» AUDIO RESTORATION: FROM THE BASICS TO ADVANCED TECHNIQUES

AUGUST 2008

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CREATE REALISTIC STRING PARTS

ALESSANDRO CORTINI

INSIDE THE SOUND OF NINE INCH NAILS, LADYTRON, AND MODWHEELMOOD

REVIEWS

KORG KO-1 KAOSSILATOR

ROLAND MV-8800 | ARTURIA ANALOG FACTORY EXPERIENCE

MACKIE MR5 | METASONIX TM-7 | REDMATICA COMPENDIUM | AND MORE

17 COOL SOFTWARE PRODUCTS UNDER $50

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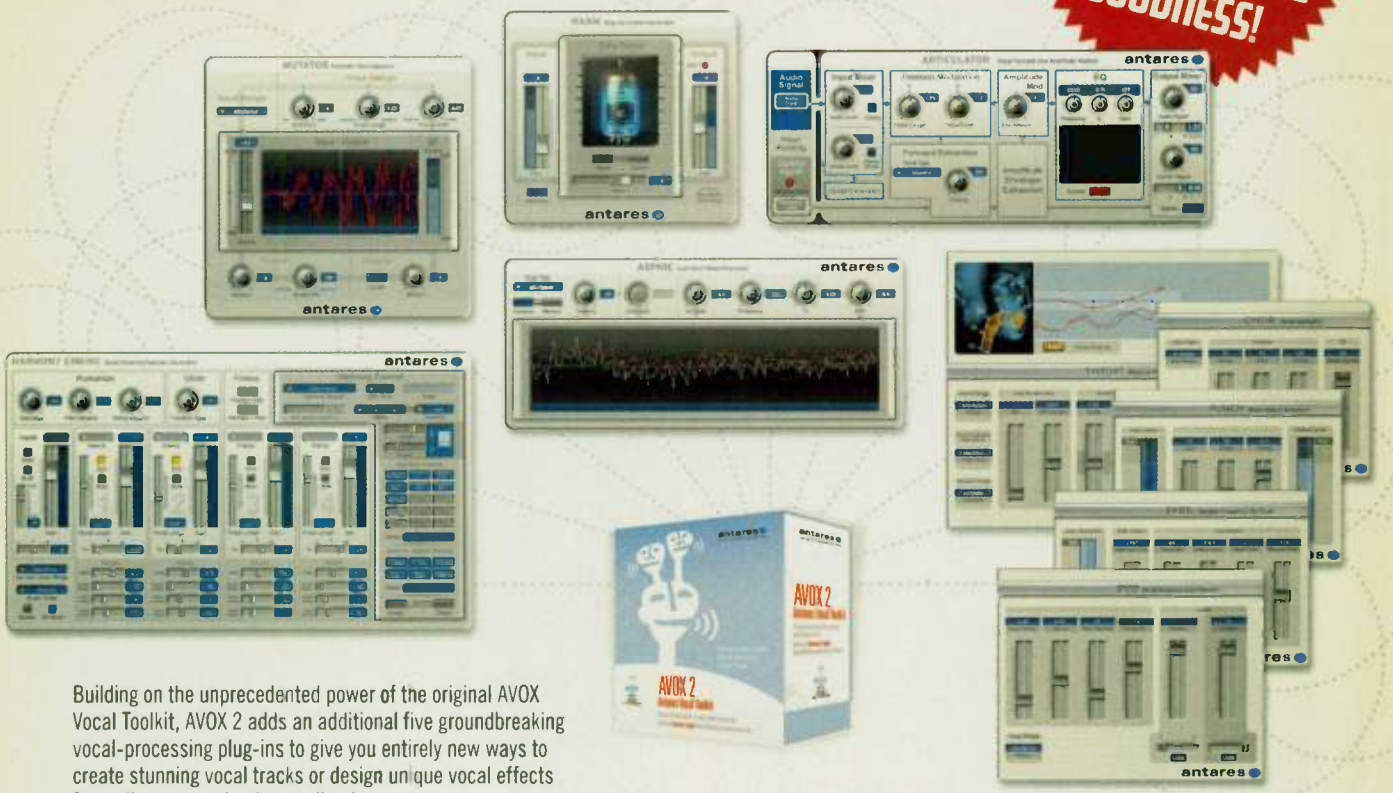
AVOX 2 Antares Vocal Toolkit

NOW WITH TWICE THE CREATIVE VOCAL GOODNESS!



Building on the unprecedented power of the original AVOX Vocal Toolkit, AVOX 2 adds an additional five groundbreaking vocal-processing plug-ins to give you entirely new ways to create stunning vocal tracks or design unique vocal effects for audio post-production applications.

And at the same suggested retail price as the original AVOX, AVOX 2 matches its unbeatable creative power with truly unbeatable value.

The AVOX 2 Antares Vocal Toolkit includes:

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WARM Tube Saturation Generator: Warms up your vocals with Antares' world-renowned tube modeling technology.

ASPIRE Aspiration Noise Processor: The world's first tool for modifying a voice's breathiness independently of its harmonic content.

ARTICULATOR Vocal Formant and Amplitude Modeler: A modern-day version of the venerable talk box, ARTICULATOR extracts the formant and amplitude information from a vocal and applies it to any other audio track. Perfect for talking guitars, singing synths, and a wide range of special effects.

THROAT Physical Modeling Vocal Designer: A radical new vocal tool that, for the first time, lets you process a vocal through a meticulously crafted physical model of the human vocal tract.

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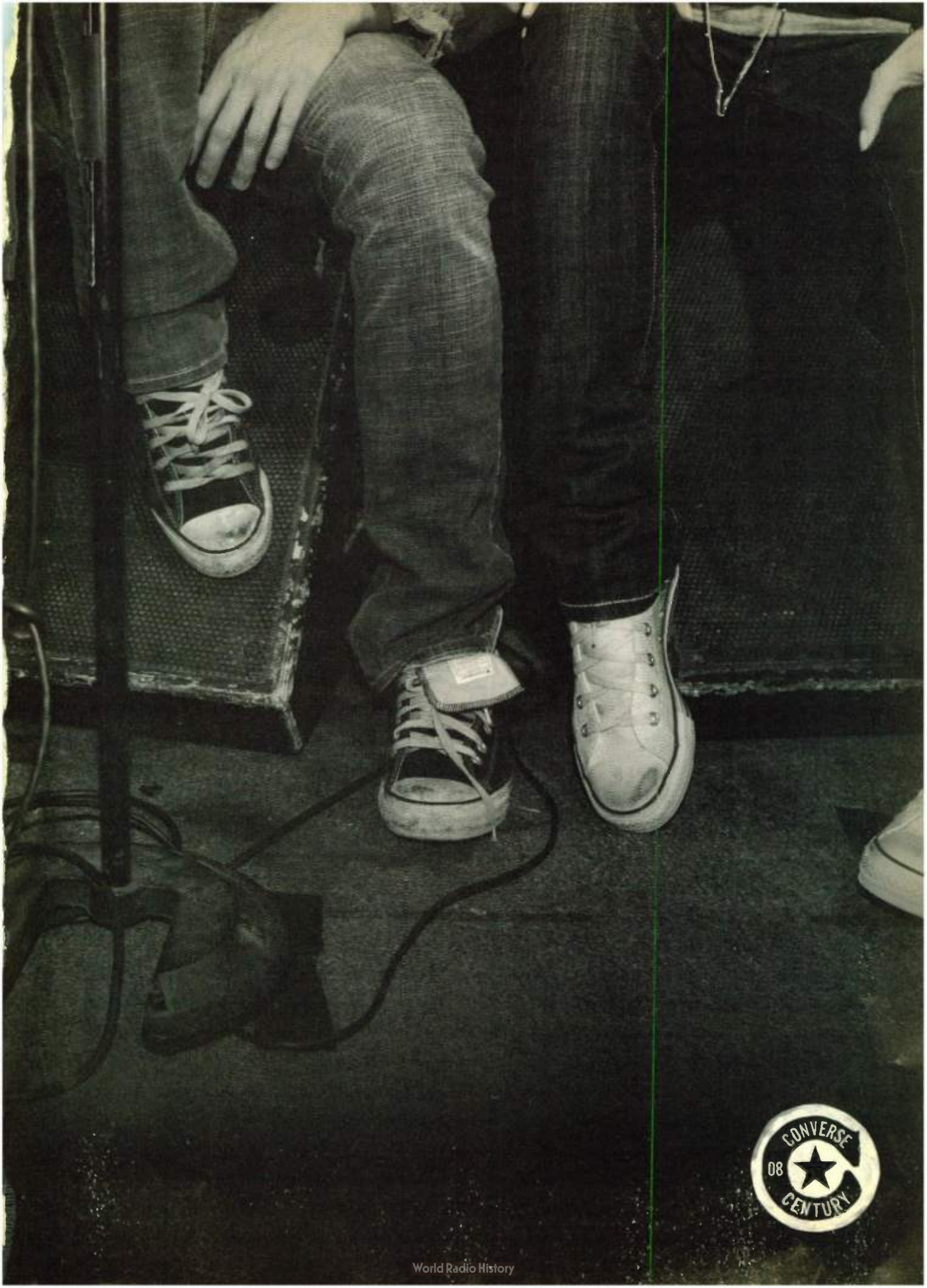

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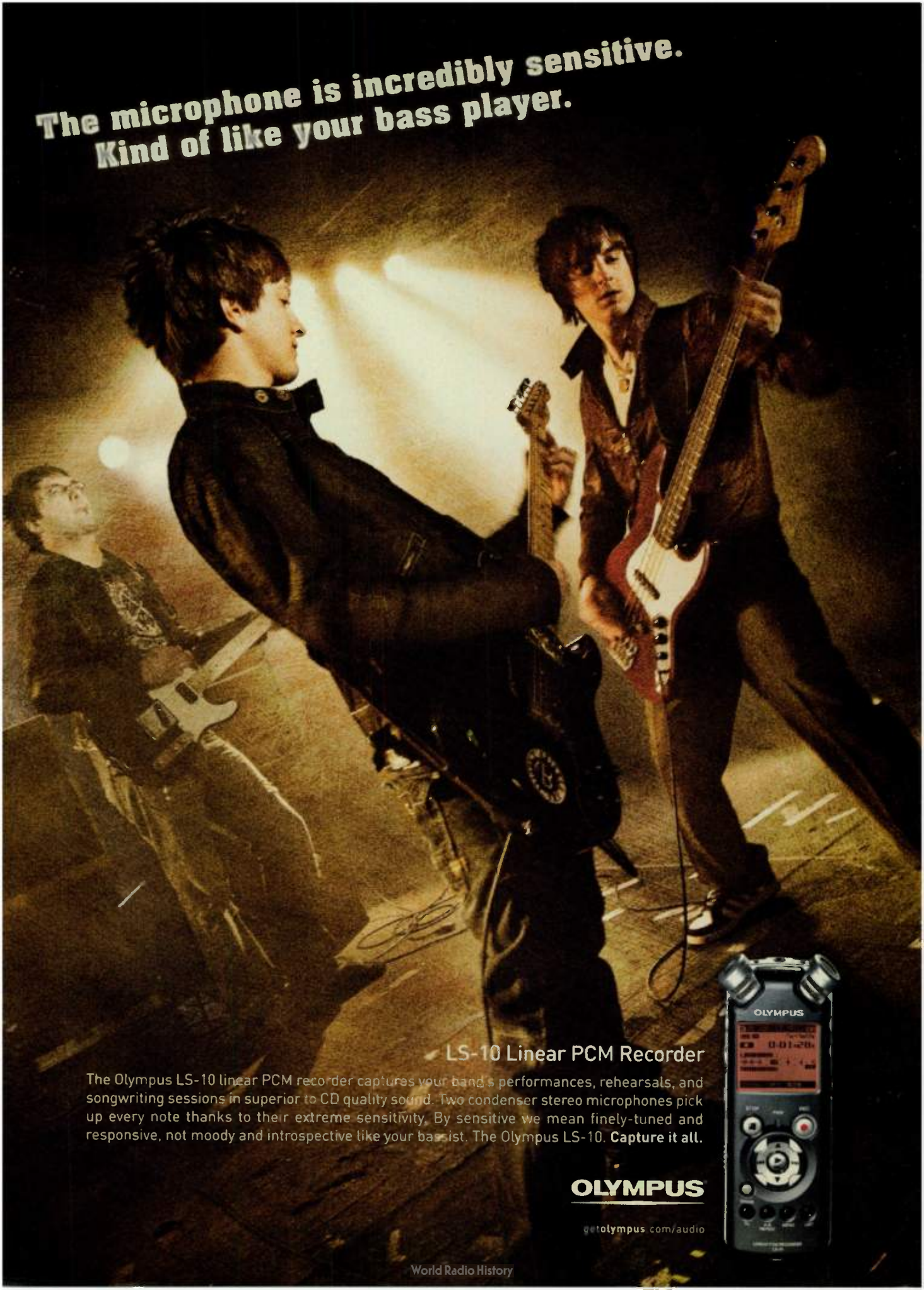

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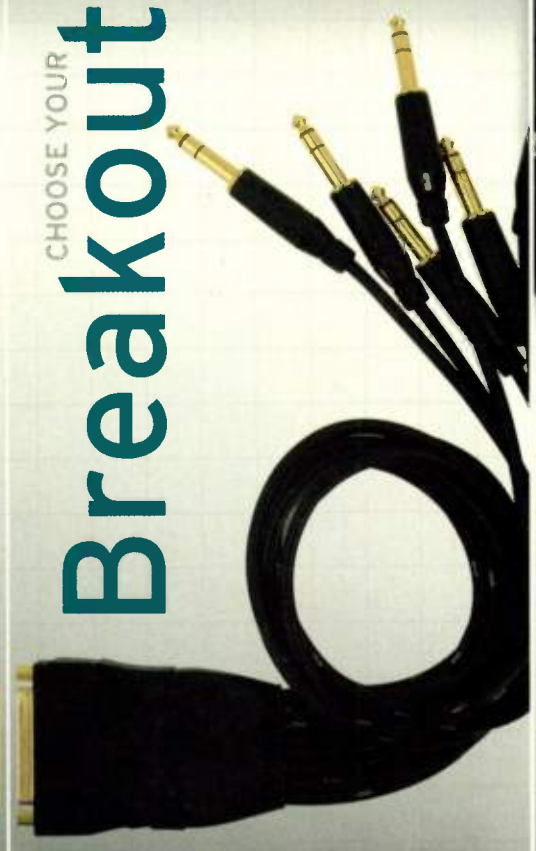

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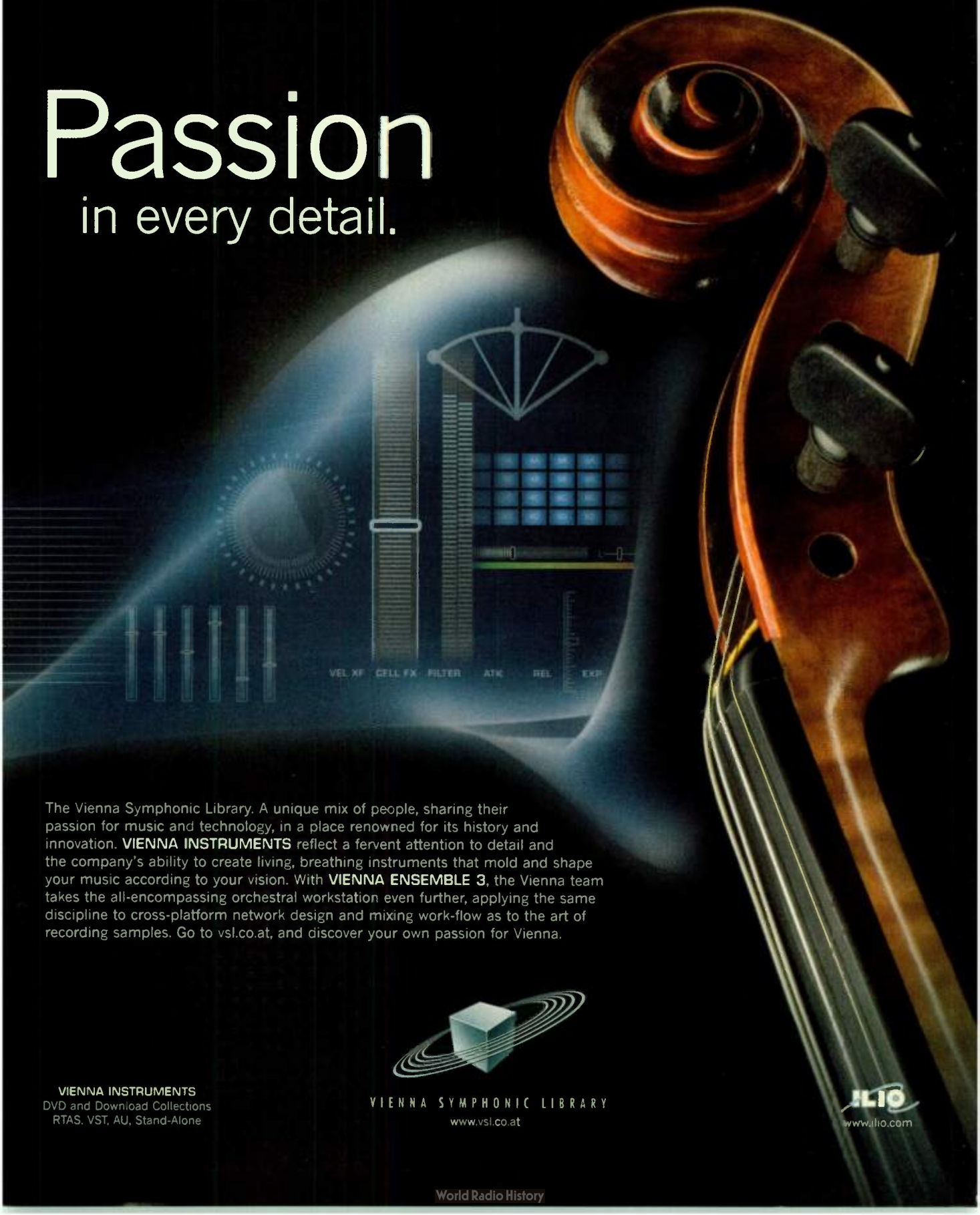

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ELECTRONIC MUSICIAN

AUGUST 2008 VOL. 24, NO. 8

FEATURES

MITCH TOBIAS

40 MODULAR MOODS

With his Buchla 200e and analog modular synths, Alessandro Cortini adds deep and moody textures to the music of Nine Inch Nails. In this interview, he talks about his work on NIN's *Ghosts I-IV*, his remixing strategies with Ladytron and Yoav, and songwriting in his band, Modwheelmood.

