instruments.com.

Road Ready RRDRC

Case for digital recording studios and multitrack hard disk recorders

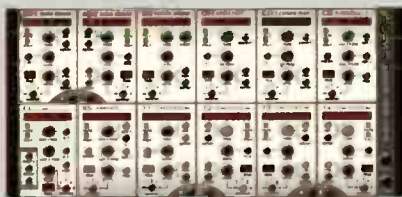
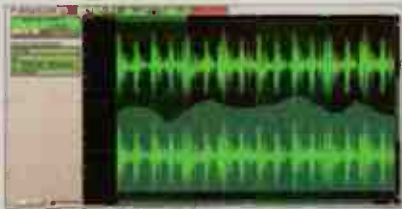
The **RRDRC case (\$159.99)** is designed to protect digital recording studios and multi-track hard disk recorders, including systems from manufacturers such as Korg, Akai, and Roland. Built for the rigors of the road, the RRDRC is designed to accommodate any model of digital recording studio or multitrack recorder up to 23" long, 16-1/4" wide, and 7-3/4" high. The case comes with the company's high-density Pick-&-Fit foam that allows you to shape and create the perfect custom storage space for your gear.

Road Ready Cases, www.roadreadycases.com.



project5

SOFT SYNTH WORKSTATION



“Highly Addictive” – *EQ, June 2003*

Project5 Soft Synth Workstation is the cutting edge tool for the next generation of music production. Project5's dynamic interface combines the best of pattern-based and live-input sequencing, with powerful looping tools— making your compositions come to life faster than ever. Project5 comes loaded with inspiring synths and samplers, creative effects, and professional sample content. Combined with its support for industry-standard effects, synths, and samples* you can take your sound beyond the rack.

“Project5 is meant for those trying to create the in-sounds of now where the groove is king”

– *DJ Times, November 2003*

“Its instruments and effects are phenomenal”

– *Computer Music, May 2003*

“There's something about Project5 that just makes music happen”

– *Sound on Sound, June 2003*

“There's no need to wait any longer, Project5 has arrived”

– *Keyboard, June 2003*

Experience the addictive qualities of Project5: available at music retailers world wide, Visit www.project5.com for more information and to download the demo.

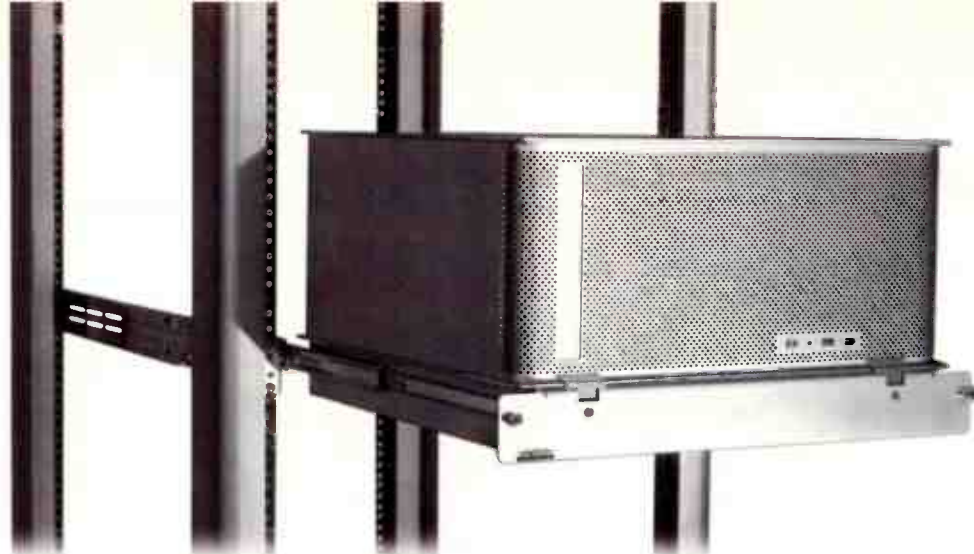
* Supports ReWire™; ACID™-format loops; DirectX & VST™ Effects; DXi & VSTi™ soft synths; and AIF, Akai™, Kurzweil™, LM4™, SF2™, WAV samples



cakewalk



World Radio History



Marathon G5 Rackmount

Horizontal rackmount for Mac G5

The Horizontal G5 Rackmount (\$250) turns a G5 Power Mac sideways so it can squeeze into the same amount of space as a G4. The computer rests horizontally on the aluminum and steel unit's ball-bearing slide rails, providing easy access to the case's interior and the rear-panel connections. Knurled thumbscrews keep the deck closed. The 6U-rackmount is user installable, and ships with illustrated step-by-step instructions.

Marathon Computer, www.marathoncomputer.com.

M-Audio O2 USB MIDI controller

The **M-Audio O2 (\$179.95)** is an ultra-thin USB MIDI controller for use with software such as Propellerhead Reason and Ableton Live. Small enough to fit in a bag along with a laptop, the O2 is designed for everything from throwing down bass lines, to programming drum patterns, to triggering effects and tweaking virtual studio parameters. It features 25 full-size, half-action, velocity-sensitive keys, along with eight MIDI-assignable knobs, eight MIDI-assignable buttons, an assignable volume slider, and a sustain pedal. The knobs, button, and slider can be assigned to any MIDI continuous controller value or note on/off value. Other MIDI support includes the ability to send program changes, Bank LSB, Bank MSB, and SysEx. The O2 features five non-volatile memory locations for storing controller setups, while the Enigma software editor/librarian (a free download for registered owners) provides unlimited memory storage on Macs and PCs.

M-Audio, www.m-audio.com.



HNB MDPBP and ACS110

Portadisc accessories

Two new products are designed to help Portadisc users reduce the recording limitations associated with AA-size batteries. The **MDPBP (\$138.40)** NiMH battery pack powers HNB's portable MiniDisc recorder for up to 3.5 hours. The sealed unit boasts a 3-hour charging cycle and is both short circuit and temperature protected, with all internal metal contacts securely welded for long-term reliability. The **ACS110 (\$125)** is a microprocessor-controlled charger developed for use with the MDPBP battery pack.

HNB, U.S. dist. by Sennheiser, www.sennheiserusa.com.





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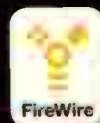
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(CLEVERLY DISGUISED AS A WORLD-CLASS ANALOG MIXER.)

For less than the cost of two medium-quality 8-channel FireWire interfaces, you can purchase a 16-channel Onyx mixer with FireWire I/O Card and enjoy superior audio quality... not to mention being able to EQ and mix a live show.



Mackie's new Onyx series premium analog mixers don't just raise the bar. They completely change the game. That's because, once equipped with the optional FireWire card, Onyx mixers give you the audio I/O capabilities of multiple 8-channel FireWire digital audio interfaces, with far better sound quality and analog simplicity.



Not recording on your computer yet? We also bundled a fully licensed copy of our acclaimed, "no-fuss" Traktion music production software so you can be up and running on your latest smash-hit in no time at all.



Sure, you could opt to spend your cash on dedicated FireWire I/O boxes, outboard studio mic preamps, outboard British-style EQ processing, a mixer and recording software. Or you can just visit your local Mackie dealer and check out an Onyx mixer.

Built upon our new flagship Onyx mic preamps, vintage "British"-style 3-and 4-band Perkins EQ, and premium analog circuitry, the Onyx series is easily the best-sounding and highest-performance compact mixer in Mackie history.

Onyx: it's superior sound quality, single-cable FireWire connectivity, and a powerful recording application—all cleverly disguised as a world-class analog mixer.

And when you plug in the optional FireWire card, Onyx mixers make for a very convenient way to stream up to 18 channels of pristine 24-bit/96kHz digital audio directly from the mic preamps to your Mac or PC, and monitor a stereo mix from your computer back through the mixer.



GREG MACKIE, our founding father, shows off a killer shirt and an Onyx 1220.

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The Next Step

SO YOU THINK YOU WANT TO OPEN A RECORDING STUDIO?

by Garrett Haines

For many of us, opening a recording studio would be a dream come true. But making the transition to a full-fledged business is a lot different than charging \$25 an hour in your basement. Starting a "real" business can be rife with hidden costs, regulations, and rules. Learning about the pitfalls in advance can help you avoid the mistakes made by many new business owners.

PLANNING

Before you press the record button you must have a business plan. If you don't have the discipline to write one, you probably lack the skills necessary to manage a studio successfully. The business plan process forces you to think through such details as finding a suitable location, evaluating your competition, and

obtaining financing. It also helps you identify obstacles and plot solutions from the outset. Whether you use pre-packaged software, hire a consultant, or enlist the local Small Business Association makes no difference — the objective is to complete the analysis.

Your business plan doesn't need to be an epic saga. In simplest form, it should answer five questions: What do you do? Who are your customers? Who are your competitors? And how will you differentiate yourself from them? What is your financial situation? Assuming that you have already figured out your offerings, market, and competition, this last question is the most crucial. (Although not a requirement, having access to a spreadsheet program can be a lifesaver at answering this question.)



One of the first realities that may hit you is studio bookings might not be enough to pay your bills. For this reason many owners rely on multiple revenue streams to make ends meet.

Tracy Curry of Curry Studios in Kings Mountain, NC, augments his studio income with live sound and PA installation jobs. "If the studio is slow, we can fall back on other work to stay afloat," notes Curry. Whether it's offering compact disc duplication, music lessons, karaoke recordings, or subletting the space to a yoga class, having more than one source of income can be the difference between success and failure.

Now is also a good time to look up your FICO score. FICO is the credit rating lenders use to evaluate how likely you are to pay a loan back on time. The higher your score, the less risk you represent. In addition to determining whether you qualify for a loan, your FICO score is also used to determine what interest rate you'll pay (the better the score, the lower the interest rate). If you find any inaccuracies in your report, work to have them corrected.

You might also want to improve your credit score, though actually doing this isn't always intuitive. For example, some lenders view debt consolidation programs negatively despite the fact that they may help a person take control of his debts. Speaking on the condition of anonymity one lender told me, "Because the consolidation companies negotiate a lower interest rate, it is sort of a breach of your payment agreement. We view it like a form of bankruptcy, and some places will disqualify you for it."

FINANCING

Unless you're independently wealthy, you'll need to obtain financing to purchase studio space and gear. Whether buying a building or building out a leased space, the process will be similar. Lending institutions will want to see three years of past tax returns, a business plan, and your credit score. If a bank feels uncomfortable underwriting the loan, they may turn to the Small Business Association (SBA). The good news is the SBA will accept income projections when considering the application. The bad news is the SBA typically charges more fees than a standard bank loan.

Dealing with lending institutions can be one of the most frustrating parts of starting a new business. Bankers are generally risk-averse. They gain little if they approve a loan that ends up

being paid in full. Conversely, a banker's career can be damaged if they lend money to a business that fails. Many banks operate on their own timelines — don't expect the application process to go quickly. Be prepared to answer and supply documentation for numerous rounds of questioning. It's a good idea to have receipts, tax returns, and any business-related records on hand.

Unfortunately, music-related businesses have a poor reputation among financial institutions. Bill Dodd, who left a lucrative position at IBM to start Mud Hut Studios in Sharon, PA, points out, "My banker wasn't concerned with whether I had good credit; they were worried that my clients wouldn't pay their studio bills!" Be prepared to combat this perception with policies that preclude the release of master recordings without payment in full. "No money, no music" is a mantra bankers will respect. It's also a good practice to follow.

Other sources of financing worth investigating include economic development agencies, federal grants, and angel investors (private individuals who inject capital into start-ups and other ventures). If your studio qualifies as a woman- or minority-owned business there are numerous government programs available to assist you.

Many studio owners overlook one of the best methods for obtaining gear: leasing. Instead of paying for a console or tape machine with precious operating capital, leasing can be a great way to expand a studio's gear list while being fiscally prudent. With a lease, the equipment serves as the collateral. At the end of the contract you can return the gear, or buy it at a pre-determined price. John Grant of GCR Capital notes, "In most cases, lease payments are considered as business expenses by the IRS." Generally, leases with a dollar buy-out at the end are considered rent-to-own programs by the IRS, and don't qualify for write-offs. (All is not lost; in those cases the gear might be depreciable.) One caution for vintage geeks: some

leasing agents will not support the acquisition of used gear.

The space you have chosen will probably require some remodeling and construction. During this time you may not be

ONLINE RESOURCES

www.nolo.com

is dedicated to helping people handle everyday legal matters. Nolo publishes plain-English books, software, and forms.

www.myfico.com

is the online source for credit scores. They combine input from the three largest credit-reporting bureaus.

www.gcr-capital.com

is a Florida-based leasing company that understands the needs of recording studios.

www.palaltosoftware.com

is the homepage for Business Plan Pro, a full-featured, mature product that assists in business plan writing.

www.sba.gov

is the official website for the Small Business Association (SBA).

www.isquare.com

is the home of the small business advisor. Plenty of tips and strategies for new companies are available.

www.business.gov

is a good source of information about governmental rules and regulations pertaining to business.

www.smbiz.com

is a frequently updated site dedicated to providing small business with tax and management guidance.

www.pueblo.gsa.gov/smbuss.htm

offers free government publications for small businesses.

www.irs.gov/businesses/small/index.html

The new, friendlier IRS is working hard to make understanding tax rules a bit easier. Here is a good place to start.

The Next Step

able to generate revenue from studio activities. For this reason, many people remain at their day jobs until the studio is near to opening. How long to keep both duties is a delicate topic. Trevor Sadler, owner of Mastermind Productions in Milwaukee points out, "Knowing when to time the jump, when to leave your other job and go into the studio full-time, is one of the hardest parts of starting your own place." It's important to have the cash flow a day job provides, but you can't build your clientele if you're not actively recording. One way to resolve this dilemma is to set quantifiable goals that must be met before you quit your job. For example, once you record ten bands, you can cut back to half-time. Since doing both jobs will necessitate sleep deprivation, it's important to make these decisions ahead of time.

EQUIPMENT

Studio owners must view equipment as a fixed business asset — not really cool gear. A new compressor may sound excellent, but how many gigs will it take to pay for it? Will having a new microphone generate more revenue? These are the

Knowing when to time the jump, when to leave your other job and go into the studio full-time, is one of the hardest parts of starting your own place.

types of questions that matter in business. Resisting gear lust will be crucial in the early years, especially since a lot of money has to be spent on gear that simply isn't sexy. Crossovers, cabling, digital routers, back-up storage, interfaces, computer RAM, and the like are all examples of items that will need to be purchased, but aren't very exciting. Be prepared to spend money that your clients might not see or necessarily appreciate.

Running a commercial studio also creates high levels of wear and tear on equipment. In a home studio, gear can be pampered, but in a pro studio, it's relied upon daily. As Sean McDonald of MCR Studios in Pittsburgh relates, "Back when we used MDM's [modular digital multitracks, such as ADAT] as our prime recording medium we had to have four or five machines — just to make sure we had three working at any given time." Console power supplies blow, tubes give out, circuits function intermittently — usually at the most inopportune time. Remember: you can't make money if you can't record! Back up computers, spare parts, or extra machines aren't just convenient — they're necessary. ▶

high fidelity single channel microphone preamplifier

MODEL 101



Presenting the model 101, a single serving of the critically acclaimed Grace Design microphone preamplifier circuit. This compact and affordable module is designed to transform plain project studio tracks into stellar, high fidelity recordings.

The model 101 uses the same fast, musical transimpedance amplifier architecture as our venerable models 801 and 201, but is packaged to be priced within the reach of any recording engineer, musician, or recording studio.

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—Bill Frisell

- fully balanced, transformerless design ■ fast, musical transimpedance architecture
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- extended gain ribbon mic input available ■ highZ instrument input
- 75Hz high pass filter ■ five year limited warranty

Regardless of budget, the model 101 is an invaluable, powerful tool for any recording setup. With an integrated high impedance input, the model 101 is the ultimate DAW input tool, bass DI or live stage instrument preamplifier.

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ADMINISTRATION

When it comes to expenses, a business is on a different plane from a private residence. Telephone service, electricity, gas, and waste disposal are priced differently (typically higher) than residential services. Likewise, bank accounts, mortgages, and financial agreements follow separate rules. Make sure you obtain reliable estimates for these services during the business planning stages. Otherwise, your expense estimates can be significantly off base.

Another administrative challenge is dealing with the local and state government. Physical alteration of the building structure will probably require some type of permit. Depending on local regulations, you may need to use the services of licensed contractors. Failure to comply can lead to stiff fines and penalties. Something as simple as putting up a sign can require a permit, often accompanied by an application fee.

Having good relations with your neighbors is also critical. Make sure they understand what you do. If parking is at a premium in your area, have customers unload first, then park further away. Be prepared to have a sound control plan in place. You won't be in business long if the police keep turning up because of noise complaints.

Managing operations can be a time trap for new owners. It's a good idea to consider professional service firms for help. At

minimum, all studios should have a certified public accountant to help with taxes and tax filings. Other key professionals include attorneys, payroll processing firms, insurance agents, and bankers.

You might also want to consider finding a mentor. A mentor is someone who can provide objective career advice. Not to be confused with your drinking buddy or therapist, a mentor maintains a certain distance in the relationship. This insulation allows them to deliver difficult messages that might be glossed over by friends. A mentor need not be in the recording industry; they can be any person with wisdom and strong business acumen. A good mentor can be a godsend.

CONCLUSION

If some of these suggestions seem a little harsh, it's with good reason. The business world is a difficult place. No one owes us a living. Even in prosperous years, keeping a recording studio open is difficult. By devoting time to planning, financing, and administration, we can increase our chances for success. **EQ**

Garrett Haines has been caught working on his studio without a permit. He is chief mastering engineer at Treelady Studios in Pittsburgh, PA. He would like to thank Kathy Miller Haines and Jay Marshall for their input. He welcomes your questions at garrett@treelady.com

"When I started RIT, almost 2 years ago, I didn't have any knowledge of computer editing/recording, signal processing, consoles and outboard gear or even the recording process. It was a shame for me, because being a musician myself, I realize now how important it all is!

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- Enrico Sesselego
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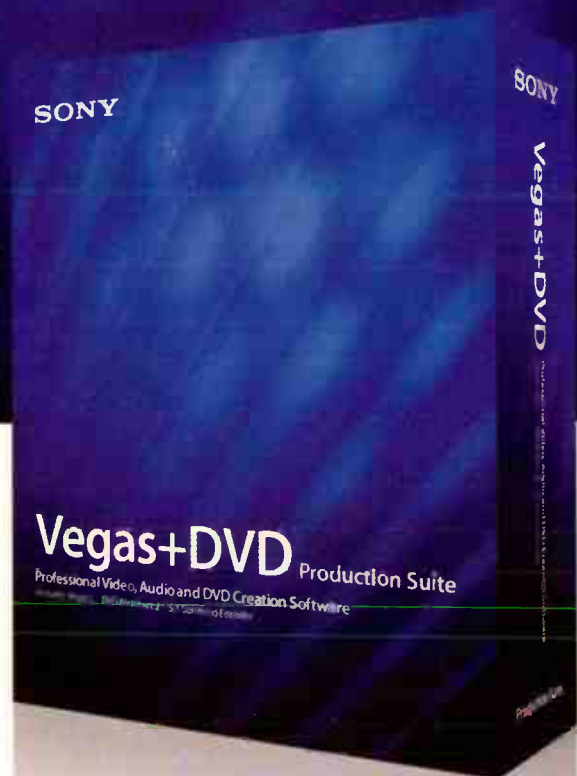
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- And much more

New in DVD Architect 2:

- End actions
- Multiple audio tracks
- Subtitle support
- 24p DVD encoding
- Elementary stream import
- Project overview window
- Real-time external monitor previews
- And much more

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Technology can be overwhelming. But does it *have* to be? Why can some people roll with any technological punch that's thrown their way, while others struggle to keep up?

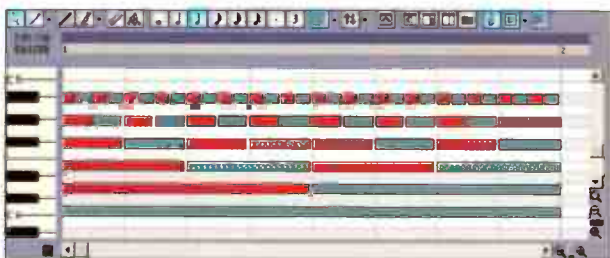
Some musicians and engineers feel that technology "gets in the way" of the recording or music-making process. Conversely, there's also no denying that technology makes possible music that was never possible before, and can even provide the means to streamline its production. If you feel there's some kind of dichotomy between technology and music, you're not imagining things: Your brain's "firmware" is hardwired to deal with artistic and technological tasks differently.

In this article, we'll explore why this division exists, describe how your brain's firmware works, and provide some tips on how to stay focused on the art when you're up to your neck in tech.

COOPERATION AND CONFLICT

Technology and art cooperate in some areas, but conflict in others. Regarding cooperation, think of how technology has always pushed the instrument-making envelope (the piano was quite high-tech in its day). And recording defies time itself: We can not only enjoy music from decades ago, but also sing a harmony with ourselves — essentially, going backward in time to sing simultaneously with our original vocal. Cool.

Then there's the love affair between music and mathematics. Frequencies, tempos, rhythms, SMPTE time code — they're all based on math.



Music ♥ Math. When my daughter was getting into fractions, I created a sequence that included half notes, quarter notes, sixteenth notes, etc. She immediately "got" the concept upon hearing fractions expressed as rhythms.

As to conflicts, first there's the dichotomy of how the brain processes information (as we'll discuss next); and second, there are a few society-induced conflicts. For example, some people think that using technology is somehow cheating (e.g., lowering a sequence's tempo so you can play along more easily, then speeding it back up). Furthermore, the accelerated rate of technological change itself causes conflicts. Which gear should I buy? Which platform is better? And why do the skills I learned just a few years ago no longer matter?

Let's look at how physiology influences our perceptions of both technology and art, as this will provide some clues on how best to reconcile the two.

THE MAN WITH TWO BRAINS

Our brain has two hemispheres; each one processes information differently. Consider the following quote from the essay *2044: One Hundred Years of Innovation*, presented by William Roy Kesting (founder of Kesting Ventures) and Kathy Woods (VP and Principal of Woods Creative Services) at a 1994 meeting of the Commercial Development Association:

"The right brain is the older of the two hemispheres and functions in an all-at-once mode to produce a complete picture. In contrast, the left hemisphere excels in sequential functions such as words, abstract thinking, and numbers."

Essentially, the right brain is the "Macintosh GUI" side that handles intuitive, emotional tasks — such as being creative. The left brain is more like the "MS-DOS command line interface" side that works in a more linear fashion, and deals with sequential thought processes.



Use Color to Your Advantage. The right brain parses color rapidly. Many programs let you customize color schemes, and hardware companies are becoming more aware of this too. For example, the Alesis Ion synth changes the transpose LED's intensity when transposing by different octaves, making it easy to see the transposition range without having to read anything. And, its programs are arranged in four banks by color rather than letters or numbers.

