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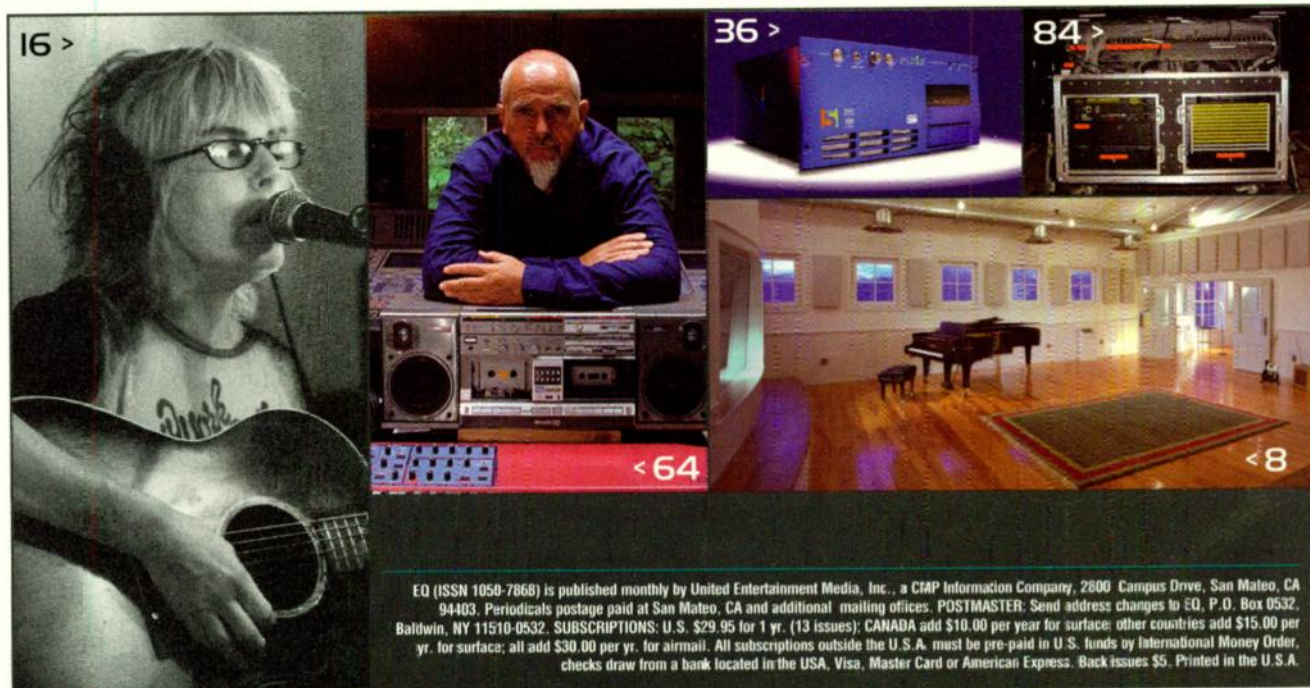
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A UNITED ENTERTAINMENT
MEDIA MAGAZINE

STUDIO ACOUSTICS • MOBILE RECORDING RIGS

World Radio History

CONTENTS



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FEATURES

- 36 FALL AES 2002**
Anyone who said "there wasn't anything new" wasn't looking hard enough at this year's AES convention in Los Angeles. For example....
By Craig Anderton, Mitch Gallagher, and Steve La Cerra
- 64 DIGITAL PLAYGROUND**
Peter Gabriel moves Up in the Real World
by Will Romano
- 75 CASE STUDIO: ACOUSTICS, PART II**
Our room undergoes its acoustic makeover
by Mitch Gallagher
- 84 ROAD WARRIORS**
Four mobile recording rigs that rock
by Steve La Cerra

DEPARTMENTS

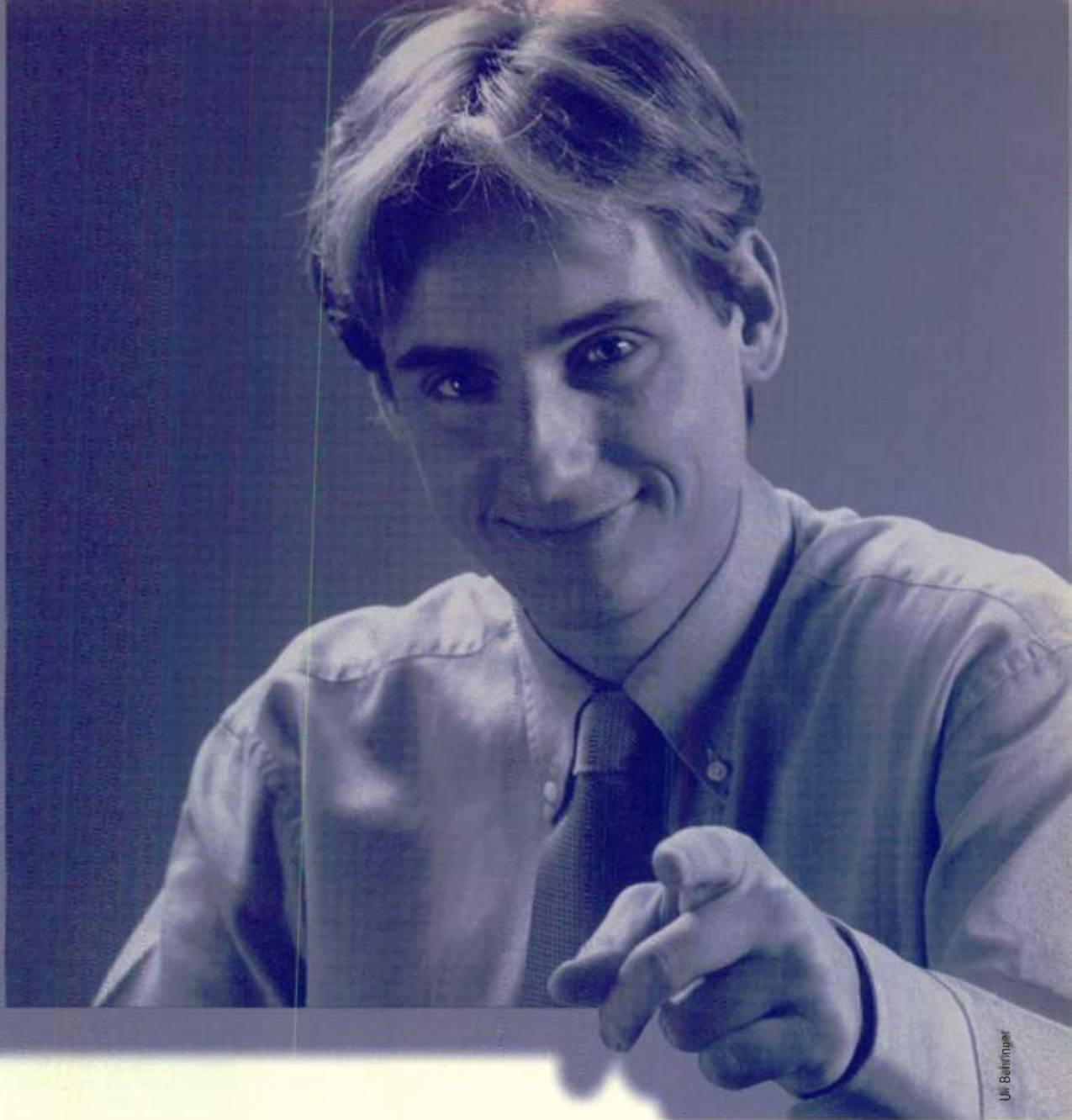
- 4 EDITORIAL**
- 6 LEGACY: TOM DOWD**
- 8 ROOM WITH A VU: CLUBHOUSE**
- 10 ROOM WITH A VU: TAKING IT TO THE RING**
- 16 SESSION FILE: LUCINDA WILLIAMS**
- 20 DAW WORLD: WHO'S THE BOSS?**
- 113 AD INDEX**
- 128 ACROSS THE BOARD: ENGINEER'S RIGHTS**

REVIEWS

- 92 YAMAHA 02R96 DIGITAL MIXING CONSOLE**
By Mitch Gallagher
- 102 TASCAM POCKETSTUDIO 5 PORTABLE DIGITAL STUDIO**
By Craig Anderton
- 104 SHURE KSM27 CONDENSER MICROPHONE**
By Steve La Cerra
- 108 STEINBERG CUBASE SX DIGITAL AUDIO SEQUENCER**
By Emile Manasché
- 112 REVIEW SHORTS**
By Craig Anderton
- 116 SAMPLE CD REVIEWS**
By Craig Anderton

TECHNIQUES

- 24 SIGNAL PROCESSING WITH RECYCLE**
ReCycle 2.0 can do a lot more than create REX files
By Craig Anderton
- 28 ROUTING OPTIONS**
How clever patching can solve a show-stopping problem
By Steve La Cerra
- 32 SOMETHING COOL**
Michael Bishop puts digital mics to work for vocal recording
By Steve La Cerra



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The Future's So Bright....

Boy, another year gone. How the heck did that happen? Seems like I was just getting used to writing "2002" on checks, now I've got to get started re-training myself to put down "2003." It's been an interesting year, to say the least, what with economic worries, the looming specters of terrorism and war, and news of unrest hitting us from pretty much every angle.

We haven't been immune in the audio industry; the economic downturn and general malaise has certainly affected us here, too. But on the eve of the New Year, I find myself optimistic that we're again moving forward. As I write this, the financial world seems to be trudging toward recovery, there's always hope that peace and common sense will prevail, and besides, the sun is shining in a clear blue sky outside my office window.

Now, before anyone starts to wonder if I've lost my cynical editor's edge, I have a confession to make: While a sunny day does slightly defrost my heart, a raft of new gear does an even better job of brightening my day. And that's just what we've got for you in this issue; one of the largest new gear reports we've ever done. If you want evidence of the health of our industry, just take a quick glance through the incredible list of new products that grace the pages of this magazine. Who could feel unhappy when presented with a mouth-watering array of new toys like that?

We're also heading into one of the big tradeshow seasons of the year; Winter NAMM, Frankfurt Musikmesse, NAB, AES Europe, and more are all just around the corner. While this means a ton of travel and work for us here at the magazine, it also means a pile of cool new gear is being frantically prepared for release by manufacturers. What more reason do you need to look forward to the New Year?

Since it is the season, let me take this opportunity on behalf of the entire staff here at *EQ* magazine to wish you and yours the very best for a happy, safe, healthy, and musical holiday season. Here's hoping that your New Year will be laden with every success and joy — and audio toy — you could hope for. Peace.

—Mitch Gallagher
mgallagher@uemedia.com



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Clubhouse

STUDIO NAME: Clubhouse

LOCATION: Rhinebeck, NY

KEY CREW: Paul Antonell (CEO/engineer), Daniel Goodwin (studio manager/engineer), Sean Price (engineer/Pro Tools op), Chris Powers (engineer/Pro Tools op)

CREDITS: Natalie Merchant, Parliament Funkadelic, Fountains of Wayne, Rusted Root, Reto Burrell, Amy Fairchild, Gathering Field, Romero

MIXING CONSOLE: Neve 8058 MKII (56-input)

MONITORS: Genelec 1031, 1094; Tannoy DMT-12, NFM8; Hot House 165, Yamaha NS10M; Headphones: Fostex T-20 [8], AKG 240 [6]

AMPLIFIER: Perreux 6000B [2], Hot House M500 [2], McIntosh MC75 [2]; Manley/Langevin 12-channel individual powered cue stations (for

headphones)

RECORDERS: Studer A827 2-inch 24-track, A80 1/2-inch 2-track; Alesis ADAT XT20 [4], Masterlink ML-9600, HHB CDR-850, Sony PCMR500

OUTBOARD: Purple Audio MC76 [2], Neve 2254a [2], Manley Vari-MU, Empirical Labs Distressor [4], Fatso Jr.; Alan Smart SC-2, Anthony DeMaria Labs ADL1000 [2], United Audio 177 compressor [2]

EFFECTS: EMT 140 tube plate reverb, Sony DRE-S777, live chambers [2], Lexicon PCM70, PCM41; TC Electronic 2290, AKG ADR68, BX-10; Line 6 Echo Pro, Filter Pro, Mod Pro

MICROPHONES: Telefunken Elam 250, Neumann U 47, U 67, SM 69, UM 57, CMV 563, SM 2, U 87; Schoeps 221B [2], RCA 44 [2], KU-3A [2]; Sony C-57 [2], Royer R-121, MBHO MBNM-608 CL [2], Octava ML-52 [2]

MIC PREAMPS: Telefunken V76 [2], V72 [2], Martech MSS-10 [2], John Hardy M-1 [4], Focusrite ISA110 [4]

KEYBOARDS/SAMPLERS/MIDI: Hammond B3 with Leslie 122 and 147; Wurlitzer electric piano, Fender Rhodes w/Dyno-My-Piano mod; Mellotron MKIV, Moog miniMoog, Prodigy; Hohner D6 Clavinet

COMPUTERS: Macintosh G3/450 MHz with 1 GB RAM, APS 36 GB SCSI, FireWire CD-RW drives; Fantom FireWire 120 GB, Rourke SCSI 36 GB drive, ATTO SCSI Accelerator

DAW: Digidesign Pro Tools Mix Plus 24, 888I24 [3], Rosendahl Nanosync, Timeline Microlynx, Midiman USBsport

SOFTWARE: Digidesign Pro Tools 5.1.1, Adaptec Toast Platinum, Retrospect

INSTRUMENT AMPLIFIER: Vox 1963 AC30, Fender 1952 Deluxe, 1957 Super, 1962 Bassman, 1962 Bandmaster, 1963 Twin, 1964 Princeton; Ampeg 1963 B-12, 1963 B-15, 1964 B-18, 1977 SVT, Marshall JCM-800 MKII

POWER CONDITIONING: Equi-Tech 110- and 220-volt balanced power

STUDIO NOTES: After 12 years in Germantown, NY, Paul Antonell recruited producer/engineer John Holbrook and architect Barry Price to design a new facility. "The studio was built from ground up," he explains. "The 31x29-foot tracking room has 16-foot ceilings with a large picture window and cus-

► continued on page 117

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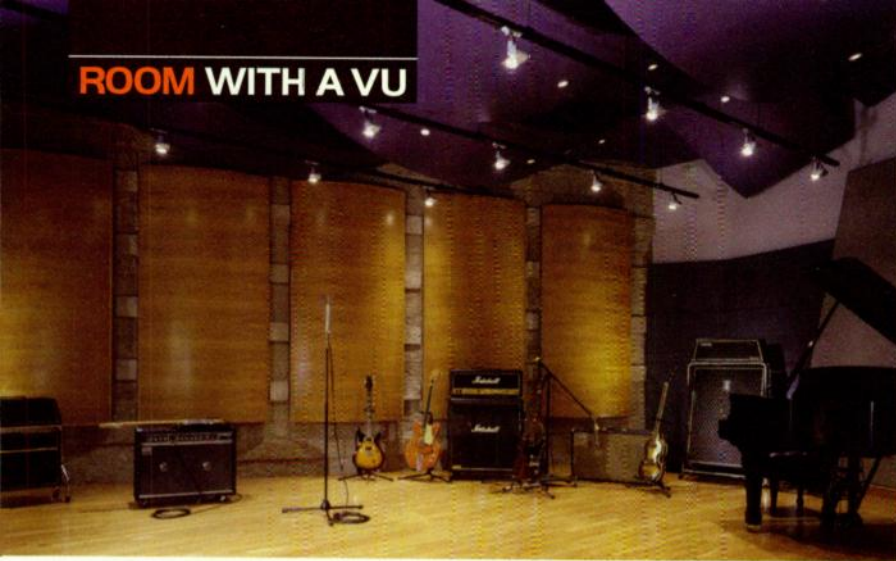


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Taking It To The Ring

Bodyslammin'
music

STUDIO NAME: World Wrestling Entertainment Studios

LOCATION: Stamford, CT

KEY CREW: Jim Johnston (composer/producer/director of music), Darryl Harvey (assistant), Marty Ludwin (head of engineering), Mike Grossman (facility director)

CREDITS: Jim Johnston has been composing and recording themes for WWE talent, television, and CD releases for 18 years

MIXING CONSOLE: SSL SL9000-J Series

MONITORS: Quested, Yamaha NS-10M, Genelec 1031A, M&K

AMPLIFIERS: Studer AP-800 [6], Perreux 9000B, Hafler: Pro5000, P1000

RECORDERS: Studer A827, A80; Ampex ATR102 half-inch analog, Sony DVW-A500 DigiBeta, CDR-W66, MDS-E12; Doremi V1B Digital Video, Alesis Masterlink ML-9600