By Gino Robair

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CHEAP FARES

Sometimes you *can* get more than you pay for. We look at 17 software applications priced under $50, including shareware and freeware.

By the EM Staff

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NOISES OFF

Broadband noise, clicks, crackle, pops, and hum are enemies of recordists everywhere. Luckily, plenty of software is available to help you reduce or eliminate such sonic problems. Learn how to get the most from your audio-restoration software.

By Mike Levine

DEPARTMENTS

EM (ISSN 0884-4720) is published monthly by Penton Media, Inc., 9800 Metcalf Ave., Overland Park, KS 66212 (www.penton.com). This is Volume 24, Issue 8, August 2008. One-year (12 issues) subscription is $24. Canada is $30. All other international is $50. Prices subject to change. Periodicals postage paid at Shawnee Mission, KS, and additional mailing offices. Canadian GST #129597951. Canadian Post International Publications Mail Product (Canadian Distribution) Sales Agreement No. 40612608. Canadian return address: Bleuchip International, P.O. Box 25542, London, ON N6C 6B2. POSTMASTER: Send address changes to EM, P.O. Box 15605, North Hollywood, CA 91615.

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QUICK PICKS 90

>> **Mackie MR5** active studio monitor

>> **Metasonix TM-7 Scrotum Smasher** tube distortion device

>> **Galaxy Pianos Galaxy II Grand Piano Collection (Mac/Win)** virtual instrument


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Frank, Global Conceptual Engineering Manager, BEHRINGER Germany designed and voiced the B2031A.

Even how we wind and treat our transducer voice coils contributes to the remarkable consistency (and power handling) of our active studio monitors.

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Darwin, BEHRINGER Mechanical Engineering department did the B2031A computer-aided mechanical design. His photo should be next to Frank's but it looked more balanced over here.

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We started with Frank's excellent design. But it's our manufacturing process that really boosts our exam results. Unlike most companies who have to compromise with off-the-shelf OEM speakers, we hand-build our transducers. And our own electronics like the B2031A's high-current 150- and 75-watt internal amps.

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Nick Carr: Scoring SpongeBob SquarePants

In the animated series *SpongeBob SquarePants*, Emmy Award–winning music editor Nick Carr seamlessly weaves production music with his own sounds. In this article from the EM archives, Carr talks about what it took to score this wildly popular children's series in the privacy of his home studio. **emusician.com/tutorials/emusic_cartoon_cutups_music**

By Erik Hawkins

EM Spotlight

The Electronic Century Part 4: The Seeds of the Future

In this final installment, we review the key developments in synthesis, MIDI, sampling, and music software that took place during the past 40 years. Then, five music-technology experts share their thoughts on the future of electronic music. **emusician.com/tutorials/electronic_century4**

By Joel Chadabe

Desktop Flamenco

Flamenco music can trace its lineage at least as far back as the 15th century. Learn about this exciting art form and how you can add its elements to your next composition. **emusician.com/mag/emusic_desktop_flamenco**

By David Rubin

EM Cast

Our monthly Podcast features interviews with producer-songwriter Daniel Tashian, engineer Chuck Ainlay, and composer Ramin Djawadi, who wrote the music for the film *Iron Man*. **emusician.com/podcasts**

Got Cheap?

No one likes a bargain more than the editors of EM, and we are always on the lookout for products that deliver plenty of bang for the buck. Although great-sounding hardware is rarely inexpensive, it's another story when it comes to software. Associate Editor Len Sasso's "Download of the Month" column is a testament to that.

This month I've asked the editors to share their software favorites priced below $50. The result is a collection of shareware, donationware, and freeware that is heavy on creative potential but light on the pocketbook (see "Cheap Fares," p. 32). Who says you only get what you pay for?

For those of you who think this class of software is mainly for experimental use or for music that resides on the fringes, look closer. You'll find products that rival those created by major companies in their usefulness, often with feature sets that would appear only in a product developed by a musician or sound artist rather than a team of marketers. And because they are often created by one-person operations, tech support and bug fixes are often handled quickly.

JANE RICHEY

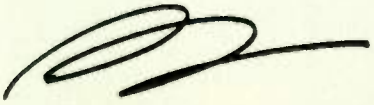
Pushing the boundaries of creativity is something I admire in any field, and the creative act of coding is rarely recognized outside the circle of programmers themselves. I'm always humbled by the fact that someone will put in an extraordinary amount of time developing a unique software tool, only to offer it to the public for little or no financial reward. "We do this for fun, you know" is how Koen Tanghe, one of the members of the Smartelectronix group, puts it on his page.

As with any other software app, if you do decide to download and use one of the products covered here, please be sure to register and pay for it. If a donation is requested, be sure to follow through with one. Not only is it the right thing to do, but it also encourages further development. And many of the developers I know like to get user feedback about their products, so let them know what you think.

While I'm on the subject of development, I want to say thanks to the man responsible for making EM what it is today. Steve Oppenheimer, who most recently served as our editor in chief/director of technology, is moving into the esteemed list of contributing editors on our masthead.

In his 20 years with Electronic Musician, Steve has filled every editorial position, taking the wheel with both hands as editor with the January 1998 issue and leading the magazine for nearly a decade. His inquisitive mind, journalistic integrity, deep understanding of technology, and exacting standards helped EM gain its reputation for in-depth coverage of topics that matter in the personal studio.

On a personal level, he has been a friend and mentor in the myriad aspects of magazine publishing for over ten years, and I wouldn't have the chops to sit in the editor's chair without such a patient and thorough teacher. Thank you, Steve, for seeing in me the potential to work in this field. And thanks for helping bring the magazine to where it is today!



Gino Robair
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By Len Sasso

ROB PAPEN PREDATOR

Predator (Mac/Win, $149) is the latest virtual instrument plug-in from Rob Papen (robpapen.com), creator of the well-received synths Albino 3 and Blue. Based on the classic subtractive-synthesis model, Predator's signal path starts with three oscillators packed with analog, additive, and spectral waveforms. Those feed a pair of multimode filters, the first of which has its own envelope and extensive modulation options. Three multi-effects processors end the signal path, and you get the separate Predator FX plug-in for effects processing of audio tracks. A 16-step combination arpeggiator and sequencer, additional envelopes and LFOs, a modulation matrix, a random patch modifier, and preset morphing round out the feature set.

GOT TEETH?

SOLID STATE LOGIC MYNX

The new Mynx 2-module box ($595 [MSRP]) from Solid State Logic (solid-state-logic.com) brings SSL SuperAnalogue X-Rack modules to your desktop. You can configure this rugged 4.13 × 7.48 × 7.28–inch extruded-aluminum chassis with any pair of the eight X-Rack modules (purchased separately): Mic Amp, VHD Input, EQ, Dynamics, Stereo Bus Compressor (fills both spaces), Four Channel Input, Eight Channel Input, and Master Bus. For example, you might combine EQ and Dynamics modules to make a classic channel strip or pair Master Bus and line input modules for an analog monitor and feedback system. External power and audio connections are made directly to the back of the modules.

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FRONTPANEL

By Gino Robair

Download of the Month

AlgoMusic Atomic 1.0 (Win) By Len Sasso

Atomic ($39.99) from AlgoMusic (algomusic.net) is unlike any step sequencer you've used in the past. Sound designer Tim Conrardy and software developer Boris K have teamed up to create this tribute to electronic-music pioneer Allen Strange (1943–2008). Atomic features a circular sequencer interface similar to hardware sequencers Future Retro Revolution and Buchla Arbitrary Function Generator. In addition, you get an arpeggiator and a great-sounding subtractive synth to play the sequences and arpeggios you create. Atomic is a VST instrument plug-in, and in hosts that support MIDI routing from plug-ins (most do), you can route the sequencer as well as two LFOs and a step modulator to other hardware and software instruments.

Atomic's outer ring of knobs sets the pitch offset relative to the pitch of the most recently received MIDI note. The middle ring sets Velocity, and the inner ring sets gate time (note duration). You set the sequence length between 2 and 16 steps by clicking on the step numbers, and clicking on a step's LED silences that step. The step rate is set in relation to the tempo, which can be internal or synced to host, and the range is whole notes to 32nd notes. You can also create your own patterns in 32nd-note increments. When the arpeggiator and sequencer are active at the same time, the arpeggiator plays the current sequencer note, but with its own timing, gate, and octave offset. When the sequencer is off, the arpeggiator functions as you would expect.

The synth has two oscillators with standard as well as additive waveforms, and you can phase-modulate either oscillator with the other. A resonant multimode filter and three effects (delay, reverb, and phaser) round out the signal path. The amp and filter have dedicated ADSR envelopes. A modulation matrix lets you apply two LFOs, a suboscillator, a step generator, and a random modulator to a variety of synth parameters. Atomic is very CPU efficient, and you can easily run several instances to create polyrhythmic sequences (see **Web Clips 1 and 2**).

ONLINE BONUS MATERIAL

OPTION-CLICK By David Battino

Holding down the Tap and Loop Rec buttons while powering up the Korg KO-1 Kaossilator activates 4-bar looping and more.

Hacking the Kaossilator

Unlock chaotic new features with this secret power-up trick

In my review of Korg's otherwise splendid little synth (see p. 70), I had one big complaint: its loop recorder maxes out at just eight beats (two bars in 4/4). Happily, I learned you can double that limit by powering up in "bufferless" mode. This procedure reassigns the undo buffer to the loop memory, meaning you can no longer undo overdubs. For me, that trade-off was totally worth it.

There are other useful quirks in bufferless mode. If you record a loop and then increase the global loop length, the Kaossilator will duplicate your original to match the new length. (In normal mode, it just goes silent.) Briefly drop the loop length to "h" (a 64th note) for a buzzing effect, and the buzz will be recorded into the loop. Changing the tempo will create interesting glitch effects. (For more about David Battino's work, visit batmosphere.com.)

Buchla Instrument Development 1990–Present

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Thunder
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1991
Lightning
A wireless MIDI controller based around a pair of handheld wands. Horizontal and vertical position is tracked using infrared signals

1996
Lightning II
The updated version includes a 32-voice synthesizer and numerous improvements

THIS MONTH'S SOUNDTRACK

These albums encompass a diverse range of styles and composition methods, including ambient, experimental, noise, and rock.

1. Nine Inch Nails: *The Slip* (Null Corp.)
2. Steve Roach: *Arc of Passion* (Projekt)
3. The Notwist: *The Devil, You + Me* (Domino)
4. Yoav: *Charmed & Strange* (Verve Forecast)
5. Various: An Anthology of Noise & Electronic Music vol. 5 (Sub Rosa)

NINE INCH NAILS
Rockin' follow-up to the instrumental masterpiece *Ghosts I-IV*. Violent, distorted grooves meet juicy songwriting.

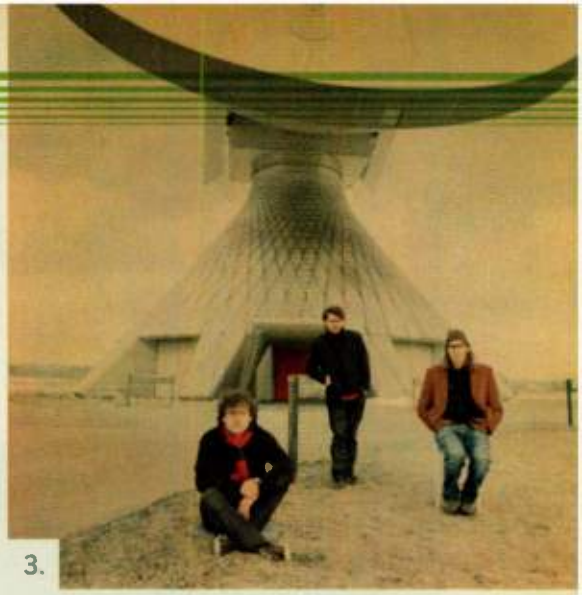

1.

STEVE ROACH
Floating textures, ambient electronics, quantized percussive sequences—an essential album.

THE NOTWIST
Another collection of catchy songs, offbeat electronics, and acoustic tonalities from the German band.

YOAV
This singer-guitarist layers rhythmic loops and vocal effects with superb lyrics.

AN ANTHOLOGY OF NOISE & ELECTRONIC MUSIC
The title says it all. Spans 1920 to 2007, with Richard Maxfield, Père Ubu, and Henri Chopin.


3.


4.

EMILIE ELIZABETH


2.


5.

EM POLL

Who is the most influential electronic-instrument designer? a) Tom Oberheim, b) Dave Smith, c) Robert Moog, d) Don Buchla, e) Roger Linn. Submit your answer to this poll and others at emusician.com. This is not a scientific poll but a tabulation of readers' responses and is just for fun!

1999–2001
Marimba Lumina
More than a MIDI controller, the instruments (including versions 2.5 and 3.5) track the position of the mallets using radio frequency technology

2002

PianoBar
Licensed to Moog Music, it lets you quickly MIDIfy any piano. Infrared sensors track the movement and velocity of each piano key

2004
200e
A hybrid modular instrument that allows you to save and recall patch parameters

By Len Sasso

ROB PAPEN PREDATOR

Predator (Mac/Win, $149) is the latest virtual instrument plug-in from Rob Papen (robpapen.com), creator of the well-received synths Albino 3 and Blue. Based on the classic subtractive-synthesis model, Predator's signal path starts with three oscillators packed with analog, additive, and spectral waveforms. Those feed a pair of multimode filters, the first of which has its own envelope and extensive modulation options. Three multi-effects processors end the signal path, and you get the separate Predator FX plug-in for effects processing of audio tracks. A 16-step combination arpeggiator and sequencer, additional envelopes and LFOs, a modulation matrix, a random patch modifier, and preset morphing round out the feature set.

GOT TEETH?

SOLID STATE LOGIC MYNX

The new Mynx 2-module box ($595 [MSRP]) from Solid State Logic (solid-state-logic.com) brings SSL SuperAnalogue X-Rack modules to your desktop. You can configure this rugged 4.13 × 7.48 × 7.28–inch extruded-aluminum chassis with any pair of the eight X-Rack modules (purchased separately): Mic Amp, VHD Input, EQ, Dynamics, Stereo Bus Compressor (fills both spaces), Four Channel Input, Eight Channel Input, and Master Bus. For example, you might combine EQ and Dynamics modules to make a classic channel strip or pair Master Bus and line input modules for an analog monitor and feedback system. External power and audio connections are made directly to the back of the modules.