Keeping the Art in



The “breakthrough” in understanding this difference between the hemispheres comes from the work of Drs. Roger W. Sperry, David H. Hubel, and Torsten N. Wiesel, who shared the 1981 Nobel prize in Physiology. Later studies have modified their findings a bit, but some comments in the Nobel Awards presentation speech, by David Ottoson, are well worth noting.

“The left brain half is . . . superior to the right in abstract thinking, interpretation of symbolic relationships, and in carrying out detailed analysis. It can speak, write, carry out mathematical calculations, and in its general function is rather reminiscent of a computer. It is with this brain half that we communicate. The right cerebral hemisphere is mute . . . It cannot write, and can only read and understand the meaning of simple words in noun form. It almost entirely lacks the ability to count and can only carry out simple additions up to 20. However . . . [the right hemisphere] is superior to the left in the perception of complex sounds and in the appreciation of music . . . it is, too, absolutely superior to the left hemisphere in perception of nondescript patterns. It is with the right hemisphere we recognize the face of an acquaintance, the topography of a town, or landscape earlier seen.”

“Pavlov . . . [suggested] that mankind can be divided into thinkers and artists. Pavlov was perhaps not entirely wrong. Today we know from Sperry’s work that the left hemisphere is cool and logical in its thinking, while the right hemisphere is the imaginative, artistically creative half of the brain.”

As a result, one option is to explain the art/technology dichotomy as the hemispheres being not necessarily in conflict, but working at cross-purposes. Once “stuck” in a hemisphere’s mode of thought, it’s difficult to transition seamlessly into working in the other.

The “Unified Interface” and the Brain. A “unified interface,” which avoids opening multiple overlapping windows in favor of a single screen where elements can be shown or hidden as needed, speaks to both hemispheres. The right brain takes in the “big picture,” while the left brain can focus on details if needed. Ableton Live has two unified interfaces — a “right brain” one optimized for live improvisation, and a “left brain” one optimized for “offline” editing.

But if that’s the case, why are so many good programmers musicians? And why have many mathematicians — going back as far as Pythagoras — been fascinated with music, and vice-versa?

THE MUSICIAN’S FIRMWARE

The NAMM (National Association of Music Merchants) campaign “music makes you smarter” is rooted in truth. Recent research shows that many musicians indeed use both halves of the brain to a greater extent than non-musicians. According to Prof. Dr. Lars Heslet (Professor of Intensive Care Medicine at Copenhagen State Hospital in Denmark, and a researcher into the effects of music on the body):

“The right brain hemisphere is specialized in the perception of spatial musical elements, that is the sense of harmony and pitch, whereas the left hemisphere perceives the progress of the melody, which requires musical memory.” ►

ARE YOU FIGHTING TECHNOLOGY, OR FLOWING WITH IT?

“State of the Art”

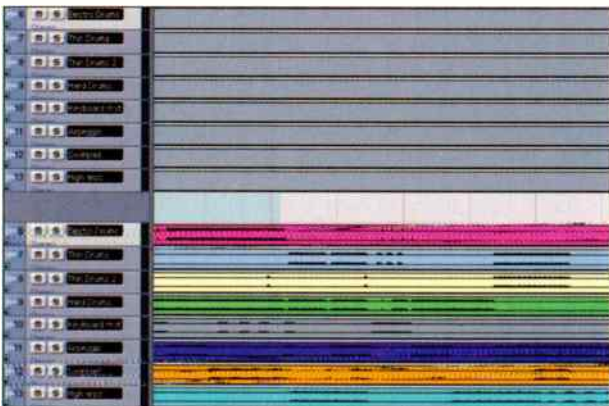


Keeping the Art in “State of the Art”

In other words, both halves of the brain need to be in play to fully appreciate music. This may explain why musicians, critics, and average listeners have seemingly different tastes in music: The critics listen with the analytical (left) side of their brain, the non-musicians react emotionally with their right brain, and the musicians use both hemispheres. Here’s an interesting quote from Frederick Turner (currently Founder’s Professor of Arts and Humanities at the University of Texas at Dallas) and Ernst Pöppel, the distinguished German neuropsychologist:

“Jerro Levy . . . characterizes the relationship between right and left as a complementarity of cognitive capacities. She has stated in a brilliant aphorism that the left brain maps spatial information into a temporal order, while the right brain maps temporal information onto a spatial order.”

Does that sound like a sequencer piano roll to you? Indeed, it uses both temporal and spatial placement. The same thing goes for hard disk recording where you can “see” the waveforms. Even though some programs allow turning off waveform drawing, I’d bet very few musicians do: We want to see the relationship between spatial and temporal information.



We Want Visual Feedback. Which track view do you like better — the one that shows audio data or the blank tracks? Odds are you prefer a relationship between spatial and temporal information.

Again, from Turner and Pöppel:

“[That] experienced musicians use their left brain just as much as their right in listening to music shows that their higher understanding of music is the result of the collaboration of both ‘brains,’ the music having been translated first from temporal sequence to spatial pattern, and then ‘read,’ as it were, back into a temporal movement.”

HEMISPHERIC INTEGRATION: JUST DO IT

The ideal bridge between technology and art lies in “hemispheric integration” — the smooth flow of information between the two hemispheres, so that each processes information as appropriate. For example, the right brain may intuitively understand that something doesn’t sound right, while the left brain knows which EQ settings will fix the problem. Or for a more musical example, a songwriter may experience a distinct emotional feeling in the right hemisphere, but the left hemisphere knows

The right brain may intuitively understand that something doesn’t sound right, while the left brain knows which EQ settings will fix the problem.

how to “map” this onto a melody or chord progression.

Without hemispheric integration, the brain has to bounce back and forth between the two hemispheres, which (as noted earlier) is difficult. This is why integration may expedite the creative process. Here’s another quote from William Roy Kesting and Kathy Woods:

“. . . just as creative all-at-once activities like art need left-sided sequence, so do science and logic depend on right-sided inspiration. Visionary physicists frequently report that their insights occur in a flash of intuition . . . Einstein said: ‘Invention is not the product of logical thought, even though the final product is tied to a logical structure.’”

Mozart also noted the same phenomenon. He once stated that, when his thoughts flowed best and most abundantly, the music became complete and finished in his mind, like a fine picture or a beautiful statue, with all parts visible simultaneously. He was seeing the whole, not just the individual elements.

MEET THE INFORMATION SUPERHIGHWAY

The physical connection between the two hemispheres is called the *corpus callosum*. As Dr. Lars Heslet notes,

“To attain a complete musical perception, the connection and integration between the two brain hemispheres (via the corpus callosum) is necessary. This interaction via the corpus callosum can be enhanced by music.”

Interestingly, according to the article “Music of the Hemispheres” (*Discover*, 15:15, March 1994), **“The corpus callosum — that inter-hemisphere information highway — is 10–15% thicker in musicians who began their training while young than it is in non-musicians. Our brain structure is apparently strongly molded by early training.”**

Bingo. Musical training forges connections between the left and right hemispheres, resulting in a measurable, physical change. And that also explains why some musicians are just as much at home reading about some advanced hardware technique in *EQ* as they are listening to music: They have the firmware to handle it.

THE RIGHT/LEFT BRAIN “GROOVE”

Producer/engineer Michael Stewart (who produced Billy Joel’s “Piano Man”), while studying interface design, noticed that someone involved in a mostly left- or right-brain activity often had difficulty switching between the two, and sometimes worked better when able to remain mostly in one hemisphere. (Some of his

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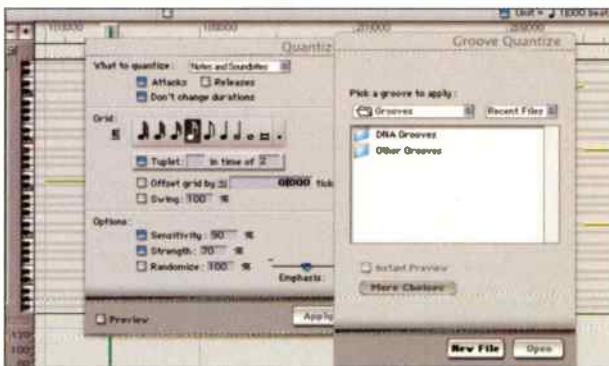
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Keeping the Art in “State of the Art”

research was presented in an *EQ* article called “Recording and the Conscious Mind.”)

For example, as a producer, he would often have singers who played guitar or keyboards do so while singing, even if he didn't record the instruments. He felt this kept the left brain occupied instead of letting it be too self-critical or analytical, thus allowing the right brain to take charge of the vocal. Another one of his more interesting findings was that you could sort of “restart” the right brain by looking at pictures — the right brain likes visual stimulation.

Stewart was also the person who came up with the “feel factor” concept, regarding the effects that small timing differences have on the brain's perception of music, particularly with respect to “grooves.” This is a fine example of using left-brain thinking to quantify more intuitive, right-brain concepts.



Quantization and Feel. Quantization can damage or help a piece of music, depending on how you use it. For example, set any quantization “strength” parameter to less than 100% (e.g., 70%) to move a note closer to the rhythmic grid but retain some of the original feel. Also, quantization “windows” can avoid quantizing notes that are already close to the beat, and “groove” quantizing (which quantizes parts to another part's rhythm, not a fixed rhythmic grid) can give a more realistic feel.

Timing shifts for notes are also important. For example, if in rock music you shift the snare somewhat later than the kick, the sound will be “bigger.” If you move the hi-hat a little bit ahead of the kick, the feel will “push” the beat more.

TECHNOLOGICAL TRAPS

Technology has created a few traps that meddle with hemispheric integration. When the left hemisphere is processing information, it wants certainty and a logical order. Meanwhile, the right brain craves something else altogether. As mentioned earlier with the examples regarding Michael Stewart, in situations where hemispheric integration isn't strong — or where you don't want to stress out the brain to switch hemispheres — trying to stay in one hemisphere is often the answer to a good performance or session.

Quite a few people believe pre-computer age recordings had more “feel.” But I think they may be looking in the wrong place for an answer as to why. Feel is not found in a particular type of tube preamp or mixer; I believe it was found in the recording process.

When Buddy Holly was cutting his hits, he didn't have to worry about defragmenting hard drives. In his day, the engineer handled the left brain activities, the artist lived in the right brain, and the producer integrated the two. The artist didn't have to be concerned about technology, and could stay in that “right brain groove.”



Cycle Recording: Let the Computer Be Your Engineer. Cycle (or loop) recording repeats a portion of music over and over, adding a new track with each overdub. You can then sort through the overdubbed tracks and “splice” together the best parts. This lets you slip into a right-brain groove, then keep recording while you're in that groove without having to worry about arming new tracks, rewinding, etc.

If you record by yourself, you've probably experienced a situation where you had some great musical idea and were just about to make it happen, but then you experienced a technical glitch (or ringing phone, or whatever). So you switched back into left brain mode to work on the glitch or answer the phone. But when you tried to get back into that “right brain groove,” you couldn't . . . it was lost. That's an example of the difficulty of switching back and forth between hemispheres. In fact, some people will lose that creative impulse just in the process of arming a track and getting it ready to record.

Now, if you have an Einsteinian level of hemispheric integration, maybe you would see the glitch or phone call as merely a thread in the fabric of the creative process, and never leave that right-brain zone. We'll always be somewhat beholden to the differences between hemispheres, but at least we know one element to reprogramming your firmware: Get involved with music, early on, in several different facets, and keep fattening up that *corpus callosum*. And it's probably not a bad idea to exercise both halves of your brain. For example, given that the left hand controls the right brain and the right hand controls the left brain, try writing with the hand you normally don't use from time to time and see if that stimulates the other hemisphere.

JUST BECAUSE WE CAN . . . SHOULD WE?

Technology allows us to do things that were never possible before. And maybe we were better off when they weren't possible! For example, technology makes it possible for one person to be artist, engineer, and producer. But this goes against our very own physiology, as it forces constant switching between the hemispheres. Would some of our greatest songwriters have written such lasting songs if they'd engineered or produced themselves? Maybe, but then again, maybe not.

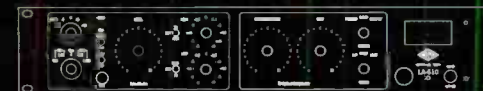
And what about mixing with a mouse? Sure, it's possible to have a studio without a mixing console, but this reduces the mixing process to a linear, left-brain activity. A hardware mixing console (or control surface) allows seeing “the big picture” where all the channels, EQ, pans, etc. are mapped out in front of you.

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AVOIDING OPTION OVERLOAD

Part of the fix for hemispheric integration is to use gear you know intimately, so you don't have to drag yourself into left brain mode every time you want to do something. **When using gear becomes second nature, you can perform left-brain activities while**

staying in the right brain. As just one example, if you're a guitarist and want to play an *E* chord, when you were first learning you probably had to use your left brain to remember which fingers to place on which frets. Now you can do it instinctively, even while you stay in the right brain. The same principle holds true for using any gear, not just a guitar. Much of this was covered in the January 2003 cover story, "How to Buy Gear," so we won't repeat ourselves here.

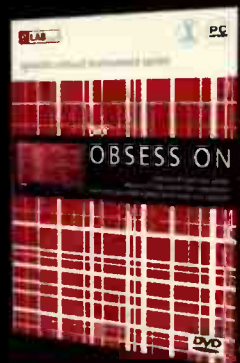
Ultimately, simplification is a powerful antidote to option overload. When you're *writing* in the studio, the point isn't to record the perfect part, but to get down ideas. Record fast before the



Which Type of Graphic Interface Works for You? The interface is crucial to making an instrument feel right. Compare the screen shot for one of the earliest software synths, Seer Systems' Reality, to that of G-Media's Oddity. Reality has more of a spreadsheet vibe, whereas Oddity portrays the front panel of the instrument it emulates; this makes the signal flow more obvious.

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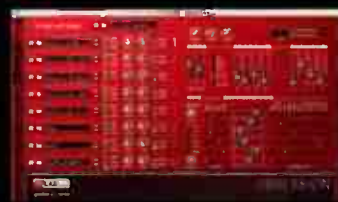


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Keeping the Art in "State of the Art"

inspiration goes away, and worry about fixing any mistakes later. Don't agonize over level-setting, just be conservative so you don't end up with distortion. Find a good "workstation" plug-in or synthesizer and master it, then use that one plug-in as a song takes shape. You can always substitute fine-tuned parts later. Also maintain a small number of carefully selected presets for signal processors and instruments; you can always tweak them later. And if you're a plug-o-holic, remove the ones you don't use. How much time do you waste scrolling through long lists of plug-ins?

Use placeholders for parts if needed, and don't edit as you go along — that's a left brain activity. With software, templates and shortcuts are powerful simplifying tools that let you stay in right-brain mode. Templates mean you don't have to get bogged down setting up something, and hitting computer keys (particularly function keys) is more precise than mouse movements. Efficiency avoids bogging down the creative process.

MAKING MUSICAL INSTRUMENTS MAGICAL

As Robert Pirsig's *Zen and the Art of Motorcycle Maintenance* says, "If the machine produces tranquility, it's right." Reviews and other opinions don't matter if something feels right to you.

Companies can supply technology, but only you can supply the magic that makes technology come alive. No instrument

includes soul; fortunately, you do. As we've seen, though, to let the soul and inspiration come through, you need to allow the creative hemisphere of your right brain full rein, while the left brain makes its seamless contribution toward making everything run smoothly.

Part of mastering the world of technology is knowing when not to use it. Remember, all that matters in your music is the emotional impact on your listeners. They don't want perfection; they want an emotionally satisfying experience. Be very careful when identifying "mistakes" — they can actually add character to your recording. And finally, remember that no amount of editing can fix a bad musical part . . . yet almost nothing can obscure a good one.

The bottom line is that you need to master the technology you use so that operating it becomes automatic, then set up a work flow that makes it easier to put your left brain on autopilot. That frees up the right brain to help you keep the "art" in the state of the art. We'll leave the last word on why you want to do this to Rolf Jensen, director of the Copenhagen Institute for Futures Studies:

"We are in the twilight of a society based on data. As information and intelligence become the domain of computers, society will place a new value on the one human ability that can't be automated: Emotion." EQ

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How to Make Small Rooms Sound Better

Low-frequency control is one key to superior acoustics

In recent months, there's been a lot of information in these pages on acoustically treating your room. This article provides additional information on acoustics and, in particular, how to handle the biggest challenge for small rooms: low-frequency control.

A studio's low-frequency response is governed by the room's *resonant modes*. Other factors will affect the response, but the modal response generally defines how an untreated room sounds when recording or playing back sources like drums, bass, guitars, and keyboards.

The two modes that most greatly affect frequency response are:

Axial — sound bounces between two surfaces

Tangential — sound bounces among four surfaces

A third mode, *oblique*, involves sounds that are higher in frequency and decay quickly, so we won't concern ourselves with them here.

See Figure 1 for examples of sound level distribution with axial and tangential modes. For reference, the sound level differences from the reddish peaks to the blue-greenish troughs are roughly 20 to 30dB. Tangential modes can have significant effects on acoustics. Similar to axial modes,

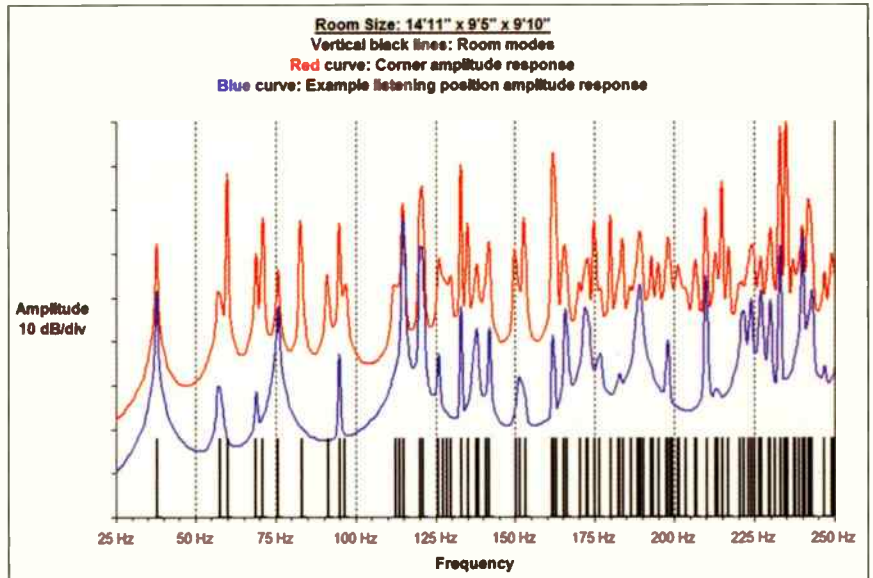


Fig. 2. Room modes and amplitude responses.

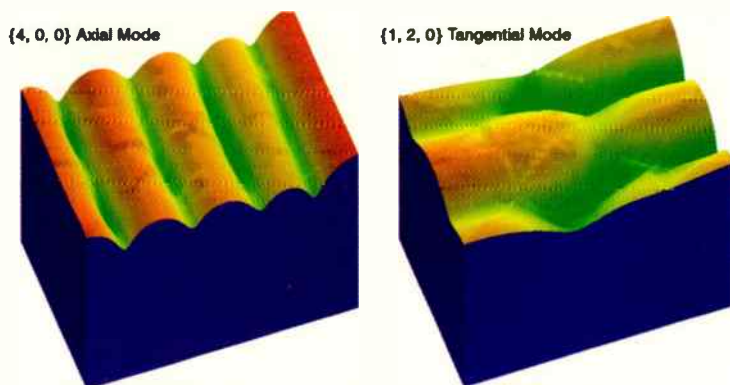
tangentials can be responsible for major build-ups and cancellations in various parts of the room.

Figure 1 also illustrates the spatial dependence of the modal response: The location in the room of your loudspeakers and your ears will affect the sound. As another example, take a room that is

14'11" x 9'5" x 9'10". The black, vertical lines in Figure 2 show the modes in this room. With a loudspeaker placed in the upper wall/wall/ceiling corner of the room and a microphone in the opposite wall/wall/floor corner, a broadband sound source would excite *all* the modes in the room. The red curve in Figure 2 shows this predicted amplitude response, but it's unrealistic — no one mixes music with one ear in a corner and one monitor in a corner. What might be more realistic is a nearfield listening setup as shown in Figure 3. The blue curve in Figure 2 shows this setup's predicted response.

Spatial dependence is very important with respect to your studio's setup. Keep monitors out of corners, and place the listening position away from the center of the room. While there are no "perfect" spots for speakers and listener, *EQ* contributor Wes Lachot recommends placing loudspeakers 38% of the way into the room from the front wall. Take it one step further, and the very affordable *CARA 2.1* modeling program (www.cara.de) optimizes the

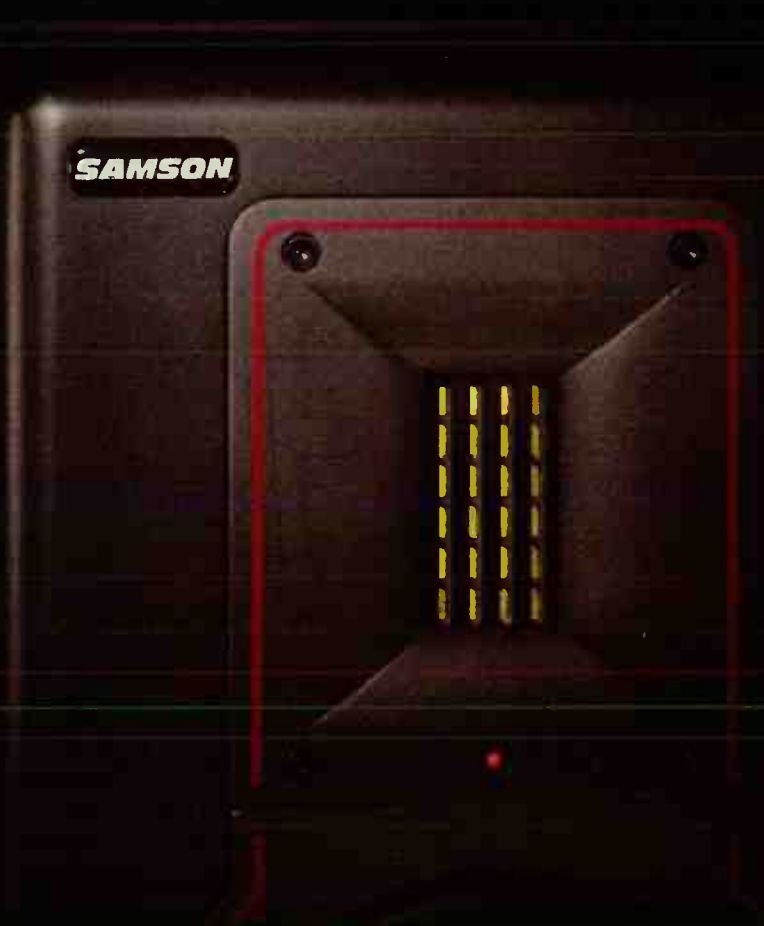
Fig. 1. Sound level distribution with axial and tangential modes.