By Steve La Cerra

OUTBOARD: Fairchild 670, Fairman TMC [2], TLC; TubeTech CL-1B [4], PE-1C [4], SMC-2A [4]; Empirical Labs Distressor [2], Joe Meek SC2 [2], Avalon AD-2044, Summit Audio EQP-200B [2], DCL-200 [2]; Gates M3529B limiter [2], Pultec EQP1S [2], MEQ5; Neve 2254 [2], DW Fearn VT-4 EQ [2], Millennia TCL-2, Amek/Neve 9098 EQ, Teletronix LA-2A [4], MXR Flanger/Doubler, Drawmer 1960 [2], 1961; Manley Labs Massive Passive, Vari-MU

EFFECTS: Lexicon 960, PCM70, PCM81, PCM90, PrimeTime; Sony DRE-S777 [2], Roland SRV-3030 [2], Yamaha SPX1000 [2], REV7; EMT 250, TC Electronic 2290 [4], Eventide Orville

MICROPHONES: AKG C12, C24, C12 VR [2]; Neumann U 47 [2], M 147 [2], M 149, U 87i, KM 84i; Coles 4038 [2], Earthworks TC-30K [2], BLUE Baby Bottle, Mouse; Electro-Voice RE20, Sennheiser MD421 [2], Shure SM57 [6], Royer SF-12

MIC PREAMPS: Groove Tubes VIPre, Avalon 737sp [2], Summit Audio MPE200, Focusrite ISA-430, Neve 1073, DW Fearn VT-2 [2], VT-1 Tube DI

KEYBOARDS/SAMPLERS/MIDI: Korg Triton Rack, Wavestation A/D [2], TR Rack; Roland XV-5080 [2], RD-700, Juno 106 [2], JP-8000, JP-8080, D550 [2], MKS70 [2]; Kurzweil K2500R, K2600R, MidiBoard; AKAI S6000 [2], Z8 [2]; Synclavier 6400, TASCAM GigaStudio 160, Yamaha TX-802 [2], EX5R; Alesis DMPPro [2], Waldorf Q, Mutator, Novation Supernova II [2], Oberheim Matrix 12, Ensoniq ASR-X-Pro, Emu SP-12, Clavia Nord Rack 2, Access Virus, Sherman Filterbank 2, Steinway B, Hammond B3 w/Leslie, Hohner Clavinet, Fender Rhodes 73, Wurlitzer 200, MOTU Digital Timepiece [2], MOTU MTP-AV [6]; Signal Transport Synth Driver [3]

COMPUTERS: Mac G4 [3] with Glyph 4-Bay, 36 GB removable drives; minimum 1GB RAM, Gefen Ex-Tend-It Systems [4], Apple Cinema Display [3], Fujitsu flat-screen monitor

DAW: Digidesign Pro Tools HD3, Mix 24; Apogee AD-8000 [4], Z-Sys Z-16.16 Digital Detangler

SOFTWARE: MOTU Digital Performer 3.1,

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Jim Johnston may be reached at
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George Petersen

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Pro Audio Review November, 2001

Richard Alan Salz

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Home Recording December, 2001

Rusty Cutchin

"... my personal favorite was the AT3031 cardioid: it's a well-behaved, predictable microphone that can be used in a wide variety of situations."

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Rick Auricchio

"The smooth response of the AT3035 really made the microphone a standout choice . . ."

Audio Media October, 2001

Doug Mitchell

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EQ June, 2001

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Audio Media December, 2001

Strother Bullins

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Digidesign Pro Tools 5.3.1, Sonic Foundry Acid 3.0, Propellerheads Reason 2.0, Toast 5.1 Titanium, Waves Gold Bundle

INSTRUMENTS: Yamaha Pro Series Drums, Gibson Les Paul [2], Les Paul Jr., Lucille; Fender Strat [2], Telecaster [4], Precision Bass [2]; Martin acoustic [2], Epiphone Casino, Music Man Sting Ray 5 Bass, Paul Reed Smith, Ibanez RG, Gretsch Country Gentleman, Nashville; Hofner violin bass

INSTRUMENT AMPLIFIERS: Mesa Boogie Rectifier Preamp, Dual Rectifier Amp; Marshall JCM-900, Fender Bassman, Bandmaster, Vibrolux Reverb; Roland JC-120, Line 6 Pod Pro, Vox AC100, AC30, Super Beatle, Berkeley Super Reverb, Foundation Bass; Lexicon Signature 284, Ampex B100 Rocket Bass, Alembic F-1x Tube Preamp

POWER CONDITIONING/BACK-UP: All power is conditioned UPS with isolated grounding

ACOUSTIC TREATMENT: "Two words: 'Russ Berger.'"

STUDIO NOTES: "We had the good fortune of having Russ Berger design the rooms," reveals Jim Johnston. "Rather than a commercial

studio, Russ and I soon realized we were creating the ultimate personal project studio — as it is really my office. I write the material, play the instruments, and engineer, so a lot of the usual considerations regarding compatibility with multiple people and multiple systems were not concerns."

PRODUCTION NOTES: "I record themes that range from rap to classical, so there's a lot of jumping from project to project. Since it's based in TV, deadlines are a constant concern. Our previous studio was centered around a Neve Capricorn, which had the wonder of instantaneous recall of every parameter. This was an enormous help, as I frequently am jumping between five or six projects in a day. Now with the (SSL) 9000, a reset takes at least 30 minutes (sometimes more). As a result I have to plan ahead a bit more, but the sound quality of the 9000 makes it all worthwhile. It's such a tremendous space, with an impressive equipment list that I keep set up and patched for the way I work. It's like



forever having a lockout on the best studio on earth."

EQUIPMENT NOTES: "I love the convenience of digital recording, but it still needs a good dose of analog (tube and solid state) in the recording chain to really come alive. That being said, I'll take a poorly recorded, great groove or performance over a pristine dead track any time! The audio world has figured out how to get the tape hiss out of our recordings, yet the overall quality of music (I believe) has suffered. I guess the hiss wasn't really the problem...."

"The nature of a WWE talent entrance theme is getting the audience's feet tapping within about two seconds, and full recognition of the tune before that. There is no time in my world for drawn out introductions, so prioritizing strong grooves and hooks over a perfect recording is a daily balancing act. Fortunately, the gear I have helps me get great-sounding results quickly. I'm not a big fan of plug-ins. They just don't sound like the real thing to me. Plug-ins are great for mangling however. I use Amp Farm, and Bruno/Reso when I need to really beat up some defenseless audio."



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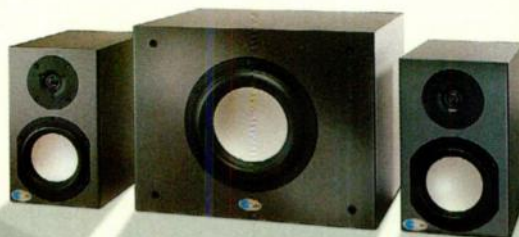
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SESSION FILE

perfectly for that sound.

"I have this technique where I aim the Shure SM57 in at the center of the cone. I like to touch the grille, that way I get a little bit of the warmth from around it but I get the clarity from inside. Some engineers like to have a little distance and use their finger as a marker. Because I've been thrown into a lot of recording situations that have to be done quickly on the spot where the amp might be in the room with the drums, I like to get it in there as close as I can. Then I wrap a blanket around so there's no leakage; I find that's my best results. Then I put the '409 right up against the grille also in at an angle with the '57 pointing right in next to it."

PROCESSING

"I've been using a lot of the Eventide units, and the H3500 is my favorite, or H3000," Howard confides. "I've saved all my favorite settings in them over the years. Most of them are delayed echoes that act like a filter...you can kind of tune it in from there. The TC Electronic FireWorx has something I use for panning effects, panning with filters and all those kind of fun things. It's a real headphone trip. I just purchased an Eventide Eclipse. I'm just getting used to it, but I'm finding out that it's half the size of the H3500 and it's got a little more power."

"I get basic sounds up and then I have a vision for certain instruments and sounds working on top of them. Over the years I've had my combinations of my favorite tambourine and guitar echo, or my favorite vocal slap. A lot of my vocal sounds on Lucinda's record are treated with double delay...very much the 'John Lennon' sound. It's become one of my favorites over the years and it works great on pedal steel guitar, too."

TRACK NOTES

"Lucinda came in with a few of her songs already written with pedal steel in," Howard concludes. "Along the way pedal steel kind of sneaked into a couple other tracks, but mainly on 'Ventura.' I think the pedal steel blossomed on this record. This is mostly a vocal record about songs, and it's about working around her vocal. We weren't going to step on her vocal; it's the forefront and the story. These are really amazing

songs, and we found that sometimes if Doug was playing over the top of her vocal it took your focus away from her performance. So we came up with this technique where when she sings a line we'd do a little pedal steel part and a rise, and then that creates the next picture, and then she would do the next part of the verse. We call it playing in the holes. Stay out of the way of the vocal, play in the holes, and it just opens the whole song up.

"On U2's *All That You Can't Leave Behind*, we featured pedal steel on the intro of "Ground Beneath Her Feet" played by their producer, Daniel Lanois. I didn't record that in the traditional way, either. I ran Dan's pedal steel right into a Vox amp with a '409. I sent that through a Lexicon PrimeTime set for one of the filtered echoes and used the Eventide H3000.

"For Bob Dylan's *Time Out of Mind* there were 15 people in the room all playing together. Bucky Baxter, Bob's steel player, set up his rig and we didn't want it leaking into everything, but he needed to be in the same room. We ended up putting his amplifier in a road case beside him. So the pedal steel amp with an SM57 got recorded inside a road case on that record and it sounded great. It was a very simple technique that worked because the road case was full of foam and had this dense sound. It worked out really amazingly.

"With Lucinda's record, I believe I captured the magic in her and her band. Doug played some haunting pedal steel parts and I think when she heard it she had a great headphone thing going and she could sing. Everything was just in the right spot, she felt comfortable. I think the sound of the pedal steel was the inspiration that allowed her soul to come out. Pedal steel guitar has painted a picture of country music, but over the years there have been some great players that have taken it to another level. Dan [Lanois] is someone that doesn't play in the traditional way. Greg Leisz is another guy that's taken pedal steel to another level. Thanks to people who are playing like that, it's opened up a whole other category. They've taken it out of the traditional element and made it more accessible." ■

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Who's The Boss?

By Tal Herzberg

This month, let's pay a visit to two-time Grammy-nominated producer/songwriter John Shanks to discuss the role of DAWs and their operators in the record-making process. John's credits include works by Sheryl Crow, Melissa Etheridge, Stevie Nicks, Chris Isaak, and, most recently, Keith Urban.

EQ: When did you start using DAWs as your main production tool?

JOHN SHANKS: As a writer, I always had a studio at my house. I started with a four-track cassette, moved into eight-track reel-to-reel, then to ADATs, and finally to a DAW about five years ago.

How did you start producing?

Many times I found myself disappointed with the results other producers got while working on my songs, so I started working on my own production skills. Once my confidence level and instincts were developed enough, I started demanding from parties who were interested in my songs to let me produce the cuts, and, after some time, things started to come out the way I wanted. I was responsible for the outcome.

Can you describe your typical process of writing a song?

Most of the times I'll start writing a song playing an acoustic guitar, and often I'll play to a rhythm loop playing from the DAW. Melodies and lyrics will emerge, and then it's time to put the basic demo together.

With the sound quality and editing capabilities of DAWs, is there such thing as a "demo" anymore?

My whole theory is to make yourself indispensable, and that means doing the best that you can from the get-go. For me, if properly implemented, there is no reason why a demo shouldn't ultimately become the master. Many times, moments captured while making a demo

can't be re-created in a "real" situation — so I keep it the way it was!

Who operates the DAW for you?

My DAW operator is also my engineer. I think that it's no longer enough to know how to get sounds but not know how to operate a DAW, and vice-versa, so at this point I rely on my engineer to be able to do both. In most productions it's not economical to have two people running the session — one engineering and one running the DAW, but in some occasions I'll have both in the control room, so things can move even faster

of the creation process, I may have an idea, but will have a problem verbalizing it, so I have to know that the person I am working with can follow me as we put the puzzle together. If my pace is too fast for the operator and it slows me down, it becomes a problem for me. As a musician, I communicate in musical terms, so when I say "fly this vocal line to the chorus" or "lay back the kick pattern," I need to know that the operator can think, feel, and respond to such requests. Since this person also takes care of the engineering chores, it's important that he/she can



Producer/songwriter John Shanks discusses the creative process of working with DAW engineers.

and smoother.

What are some of the characteristics that make you want to work with a certain DAW operator?

I like to work really fast, because it keeps things exciting. My main concern with engineers who also operate the DAW for me is that they need to be able to work as fast as me, without me needing to say a lot to them. They need to be able to work off the moment and blindly trust my process. Sometimes, in the heat

also respond to comments such as "this sound is too harsh" or "the bass is too muddy" and react accordingly. From a musical standpoint, it's nice when this person has a viable creative side and taste, but, generally speaking, I do not rely on his/her programming skills, since I program myself. Some of the guys I work with have learned my taste and approach to certain situations, and also learned my arsenal of loops, so they can suggest some good combinations,

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World Radio History

which I am always happy to check out.

Can you describe your typical process of producing a song?

After deciding on the tempo, I'll normally start by tossing a bunch of rhythm loops together. I have a hard drive loaded with thousands of loops and drum tracks, and in most cases I'll need the operator to change the tempo of the loops to fit the new tempo. This allows me to quickly come up with a convincing rhythm skeleton, while keeping the cost down. When this is done, I'll play bass, guitars, and basic keyboard parts, and in a very short time I can tell if the vibe is there. If it feels right, I'll often end up replacing my bass and keyboard parts with other musicians, as well as overdubbing a real drummer. Vocals recording come last, so the singer can sing to a pretty much complete track.

Audio versus MIDI?

I have noticed how many producers who come from a guitar background prefer to use audio tracks, while those who come from a keyboard background will use more MIDI. For me, a DAW is a glorified tape machine, and I treat it as such.

I'll use MIDI occasionally for beat programming, but, for the most part, it's all about audio tracks.

Audio quantization?

Since I incorporate loops in many of my productions, I tend to ask my operator to quantize live drumming tracks. It simply sounds better when things are not flammings, and it allows the mixer to feature both live and programmed rhythm parts equally without the need to hide either one.

Vocal tuning?

Certainly, but in a selective way. I never let my guys run the tuning program in an automatic mode, but rather ask them to follow the performance and manually correct dodgy spots. I don't see the need to torture the singer with endless takes that lose the freshness, but rather capture fewer, less thought-out takes, comp them to a master track, and then fix the bad pitch spots after the fact. It's also important to pay attention to breaths and duck them so when the track is compressed and brought up they don't sound like a wind tunnel.

Analog tape?

Sometimes for tracking. I love the sound, but cannot ignore the convenience of tracking directly into a DAW, as well as the increase in recording costs involved with using analog tape. If budget is not a concern and the style of music calls for it, I'll use it.

44.1/48 kHz versus 88.2/96 kHz and above?

I haven't yet tried high sampling frequency on any of my productions. I have been hearing people I respect say that the bottom end is tighter and that the top end is smoother than at a lower sampling frequency, but, honestly, for me, after investing a lot of money in my current setup, getting it to work solid as a rock, and liking the way my productions sound on CDs and on the radio, I think I'm just going to wait. After all, higher sampling will not help me make better music, and, at the end of the day, it's all about the song. I am aware it may make it sound better in the audiophile aspect, but since I'm mostly dealing with pop and rock music, there is something to be said for the relative lo-fi characteristics of

► continued on page 117

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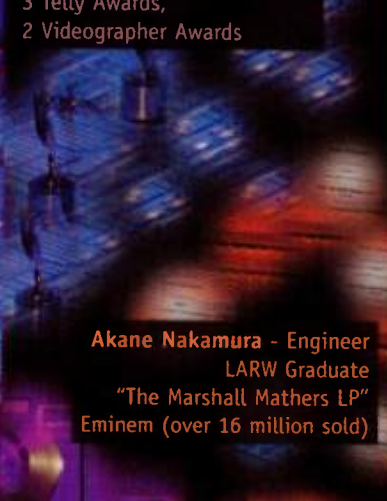
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Michael Bishop puts digital mics to work for vocal recording

SomethingCool

By Steve La Cerra

Something Cool marks the third Telarc International release in as many years for vocalist Tierney Sutton. Along with her band — Christian Jacob (piano), Trey Henry (bass), and Ray Brinker (drums) —

"It's essentially a simple recording," begins Bishop, "but Tierney is a demanding vocalist — both sonically and in performance. There are almost no vocal overdubs. The trio played live in the room [Studio B at O'Henry Studios, Burbank, CA] with Tierney in an iso booth. Miking of the ensemble was a combination of fairly modern close-miking technique with a foot in the traditional. We used a pair of Sennheiser MKH20 omni's for the piano. On the kit was a pair of DPA 4006's for the primary pick-

where Bishop strayed from the norm. "In the past we have always gone through a quite a selection of vocal mics due to her demanding dynamic range," says Michael. "Tierney uses everything from full-diaphragm support to top-of-the-head voice, and everything in between. With this in mind, we decided to try the Neumann Solution D. Initially I thought 'Okay, I'll give it a listen,' but I knew that it's a PCM output microphone. We were mixing in analog to DSD (Direct Stream Digital) two-channel and six-channel surround — so I wasn't sure

how this was going to work out. I needed to go through the most direct mix path possible, and the Millennia Media Mix Suite is the absolute best means of doing that. It's a line mixer using all Class-A circuitry so it allows the audio path to be very wide open.