BRACE YOURSELF

BLACET RESEARCH HEX ZONE

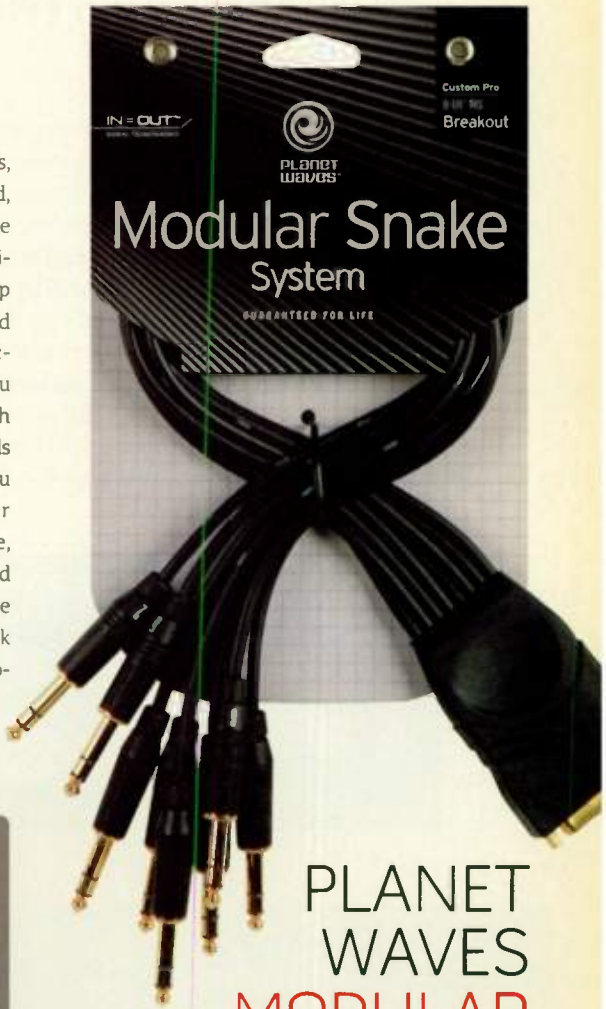
SEQUENTIALLY YOURS

Blacet Research (blacet.com) develops voltage-controlled analog synthesizer modules, which you purchase directly from its Web site. The new Hex Zone ($328 assembled, $246 kit) is a microprocessor-controlled 16-step sequencer with two 1V-per-octave CV outs. Each step offers variable gate (1 to 99 percent of step width) along with hold, rest, and loop options. A separate bidirectional sequential switch lets you route other sources in sync with the sequence. The memory holds 32 sequences and 60 chains. You can chain sequences or other chains, and you can copy, paste, and edit both sequences and chains on the fly. The Hex Zone has internal and external clock modes and, in either mode, provides a dividable clock output.

ADAM A5 and Sub7 Speakers

ADAM Professional Audio (adam-audio.com) has expanded its A series with the A5 powered monitors ($699 per pair) and matching Sub7 subwoofer ($479). The A5 is a smaller version of the popular A7 and is well suited to mobile and broadcast applications, desktop recording, and multimedia systems. Each speaker houses a pair of 25W onboard amplifiers, a folded-ribbon tweeter, and a 5-inch carbon-fiber woofer. ADAM claims the low-end frequency response reaches to 55 Hz and is extendable to 30 Hz with the Sub7. Both speakers feature balanced XLR and unbalanced RCA inputs. New Stereolink technology lets you control multiple A5 volumes from one speaker, and an included wireless remote lets you set the Sub7 volume and crossover frequency from the listening position.

BIG SOUND IN A LITTLE BOX



PLANET WAVES MODULAR SNAKE SYSTEM

Planet Waves' (planetwaves.com) new Modular Snake System ($59.99 to $159.99 depending on configuration) lets you mix and match a core cable with four breakout options. The DB25 core cable, which comes in 5-, 10-, and 25-foot lengths, has an 8-bus DB25 connector on each end. The breakouts combine a DB25 connector with one of four breakout configurations: eight ¼-inch TRS, eight male XLR, eight female XLR, or four male and four female (AES/EBU) XLR connectors. Construction features proprietary multipair cable, oxygen-free copper conductors, two layers of shielding, and Amphenol gold-plated connectors.

SERPENTINE SOLUTIONS

DANGEROUS MUSIC DAC-ST

Dangerous Music (dangerousmusic.com) is shipping the first module for its new 1U rackmountable Additional Switching System ($199), which holds and powers two modules. The DAC-ST module ($949) provides mastering-quality stereo digital-to-analog conversion for the Dangerous Music Monitor ST controller. The four rear-panel inputs on the DAC-ST accept AES and S/PDIF formats and have active Thru outputs for routing their inputs to other devices. Integrated digital source switching lets you monitor all digital sources through the same converter, which is essential in making accurate comparisons to reference material. Other modules for the Additional Switching System, including a 6-channel surround version, the DAC-SR, are in the works.

IK MULTIMEDIA SAMPLETRON

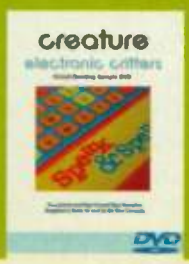
If vintage is your thing, browse over to IK Multimedia's Web site (ikmultimedia.com) for a look at the new SampleTron (Mac/Win, $329.99). This is a sample-based virtual instrument collaboration with Sonic Reality that is powered by the SampleTank engine and comes in standalone and plug-in formats. It includes 2 GB of chromatically spaced multisamples of Mellotrons, Chamberlins, and other instruments like the Optigan, Novatron, and Stylophone. The SampleTank engine is 16-part multitimbral and each part can hold up to 4 of the 32 built-in effects; the engine also features resampling, pitch-shifting and time-stretching, and Stretch playback. Fifty synthesis controls take you beyond the vintage models.

BACK TO THE FUTURE

Sound Advice

Haunted House Records' Electronic Critters

Haunted House Records' *Electronic Critters* sampling DVD ($40) is a menagerie of recordings from bent-circuit children's toys: Furby, Major Morgan, Musical Animals, Phone, Speak & Spell, and Talking Computer. These toys were severely dealt with by sound designer Stephen Haunts, then the results were recorded in 16- and 24-bit, 44.1 kHz WAV files. The collection contains 750 raw recordings and 250 recordings processed with a variety of DSP effects. The DVD also contains a demo album of ten MP3 songs and before-and-after photos of the critters. You can buy the DVD as well as other music samples and swag at electroniccritters.com.



Sony's Electronic Music Manuscript

The Electronic Music Manuscript: A Richard Devine Collection ($69.95) is a huge and eclectic construction kit of acoustic and electronic sounds from Sony Creative Software (sonycreativesoftware.com). Its 1,068 royalty-free 24-bit, 44.1 kHz Acidized WAV files run the gamut from tortured acoustic instruments to leads, pads, and textures from a variety of classic and custom-built synths. You also get two videos and a 20-page manual detailing the making of the collection. Richard Devine is a noted sound designer, film- and game-music producer, and remix artist, and this collection represents some of the best of his sound arsenal.

TrackTeam Audio's Thud

Thud ($22) is a collection of big, fat, floor-shaking bass sounds in Ableton Live 7 Instrument Racks. It is delivered in Live Pack format as a 215 MB download from TrackTeam Audio (trackteamaudio.com). The Instrument Racks use Live's free Simpler instrument and built-in effects. You get 214 seamlessly looped waveforms, which you can hot-swap to customize the Racks. Those waveforms are used to build Thud's 101 bass Racks, and each Rack's Macro knobs are mapped for flexible sound manipulation.

YOU'RE GONNA NEED MORE MICS.

With sixteen inputs, the TASCAM US-1641 is the ideal choice for musicians to record the whole band to a computer. Eight mic/line inputs plus six line inputs gives you plenty of channels for a large ensemble, drumset, live recording or worship service. It includes Cubase LE4, Steinberg's latest version, for 48 tracks of 96k/24-bit recording power. Using the latest high-speed USB 2.0 technology, the US-1641 packs the interfacing power of a big console into only one rackspace. The well-connected TASCAM US-1641.....you're gonna need one.

TASCAM
MAKE IT HAPPEN

For more information about this jam-packed state-of-the art recording power box, visit
www.tascam.com

ABLETON LIVE 7 LE

Ableton (ableton.com) has just upgraded the budget edition of its flagship sequencing and performance software. Live 7 LE (Mac/Win, $149) has the same user interface and fundamental structure as Live 7, and it offers most of the same features, albeit with some limitations. You get Live's 32-bit, 192 kHz audio engine, multitrack MIDI and audio (64 tracks) sequencing, real-time Scene triggering (8 Scenes), all MIDI and most audio effects, Simpler and Impulse virtual instrument plug-ins, and VST and AU plug-in instrument and effects support with plug-in delay compensation (2 of each per project). When you need support for ReWire, video, automatic beat slicing, or external sync, you can upgrade to the full version of Live 7 for $389.

LIVE ON A BUDGET

Get Smart

Digital Music Doctor's Video Tutorials

Digital Music Doctor (digitalmusicdoctor.com) has added two new titles to its series of video tutorials. *Ableton Live 7* (Mac/Win, $34.95) and *Pro Tools 7+* (Mac/Win, $34.95) start from the beginning to help you master these two popular DAWs. Both are available in download or DVD form, and you can buy one bundled with two other popular video titles from the Know It All series, *Mixing & Mastering* and *Digital Producer*, for $89.95. The Live 7 tutorial comprises 17 videos averaging 10 minutes in length, and each covers a specific topic in full detail. The Pro Tools tutorial comprises 15 videos.

Groovebox Corp.'s EXS24 in Action

EXS24 in Action ($29.99 DVD, $14.99 30-day online viewing) is the latest release for Apple Logic in Groovebox Corp.'s (grooveboxmusic.com) Brainwerks pro-audio series of Power Pak video tutorials. EM contributor and Logic guru Eli Krantzberg takes you on a detailed 20-tutorial, 3.5-hour exploration of Logic's EXS24 sampler virtual instrument. If you're new to Logic and EXS24, this collection will get you up to speed, but seasoned EXS24 veterans will find plenty of new material as well.

ASK Video's GarageBand '08 Tutorial

ASK Video Interactive Media's (askvideo.com) *GarageBand '08* DVD (Mac/Win, $49.99) of 41 video tutorials covers all aspects of Apple's popular entry-level DAW. In over 4 hours of instruction, composer and jazz guitarist Tony Wallace reveals GarageBand's inner workings as well as offers advanced tips and tricks in clear, step-by-step presentations. You'll learn how to sketch, arrange, and mix your songs, Podcasts, and soundtracks. The tutorials are arranged in easy-to-follow stages appropriate for any starting level of knowledge.

ALGOMUSIC ATOMIC

Atomic (Win, $39.99) from AlgoMusic (algomusic.net) brings a refreshing new look to MIDI step sequencing. You set up the sequence using three concentric rings of knobs. That makes the last and first steps visually as well as musically adjacent. The outer ring of knobs sets pitch offsets relative to incoming MIDI notes, which can also retrigger the sequence. The inner two rings control Velocity and note duration. Atomic is a VST instrument plug-in that can drive its own full-featured built-in synth or, host permitting, other plug-in instruments, external hardware, and software. em

STEPPIN' OUT

Save on the Fly.

Capture a Dragonfly and get $200 cash back. Purchase a pair and get $400.

This is one dragon that won't burn a hole in your pocket.

With summer in high gear there's never been a better time to let a Dragonfly loose in your studio. Just purchase a Dragonfly microphone between July 1st and August 31, 2008, from an Authorized Blue Retailer and you'll receive a $200 rebate. Or become a Frequent DragonFlyer and buy a pair (great for drum overheads) and get $400 back. The sky's the limit. You'd have to be crazy (or a competitor!) to pass up an offer like this one.

The award-winning, hand-tuned and tested Dragonfly is a unique cardioid condenser mic featuring a rotating spherical capsule head that can be positioned and adjusted in the smallest of spaces. Offering superb detail, the Dragonfly is ideal for recording vocals, drums and percussion, electric guitar, bass and just about any acoustic instrument.

Check in with your local Authorized Blue Retailer for more details or to hear a Dragonfly in action. But hurry! With savings like these, they're likely to zip off the shelves in record time. And that would be a fire-breathin' shame.

Blue Microphones
www.bluemic.com

Blue Microphones Dragonfly Rebate Coupon

Use this Blue Rebate Coupon to save $200.00 on the purchase of a Blue Dragonfly mic. To be eligible, simply purchase a Dragonfly from a Blue Authorized Dealer between July 1st and August 31st, 2008. Completely fill out, clip and send in this rebate coupon (incomplete coupons will not be accepted), along with a copy of the sales receipt and the original (no copies) UPC code from the bottom of the box to the address at the bottom. Multiple purchases require separate rebate coupons, sales receipts (if applicable) and UPC box codes. Additional rebate coupons are available for download online at **www.bluemic.com**.

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ROBERT CALDARONE

46BLISS

Home bases: Brooklyn and Katonah, New York; Burlington, Vermont

Sequencer of choice: Steinberg Cubase SX3

Other key software: Ableton Live, Propellerhead Reason, Sony Acid

Web site: 46bliss.com

Wish Me Away

Long-Distance Operators

The members of 46bliss find musical joy working in parallel studios.

You could describe 46bliss as an electronica outfit, but the trio—which consists of keyboardist-vocalist David Cooper, drummer-programmer Jack Freudenheim, and vocalist Clare Veniot—might just as easily be thought of as songwriters who happen to express their ideas with digital gear. The band's shimmering production and often-processed instrumentation are employed in service of memorable tunes and artful lyrics.

By Emile Menasché

Part of the group's bliss is born from a highly interactive songwriting and production process. "Sometimes Clare brings in a melody she's been singing, and David starts comping on the piano, and we start jamming," Freudenheim says. "Or they write together, and I come up with stuff to help out. Sometimes David has full songs in his head, and we build around that. I tend to come up with grooves—little loopy things [often generated with Ableton Live] with a couple of chords or a bass line—and we start jamming, three of us in a room. We record that and start building on it."

Having more than one work process, says Cooper, keeps them from falling into the same habits, which can stifle creativity. The band's collaborative process yields a final product that is better than the sum of its parts, he says. Their interaction was easy when all three lived in New York City. But for their third CD, *Wish Me Away* (Pistachio Records, 2008), the band often had to collaborate long-distance—something they also did with guest musicians from as far away as Paris.

So coproducers Freudenheim (a software developer and the author of the music program Sounder) and Cooper (who recently left Brooklyn for Vermont) developed a system that would allow production they did in their own studios to translate in both. They agreed to use only software instruments and plug-ins that were installed on each other's PCs. Steinberg Cubase SX3 and Propellerhead Reason were their primary tools, but they also worked in Live and Sony Acid. For monitoring, both used Yamaha NS10M monitors and the same model power amplifier.

As the tracks moved back and forth, often on removable hard drives, the band used a program called GoodSync to keep file versions in order, and a Web-based project-management tool, Basecamp, to exchange notes, manage versions, and post lyrics. Sometimes both studios were active in parallel. "There were times when Clare was over at [my studio] doing vocals, and we'd be sending things back to Jack [electronically]. He'd be fixing drums and sending them back to us," Cooper says.

To cut clutter, "we decided to make stems and mix from that—get the golden comp of drums, vocals, keys, etc. and bring those into a new project and go from there," Freudenheim says. "When we mixed with [Westchester-based producer and mastering engineer] Scott Creswell, we gave him the stems that made up our final mix. He set up a mastering chain, so we mixed and mastered at the same time, and we were able to hear a 'final' as we mixed. He could bring down specific sounds—compress, say, the vocals separately. If we heard something that needed fixing after the mastering, David was able to slip him a new stem, and Scott could rerun the master."

Technology has allowed the band members to continue to draw on one another's creativity despite the distance between them. "The mix lives between us," Cooper says. "It evolves as time goes on and moves from place to place."

"When I got my Radial DI, it gave me a special sound that was natural, with a fine presence... and the engineer said 'What is that? I've got to get one!'"

~ **Will Lee**

(George Benson, Dave Matthews, Bob James, Billy Joel, Spyro Gyra)

"With the Radial JDI, my bass comes through extremely clean, very quiet and with a smooth transparent low end. I use my Radial DI for everything."

~ **Tony Levin**

(Peter Gabriel, King Crimson, Mark Knopfler, John Lennon)

"Radial builds DIs exactly how I would do it. Real quality and they sound great. I love them. They are not going back!"