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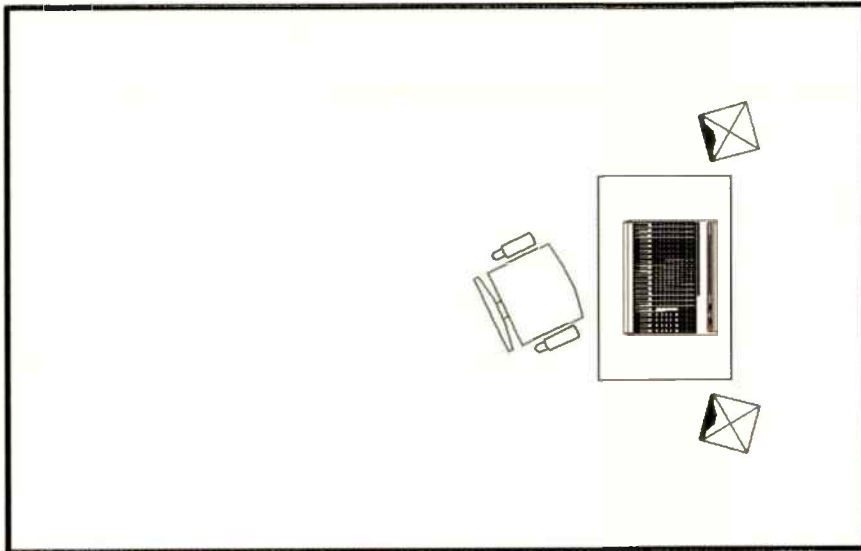


Fig. 3. Typical nearfield listening setup.

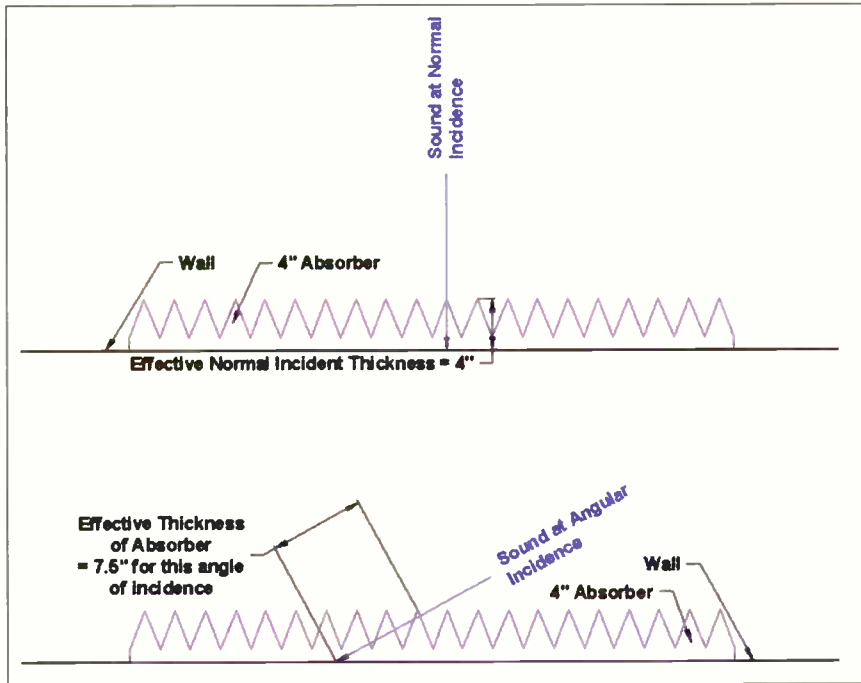


Fig. 4. Angular versus normal incidence of sound.

location of loudspeakers and listeners in the room, given a user-input range of locations. It will do this for stereo and/or surround setups, and shows graphically where loudspeakers, listener, and treatments should be placed in the room. It will also generate predicted room responses, like those shown in Figures 1 and 2.

And keep this in mind regarding placement of speakers, listener, and treatments: *There is no sweet spot.* The concept of having one and only one "spot" in the room where the sound is ideal contradicts the goal of a good room, which is to minimize the effect of the room

completely with appropriate selection of acoustical treatments. Appropriately placed absorption, diffusion, etc., will create a wide listening area in the room where imaging is clear, low-frequency anomalies are minimized, and direct sound dominates. This is along the lines of the "Reflection Free Zone" or "RFZ" discussed in previous articles in these pages.

TREATMENT OPTIONS

Low-frequency treatments are a requirement for any room. You can fabricate your own devices — the "DIY" approach — or choose from myriad commercial devices. I

classify low-frequency absorbers into two types: passive and active. We're all familiar with these terms as they pertain to monitors, but in terms of absorbers, "active" devices require or imply some "tuning" of the device. You may have heard of "Helmholtz resonators" and "panel absorbers." These operate by employing an air cavity or airspace that actively vibrates or resonates in sympathy with a frequency or range of frequencies. The amount of soft material used in a tuned device will affect its frequency range and the amount of absorption it provides. Commercially, these types of devices are rare due to a few drawbacks:

- In order to provide good absorption, they're often narrowband. So there's no guarantee that buying a certain tuned device will absorb the required range in your particular room.
- In the very low frequencies where tunable devices often can help the most, they sometimes need to be very large.
- "Off-the-shelf" active devices sometimes don't perform as intended. Active devices often require on-site tuning to be as efficient as possible. That's not to say that an "off-the-shelf" active device won't work. But a recent AES paper by John Storyk (Preprint No. 5944) summarized a "shoot-out" of many commercially available "panel" or "Helmholtz" devices. The result was that many didn't function as claimed, and one of them even *added* more bass to the room.

Tuned absorbers can be effective if they are designed and installed correctly. Panel absorbers in particular can be an efficient method of addressing specific low-frequency problems, without having to place extremely large devices in the room. As an example, a 6" deep panel trap with 1' of plywood and a 5' sealed airspace behind it, filled with acoustically absorptive material, will likely absorb well in the 40 – 50Hz range. For more detailed explanations of building these types of devices, I recommend F. Alton Everest's *Master Handbook of Acoustics*.

"Passive" devices require no tuning or special design tools. They're broadband in nature, and the user simply places them in the room to control low frequencies to some degree. The concept is simple: Place big, thick absorbers in the right locations. But the amount of "big" and "thick" you can get away with may surprise you. ►

HOW THICK DOES IT HAVE TO BE?

A common misconception is that an absorber's effectiveness is limited by its thickness. This limited effectiveness is often cited as something along the lines of "useless below where the absorber thickness corresponds to a frequency's 1/4-wavelength." If this were true, it would mean that a 2" thick absorber would stop working at 1,695Hz. But that's simply not the case. Tests on 2" absorbers show effective absorption down to the 200 – 500Hz range. This is because the sound rarely strikes the panel at normal incidence (perpendicular to it), which is a crucial assumption for the "1/4-wavelength" argument.

To see why this is, see Figure 4. A majority of incident sound waves aren't perpendicular to the panel, but instead pass through a much greater depth of the material. This allows the absorber to work at a far lower frequency than the "1/4-wavelength" cutoff would indicate.

Armed with this knowledge, controlling

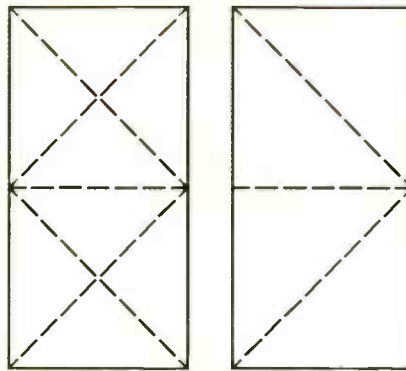


Fig. 5. How to cut absorber panels to create corner traps.

low frequencies with absorber panels should be relatively easy. We can add 3" to 6" absorbers to a wall and probably get most of the absorption we need. This is usually how commercial studios approach treatment. Commercial control room designs often call for 6" to 12" *minimum* depth of absorption wherever absorption is needed. This approach is typically effective down into the 50 – 80Hz range. Unfortunately, many personal studio owners don't have the luxury of building 12" absorbers on walls and ceilings. In the

example room above, 32% of the usable floor area could vanish!

SAVING SPACE WITH CORNER TRAPS

Corner traps — devices specifically designed to go in room corners, where low frequencies build up — provide one way around this problem. Corner treatments can be extremely effective, while conserving precious usable space. Traditional "foam corners" are effective down to 80 – 100Hz. Larger corner devices, or larger panels (typically 2' x 4') placed across a corner at 45° can go even lower. You can fabricate your own corner devices by taking commonly available 2' x 4' rectangular absorber panels and cutting them in one of the configurations shown in Figure 5. You can then stack the triangular pieces in the corner to great effect.

But what of the assertion that corners are areas of pressure build-up, so passive absorbers won't work because they're velocity devices? ("Pressure" and

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"velocity" refers to the air particles in the room.) Basically, the wave's particle pressure builds up at the boundaries, hence, in a room's corners. This represents maximum particle pressure, but minimum particle velocity. At certain locations away from the boundary, pressure approaches a minimum, but velocity approaches a maximum. This is where passive absorbers work best. Velocity, or "active" absorbers work best nearest the boundaries and corners.

Small, low-density materials tend to adhere to this rule and are typically poor choices for boundary or corner absorption. However, the larger passive devices, made of higher density material, provide two advantages to overcome the "pressure versus velocity" argument. First, the larger size gets a bulk of the material out of the actual corner and places absorption in the low-pressure, high-velocity zones where it is more effective. Second, higher density devices — materials typically between 1.5 and 8.0 lb/ft² — exhibit some membrane-like

behavior. This "active" behavior is required to absorb sound in areas of high particle velocity. So provided passive absorbers are large enough, are in the appropriate density range, and are installed correctly, they can be effective at absorbing low-frequency sound — even in corners. This tames build-ups and minimizes bass cancellations. Adding corner absorption can perceptibly *add* bass back into the room at the listening position. (This always surprises people after they install these types of devices!)


Wall or ceiling placement can also help bass control by treating very low-frequency axial modes and boundary effects. To attenuate these problems, thick absorbers or absorbers with airspaces are often used on walls and ceilings. Again, commercial devices are available, or you can simply take a common 2" to 6" thick fiber or foam panel and space it out by 2" to 6" — the airspace depth should match the panel's thickness as closely as possible.

TREATMENT ON THE GO

Finally, another passive absorption method involves using portable devices, including stand-mounted and free-standing types. These portable absorbers offer maximum flexibility: They let you tune the room as you would tune an instrument. Fabricating your own portable devices is relatively easy; use 2" to 4" thick material on both sides of a rigid piece of wood. Just add a frame and some casters to make this device easy to move around and usable in all types of recording and mixing situations.

Through all of this, keep in mind that the goal is to make things sound *true*. Always defer to the best sound receiver and processor on the planet: your ears and brain. If what you're hearing doesn't sound right, it probably isn't. **EQ**

Jeff D. Szymanski is a guitarist, singer, and songwriter with his own home studio, as well as the Chief Acoustical Engineer for Auralex Acoustics, Inc. Jeff can be reached by e-mail at appsupport@auralex.com.



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World Radio History

Myths Revealed

Power Problem Perspective

AC Power. 120, 121. Whatever it takes...

by Lynn Fuston

In this month's installment of "Myths Revealed," let's dig deep into a subject that touches us all, from the smallest home studio to the largest studio complexes in the world: AC power. We all use it every day. And fortunately, at least in this country, the lights stay on most of the time. It keeps your refrigerator cold and your toaster hot, but what about your recording gear? When you turn it on, it lights up, right? Isn't that enough? I asked several experts in the AC power-conditioning field to answer a few questions and shed a little light on this subject.

MYTH #1: I've already got all the mics, preamps, recorders, computers, and outboard gear that I need for my studio. As long as I can plug them all in and they don't hum or blow the circuit breaker, then I really shouldn't have to worry about the AC power. It seems like power conditioning is either A) a band-aid for a big problem or B) a luxury that I can't afford.

Mark Posgay: There are several problems with stating that one should bother with power conditioning only when there's a problem with noise, voltage swings, or spikes. You're assuming that "dirty" AC power (RFI and EMI that causes noise — see sidebar for definitions) only sporadically invades the power that feeds your system. However, the reality is much different. You're sharing the same power line with everyone in the neighborhood. That means any time of the day or night there are a host of electrical appliances (hairdryers, washers, microwaves, dishwashers, entertainment components) being operated that often create RF and EM interference that is carried down the power line you all share. Audiophiles often say the best time for critical listening is at night. The reason why is because nobody is up and using equipment that causes interference. You have the power line all to yourself. However, this scenario is obviously impractical and unrealistic for a recording studio.

Sometimes dirty power manifests itself in obvious ways: annoying clicks, buzzes and hums. The fact is the detrimental effects of dirty power are often subtler. You may not hear it immediately, but there may well be a loss of dynamics and punch, a harsher sounding mix, and lack of clarity. These can all result from dirty power that's present every day, year round. Most consumers are unaware of how many AC power problems there are and the real need to attack all of them. First, you must reduce the RF and EM interference on the power line. Many conditioners do that. Second, however, you must also address the issue of interference caused by the equipment in your own system. Our isolation filter will not only stop equipment-generated noise, but all the different types: noise created by digital gear, analog, power amps, and more. Lastly, there is the need to balance power. In most consumers' recording environments they are receiving unbalanced power, which also causes noise

and inferior performance. We make power products that address all these problem issues in a single unit.

When it comes to surges and spikes, there is nothing more ineffective than waiting until something happens. By then it's too late. You've risked thousands of dollars and priceless amounts of time and possibly even recording data, hoping power surges and spikes will *not* strike. However, the power in the U.S. is bad and it's only getting worse. Preventative measures are the only way to avoid costly damage to your system.

Surges and spikes are another problem. A surge suppressor should offer high joule ratings. An auto disconnect safety feature will also protect you on another level, such as when multiple surges or spikes hit, the unit will automatically shut off and no current will be passed to the connected equipment. Some surge strips may protect your equipment during one surge or spike, but if multiple strikes occur, the strip will pass damaging current to your equipment even after it has fried! Look for a unit that has an auto disconnect.

Furthermore, many consumers are unaware of the need for voltage stabilization. Like dirty power, the negative effects of power sags and swells caused by the power-hungry gear musicians, producers, engineers, and sound folks use may not be glaringly obvious. But the power feeding your gear is rarely at 120 volts. Often it's several volts lower. This results in subtle loss of punch, dynamics, clarity, and power. A good voltage stabilizer ensures a consistent feed of 120 volts. The difference can be so great that many pro engineers have literally gone back and remixed sessions based on their new improved AC power.

Casey Zygmunt: No one is receiving good clean AC power and it's not getting better. As recently demonstrated through the huge nationwide blackout/power grid failure in the Northeast, our power grid is not only old, it's obsolete as well. The truth is your AC power, no matter where you are, is contaminated and full of

noise — noise that invariably finds its way into your audio signal or on your video signal. You may not know it's there, but we've measured it, we've tested it, and it's a fact. A good analogy is water.

Are you comfortable drinking tap water . . . or is it too contaminated to feel safe? The same is true of your AC power. The only difference is awareness, and that's changing.

Today's power conditioner has evolved. No longer is simply protecting your equipment enough. The proliferation of digital switching power supplies has greatly increased the amount of noise on the AC line. The need to filter and clean your AC power before feeding it to your sensitive components is more critical than ever. Our latest technology in AC conditioning, the Series Mode Protection circuit (SMP), significantly reduces AC line noise and contamination across the full audio bandwidth. This very noticeably improves your equipment's performance and sound but protects its longevity as well. Clean

Myth-busters and Truth-seekers

Our cast of experts for this installment of "Myths Revealed" includes:

Casey Zygmunt
Vice President of Sales
Furman Sound, Inc.
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Mark Posgay
Pro MI Product Area Manager
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Myths Revealed

power is what your gear needs to perform up to spec. This is most noticeable when dealing with video. The improvement in picture quality is evident when a good power conditioner is employed. Try it with a good plasma or LCD screen. You'll definitely see the difference.

Surges and spikes are an every day occurrence. This is a documented fact and no one is immune. To risk plugging any DAW, valuable mic preamp, or other sensitive equipment directly into the wall is just plain foolish. Consumer Reports has published articles stating that dozens of electrical surges and spikes happen on a daily basis. Most go unnoticed or trigger an event you may not associate with bad power. Consider a hard drive crash. Ever heard the claim, "My hard drive just decided to crash on me!" Chances are it was caused by an AC surge or spike. They are very common and there are no exceptions. Consumer reports also has stated the most common damaging AC event is a loss of the neutral line in an AC circuit. This causes upward to 208 volts to come down one leg of your AC line. Needless to say, if this happens, you'll be replacing equipment...all of it!

Simple power strips offer very limited protection. They employ a "Shunt Mode" of surge and spike protection. This is a good system yet it is a sacrificial one. It is based on a device called Metal Oxide Varistor (MOV). Essentially like a big fuse, it burns up instead of your equipment. The problem with that is you may not notice the MOV has sacrificed itself. In most cases (or products), once the MOV has failed electricity is still passed on to your equipment, minus the protection. We have upgraded our technology to a more advanced method called Series Mode Protection. Electrical surges and spikes are safely dissipated

without any sacrificial components. It's so efficient the joule rating is almost infinite.

Bottom line...to plug a nice equipment rack or DAW straight into the wall is foolish. It's absolutely worthwhile to invest in at least a good power conditioner.

THE FACTS:

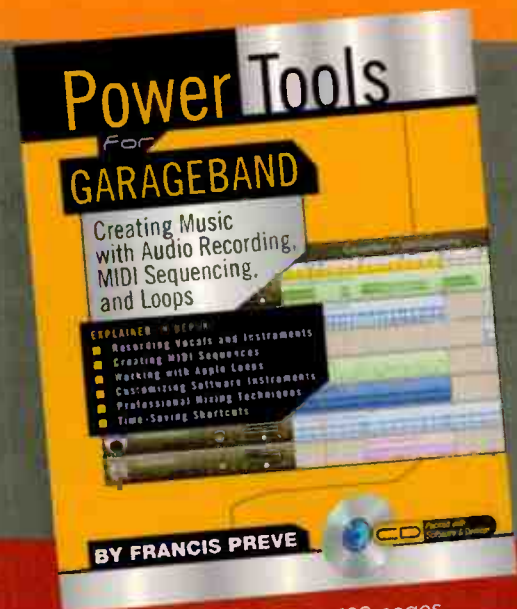
1. Power surges and spikes happen every single day, whether you notice them or not.
2. Simple MOV surge protector strips only work once, then may continue to pass electricity — and surges and spikes.
3. Straight out of the wall, AC power is never "clean" and it's rarely at 120 volts.

MYTH #2: As long as I have some power protection, I should be covered against AC problems. They make those power strips with the "Equipment Replacement" warranties stating if anything happens to my gear, they'll replace it, even up to \$50,000 worth. That makes me feel pretty secure that my gear is safe from AC power problems.

Peter Cook: It sure sounds like a great idea and is a huge marketing advantage for a company to offer to repair or replace damaged equipment. "Use me and if your equipment is ever damaged by AC line voltage spikes we'll replace it for free." Ah, but read closer. If there

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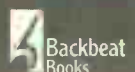
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Myths Revealed

was ever a need to read the fine print — this is it. Here is the actual text from one company that offers such a "protection policy."

"_____ will replace, pay to replace at fair market value, or pay to repair, up to \$5,000,000, equipment that is damaged by an AC power, cable, telephone, or lightning surge while connected to a properly installed _____ surge protector. The surge protector must also show signs of surge damage."

Suppose, before a thunderstorm, we were to connect a large power cable between a lightning rod and a big screen TV. Suppose lightning struck the rod and blew up the TV. Clearly the rod and cable are providing no spike protection. Yet, they were "properly installed." And they showed no "signs of surge damage." Would a damage claim be honored under these circumstances? I doubt it.

Another nice touch is the \$5 million coverage. Emotionally, you kind of hope your equipment blows up so you can get the 5 million bucks. Of course, it doesn't work that way. Who has \$5 million worth of equipment, anyway? Why don't they make it \$50 million or \$500 million?

Casey Zygmunt: We've been kicking around this idea of the "Connected Equipment Warranty." We've done our homework and research. Here's what we've learned.

1) Good luck trying to collect. *Read the fine print!* No way is any manufacturer going to simply write you a check. You must first prove it is entirely the fault of the AC protection device — and that won't be easy.


2) From a legal standpoint, the liability issue is enormous if these policies are not written with clear protections for the manufacturer. No one would underwrite it any other way.

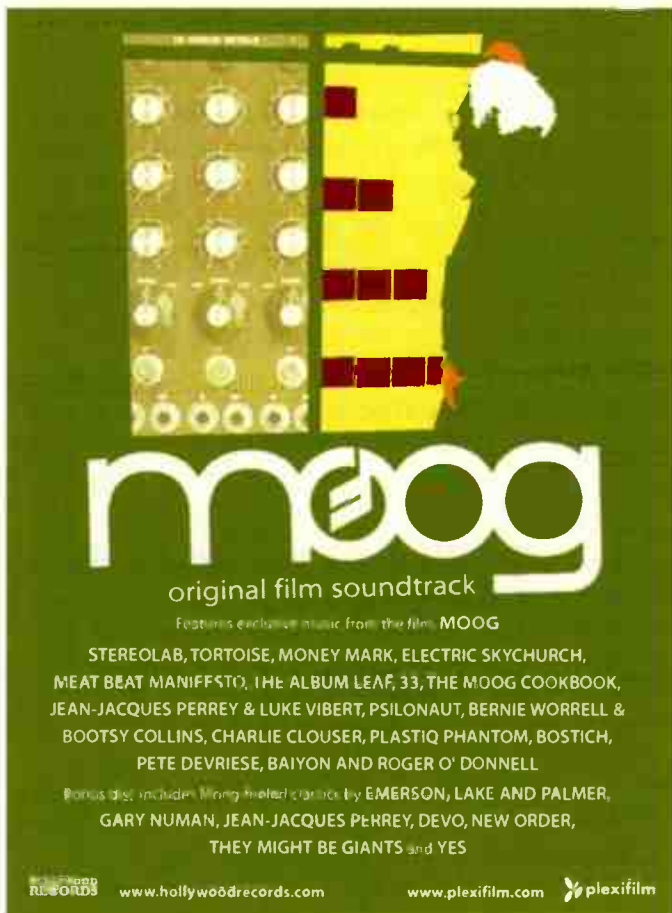
Truth is, if you think that statement printed on the packaging is enough, you need to think again. Chances are you would never be able to prove that the power conditioner alone caused any damage. The proof itself is extremely difficult to provide. Some require sending everything to them for evaluation and then submitting to some kind of inspection of your facility. Like I said, it's very involved and written to protect the manufacturer.

We currently don't offer one of these protected equipment warranties for these reasons. We've considered an "Honest Connected Equipment Warranty." Essentially it would cover the deductible on a homeowner's or renter's policy. What virtually every other company offers behind the marketing hype — a "\$50,000 Connected Equipment Warranty" — that part we'll leave out.

THE FACTS:

• The super-duper gear-replacement warranties that come with some surge protectors/power conditioners aren't worth much, as it will be near impossible to provide enough proof to collect on them.