"At first I put up the Solution D as a room mic for ambient pickup in the surround mix. When we listened to it there was something special about how

immediate it was making the room sound. It was extremely clear and detailed even though the mic was at some distance from what it was picking up (mostly drums and a little bit of piano). Tierney was in the only iso room, off to the side of the control room.

"In the past I've used mics custom-modified by David Smith of Sony Music Studios for Tierney's vocal,

up, with additional close mics: Sennheiser MKH50 supercardioids for snare and kick, and MKH80's for toms and hat. On the bass we used another Sennheiser MKH50 as well as a DI system. The bass signal was mostly DI due to the very soft nature of Trey's touch."

While the setup appears fairly standard, it was with Sutton's vocals



After searching for the right mic to record Tierney Sutton's vocals, Telarc's Michael Bishop decided on the Neumann Solution D, which he used in an XY position, set to subcardioid.

Sutton has turned in a recording that prompted music critics to compare her to jazz legends such as Ella Fitzgerald and Sarah Vaughan. Anticipating release in DSD two-channel as well as six-channel SACD formats, engineer Michael Bishop recorded *Something Cool* using a mixture of cutting-edge and traditional technology.

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vacuum tube mics based upon (AKG) C12VR's, but all that exists of the original mics are the cases and capsules — David custom-builds everything else. There are six of these mics, and David owns all of them, so they get shuttled from one session to another. These mics have been perfect for her, but I couldn't get them this time. We went through a lot of other mics and 'settled' for a really pristine [AKG] C24.

"I like to mic Tierney in stereo so I

always use a stereo pair on her — which is a little unusual on a vocalist. That technique will not work on many vocalists because most of them are not very well behaved. If they move around, you get all sorts of image shifting. On Tierney I can record in stereo and it works great. I use an XY pair, usually with a subcardioid pattern (halfway between omni and cardioid). This was working well with the C24, but still something was not quite right.

"After hearing the Neumann D in

the room I thought I should try the pair on Tierney. I put up the two Solution D's in XY configuration, head-to-head and set to subcardioid. They were placed very close, maybe about a foot or two away from her. When we listened to them for the initial sound-check, everyone fell in love with the mic. Tierney heard immediately in the cans that this was *the* mic.

"The Solution D was set to 96 kHz for maximum resolution, and the AES digital output of the mic went directly to an Apogee PSX100-SE running at 96 kHz for D/A conversion. There was no mic preamp because the Solution D capsule goes directly to the A/D converter in the mic. From the control room, I had full control over the mics by way of laptop computer interface that sends a control signal back through the AES line via AES 42 interface. [Ed. Note: the Solution D uses the AES 42-2001 standard, which calls for a single three-conductor cable to connect the digital mic to the interface. Power, data transfer, and control over mic functions all travel on this single cable.] I was able to adjust sensitivity, pattern, and HF compression. All these parameters can be stored as templates, so I could use different templates for different songs as the demand changed.

"If I wanted to get a little less proximity and change to more of an omni pattern at certain points in a tune, I could adjust the pattern during the recording in-between lines and match it perfectly to what Tierney was doing. The combination of the dynamic control and pattern control made the mic extremely versatile, but the main thing is that the detail was perfect for what we were doing. The Solution D was able to capture Tierney's range from a soft whisper to full-out singing without exaggerating anything (a "hype-y" mic is not appropriate for Tierney). The line-level D/A was followed by a GML 8900 dynamic controller (my favorite analog compressor/limiter of all time) for a touch of compression, and then the vocal went to mix."

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Tony Widoff, Programmer: David Bowie *Heathen* Tour

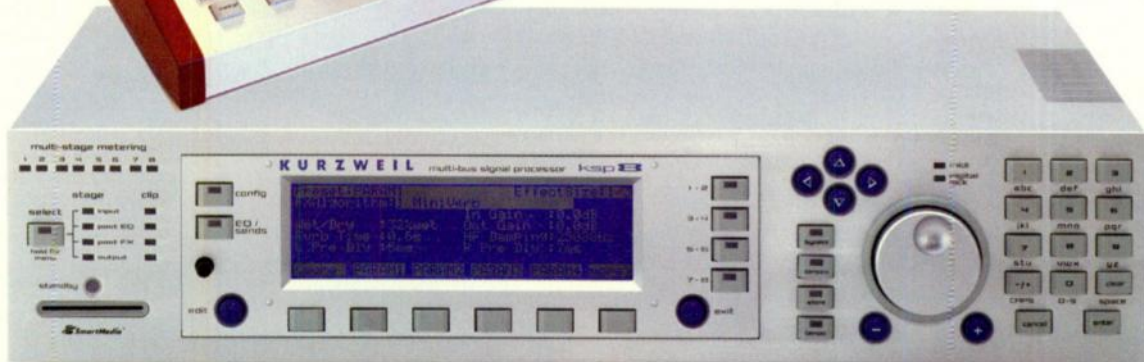
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FALL AES 2002

Anyone who said "there wasn't anything new" wasn't looking hard enough at this year's **AES convention** in Los Angeles. For example....

HARDWARE AND HARDWARE UPDATES

A Designs Audio. The MP-1 (\$1,099) mic preamp is a tube-in, tube-out mono version of the MP-2 stereo mic pre with Jensen input transformer and custom wound output transformer.
www.adesignsaudio.com

Aphex. The Model 212 A/D-D/A Converter (\$995) offers multiple stereo outputs (AES, S/PDIF, and optical) and two separate mono AES outputs...The

Model 2020 MkIII is a dynamics processor with split-band optical pre-emphasis limiter and new processing algorithms for increased loudness and clarity. www.aphex.com

ART. The Digital MPA is a two-channel, tube-based mic preamp with digital outs (AES/EBU, S/PDIF, TOSLINK, and ADAT) and features variable input impedance for mic optimization... The Model 311 stereo two-way crossover network includes a

subwoofer out for low-frequency reinforcement.

www.artproaudio.com

Crane Song. Ibis (\$4,500) is a four-band stereo equalizer offering switch-selectable frequencies centered on musical notes (i.e., "C" at 32 Hz). Bandwidth is adjustable from 0.1 octave to four octaves per band, and there is a boost/cut range



of 12 dB. A low-cut filter, discrete Class A circuitry, and a unique "color" function that can be applied to the entire signal or any frequency band are also included. A fully stepped mastering version is available. www.cranesong.com

Dangerous Music. The **Dangerous 2-Bus** (\$2,999), a 16x2 analog summing mixer, accepts individual outs from a DAW and mixes them, in analog, to a stereo out to bypass the summing bus within the DAW program...The **Dangerous 2-Bus LT** (\$1,499) is similar, but uses d-sub connectors for inputs instead of XLR balanced ins...The **Dangerous Monitor** (\$4,999) provides analog switching (three pairs of analog ins), digital input switching (four digital inputs, with active thru outs), and onboard D-to-A conversion. www.dangerousmusic.com

Denon. The 2U **DN-C615** CD player (\$350) plays back standard CDs, CD-R/RW, and MP3 encoded discs;

playback speed is adjustable $\pm 12\%$...The **DN-T625** CD/Cassette combination deck (\$649) offers Dolby B/C, RS-232C control, coaxial SPDIF digital output, CD-R/RW playback, and $\pm 12\%$ pitch change...The **DN-T645** CD/Cassette combination deck (\$750) provides CD/CD-RW/MP3 playback, Dolby B/C noise reduction and Dolby HX-Pro, serial d-sub 9 (RS-232C/422A) control functionality, and up to $\pm 12\%$ pitch change. www.usa.denon.com/pro

Disc Makers. The **Elite1** duplication/printing system (CD, \$3,990; DVD-R, \$4,790) features 125 disc input and an onboard 1,200 dpi color inkjet printer...The **Elite Pro1** (CD, \$4,790; DVD-R, \$5,790) adds a built-in Intel-based PC for turnkey duplication. Both can be upgraded to include a second drive. www.discmakers.com

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www.dolby.com

Drawmer. The **Tube Station 2** is modeled after Drawmer's 1960 and 1969 tube compressors. The new unit includes analog tube compression. The DC1 24-bit/96 kHz compatible digital output is available as an option, or pre-installed in the compressor.

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FALL AES 2002

and solid-state direct box offers selectable input impedances of 0.5, 2, and 20 megohms using tube or FET DI input stages. Other features include a Reamp guitar pickup simulation output and guitar amp "speaker soak" input.

www.millenniamedia.com

mSoft. MC Lite is a mid-tiered version of its MusicCue on-line music library server system. Its database accommodates 1,000 hours of music and a maximum of five users.

www.msoftinc.com

Otari. An IEEE-1394 ("FireWire") I/O Card for the FS-96 96 kHz Digital Format and Sample-Rate Converter allows sending/receiving multi-channel digital audio signals over an IEEE-1394 S400 network at up to 400 Mbps/second. The card supports Yamaha's mLAN protocol and can handle up to 24 channels of 96 kHz digital audio signals. www.otari.com

Phoenix Audio International. The 1U DRS-2 Mic Pre/DI uses Class A discrete balanced circuitry (for both output and transformerless input) and features a high impedance DI input.

www.transaudiogroup.com

Princeton Digital.

The Reverb 2016 (\$1,999) recreates the reverb algorithms of Eventide's SP2016. The hardware itself has been updated with 24-bit DSP, 24-bit analog I/O, digital I/O, and MIDI interface. www.princetondigital.com

Radial Engineering. The JDV Mk3 direct injection box (\$400) provides dual inputs, multiple outs, Class A circuitry, high-cut filter, and a "drag" control to simulate an amp's effect on guitar signals. www.radialeng.com

Roland. The 1U DM-1000 10-channel Digital Line Mixer mixes up to four stereo S/PDIF signals—plus two analog inputs—with automatic sample rate conversion up to 96 kHz. The DM-1000 can even mix audio from a PC via its USB port, while word clock I/O simplifies integration with other



digital gear...The MC-909 Sampling Groovebox combines an expandable synthesizer, sampler, sequencer and velocity-sensitive pads; a USB port makes it possible to exchange samples and Standard MIDI Files with a PC. Once inside, waveforms can be edited and processed via Chop, Timestretch and other functions, resampled, and even used as synth waveforms. Effects include reverb,

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compressor, two multi-effects processors, and mastering processor with three-band compression...The **DS-30A** 24-bit/96 kHz-capable, 30w biamped reference monitor features a S/PDIF digital input (optical or coaxial). A balanced XLR/TRS jack is provided for conventional analog monitoring...**Edirol** audio products will now be sold in the U.S. market through Roland's MI Division. www.roland-us.com

Sonifex. The 1U **RB-DAC1** D/A converter produces a stereo balanced XLR, or unbalanced phono, output from an incoming AES/EBU or S/PDIF digital input signal...The 1U **RB-DHD6** digital headphone amp has both AES/EBU and S/PDIF ins and produces six separately buffered headphone outs with individual volume controls...The **RB-DMA2** consists of two independent low-noise mic preamps for converting mic level

signals to AES/EBU or S/PDIF digital outs...The **RB-HD1** is a stereo headphone amp for driving up to two pairs of stereo headphones from a single stereo or mono input, and is VCA remotely controllable...A USB version is available of the Courier portable flash-card recorder, which allows downloads to the PC of up to 40 times real-time speed. www.sonifex.co.uk

JLCOOPER CS-32 MINIDESK

By Craig Anderton

WHAT IS IT? A 32-channel, miniature fader box/controller for DAWs and soft synths — it looks like the star of the movie "Honey, I Shrunk the Controller."

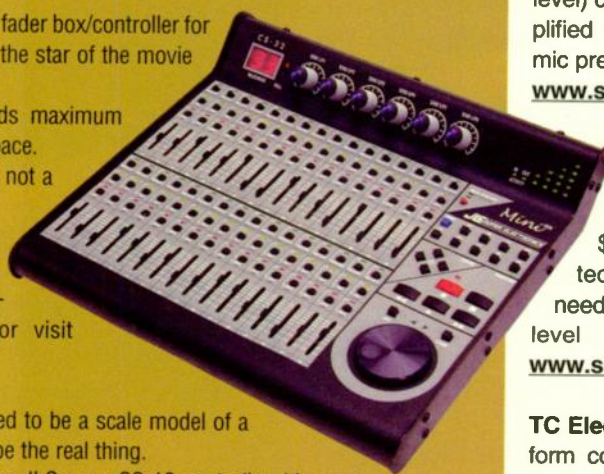
WHO NEEDS IT? Anyone who needs maximum control in the minimum amount of space.

WHY IS IT A BIG DEAL? Actually it's not a big deal at all, but a very little deal.

SHIPPING: Q1, 2003

PRICE: \$495

CONTACT: For more information, contact JLC Cooper at 310-322-9990 or visit www.jlcooper.com.



At AES, heads turned at what appeared to be a scale model of a control console — but turned out to be the real thing.

Because the CS-32 can emulate the JLC Cooper CS-10 controller, it's compatible with a huge amount of software (Pro Tools, Nuendo, Cubase SX, Digital Performer, Ableton Live, Pyramix, Sonar, Logic Audio, etc.) — the CS-10 was one of the first controllers, and became more or less an industry standard. However, the CS-32 can also send general controllers, which is useful when using it with effects boxes, synthesizers, and other gear. Depending on the model, the CS-32 connects up via USB, MIDI, or RS-232. (Note that the MIDI version has MMC functionality for plug-and-play hard disk recording control, including transport, track arming, locates, etc.)

The control complement is comprehensive: 32 channels with dedicated 20-mm faders, six physical rotary encoders, optically encoded (and weighted!) jog/scrub wheel, cursor keys, and buttons for mute, solo, track arming, etc. A two-digit LED display gives visual feedback on the various settings.

Although it looks like a joke, this is a serious piece of gear. Surprisingly, the faders and buttons are easier to move precisely than you'd think, and actually have a decent feel. The construction seems pretty solid, so it's not going to go skidding around your desk-top too much. Nor is it confusing to use, despite its size.

This is a super little box for those who use computer-based, desktop systems. Often the engineer is a single operator, so it's helpful if all control elements can be within arm's reach. The CS-32 is about the size of a mouse pad, and can fit into almost any working environment; it joins a growing family of products created with the desktop studio in mind. Of course, it's also at home with portable recording setups based on laptops.

Bottom line: sometimes size does matter, and if you're looking for decent control options, it doesn't get much smaller than this.