~ **Bruce Swedien**

(Quincy Jones, Michael Jackson, Jennifer Lopez, Paul McCartney)

"Radial direct boxes make everything I put through them warm, punchy and clear. They are great DI's!"

~ **Chick Corea**

(Elektrik Band, Miles Davis, Return to Forever)

"I love my J48 DI's! They produce a big, fat, clean signal that is so good, I use them for my live recording. Thank you Radial!"

~ **Tommy Emmanuel**

(Certified Guitar Player, Two time Grammy nominee)

"Radial DI's provide the flexibility I need to perfectly match any situation. I specify Radial exclusively for every tour I mix."

~ **Dave Natale**

(The Rolling Stones, Fleetwood Mac, John Mellencamp, Bon Jovi)

"My JDV DI is crystal clear and easily configures to the most elaborate set-ups. I love it and use it every day!"

~ **Billy Sheehan**

(Steve Vai, Mr. Big, David Lee Roth, Greg Howe, Paul Gilbert)

"You need to carry direct boxes that are reliable and the perfect match for your direct input devices. That's why I choose Radial DI's."

~ **Rob 'Cubby' Colby**

(Phil Collins, Prince, Paula Abdul, Janet Jackson, Cindy Lauper)

"Radial makes a DI box that does exactly what it is supposed to do. No compromise."

~ **Paul Boothroyd**

(Paul Simon, Paul McCartney, AC/DC)

"Live or studio, Radial DI's are the only ones we use. They're built like tanks and eliminate noise without killing tone. I love them."

~ **John Rzeznik**

(The Goo Goo Dolls)

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COURTESY ERDEM HELVACIOGLU

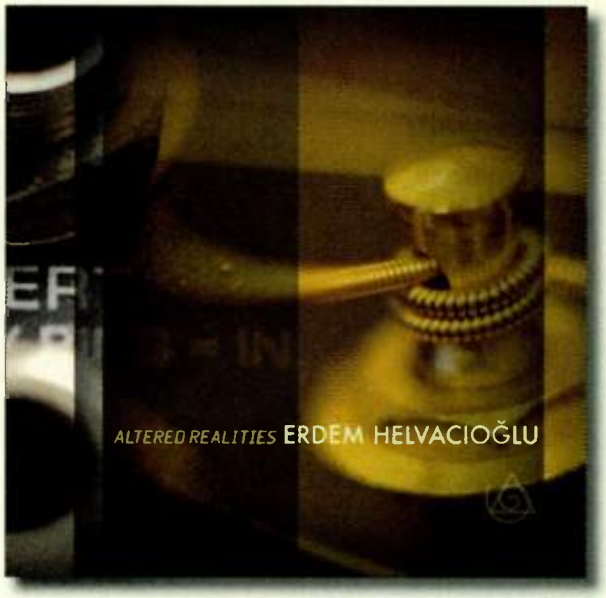
ERDEM HELVACIOGLU

Home base: Istanbul, Turkey

Guitar: Ovation Custom Legend 1869 acoustic-electric

Other key gear: AudioMulch software, TC Electronic FireworX processor, Behringer FCB1010 MIDI foot controller

Web site: erdemhelvacioglu.com



»» *Altered Realities*

Cycles of Strings

Erdem Helvacioglu weaves signal-processed guitar symphonies

Experimental music naturally brings with it a sense of risk, adventure, and endless possibility. And with the current state of technology, all it takes is a single instrument and a few key pieces of gear to create a whole new galaxy of sound. Joining the ranks of solo innovators like Christopher Willits and Imogen Heap, guitarist Erdem Helvacioglu has begun to make his mark outside his native Turkey with live and fully improvised excursions using only an acoustic guitar and a little programming ingenuity. His most recent album, *Altered Realities* (New Albion, 2006), offers a good view of where he's headed.

By Bill Murphy

"I'm interested in continuity," Helvacioglu says, "but I'm also interested in changes within the live-electronic sound and within the playing itself. Each is part of the same story. A lot of live-electronics albums with guitar—or with any other instrument—are based on looping. First you loop a sound, then you change it a little bit, and then maybe you add something. But the sounds themselves don't evolve that much. I'm trying to make *everything* evolve."

Helvacioglu initiates a cinematic and sweeping exploration right from *Altered Realities*' start with "Bridge to Horizon," which opens with a series of 2-note chords and plucked harmonics that gradually morph into a cavernous echo wash of orchestral proportions. Like each of the other six pieces on the CD, "Bridge to Horizon" is the result of a live stereo mix of one pass, with no overdubs. The signal of Helvacioglu's Ovation guitar is split out to both Ross Bencina's AudioMulch interactive studio software and a TC Electronic FireworX processor, then recorded straight to DAT. He uses a Behringer MIDI foot controller to manipulate virtually any combination of effects parameters he wants.

"I've used lots of other sequencing and sound-design programs, like [Steinberg] Cubase, [U&I Software] MetaSynth, and even a little [Cycling '74] Max/MSP," Helvacioglu explains, "and at first I used AudioMulch basically for sound design—importing a sound, processing it, and then using it for something else. But then I started getting into more of the live-electronics aspect of it, and I found that it's very intuitive. Pretty soon I incorporated it with the hardware side [FireworX], and so it's gone on from there."

Real-time sample chopping and multiple rhythmic gate effects drive songs such as "Frozen Resophonic," which, under the insistent pulse of rapidly regenerating guitars, seems at one point to break apart like an ice sheet during a spring thaw. By contrast, the soaring corps of violins that fills the high registers of "Pearl Border" arises from a combination of granular synthesis and the resonators in AudioMulch, propelling the song into otherworldly regions. Always ready to follow a melody or rhythm wherever it may lead, Helvacioglu recalls the free spirit of other Turkish guitarists (Erkin Koray and Erkan Ogur, to name two of the biggest) who have come before him—a link not immediately detectable in his music, but one that he acknowledges.

"Our generation definitely listened to those records," Helvacioglu says. "I'm not sure if they've had a very direct effect on my music. If I played a fretless guitar and used the scales of traditional Turkish folk music, that would be too obvious. But it's in our subconscious and in our soul, so I'm sure there are hints of it in what I'm doing now." em

NATHANIEL KUNKEL

Emmy® Award, multi-GRAMMY® Award-Winning
Engineer, Producer whose credits include projects with:

B.B. King
The Crystal Method
Fuel
Good Charlotte
Graham Nash
James Taylor
John Mayer
Lyle Lovett
Maroon 5
Morrissey
Sting

Nathaniel Kunkel's Studio Without Walls is as much an approach to making records, as it is the actual physical studio. "I move around all the time and I take my studio with me. More often than not I find myself working in smaller, irregular rooms, such as a guest house, office, or hotel room. When I am working in a smaller room like that, the first thing that gets sacrificed is the monitoring environment – and there is almost always some kind of low frequency problem. The LSRs allow me to know exactly what is going on with the bottom end, and create mixes that translate impeccably outside of the studio. The RMC system makes a tremendous difference. I've been working on the JBLs exclusively and I'm really, really happy with them."

Hear why award-winning engineer, producer, Nathaniel Kunkel relies on the LSR series studio monitors. Visit JBLPRO.com/LSR

LSR4300
SERIES

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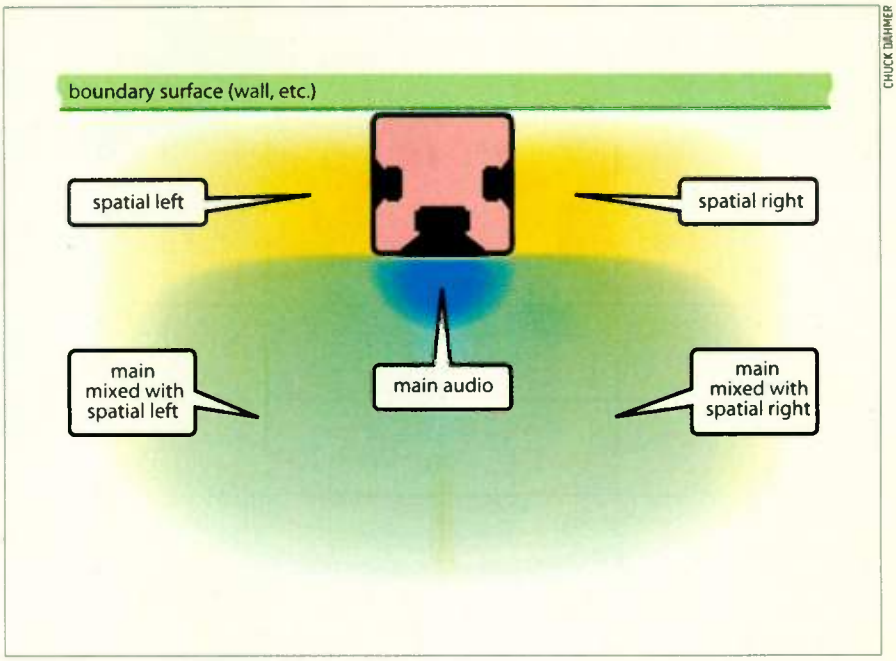


FIG. 1: The airSound concept uses a single main speaker driver in the front of a cabinet to reproduce the main sound, which is the sum of the left and right signals (L + R). The two side-firing drivers, 180 degrees out of phase with respect to each other, reproduce the difference signal (L – R) to provide the spatial informat on.

Sweet Space

A new approach to stereo eliminates the sweet spot. | By Scott Wilkinson

The transition from monaural to 2-channel stereo in the 1930s is undoubtedly one of the most important innovations in the history of recorded and reproduced sound. The idea first came to Alan Blumlein when he went to the movies, which had only recently been enhanced with synchronized audio.

Of course, the audio was mono, and Blumlein noticed that the actors' voices didn't always seem to come from their onscreen positions. That sparked his idea of recording the audio with two microphones and playing it on two speakers, allowing the actors' voices to "follow" them as they moved around on the screen.

Since then, of course, 2-channel stereo has become the de facto standard of sound recording and reproduction, but it's not without its own drawbacks. For example, the sound from two separated speakers is optimal only at the point that forms an equilateral triangle with them—the so-called sweet spot. Anyone at a different location might hear a very different sound, thanks to the cancellation or reinforcement of certain frequencies that arise when the distances from the listener to the two speakers are not equal.

A British company called Airsound (airsound.net) has come up with an ingenious solution to this problem. The company was founded by Ted Fletcher, a longtime engineer who also started Joemeek, a well-respected manufacturer of professional audio electronics and microphones.

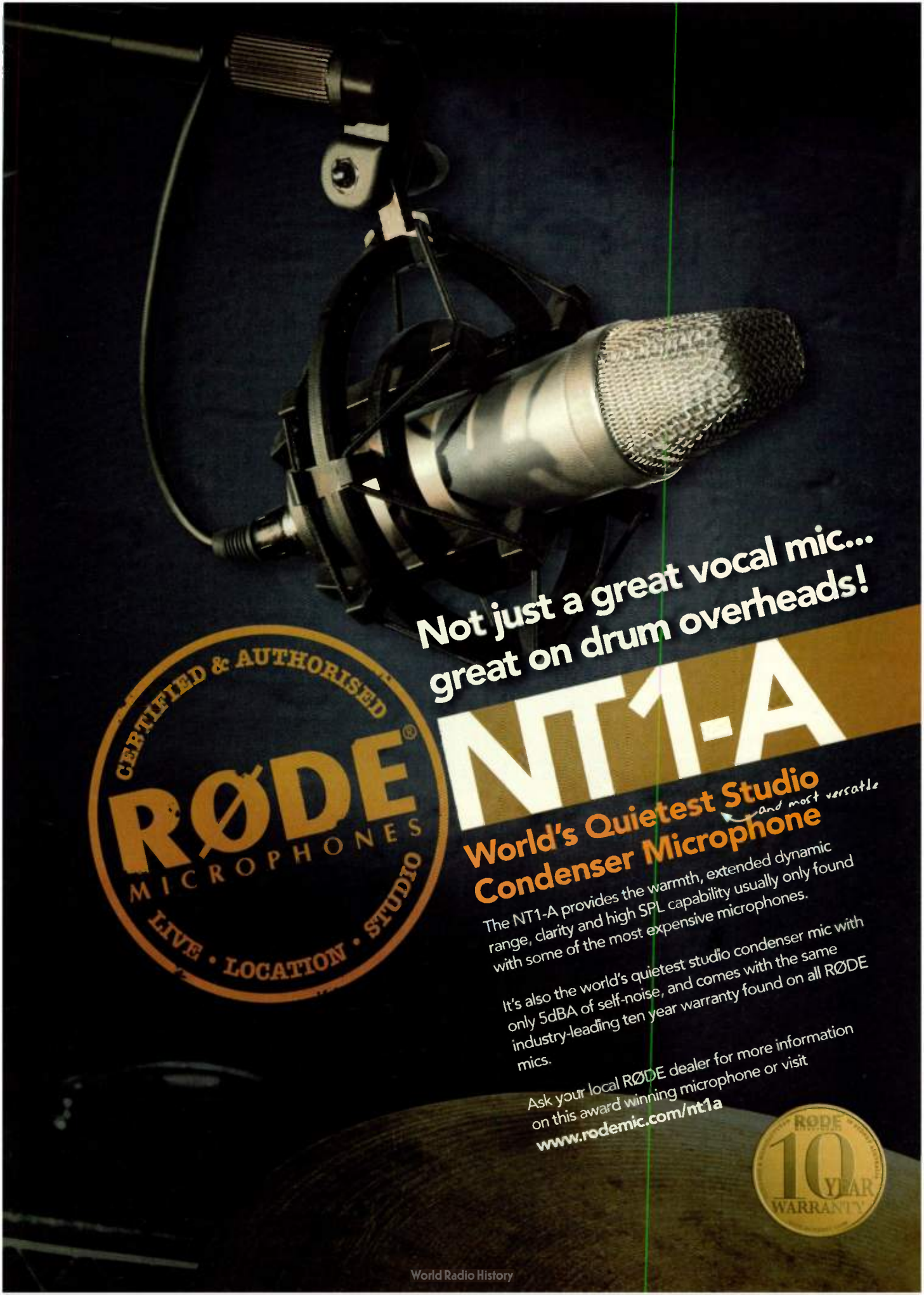
To address the drawbacks of 2-speaker playback, Fletcher devised a way to reproduce 2-channel stereo from a single speaker enclosure. The system works much like M-S (middle-side) recording in reverse. As you may already know, M-S recordings are made with a central microphone aimed at the sound source (which captures the main part of the sound) and a bidirectional, or figure-8, mic pointing to the sides (which records the spatial information). Interestingly, this idea was first proposed by Blumlein in the 1930s.

Fletcher applied the same idea to sound reproduction. His airSound speaker cabinet includes a central speaker driver aimed forward and two drivers facing sideways—each oriented at 90 degrees to the central driver (see **Fig. 1**). The forward-facing driver reproduces the main signal, which is the sum of the left and right channels (L + R), while the side drivers reproduce the difference signal (L – R), with one driver being 180 degrees out of phase with the other. These drivers provide the spatial information necessary for perceiving a stereo sound field.

Used in isolation, this technique can result in a somewhat muddled spatial image, so the airSound concept also relies on something called the "surface effect." By placing the speaker cabinet against a flat surface, reflections reinforce the sound waves, allowing the volume to be maintained at a considerable distance from the speaker and enhancing the clarity of the spatial image. Placing the cabinet against a wall is the easiest way to accomplish this; alternatively, a flat surface can be mounted to the cabinet to allow more-flexible positioning.

According to Airsound, the advantages of this approach are dramatic. Perhaps most important, there is no sweet spot; the stereo effect is balanced and clear no matter where you are in front of the cabinet. In addition, the placement of the speaker is not critical (other than needing a boundary surface). And because the sound comes from a single source, there are no frequency, phase, or time anomalies, which results in a more well-defined and intelligible sound than two separated speakers can typically produce.

Clearly, this technology could be a boon for studio monitoring, P.A. systems, consumer sound systems, and many other audio applications. Alan Blumlein would be proud that his theoretical ideas have found such fertile ground in which to bloom. em



Cheap Fares

Expand your sonic horizons with software under $50.

By Mike Levine, Dennis Miller, Len Sasso, and Geary Yelton

With fuel prices at an all-time high, how far can you really go for less than 50 bucks these days? Well, if you're searching for new sonic vistas, look no further: we've got 17 products that are sure to give you extra creative mileage for less than the price of a tank of gas.

I asked the editors of EM to pick a handful of software apps under $50 that they use and enjoy. The only caveat was that the products could not have appeared in our other roundups of low-priced software, such as "Too Much Good Stuff" (August 2003), "Bargain Hunter's Delight" (May 2004), and "Twelve Under a Hundred" (March 2007; all available at emusician.com).