In conclusion, your AC power system is like the foundation of your house. You wouldn't build a house and *then* go back and install a solid foundation under it, would you? The same is true of the AC power you feed your recording system. Unless you have clean, conditioned, spike-free power, you're compromising the performance, and possibly the longevity, of the gear that you spent so much money on. Try giving your system premium AC power and then see what your gear is capable of. You won't be disappointed. 




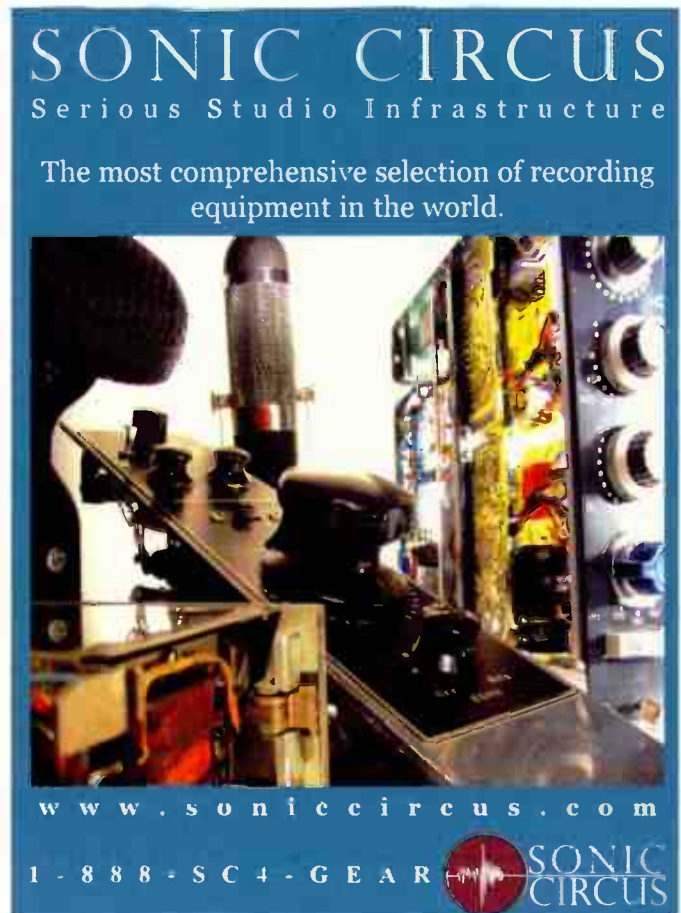
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The Pro Audio Palace for Holiday Gear

To many, the holiday season conjures up images of family get-togethers, turkey dinners, and Christmas trees. To pro audio people, it's also an important opportunity to make sure the right box ends up under the tree. Traditionally, that's been a tricky task. It's hard to get Santa to the music store in the first place, and even more difficult to teach him (or her!) about the intricate and important differences between a dynamic and a condenser microphone. Then along came eBay, which turned out to be a gift to musicians and audio engineers everywhere.

eBay has fundamentally changed the way people buy and sell—especially when it comes to musical equipment. Now all the gear you need is only a few mouse clicks away, and eBay's easy-to-use interface makes it simple to show Santa exactly which items are at the top of your priority list.

Looking to upgrade your sound with different gear? eBay offers the ideal place to sell your old equipment. You can get top dollar for your mics, mixers, monitors, and more. By successfully selling your gear within the eBay community, you'll have more resources to invest in the next stage of your musical ascent.

Of course, if you're looking to purchase gear on eBay, you'll discover a great selection of new, used, and vintage equipment—right at your fingertips! The main trick is determining what you need.



backstage lounge

from the publishers of **Guitar Player** **EQ** **BASS** **KEYBOARD**

back to 

Wah Shootout
The staff of *Guitar Player* tackles eight wah pedals—the Budda Bud-Wah, Danelectro Dan-O-Wah (an October D1 Editors' Pick Award winner), Dunlop CryBaby 535Q, Fulltone Clyde Deluxe, Morley Bad Horse 2, Snarling Dogs Whine-O, Tech 21 Killer Wah, and the Vox Wah-Wah.

The Dunlop, Fulltone, and Vox pedals won Editors' Pick Awards. [Find out more](#)





Bass Bargain Blitz
Among the many reader requests we *Bass Player* editors get each month, few come more often—or more passionately—than this: “When are you going to do another massive gear roundup?” Like all good bass players, we listen and we oblige. Here you'll find one of the most exhaustive product tests in *Bass Player's* 15-year history: a roundup of fretted solidbody 4's priced between \$499 and \$900 in 2003. [Find out more](#)



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Backstage Lounge

When eBay and *EQ* teamed up earlier this year to create the Backstage Lounge, the result was an information station that will help you determine which products are right for the kind of music you want to make. The Backstage Lounge features Buyer's Guides, Gear of the Stars, Classic Gear, and Lessons, all culled from the pages of *EQ* and posted online for quick access to eBay auctions. The Backstage Lounge can be accessed via the banner at www.eqmag.com or by entering the portal from the main musical instruments page on eBay, at <http://instruments.ebay.com>. New content is added monthly, so be sure to check back often for helpful articles covering the full spectrum of pro audio gear.

Mixers & Multitracks

Modern technology makes multitracking affordable for everyone. The average all-in-one unit now available makes machines manufactured a few years back appear archaic. Today, it's even plausible to produce radio-quality recordings with a powerful PC and a quality mixing board. Employing a hybrid approach that



combines the use of analog tape with the endless options available in the digital realm make it possible to push the ideological envelope over a sonic foundation as fat as ol' St. Nick himself!

You'll be hard-pressed to find a bigger or better selection of mixers and multitracks than the virtual warehouse available on eBay. From vintage classics that have been hiding out in someone's garage for 30 years, to spankin' new models from top manufacturers, the variety of options on eBay is practically limitless. eBay's auction system often yields the lowest price on the planet, but before you bid, it's a good idea to check out the "Mixer Vs. Mixerless Studios" Buyer's Guide on the Backstage Lounge.

Microphones

A killer tone starts with a killer microphone. Maybe you've decided that after reading about them in *EQ* for years, it's time to discover the magic of a hand-wired model from the '60s. Or, it could be that you're starting to record live drums for the first time and need a bevy of different mics at affordable prices. You'll always find a wide variety of new and used, condenser and dynamic, omnidirectional and unidirectional microphones on eBay. There's an *EQ* Buyer's Guide article on the Backstage Lounge entitled, "Choosing the Best Vocal Recording Tools," that will help you understand how to put together the complete signal chain from your microphone to your recording medium. And if you're in the market for something vintage, be sure to check out the *EQ*'s Microphile series in the Classic Gear section.

Preamps

One of the best kept secrets of pro audio professionals is their use of preamps to pump up microphone and instrument tones. In fact, if you've already got a decent microphone, a great pre-amp might be the best investment you can make to improve the sound of your recordings. On eBay, you'll find everything from pre-owned Neve preamps ripped right out of classic consoles, to modern modeling machines capable of digitally recreating the historic tones formerly available to only the most successful recording engineers and musicians. To get a better idea of what's

on the market, check out the Buyer's Guide called "Preamps: An Overview of Current Models" on the Backstage Lounge.

Interfaces

The digital revolution has fundamentally changed the studio environment at every level. Even top shelf studios equipped with a 2" tape machine have computers in the corner. In each instance, an interface is necessary to accept the analog audio signal and convert it to the digital realm. Which one is right for you depends on your needs. Are you tracking one or two instruments at a time on your home PC? If so, there are a number of single and double input devices on the market that will suffice. On the other hand, if you plan on tracking your band live, it's a good idea to pick up a unit with the ability to track eight or more input signals simultaneously. Other features certainly factor in the decision, so be sure to check out the "Audio interface Buyer's Guide" on the Backstage Lounge.

Trading Tools

Whichever path you choose to pursue, using eBay makes the journey more efficient, effective and safe. The Backstage Lounge on eBay offers great content to help with your decisions, such as Buyer's Guides, Lessons, Gear Setups of the Stars, and more. eBay also offers multiple search options, including the "completed items" function, which allows you to see recent closing prices for items similar to the one you are interested in, and the "regional" feature (under "refine search"), which allows you to keep to your home turf and perhaps even contact the seller to try out the gear you are considering before you make an offer. eBay's unique Feedback system, which allows buyers and sellers to rate their satisfaction with each transaction, lets you buy with confidence from reputable sellers. And don't forget to sign up as a seller so you can unload some of the gear you've outgrown while raking in the dollars needed to trade up to the gear you want!

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The Art of Recording:

Recording Background Vocals

Take your background vocal tracks to the next level

by Lynn Fuston

There are probably as many background vocal techniques as there are background vocalists. But there are many recording techniques that you may not have tried before. Let's explore some other options for recording and miking background vocals.

Probably the most widely used background vocal recording technique is having the vocalist(s) go out and sing the background parts into the same mic that the lead vocalist just finished singing into. It's probably the most common because it's the easiest. But it's not always the best option.

LAYERING

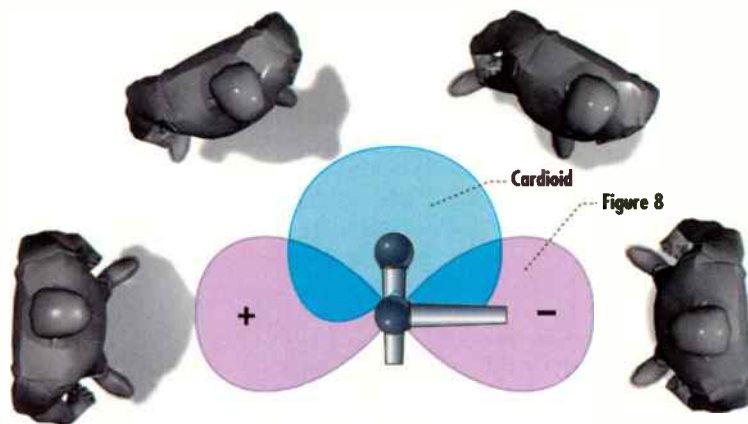
One variation on the one-voice/one-mic "easy method" outlined above is to change up the recording path. Instead of

just using the lead vocal mic and signal path, use something else. Engineer/producer Gary Pazcosa (Allison Krauss, Dolly Parton, Nickel Creek) told me that if he's stacking the same vocalist, he tends to

use a different preamp than the Mastering Lab preamp he prefers for solo voice because of a harmonic resonance, a build-up of fuzzy odd overtones that happens when he layers using it. Sometimes he'll even set up a different mic through a different preamp, so there's not so much layering of the same characteristic sound. This makes sense: A bright lead vocalist might sound great for one track, but three or four stacks of that same brightness could easily be overwhelming.

When recording a group background vocal, you can use the same one-mic technique, but if you're using a cardioid mic, the outside singers may lose definition since they're off-center on the mic and there is typically less presence as one moves off-axis. Try using the mic in a wider, hypo-cardioid (as opposed to hyper-cardioid) pattern or better yet, try switching the mic to the omnidirectional pattern. This delivers excellent results because most mics have flatter frequency response in omni and sound — to my ear, at least — much more real. (I discovered this by accident: I recorded Amy Grant's lead vocal on a Brauner VM-1 and it sounded superb. Only as I was striking the mic did I realize it was set to omni.) ►

You can use four cardioid or two figure-8 mics to record an octet. Gobos will provide isolation between parts.



This type of arrangement leaves a "hole" in the middle where the lead vocal can comfortably reside without fighting the background parts. An M/S mic arrangement results in a stable stereo image.



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Recording Background Vocals



When tracking two vocalists, you can use a single mic set to a figure-8 pickup pattern. The balance between the singers can be managed by changing their distances from the mic.

Two things to watch for when using an omnidirectional pattern; both related to the room. First, make sure any boundaries (walls, windows) are far enough away so as not to create comb filtering due to reflections. (The rule of thumb is 3:1, but I try to be even farther than that.) Right in front of the control room window, where the vocalists frequently sing, is notorious for reflections into the back of the mic.

Second, watch out for the sound of the room. While it may be flattering on the first and second pass, by the time you layer five or six (or 22, which I've done) tracks, the "roominess" may overwhelm the direct vocal sound.

TWO OF A KIND

If you're using two singers, you can have them sing into one mic, or give each

vocalist their own mic. Two singers into a single mic is most common, but if the mic is directional, you're compromising the presence of each singer since they can't both be on-axis on the mic at once. If they balance well, the best method of getting absolute presence is to have them simultaneously sing into opposite sides of a figure-8 patterned mic. Each singer can get as close as they want, but without the low-end build-up that using two cardioids can give you. This works very well as long as you have two singers who can balance themselves, or if they're singing in unison.

The balance between the two voices is decided by distance from the mic and volume of the singers. Make adjustments in the volume by having the singers move closer or farther from the mic. Make sure to put any reflective surfaces to the sides of the mic, which have the greatest rejection. Ribbon mics are quite good for this, especially if you have a less-than-wonderful sounding recording space, because they'll pick up less room than a condenser.

THREE'S A CROWD

When using a background trio, it's fairly common to have them gather around and sing into the lead singer's cardioid mic. In this case, only one of the three singers is truly "on-mic" and the other two are just filling in on the sides. The presence difference can be shocking. (Try it: Listen through headphones as you sing or speak into a directional mic while moving from on-axis to off-axis — you may be surprised at how much sonic difference being off-axis makes.)

For stacking background vocals with a group of three, I have a technique that I love: Get two variable-pattern matching mics and set them up as an M/S pair. Put the mid (M) mic where you would normally put the mic in front of the three singers. Then put the side mic (S) above or below it. I've tried both ways; usually logistics plays a part in finding the best spot. If the vocalists are singing from charts, above works

When recording a single vocalist, using an omni patterned mic will result in a more natural sound.



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The Art of Recording: Recording Background Vocals

best so they can read the music.) The best way to do this is to get the vocalists in tight around the mics (within 12" – 24") to maximize the stereo image. Try positioning the singers at 9:00, 11:30 (off-center left in front of M), and 3:00. Then pan the stereo outputs from the M/S pair hard left and hard right. You'll hear one singer left, one near-left, and one right.

On a second pass, flip the pans and you'll hear the opposite: one singer right, one near-right, and one left. The main advantage to this, over a single mic panned hard left and right, is that you don't end up with mono left, center, right. You end up with a stereo background vocal group that surrounds the lead vocalist without occupying the same space. Put the singer at 11:30 whose part is farthest away from the lead singer's melody, as their part will crowd the lead the least. By moving the singers around the mics, you can fill the space from left to right and still leave room in the middle for the lead vocalist.

Watch out for the sound of the room. While it may be flattering, by the time you layer tracks, the "roominess" may overwhelm the direct vocal sound.

OCTET

Although most engineers prefer to use a typical choral semicircular configuration for recording an octet (eight singers), which is preferred if you have a conductor, I've had excellent results with an alternate method: I put the group in a full circle and set up four mics in a crossed configuration, where each mic is aimed 90° from the mic next to it. Then put two singers on each mic.

If you use cardioids for this setup, it's possible to achieve very good isolation (if the room isn't too live) without excessive baffling. If you position one voice part on

each mic (soprano, alto, tenor, bass), all the other voice parts are off-axis at each mic and you will have a lot of control in the mix. To keep the cumulative sound from being too hollow or roomy, you may put gobos between the sections or behind each section. The advantage of this setup is that the singers are all physically close to each other and can hear each other in the room (assuming they are doing the "one earphone on, one off" trick). They can see one another and easily do visual cueing for inflections or cutoffs. The drawback to this setup is that it won't work if the vocalists have to watch a conductor who isn't in the group.

A variation on this configuration can be used if you have a singing group that balances itself well and doesn't need any "fader control." In this case, you can use two figure-8 mics set up at 90° to each other (a.k.a. Blumlein stereo) and have the group gather around. This will work well with no baffles at all, as the vocalists will be able to hear the balance in the room and adjust accordingly. **EQ**

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The Art of Recording: Patchbay basics

Optimize your studio's audio connections
for maximum productivity

by John Krogh

Unless your recording setup consists of a single preamp and DAW, and you mix entirely "in the box," chances are your project studio could benefit from a patchbay. I know, they're not as sexy as, well, just about any other piece of pro audio gear. But as our studios grow, it can be a challenge to manage all those inputs and outputs effectively, allowing us to record and mix music with minimum fuss, interference, and creative downtime.

If you find yourself crawling behind your racks more than a couple of times a year, or you're not using certain pieces of gear because it's not convenient to plug them into your recorder or mixer, you're a perfect candidate for a patchbay. Maybe you're in the process of going mixerless, but you still have a few choice outboard units (compressors, mic pres, and so on) that you'd like to press into service for tracking and mixing — a patchbay

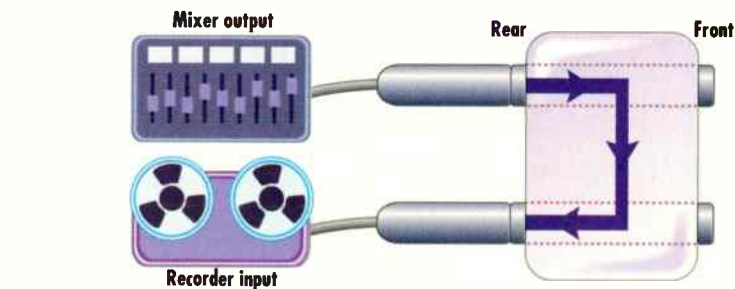


Fig. 2A. Normalled connection. Plugging into the top or bottom front jack will break the connection.

may very well be the missing link.

Or perhaps you're a member of the "summing box club," and you use a device such as the Dangerous 2-Bus to combine subgrouped DAW tracks in the analog domain. Summing mixers like this typically aren't equipped with inserts, but by adding a patchbay to the setup, you could easily process those subgrouped tracks with your existing outboard via a few patch cables.

PATCHBAY ROUTING BASICS

Patchbays are designed to be inserted between the signal path of a multitrack recorder and the rest of your studio's outboard gear, which can include mixers,

EQs, reverb units, etc. It works like this: Inputs and outputs from the recorder, compressors, synths, mixers, and so on are plugged into jacks on the rear of a patchbay. These jacks continue through to the front panel, making it easy to route signals to and from various devices by physically patching cables from the front panel's output and input jacks. (See Figure 1.)

Generally speaking, patchbays offer three types of signal routings — "open" (sometimes called isolated or de-normalled), half-normalled, and normalled. (See Figure 2.) With an open or isolated routing, the top and bottom jacks are completely separate (*i.e.*, audio is

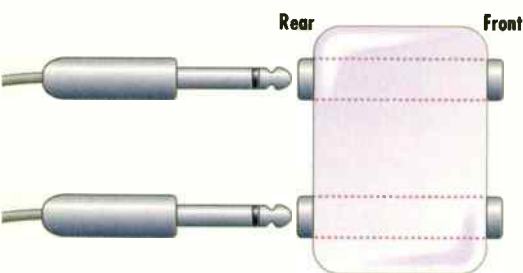


Fig. 1. Outboard gear gets plugged into the patchbay's rear panel. You can connect devices on a point-to-point basis from the front panel via short patch cables.

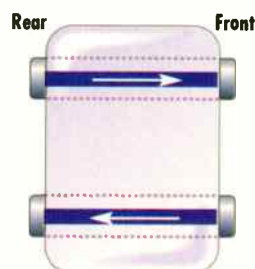


Fig. 2. Open connection.

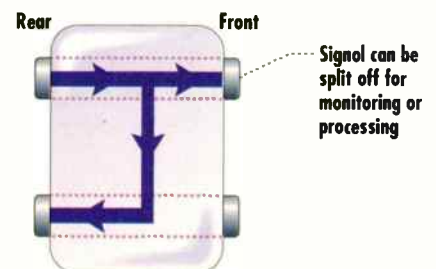



Fig 2B. Half-normalled connection. Tapping the signal arriving at the top rear jack from the top front jack leaves the normalled connection in place; however, plugging a cable into the bottom front will break the connection.

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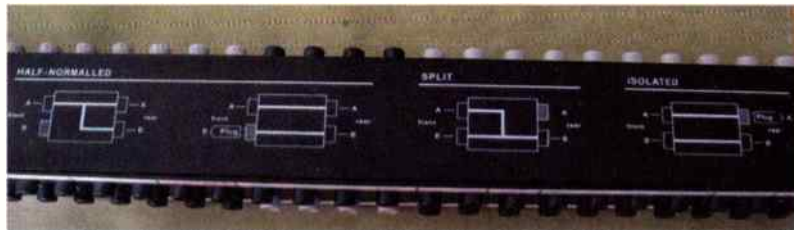
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The Art of Recording: Patchbay Basics



Fig. 3. I have a summing mixer (a Roll Music Folcrom), which is passive, and requires a mic preamp to bring the summed output signal up to line level. I built this XLR/preamp patchbay, allowing me to easily send a summed mix into a variety of preamps in my studio.

I also frequently record overdubs (percussion, acoustic guitar, scratch vocals) in my room. I don't have a separate tracking room, and having the preamp inputs on the front of my rack makes it easy for me to set up a microphone without having to reach behind my gear.



The Neutrik 48-point patchbay from my studio offers half-normalled, split, and isolated routings, which are determined by the way the jack pairs are inserted into the frame. Note the diagrams on the top showing how each routing works. Some patchbays offer send/return connections as well, which work similarly to the send/return inserts commonly found on small-format mixers such as the ubiquitous Mackie 1604.

passed independently), and can only be connected using a patch cable.

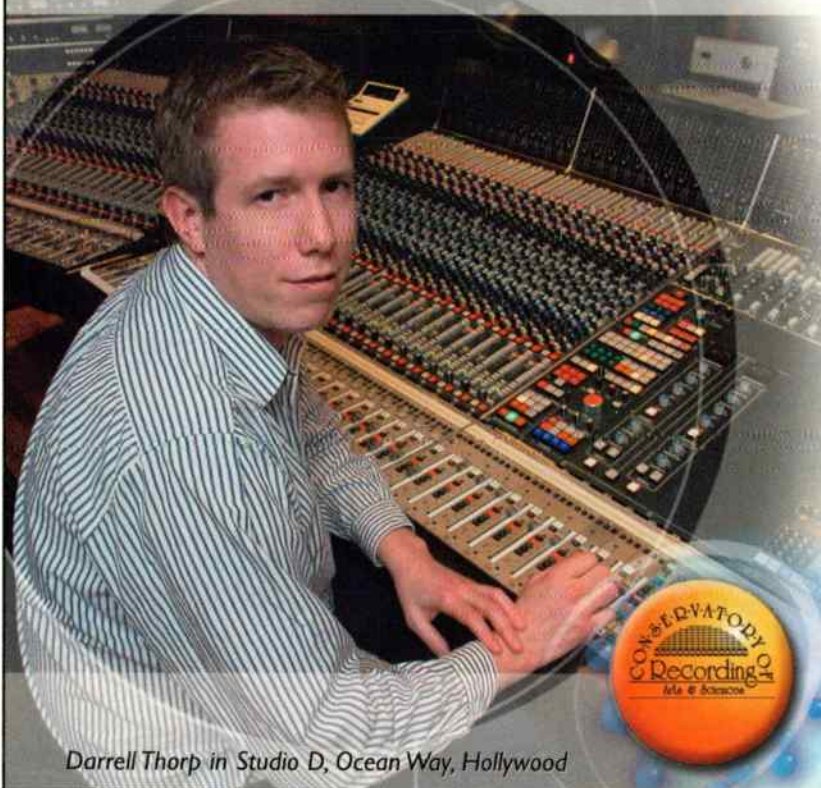
A normalled connection refers to a routing that's "hard-wired" between a vertically oriented jack pair located on the rear panel (essentially creating a loop). With a normalled jack, signal arriving at

the top is routed to the bottom without the need to use a patch cord to make the connection. This kind of patch is usually reserved for "permanent" or "normal" signal routings, such as connecting a mixer output to a recorder input, a synth's outputs to mixer inputs, and so on.