SPL. The **Router** routes up to eight stereo or mono processors, and includes a Class A headphone amp. Two sources (XLR mic and stereo line level) can connect to the router for simplified comparisons of channel strips, mic preamps, etc.

www.soundperformancelab.com

Summit Audio. The **EQF-100** full-range passive parametric equalizer has been reduced to \$3,450. It employs vacuum tube technology to supply the gain needed to make up for the inherent level loss of passive circuitry. www.summitaudio.com

TC Electronic. The **Reverb 6000** platform covers reverb from 16 mono to dual 6.1. New multi-format delay and boundary effects are also featured, along with "Halls of Fame" presets created by film and music pros. All registered System 6000 users can get version 3.0 upgrades (including de-esser and intersample peak limiter), adding all Reverb 6000 capabilities, free of charge...The **M300 Dual Engine Processor** combines a dedicated stereo reverb with 15 stereo reverbs and multi-effects with 15 effects. www.tcelectronic.com

Telex. The **PrintWise** line of CD/DVD printers entails both ink jet and thermal printable and automated systems ...RAID storage solutions, all based on Seagate IDE drives, include the **RAID 4-240** (four-drive, 240 GB), **RAID 6-400** (six-drive, 400 GB), and **RAID 8-560** (eight-drive, 560 GB). All have front-end loadable, hot-swappable drives. www.telex.com

Trident. The 8U **S100 Eight Channel Mixer** (\$4,995) features eight mic pres, an EQ like the Series 80, five aux sends, and three stereo output buses (configurable as six mono buses)... The **S80 Producer Box** (\$3,499) offers two channels of the Series 80 console's transformer-coupled mic pre and EQ along with balanced inserts for the mic pre...The **S40** (\$2,995) is a single-channel version of the S80...The **S20 Dual Mic Pre** (\$1,299) switches between mic and line or two mics; the pre is followed by variable-sweep low-cut controls...**Series 80 5.1 Console** augments the original Series 80 console with more aux sends and stereo returns with routing and EQ, and the ability to combine 24 Century modules from the Oram BEQ PRO-24 Series consoles into the same frame. A moving fader/mute automation system is optional.
www.oram.co.uk

Universal Audio. The 1U **6176** (\$2,496) combines UA's 2-610 mic pre and 1176LN compressor into a single channel strip and includes extra features not found in the individual components. www.uaudio.com

Weiss Engineering. The **EQ1-DYN Dynamic Digital Parametric EQ** sports a total of seven parametric bands, four of which can be used in dynamic mode, with program dependent boost or cut...The **DAC1-MK2 D/A** converter can work up to 192 kHz; it features extensive jitter reduction and Class A output stages. www.weiss.ch

Z-sys. OptiPatch (\$999) is an automated patch bay, router, and distribution amplifier for ADAT and S/PDIF optical



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Aardvark. Mac OS9 drivers for the Aardvark series of audio interfaces will be followed by OS X-compatible drivers in early 2003. www.aardvark-pro.com

BIAS. Designed equally for standard audio applications as well as removing noise from DV and miniDV camcorders, **Sound Soap** is an easy-to-use noise reduction plug-in for Mac and Windows that reduces hiss, room noise rumble, and electrical hum. www.bias-inc.com

Cakewalk. Sonar 2.1 is a free downloadable update for all registered owners of the program. The new version features OMFi and Broadcast WAV support, Windows Media 9 export, and

Mackie hardware control surface support. www.cakewalk.com

Carillon. The **AC-1X** (prices start at \$2,500) is a Xeon-based Windows machine designed specifically for running digital audio programs. Features include a Matrox G200 quad head graphics card, dual 2.8-GHz Xeon processors, CD/DVD writing, and remote support.

www.carillonusa.com

Crane Song. **Phoenix** is a Pro Tools TDM plug-in designed to add analog "color" into the digital domain by modeling analog tape compression.

www.cranesong.com

Cycling 74. The graphical media development products **MAX/MSP** and **Jitter** will be available for Mac OS X (free updates to existing users of MAX/MSP 4.0 and Jitter 1.0 and higher). MAX/MSP takes advantage of OS X's

CoreAudio and CoreMIDI.
www.cycling74.com

Digidesign. **Pro Tools 6.0** for Mac OS X features a streamlined interface, the DigiBase file management utility, dual processor support, enhanced MIDI functionality (including Core MIDI support, MIDI Time Stamping, and hi-res groove templates), Beat Detective 2.0, new import session options, plug-in functionality enhancements, Machine Control additions, and more...**Pro Tools LE 5.3.3** (\$495) add Windows XP support for Mbox, a two-channel USB audio peripheral that integrates audio and MIDI recording.
www.digidesign.com

Digram. Mac OS X v10.1 and v10.2 drivers are available for the **VXpocket v2**, **VXpocket 440**, and **VX222** sound cards...The **VX442** multichannel sound card features four/four balanced line inputs/outputs, additional stereo

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AES/EBU input/output, 96 kHz 24-bit converters, and supports Windows 98, ME, 2000, XP, and Mac OS 9 and X. Drivers include Direct Sound, WAVE, ASIO2, GSIF, EASI, Sound Manager, and Core Audio. All I/O can be used simultaneously and independently. www.digigram.com

four-in/eight-out breakout box that connects to a half-length PCI card and supports multiple sample rates up to 192 kHz as well as Windows XP/2000/ME/98SE and Mac OS X operating systems...The 2U, **M-fire MF9600** (\$1,999) is a stand-alone 24-bit/96 kHz DVD recorder-based stereo mastering

I/O uses 24-bit/96 kHz converters; digital I/O is S/PDIF coaxial and AES/EBU... Mac OS X drivers for its entire 192 Series of PCI audio peripherals are now available.

www.esi-pro.com

Ilio. The Vienna Symphonic Library,

ESI. DirectWire, a new feature in ESI's latest drivers, allows internal patching between any audio software programs that use MME, Multi-MME, ASIO, and GSIF. It appears on-screen as a standard patchbay, and supports data transfer for audio up to 24-bit/192 kHz. The basic **MAXIO XD** 24-bit/192 kHz interface system (for Windows XP or Mac OS X) consists of the 2U **EX-8000** (with eight-in/eight-out balanced XLR/TRS connectors and AES/EBU and S/PDIF digital I/O) and a choice of a PCI interface for desktop systems or a cardbus interface for laptop recording (EX-8000 + card, \$1,699). Each interface includes four Firewire-like EDI connections for supporting multiple EX-8000s, giving the system 32-channel capability on one card (EX-8000 expansion units, \$1,199). The PCI version supports up to four cards on the same computer for 128 total channels of recording. Software for the card includes a 64-channel virtual mixer...**Romio** (\$49.99) is a Mac/PC USB to MIDI interface...The **M4U** (\$149.99) is a four-in/four-out USB to MIDI interface housed in a half-rack sized box; the **M8U** (\$349.99) is a 1U, eight-in/eight-out USB to MIDI interface that can serve

as a stand-alone MIDI patchbay when not connected to a computer. Both are Mac OS X- and Windows XP-compatible...**Waveterminal 192M** features a

deck. Finished discs can play back on standard DVD players. The M-fire utilizes DVD-RW media as well as DVD-Rs, CD-Rs and CD-RWs. Stereo analog

recorded in 96 kHz/24-bit, will be released initially for Emagic's EXS24 and TASCAM's GigaStudio platforms. The first release on DVD-

STEINBERG NUENDO 2.0

By Mitch Gallagher

WHAT IS IT? A major update of Steinberg's professional DAW software platform.

WHO NEEDS IT? Anyone who uses Nuendo, as well as those looking for a native DAW platform for audio/MIDI production work.

WHY IS IT A BIG DEAL? Nuendo 2.0 offers a host of new features and capabilities designed to offer improved production power and enhanced productivity and versatility.

SHIPPING: Q4, 2002.

PRICE: \$1,499, updates for existing Nuendo owners are \$299, free for those who purchased Nuendo after October 1, 2002.

CONTACT: For more information, contact Steinberg at 818-678-5100 or visit www.steinberg.net.

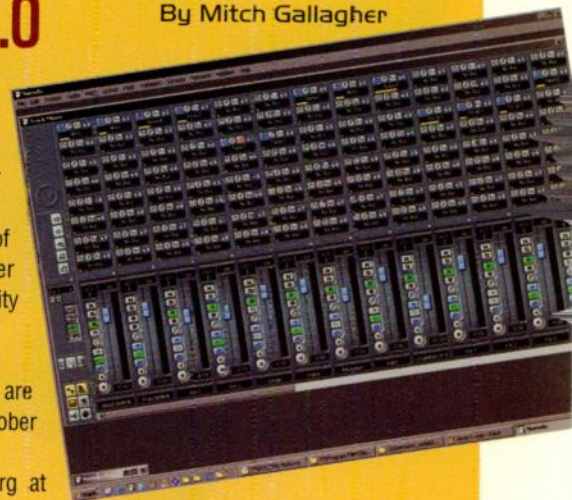
At the fall AES show, Steinberg announced the latest version of their flagship DAW platform, Nuendo. The new version includes a host of new features, as well as enhancements designed to improve efficiency, productivity, and versatility. For example, you're given the ability to configure Nuendo's menus to match the way you work. You can hide menu selections you never use or that you won't need for your current project. You can also configure each track so that it shows only the controls you need.

In addition to VST System Link (introduced in v1.6), Nuendo now has powerful features that allow multiple workstations to edit projects, and audio, MIDI and even video tracks over a network — an entire project or selected tracks can be accessed on multiple computers by various team members. Nuendo 2.0 also allows for central data management on a server.

Nuendo's surround mixing support has been extended to 10.2 format; users can customize multi-channel I/O configurations and switch between them. Audio can be recorded in split or interleaved surround file formats, making file management easier. New multi-channel busses make mixer routing more versatile and powerful.

Beyond the world of audio, Nuendo's MIDI support has been greatly enhanced, with Drum, Logical, SysEx, List and Score editors, and 14 MIDI plug-ins providing extensive MIDI processing capabilities. The integrated Score editor lets you view, edit, and lay out the MIDI data as standard music notation.

Nuendo 2.0 now offers full scrubbing of audio and of the video track. Various speeds are supported, and scrubbing can be controlled from the screen or from a compatible controller such as Yamaha's DM2000 and O2R96 mixers. Other new editing features include drag-and-drop replacing an event's content, slipping the content, adjusting fades while scrubbing video, trimming event levels for multiple events, and fast bouncing of sections of a track.



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Studio Network Solutions. Two-gigabit versions of the **A/V SAN** and **A/V SAN PRO** storage systems double the throughput of their 1 gigabit predecessors from 200 MB/sec to 400 MB/sec, offering higher levels of storage/back-up capacity and redundancy...**Fibre-drive** provides 72 GB to 146 GB storage capacities in a single-drive fibre channel enclosure, and is compatible/upgradeable to A/V SAN and A/V SAN PRO.

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Syntrillium Software. Cool Edit Pro 2.0 will support the **Windows Media Audio 9** Professional codec...Syntrillium's **Loopology.com** site has added five sets of techno-oriented loops...Three double-CD releases of loops and samples include the company's core library of 2,000 mp3PRO-compressed loops, 32-bit WAV versions of core collection loops that match the set's genre, and additional 32-bit WAV versions of genre loops not available on Loopology.com.

www.syntrillium.com

TC Works. **Assimilator** (\$299) is a plug-in for PowerCore that can apply the EQ curve from one audio source to another using FFT technology. The software learns the reference curve as well as the target curve and can "morph" between them...**ClassicVerb** is an entirely

SOUNDELUX IFET7

By Mitch Gallagher

WHAT IS IT? A "dual-mode" vintage-sounding large-diaphragm microphone.

WHO NEEDS IT? Anyone looking for a versatile microphone with multiple sonic signatures. Anyone who wants to own the sound of two vintage mics while only paying for one microphone.

WHY IS IT A BIG DEAL? Combines two sets of completely different-sounding electronics to re-create the sonic characteristics of vintage 47fet and 87fet microphones.

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PRICE: \$2,100

CONTACT: For more information, contact Soundelux distributor TransAmerica Audio Group at 702-365-5155 or visit www.transaudiogroup.com.

Soundelux has become widely known and respected as a manufacturer of faithfully re-created vintage microphones. At the fall AES show, the company unveiled the first in its new Interpretive Series of mics, the ifet7. The new microphone combines a German-made capsule with two independent selectable electronic paths, one duplicating the sought-after vintage 47fet mic, and the other the 87fet mic. This allows the ifet7 to cover multiple applications; in fact the switch for selecting between the electronic paths is labeled "Vocal" (which provides the 87fet characteristics) and "Instrument" (re-creates the 47fet sound).

The ifet7 is transformer-coupled like many vintage mics, but it offers modern-day enhancements, including a large-core transformer that provides low-frequency headroom approaching that of the finest transformer-less designs.

While the two mic modes are designed to closely duplicate the sonic signatures of the original mics, the ifet7 improves on the originals with "clearer high end" and "unsurpassed low end," resulting in a mic that the manufacturer says has a sound that's "not at all boxy or band-limited."

Physically, the ifet7 resembles a short version of the Soundelux E47 microphone (reviewed in the November '02 issue of EQ). It comes with an arm for stand mounting, and a wooden storage box. An optional shock mount is available for when full isolation is required.

Purchasing vintage mics can be a challenge — you never know if you're going to get a "good" one, and if you do find one, prices have gone through the roof. With the ifet7, Soundelux has provided an extremely cost-effective solution: Buy one mic, and get the sound of two vintage transducers. Such a deal!



new reverb for the PowerCore platform. Modeled after a studio-standard hardware reverb unit, the new plug-in offers a sound unlike TC's **MegaReverb** plug-in...**MasterX3+5** for Pro ToolsIHD uses a mastering algorithm based on the TC Finalizer. TC MASTER X features integrated multiband expansion, compression and limiting, all optimized for mastering applications...**TC Tools 3.0** for Pro ToolsIHD includes the MegaReverb hi-end reverb plug-in (mix of TC M3000/M5000 algorithm), TC Chorus/Flanger/Slap Delay, and TC EQSat...**TC Works Surround Verb**

for Nuendo (\$699) features graphic displays visualizing the reverb components. www.tcworks.de

Terratec. The **USB Keyboard** (\$399) features 49 full-size touch-sensitive keys, PC/Mac USB interface, and 10 non-volatile memories...All 4G Sound cards now incorporate drivers for **Mac OS 9** and **OS X** operating systems. www.terratec.com

Trillium Lane Labs. The **TL Metro** plug-in for Pro Tools Mac (\$249) provides metronome/click track functions in tempos ranging from 50-250 BPM...**TL InTune** (\$249) is a plug-in

software tuner for Pro Tools Mac for a wide range of instruments and can also produce reference tones. TL InTune ships with presets covering over 20 different guitar tunings. Both are also bundled for \$399. www.tllabs.com

Universal Audio. TDM versions of the UA powered plug-ins support Pro ToolsIHD and will also support Mac OS X next year. The first TDM plug-ins will be the 1176LN and LA-2A, followed by the Pultec EQ. Existing Kind of Loud TDM plug-ins (Smart Code Pro sur-

round encoders and RealVerb 5.1) will be upgraded to support HD as will two new plug-ins, the DreamVerb and Cambridge EQ...The 1U 2192 Dual D/A and A/D converter provides sample rates up to 192 kHz, and transcodes among AES/EBU, S/PDIF, and ADAT in real time, with single and dual wire AES modes. www.uaudio.com

DIGIDESIGN PRO TOOLS 6.0

By Mitch Gallagher

WHAT IS IT? The latest version of Digidesign's industry-leading DAW software.

WHO NEEDS IT? Anyone who uses Pro Tools.

WHY IS IT A BIG DEAL? Version 6.0 includes Mac OS X support, along with a new user interface and enhanced databasing, mixing, and MIDI features.

SHIPPING: Q1, 2003. Windows XP and cross-platform support for AOptionXL, Unity, and MediaManager; Q2, 2003.

PRICE: TBA

CONTACT: For more information, contact Digidesign at 650-731-6300 or visit www.digidesign.com.



A new version of Pro Tools is always a big deal, and the announcement of version 6.0 at the AES show was no exception.

The big news in Pro Tools 6.0 is Mac OS X support; the new version will sport a user interface that takes advantage of OS X's UNIX-based architecture for improved stability, a streamlined look, and increased performance with dual-G4 Macs.

Digidesign has improved Pro Tools' file and session management using "DigiBase" databasing technology. Users can view complete file information, including mini-waveform view, duration, timestamps and comments, and use that information to search for and audition files, which can then be imported. A DigiBase Pro option (for TDM systems, purchased separately) lets you create custom catalogs for files no matter where they're stored — even on offline media.

Pro Tools MIDI enhancements include support for OS X's Core MIDI Services, while MIDI Time Stamping (MTS) provides sample-accuracy for Pro Tools-compatible software synths/samplers, and sub-millisecond accuracy with Digidesign's MIDI I/O and other MTS-compatible interfaces. A new Groove Quantize feature and improved Beat Detective (TDM only) increase groove processing capabilities, while Restore Performance lets you get back your original MIDI data.

New mixing features include importing audio/MIDI playlists with mixer layouts, routing, and plug-in settings. Import Session Data allows importing of any combination of track data including audio and MIDI playlists, mixer and plug-in automation, routing assignments, and plug-in instances and their settings into another session.

MachineControl option (TDM only) improvements include a Machine Profile utility for use with Sony 9-pin decks, 9-pin deck emulation, timecode offsets, chasing timecode, MMC, and the ability to relatively reset the entire timeline.

Pro Tools 6.0 is compatible with Pro ToolsIHD, Pro ToolsI24 Mix, Pro ToolsI24, and LE (Digi 001 and ToolBox) systems under Mac OS X, with support for Mbox and Digi 002 coming soon. Support for Windows XP, and AOptionXL, Unity, and MediaManager support are expected in the second quarter of 2003.