The results include shareware, donationware, freeware, and even one application with a hardware component. With such a wide variety of synths and effects, as well as an audio editor and a programming environment, you're sure to find a software vehicle to take you where you want to go. —*Gino Robair*

Audio Damage

DubStation (Mac/Win, $39)

Audio Damage (audiodamage.com) has earned a reputation for vintage gear emulations, and DubStation is about as close as it gets to a bucket-brigade analog delay. For example, the high frequencies degenerate with longer delay times, and cranking up the Lo-Cut knob reproduces the lousy bass response of those units (see Fig. 1). Delay times, which you can sync to tempo, range from 4 ms to 2 seconds. The Drive knob adjusts the input from –80 to 3 dB, and the Level LED flashes red to indicate analog-like soft clipping.

FIG. 1: DubStation's GUI encourages hands-on processing.

To encourage hands-on operation, DubStation offers only the essential controls together with an easy-to-use MIDI Learn implementation. The Drive (input level) and Regeneration (feedback) knobs, along with the Loop and Reverse buttons, beg for real-time use. Pressing the Loop button loops the contents of the delay buffer. Looping differs from full-level feedback in that the signal is not repeatedly passed through the delay line and therefore is not degraded. Incoming audio is overdubbed during looping unless you turn the Drive knob down. Reverse plays the buffer backward while new material is overdubbed forward (see Web Clip 1). If you like real-time delay effects, DubStation is a must-have plug-in.

ONLINE BONUS MATERIAL

Big Tick Audio

Cheeze Machine (Mac/Win, donationware)

Although it's been five years since its most recent update, Cheeze Machine, a plug-in from Big Tick Audio (bigtick.pastnotecut.org), continues to be a favorite instrument. It ostensibly

FIG. 2: Even with high polyphony, Cheeze Machine is light on your CPU.

simulates string synthesizers such as ARP's String Ensemble, but its real strength is its ability to generate floating, ethereal pads and other analog-type sounds (see Fig. 2).

Cheeze Machine comes with eight presets you load at the touch of a button. You can also save your own patches and download more banks from Big Tick's Web site. The instrument's oscillator produces waves described as "saw-like," processed through phaser, reverb, and ensemble effects, each with user-programmable parameters. Other than attack, decay, and brightness, though, additional user parameters are minimal. You can vary polyphony from 1 to 32 voices, but Cheeze Machine's CPU usage is negligible.

Csound 5
(Mac/Win/Linux, free)

Csound 5 (csounds.com) is the latest in a long line of sound-synthesis programming languages stemming from Max Mathews's seminal work in the 1950s. It's supported by a huge number of users worldwide who collectively have created a massive library of resources that includes great documentation, numerous examples and tutorials, a journal published approximately three times per year, and a vibrant Web site full of utilities. If you've always felt that programming was something left to technical types or computer science majors, Csound 5 may just change your mind.

The programming environment runs on nearly all modern computing platforms and is capable of creating any sound imaginable. You can use it to synthesize additive sounds with hundreds of oscillators, rich and warm subtractive timbres, or complex time-varying FM patches. But those are just some of its old-school tricks. Csound also supports newer synthesis methods such as physical modeling—Perry Cook's WG (waveguide) opcodes are great for that task—and there are several robust techniques for producing granular sounds using either synthetic or sampled grains (see Web Clip 2).

Csound 5 provides hooks for incorporating real-time MIDI input, and you can also configure it to generate sound in real time (as opposed to writing its audio output to disk, which is the default mode). A recent user contribution puts the entire Csound engine under a VST plug-in or standalone interface, and another lets Csound function as a VST plug-in host. But with so much built-in power, it's not likely that you'll need to look elsewhere for your synthesis needs.

Though there are good graphical interfaces for Csound that limit the amount of text you need to type, be aware that Csound is neither as intuitive nor as easy to use as a modular synthesis environment such as Native Instruments Reaktor, much less a modern soft synth with sliders and knobs (see Fig. 3). But what you do get for your effort is an unlimited number of sound-synthesis and -processing capabilities that will keep you busy for a long time.

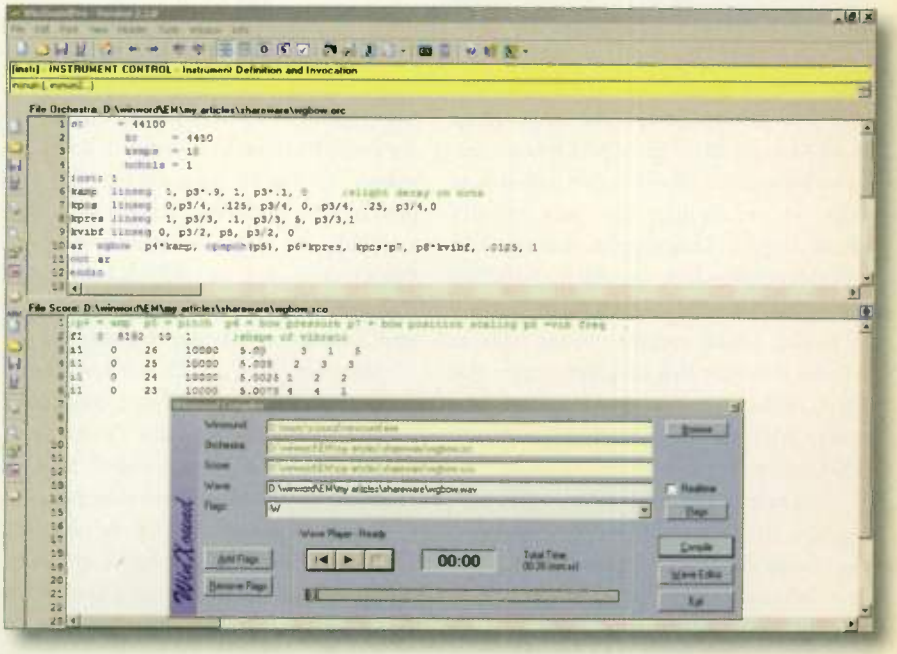


FIG. 3: There are many third-party utilities available that provide a graphical front end to Csound. Here, the code for Web Clip 2 is shown using Stefano Bonetti's WinXound Pro.

Cycling '74
Pluggo Jr. (Mac/Win, free)

Pluggo Jr. is a 12-plug-in subset of the Cycling '74 (cycling74.com) Pluggo suite, which supports AU, VST, and RTAS formats. While the full Pluggo includes both effects plug-ins and virtual instruments, Pluggo Jr. focuses on the former. Like many Cycling '74 products, these effects were created with sound design in mind and are not what you might call "bread-and-butter" plug-ins.

Take, for example, Filter Taps, which combines a multitap delay line with filter effects, allowing you to mangle your audio in a rhythmically cool manner. Jet is a sweet-sounding flanger that has a sonic fingerprint reminiscent of the classic Electro-Harmonix Electric Mistress pedal. If you want to move beyond conventional flanging, you can take Jet into higher altitudes with its 5-way shape control, which lets you choose different waveshapes for modulating the sound.

More strange modulation effects are available in the distinctly nongeneric comb-filter plug-in called Generic Effect. It lets you go from relatively subtle chorus- and flanging-type effects to alien-sounding comb filtering and even complete sonic chaos, depending on where you set its ten adjustable parameters.

Additional filter effects are provided by Resosweep (see Web Clip 3). With Spectral Filter, you draw in filter settings by dragging the cursor across a graphic display. Also notable are Limi, which offers preamp and limiting effects, and Resonation, which combines EQ and delay for some very cool, and often waterlike, effects.

It's not often that you can get a dozen professionally designed and fun-to-use plug-ins for free, so what are you waiting for?

Expert Sleepers
Augustus Loop (Mac/Win, $29)

Expert Sleepers' (expert-sleepers.co.uk) Augustus Loop 1.8 is an amazing audio-looping

FIG. 4: Augustus Loop offers classic tape-delay effects.

plug-in that emulates classic tape-delay devices such as the Maestro Echoplex EP-2 and Roland Space Echo RE-201. Unlike the hardware versions, however, it allows for extremely long delays—up to an hour—and very complex effects. Augustus Loop supplies four taps, each with independent delay time and feedback. You can set delay time or loop length by typing it in, moving a slider, tapping a button twice, or syncing it to your host program's tempo (see **Fig. 4**). A Freeze button lets you sustain delay indefinitely—very handy for setting up ostinato loops to play over.

Augustus Loop behaves a lot like analog tape, but only when you want it to. You can change the virtual tape's speed, reverse its direction, and bring it sliding to a dead stop. You can change delay time gradually, as if you were changing the relative position of two tape heads. Unlike with real tape, however, you can transition instantly from one delay time or loop length to another and abruptly switch from the current tempo to a multiple of that tempo. You can punch in and out and quantize the punch points, and fade your loops in and out gradually. And if tape echo isn't your thing, a Digital Mode button disables the tape-simulation effects.

For live performance, most controls respond to MIDI Control Changes. Two rows of buttons are arranged in semitones for specifying pitch-shifts quickly and accurately, and there's even an LFO to modulate pitch. At the end of the signal path are a resonant multimode filter (with lowpass to highpass to bandpass response) and another LFO to modulate filter cutoff. Saturation parameters apply various amounts of overdrive to the signal, ranging from soft distortion to hard clipping.

All of these parameters allow you to set up very intricate echoes and loops within loops, the likes of which you'd be hard-pressed to reproduce with other effects processors, either hardware or software. And considering the price, if you're fascinated with either loop composition or tape delay, you can't go wrong with Augustus Loop.

Expert Sleepers
Warbler (Mac/Win, $19)

Warbler, from Expert Sleepers (expert-sleepers.co.uk), is a combination pitch-modulation (think vibrato) and feedback-delay effect. The Shape and Bias knobs make this delay unusual: Shape varies the waveshape of the pitch modulation continuously from sine to square, passing through sawtooth up, sawtooth down, and triangle; the Bias knob morphs the effect from pitch modulation to delay. In delay mode (Bias knob fully clockwise), the effect ranges from flange to chorus to discrete echoes. Intermediate Bias settings produce unusual combinations of pitch modulation and delay (see **Web Clip 4**).

Superfine, Fine, and Coarse Speed knobs give you precise control of pitch-modulation frequency, whereas Fine and Coarse Depth knobs affect modulation amount. In delay mode, the depth knobs set the delay time with a range of 0.01 to more than 500 ms. Additional LFOs let you modulate the Speed and Depth settings. In particular, applying the LFO to depth with short delay times provides the sweeping associated with flange and chorus effects. Delay lines are easy to find and pitch-mod effects less so, but this is the only effect we've seen that morphs between the two.

Fretted Synth Audio
Free Amp 3 (Win, donationware)

When you first open Fretted Synth Audio's (frettedsynth.home.att.net) Free Amp 3 and see its 3-D-graphic look, you might be surprised to discover that it's not a full-featured commercial product (see **Fig. 5**). The plug-in offers amp and cabinet simulations as well as virtual stompboxes and rack effects.

FIG. 5: Windows users looking for a guitar amp and effects emulator will be surprised by the power of Free Amp 3.

You get a Clean amp stage and a Drive amp stage. The former has 5 settings (Normal, Bright, Edge, Warm, and Smooth), and the latter 19 (Tube, Punch, Fizz, and so on; see **Web Clip 5**). These are not amp-emulation models that evoke specific classic amps, but the sounds are realistic and range from clean to crunchy to distorted. You can choose between 17 different cabinet types, ranging from 1 × 10 open-backed simulations to 4 × 12 configurations to 8 × 10 bass-amp cabs.

A maximum of three stompbox effects and three rack effects can be applied to each patch. Available effects include Compressor, Chorus, Flanger, Delay, Pitch Shift, (auto) Wah, Equalizer (both parametric and graphic), Tremolo, Overdrive, and Reverb. All time-based effects can be manually set, adjusted with a tap tempo, or synced to your host. A noise gate section with six adjustable parameters is also included.

Free Amp 3 offers a large selection of presets for both guitar and bass sounds. You can save your own sounds, too.

Not everything in this plug-in works as expected. The virtual mic placement feature—you drag a mic icon around a speaker grille—has an almost negligible effect on the sound. Also, no documentation is offered online (Fretted Synth's site offers download links for its software and for donations, but not much else), but for the most part, the user interface is pretty intuitive.

If you want credible guitar sounds for your Windows machine without spending much, Free Amp 3 is a great solution.

HairerSoft
Amadeus Pro (Mac, $40)

Considering its price, HairerSoft's (hairersoft.com) Amadeus Pro is a surprisingly robust audio editor (see **Fig. 6**). Although it has multitrack capabilities, it's strongest as a 2-track editor. In many ways, Amadeus Pro compares favorably to programs costing much more. It's easy to use and very stable, and it lets you zoom with a mouse's scroll wheel, which can really

THE PERFECT MATCH

MSR250

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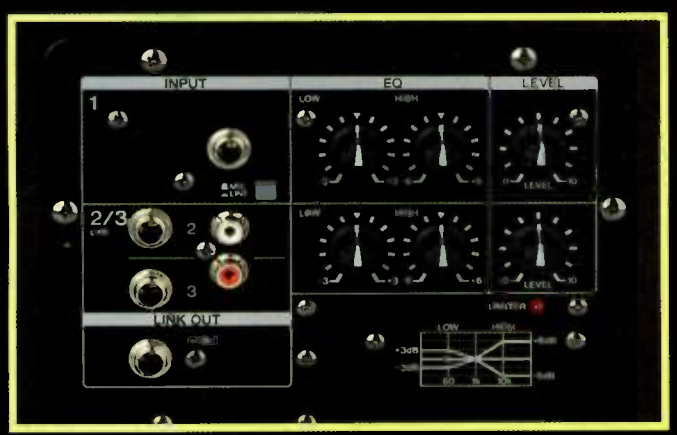

(Back panel shown)

For extra input flexibility, the MSR250 features dual input channels, each with its own low and high EQ controls and level control. The signals from the two inputs can be mixed through the MSR250s, as well as the rear-panel output connector, allowing convenient linking to other speakers or audio devices for easy system expansion.

YAMAHA

www.yamaha.com

FIG. 6: Amadeus Prc has numerous audio-editing features and works well as a file translator.

speed up your work flow (see Web Clip 6).

Amadeus Pro handles all the typical 2-track audio editor functions, including cut, copy, and paste; converting stereo to mono and mono to stereo; reversing; normalizing (both peak and RMS); adding or subtracting level; click and pop repair; basic denoising and audio repair; and fading. Not only can you add fades in and out, but you can also crossfade a selection to the left and to the right. I've found this to be extremely useful when trying to smooth out an edit in a spoken-word audio selection.

The program supports both AU and VST effects. The handy Actions window shows you the effects you've applied, and lets you reapply them to another part of the audio file by simply selecting a section of audio and double-clicking on the Action in the window. You can also save Favorite Actions, which stay in the list even when you open a new file. In addition, the program lets you construct and save racks of multiple effects.

The downside of Amadeus Pro's effects handling is that you can't add a plug-in non-destructively to an entire track and wait until you're finished editing to actually apply it (the way you can in BIAS Peak, for example). Instead, when you open an effect, you must apply it destructively to a selection or the entire track, or decide not to use it. You can preview it, though, before applying. You also get multiple levels of undo.

As a file translator, Amadeus Pro reads and writes in a wide range of formats, including WAV, AIFF, QuickTime, Ogg Vorbis, and MP3. The program also supports batch processing. Among its other useful features are flexible and easy-to-use markers, and the ability to burn CDs (although it's not set up for mastering CDs).

Christopher Keyes and Marcel Wierckx
ArtsSync 1.1 (Mac/Win, free)

If you think sound and images play well together, then you'll enjoy working with ArtsSync 1.1 from Christopher Keyes and Marcel Wierckx (www.hkbu.edu.hk/~lamer/download.htm). ArtsSync is a patch for Cycling '74 Max/MSP that runs under either the free Max runtime application (available at cycling74.com) or the full commercial version. It includes modules for extracting information from an audio file and using it to process real-time video input or a video file on your drive. It also offers several real-time audio generators and a massive matrix-modulation system for sending data across different areas of the program (see Fig. 7).

ArtsSync provides 12 buses on which you can route data. You can assign an envelope follower to watch the amplitude level of one channel of an audio file, then use that information to control the fade level, brightness, or zoom level of a preexisting video file or live input while the amplitude of the other channel, scaled by a certain amount, controls the amount of granulation on a different video. The same data could also be used to control the parameters of a new animation that is generated in real time by the program or to alter one or more still images on your drive.