A normalled connection can be broken by plugging a jack into the top or bottom front jacks, allowing you to insert an effect processor in the signal path, or re-route signals to other destinations.

Half-normalled is a type of normal connection that can only be broken by

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The Art of Recording: Patchbay Basics

plugging into the front panel's lower jack. Plugging into the top jack, however, does not break the connection. This kind of patch scheme is commonly used to split off a signal by patching into the top jack, allowing you to send a signal to another destination (say, for monitoring), while also keeping the normalled connection in place.

CONNECTION TYPES

In most pro facilities you'll likely encounter bays with connections soldered directly into the rear panel. Soldering up your own patchbay is an expensive and time-consuming proposition that's beyond the scope of this article. Fortunately, several manufacturers offer patchbays that come in several varieties — balanced, unbalanced, 1/4", bantam, "tiny-telephone" (TT for short), etc. — to suit the kinds of connections in your studio.

For many of us, prebuilt 1/4" bays are the most convenient, inexpensive, and widely available option. Wiring these is as simple as patching TS or TRS cables into the rear panel. Although if you're experienced with a soldering gun, you may wish to tackle wiring up your own bays by hand.

MAKE A PLAN

Incorporating a patchbay into a project studio takes a bit of forethought — for example, how will you interface consumer gear with pro gear? Should you normal the mixer outs to your DAW? You may need to purchase additional transformers, or devices that can change an unbalanced signal to balanced.

Before rushing out to your local pro audio shop, the first step should be to look at the kinds of signal routings you need most often. In other words, take stock of how you record and mix. If you're primarily a singer/songwriter, and you typically only record mono and stereo tracks, there's little need to have a bunch of mixer outs normalled to your DAW's inputs. But if you record drums or full ensembles, you'll have different requirements.

Also, consider the gear you currently use a lot, and what pieces, if any, are being neglected because they're not easily inserted into the recording signal path.

After you have a handle on this, make a list of all your gear and how you'd like it connected. Don't go crazy, though. It may be tempting to bring every input and output of every audio widget in your studio into the patchbay, resulting in the Ultimate Patchbay of Doom. But do you really need all eight outputs from that synth brought out to the patchbay? Or

will you really use both the -10 and +4 line inputs on that rackmount effects processor? Having all those possibilities at your fingertips may be a seductive idea, but there are caveats.

You'll need several patchbays and a lot of cabling, and you may find yourself crippled by option anxiety. What's more, setting up complex routings takes time and

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The Art of Recording: Patchbay Basics

patience to set the optimum gain staging, which can kill your creative spark. Having more I/O available to you than you need won't help. A patchbay should make it easier to try an effect or set up a recording chain, so you can capture a great take, or finish your mix without wasting time.

When you're ready to start plugging gear into the patchbay, keep a notepad handy to document where everything goes. Once you're finished, use the bay's scribble strips along the front panel to label each jack. Some patchbays offer label templates that you can print from a computer, or you could use a standalone labeler. I don't recommend labeling by hand, because ink fades and smears. In any case, this step is tedious and no fun, but if the patchbay isn't labeled, it will make life very difficult, especially if others have to work in your room.

SPECIAL CONNECTIONS

So far I've mostly covered what you'll need

to consider when it comes to patchbays that work with line-level gear. There are other sorts of connections to consider, though, such as mic-level signals.

Since mic pres usually have their inputs on the back, you're left with little choice: either go behind your rack every time you want to record, leave your mic cables plugged in and lying around all the time, or (drum roll) add an XLR patchbay to the mix. These are harder to come by than their 1/4" counterparts — stores may not stock any prebuilt options. If you can't find an XLR patchbay, I recommend making one yourself, which isn't nearly as difficult as wiring up a custom TT bay.

I built my preamp patchbay using a knockout panel, a handful of female XLR panel connectors and male XLR connectors, a rivet gun, and some microphone cable. (See Figure 3.) It all cost less than 50 bucks. Now, when I want to record through my preamps, I simply patch in

from the front of my rack and go. It couldn't be any simpler.

WIRE IT UP

Working with a patchbay should allow you to work faster and experiment more easily in the studio. Once you've wired everything up, give yourself some time to adapt — it may take a few sessions before you've mentally switched gears from your "pre-patchbay" days. After completing several projects, you may need to rethink the patchbay layout. Maybe you *do* need to access both -10 and +4 connectors, and all eight of those synth outs.

Undoubtedly, there will be routing situations unique to your studio. Don't be afraid to tweak your patchbay after you've initially set it up. Eventually, you'll get to the point where you're flying around the studio, and able to combine gear in effective and creative ways, without the frustration of climbing behind your racks. **EQ**

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by Mitch Gallagher

Universal Audio LA-610

Two legendary components in one box

Type: Tube channel strip
Price: \$1,749
Contact: Universal Audio,
www.uaudio.com

Channels: 1
Components: Tube preamp, 2-band shelving EQ, optical compressor/limiter
Connections: Mic input (balanced XLR), line input (balanced XLR), instrument input (unbalanced 1/4"), line output (balanced XLR)
Maximum gain: 77dB (mic), 40dB (line)
Microphone pad: 15dB (switchable)
Frequency Response: 20Hz–20kHz, ± 0.5 dB
Input impedance: 500 or 2k ohms (mic), 2.2M or 47k ohms (DI)
Low shelf EQ: 70, 100, or 200Hz, ± 9 dB
High shelf EQ: 4.5, 7, or 10kHz, ± 9 dB
Noise floor: -72 dBu (line, unity gain)

Time for a math lesson: A Universal Audio M-610 tube mic preamp has a list price of \$1,295. One of the company's LA-2A optical compressors lists for \$2,995. Put the two together, and you've got a grand total of \$4,290. So how the heck have they managed to put out the LA-610 — basically a combination of the two products — for \$1,749 list? Even compared to the \$2,495 Universal Audio 6176 channel strip — a combination of the 610 and the 1176 compressor/limiter — the LA-610 is surprisingly inexpensive.

Granted, the optical compressor in the LA-610 isn't quite the same as the venerable LA-2A, but it's very close. The compressor uses the same T4 optical cell as is used in the LA-2A, and provides response similar to the original. Unlike the LA-2A, the LA-610 doesn't have sidechain high-frequency adjust, nor can you link two units for stereo operation. And, unlike the 6176, you can't use the preamp and compressor independently. (You can, of course, bypass the compressor/limiter, or use the line input to feed the compressor, but you can't use the two sections on separate

signal paths the way you can with the 6176.)

Are those differences enough to explain the relatively low price? Who knows . . . and really, who cares? What's important is that Universal Audio was able to accomplish the task. (Okay, according to Universal Audio, there are other reasons: the LA-2A is laboriously hand-wired, contains some very expensive components, etc.)

THE TOUR

EQ reviewed the LA-2A and M-610 in the past (April 2001 and June 2001, respectively), so I won't re-hash what's already been written. Instead, let's take a quick tour of the LA-610. The preamp section has selectable input impedance, 15dB pad, phase invert, and phantom power. Gain is set using two knobs; a 5-position Gain control, and a large Level control.

Two bands of shelving EQ round out the preamp section, High and Low. The EQ has ± 9 dB of gain for each band, and each can operate at one of three frequencies. For the high EQ, you can choose among 4.5, 7, and 10kHz. For the low EQ, you have 70, 100, and 200Hz.

The T4 optical compressor/limiter offers extreme ease of use; there are only two knobs required: Peak Reduction and Output Gain. Both are nice and big for easy adjustment. The last two controls on the front panel set the T4 to compression, limiting, or bypass, and determine where the meter falls in the circuit. Speaking of meters, the LA-610 has a cool backlit analog VU meter. There's a recessed meter calibration pot on the front panel. The review unit's meter was slightly out of calibration when it arrived; a quick tweak brought things into alignment.

Around back, things couldn't be more straightforward: There are line and mic XLR inputs and an XLR line output. A front-panel 1/4" jack accepts instrument-level signals. The input selector knob lets you choose among mic input at 500 or 2,000 ohms, line input, or Hi-Z (instrument level) input at 47k or 2.2M ohms. This allows you to have all the inputs connected at the same time; just select the one you want using the knob, and you're ready to go.



IT DOESN'T GET MUCH SIMPLER THAN THIS: MIC INPUT, LINE INPUT, AND LINE OUTPUT. THE INPUTS (INCLUDING THE FRONT-PANEL INSTRUMENT INPUT) CAN ALL BE CONNECTED AT ONCE; SELECT THE ONE YOU WANT USING A FRONT-PANEL SWITCH.



THE LA-610 PROVIDES A COMPLETE CHANNEL STRIP BASED AROUND UNIVERSAL AUDIO'S 610 TUBE MIC PREAMP AND AN "LA-2A-STYLE" OPTICAL COMPRESSOR/LIMITER.

THE SOUND

As with the M-610 and 6176, the LA-610 preamp's Gain and Level controls interact. The Gain control is a 5-position switch, offering -10, -5, 0, +5, and +10dB increments. Changing this switch not only changes the input gain, but also affects the tube's harmonic distortion. The Level control is a continuous knob; setting it higher and the Gain control lower results in a cleaner sound, turning Gain up and Level down makes the sound rounder, warmer, and more "tube-y."

The EQ is useful for basic shaping, but isn't designed for "surgical" purposes. The EQ gain is set using 11-position rotary switches; the smallest switch increment is 1.5dB, so don't look for fine control over tonal shading here.

The compressor is similar in response to an LA-2A. The manual describes it as slightly more colored sounding than the original, and I'd have to agree — to my ears it's a

tiny bit more aggressive. But it's still a nice, smooth compressor, especially when used for minimal gain reduction. As on the LA-2A, there are two operating "modes": compression, which is gentler with a lower ratio, and limit, which has a higher ratio.

Combined, the preamp, EQ, and compressor offer a tremendous range of sonic shading. You can set the LA-610 for transparent, clean operation, or you can punch things up, adding substantial girth to the input signal.

But even when running clean, the LA-610 adds a roundness to the signal and subtly tames strident highs. I tracked vocals, acoustic and electric guitars, and electric bass into Pro Tools using the LA-610. In every case I was thrilled with the result. On mic-level signals, the LA-610 preamp provides great dynamic response, good presence, and even frequency response.

After tracking, I ran the signals back out through the LA-610. Even with the compressor bypassed, and the EQ set for no boost or cut, there's a subtle character added to line-level signals. The EQ is easy to dial in for broad tonal shaping. The LA-610's high EQ is sweet, without harshness. The low EQ is round and smooth.

Setting the compressor couldn't be easier: Set the Peak Reduction knob for the amount of compression or limiting you want, then adjust the Gain control to make up for level lost due to processing. Easy. The meter can be switched to display the preamp output level, gain reduction, or compressor output — a big help for getting the levels where you want them. A nice addition would be a signal present/overload LED on the preamp input.

TRUE VALUE

Remember our math lesson from the beginning of this review? No matter how you run the numbers, the LA-610 works out to be a pretty good deal. Basically, buy a 610 preamp for \$1,299, and Universal Audio throws in an LA-2A-style

compressor/limiter for an additional \$450. (These are list prices, of course; you'll likely find lower street prices.)

Not bad at all considering the sound quality and versatility this buys you. You get a tonally flexible tube preamp, two bands of shelving EQ with switchable frequencies, and a smooth, high-end compressor/limiter.

Whether you're after transparency or thick, punchy tones, the LA-610 can deliver. Use it as a channel strip, a mic or instrument preamp, for EQ, or as a compressor. No matter how you set it up, you'll get low noise, great-sounding results.

Add it all up, and you get a great value. That's the kind of math I like best. **EQ**

Strengths:

- Tube preamp with variable input impedance
- Optical compressor
- Hi-Z (direct) input
- Excellent value
- Tonally versatile preamp

Limitations:

- Can't link two units for stereo
- Can't use preamp and compressor independently
- No sidechain

THE PREAMP PORTION OF THE LA-610 INCLUDES TWO BANDS OF SHELIVING EQ. EACH BAND CAN BE SET TO ONE OF THREE FREQUENCIES.



by Lynn Fuston

AMS-Neve 1073

Is this the perfect reissue of a classic preamp/EQ?

Type: Preamp with 3-band EQ

Price: \$3,750

Contact: AMS-Neve,
www.ams-neve.com

Frequency response: 20Hz to 20kHz,
±0.5dB, -3dB at 40kHz

Distortion: less than 0.07%, 50Hz to
10kHz, at +20dB gain

Noise: less than -83dB at all line
gain settings

EIN: better than -125dBu at
+60dB gain

EQ

High-frequency: ±16dB fixed
frequency shelving at 12kHz

Low-frequency: ±16dB shelving with
selectable frequencies of 35, 60,
110, and 220Hz

Mid-frequency: ±18dB peaking,
fixed 'Q' with selectable center
frequencies of 0.36, 0.7, 1.6, 3.2,
4.8, and 7.2kHz

Highpass filter: 18dB/octave slope,
switchable between 50, 80, 160,
and 300Hz

The Neve 1073 is probably the most famous and possibly most desirable preamp in the history of recording. Designed by the Rupert Neve company in the early '70s, it has earned its place as the "gold standard" among preamps. This discrete transistor mic/line amp with 3-band EQ and highpass filter may not be the flattest, cleanest, or fastest preamp design, but it epitomizes the Neve "essence," endearing it to engineers and producers worldwide. When I gathered seven world-class engineers together for the 3D Audio *Preamps in Paradise* video and asked about a "desert island preamp," three of the seven said without hesitation: "Neve 1073." With hundreds of preamp options available today, finding so much agreement is testament to the desirability and sound of the 1073. I called Fletcher at Mercenary Audio and asked him which preamp he thought is the most copied, he retorted "Copied? Or copied well? The 1073 is without a doubt the most copied mic pre, however it is very rare that it is copied well." The legendary big, punchy sound of the 1073 is well documented so I'll stick to



FIG. 1. THE FRONT PANELS ON THE TWO UNITS ARE SO NEARLY IDENTICAL THAT YOU HAVE TO KNOW WHERE TO LOOK TO TELL THEM APART. NEW ON THE LEFT AND OLD ON THE RIGHT.

comparing the reissue to the original unit, to see how close AMS-Neve came to duplicating the vintage 1073.

Realizing the number of 1073 copies out there, along with the skyrocketing prices for originals, AMS-Neve decided to re-issue a new 1073. However, I think the word "re-create" is more accurate. When I pulled two racked modules out of the shipping box, I thought there had been a mistake. I was to get an original (old) 1073 and a recreation (new) 1073. But the

two I had here were identical. Closer inspection revealed minor differences. The "vintage" unit seemed to be in pretty good repair, somewhat rare for vintage Neve modules. The knobs on the old unit were dirty and the frequency-select rings had grease pencil on them where the original paint had worn off. The knurled knob on the new one was shiny, while the old one was dull. And the highpass filter knob was darker blue on the old one. Other than that they looked absolutely identical, so



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AMS-Neve 1073



FIG. 2. HISTAG ILLUSTRATES HOW SIMILAR THE TWO UNITS ARE. IT WAS MARKED SO PEOPLE COULD TELL THEM APART.

close in fact that I put marker tape on the front of the new one so I wouldn't confuse them. (See Figure 1.)

Next it was time to go under the hood. I pulled the units from the case, a sturdy 3U box that includes power supply, XLR inputs (both line and mic) and outputs on the back, along with power frequency/voltage select and a power switch. On the front, there are LED indicators for +24V and +48V, along with phantom on/off select for each module and a pair of output level trims. The modules look exactly like every other Neve module I've held — the Amphenol connector on the back, with a Lo/Hi switch on the rear for the 300/1200 ohm mic input impedance, and completely encased in metal. I did notice one thing that struck me as funny: On the old module was a bright red sticker that said "Original old unit." Obviously I wasn't the only one who had difficulty telling them apart. (See Figure 2.)

Next I unscrewed the sides, slid them off, and got to the heart of the matter. (Even the screws are interchangeable between old and new.)



FIG. 3. THE IDENTICAL TRACES ARE ATTRIBUTABLE TO USING THE ORIGINAL PCB ARTWORK FROM THE NEVE ARCHIVES. NEW (LEFT) AND OLD (RIGHT).

(The old and new units) looked absolutely identical, so close in fact that I put marker tape on the front of the new one so I wouldn't confuse them.

The first thing I noticed as I placed them side-by-side was the similarity of the printed circuit board (PCB) traces. A big aspect of preamp design, which some clone-makers overlook, is component placement and PCB design. When copying an old design, you can use the same components in the same circuit but lay out the PCB differently and end up with a unit that sounds totally different. The



FIG. 4. NOTICE THE IDENTICAL COMPONENT LAYOUT, MAKING IT DIFFICULT TO DISTINGUISH NEW (LEFT) FROM OLD (RIGHT), EVEN WITH THE ORIGINAL CAPACITORS ON THE OLD BOARD, WHICH SHOULD BE CHANGED FOR BETTER PERFORMANCE.

routing and size of the signal traces can have *that much* influence on the sound. Conversations with many well-known preamp designers has confirmed this to me. So I was delighted to see that the PCBs looked absolutely identical, apart from the color of the board material. (See Figure 3.)

When I asked the technical design department at AMS-Neve about the PCBs, they informed me that "the PCBs look identical because they are made with the original tape PCB artwork, carefully stored over the years and now in use again. All original PCB drawings are used." Chalk one up for "historical accuracy." That made me wonder if the same was true for the accurate reproductions of the front panels as well. The word from AMS-Neve? On those "it was more difficult because we had to spend a great deal of time matching today's CAD fonts with the original hand-produced artworks." Original artwork or not, to my eye the front panel is indistinguishable from the original.

The next thing I noticed was the looming (the way the cables are routed and wrapped between individual PCBs). This aspect is just as significant as the PCB layouts and I was pleased to see the cables were positioned and wrapped exactly like the original. The faithfulness to the original design and construction is overwhelmingly evident. (See Figure 4.)

So lots of similarities. Now let's talk about some differences inside. I noticed a difference in the potentiometers and resistors between old and new, as you can see in the images below. The old carbon track pots, corroded over the years, were replaced with newer conductive plastic pots on the re-issue. The larger brown

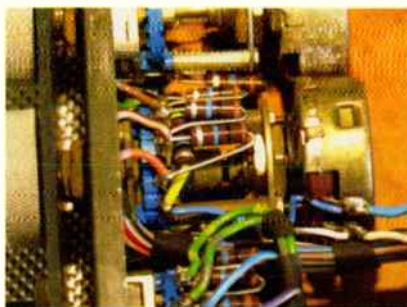
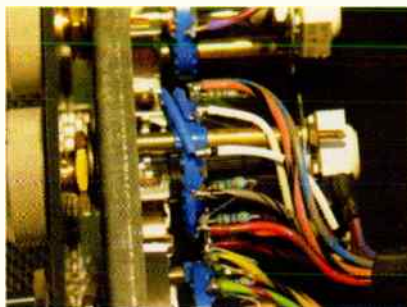


FIG. 5. COMPARE THE NEW METAL FILM RESISTORS AND SMALL POTS (TOP) WITH THE OLD BROWN RESISTORS AND CARBON POTS (BOTTOM).



FIG. 6. NOTICE THE IDENTICAL SIZE AND PLACEMENT OF THE TRANSFORMERS AND THE IDENTICAL PCB LAYOUT. NEW (TOP) AND OLD (BOTTOM).

resistors on the old were replaced with smaller metal film resistors, bluish in color. (See Figure 5.)

Probably the most influential things to the sound of the 1073 are the audio transformers. On the new module, although identical in size and color, the transformer case markings were different. I asked the AMS-Neve team to explain these three differences. (See Figure 6).

Simon Daniels, Product Marketing Manager of AMS-Neve responded:

"Originally Neve used "Plessey E" carbon track potentiometers, but during 1977 a new range of pots was introduced after extensive evaluation. These were manufactured by SFER Nice, and had better performance, especially in terms of noise and life and they were physically much smaller. Today we still use the white SFER PA11 pots, which have conductive plastic tracks and gold plated contacts, and give excellent audio performance, longevity, and linearity. ►

Clones and Transformers

The topic of transformers in Neve clones is worthy of attention since the transformer has such a large effect on the sound. Carnhill is the company that supplies the majority of the "cloners" with their LO 1166 output transformers (a few of the "cloners" use original transformers). AMS/Neve tested the LO 1166 transformers and says they found an unacceptable level of low-frequency distortion. Robin Porter, one of the original Neve staff involved with the first batches of 1073s, finally got Carnhill to build transformers that conformed to Neve specs. Only Neve has access to these output transformers, which the company says are a major contributor to why the AMS-Neve reissues are so close in tone and texture to the original modules.

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www.m-audio.com

AMS-Neve 1073

"The resistors used today are metal-film and exactly the same specification as the ones used in the original units. They are available from our suppliers and component size is reduced.

"The original transformers were co-designed in 1968/69 by Neve and Marinair Rader of Harlow, who then manufactured the transformers for Neve. As Neve expanded in the 1970s, a second supplier was required and so another local (to Cambridge) transformer manufacturer

frequency select switches on the old modules go "chunk" when you turn them. On the new one, they feel lighter and go "click." The boost/cut knobs on the old 1073 are very heavy and you have to purposefully "twist" them. On the new one, they feel lighter and you can just turn them. The old rotary highpass switch is actually easier to turn than the new one. As you can tell, I'm reaching to find differences — no one would expect 30-year-old switches and pots to operate like new ones. Besides, none of this

AMS-Neve has done a spectacular job of recreating a classic.

(St. Ives Windings) produced transformers of the same design. So Neve used both suppliers.

"The transformers used in the current AMS-Neve built modules are to the same design and from the same factory in St. Ives in Cambridgeshire. (The parent company name is now changed to Carnhill, the name on the current transformer.)"

THE ULTIMATE QUESTION

It's time for the ultimate question: What does the new module sound like compared to the original?

After detailing all the similarities, you may not be surprised to find that it sounds like a 1073. Using the old and new pair on stereo sources such as piano, no noticeable differences were detected between left and right channels. I ran tones to check conformity of gain staging and it was right on. I compared the two equalizers by ear and found that the curves and values of the EQ sound identical. In studio use, I did spot a few differences: The switches for EQ and phase on the old Neve modules are notorious for the scratchy sound they make. The new ones feel the same but don't make that annoying noise. The

will have any impact on the sound of the unit.