Voyager Sound. Designed for Windows 98/NT/2000/XP, GraphiMix Pro is an icon-based mixing system where mixing is accomplished by moving the icons on-screen. Plug-ins are provided for several programs and digital mixers, but GraphiMix Pro can also be customized for other devices. www.voyagersound.com

Wave Mechanics. The Ultratools bundle (SoundBlender, Speed, PitchDoctor, and PurePitch) now supports 96 kHz sampling rates and Pro ToolsIHD.

www.wavemechanics.com

Waves. The 360° Surround Toolkit, for Digidesign Pro ToolsIHD and Mix systems for the Mac consists of seven surround tools: Surround Manager for system calibration, Surround Reverb (six channels of completely de-correlated reverb), Surround Imager (adds distance panning and generating early reflections), Surround Limiter (6-channel implementation of the L2), Surround Compressor (with flexible channel coupling and grouping), Surround Panner (provides rotation and width for any input), and Surround Mixdown (allows derivation of quad, LCR, stereo, and mono mixes directly from the surround mix)...The Restoration Bundle (X-Noise, X-Click, and X-Hum) is now available in a Pro Tools I HD compatible version for Mac and Windows XP...Version 3.6 plug-ins for TDM are now compatible with Pro ToolsIHD and Mix systems for Windows XP...The Maxxbass 101 and 102 bass enhancement hardware processors generate a specific set of harmonics in response to the presence

of bass signals to give the impression of a significant bass extension...The **Renaissance Collection** of plug-ins is being bundled with Digi 002 LE systems. www.waves.com

Xvision Audio. Venerable audio software packages **Samplitude** and **Sequoia** will now be distributed in the U.S. by Xvision.
www.xvisionaudio.com

MICROPHONES

AEA. The **R84 Large Ribbon Geometry Mic** (\$999) features an exceptionally large ribbon for improved headroom. It can handle 165 dB SPL and includes a shock mount, 6-foot mic cable, and carrying case.
www.transaudiogroup.com

AKG Acoustics. The **C 414B-ULS/SE Special Edition Stereo Set** (\$2,100) consists of two C 414B-ULS large-diaphragm, multi-pattern, stereo

condenser microphones that utilize a revamped version of the CK 12 capsule. The Stereo Set comes with two elastic spider suspensions, two wind-screens, hard shell carrying case, and a stereo bar that allows mounting both mics on one mic stand...The **Project Pack** (\$399) combines the C1000S condenser mic with a C3000B 1-inch diaphragm condenser mic, along with a carrying case, spider suspension, Tips & Tricks brochure, and stand adaptor...**Mic Check** is a mixed-media CD-ROM that simplifies comparing and contrasting AKG microphones with various features and prices.
www.akgusa.com

Audio-Technica. The **AT4033/CL** Cardioid Condenser Microphone features a vapor-deposited gold diaphragm, and symmetrical mic capsule housing assembly...The **5000** and **4000 Series** wireless systems offer true-diversity, frequency-agile operation. Both systems come in

multiple configurations, including handheld and UniPak transmitters. Multiple receivers of both series can be linked, and both systems feature IntelliScan frequency selection and dual compansion. In addition, the 5000 Series includes PC- and Mac-compatible control software...New **Artist Elite** mics include the **AE5100** (large-diaphragm end-fire cardioid condenser), **AE3000** (large-diaphragm side-address cardioid condenser), and the **AE2500** (combination condenser/ dynamic model for kick drums).
www.audio-technica.com

Dirk Brauner. The **Phantom** (\$1,380) is a pressure gradient transducer FET mic with cardioid pattern, maximum SPL of 142 dB, and requires 48V phantom power. Also includes shock mount, low capacitance cable, and carrying case.
www.dirk-brauner.com

M-Audio. The **Groove Tubes Model 1B** (\$699; with tube) and **1B FET**

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"Wannabe musician" store clerks.

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FALL AES 2002

(\$399) condenser mics use Class A circuitry. They are both single-pattern cardioid mics with hand-assembled, hand-tested 1.1-inch evaporated gold diaphragms with a thickness of 3 microns. www.m-audio.com

Microtech Gefell. The **M930 XY Stereo Pack** combines two compact stereo-matched large-diaphragm M930 microphones with an innovative X-Y stand adapter...Three new mics are aimed at test and measurement applications: **M294** and **M925** are cardioid pattern mics, while the **M296** is omnidirectional. www.microtechgefell.de

RØDE. The **NT-1A** (\$199) is an externally polarized, one-inch condenser mic with a cardioid response, 132 dB dynamic range, and self-noise of 5 dBA. It has a satin nickel-plated finish and comes complete with a dedicated shock mount and zip pouch. www.rodemic.com

Shure. The **SM86** (\$300) vocal condenser is the first addition to the SM series in over 10 years. It has a cardioid polar pattern and frequency response of 50 Hz to 18 kHz. It's equipped with an integral two-stage windscreen and pop filter, and has a built-in, three-point shock mount to minimize stand and handling noise.

www.shure.com

Soundelux. The **ifet7** (\$2,100), part of the new Interpretive Series of mics, features two independent sets of electronics, allowing the mic to accurately replicate the sound of vintage 47fet and 87fet microphones.

www.soundelux.com

SoundField. The **SPS422B** microphone retains all the features of the original SPS422 stereo, mono, M/S microphone while adding B Format



direct outs to enable expansion into 5.1 and future surround/multi-channel formats.

www.soundfieldusa.com

SPL. Built to SPL's specs by Audio-Technica, the **Nugget** (\$428) is based on the A-T 40 Series. It hous-

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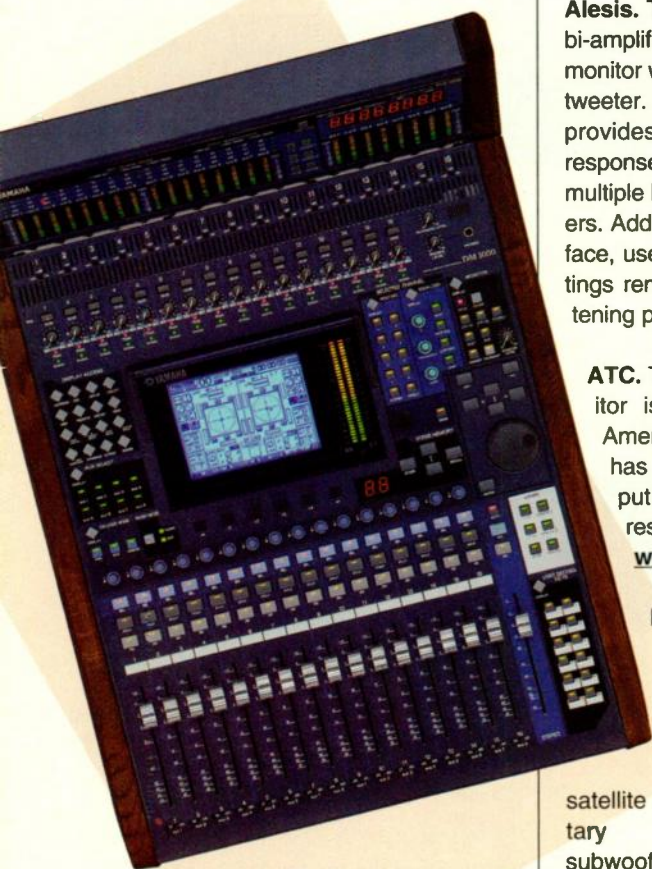
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es a one-inch diaphragm, transformerless circuitry, high SPL capacity, and a switchable 50-Hz high-pass filter and -10 dB pad. It has also been tuned specifically for SPL preamps. www.soundperformancelab.com

Telefunken. The **Ela-M 251** (\$10,125) is a reproduction of the original Telefunken 251. Where possible, origi-



nal suppliers were used for source components...The **Ela-M CM47** (\$3,975) "CineMike" features a European M7 capsule, NOS 6072 tube, and remote pattern switching at the power supply. www.telefunkenusa.com

SPEAKERS

ADAM Audio. The **MP-1 Mastering Piece** (\$20,000 pr.) is a powered monitor with a 12-inch Hexacone woofer powered by a 500w amp. A pair of ceramic cones provide low mids, where the ADAM Accelerated Ribbon Technology (A.R.T.) folded ribbon midrange and tweeters take over...Two

new additions to the S series line are the **S2.5A** (\$3,500 pr.), a two-way studio monitor with folded ribbon tweeter, 9-inch Hexacone woofer, and two 150w amplifiers...The **S4V** (\$6,800 pr.) is a three-way studio monitor with a vertical orientation. It consists of the A.R.T. tweeter, 11-inch woofer, and three 150w amplifiers. www.adam-audio.de

Alesis. The **ProLinear 720** (\$399) is a bi-amplified two-way studio reference monitor with a 7-inch woofer and 1-inch tweeter. A digitally controlled crossover provides a precisely controlled response, as well as the ability to store multiple EQ curves for individual speakers. Additionally, by using the PC interface, users can adjust and set EQ settings remotely from a "sweet spot" listening position. www.alesis.com

ATC. The **T16 Special Edition** monitor is voiced specifically for the American rock 'n' roll market, and has been designed for higher output levels and increased bass response.

www.atc.gb.net

Blue Sky International. The THX pm3-certified **Sky System One** is a 2.1 near-field powered monitoring system consisting of two Blue Sky **SAT 6.5** bi-amplified satellite speakers and a complementary powered **Sub 12** subwoofer...**ProDesk** is a 2.1 system specifically designed for desktop audio systems. It consists of two Blue Sky **SAT 5** bi-amplified Satellite speakers and a complementary powered **Sub 8** subwoofer. www.abluesky.com

Dynaudio Acoustics. A digital-in card capable of dealing with six digital inputs enables a 5.1 setup to be fed from a single AIR Master speaker. The new package also offers Bass Management on the digital inputs with selectable frequency crossover points for maximum control. AIR Series monitors are powered by two 200w PWM amplifiers.

www.dynaudioacoustics.dk

EMES. The **Mini Owl** speaker provides true, discrete stereo from a single enclosure using the patent-pending Embracing Sound Experience System. Driver components are matched to within ± 0.2 dB.

www.xvisionaudio.com

Genelec. The **7073A Active Subwoofer** (\$6,500), designed for large-scale installations in either stereo or surround, features four 12-inch drivers, low distortion amplifiers, 124 dB SPL capability down to 19 Hz, and a 6.1-capable bass management system. All electronics are integrated into the cabinet...The **1029.LSE PowerPak** system (\$3,999), designed for 5.1 surround monitoring in control rooms measuring less than 3000 cubic feet, consists of 5 Genelec 1029A 2-way, bi-amplified active monitors, one Genelec 7060A LSE Series Active Subwoofer, and a Genelec frequency/wavelength measuring tape. www.genelec.com

KRK. The **M2-18** dual 18-inch, active four-way speaker system is designed for in-wall installations. Drivers include a 1-inch carbon ring diaphragm tweeter, 1-inch carbon fiber compression horn for midrange, two 10-inch mid bass drivers, and two 18-inch high-power-handling woofers...Updated versions of KRK monitors include the **Exposé E8T**, **KRoK II**, and **RoKit II**. www.krksys.com

Mackie. The THX PM3 certified **HR626 Active Studio Monitor** (\$899) uses a 1-inch dome tweeter and dual 6.7-inch low frequency drivers that work in conjunction with Mackie's rear-firing passive transducer to provide bass extension to 40 Hz. The bi-amplified design includes dual FR Series amplifiers to provide 100w to the woofer and 40w to the tweeter...The 950w, 15-inch **HRS150** (\$2,499) subwoofer is THX PM3 certified and uses a 15-inch RCF Precision transducer accompanied by two side-firing 12-inch passive radiators; it provides output to 123 dB as low as 19 Hz.

► continued on page 118

Who Says Size Matters?

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Audio Technica's large-diaphragm condenser mics have proven to be very popular here at Sweetwater, and now the AT4040 adds its name to that illustrious line. An excellent mic for all kinds of studio applications, the low-priced AT4040 offers a hotter output and lower self-noise than similar mics in its class. You can record directly to your computer-based digital audio workstation via the FireStation's analog inputs without losing the AT4040's smooth, natural sonic characteristics.



Korg Triton Studio

Korg's flagship synthesizer is simply one of the most powerful instruments available. A comprehensive synthesizer workstation, the TRITON offers everything you need to create, mix, and master your music: powerful recording and editing, professional effects and fantastic sounds, mixing... it's all here. The TRITON's mLAN option means you can easily hook it up to your computer-based production studio for a whole new level of power!



KORG

PreSonus
Audio Electronics

Presonus FIREstation

Presonus' 8-channel FIREstation interface is designed to be the heart of your digital recording studio. Any mLAN compatible keyboard such as the Yamaha Motif or Korg Triton Studio can be seamlessly patched into the FireWire ports of the FIREstation to send audio and MIDI information to your computer. You can plug microphones, instruments and external preamps into the analog inputs while monitoring them in realtime without latency. Need more inputs? Just daisy-chain multiple FIREstations for up to 40 channels of I/O. There's even a built-in 1x1 MIDI port for interfacing with MIDI devices.



YAMAHA

Yamaha Motif

Yamaha's MOTIF master synthesizer sets a new standard for sonic performance and creative freedom. It offers a whopping 85MB of Yamaha's finest sounds and the revolutionary Integrated Sampling Sequencer, a 16-track sequencer that lets you easily add vocals, guitars and drum loops to MIDI sequences.

While these workstation powerhouses can stand alone as complete music production systems, imagine the creative potential when combined with other devices in an integrated intelligent FIREstation/mLAN studio.

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Presonus' FIREstation interface, with state-of-the-art mLAN technology, is destined to become the most essential piece of gear in your digital studio. Just as AES/EBU and MIDI have set the standard for the way music technology communicates, so mLAN or FireWire technology promises to bring that level of integration to the recording and audio set-ups of the future. But unlike USB, an mLAN FireWire solution uses separate data streams for different types of data in a single wire. There's no need for a card or large cable. Video and other FireWire devices can be run on the same FireWire cable without affecting the timing of the mLAN musical data. And because mLAN is non-proprietary, any mLAN-equipped product will work with any other mLAN-equipped product.

Yamaha 02R96



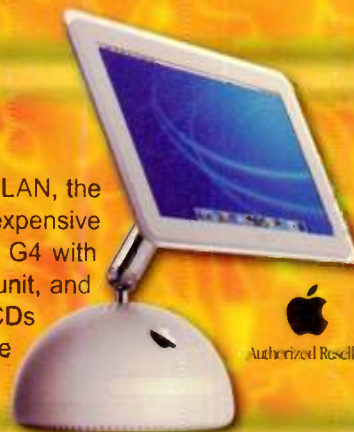
Along with a feature set more advanced than any other digital mixer in its class, the 02R96 offers multiple channels of pristine 24-bit, 96 kHz audio, surround sound capabilities, DAW compatibility, and much more! Connect your 02R96 via the FireStation to a standalone recorder or to a computer-based system like ProTools or Nuendo for powerful and flexible audio production.



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- 2 1/4" Instrument Preamps
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- Eight Channels of Analog I/O
- Eight Channels of ADAT I/O
- S/PDIF I/O
- External Recording Punch Input
- Word Clock Input/Output via BNC Connectors

Apple iMac

You can drive your whole mLAN system with a top-of-the-line iMac. Thanks to mLAN, the latest iMacs are as adept at providing pro-level audio/MIDI communication as the expensive PCI-based desktops of the past. The new iMacs feature an 800 Mhz PowerPC G4 with Velocity Engine, the ferociously fast NVIDIA GeForce4 MX graphics processing unit, and the Super Drive — a combination DVD-R/CD-RW — that lets you burn your own CDs and DVDs. The striking 17-inch flat panel widescreen LCD display gives you more space for viewing all your windows and toolbars.



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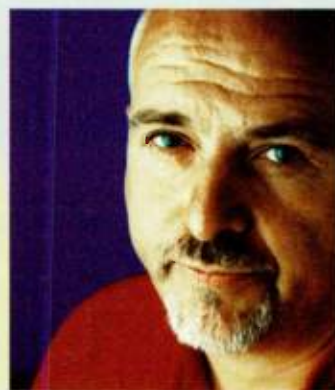
DIGITAL PLAYGROUND

PHOTO BY ARNOLD NEWMAN



The running joke in the recording industry is, "Peter Gabriel has a new record and it only took him ten years to make it." While myth may surround Gabriel's creative process, wrapped inside every tall-tale is a grain of truth. The fact is, Gabriel *does* take a long time to finish his solo records. It's been ten years since his last full-fledged solo outing (*Us*), and some say that is much too long for such a highly influential pop mastermind like Gabriel.

"The reason it has taken so long is that Peter's been working on so much material," claims Richard "Dickie" Chappell, chief recording and sound engineer for *Up*. "The work we've done has produced enough material for three records."



PHOTOS BY STEPHEN LOVELL DAVIS

Still, we're talking about a decade. Just what has Gabriel been doing all this time? A look at his in-the-meantime projects offers a clue: He's completed film soundtracks, done benefit concerts, and written music for the opening premiere of Britain's "Millennium Dome" (the largest dome in the world located at the Meridian Line).

"I enjoy the process of making music better than being a traveling salesman," Gabriel says of *Up*. "...I think in part I have been avoiding getting into it and then I get attracted to detours..."

Recording for *Up* was done in stints. Through years of amassing tracks, it's been estimated that Gabriel had over 70 completed musical ideas (that number had topped over 130 by some accounts in the Gabriel camp).

"Generally we'd find some cassette or DAT and listen to lots and lots of stuff and pick up an idea from that," says Chappell. "Peter doesn't like to erase anything, so we began making lists and labeling everything. We'd so many that Peter had to assign each musical idea a number. Even today we refer to these songs as numbers."

These tracks/concepts were the basis for Gabriel's painstakingly assembled, 10-track sonic masterpiece. The record is seamless, but one would be hard-pressed to find a finished track that was recorded from beginning to end. Multiple basses, overdubbed strings, brass sections, strings, programmed rhythms, and odd-sounding loops had been created and were at Chappell and Gabriel's disposal.

Stating that Gabriel doesn't work in a

straight line is an understatement. His sprawling approach is further complicated by new technology. In 1997, Real World Studios (Gabriel's state-of-the-art recording facility) installed a new Sony Oxford (OXF-R3) digital console.