In addition to using incoming audio information, ArtsSync includes six internal data generators (two Random, two Chaos, and two Oscil functions) and six real-time MIDI data streams, all of which can be routed to control a variety of video effects. Added to that are six multisegment envelope generators that can scale the other modulators or simply control parameters of their own. The combination of the above provides an almost mind-boggling amount of control.

FIG. 7: Combining sound and image, ArtsSync offers real-time audio generators, a dozen buses to route data, and a generous matrix-modulation system.

Line 6
TonePort GX (with GearBox) (Mac/Win, $49)

Line 6 (line6.com) is hardly what you'd call a small, independent software developer, but without a doubt, one of the greatest bargains available from any company is the TonePort GX. It pairs a 24-bit, 96 kHz–capable audio direct box and USB computer interface with GearBox (Mac/Win)—the same modeling software that accompanies Line 6's more expensive hardware devices. GearBox comes with an abundant assortment of guitar and bass amp, speaker cabinet, mic preamp, and effects simulations and a GUI that makes them even easier to use than some of their hardware counterparts. At this price, it's almost like you buy the software and get the hardware for free.

With a high-impedance ¼-inch input and an ⅛-inch line output that accommodates headphones, the low-latency, palm-size TonePort GX interface is short on frills, but it opens the door to some of the finest tones and effects available. You get 23 amp models and 29 cabinet models for guitar and bass, 6 virtual mic preamps, and 29 stompbox and studio effects simulations ranging from phasers and flangers to vintage tape echo and fuzz boxes. Ampeg, Fender, Marshall, Mesa/Boogie, and Vox are just a few of the brands of hardware amps that GearBox emulates. The software's internal player not only lets you jam along with songs and riffs, but it also lets you play them at half speed without affecting pitch. What's more, GearBox parameters send and respond to MIDI.

GearBox runs standalone, and when your

The
sensation of
steel on wood.
The vibration in your
heart and soul.

BASiS

There's nothing like the feel of fingers on strings, or the buzz and thrum of wood on skin. But now there's a bass virtual instrument so realistic, so all-encompassing in its depth and ease of use, you feel like you're playing a real bass.

BASiS makes this possible because it contains advanced humanization controls, as well as incredibly realistic legato and vibrato tools. **BASiS**' comprehensive set of articulations and effects gives you complete control over every small nuance of your bassline. All those little things that happen in between the notes, they're all here, with an interface that is as deep as it is easy to use.

And just so you don't end up sounding like everyone else, **BASiS** also features a truly massive collection of electric, upright, fretless and synth basses. There are classic basses and 'character' basses, and you can control the blend of amp and DI signals. You can further tailor your sound with an extensive set of built-in effects.

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INSTRUMENTS

Machine a lot more than in *Downward Spiral*, but I liked the sound design more in *Downward Spiral*. When it came time for the audition—granted, it was after *The Fragile*, which, sonically, was a big influence on me—I kind of knew what to expect, that I wasn't jumping into the *Downward Spiral* band. It looked like it was following a natural evolution and it was going to be a little different.

But what attracted me to the gig itself was the sound. Knowing that there was a statement being made, soundwise, independent from the songs themselves.

But I remember when, after the first two rounds of real auditions I did in front of them, they invited me over to the studio—they were at the Village mixing *With Teeth*. Atticus Ross, Trent's programmer and coproducer, played me some of the stuff on the album. The first song that he played was "All the Love in the World," which is one of my favorite tracks from Nine Inch Nails, ever. And I knew that that's where I wanted to be. It sounded awesome.

When you work with Trent, do you bring the Buchla and the EAR synth, or do you use whatever he's got?

I just bring the Buchla. If there's one piece of gear that he doesn't have, and he's probably not going to be able to get the sounds any other way, it's the Buchla. I figured I might as well bring something new to the table.

But I ended up using other stuff over there. He has a little bit of everything. A lot of the stuff that I wrote for "Ghosts" was done on his equipment, especially the modular. He has a huge mixed Euro-format system.

And obviously in an environment with Nine Inch Nails where if even one piece of gear—one pedal or whatever it is that he buys—brings one idea, it's worth it. That's one thing that I think made me feel better. Because no matter what, you always feel guilty when you buy gear. But then you go see Trent, and you don't feel guilty anymore.

So how does he deal with having so many options?

I don't know, but he does it. I envy him for that. I think that in my case, limiting myself is good. I can sit in front of the Buchla and come up with enough stuff to keep me busy creatively for a long time.

You're going to be in a different mode when you sit in front of one machine. I have different machines, and each one does a different thing. It's not like having everything in front of you on a computer.

There is a side of me that wants to specialize. Let's face it, if you find an instrument that really makes you happy, and you're allowed to create textures with that instrument that are not that common, *and* if you're lucky enough that people call you because of them, then why concentrate on something else? EM

Gino Robair is the editor of EM.

The
sensation of steel on wood.
The vibration in your heart and soul.

BASiS

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budget allows, you can buy additional Model Packs and upgrade to GearBox Plug-In. You can also subscribe to GearPort Online, a built-in Web-based service for downloading new tones, songs, and lessons.

LinPlug
Free Alpha 3 (Mac/Win, free)

LinPlug (linplug.com) is well respected for soft synths such as Octopus, SaxLab, and CronoX. The company also offers a no-cost version of Alpha 3 called, appropriately enough, Free Alpha 3. Because the free version supplies much of the functionality and many of the same excellent sounds as the $99 version, Free Alpha is a deal you can't afford to miss. Like the fully functional edition, the Free Alpha plug-in supports VST in Windows and AU and VST in Mac OS X.

Free Alpha 3 is an 8-voice virtual analog synthesizer with two oscillators, a resonant multimode filter, an LFO, and two invertible ADSR generators with an additional Fade stage. You can choose from 30 oscillator waveforms and 6 LFO waveforms. Free Alpha 3 has programmable glide and chorus, as well as a 7-slot modulation matrix that routes any of 17 sources to 14 destinations. Because all parameters are addressable by MIDI, you can control any setting in real time with an external controller. Best of all, Free Alpha 3 comes with 64 outstanding factory presets, and its ability to store additional patches is unlimited.

Magnus
Ambience (Mac/Win, donationware)

With reverb plug-ins you generally get what you pay for, but Ambience, a donationware plug-in from Magnus (magnus.smartelectronix.com), is an exception. This VST and AU plug-in sounds surprisingly good (see **Web Clip 7**) and offers a range of editable parameters.

Ambience comes with 77 presets, which encompass a range of reverb types from drum rooms to halls. You get numerous editable parameters, including room size, decay time, EQ controls, stereo width, and gating amount. A slider labeled Quality/CPU lets you lower sound quality to save CPU power. This can be useful on less powerful computers because Ambience, like reverb plug-ins in general, uses a lot of CPU.

Is Ambience going to replace your $400 reverb plug-in? No. But if you want to try another reverb option without spending anything except a couple of minutes of downloading time, it's a solid choice.

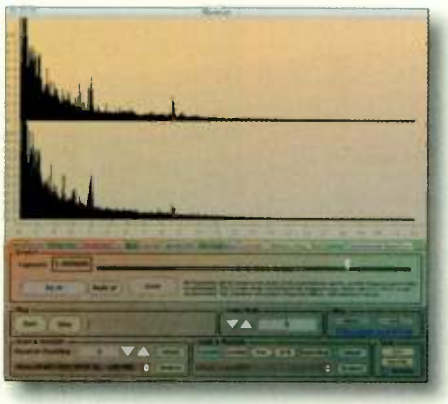


FIG. 8: Mammut's single screen provides access to all the program's features and shows a two-dimensional graph of the current sound's spectrum.

Michael Norris
Soundmagic Spectral (Mac, free)

Michael Norris (michaelnorris.info/software.html) has produced a powerful set of tools that use spectral analysis and resynthesis as their basic modus operandi. Soundmagic Spectral is a collection of 23 AU effects that can do amazing things to your audio files, including transformations you won't readily find elsewhere (much less at this price). The plug-ins perform their analysis in real time, which means there's little or no delay when you use them on a track, and you can tweak the FFT size (aka the window or frame size) to suit different material. The range of parameters each plug-in provides is extensive, and the potential for experimentation is vast.

The Spectral plug-ins are organized into eight categories, including Spectral Smoothing, Spectral Filtering, Spectral Pitch, Spectral Texturing, and Spectral Excitement. Several parameters are found in all of the plug-ins; for instance, Brightness (a high-frequency booster), Gain, and Feedback. It's hard to generalize about the sound each plug-in produces because different source material will generate very different end results—even a minor tweak of a setting or two can send you off into an entirely new direction. For example, by default, Spectral Granulate produces a continuous swirling haze of sound, but with a slight adjustment of the Density and Bin Size parameters, intermittent snippets of audio will spew forth from your monitors (see **Web Clip 8**).

If you haven't explored the realm of analysis and resynthesis, Soundmagic Spectral is a great place to start. From freezing to blurring to creating slowly evolving drones from fast-moving sounds, these plug-ins offer a wide range of sonic wonders.

Notam
Mammut 0.59 (Mac/Win, free)

Mammut, from Notam (notam02.no/notam02/prod-prg-mammut-e.html), is a standalone application that lets you get down and dirty with the spectrum of your samples and audio files. It performs a quick spectral analysis when you load a file, then offers a large number of processing options to tweak the audio before resynthesis. Mammut's developers claim that the program uses a "completely nonintuitive sound transformation approach." To be sure, its analysis method is somewhat unusual—it performs the entire analysis using a single window that is the total length of the file, which means that it is very good at detecting frequency components but not so good at timing. But its functions are intuitively named (Multiply Phase, Invert, Filter, and so on), and with a little practice, you'll be able to get repeatable results using different sound files and often predict the outcome of the processes you're using.

Across the bottom of Mammut's single screen is a row of tabs for accessing each of the program's main functions (see **Fig. 8**). Among these are the Stretch command, which will raise all of a sound's frequencies to the power of an exponent you specify, and the Wobble feature, which expands and contracts the components of the spectrum using a sine function at a user-defined frequency and amplitude (see **Web Clip 9**).

For splicing and dicing a sound's spectrum, try the Block Swap command; use a small block size and large Repeat value if you want to chop your audio into oblivion (see **Web Clip 10**). Or, to give a pitched quality to a completely unpitched sound, tweak the settings of the Mirror feature, which reorients all the partials around a center frequency that you specify.

As its developers suggest, use Mammut "experimentally, by ear. Do not try to understand

what happens—even the programmer can't explain it in many cases." Trial and error is clearly the name of the game with this software.

Smartelectronix
Fire (Mac/Win, donationware)

Smartelectronix (smartelectronix.com) is a worldwide consortium of individual software developers who specialize in unusual effects and instruments. All of their offerings are affordable or free.

Fire, from Remy Muller (aka mdsp) of Smartelectronix, won third prize in the KVR 2006 Developer Challenge (kvraudio.com). It is a multitap delay line (AU/VST) with some interesting twists. Choose a delay time and a number of taps, then select a distribution curve and amount for pan, volume, and delay time. For instance, if you choose a linear distribution and an amount less than zero for delay, the time between delays will decrease like a bouncing ball.

Fire's most unusual parameter is called Morphing. It sets the length of time it takes for real-time changes in the delay times to take effect. For example, if you make radical changes to the delay time with a long morph time (the range is 10 ms to 10 seconds), you hear a slow contraction of the delays along with pitch-shifts proportional to the differences between each tap's original and modified time. With short morph times, the change is glitchier (see **Web Clip 11**).

FIG. 9: The various playback modes in Backwards Machine offer a variety of interesting ways to process audio.

Smartelectronix
SupaTrigga (Mac/Win, donationware)

Smartelectronix (smartelectronix.com) founding member Bram de Jong's SupaTrigga is a deceptively simple effects plug-in (AU/VST) for real-time beat slicing. You start by selecting the number of slices per measure and setting the probability that a slice will be processed. You then set separate probabilities for four kinds of processing: reverse playback, tape-style slowdown with pitch-shift, repeat the previous slice, and silence. The probability of the individual processes is a percentage of the overall processing probability, and different processes can happen simultaneously. Results range from complete chaos when the probabilities and slice counts are high to subtle accents when they're low (see **Web Clip 12**).

You can exert more control with automation or MIDI remote if your plug-in host supports that. In particular, buttons for reversing, slowing, and repeating let you force these processes regardless of their probability setting. Anything from leads to chords to percussion parts makes good fodder for SupaTrigga.

The Sound Guy
Backwards Machine (Mac/Win, $35)

Getting it backward is where Backwards Machine (sfxmachine.com) starts, but not where it ends. This little plug-in can add a ghostly background sheen to loops, pads, and leads, or it can mangle them beyond recognition.

You start by choosing a buffer size between 0.5 and 4 seconds (see **Fig. 9**). Times between 1 and 3 seconds that are a multiple of the beat length produce the subtlest results (see **Web Clip 13**). You then set the wet/dry mix and the amount of feedback into the buffer. If you think of the buffer as a circle, Backwards Machine fills the buffer starting at the top and moving clockwise around the circle. In Reverse Playback mode, once the buffer is half-full, Backwards Machine starts playback from the bottom and moves counterclockwise around the circle.

Choosing times not related to the tempo and using Backwards Machine's other playback modes (Forwards Backwards and Reverse Repeat) is less predictable but no less interesting. If reversed audio is not to your liking, put two instances in series and set the Dry sliders to minimum. That gives you a very unusual delay effect. EM

Mike Levine is executive editor and senior media producer, Dennis Miller and Len Sasso are associate editors, and Geary Yelton is senior editor for EM.

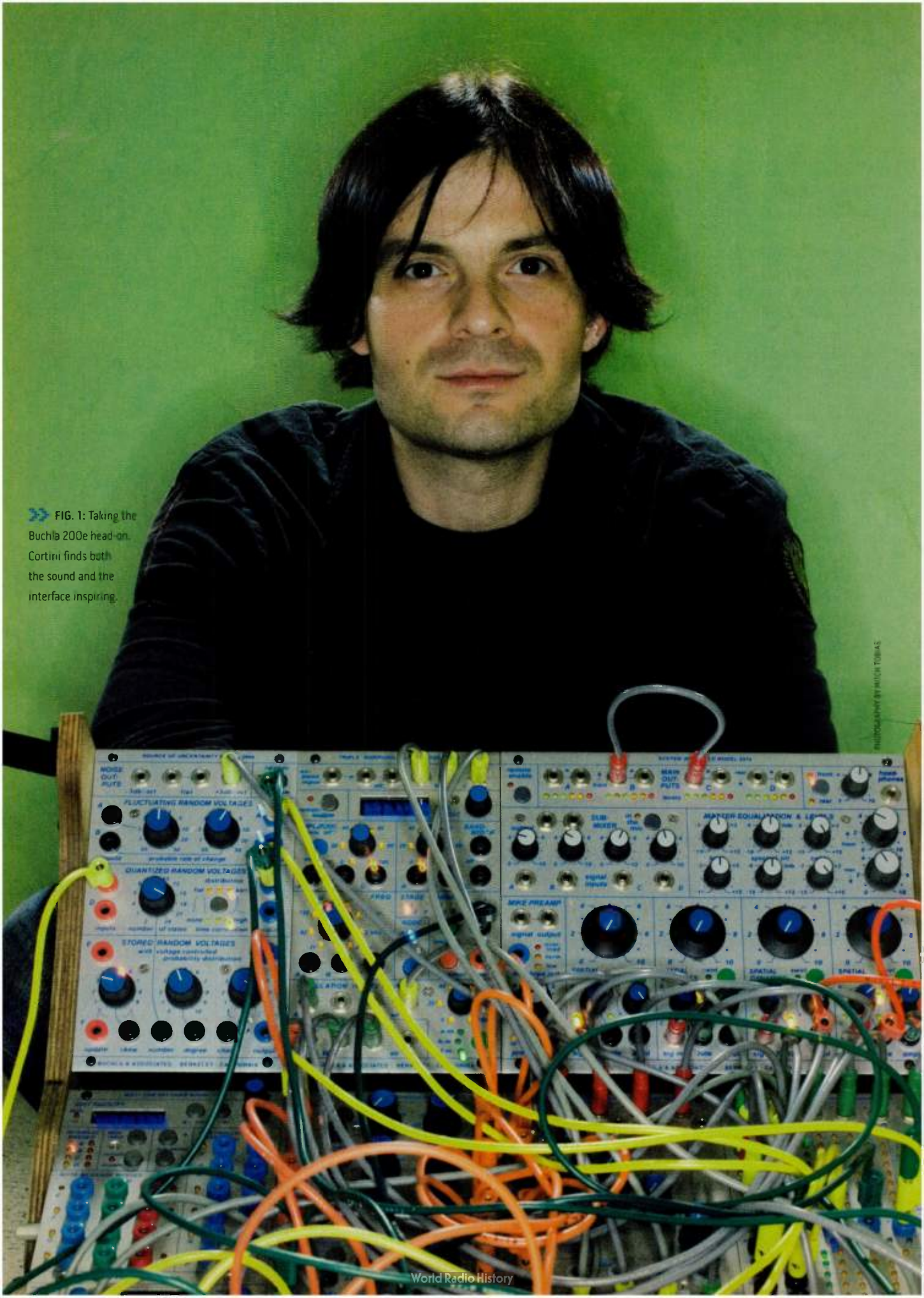


FIG. 1: Taking the Buchla 200e head-on, Cortini finds both the sound and the interface inspiring.