All in all, I think AMS-Neve has done a spectacular job of recreating a classic. The new module is worthy to wear the Neve symbol and the 1073 name. Those who purchase one won't have "vintage Neve" bragging rights but they won't have old gear frustrations either. They will certainly be entitled to say, "I have a Neve 1073" without reservation. **EQ**

Strengths:

- As faithful a reproduction as possible, with identical PCBs and identical or better components
- Has the classic 1073 sound with better reliability/longevity
- Will work side by side with vintage 1073 modules in existing racks
- Output level control and switchable phantom power on front panel
- Only slightly more expensive than original 1073 modules

Limitations:

- No front-panel power switch
- No boost/cut value markings, only dots, just like original 1073
- Expensive

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by Craig Anderton

Type: Sampler/audio interface/software bundle

Price: \$599.99

Contact: E-mu Systems,
www.emu.com

Platforms: Windows 2000 SP4/XP SP1

Minimum system requirements: 512 MB RAM, PCI 2.1 slot, adjacent PCI slot for sync daughterboard, 1.5GHz PIII or AMD processor, 1024 x 768 display

Analog I/O: six 1/4" TRS balanced ins, eight 1/4" TRS balanced outs (software selectable +4/-10), 2 combo mic/line ins with TFPro mic pres, stereo headphone out, RIAA equalized phono input, 4 stereo minijack alternate outs (these parallel the eight balanced outs; intended for driving powered speakers with surround applications)

Mic Preamp: +10 to +50dB gain, switchable +48 phantom power

Digital I/O: S/PDIF 2-in/2-out transformer-coupled coaxial, 2-in/3-out optical (software switchable AES/EBU, S/PDIF, or ADAT. In ADAT mode, offers 24 bits with 8 channels @ 44.1 or 48kHz, 4 channels @ 96kHz (S-MUX compatible), 2 channels @ 192kHz. FireWire 400Mbps port.

MIDI I/O: 2-in/2-out (32 channels)

Sync: internal crystal sync at 44.1, 48, 96, 192kHz, external sample rate sync (ADAT, S/PDIF, opt. or coax), word clock (75ohm switchable termination), SMPTE in/out, MTC out

A/D-D/A converters: 24-bit linear, 192kHz

Resolution: 16-/24-bit @ 44.1, 48, 96, 192kHz, 32-bit floating point internal processing

Modes of operation: standalone, VST plug-in

Bundled software: 4 CDs (over 2GB) of sounds, PatchMix DSP, hardware-accelerated FX library

Format support: EOS, ESi, EIII, Emiax II, Giga, Akai S1000/3000/5000, HALion, EXS24, SoundFont 2.1, WAV

Drivers: ASIO, WDM (for interface only), DirectSound

Copy protection: periodic CD insertion

The software takes E-mu's sampling expertise into the virtual world, while the hardware provides serious I/O and effects — all at a price that looks like a typo.

E-mu Systems Emulator X Studio

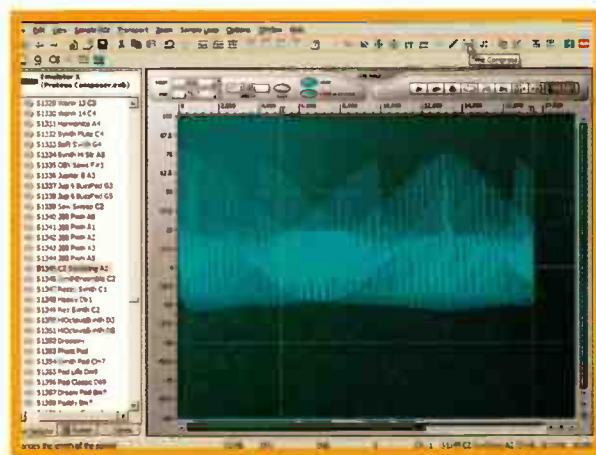
The hardware sampling experts go virtual

There are a lot of native soft samplers, but the E-mu Systems Emulator X Studio package (EX for short) is a

hardware/software bundle: PCI card, sync and I/O daughtercard, nice I/O breakout box, sampler software, sampler format conversion software, and

hardware-accelerated effects. It actually samples — it's not just for playback — and works as a VST plug-in or in standalone mode. ▶

SAMPLE EDITING HAS EXTENSIVE OPTIONS, WITH PLENTY OF SCREEN SPACE TO SEE WHAT YOU'RE DOING. YOU CAN ZOOM IN UNTIL YOU SEE EACH INDIVIDUAL SAMPLE.



THE PATCHMIX DSP APPLICATION (LEFT) PROVIDES 32 CHANNELS OF ZERO-LATENCY HARDWARE MIXING/MONITORING, AND A VIRTUAL PATCH BAY WITH FX INSERTS. IN THE BACKGROUND IS THE EMULATOR X'S VOICE EDITING WINDOW, WITH ONE OF THE 54 FILTER TYPES ABOUT TO BE SELECTED.

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E-mu Systems Emulator X Studio

Tying the software to hardware has significant strengths, like tight integration, zero-latency mixing, and hardware effects that don't tax your CPU (although the hardware doesn't have infinite DSP — you can run out of effects). This is the same high-quality hardware used in E-mu's 1820M, and features a ton of I/O.

On the downside, basing the hardware on FireWire connectivity would have been more transportable. (Although there is a FireWire port, it doesn't relate to the sampler — it's just a thoughtful bonus.) Still, PCI slots aren't going away any time soon, and the exceptional performance justifies tying into the computer's insides rather than going through external I/O.

INSTALLATION

The package installed easily and worked immediately. There are some unexpected extras: A headphone splitter, MIDI DIN to mini-DIN adapter for driving modules with non-standard MIDI connectors, and a power supply cable extender (the PCI card gets its power from the computer's power supply.) Everything you need to get going is included.

THE HARDWARE

The specs sidebar gives the specs, but it's worth mentioning that the breakout box is classy, with good build quality and connectors. E-mu gets extra points for including a phono preamp; DJs, rap, and hip-hop artists will appreciate this for sampling classic vinyl. Unless you need more I/O, this is as good an audio interface as you'll find in this price range... and probably some higher price ranges too. And of course, having a hardware interface means you can hook up a mic or line out and actually sample.

THE SAMPLING SOFTWARE

There are no real surprises regarding architecture. A browser tree locates presets and samples, and a large window offers different pages that show various aspects

Bottom line: It's
a helluva
package at
a helluva price.

of the sampler (voice editing, voices and zones, and links among presets). What is surprising is the interface's efficiency — everything is visible and easy to edit, without taking up too much space — and drag-and-drop is well supported. If you've worked with samplers before, it's a cinch to get around. The only reason you need to read the PDF manual (there's also a printed, fairly limited quick start manual for both the interface and sampler) is to pick up on the extra goodies that aren't obvious.

As this is an E-mu product, there's a major emphasis on filtering — 54 types, and you can morph from one filter to another. Under the hood, there's also the option for high-quality transposition if you're stretching samples over a wide range. E-mu has always had the recipe for transposing samples and making them sound good, and they've ported that over to the EX. There are also plenty of modulation options, along with flexible routing.

PATCHMIX DSP

This application ties into the hardware, providing zero-latency mixing and effects that don't load down the CPU. A large window shows effects parameters for editing, but you can also show inputs and outputs, and do patching. There are effects inserts per channel and master inserts; the number of each depends on how you're using the EX DSP resources.

But these aren't only for effects: Right-click on a slot and you can insert a trim control, peak meter, signal generator, or insert an additional send or send/return (yes, use an external in and out in the



As we go to press, E-mu has announced version 1.5 of the Emulator X software. This free download offers integrated software effects at the preset and multisets level (these are in addition to the existing hardware-accelerated effects), auditioning of sounds straight from disk, and a new Single View Screen that allows users to quickly search and dial up sounds in seconds. For more information, visit E-mu's web site.

breakout box to insert some vintage piece of hardware sitting in your rack).

There's the usual stuff too, like meters, level controls, mute and solo, etc. PatchMix DSP isn't just an accessory, but a useful part of the system. And, with a recent driver update (version 1.60), the PatchMix DSP effects can show up in your VST host (named "E-mu Power FX"), with automation.

SOUNDS

There aren't a lot of dedicated EX libraries, but the supplied format translation program works quite well. The bundled sounds also rate highly, particularly the X-Producer CD. REX file import isn't supported, but if you have ReCycle and save the file in Akai format, EX can import it and map slices to the correct keys.

HEY, BUT WHAT ABOUT...

We just can't cover everything. The file management deserves props, and the automated sampling functions are brilliant if you're into making your own samples. Then there's the sample editing DSP — time and pitch stretching, bit reduction, compression, and much more. And yes, there's positional, velocity, and controller crossfading for the various zones, which can be up to 128 layers deep (Also note that if your budget is really cramped, the standard EX package that's based on the 1212M audio interface costs \$299.99; it omits the sync daughterboard and some I/O.)

Bottom line: It's a helluva package at a helluva price. E-mu has rocked the hardware sampling world for over 30 years, and their no-holds-barred entry into the virtual realm easily earns them an EQ Award.

Strengths:

- Cost-effective
- Excellent quality (sound and hardware)
- Actually samples, not just playback
- Useful effects don't load the CPU
- Extensive editing options
- Disk streaming, or load in RAM
- Lots of realtime control options

Limitations:

- PCI-based system not as "transportable" as FireWire
- Wants a high-power system
- Windows-only
- Limited export options (EOS bank or EOS floppy bank files)



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by Barry Rudolph

Trident 4T Celebration Channel Strip

It's a party in a rack

Type: Channel strip with stereo monitoring facilities

Price: \$999

Contact: www.tridentaudio.co.uk

Format: Single-rackspace

Connections: Balanced XLR and 1/4" microphone input, 1/4" instrument input, stereo monitor input (RCA), balanced XLR output, 1/4" stereo headphone output

EQ:

Low: Shelf selectable 50 or 150Hz, ± 15 dB

Mid: Sweepable 100Hz to 10kHz, ± 15 dB

High: Shelf, selectable 7 or 10kHz, ± 15 dB

EQ Magic: Simultaneous boost/cut of 100Hz and 10kHz (DI only)

Compressor: Selectable ratio 4:1 and 30:1. Adjustable threshold and release

Trident's 4T Celebration channel strip is a party — a 1-rackspace *soirée* that commemorates designer John Oram's 40th (4T, get it?) year in the pro audio business. Useful for live performance, studio recording, and mastering applications, the single-channel 4T has a separate direct instrument input (DI), a mic preamp, a 3-band equalizer, a compressor/limiter with metering, and stereo monitoring facilities.

For live gigs, you can play guitar or synth through the instrument input, sing along using the XLR mic input and mix these two signals along with a stereo backing track coming into the rear-panel line level inputs. When recording at home, this stereo input can be used for monitoring your DAW's soundcard output. A pair of 4Ts will also work as an analog stereo mastering chain since the XLR mic inputs will accept up to +23.5dBu line levels.

The brushed-aluminum front panel is ergonomically laid out with 12 aluminum knobs, 10 push buttons, two 1/4" jacks, an on/off switch, and a wristwatch-sized VU meter that's amazingly easy to read. This is one densely packed front panel — yet it's easy to use.

STEREO MONITORING

There are two RCA input jacks on the rear panel for connecting the stereo output of a CD player, DAT deck, or your DAW's output

to the 4T. The Mon level knob controls the monitor level (of this stereo input) to both the 4T's front-panel headphone jack and the rear-panel output jacks. The output signal of the 4T Channel also comes out of the stereo output jacks at the same time. It shows up in the center of the pair if you're monitoring them panned left and right. I connected the 4T output jacks directly to my powered monitors and later switched to two input channels on my console.

Since there's no separate output jack (without the monitor input), if you want to record the channel's output only, you have to push in the Mon button. This separates the 4T output from the monitor mix feed. The stereo monitor mix now appears only at the headphone jack and the 4T's output only at the rear-panel jacks.

DI AND MIC MIXING WITH EQ MAGIC

The front-panel DI jack's signal and the rear-panel mic input mix together using the Instrument level and the mic Gain controls. The DI's preamplifier has an input impedance of 10-megohm and accepts up to +15dBu levels. Passive and active guitar/bass pickups and touchy piezo transducers all worked great.

The Direct button, when out, routes the instrument signal through the rest of the channel for EQ and compression. When Direct is pushed in, the

instrument signal goes straight to the left and right outputs. This would leave the 4T's EQ and compression on the mic input only.

A nice surprise is something called "EQ Magic." This is a very musical sounding shelving EQ that boosts or cuts 100Hz and 10kHz simultaneously using a single control. This is no-brainer EQ — just turn it to where it sounds good. The control has a center-detented "flat" position and only works in the instrument DI path. (Too bad; it would be useful on the other inputs as well!)

The next section is the microphone preamp, which has no pad, and has up to 60dB of gain adjustable with a mini-stepped level control. The frequency response is stated to be 10Hz to 100kHz, ± 1 dB. There are phase/polarity flip and phantom power on/off push buttons. The transformer-less mic pre is the same as in Trident's S20 and S40 channels and is configured around an Analog Devices or THAT Corp chip but with enhanced biasing to keep it Class-A.

TRIDENT EQ AND COMPRESSOR/LIMITER

The equalizer section differs from the Trident S40 only in that it has three bands instead of four. There is a sweepable midrange section with 1/2-octave Q covering 100Hz to 10kHz. The high-frequency shelving section has two corner frequency choices: 7 and

THE "EQ MAGIC" CONTROL ENHANCES THE RESPONSE OF THE 4T'S INSTRUMENT (DIRECT) INPUT.



DESPITE BEING DENSELY PACKED WITH CONTROLS, THE 4T'S FRONT PANEL IS EASY TO GET AROUND ON.

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10kHz. Low-frequency shelving is available at 50 or 150Hz. All bands provide up to ± 15 dB boost/cut.

The 4T's compressor/limiter has two ratio choices: 4:1 and 30:1. Interestingly, the meter indicates gain reduction even when the compressor isn't engaged. This is good for live sound use: pre-set the compressor and then drop it in on cue using the Dynamics button. Compression threshold is continuously adjustable from off to -25 dBu with attack time variable from 0.1 to 40ms. Release time is also adjustable from 0.05 to 3 seconds. Like the S40, the meter changes backlit color from blue for output level to green for gain reduction when toggling the VU/GR button.

IN THE STUDIO AND LIVE

First up were direct recordings of a Fender Telecaster guitar and a Roland JV-1080 synth. I had loads of gain available for both tasks and found the direct sound clean and noise-free. The 3-band EQ sounded good and precisely took the muddiness out of an organ patch. I mic'd up the Tele's amp with a Royer R-121 and blended it with the DI by using the mic gain control. There was no noise buildup and everything was in phase and sounded fat.

Recording direct bass got me using EQ Magic — my bass player loved what that little knob did! At about the 2-o'clock position, it bumped up the bottom for fatness and the top for air and attack. More recording gear should have musical controls like EQ Magic.

I liked the 4T compressor because I could get both a smooth leveling amp sound (4:1) for a soft ballad and then, for controlling very dynamic bass pops and slaps on a funk/dance song, switch over to peak limiting (30:1).

I had good luck recording both my large-lunged, male rock singer and my quieter, girl balladeer with the 4T. I used a Neumann U 87 without a pad for each singer. The 4T never folded up (overloaded) once, and adjusting the compressor was easy although there's no separate make-up gain control for matching the levels between compressed and uncompressed. For vocals, the compressor can be as gentle or as aggressive as you want. Vocals used the (very typical) 4:1 ratio and I got full-sized vocals immediately without working hard at all.

At the club, the 4T is the greatest! Singers love compression and a touch of

EQ to get over the crowd din. Placing the 4T right up front within easy grasp of the performer worked well. He now had the immediate ability to mix in his backing track to taste, which really won him over.

My only wish would be an effects loop for inserting a reverb/delay unit. I used the clever Direct button pushed in so that the direct guitar signal wasn't affected by the hard limiter setting I had for the

The 4T is a clever bit of analog design that expands the idea of the dedicated recording channel for application outside the control room.

performer's vocal. This worked out perfectly since he usually plays guitar through a Line 6 Pod anyway.

ALL THERE!

Trident deserves to celebrate with this multifaceted unit. The 4T is a clever bit of analog design that expands the idea of the dedicated recording channel for applications outside the control room. The sound of a Trident mic preamp, EQ, and compressor and the ability to mix and monitor your DAW or backing track along with your mic and instrument — what more could you want? **EQ**


Strengths:

- Built-in monitor mixer
- Mic and DI internal mixing
- EQ Magic equalizer on DI input
- Complete recording chain in a 1U box

Limitations:

- EQ Magic only works on DI
- No insert effects loop
- No separate recording channel output jack
- No make-up gain on the compressor

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by John Krogh

PreSonus Central Station

Rackmount studio and headphone monitoring and talkback module

Type: Rackmount control room monitoring solution with built-in talkback microphone

Price: \$699.95

Contact: PreSonus,

www.presonus.com

Monitoring audio inputs: three sets of balanced stereo 1/4", two S/PDIF (coax, TOSlink)

2-Track outputs: L/R balanced 1/4"

Speaker outputs: three sets of balanced L/R 1/4"

Headphone outs: two stereo 1/4" outs, with separate level control

Thanks to computer audio interfaces with software mixing features, many of us are going "mixerless" in our project studios. Instead of routing and monitoring signals through a hardware mixer, we're able to use software monitoring and breakout boxes with lots of ins and outs. Without a doubt, this kind of software mixing setup offers some advantages, but it presents some challenges, too. One of these is how best to route signals to control room speakers, headphones, and DAWs. A solution is some sort of monitor control unit, such as the PreSonus Central Station, which offers flexible input signal monitoring and a number of professional trimmings that put it ahead of the competition.

One of the Central Station's biggest selling points is its passive design: PreSonus designed the Central Station to be free of noise and coloration, so there are no integrated circuits or op amps, which can result in a more strident or "pinched" sound. And in fact, when I first patched the Central Station into my studio, I was pleasantly surprised by its open and smooth top end as compared to my Mackie 1604VLZ and Samson C Control (both of which use ICs, by the way). We're talking a subtle difference, but perceptible. It's

One of the Central Station's biggest selling points is its passive design: PreSonus designed the Central Station to be free of noise and coloration, so there are no integrated circuits or op amps.

not just hype — the Central Station is uncolored and clean as a whistle, which is what you

YOU CAN SWITCH AMONG THREE SETS OF SPEAKERS: A, B, OR C. A AND B CAN'T BE ENGAGED SIMULTANEOUSLY; HOWEVER, SPEAKER C CAN BE ENGAGED WHILE SPEAKER A OR B IS ON — THE DOCUMENTATION SUGGESTS USING SPEAKER OUT C TO FEED A SUBWOOFER, THEREBY ALLOWING YOU TO MONITOR WITH AND WITHOUT A SUB AS YOU MIX.

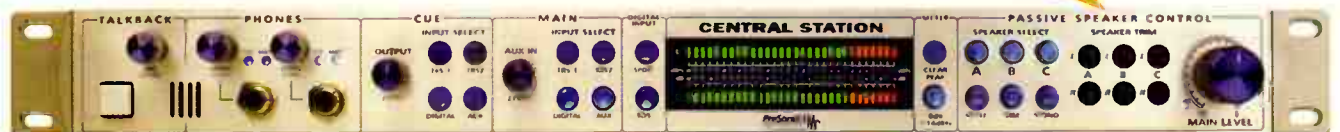
want in a monitoring solution. But there's more to the story, not the least of which is the routing capability.

OVERVIEW

Perhaps the first thing you'll notice from the front panel is its generous 30-segment metering. This proved extremely helpful for accurately gauging levels when recording signal from the main outs. No other box in this price range comes close, metering wise, to Central Station's resolution.

Some control room monitoring "hubs" are intended to sit on your desktop, resulting in a mass of cables draping off the edge and down on to the floor. The Central Station is rackmountable, so once your gear is patched in, all the cabling stays behind the rack.

What's more, PreSonus offers an optional remote control, which attaches via a DB9-pin connector and gives you access to nearly all the main unit's front-panel switching and level controls. It even has its own built-in talkback mic, so you don't have to worry about positioning the Central Station close enough to pick up your voice. The included cable is roughly 12', which should be adequate for all but the largest of project studio rooms. If need be, you can always connect multiple DB9-pin cables together with adapters. ▶



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PreSonus Central Station



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Central Station is equipped with five sets of stereo inputs (three 1/4" balanced analog, two 24-bit/192kHz S/PDIF— one TosLink, and one coax), which amounts to a total of four possible sources that can be monitored by one of three sets of speakers. Interestingly, you can have sources patched into both digital inputs simultaneously. The unit automatically recognizes incoming sample rates and can switch between different fixed rates on the two inputs on the fly, which means you can monitor a DAT running at 16-bit/48kHz, and switch to monitoring a 24-bit/192kHz high-resolution source without any hiccups or having to adjust sample rate settings. Here again, this is one of several professional features that you'd be hard pressed to find on any other monitoring solution costing twice as much.

Each of the three speaker output pairs has its own trim control. In my opinion this is a necessity, especially if you like to monitor on consumer-grade speakers or through a home stereo as a "reality-check" reference. With other monitoring boxes, I've been frustrated by trying to match levels for comparison across several speakers, but with Central Station's speaker out trim controls, it's "set it and forget it."

In addition to feeding speaker systems, Central Station is intended as a means to bus mono and stereo signals to a recorder, so you can use it in place of a mixer, assuming you only record one or two channels at a time. On the rear you'll find left/right Main outs for patching into your multitrack, and left/right Cue outs, which can be used in conjunction with a headphone distribution amp. It's important to realize the distinction: Cue outs have their own volume knob on the front, but there's no volume control for Main outs as they're meant to be patched into a recorder.

In addition to feeding speaker systems, Central Station is intended as a means to bus mono and stereo signals to a recorder, so you can use it in place of a mixer, assuming you only record one or two channels at a time.

IN USE

I used the Central Station over the course of several projects, including mastering some of my commercial music spots for a demo reel, and producing several new tracks. As mentioned earlier, I was more than pleased with the sonics. In one case I A/B'd the output of my audio interface's analog main outs and the same signal source material routed into the Central Station's S/PDIF in. The signal converted from Central Station's digital input had slightly better depth and separation. Color me impressed. Bottom line: There's a purity to the Central Station's sound that, to my ears, is a notch or two above what you're likely to find with other affordable mixers or control room monitor sections.

I have a few complaints, though. There's no on/off switch, which is a bit annoying. As for the tactile feel of the knobs and switches, the remote's talkback level knob was wobbly and loose.

More significantly, I have doubts about the build quality, and here's why: The

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power supply for the first unit sent to me failed. Presonus sent a replacement, which also failed. At this point, I suspected something wrong with the Central Station's inner workings, so a second unit was sent. After about eight days, this unit failed. When I powered it up, the meters were completely lit up, even when no input signal was patched in. I spoke with several Presonus reps, all of whom were just as stumped as I was. According to them, they've had no such problems reported by any other users. Maybe my studio is the Bermuda Triangle of gear failure (although no other device has failed).

CONCLUSIONS

I can't say for certain what caused all the weirdness I experienced. I searched online to see if users were complaining of similar problems, but I found no evidence of this. So I'm left undecided. On the one hand, the Central Station sounds great, and has some features that put its competition to shame. It's a well-conceived box that offers an impressive amount of monitoring control. But then there's the whole question of quality control.