"This desk has become a musical instrument in and of itself," explains Chappell. "It's surprisingly easy to use and allows Peter to instantly jump between parts of the project and different ideas. He can concentrate on the creative end rather than waiting for setups to be recalled."

THE GENESIS OF *UP*

Real World, in Box, England, blends with the rolling hills of the Wiltshire countryside. Much like a Frank Lloyd Wright-designed home, it seems to be an outgrowth of its natural surroundings. Inside, the stone and wood materials combine to provide great acoustics for each of the three main control/recording rooms. When work began in 1994 on *Up*, Gabriel and Chappell would report to this technological oasis by midday and work until the late evening.

While some initial ideas were laid down then, Gabriel felt restless and wanted a change of scenery. He and Chappell went to Meribel, France, where they rented a chalet in the Alps for the better part of two months to write and record. "We'd snowboard during the day and work at night-time," remembers Chappell.

By the fall, Gabriel and Chappell had ventured to Senegal, Africa, for a three-month stay in Dakar where they set up a studio in a house. In both France and



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Richard "Dickie" Chappell, chief recording and sound engineer for Peter Gabriel's *Up*.

guitarist David Rhodes, and Peter in Real World's "The Big Room."

"We arranged them to play live as a group. We'd do two or three takes — sometimes more," states Ben Findlay, who engineered those early sessions. "We had gone through an intense two-week recording stretch. We didn't move until Peter got what he felt he needed."

Findlay recorded the sessions on a Sony PCM-3348HR — a 24-bit, 48-track digital recorder. "We were recording simultaneously to analog, running [Quantegy] 456 at 15 ips, Dolby SR," says Findlay. "I believe it was +4/200. There's an old Neve board that Peter keeps around here that has a 33114 mic pre and EQ modules. I used those for the inputs for the key components of the bass and drums. For the bass, we miked two Trace Elliott amps — we used a Neumann U 87 on one and a [ElectroVoice] RE20 on the other. We also had a direct track. The DI would have gone down flat and we would have compressed the cab."

Tony Levin described his bass chain in more detail. "I was using my NS [Ned Steinberger] upright electric and my Music Man bass with a [Radial Engineering] JDI DI box for the tracks. I used a [Empirical Labs] Distressor for clean compression, a custom compressor for bass boosting, and a dbx for heavy compression."

Findlay and Gabriel used nearly all

of the studio's percussion stock. Three basic kits are heard on *Up*: a toy kit, an African-style acoustic setup, and an electronic kit for MIDI and sampling.

"We used [Sennheiser] 421's on the toms, [Shure SM]57's on top and bottom of the snare, a few [Neumann] U 47's around the kit, and a [AKG] D112 on the bass drum," says Findlay. "On the overhead we used a Schoeps MK21 — it has a separate capsule — and we used a Neumann KM 85i on the hi-hats. We also used [Neumann] U 87's and a pair of B&Ks in the ceiling as room/FX mics. We compressed the signal from the B&Ks with a SSL dynamics compressor on the channel and crushed it to death. [Laughs.] We wanted to get some distortion and those sucking sounds that the SSL is known for."

For some artists, recording the bed tracks would put them a big step closer to finishing the project. Not so with Gabriel, who saw those sessions as a resource to be used later.

"As I have learned, the most important thing with Peter is to just capture the emotion you need and then sort it out afterwards," says Chappell. "Peter doesn't like to erase anything. Some people might be appalled by that, but that is just the way he works: sifting through massive amounts of recordings to find what he likes."

In the summer of 1997, Real

World installed an OXF-R3 in the "Writing Room." The Oxford made the splitting, combining, and editing of musical ideas very easy. While some might argue that too many options contributed to why it took so long to put *Up* together, Chappell sees the Oxford as a must for the perfectionist in Gabriel.

"The Oxford allows Peter to jump between different parts of a project and ideas instantly," says Chappell. "It allows him to concentrate on the creative process rather than waiting around while the setups get recalled."

"We spent months researching different consoles for Real World and we just kept coming back to this one. We did various mixes through a lot of consoles and then we'd do A-Bs with what we had done, and the Oxford always sounded the best."

While Chappell was navigating the ins and outs of the studio and its new gear, Gabriel had another adventure in mind. He accepted an invite on to Paul Allen's yacht, The Medusa, to record as the ship sailed up the Amazon through Bolivia and Brazil. "The boat was very well equipped, but our basic recording setup was Digidesign's Pro Tools and Emagic Logic," remembers Chappell.

Work on *Up* appeared to be at a standstill for most of 1998 as Gabriel and Real World crew signed on for the Millennium Dome project. Gabriel agreed to create the music for the opening premiere of the Dome, which ate up much of his time.

OVO, the CD that features music from the Dome show, was released, but, curiously, Gabriel's voice is scarcely heard on it. Further prolonging the release of *Up*, Gabriel signed on to do another project: the soundtrack for the Australian film, *Rabbit-Proof Fence*. Once that score was complete, Gabriel retreated into the recording of *Up*. But full of new ideas, Gabriel rethought some of the songs. Some that he thought were completed received major overhauls.

"Signal To Noise" was finished back in 1996," says Chappell. "It was performed at the VH-1 Honors show in L.A. with Nusrat Fateh Ali Khan, who passed on in 1997. Even though we used his performance from that

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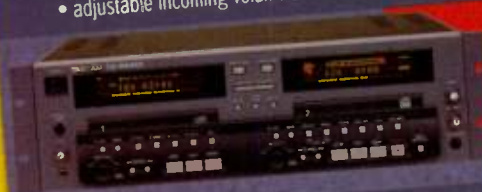
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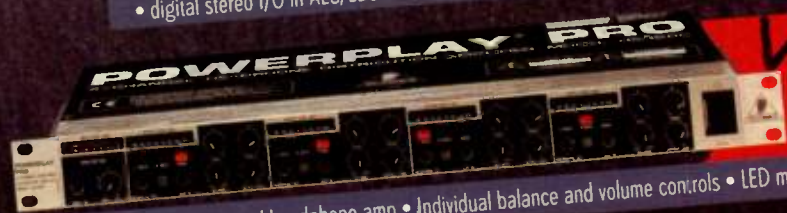
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By Mitch Gallagher

CASE STUDIO:

Acoustics, Part II



Our room
undergoes
its acoustic
makeover

Back in the September, 2002 issue of *EQ*, we began a project designed to take a spare room in a house, and turn it into a great-sounding studio space. To do this, we enlisted the aid of world-renowned studio designer John Storyk of the Walters-Storyk Design Group (www.wdsg.com), who provided us with a plan for acoustically treating the room in an economical way, and in a way that could easily be reversed if the owner sold the home or moved.

To recap, our room has a slightly unusual shape, with partially angled side walls where the roof of the house comes down (see photos). There's a large window on one end, and a small "alcove" at one side of the back of the room. The room is finished in sheetrock and plaster, with a hardwood floor. There's a large, fairly thick rug with a carpet pad that's positioned under the mix position. Empty, the room has a bright sound and

a four or five second reverb time.

Storyk's plan suggested placing four 2x2-foot bass traps on each side wall, with six 2x2-foot bass traps across the bottom of the room's front wall, which also features a custom-built shelving unit to conceal the traps. There are also eight 2x2-foot bass traps mounted to the ceiling. Absorption is provided by 4x6-foot acoustic panels on each side and angled side wall, as well as by an 8x10-foot acoustic "cloud"



This is how our room looked before we began installing acoustic materials. The walls and ceiling are all hard surfaces, the floor is hardwood. As you'd expect, the room was bright sounding and had a very long reverb time with prominent slap echoes.

panel suspended below the bass traps on the ceiling. Diffusion in the rear of the room is handled by four 6x2-foot diffusors mounted to the back wall. The total cost of installing Storyk's design came to approximately \$10,000, assuming the studio owner did most or all of the work himself.

NO BUDGET

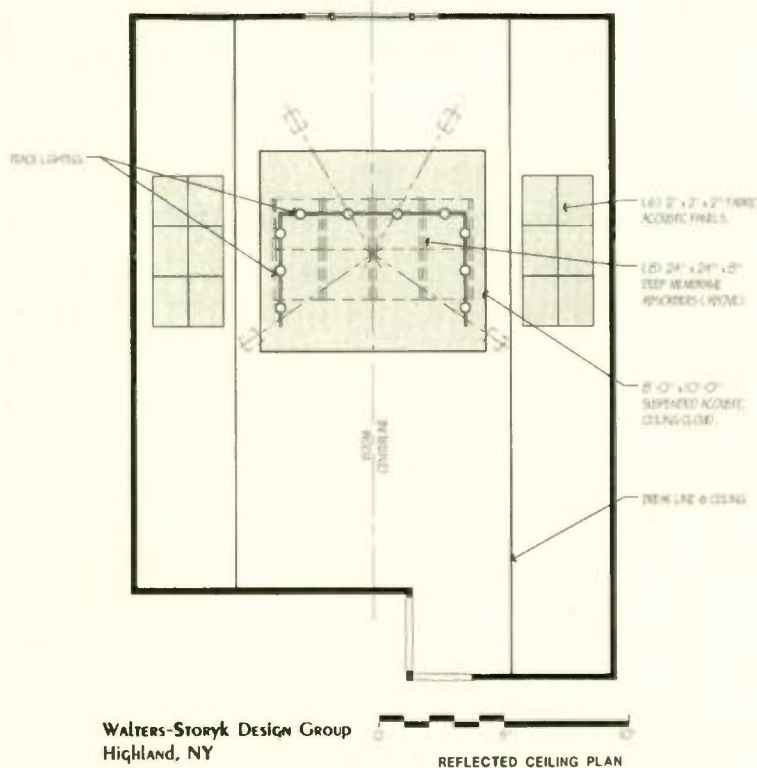
Unfortunately, \$10,000 was too rich for our blood, so we set about coming up with an alternative approach that utilized Storyk's design ideas, and that accomplished most of what he intended acoustically for the room. Our first step was to substitute large wooden bookcases across the back wall of the room for the diffusors recommended in the plan. While the performance of bookshelves loaded with various items in no way duplicates what you'd get with real diffusor panels, we were surprised at how much of a difference just positioning the shelves in the center of the back wall made to the sound of the room. Some of the most prominent slap echo was removed, and the room's reverb became smoother overall. Centering the shelves across the back of the room also made the room more symmetrical, which was easily audible from the mix position. Cost: \$300, not including books, gear, cables, and miscellaneous junk loaded onto the shelves to help disperse sound.

FALLING INTO A TRAP

Bass trapping is one of the acoustic techniques least utilized by studio owners — very few of us ever get around to installing bass traps. This is unfortunate, as proper trapping can make a tremendous improvement in the frequency response of the room and in the accuracy of the music that's recorded and mixed there.

A variety of companies manufacture bass traps, some of thick acoustic foam, others using various other materials. Since John Storyk's plan recommended using diaphragmatic bass traps, we searched for a lower cost substitute. As luck would have it, a new company,

RealTraps (www.realtraps.com) was just announcing its new line of diaphragmatic bass traps, which come in at economical prices. As a bonus, the RealTraps units feature angled fronts, which helps provide some diffusion of higher frequencies in the room. We ordered traps that covered approximately

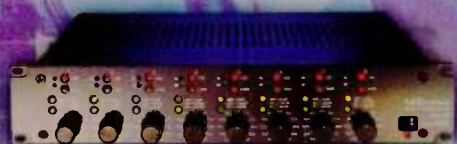


This diagram shows John Storyk's ceiling treatment design for the room. Bass traps are mounted to the ceiling, and hidden from view by a suspended 8x10-foot absorptive ceiling "cloud." The angled side/ceiling walls receive 4x6-foot absorptive acoustic panels.

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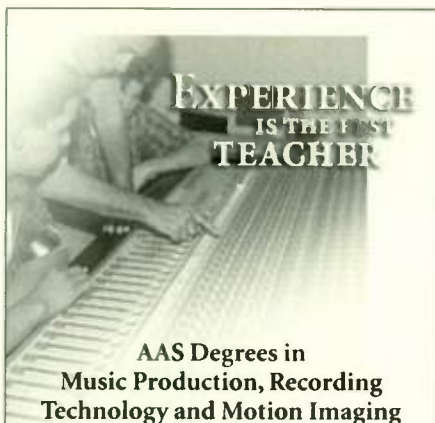
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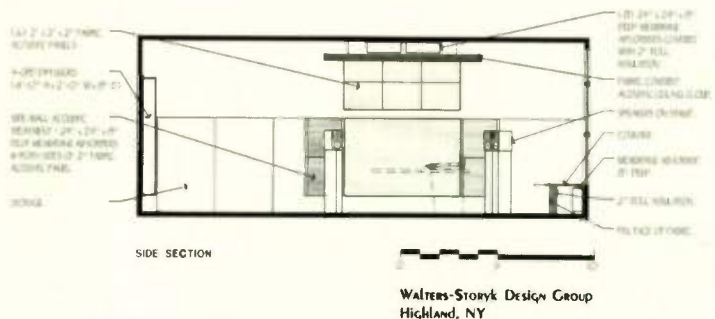
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A side view of John Storyk's design for the studio showing the bass traps/shelving unit along the bottom of the front wall, the sidewall bass traps and acoustic panel, diffusers on the back wall, and bass traps and cloud suspended from the ceiling.

as much area as Storyk suggested: four 4x2-foot traps for the walls, two 6x2 traps for the front wall, and two 6x2 traps for the ceiling.

The RealTraps units install easily, requiring just two screws into the studs of the wall to hold a wooden hanger. However, installing the two traps on the ceiling proved to be more of a challenge. We thought about various methods of hanging them from straps, etc., but in the end, we were simply too uncomfortable with the idea of the large traps dangling above our heads as we worked in the studio. In addition, we had decided to retain the ceiling fan/light fixture in the ceiling, which would have made mounting the traps more difficult. At this point, the two traps intended for the ceiling are standing in the rear of the room. We're experimenting with the best placement for them, and will hang them when we have found the ideal wall location.

Total cost for eight traps: \$3,112 plus shipping. While this is still pricey given our very limited budget, we felt that this was one area where it was important to put some cash. We could have saved sig-



Here's how the Audio Precision System acoustic tests were set up, in this case before the room had been acoustically treated. An Earthworks mic was fed into the A-P analyzer; the blanket on the console is to cut down on reflections. Careful measurements were taken so that the test could be accurately duplicated after the room had been treated.

nificant dollars — perhaps as much as \$2,000 — by going with foam-based or other bass traps.

BREAK OUT THE TOOLS

For the absorbent wall and ceiling panels, we decided to go with Auralex four-inch acoustic foam (www.auralex.com). We went with the four-inch thick foam as it spec'd out quite closely to the fiberglass panels specified by Storyk. Based on past discussions with acousticians, we knew that the low-frequency performance of the foam could be significantly improved by hanging it a few inches from the wall or ceiling surface. To do this, we purchase 4x8-foot pieces of plastic lattice from our local home improvement center. The lattice for the four side and angled side walls was cut down to 4x6 feet, we also needed two 4x8 pieces and one 2x8 piece for the ceiling cloud.

The lattice material is very light and flexible; to reinforce it, we screwed 2x2 wooden strips to the back. To mount the lattice in the room, we screwed large hooks into the walls and ceiling. We also screwed eye bolts into the 2x2 braces on the back of each lattice piece. This allowed us to hang the panels easily, and resulted in approximately four inches of air space behind (or above, in the case of the ceiling) each panel. We finished by gluing the four-inch acoustic foam to the lattice.

Since the lattice material is light and open, it's almost transparent to sound; this lets sound pass through the foam and reflect off the wall (or ceiling) back through the panel, increasing the overall performance of the foam.

Total cost of the foam, lattice, wood braces, screws, etc., \$1,290.

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CASE STUDIO: Acoustics, Part II



Since we wanted an air gap between the foam and the wall to improve low-frequency performance, the foam was mounted to light plastic lattice that had been strengthened with 2x2-inch wooden bracing. The lattice was hung using hooks screwed into the wall and eye bolts screwed into the lattice bracing. This resulted in the lattice hanging approximated four inches off the wall surface.

Storyk's recommended products totaled. As mentioned earlier, we probably could have cut this by as much as \$2,000 by going with foam bass trapping. For your own acoustic treatment projects, compare and shop around, you may be able to come up with even better deals. For example, Acoustics First (www.acousticsfirst.com) quoted us a price of around \$4,500 for a package of their materials also designed to substitute into the Storyk design.

Building the panels and installing everything took several evenings, and none of the "construction" was difficult. Take our word for it, we're no craftsmen! A tape measure, drill, saw, and screwdrivers were the only tools required. As a bonus, everything was installed with screws. Should the house be sold or the studio removed, the panels and traps can be pulled down, the

Hard Numbers

By Frank Wells

Before and after measurements of the room were performed with an Audio Precision System Two Cascade test set, using their MLS (Quasi-Anechoic Acoustical Tester) program. This test uses a pseudo-random noise pattern to generate the equivalent of an impulse test, allowing a speaker to be separated in the data from the room environment (so a system can be tested without a true anechoic space). In our case, the entire 50 millisecond test window can be included to look at contributions of the room to the test data as well as the direct signal.