PHOTOGRAPHY BY MITCH TOBIAS

Modular Moods

Alessandro Cortini mixes it up with Nine Inch Nails, Ladytron, and Modwheelmood.

By Gino Robair

"I didn't really give up the guitar. It stopped inspiring me," explains Alessandro Cortini on a warm spring day at his home in Los Angeles. "I got more into the song itself, as opposed to just the guitar."

Born in Bologna and raised in Forli, Italy, Cortini moved to L.A. nearly a decade ago to attend the Guitar Institute of Technology (GIT), where he met Swedish guitarist Pelle Hillström. The two later formed the duo Modwheelmood (with Cortini on lead vocals), whose melody-laced, 3-volume EP *Pearls to Pigs* (Modwheelmusic, 2007–2008) has been released as downloads over the course of several months.

After graduating from GIT, Cortini's creative focus shifted from guitar to synths, which ultimately helped him land a coveted role in Nine Inch Nails. Recently he collaborated with leader Trent Reznor on the instrumental masterpiece *Ghosts I-IV* (Null Corporation, 2008) and contributed to its immediate follow-up, *The Slip* (Null Corporation, 2008).

His ear for catchy melodies and infectious rhythms, as well as his mastery over guitar, drum machine, and synth, has brought him to the attention of other noteworthy acts. He's contributed to Ladytron's *Velocifero* (Nettwerk, 2008), Yoav's *Charmed & Strange* (Verve Forecast, 2008), and the scores for the upcoming films *Righteous Kill* (Millennium Films, 2008) and *Tropic Thunder* (DreamWorks SKG, 2008).

Cortini's personal studio, where he does much of his work, is no-nonsense to the point of austerity—if a piece of gear doesn't inspire him, he doesn't keep it. The result is an exquisite collection of vintage and modern instruments (Korg MS-20, Macbeth M3X, Analogue Systems French Connection, Jomox Sunsyn and Xbase 09) and processors (Vermona spring reverb, Roland RE-501 Chorus Echo, Line 6 DL4, ToneLux modules, various stompboxes), with two standouts: a Buchla 200e (see Fig. 1) and a custom Eurorack modular (see Fig. 2).

"I'm not an analog aficionado," Cortini says. "There are certain things that software can do that hardware can't, and vice versa. I think it's limiting to commit to only one or the other." His main sequencer is Apple Logic, with a Metric Halo 2882 and a Digidesign Mbox mini for interfaces. A Monome and a Native Instruments Kore 2 interface are also within reach. (Visit emusician.com to see video of Cortini in his studio.)

When I caught up with him in April, the humble and charming Cortini was about to begin rehearsals for the upcoming Nine Inch Nails tour. After introducing me to his big friendly dog and three cats, he showed me around the studio. "Modwheelmood is basically out of this basement—everything. The only things I outsource are some mixing, and mastering."

Where did you track the drums for *Pearls to Pigs*?

With Greg Panciera at Musician's Institute, because there was a good room there and Greg took the time to make things sound right. But everything that has to do with programming or recording I do here. Some of the tracks on Volume 2 I mixed myself, and I'd like to do more of that.

Do you cowrite with Pelle?

It depends on the song. A lot of the stuff I've done on my own, and Pelle comes in and, since he relates to the way that I write a lot better as a guitar player, he adds parts that are a lot more memorable than mine. Some songs we wrote together. They just came up: I had a verse and he had a chorus, or vice versa. Or we're in the same room and come up with something that works.

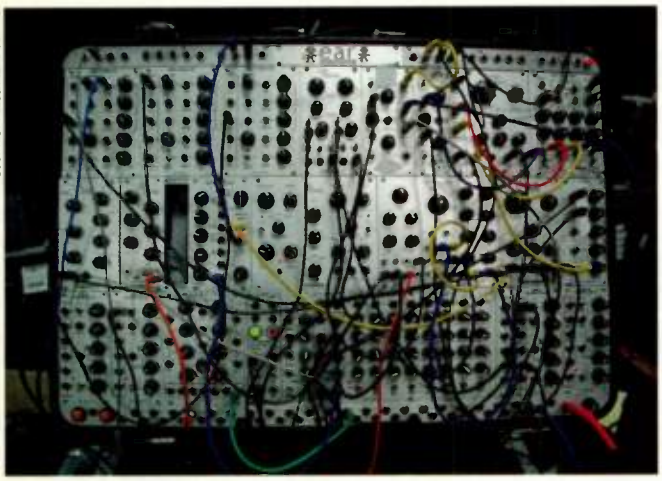
In here mostly?

Yeah. He recently bought a MacBook and records stuff at home using [Apple] GarageBand, and he sends me the demos. Sometimes they spark something in me and I'll sit down and add parts. On a couple of songs—particularly "Crumble" from Volume 2—he sent me a rough of the first verse and chorus. Then I added stuff and sent him what I did, and it went back and forth like that. But most of the time we just work here because it's at home.

I wrote and recorded some of the *Enemies and Immigrants* EP [Buddyhead, 2006] on tour, and mixed it when I was home. I plan on working on some sort of music on this tour, if there is time: after the live show and during days off, I can usually concentrate on other things. So I've always tried to bring something with me to keep me sane. Last tour it was the Buchla.

You finally dropped the dollar on a Buchla 200e.

Oh man, I'm still dropping it *[laughs]*. It was kind of like buying a car. But this takes me more places than a car. It's my favorite piece of gear. If I had to pick one, it's the most creative. Just the way it's laid out.



COURTESY ALESSANDRO CORTINI

FIG. 2: Cortini creatively patches his custom analog modular synth onstage each night with Nine Inch Nails. Built by the Electro-Acoustic Research group (EAR) using Plan B and Livewire modules, it accepts an audio click from a Pro Tools rig offstage to drive the sequencer. As a result, Cortini can patch as creatively as he wants, knowing that his sequence will stay in time with the music and stage lighting.

Is this a standard setup, or did you pick the modules you wanted?

This is a small configuration—just a 12 panel. I knew that I couldn't begin with an 18-panel instrument, so I tried to get as many high-density modules as possible. The 249e [Dual Arbitrary Function Generator] was a module they weren't making anymore, but I was able to get one. It's two sequencers in one. I could have worked with a 250e [Arbitrary Function Generator], but I felt the more each module can do, the better. And I wanted variety, so I have one of the old 259e's [Programmable Complex Waveform Generator] and the new 261e [Complex Waveform Generator].

I've had the pleasure of working with companies like Plan B and Livewire on the EAR system, which are Buchla oriented in a way. But one thing is that they're not replicating the [Buchla] interface, for good reason. They might be able to replicate the functions: Plan B has the Heisenberg Generator, which is, in a way, like a simplified [Buchla] Source of Uncertainty. The Model 15 oscillator is half a [Buchla] 258. And they sound awesome. But it's an ⅛-inch interface. I hate to be this new age, but it doesn't call me the same way that the Buchla's banana jacks call me. The fact that it's half ⅛ inch and half banana makes you work in a certain way. The density of the modules makes you work in a certain way. And the fact that it's designed to do quad and that voltage-controlled panning is built in—it's so easy to achieve stuff that moves around.

It's hard not to do it.

Yes, it's essential.

It's interesting in a rock environment such as a Nine Inch Nails concert to have a musical element like your EAR system that's always different for every show. That's unusual these days.

As long as you're not pretentious to the point of making it a centerpiece. But it's a color. It just adds to the whole appeal of the show, that it's not the same every night. Modular synths—everybody sees them only as lab instruments, but it's not true.

What modular do you use the French Connection with?

At the moment, the EAR system. I used to have a small Analogue Systems rack, with one oscillator, a subdivider in order to get some sort of octave out of it, and two multimode filters. It was at the beginning of a Nine Inch Nails "With Teeth" tour. But now I'm using the Livewire AFG, because it allows for a lot of modulation at the oscillator stage, as opposed to utilizing other modules after that [see **Web Clips 1 through 4**].

ONLINE BONUS MATERIAL

Do you use the French Connection with the Buchla?

No. I don't use a keyboard-based controller with the Buchla. I started to use it as an instrument on its own and was really successful being creative with just that.

To me, it's like a chess game when I play with the Buchla. And that's what I like.

How do you work when you're writing on your own?

It depends on what I have in front of me; I don't have a typical way of working. I never really sit down and think, "Let's see what comes out." It usually comes from something new that I have, either gear or something that I haven't used in a certain way.

There has to be the child factor of not really knowing exactly what's going on, in order to spark some sort of creativity. That's why I haven't really played guitar as a creative instrument in a long time. I used to end up playing the same chord progressions over the same tempo.

I sit down in front of the modulars a lot and come up with a sequence. "MHz," from Volume 1, came about by plugging the Plan B oscillator into the [Livewire] Frequensteiner. I came up with this really cool, tuned sequence and I just let it run. Then a bass line came to mind, so I went to the MS-20 and played it. And after that I came up with a guitar accompaniment.

It's always something different. But I would say that the modulars are the main source of inspiration, or a drum machine. Something that doesn't have to do with melody, most of the time. Melody usually comes later.

So you're really starting with a rhythm or a mood.

Yeah. But this is a personal preference, not when it comes to something that I need to do for somebody. For example, I've been working with composer Ed Schearmur on some cues for a movie called *Righteous Kill*. If he says, "Try this" or "Try that," I might not have the luxury of being able to pick whatever I want. I have to be creative with what he suggests, but that's good, too, because I didn't set the limit. It's somebody else setting it. In that way it's challenging.

Are you playing guitar on this Nine Inch Nails tour?

Yes, if it goes like last tour. I played a lot of guitar, which is great for me because I consider myself better at playing guitar than "piano." I'm good when it comes to synths and stuff like that. But I wasn't schooled on keyboards.

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FIG. 3: When asked about his favorite guitars, Cortini enthusiastically replies, "Jazzmasters!" Pictured here is his vintage Fender '61, refinished in black. He also has a reissue.

I do [see Fig. 3]. Mostly rhythm parts. But usually, if I leave Pelle room to do his thing, he's probably going to come up with more memorable parts in the song.

You do a lot of live vocal processing in that band.

Yeah, I love delays. I use a Line 6 [DL4] to loop my vocals. A lot of it came from having to adapt what we had in the studio to a live situation, because there's only two of us. We got rid of the computer and put the drum programming on an iPod. And I try to replicate the pads with layers using the delay.

Do your songs stretch out longer live than they do on the record?

It depends. We try to if possible. We played two shows with Ladytron, and this time we approached it differently. We went into rehearsals with a drummer, with no electronics whatsoever.

This time I'm playing bass live, and we have some sequences going on, as well as the drums. A lot of things from *Pearls to Pigs* Volumes 1 and 2 have real drums, so it'll be cool to be able to do it that way onstage.

This environment was mostly born for me to work on Modwheelmood. But I've been working on other stuff with it, such as the Ladytron album.

Tell me about your remixes for Ladytron.

It started with them asking me to be a guest on the album and add some tracks to "Versus." I added a couple of synth parts, a little bit of French Connection, and they liked that. So they asked me if I wanted to do another.

They sent me a track that, to my ears, was particularly empty, and one night I had probably too much coffee and recorded as many things as I felt belonged in there. I'm pretty sure it was "Ghosts," the single, where I added background vocals, a guitar solo, a couple of Buchla tracks, and the Korg MS-20 synth line, which is the main synth line. I wrote an introductory email saying, "Hey, I might've gone a little overboard *[laughs]*. If there's anything you're not going to need, feel free to mute it or whatever." But they really liked it, so two tracks turned into six. And I'm really happy with the results. It sounds awesome and the guy who mixed it, Michael Patterson, did an amazing job with it. Having heard the roughs of what Ladytron recorded, and then hearing the final product that Michael mixed, I was blown away.

Did they send you multitrack files?

Actually, no. At the time, they were working in Paris, and they just sent me stereo rough-mix bounces of what they had so far, and I took it from there. Some of them were demos that they still had to work on.

You sent them Logic session files?

First I sent them an MP3 with what I'd done. Then I just sent them stems.

The first song, I sent everything dry. But since I use a lot of delays, they just asked me to print all that stuff. So I just started printing everything the way that it sounded here in the studio. Then Michael Patterson imported the stems into his [Digidesign] Pro Tools session.

Are you using software delays in those pieces?

It depends on the song. Most of the songs, I used SoundToys EchoBoy. In other songs, I used hardware for the guitar parts—in "Season of Illusions," either the Diamond Memory Lane or BlackBox Quicksilver. I ran the guitar into the pedal, into a preamp, and then into Native Instruments Guitar Rig, and then I would print the whole thing.

You never mic an amp?

No. I don't own an amp at the moment. I had an old Fender that I sold to buy a Rhodes Suitcase 73 to practice keyboard parts on when I got the gig with Nine Inch Nails. Then I sold that because there's no room in this studio for something that big. There's a lack of keyboard instruments here. I do have a controller that I use sometimes with virtual instruments.

When it comes to programming things like the Sunsyn, I've always done it in the piano roll. To this day, I write all the voicings, whether it's a pad or a melody, on the piano roll. I just loop a section of the song and come up with a melody in a Tetris-like way, as opposed to sitting in front of a keyboard controller.

But it depends on the instrument. If it's the Korg MS-20, then I obviously have to play the part, and it takes a little bit more time because I'm trying to get a take that is in time, as opposed to recording whatever and fixing it later. I like the fact that some of the instruments in my little studio force me to work in a certain way, as opposed to having everything MIDI remote controlled.

When you are asked to do a remix, how do you approach it?

The way that I do it is not the typical remix dancy stuff. Not that I'm against it, but I know there are a thousand people that could do a lot better job than I do at that.

When I was asked to do my first remix—Nine Inch Nails' remix of *Year Zero*—I approached it as "What if Trent and I were in the room, and Trent had this idea and asked me to finish the song with him?" With the wonders of technology, and using [Celemony] Melodyne, I was able to reshape his melody according to the chords that I wrote.

I realized I couldn't do the same thing for the Ladytron "Ghosts" remix, even though I didn't change the chords that much. But it's usually "What if these artists would've written the song with me?" Sometimes I can relate to the song melodically to the point that I don't change anything. And other times I feel like I would've gone *here*, and I just bust Melodyne out and change it.

With Yoav, I did two remixes. He does everything with acoustic guitar and vocals—he loops the guitar, playing percussion on the body of the instrument. So the whole album is really sparse and really raw, with a lot of reverb and delays, but the instrumentation is really

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basic. The first song I did, "Adore Adore," came out really quick, because obviously I busted out a drum machine and synths. And all of a sudden it was a Modwheelmood tune, to me. It's a really melodic song.

In the Nine Inch Nails remix, I sang the harmonies myself. But now, because it sounds better when it's the original artist singing, I started using Melodyne to copy the original vocal take and then harmonizing it in another track.

You can do that when you get stems from the artist, right?

Yes, for those I received stems, with the bpm and everything. And I just work in Logic. I've been able to spend a lot of time on the Modwheelmood stuff, and then working with Ladytron on their new album, doing these remixes for them and for Yoav, and working with these movie composers. It's been a really creative time.

What inspires you lyrically?

It all depends. A lot of songs have been around for a while, and others come the day before we release an album. Most of the time, it's personal experiences. Then, two or three weeks into the recording process, I reread the lyrics and change something, and it takes another meaning for me. And at the end it's just a mash-up of different concepts.

Lyrically, I'm of the school that each of the listeners should make the lyrics their own. A lot of the songs that I was listening to when I was young, whether the author said what the song was about or they didn't, didn't really matter that much to me. And most of the time, it kind of bummed me out when I found out what they meant *[laughs]*.

I really like the fact that music, and sometimes lyrics, can allow you to interpret the song the way that you want and make it yours.