Fortunately, PreSonus stands behind their products, so if you do end up with a faulty unit, they'll be happy to repair or replace it without hassle. **EQ**

Strengths:

- Passive signal path design for low-distortion and noise
- 30-segment signal metering
- Optional remote control
- Two digital input sources can be patched in simultaneously, with monitor switching from front panel

Limitations:

- No surround monitoring
- No power switch
- Multiple input sources can't be monitored simultaneously

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The Primera Signature Z1 CD/DVD printer wins an EQ Award for its high print quality, ease of use, and great value.

Primera Signature Z1

by Mitch Gallagher

Price: \$139.95, replacement ribbon (black, blue, red, green are available), \$19.95 each or \$229.95/12. Printable CD-R, \$49/100; DVD-R (4x), \$45/50, DVD-R (8x), \$65/50

Contact: Primera Technology, www.primera.com

Strengths:

- Great print quality
- Compact
- Easy to use
- Inexpensive

Limitations:

- Monochrome printing only
- Mac support not yet available



Given how many CD-Rs, and lately, DVD-Rs, many of us burn, wouldn't it be nice to have a more professional looking label solution than CD markers and stick-on labels? There are CD printers out there, but they tend to be expensive. Primera Technology has a much more cost-effective solution in their \$139.95 Signature Z1 thermal printer.

The Z1 is tiny — only an inch or so bigger than a DVD case.

It connects to your Windows PC via USB 1.1 or 2.0. The included CD contains the drivers and print application. Installation


on my machine went off without a hitch.

The software app provides a template with up to four print "areas" on the disc (top, bottom, left, and right) where you can type text or import graphics. Text layout can be curved to follow the disc shape or straight. You have control over font, font size, bold, italic, and a few other text parameters.

The Z1 uses a thermal transfer process. Ribbons are available in black, blue, red, or green. Only one ribbon can be installed at a time, so you're limited to monochromatic printing. The ink is waterproof (I tried washing it off) and doesn't smudge, even immediately after printing. You can, of course, scratch off the printing if you try.

Printing is reasonably fast — about 26 seconds per

"area," so a complete disc should take less than two minutes to print. Primera says that each ribbon can print at least 200 "areas," which works out to around a dime per area (at ribbon MSRP; the exact number depends on how densely each area is printed). The 200dpi print quality is crisp and detailed. You can print small fonts and tiny images without problem. Continuous blocks of print come out nice and solid.

I love this little gadget. It's the easiest, least expensive way I know of for getting truly professional looking CD labels. It would be nice if it could do multi-color printing, but hey, for under \$140 list price, I'm not going to complain much. The Signature Z1 is a definite EQ Award winner. 

PSP Nitro

by John Krogh

Price: \$149

Contact: PSP, www.pspaudioware.com

Strengths:

- Impressive sonic modulation options
- Flexible signal routing
- Extensive modulation control
- Large library of utilitarian and inspiring, creative presets

Limitations:

- None to speak of



Nitro is billed as a filter plug-in, but make no mistake: The term "filter" doesn't do justice in describing what's possible with this sonic blender. First, the basics. It runs under Mac OS X and Win XP, and is compatible with AU, VST, RTAS, and DX. Nitro is equipped with four effect processor sections, called operators, each of which can employ one of 17 algorithms, most of which cover a range of filtering options. Lowpass,

highpass, bandpass, Moog models, comb filtering, etc. are all on-hand. In addition, you'll find bit reduction, down

sampling, waveshaping, phase shifting, multitap delay (with separate times for left and


right), auto panning, and "stereoizing" options.

Signal can be fed from one section to another, but we're not just talking your conventional serial or parallel processing. No, it goes way beyond this. Each operator can be routed serially and in parallel in a variety of ways. For example, you can split a signal off to separate operators with independent level control, create feedback loops, pile filter on top of distortion on top of filter, and so on.

Along the top of the center panel is a tabbed menu, where you can access pages for setting up signal routing and modulation options, choosing operators, tweaking envelopes, and selecting presets. From the CFG (configuration) tab, for example, you'll find a signal path matrix where you can define custom

routings, or choose from 11 predefined schemes.

One of Nitro's strengths is that in addition to a wealth of built-in mod sources and destinations, many aspects can be adjusted in real time using standard MIDI controllers. There's even a "learn" function.

I found it completely intuitive and easy to work with — creating custom patches was a snap, but to be honest, I had little desire to roll my own, since Nitro ships with 192 presets divided into three banks of 64. Whether I was hunting for wild ways to mangle drum loops, sprinkle a bit of chorus onto an acoustic guitar, or add intensity to a lead vocal, I found plenty of patches that fit the bill. In short, if you're in search of new sonic "special sauce" to add to your plug-in collection, Nitro should be first on the list. 

EQ IS RECORDING

The newest addition to EQ's roster of monthly features is **THE ART OF RECORDING**

Everyone knows that in studios today, it seems to be all about computers, DAWs, and plug-ins. But that doesn't mean that producers, musicians, and engineers don't need to know "traditional" recording techniques and how to use hardware.

EQ IS FOR THE PROS

Each month, EQ's exclusive new Art of Recording section features hands-on guides to mic technique, hardware processing, interfacing hardware with software, acoustics, how to get the best performance from an artist, and much, much more.

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The Art of Recording:

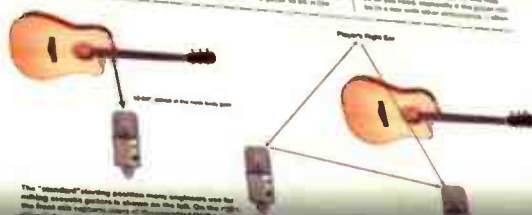
1. Acoustic Magic

Simple techniques for recording acoustic guitar

Recording an acoustic guitar is easy: Set up a mic, press record and play. And by now you approach recording a guitar sound like a reflex. But the way you set up the mic, the style of playing, and the room's content...

TIPS

First, make sure the mic is positioned correctly. A mic that is too close to the guitar will pick up too much of the instrument's natural resonance and too little of the room's ambience. A mic that is too far from the guitar will pick up too much of the room's ambience and too little of the instrument's natural resonance.



The Art of Recording:

1. Why Rong is Gud

Sometimes mistakes are good for you

Whether giving seminars or receiving emails, I'm constantly asked about the "right" way to record, as if there was some committee on standards and practices dedicated to the recording industry ("for acoustic guitar, you must use a small diaphragm condenser mic"). Well, I certainly don't want to demean the art of doing things right. Yet some of the greatest moments in recording history have come about because of ignorance, unbridled curiosity, luck, trying to impress girls, or just plain making a mistake that became a happy accident.

When Led Zeppelin decided to buck the trend at that time of close-miking drums, the result was the Olympian drum sound in "When the Levee Breaks." Prince decided that sometimes a bass simply wasn't necessary in a rock line, and the strings of "When Doves Cry" proved he was right. Reverse tape, flanging, distortion—all at one point were considered "wrong."

A lot of today's gear locks out the chance to make mistakes. Feedback can't go above 99, while "normalized" patching reduces the odds of getting out of control. And virtual plug-ins typically lack access points, like insert and loop jacks, that provide a "back door" for creative weirdness. It's time to reclaim some of our heritage as sonic explorers, and screw up some of the recording process. Here are a few suggestions to get you started.

UNINTENDED FUNCTIONS

The Lexicon Pantheon reverb (included in Sonar, Lexicon Omega, and other products) can provide some really cool resonator effects as well as reverb. Try these settings:

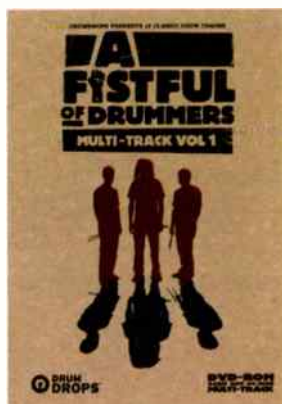
- Reverb type: custom
- Pre-delay, Room Size, RT60, Damping: minimum settings
- Mix: 100% (wet only)
- Level: as desired
- Density Regen: 199%
- Density Delay: between 0 and 20ms
- Echo Level (Left and Right): off
- Spread, Diffusion: 0
- Bass boost: 1.0X

Vary the Regen and Delay controls, and feel free to experiment with the oth-



It says it's a reverb, but here Pantheon is set up as a resonator.

Sounds



DRUMDROPS

A Fistful of Drummers, Volume 1

Contact: Drumdrops, www.drumdrops.com
Format: 1 DVD; REX and WAV stereo drum loops
Price: \$100

One of several titles in the Drumdrops *Fistful of Drummers* series, *Volume 1* is oozing with old-school breakbeats laced with lots of analog goodness. The producers are keen to point out the tools used in recording these tracks: '70s-era Neve console, Pultec and Langevin EQs, Fairchild compressors, analog tape (Ampex 449 and GP9), and more. Additionally, much of the material is presented dry and effected with classic processors such as EMT plate and spring reverbs. One listen to these tracks and it's obvious your hearing the fruits of die-hard analog engineers.

Equally as palpable are the rhythm performances themselves, which include 40 tracks divided into over 400 loops of 8–16 bars in length. *Fistful* combines percussion and drumkit patterns played by Nasser Bouzida (Blow Up recording), Jim “the lick” Kelly, Style Scott (Roots Radics), and Jan Kincaid of Brand New Heavies fame. These guys

lay it down in such a tasty, vibe-sensitive way.

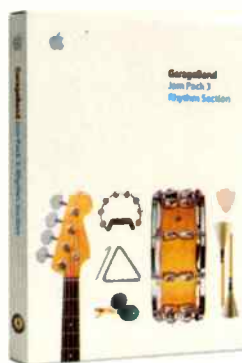
Tempos range from 69–147 bpm, with an emphasis on funk, hip-hop, and rock. You're not limited to these styles, though. The loops lend themselves to cinematic, lounge, acid jazz, and other moods. I found plenty of solid song-starter beats, as well as material that will undoubtedly serve as future fodder for my breakbeat experiments.

Related loops (various percussion and drums) are organized into folders by tempo, making it easy to load a handful of samples and assemble song sections quickly using WAV- or REX-compatible tools. Note, however, that the WAV files aren't Acidized. This didn't prove to be a problem. I was able to load the loops into Ableton Live, which accurately determined the tempo in most cases. If I hit a snag, it was only that I needed to halve or double the original tempo value.

There's little to find fault with — I was a little disappointed by the lack of individual drum hits. But this is far from a deal-breaker, and can be easily forgiven, considering how much useful material is on hand. And with careful editing, I was able to extract single hits where necessary, allowing me to add extra snare or hi-hat hits, for example.

If this sounds like too much work, then you might want to consider the 24-bit multitrack version, which splits the recordings into discrete tracks (snare, hat, overheads, kick, room, and so on). Whichever format suits your needs, *Fistful of Drummers Volume 1* is guaranteed to satisfy your craving for funk up, soulful grooves.

—JOHN KROGH



APPLE Jam Pack 3: Rhythm Section

Contact: Apple, www.apple.com
Format: 2 DVDs; Apple Loops and GarageBand instruments
Price: \$99

Until Logic Pro 7 hit the streets, I hadn't fully climbed on board the Apple Loops/Jam Pack train. After all, Apple's Soundtrack and GarageBand didn't cut it for my pro music projects. And who has time to play around with a new sample library format with looming deadlines, right? Well, I've done a 180-degree turn since I updated to Logic 7. Here's why: Apple Loops and GarageBand instruments are seamlessly integrated into Logic, making it easy to grab hold of the growing list of compatible titles such as *Jam Pack 3 — Rhythm Section*. As you might expect, the focus of this collection is on bass, drums, and guitar. But here's the hook: *JP3* comes well stocked with audio and MIDI loops, as well as multisampled instruments that rival the sonic quality and expressiveness of hardware tone modules.

The content is spread across two DVDs; installation takes no time, but you must install the 5GB library on the same hard drive as the operating system. I'd prefer to keep samples separate from my main system drive, especially considering that

adding several titles will quickly eat up precious storage space. (Hopefully this will be addressed with future software revs.)

In the guitar category, I was pleasantly surprised by the inclusion of Dobro and banjo. Many of the patches offer finger and fret noise for added realism. There's a lot to mine on the electric side, too, including guitar patches with power chords and “chugs” mapped across the keyboard, making it easier to sequence “live-sounding” parts. Especially cool: When adding MIDI loops to a song, the appropriate software instrument (drums, guitar, etc.) and its associated effects such as EQ, compression, and distortion are automatically instantiated.

The “studio” and “brush” drumkits are among the best I've ever played. I was able to lay down swing and second-line grooves with all the nuances of ghosted snares, pedal and half-open hi-hats, and so on. What's more, there are plenty of MIDI patterns to kick-start practice or song-writing sessions.

The electric basses cover clean, thick, round, punchy, and warm. I wasn't as impressed with this instrument category, though. Not that the loops and instruments were bad, but they tended to have a “General MIDI” quality in the upper registers.

On the whole, *Rhythm Section* represents serious bang for the buck. For any commercial composer or songwriter who uses Logic or other compatible program, this is a must-buy. —JOHN KROGH **EQ**





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Alice Cooper: Bass

“For

the most part I was just blown away by the fact that we were able to get as creative as we did,” states Alice Cooper’s king of bass, Chuck Garric. “I think the whole record for me was just a big, happy accident. We were learning the songs for the tour as we were recording them. It was great getting away from having to do overdubs and making it as raw as we could. [Producer Andrew] Mudrock really gave us the freedom to let it loose.” With the band holed up in a rehearsal studio in the Valley,

producer/engineer Mudrock brought in his recording gear and turned the empty room into a recording studio. And let loose they did.

Before hitting the stage in Sudbury, Canada, Garric jumped on the phone with EQ to discuss his technique for getting an awesome rock bass tone, whether recording in the studio, living room, garage, or in a hotel room on the road.

SIGNAL PATH

“I used a Music Man bass on this record. It has flatwound strings with Bartolini MMC-style pickups and Aguilar (3-band) onboard preamps,” confides Garric who has also lent his wicked signature bass

tone to LA Guns, Lynch Mob, and Dio. “I ran that through Ampeg 8x10 cabinets with Ashdown amps. I also ran direct. We had an AKG D-12 on the cabinet, which we ran through a Neve 1073 preamp and a Tube Tech LCA 2B. We recorded everything to Pro Tools but mixed on an SSL J9000.”

MIC POSITION

“The D-12 was placed on the lower end of the cabinet to capture some of the natural low end from the speakers,” explains Garric. “It was about 1/2-inch away and a little off-center. There really wasn’t a whole lot of experimenting with the mic placement . . . we messed around more with the EQ on the amps and my bass.”

PROCESSING

“This record was recorded live . . . there were no overdubs on my bass and the drums,” Garric says. “Everything you hear was pretty much: learn the song, jam the song a few times, and during one of the jams we got the take that made it to the record. So with the processing and miking, I think Mudrock took that into consideration. He miked my bass in a way that was going to pick up the best possible tone, but he also realized there was going to be a bit of room bleed because we were all in a room together.

“We didn’t use any plug-ins on my bass, just the Neve 1073 and the Tube Tech LCA 2B. When Mudrock was mixing, he used a Hycor passive EQ on my bass but that’s it. We were definitely going for a ‘70s feel to get that Alice Cooper kind of bass tone . . . a natural rock ‘n’ roll record.”

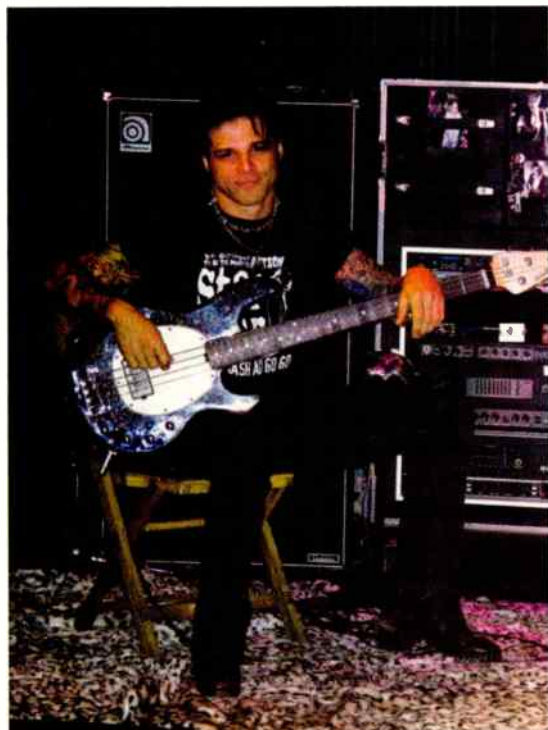
TRACK NOTES

“When Alice talked about the kind of record he wanted, I went back to thinking about the records I listened to as a kid, like AC/DC and Alice Cooper,” concludes Garric. “We basically went with what sounded good. I brought in the equipment I’ve been using for live shows, but this was my first time using the Ashdown amps in the studio, which was a result of Mudrock and I trying out different things.

“When I record my bass, the most important thing is to make sure it’s got that thick rock sound. Each time I go into a recording studio I’m learning how to get different tones and ways to approach songs and play them differently. I see myself getting more knowledgeable each time I pick up my bass and end up in any type of recording situation. There’s so much to learn and there’s no rules when it comes to that stuff.

“Bottom line, when you’re recording rock ‘n’ roll: You don’t have to be as anal as you would for something with more of a clean sound. When you record a dirty rock ‘n’ roll record in someone’s garage you’re going to get some bleed and the odd sounds that you get from miking the bass amp in a garage. But that’s what’s so cool, because that’s what wrote the song anyway — that’s what brought the song to life; we weren’t in some fancy rehearsal studio writing the songs.” EQ

DATE: May–June 2003
STUDIO: Mates Rehearsal Studios
LOCATION: San Fernando Valley, CA
ARTIST: Alice Cooper
PROJECT: *The Eyes Of Alice Cooper*
TRACK: tracking rock bass with Chuck Garric
PRODUCER: Andrew “Mudrock” Murdock
ENGINEER: Andrew “Mudrock” Murdock



Alice Cooper bassist Chuck Garric used a combination of miked cabinets and direct signal to capture his thick rock tone.

Resource.

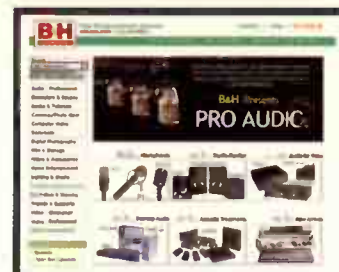
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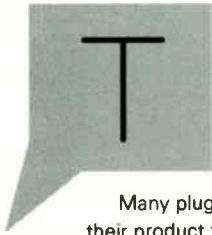
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The Plug-in Problem



Third-party or "add-on" plug-ins are great. They give our favorite DAW applications additional power, flair, and creative spice. However, because they're essentially little applications installed within a host application, unexpected problems can sometimes occur.

Many plug-in developers offer demos so you can try their product for a limited period of time. When these plug-in demos expire, an alert typically appears telling you that the trial period has expired and to either remove or purchase the product. In rare cases, these demo packages can cause problems, such as application freezes.

Other problems occur when a plug-in or bundle of plug-ins is either corrupt or incompatible with your software. If symptoms arise where your host application

In Mac OS X, it's easy to remove plug-ins . . . once you know where they exist in your system.

has a problem while using or loading a plug-in, you might experiment with disabling (at least temporarily) certain plug-ins. Here are some tips on finding, disabling, and removing plug-ins when you have a problem.

MAC

In Mac OS X, it's easy to remove plug-ins . . . once you know where they exist in your system. For most applications look in the following location (see Figure 1): *Macintosh HD > Library > Audio > Plug-ins*.



Figure 1

Check in each folder ("Components," "MAS," "VST," etc.) for plug-ins that you've added (see Figure 2).

These folders will also contain plug-ins that came with your host applications, so check documentation to see what's included. You can drag any questionable plug-ins to your desktop, then try launching the application again. If you have no errors or problems, you'll know that one or more of the items you removed either had a problem

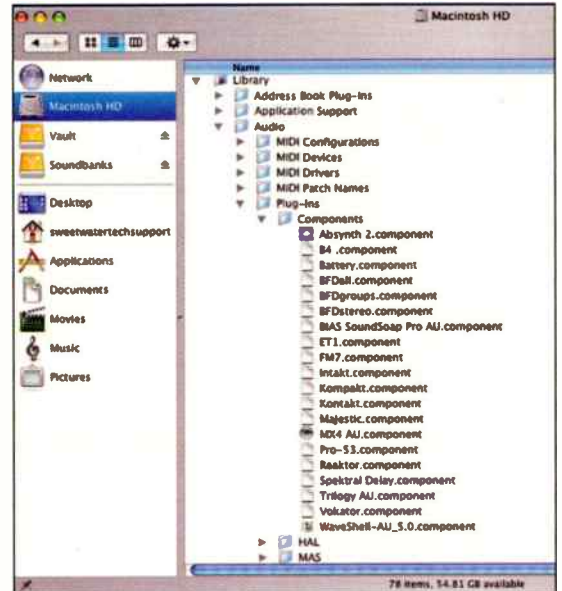


Figure 2

or its demo period expired. If you know a plug-in is bad, you can drag it to the Trash to delete it. If it's a plug-in you've purchased and removing it helped your problem, check the developers website for updates and other solutions, or contact tech support.

For Pro Tools 6 users, plug-ins are stored elsewhere. In recent versions, an alias of the Pro Tools plug-ins folder has been placed in its applications folder (*Macintosh HD > Applications > Digidesign > ProTools*).

WINDOWS

Don't worry, I haven't forgotten Windows users! The most common way to remove demo or problem plug-ins is to click *Start > Control Panel* and choose *Add/Remove Programs*. Read through the list and find plug-ins or their developer names. Choose an item and remove it to uninstall.

Some plug-in developers include their own uninstaller for their product. You can check by clicking *Start > All Programs* and looking for an uninstaller for the plug-in in question.

BE LEGAL

One last tip: Cracked or illegally copied plug-ins are bad for reasons beyond the moral/legal issues. Plug-ins are frequently "cracked" by changing significant parts of their programming code. I've seen entire DAW's go down thanks to one cracked plug-in. Trust me, it's not worth it. Remove cracked plug-ins and be the better for it. EQ

Todd G. Tatnall is the Senior Tech in Sweetwater's Technical Support department.