Figure 1 is a frequency domain plot of just the primary impulse period from the MLS signal fed through the center speaker and sub, giving a pretty normal looking frequency response plot for the direct signal. Because only a narrow portion of the test time window (the 4 ms of the primary impulse shown in Figure 2) is used, the frequencies below a couple of hundred Hz or so should be ignored in this plot. A very large room with a long early reflection time is necessary for accurate low-frequency response measurements using the MLS technique. The post-acoustic treatment time domain plot in Figure 2 has far less identifiable reflection peaks than did a similar pre-test plot. For tests such as those shown in Figures 3 and 4 (before and after the room treatment), derived from the full test time window, the low-frequency data is more relevant, though only to a little above the 20 Hz lower limit shown.

Figures 3 and 4, then, show the combination of the primary and reflected sound within the full 50 ms test window. These plots also include a phase measurement, comparing stimulus to measurable reflected energy, with the post-room treatment test plot revealing less measurable content to skew the phase response.

Between 700 Hz and 5 kHz is where the effects of the room treatment are most prominent, with energy confined to a 15 dB range in Fig 4 as opposed to a 25 dB range in Fig 3. There are also significantly fewer discernable individual frequencies within that range. The shape of the plot beyond 5 kHz closely matches the Fig 1 speaker system plot (but is also less busy within that curve compared to the pre-treatment plot in Fig 3).

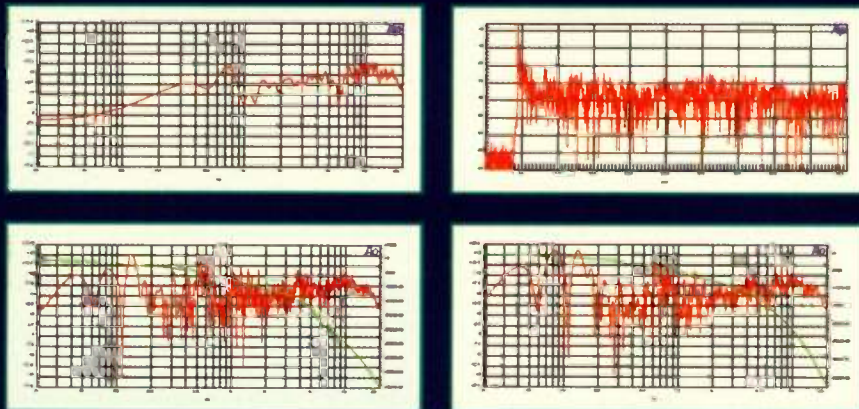
Tests were also done with a stereo pair of speakers, with and without the subwoofer, as the source, looking for additional reflection content that might be generated by speakers firing from normal left-right positions. This kind of testing is fraught with potential for error at high frequencies, however. Our experiments showed that a mere tap on the test microphone — shifting its position by a minute fraction of an inch — could skew the high-frequency readings significantly. (Even the tiniest movement of the microphone resulted in the left/right signals reaching the mic at slightly different times causing dramatic phase-induced comb filtering.)

FIGURE 1: MLS measured response of the speaker system, looking only at the primary impulse time window, thus looking primarily at direct signal.

FIGURE 2: The derived impulse response of the room, after room treatment.

FIGURE 3: The pre-room treatment plot of energy at all frequencies, including direct and reflected sound. Phase response versus generator phase is also shown (green line).

FIGURE 4: The same test as Figure 3, post-treatment. Phase response versus generator phase is also shown (green line). Note, for example, the reduction in dips between 1k and 2k compared to Figure 3. Note also the smoother phase curve.



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screw holes filled, a bit of touch-paint applied, and no one will be the wiser. The panels and traps can be taken to the next studio location and used again.

THE RESULTS

We're quite pleased with the results of our project. We installed the materials in stages; first we set up the shelves for diffusion, then we installed the bass traps, then the foam wall panels, and last the ceiling cloud. This allowed us to listen to the room after each stage. (We also tested the room with an Audio Precision system before we began the project and after we finished treating the room; see sidebar "Hard Numbers.")

As mentioned earlier, just moving the bookshelves to the rear of the room made an audible difference in the sound of the space. Hanging the bass traps made a much more dramatic difference. The low end of the room immediately tightened up and smoothed out, the bass resonances disappeared, and overall the bass level at the listening position seemed to *increase*.

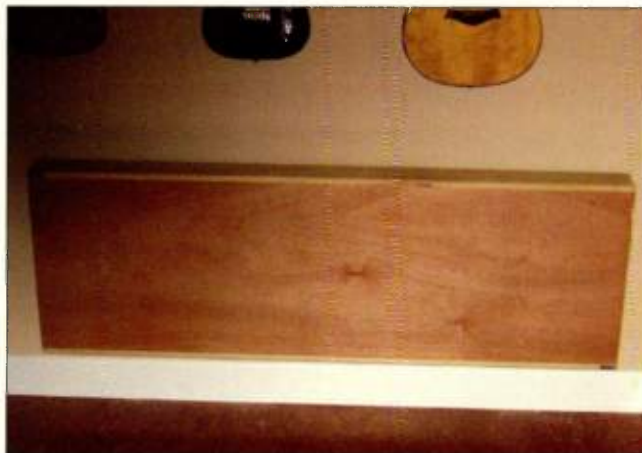
Just installing the two foam panels on the side walls made a noticeable difference in the imaging at the mix position. With all the panels and the ceiling cloud installed, the difference in the room's sonics was dramatic. The room's reverb was tamed, reflections were non-existent, imag-

ing was much better, and the overall brightness of the room was reduced.

When we were finished, the room not only sounded better, but it also measured better — the room response was more even and reflections were significantly diminished.

While more listening is required, and more important, we need to do some mixes and check them out elsewhere, to our ears the room treatment was a rousing success. The monitor playback at the mix position is night and day from where it was when

► continued on page 101



RealTraps can be installed to hang vertically, or, as in this case on the front wall of the studio, horizontally.



Here we see the finished room, with acoustic panels and bass traps hanging from the side wall, and suspended acoustic panels hanging from the angled side walls and the ceiling. The shape of the cloud has been changed from John Storyk's original rectangular design to allow for the ceiling fan/light fixture and two heating/cooling vents that are in the ceiling near the front of the room.



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ROAD WARRIORS

FOUR MOBILE RECORDING RIGS THAT ROCK

GOT the itch to take YOUR studio on the road? We spoke with four engineers about how they've been able to take their studio recording act along with them to remote locations.

BRYAN CARLSTROM

Producer/engineer Bryan Carlstrom — who has worked with artists ranging from Alice In Chains to White Zombie — owns a portable recording rig that he's used on recent projects with The Offspring, Dixon, and (former Stabbing Westward front man) Christopher Hall's latest project. Bryan's rig fits into two very large racks that travel with him from studio to studio, while also serving as the recording rig in his private facility.

"One of the racks," Bryan begins, "holds the Pro Tools rig, including two 21-inch monitors. The second rack holds my Summit Audio tube gear, including 24 M-210 mic pres, six TMX-420 Tube Mixers (creating a 24x12 recording console), four DCL-200 compressors, two EQF-100 EQs, and two MPE-200 mic pre/EQs. The wiring in these racks is set up with a 90-pin Elco scheme that seems to be common among local studios and rental companies here in L.A. The Pro Tools rack has four Elco's: two male, two female. I carry 50-foot, 48-pair Mogami cables with Elco ends, and patch two 48-pair cables to the Pro Tools rack — one for the inputs to Pro Tools, and a second for the outputs from Pro Tools. The other ends usually plug directly into a wall panel at the studio where their 24-track machines live, and my Pro Tools rig comes up in the house patchbay instead of their tape machine(s) "

"The back of the Summit rack and my remote patchbay (four bays, 96 points each) have the same Elco connectors. Another set of 50-foot, 48-pair Mogami connects the remote bay to the Summit rack. I sit my patchbay next to the studio's bay so I can patch from the studio's mic points to my mic pres and compressors, or between the studio's mic pres and compressors. From there I patch to the tape machine inputs in the house patchbay, which now correspond to my Pro Tools inputs (because I am plugged into the studio's tape machine panels on the wall).

"There are extra points in my remote patchbay for the Pro Tools rig. If for some

reason I cannot plug into the studio's wall panel, I plug my Pro Tools rig into an Elco on the rear of the remote bay. This brings the Pro Tools I/Os to the extra spots on my bay and then I can easily patch my equipment into their console. I carry 90-pin-to-120-pin Elco adapter cables, in case the studio uses a 120-pin configuration — but for the most part I've been able to plug directly into the wall panels.

"I can literally have this stuff packed up from one studio, moved to another studio, unpacked, plugged in and ready to go in around four hours. If the gear was separate, it would take me a few days just to move — maybe longer because I would have so many issues with SCSI cables that I'd either be pulling my hair out or committing violent crimes!"

Carlstrom has gone whole hog to make sure that his Pro Tools rig is ready for intense multitracking. "I use six Digidesign 888I24's for the Pro Tools outputs, but for inputs I use two Studer D19 A/Ds (eight channels each). They sound just like the Studer digital multitrack, which blows everything else away. Obviously I will eventually need 48 D/As so that I can have a separate output for every track, but — even when I'm tracking drums, bass, guitars, and vocal live — I have plenty of inputs using the Studers. I run the D19's lightpipe outputs to an Otari Universal Format Converter, which accepts 24 channels of any digital audio format and then spits out 24 channels of every other format including lightpipe, AES, PD, SDIF, and TDIF. I send the AES outs from the UFC to the inputs of the 888I24's. If for some reason I need to interface a Sony, TASCAM, or PD digital tape machine, I use the appropriate outputs."

Carlstrom's rig includes quite a few drives to ensure that the system runs smoothly. "The computer [a dual 500/G4 Mac] has three identical systems drives plus a CD/DVD drive, all set up with Pro Tools, my plug-ins, and MIDI," he reveals. "If I'm in the middle of a project and begin having problems, I can restart from another system

drive and keep working. In between projects I can go back to that drive and figure out the problem. If it's serious, I'll remove authorizations and reformat the drive. Then I use a CD I've burned of an appropriately set up drive, dump that back, and reinstall the authorizations. After that, the drive will be ready to go for the next project. I look at the drives like spare tires: If I get a flat I change it, keep going, and then later deal with whether I want to change it, repair it, or replace it," he laughs.

"I also have four 18 GB and six 23 GB external drives, seven 120 GB FireWire drives, two CD-RW burners, Sony DDS3 and AIT-2 backups, a Jaz drive, and an Imation Superdisk. I am running two dual ATTO cards, giving me four external, high-speed SCSI busses. There are three master

so minutes if the power goes out — plenty of time to shut down safely. Above the 21-inch monitors are two bars that pull out to hold a pair of Genelec 1029's. A Mackie HUI pulls out of the rack to run the session, and you can sit in the stereo field. There's also a 200-CD 'juke-box,' which is like a wealthy library of influence for me. I continually switch back and forth between that while I am working for reference and inspiration. That's like my library of learning."

MILLBROOK SOUND STUDIO

Featuring 24-track digital recording, a Mackie 32x8 console, and a 384-point



Bryan Carlstrom

PHOTO BY EDWARD COLVER

18 GB and three master 23 GB drives. Each of those drives has a clone. At the end of every day, whatever was recorded on the masters is moved over to the clones, giving me a hard backup. In addition to the hard copy, I've been doing three tape backups so I have four copies of the record. It's so stable that I have never actually lost anything. It's a bit redundant, but that's how I work.

"The entire Pro Tools system is on four APC 1400 UPS's, which will run for 30 or

patchbay, Paul Orofino's mobile rig — dubbed the PDMS-1 — is enclosed in a single ATA flight case that can be set up in less than 10 minutes. Paul says he built the system "out of necessity. I was doing a lot of live recordings and wanted to be able to record shows without having to lug around separate cases for the console, recorders, outboard gear, and speakers. After lugging

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Houston - The VST Studio Controller Houston is a MIDI/USB remote controller specifically engineered for Steinberg's VST engine. It's designed for total hands-on mixing within Cubase VST and Nuendo, without having to use the mouse or computer keyboard.

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Steinberg Cubase SX Digital Audio Sequencer

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There's been a lot of action in the desktop audio world lately. In just the last few years we've seen new operating systems (Windows XP and Mac OS X), high-resolution audio, revolutionary time-stretching technology, supercharged software instruments and plug-ins, and the retreat of one of the top cross-platform programs to the Mac-only camp. When confronted with these changes, there are two ways a software developer can go: patch together incremental revisions that tack on new features *ad hoc*; or start fresh, and set a new foundation for the future. With Cubase SX,



FIGURE 1: The Project window displays audio, MIDI, video, and marker tracks, as well as automation sub-tracks. The inspector (left) gives you access to a complete range of channel parameters, while the overview (top) helps you get around your project. Note automation sub-tracks at the bottom of the screen.



FIGURE 2: Cubase's new Mixer window has a hardware look, but is flexible enough to show different views for each channel.

STEINBERG CUBASE SX

MANUFACTURER: Steinberg North America, 9200 Eton Ave., Chatsworth, CA 91311. Tel: 818-678-5100. Web: www.steinberg.net.

CUBASE SX

SUMMARY: Fast, sleek and powerful, Cubase SX proves that the sequel can leave the original in the dust.

STRENGTHS: Sleek, efficient interface. Huge track count. Surround capable. Supports wide array of audio formats. Improved mixer. Sample-accurate automation with track-based graphical editing. Quick menu access to most features. Hitpoints for ReCycle-style time stretching. Plug-ins can be applied in real time or as file operations. Flexible time handling. Improved navigation. Powerful sample editing and DSP tools. VST link. Extensive VSTi and ReWire support. Real-time MIDI effects.

LIMITATIONS: Can't route inserts to audio hardware. Can't route busses to channels. VST's Groove Control quantize feature is missing. Can't toggle loop status of individual events. Doesn't offer Acid-style time-stretching and CD-burning capabilities.

HOUSTON

SUMMARY: A nice addition to SX, but a few improvements needed before it becomes a "must-have."

STRENGTHS: Nine motorized faders, with bank control. Assignable control strip. Can access mix, transport, and edit functions in Cubase and Nuendo.

LIMITATIONS: No counter. Interaction with Cubase SX feels somewhat incomplete.

PRICE: Cubase SX, \$799. Houston, \$1,499.

Steinberg does the latter, and moves to the head of the class.

Here are some of Cubase SX's sexiest features: unlimited audio and MIDI tracks, the ability to record 32-bit floating-point audio files and handle sample rates up to 96 kHz, surround sound mixing, file import and export of many popular formats (including MP3 and RealAudio), unlimited undo and undo history, a revamped sample-accurate automation system, and the ability to network with other computers via VST System Link. Cubase also comes with some good plug-ins and an outstanding new virtual instrument, the AI synth. But SX appeal goes beyond the feature set. It looks and *feels* different — faster, smarter, more direct. There's less clutter between you and your work.

SYSTEM REQUIREMENTS

Cubase SX for Windows requires at least a Pentium III 500 processor and 256 MB of RAM. It will run under on Windows 98SE, ME, XP, or 2000. On the Mac side, you'll need OS X 10.2. We tested it on a sluggish Pentium III desktop but spent most of our time spinning tracks on a Pentium IV laptop, which worked great.

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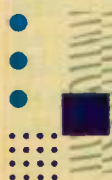
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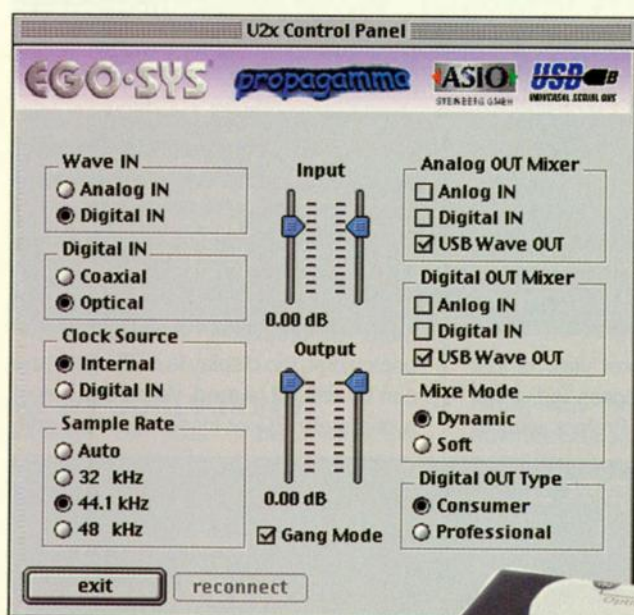
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SHORT REVIEWS



ESI WAVETERMINAL U24

(Windows/Mac \$299.99)

My Mac PowerBook is a constant traveling companion — unfortunately, its 1/8-inch analog I/O and consumer-grade converters come along, too. But I think I've found a solution:

ESI's Waveterminal U24 is a USB interface that provides fine-sounding 1/4-inch unbalanced, -10 dB analog I/O with 24-bit conversion; S/PDIF (pro or consumer) coaxial and optical digital I/O; the ability to transfer signals among all I/O (including optical to coaxial conversion); and real-time input sample-rate conversion over a 3:1 or 1:3 range to the supported sample rates (32, 44.1, and 48 kHz).