AdIndex

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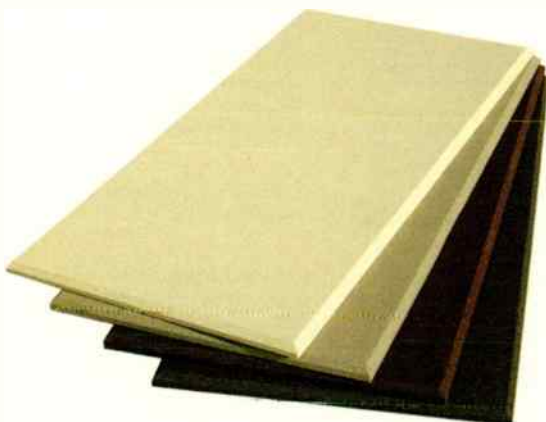
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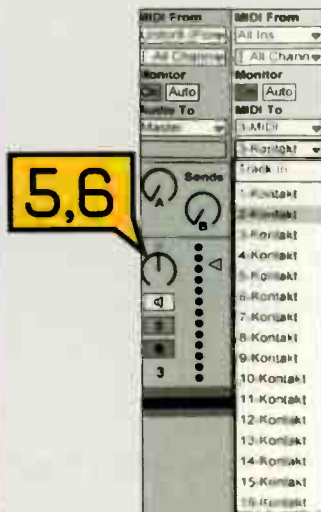
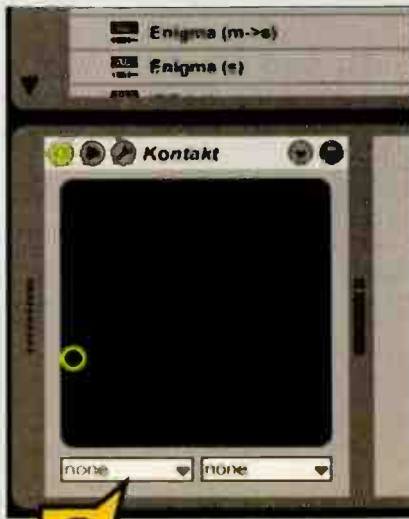


Ableton Live 4

Configuring Live to work with multitimbral soft synths

Objective: Set up Live so you can access separate MIDI parts within a multitimbral software synth or sampler.

Background: Our October '04 review of Live version 4 touched on the new MIDI instrument support, which includes the ability to route multiple tracks of MIDI data on separate channels/tracks to a single multitimbral software synth such as MOTU's MachFive or Native Instruments' Kontakt.



- 1 Starting with a new Live session, add several MIDI tracks, if these aren't already preloaded by default.
- 2 Instantiate a multitimbral software instrument on the first MIDI track. To do this, simply drag and drop the plug-in from the browser window on top of the track from either Session or Arrange view. (I've selected NI's Kontakt for this example.) Live's "generic" plug-in interface should appear in the lower left-hand corner.
- 3 Access the plug-in's user interface by clicking the small "wrench" icon, then load several patches, making sure to assign each patch a unique MIDI channel.
- 4 Return to Live's Session view, select the first MIDI track, and then configure the track's MIDI input to accept data from your controller (either by specifying a port or the USB instrument profile).
- 5 When you record-enable this track and play your MIDI keyboard, you should hear the patch assigned to channel 1. Now choose the first MIDI track from the next MIDI track's MIDI To menu. This will route MIDI data from the second track back into the software instrument; however, you can set the second track to output to a specific channel. When you record-enable the second track, you'll trigger only the instrument assigned to the channel selected beneath the MIDI To menu.
- 6 Configure the remaining MIDI tracks similarly.
- 7 Optional: If your soft synth or sampler supports multiple audio outs, try routing individual sounds to their own audio tracks for further processing.

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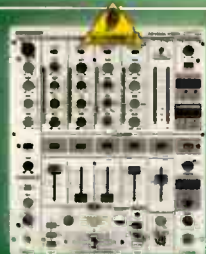
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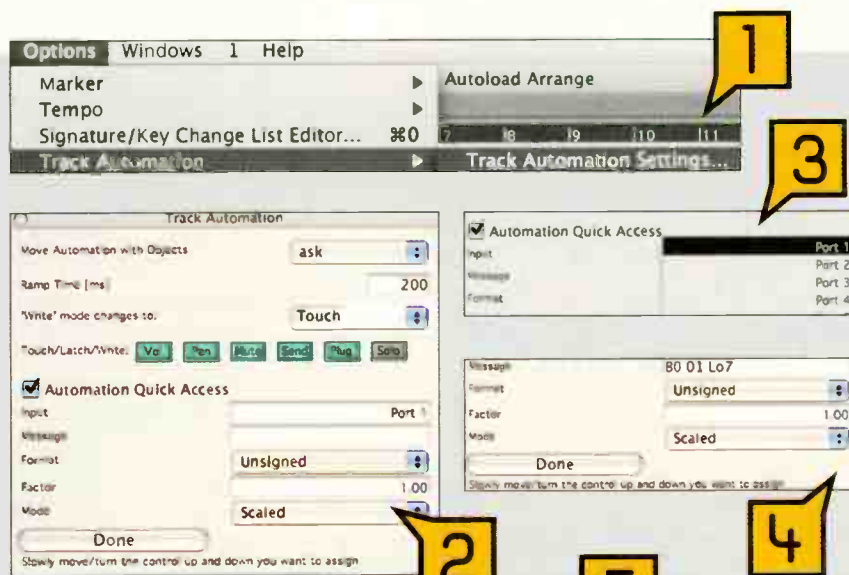


Emagic Logic Pro

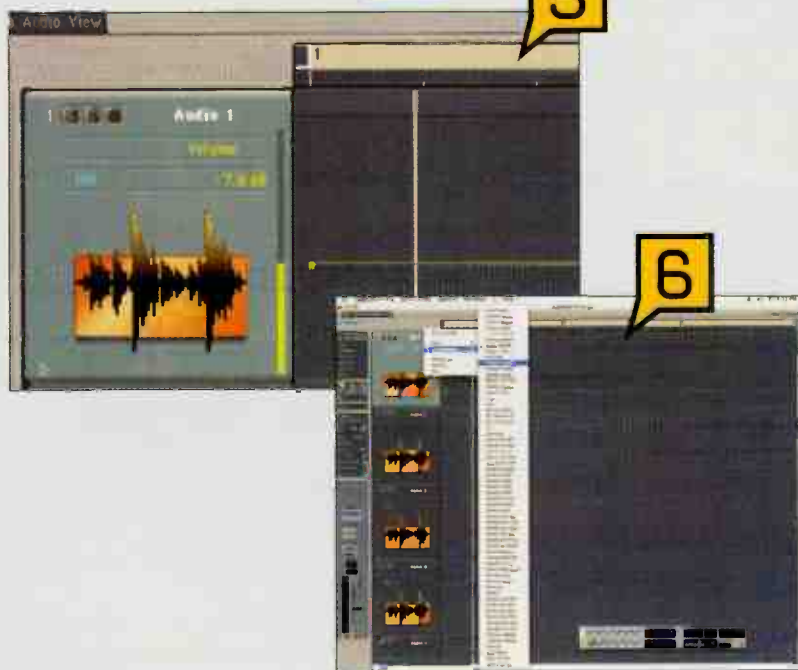
Animating track parameters with Quick Access automation

Objective: Use a single MIDI continuous controller to automate multiple track parameters via Logic's Quick Access automation feature.

Background: While Logic supports several popular control surfaces, you don't need a dedicated fader box to gain hands-on realtime control over track parameters. All you need is a MIDI device equipped with a single continuous controller such as a mod wheel, pitch bender, or knob. You can automate the currently visible parameter of any track selected within the Arrange window using this controller by assigning it to Logic's Quick Access automation function. Here's how to set it up.



- 1 Go *Options > Track Automation > Track Automation Settings*.
- 2 The *Track Automation* dialog box will appear. Enable *Automation Quick Access*.
- 3 Select the MIDI in port that's connected to your controller's MIDI out.
- 4 Click the *Learn Message* button, then operate your controller (mod wheel, joystick, etc.). Logic will sense the message type (data) and display it within the *Message* text field. When you're finished, click *Done*, and then close the dialog box.



- 5 From the *Arrange* window, zoom in on an audio track, making sure *Track Automation* is selected from the *View* menu. Now operate the controller — you should see the currently visible parameter (by default this is set to *Volume*) move.
- 6 To adjust any other parameter, simply select it from the *Track's* automation flip menu, and then move your controller.
- 7 Optional: There may be times when you don't want Logic to recognize incoming MIDI CC data for automation — say, when you want to actually send modulation data directly to a soft synth. In that case, you can toggle *Quick Access* automation on and off via a *Key Command*, which can be programmed from the *Key Command* window (*Logic > Preferences > Key Commands*).



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EQ

Want the ultimate personal studio?

Apple **Power Mac G5**

Raw power. That's what the dual processor 2.5 GHz G5 Power Mac delivers. It's THE most tricked-out system available for Digital Performer, MachFive, MX4 and dozens of hot new instruments and plug-ins.



MOTU **828mkII**

Sweetwater's best-selling FireWire audio interface, and for good reason: 2 mic inputs, tons of additional I/O, on-board mixer, and professional sync. This is the ONLY audio interface with front-panel LCD programming.

MOTU **MachFive and MX4**

A one-two punch for your virtual instrument arsenal. MachFive, the universal sampler, imports just about anything on the planet and delivers all of the advanced sampling features you need. MX4, the new multi-synth, delivers hundreds of fresh and vintage sounds alike.



Focusrite **Liquid Channel**

Every MOTU personal studio deserves luxurious outboard gear. And what better than a piece that delivers the sound of 40 classic mic pres and 40 vintage compressors in one box! The Focusrite Liquid Channel is a revolutionary professional channel strip that can replicate virtually any classic mic-pre and compressor ever made! Combining radical new analog pre-amp technology with special Dynamic Convolution techniques,

the Liquid Channel fuses cutting-edge analog design with lightning fast SHARC DSP. Augmented by fully digital controls, the Liquid Channel provides unlimited possibilities with available FREE *LiquidControl* software, which allows for remote control of the Liquid Channel and future FREE pre and compressor replica downloads for unlimited additional sound expansion. The Liquid Channel provides the ultimate fluid vintage collection,



Call the DP4 and MOTU experts.

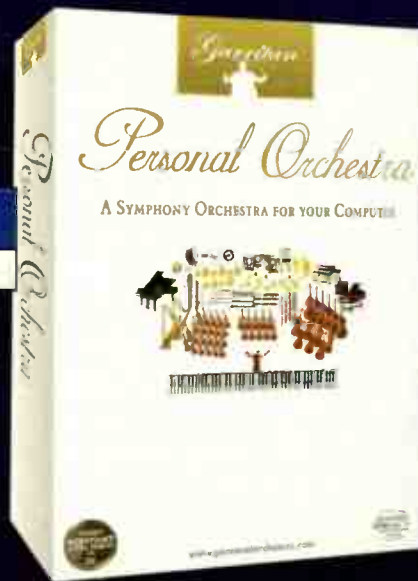
Synthogy Ivory Grand Pianos

This groundbreaking sample-based virtual instrument was conceived and crafted to bring out the resonance, response and character of the world's finest Concert Grands. These 3 superbly sampled pianos, totaling 28 GB, are paired with a custom DSP engine with string resonance, real release samples, and unprecedented user control. A first of its kind!



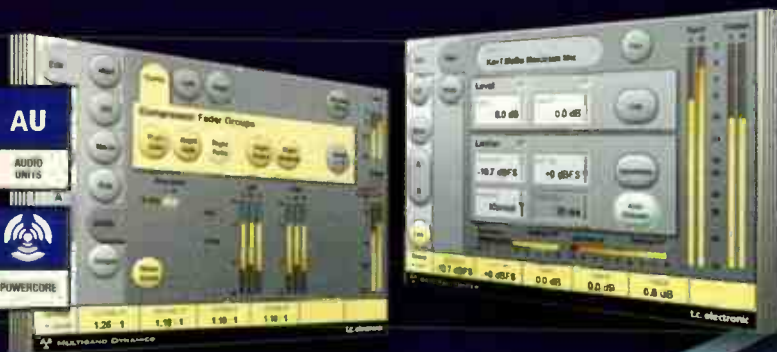
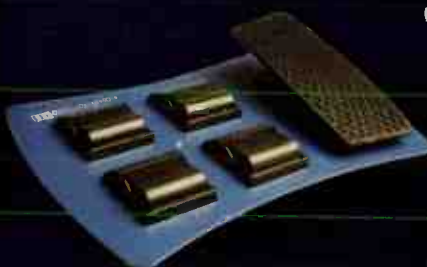
Garritan Personal Orchestra

Garritan Personal Orchestra is an affordable and easy-to-use orchestra for Digital Performer. It includes all the major instruments of the orchestra — strings, brass, woodwinds, percussion and keyboards plus the Sample Player to play them in Digital Performer. Create realistic sounding orchestral music quickly and easily. No confusion. No steep learning curve. Just load instruments and play.



Native Instruments Guitar Rig

The Be All, End All guitar tone and effects rack for Digital Performer. This monster package (look at that effects rack to the left!) even comes with its own foot controller, which doubles as a Direct Input box for feeding your guitar signal into your MOTU audio interface — too cool! Guitar Rig is your one-stop solution for guitar effects, amp and cabinet emulations, and mic modeling.



TC Electronic MD3 Stereo Mastering Package for PowerCore

From the legendary System 6000, TC's most advanced flagship audio processor ever, comes two new mastering plug-ins for PowerCore (PCI and FireWire). This is your chance to own TC's most advanced multiband dynamics and brickwall limiter algorithms at an incredible price, applied directly to your Digital Performer master fader. And thanks to PowerCore's dedicated DSP, you'll have plenty of CPU power left over. Also available as a Windows VST plug-in for PowerCore PC hosts.

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M-Audio **KeyStation Pro 88**

Digital Performer captures every nuance of your MIDI performance. And this new 88-key hammer action USB powered MIDI controller delivers fine-tuned response to satisfy even the most demanding players. Add four zones, a stunning set of MIDI-assignable controllers all in a compact 40 pound package, and you have the most comprehensive product of its kind!



BIAS **Peak 4.1 Mastering & Restoration Edition**

Peak 4.1 plus SoundSoap Pro and SuperFreq. Imagine the world's most popular stereo audio editing, processing, and CD mastering program for the Mac, combined with unparalleled noise reduction and restoration technology — all at a jaw dropping low price. You get Peak 4.1 (including ImpulseVerb, Sqweez, Vbox SE, Jam 6, SFX Machine LT, and more), SoundSoap Pro (combines four slate of the art restoration and noise reduction tools in a single plug-in), and the SuperFreq suite of mastering EQs all in one great package. Launch Peak directly from DP4 for more editing and processing power. Run SoundSoap Pro within DP4 or in Peak as an AU plug-in. For the very best in sample editing, batch processing, file conversions, loop creation, sound design, restoration, and Redbook CD mastering on OS X, pick up the Peak 4.1 Mastering and Restoration Edition today — the perfect mastering and restoration companion for DP4!



Monster **Power Pro AVS 2000**

Often overlooked, voltage stabilization is an absolute must for the well-tuned MOTU studio experience. Dips in voltage caused by power-hungry appliances can seriously compromise your sound: loss of tone and clarity, spurious changes in gain structure, loss of peak power, and worse. The Monster AVS 2000 PRO delivers the stability needed for peak power and performance.



Monster **PowerCenter Pro 7000**

Equally important, power conditioning is another must. The current that comes from most AC outlets is inherently unbalanced, causing high-frequency oscillations that get picked up by your gear in the form of performance-robbing hum, buzz and static. Only a power center with perfectly balanced power can fully remove this type of interference. The Pro 7000 is the answer, with 12 AC outlets and Tri-Mode™ 3145 joule rated surge protection. It's the perfect compliment to the AVS 2000 Pro.

Get both units to deliver the world class power that the gear in your MOTU studio deserves.



Yamaha **O1x Digital Mixer**

For mixing "inside the box" or "outside the box" with Digital Performer, the Yamaha O1x gives you the best of both worlds. In fact, the O1x can serve triple duty in a MOTU-based studio as a mixer, control surface and audio interface. First and foremost, the O1x is a world-class 24-channel motorized-fader digital mixer with 8 mic preamps, 24/96 A/D converters and total recall. Built on world-renowned 96kHz DSP technologies found in Yamaha's flagship DM2000, 02R96 and 01V96 professional digital mixers, the O1x has massive power under the hood, at an amazingly affordable price. If you choose to mix in Digital Performer instead, the O1x serves as a comprehensive control surface for Digital Performer's mixing environment, complete with motorized faders. And Finally, the O1x can serve as a multi-channel audio interface and multi-port MIDI interface via mLAN FireWire.



Call the DP4 and MOTU experts.

Mackie Control Universal and Extender

Imagine the feeling of touch-sensitive, automated Penny & Giles faders under your hands, and the fine-tuned twist of a V-Pot™ between your fingers. You adjust plug-in settings, automate filter sweeps in real-time, and trim individual track levels. Your hands fly over responsive controls, perfecting your mix — free from the solitary confinement of your mouse. Mackie Control delivers all this in an expandable, compact,

desktop-style design forged by the combined talents of Mackie manufacturing and the MOTU Digital Performer engineering team. Mackie Control brings large-console, Studio A prowess to your Digital Performer desktop studio, with a wide range of customized control features that go well beyond mixing. It's like putting your hands on Digital Performer itself.



PreSonus Central Station

The PreSonus Central Station is the missing link between your MOTU recording interface, studio monitors, input sources and the artist. Featuring 5 sets of stereo inputs (3 analog and 2 digital with 192kHz D/A conversion), the Central Station allows you to switch between 3 different sets of studio monitor outputs while maintaining a purely passive signal path. The main audio path uses no amplifier stages including op amps, active IC's or chips. This eliminates coloration, noise and distortion, enabling you to hear your mixes more clearly and minimize ear fatigue. In addition, the Central Station features a complete studio communication

solution with built-in condenser talkback microphone, MUTE, DIM, two separate headphone outputs plus a cue output to enhance the creative process. A fast-acting 30 segment LED is also supplied for flawless visual metering of levels both in dBu and dBfs mode. Communicate with the artist via talkback. Send a headphone mix to the artist while listening to the main mix in the control room and more. The Central Station brings all of your inputs and outputs together to work in harmony to deliver a powerful and affordable solution for Digital Performer that will enhance the creative process and ease mixing and music production.

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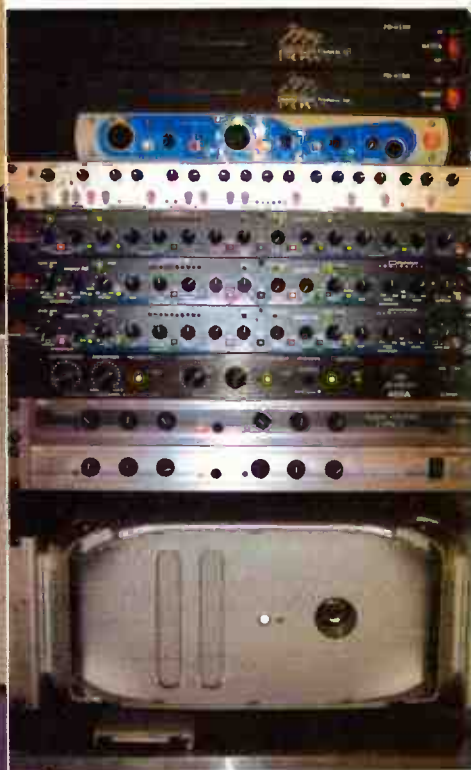
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World Radio History



by Mitch Gallagher

Room with a VU

STUDIO NAME: Oniram Productions
CONTACT: www.oniramproductions.com
LOCATION: Ocala, FL
KEY CREW: Anthony Marino
CONSOLE/MIXERS: TASCAM M-3700 (64 channels, VCA automation), Mackie 1402VLZ
RECORDERS/PLAYERS: Panasonic SV-3700 DAT
MONITORS: Tannoy Reveal, P110-B sub; Alesis RA-150, AKG K240m headphones [3]
OUTBOARD: dbx 166xl [3], Aphex Aural Exciter Type C [2], BBE 422, 822; HHB Radius 3 Fat Man, Joe Meek VC-5
EFFECTS: Antares ATR-1 Auto-Tune, Roland SRV-3030, Lexicon MPX-500, Yamaha SPX-90II, Alesis MicroVerb III, Line 6 POD Pro
MICROPHONES: Neumann TLM 103, Sennheiser 206 [3], Shure SM57, SM81 [2]; AKG D112, Electro-Voice RE-20 [2]
MICROPHONE PREAMPS: Focusrite Voicemaster Platinum
COMPUTERS/DAW: Apple PowerMac G4/867MHz, 1.5GB RAM, PowerBook G3; Envision LCD monitor [2]
DAW: Digidesign 001
SOFTWARE: Digidesign Pro Tools, MOTU Digital Performer

KEYBOARDS/MIDI: Korg Triton R; Roland RD-700 MT-32, M-DC1, SRX-01, SRX-04, SRX-06; Boss DR-02, Yamaha TX-7, PSR-300; E-mu Proteus 1 (with Protologic0, Proteus 1XR, Proteus 2, Orbit v2, Planet Phatt; Alesis NanoSynth, NanoPiano; MOTU MTP AV [2] Micro-Express

STUDIO NOTES: Oniram Productions takes its company name from the fact that it provides more than standard "studio" services. The company offers everything from tracking brief voiceovers to full demo and CD project production. Additional services include full lighting and sound/PA rigs for concerts, live sound engineering for conventions and other special events, remixing, and beat creation using a large selection of MIDI gear and sound libraries. Oniram Productions can also provide live recording services, offering mobile 32-track digital recording onsite at performance venues.

According to studio owner Anthony Marino, most of the studio's gear is hardware-based, with DAW/computer-based recording and editing. However, a range of plug-ins and software processing options are available. Mixing and EQ is handled in the analog domain by a VCA-automated TASCAM M-3700 analog console.

HEY, EQ READERS. WANT US TO FEATURE YOUR STUDIO? SEND PICS AND INFO TO mgallagher@musicplayer.com.

Still The Most Professional Digital Audio Workstation In Its Class



The AW16G set a new standard for all-in-one digital recorders when first introduced. And, when you're number one, everybody's gunning for you. Well, competitors have come and gone while the AW16G remains the only DAW in its class with all the features you need to burn truly professional quality CDs. So, before selecting the heart of your new studio, make sure it has what it takes to make your music sound its best, including:

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- High-performance, low-noise mic preamps...a total of 8
- A flexible and easy-to-use digital patchbay to route any input to any track
- Two completely assignable stereo digital effect processors
- Built-in CDRW drive with powerful DSP mastering tools
- Complete compatibility with computer-based recording systems via easy exporting of .WAV files
- Rugged metal construction...no plastic
- Smooth, quiet controls and switches...Yamaha quality throughout.

And, if you're a guitar player, you'll love the dedicated Hi-Z input, special effects, and amp simulators. All this adds up to pristine recordings and great mixes. Check out the AW16G (at its new *incredible* price) at your nearest Yamaha retailer or visit www.yamaha.com/proaudio for more details.



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Slide the Traveler into your briefcase or bag, alongside your laptop, and you've got a complete audio recording system — to go. At an incredibly efficient 9 watts, the Traveler draws power directly from your computer via FireWire, with no AC or DC power required. So you can record anywhere at sample rates up to 192kHz.

For extended remote recording, the Traveler can be powered by a standard battery pack. The Traveler also delivers industry leading features, impeccable audio quality, steadfast reliability and broad compatibility with your favorite audio software on Mac and Windows. Your studio-to-go is ready — no power cords attached!

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