THE VIBE: Compact (3-3/8-inch x 3-11/16-inch) and sturdily-built, the U24 is clearly designed to stand up to the rigors of mobile use — I dropped it a few times just to make sure, and opened it up to check on the internal construction (it passed). The top has a rubberized plate with legends for

the jacks and LEDs — it's frivolous, but fun.

WHAT'S HOT: The AKM A/D converter delivers a dynamic range of around 100 dB, and output can go simultaneously to analog and digital outs. With Windows 98SE/ME/2000/XP, there are drivers for DirectSound, ASIO 2.0, and MME (with KS support for Sonar). For Mac OS 9, there's Sound

a job well done. ESI America, 408-519-5774, www.esi-pro.com.

BITSHIFT AUDIO PHATMATIK PRO (Windows, Mac OS9, \$99)

This VST 2.0 plug-in is a loop-slicing tool. Insert it into your host program (I tested it with Cubase SX and Sonar using Expansion's VST-DX adapter), load a loop, and pHATmatik PRO slices it into sections. The algorithm that chooses the slices is pretty capable, but you can also move, insert, and delete slice markers if fine-tuning is required. You can then export a MIDI file and bring it into the host to play these slices in the correct order with the correct timing, thus allowing tempo-stretching without shifting pitch (*à la* ReCycle) by simply speeding up or slowing down the sequence.

THE VIBE: pHATmatik PRO is a totally pro, brilliant piece of software, from look to functionality. Even the documentation is good.

WHAT'S HOT: You can apply pitch changes, filtering, even modulation to the entire loop (all slices). And pHATmatik PRO is multitimbral, so you can load up to 16 MIDI channels' worth of loops. But you can also apply extensive processing possibilities to *each* slice, including level, pan, envelope, pitch, reverse, filter (highpass or low-pass), looping with adjustable loop time (set a short loop, and you'll get a "buzz" during the slice's allotted time; there's a choice of different looping options) — even send slices to one of four individual stereo outs. Breakpoint envelopes are available for amp, pitch, and filter parameters.

Significant master section parameters (level, mix, and feedback knobs for the tempo-synced delay, distortion amount, etc.) are automatable and/or controllable via MIDI. Oh yes...there are tempo-syncable dual LFOs, comb filter, and modulation



Manager and ASIO 2.0 (7 ms latency with Reason — the lowest yet with my PowerBook). Beta OS X drivers are available from the Web site. The package also includes a 6-foot USB cable, and output 1 can drive stereo headphones (nice). Finally, there's a software utility for assigning ins, outs, clock source, levels, etc.

WHAT'S NOT: The only documentation is on the Web site. At the very least, ESI should have put a ReadMe on the CD-ROM directing you there.

THE VERDICT: Sounds good, low latency, mondo compatibility, fair price, solid feature set...just what's needed in a USB interface. Definitely

ADINDEX

COMPANY	PHONE	WEB	PAGE #
Aardvark	734-665-8899	www.aardvarkaudio.com	87
AKG Acoustics	615-620-3800	www.akgusa.com	54
Alesis	310-821-5000	www.alesis.com/masterlink	51
Antares Audio Technologies	831-461-7800	www.antarestech.com	31
Audio One	615-341-0056	www.protocoltraining.com	95
Audio-Technica	330-686-2600	www.audio-technica.com	11
Auralex Acoustics	800-959-3343	www.auralex.com	68
Aviom	610-738-9005	www.aviominc.com	41
B&H Photo/Pro Audio	800-947-5518	www.bhphotovideo.com	115
Behringer	425-672-0816	www.ubseries.com	3
Blue Sky	631-249-1399	www.abluesky.com	13
Broadcast Supply Worldwide (BSW)	877-564-0560	www.bswusa.com	74
Brother International	877-4PTOUCH	www.brother.com	67
Carvin	800-854-2235	www.carvin.com	5
Conservatory Of Recording Arts & Sciences	800-562-6383	www.audiorecordingschool.com	78
DBX	801-568-7660	www.dbxpro.com	59
Digidesign	800-333-2137	www.digidesign.com/HDdealer	19
Disc Makers	800-468-9353	www.discmakers.com/eq	43
Discrete Drums	800-387-5720	www.discretedrums.com	30
Discrete Drums	800-387-5720	www.discretedrums.com	58
Dupco	866-333-8300	www.dupco.com	79
Event Electronics	805-566-7777	www.eventelectronics.com	33
Focusrite	866-FOCUSRITE	www.focusrite.com	27
Frontier Design Group LLC	603-448-6283	www.frontierdesign.com	40
Full Compass	800-356-5844	www.fullcompass.com	18, 39
Full Sail	800-226-7625	www.fullsail.com	26
Genelec	508-652-0900	www.genelec.com	C3
George L's	615-868-6976	www.georgels.com	57
Grace Design	303-443-7454	www.gracedesign.com	22
Just For The Record	866-989-9818	www.justfortherecord.net	103
KRK Systems	954-689-8833	www.krksys.com	61
Kurzweil	253-589-3200	www.ksp8.com	35
LA Recording Workshop	818-763-7400	www.recordingcareer.com	23
Mackie Designs	800-258-6883	www.mackie.com	C2
Manny's Music	866-PROMANNY	www.mannysmusic.com	97
Mark Of The Unicorn	800-258-6883	www.motu.com	C4
Markertek Video Supply House	800-522-2025	www.markertek.com	106
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matrix that can route the two LFOs, mod wheel, and velocity to filter envelope, pitch, filter cutoff, and master level.

WHAT'S NOT: pHATmatik PRO doesn't read REX files. However, pHATmatik, a free program that does, is available from the Bitshift Audio Web site.

THE VERDICT: This is an essential piece of software for anyone who works with loops. On a scale of 1 to 10, I'd give it an 11. Bit Shift Audio, www.bitshiftaudio.com.

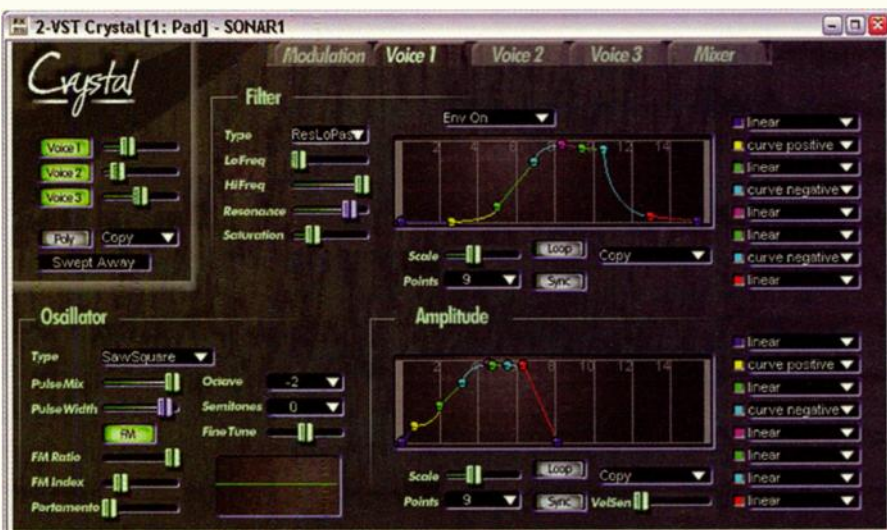
GREEN OAK CRYSTAL VST1 (Windows, Mac OS9, free download)

Public domain plug-ins range from bug-ridden disasters to devices that meet, or even exceed, the expectations of the most critical musicians. Crystal is definitely the latter.

The three-oscillator engine is mono or poly, and combines elements of subtractive synthesis, FM synthesis, and signal processing (chorus, reverb, flanger, delay). It's not miserly with CPU power or RAM; an instrument with this kind of power needs, well, power. For the Mac, Green Oak recommends a minimum G4 processor and a 500 MHz or faster Pentium with Windows.

THE VIBE: This is definitely not just another synth emulation. Crystal

recalls an instrument on the same kind of level as Native Instruments' Absynth, as it allows rich programming options and complex, evolving sounds. The graphics, functions, and



sound quality are first rate.

WHAT'S HOT: Unlike many public domain plugs, the support is excellent. The Web site includes a well-written user guide, two tutorials designed to show basic programming principles, two banks of free user patches (in addition to the patches that come with Crystal), demos, and news (reviews, press releases on updates, etc.).

There's a lot to explore, so we'll

just hit the highlights. Each voice has an oscillator with 17 waveforms, multimode filter with saturation, breakpoint envelopes (loopable, scalable, and synchable, with up to eight stages) for the filter and amp, and the ability to shape each curve on the envelope.

Want modulation? How about six LFOs (with tempo sync, of course), dual modulation envelopes, and a comprehensive modulation matrix. And the mixer doesn't just have sliders for the three voices — there are four delays (with optional filtering) that go up to 10 seconds each, and offer chorus, flanger, and delay/reverb functions as well as straight delay. You can even do frequency-selective processing, thanks to the frequency splitters.

WHAT'S NOT: With complex patches, you won't be able to instantiate a bunch of these before your computer starts begging for mercy. So bounce the instrument sound to a hard disk track, but save the MIDI file used to create it should you want

to make any edits later and rebound. Note that if you limit the number of voices and effects, CPU power consumption goes down dramatically.

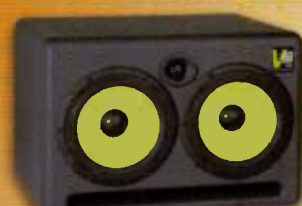
THE VERDICT: It's utterly amazing that something of this depth and sound quality is available for free. Mega-thanks go to Glenn Olander for his generosity in making such a fine instrument available. Green Oak, www.greenoak.com. ■

The Professional's Source

Digidesign ProTools TDM



Digidesign Control 124



KRK V88



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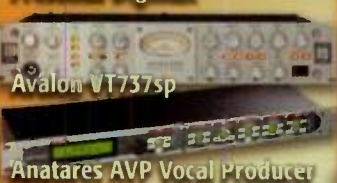
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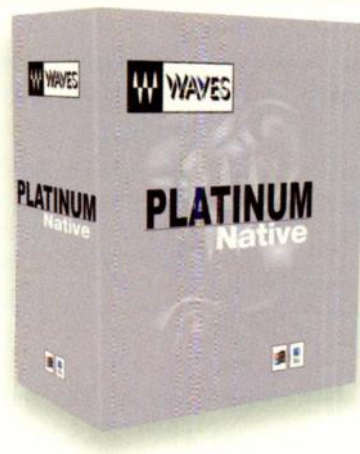
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Waves Native 3.5

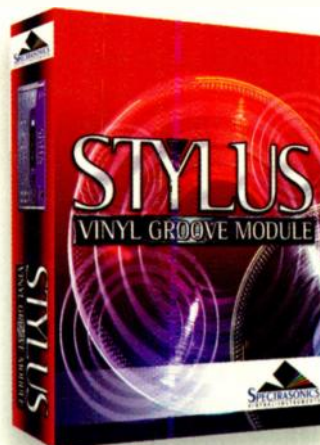
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Waves 3.5 is native processing in full glory.



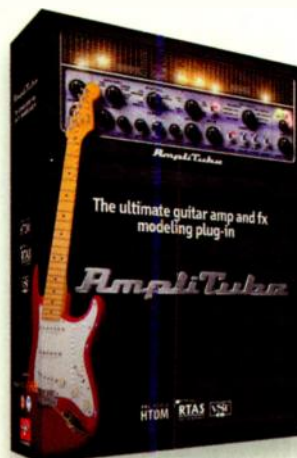
Spectrasonics Stylus

Stylus™ is a breakthrough native virtual plug-in instrument for Digital Performer from renowned developer Spectrasonics that integrates a massive 3GB arsenal of incredible Groove Control™ activated loops and unique drum sounds, with a powerful user interface for shaping and creating your own grooves. Features all NEW sounds, over 1,000 new remix grooves by acclaimed producer Eric Persing, elastic Tempo, Pitch, Pattern and Feel with Groove Control, killer live percussion loops, thousands of cutting-edge drum samples and real-time jamming with Groove Menus.



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Teletronix LA-2A Leveling Amplifier

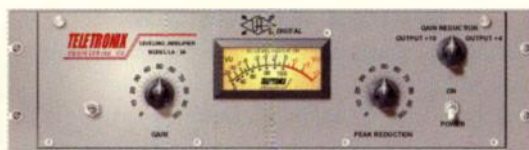
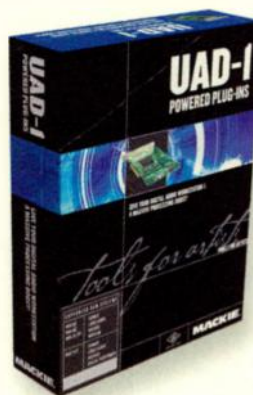
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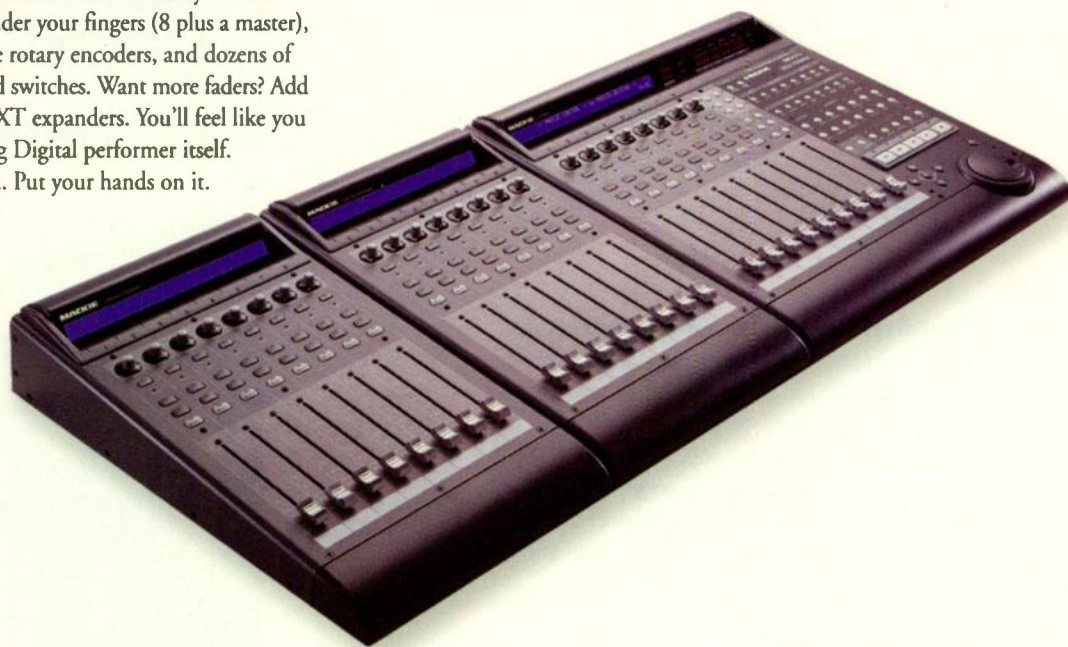


Mackie Control for DP3

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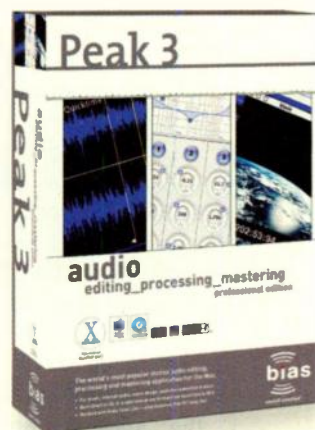
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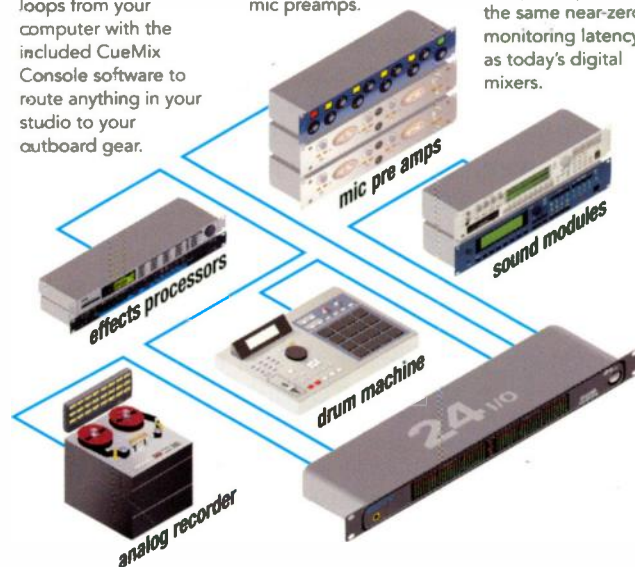
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