What did you listen to when you were young?

My mom was a huge Beatles fan, so there was a lot of Beatles in the house. She was obsessed. I think a lot of my attraction to chord changes, to melody, comes from that. And then there was a lot of Cat Stevens growing up.

When I started making my own choices, Duran Duran's *Arena*, the live album, was an overplayed album in my cassette player. I listened to a lot of Terence Trent D'Arby growing up, believe it or not—the *Introducing the Hardline According to Terence Trent D'Arby* album. A lot of the '80s European pop, like Bronski Beat, Alphaville, and New Order. Depeche Mode was kind of dark and I got into them later—when I discovered *Violator*, that was the end. Also, Guns N' Roses' *Appetite for Destruction* was one of my favorite albums, and still is. Great songs. Just a perfect album.

Had you listened to Nine Inch Nails before you did the audition?

I remember listening to *Downward Spiral*, yes. I remember finding out about *Pretty Hate Machine* after. I liked the songs in *Pretty Hate*

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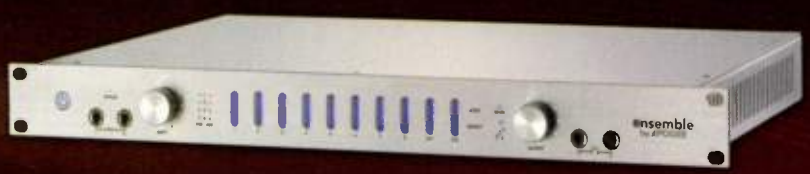

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Machine a lot more than in *Downward Spiral*, but I liked the sound design more in *Downward Spiral*. When it came time for the audition—granted, it was after *The Fragile*, which, sonically, was a big influence on me—I kind of knew what to expect, that I wasn't jumping into the *Downward Spiral* band. It looked like it was following a natural evolution and it was going to be a little different.

But what attracted me to the gig itself was the sound. Knowing that there was a statement being made, soundwise, independent from the songs themselves.

But I remember when, after the first two rounds of real auditions I did in front of them, they invited me over to the studio—they were at the Village mixing *With Teeth*. Atticus Ross, Trent's programmer and coproducer, played me some of the stuff on the album. The first song that he played was "All the Love in the World," which is one of my favorite tracks from Nine Inch Nails, ever. And I knew that that's where I wanted to be. It sounded awesome.

When you work with Trent, do you bring the Buchla and the EAR synth, or do you use whatever he's got?

I just bring the Buchla. If there's one piece of gear that he doesn't have, and he's probably not going to be able to get the sounds any other way, it's the Buchla. I figured I might as well bring something new to the table.

But I ended up using other stuff over there. He has a little bit of everything. A lot of the stuff that I wrote for "Ghosts" was done on his equipment, especially the modular. He has a huge mixed Euro-format system.

And obviously in an environment with Nine Inch Nails where if even one piece of gear—one pedal or whatever it is that he buys—brings one idea, it's worth it. That's one thing that I think made me feel better. Because no matter what, you always feel guilty when you buy gear. But then you go see Trent, and you don't feel guilty anymore.

So how does he deal with having so many options?

I don't know, but he does it. I envy him for that. I think that in my case, limiting myself is good. I can sit in front of the Buchla and come up with enough stuff to keep me busy creatively for a long time.

You're going to be in a different mode when you sit in front of one machine. I have different machines, and each one does a different thing. It's not like having everything in front of you on a computer.

There is a side of me that wants to specialize. Let's face it, if you find an instrument that really makes you happy, and you're allowed to create textures with that instrument that are not that common, *and* if you're lucky enough that people call you because of them, then why concentrate on something else? em

Gino Robair is the editor of EM.

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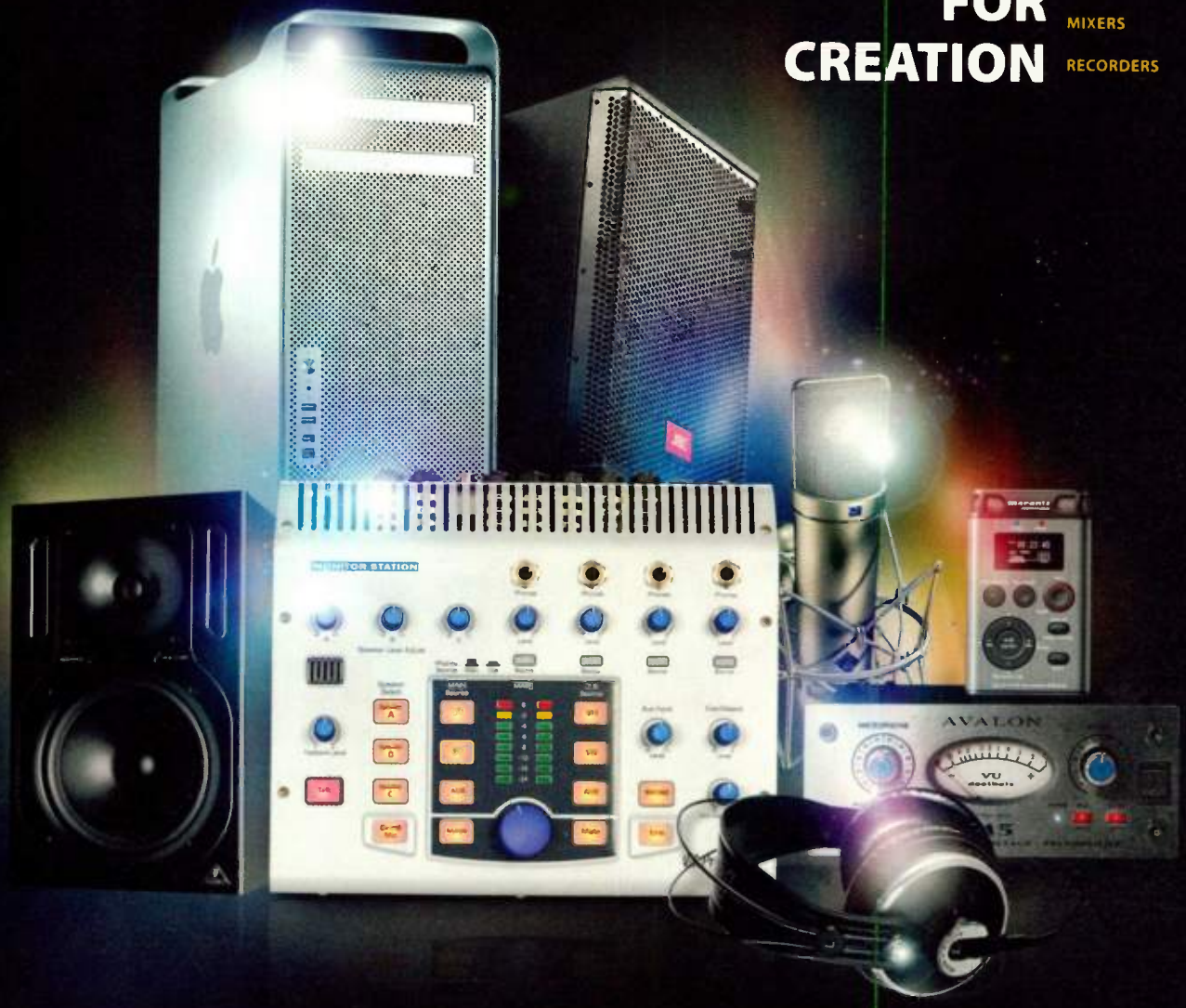

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Tips for getting the best results from audio-restoration software.

By Mike Levine

Cleaning up clicks, pops, and crackle in recordings transferred from vinyl is perhaps the best-known application for audio-restoration (AR) software, but there are uses for it in virtually every situation where audio is recorded (for audio-restoration basics, see this month's "Square One" column). Whether you need to reduce background noise in film or video soundtracks, clean up audio for Podcasts, minimize the noise of computers and drives that leaks onto your music tracks, or repair clipped digital recordings, there's an audio-restoration product that can help you.

AR software comes in many varieties, from dedicated plug-in suites to standalone editors to noise-reduction features built into audio editors. (You may have such features included in software you own and not even realize it.) Although AR software titles offer the tools to tackle noise issues, these products will frequently yield the best results with subtle application. A heavy-handed approach to AR processing can often make a bad-sounding recording worse.

Full-featured AR programs or suites typically consist of several major tools. Common to most are a hum-and-rumble remover, a click-and-crackle remover, and a broadband-noise reducer. Manufacturers typically suggest that if you're going to use all three on a piece of audio, you'll get the best results by applying them in the order just mentioned. Some AR products also have noise gates, declipper modes for regenerating clipped sections, and other specialty tools.

In this article, I'll provide tips and techniques for using AR software in common audio-restoration scenarios. The information was gleaned from talking to professional users and software developers, and from my own experience with AR software. This is not a product roundup, but I will mention plenty of different programs and plug-ins along the way.

ONLINE BONUS MATERIAL

Noise Horizons

One of the most common reasons people turn to audio-restoration software is to reduce broadband noise. As the name implies, a broadband noise is one that covers a range of frequencies (as opposed to, say, 60 Hz hum). For instance, hiss, background noise, machine noise, and even people's voices would be considered broadband noise. Even with the prevalence of 24-bit recording and its improved dynamic range, hiss and background noise bedevil all types of recorded material, particularly dialog, interviews, and other spoken-word recordings (see the online bonus material "Denoise in the Name of the Law" at emusician.com).

Plug-ins like BIAS SoundSoap and SoundSoap Pro, Wave Arts MR Noise

(from the Master Restoration Suite), and Waves Z-Noise and X-Noise (the latter is part of the Restoration Bundle); standalone applications like Enhancedaudio DC Seven and iZotope RX; and audio editors such as Adobe Audition, Apple Soundtrack Pro, BIAS Peak and Peak LE, Sony Sound Forge, and Steinberg WaveLab all offer denoising tools.

Denoising software requires that you sample a bit of program material, preferably a short section containing only noise, so that the software can calculate the frequencies and levels of the noise signal. This setting is sometimes called the "noise profile" or "noise print." Then during playback, the software will use this profile setting to squash down any frequencies that fall below these levels at the specified frequencies. Essentially, it's a multiband gate.

"At every frequency," says Bill Gardner of Wave Arts, "it knows what the level of noise is. So while the music's playing, if you're above that level, it decides it must be signal; it'll let it pass. But if it falls down to the level where it thinks it might be noise, it starts to attenuate it." Although Gardner was speaking specifically about the MR Noise plug-in, what he said is descriptive of broadband-noise reducers in general.

Some denoising software can automatically detect the noise portion of the audio, even if you don't have a section of solo noise to sample. For example, Waves Z-Noise has a setting called Extract, and the standalone version of iZotope RX has one called Auto-Train. These functions search your audio for a section that contains only noise and sample it automatically. BIAS SoundSoap Pro (see **Fig. 1**) offers an option called Timed Learn Noise, which samples a user-specified segment of program material and then calculates an average noise profile from within it.

Tweak That Thing

Although a denoiser calculates its settings automatically from the noise profile, don't expect instant perfection. You'll typically need to do some additional tweaking of the threshold and reduction (sometimes called "attenuation") controls—which are offered in virtually all full-featured noise-reduction software—to get the best results.

The threshold governs the level below which the reduction kicks in, at the frequencies identified in the noise profile. The reduction slider controls the amount of the process that's applied (similar to the ratio setting in a conventional noise gate). Experimenting with these settings helps you find the best compromise between reduction amount and sound quality. Too much reduction will cause glassy or watery-sounding artifacts, sometimes referred to as "musical noise" (see **Web Clip 1**; in his "Square One" column on audio restoration in this issue, Brian Smithers refers to these as "birdies"; I've also heard them called "space monkeys"). Other artifacts of the noise-reduction process include harsh-sounding audio and degraded transient response.

Most noise reducers offer other tweakable parameters to help you come up with the best trade-off between noise reduction and audio quality. It's important to learn the capabilities of these parameters to get optimal results.

One tool that can help a great deal in figuring out your settings is the noise-monitoring feature common to most AR software. It lets you listen separately to what you (or the program's automatic settings) have defined as the noise portion of the signal. At the press of a button, you're able to listen to the portion of the audio that's being taken out. This is particularly useful for checking how much of the target (source) signal, if any, you're affecting along with the noise.

Set and Don't Forget

Let me focus for the moment on reducing noise in a primarily spoken-word recording, such as in a video soundtrack or an audio interview. How you set the controls depends on whether you're aiming for ultimate sound quality or just intelligibility. You also have to assess the severity of the noise and come up with a realistic goal for the final result.

If the noise is relatively quiet compared with the target signal, it's usually pretty easy to clean it up without much degradation. However, as the relative noise level increases, getting both intelligibility and good sound quality can become much more difficult.

Curtis Crowe of Enhancedaudio, who has a great deal of restoration experience, terms a recording with more noise than target signal as being "upside down." Fortunately, he notes, most of the time you won't be dealing with such an unfavorable balance. "Usually it's not upside down," Crowe says. "As long as that's the case, we're likely to get excellent results."

To tap into Crowe's audio-restoration methodology, I asked him how he would handle a hypothetical upside-down interview recorded on a busy and noisy convention floor. "That would be an incredibly difficult thing," he says. "Obviously all the noise on a convention floor, same as in a restaurant, would be almost identical [to the source]." In other words, both the target audio (the interviewer and interviewee's voices) and the primary background noise (numerous people talking) are of a similar character, making the process of separating them out harder from a frequency standpoint.

"One thing that we'll always try," says Crowe about such a situation, "is to use a continuous noise filter [broadband-noise reducer], and we know that we'll introduce a few artifacts. First we want to take a sample of the background noise. Typically I'll take one that's a little longer than normal, about 1 second. I'd rather have it without the target signal. If I can find a [full] second, fine; if not, I'll take what I can get." The longer the sample of noise, the more accurate the settings that the software calculates will be.

"I'll start with my continuous noise filter [in DC Seven]," he continues, "doing almost nothing with the attenuation slider, and then I'll inch it [the slider] up, not trying to remove the noise, but trying to improve the signal-to-noise ratio by whatever amount I can. And when I move it up, I'm going to induce some artifacts as I reduce the noise, because my sample cannot match the noise correctly."

Crowe would also apply another effect in

FIG. 1: BIAS SoundSoap Pro's denoiser module offers both a "learn noise" option and another that extracts a profile from a user-specified section of the audio that includes both source and noise.

Audio-Restoration Bullet Points

- Always preview before applying destructive processes. Make sure you have a backup copy of the audio.
- If your software allows it, pop the AR processing in and out to compare it with the unprocessed audio.
- Don't rely strictly on automatic settings, especially in broadband-noise reducers. Experiment with the threshold and reduction sliders (or equivalents) as well as parameters like attack and release. If you start hearing artifacts, back off on the amount of the effect.
- Try to find as long a sample of noise for the "learn" function as you can. It will help with the accuracy of the settings.
- Use the "noise-only" monitoring feature to check the part of the audio being removed by the software.
- In heavy noise situations, consider a multiband expander or an EQ boost set to the frequency range of the target audio to help bring it out.
- If the audio contains rhythmic material, make sure the AR software isn't degrading the transient response.
- If you don't have declipping software, try de-essing in the area of 2 kHz (and higher) to minimize the distortion artifacts of clipped audio on spoken-word tracks.
- When editing out an anomaly from a file being used in a soundtrack situation, don't delete audio, or you'll change the timing. Eliminate it by reducing level instead.
- Don't edit out time when cleaning up a video soundtrack, or you'll likely affect the sync. Use attenuation to get rid of glitches instead.

> Don't expect instant perfection. You'll typically need to do some additional tweaking.

that situation: an expander. "I'd use a multiband expander to try to lock on to the target voice to try to make it louder," he says. "A tool in DC Seven is called Punch and Crunch [see **Fig. 2**]. It's a 4-band compressor/expander, and it shows you the energy in each band. And the bands are adjustable. So I'd probably start off with two bands covering 300 Hz to 3,000 Hz. And then, as I watched where the energy was in his voice, I'd try to narrow that to make the expander only effective when he's talking, as much as possible."

Treat the Music

So far I've focused on spoken-word recordings, but what about noisy music tracks? People transferring from vinyl or cassette to digital often find source material that needs noise reduction (see the **online bonus material** "Restoring the Past"). Even in music that you've tracked in your own studio, you might have background-noise problems resulting from recording at too low a level, tracking a noisy source like an overdriven, compressed guitar signal, or picking up machine noise.

I spoke to producer (and EM author) Steve Skinner, who was having trouble with machine noise, particularly from his CPU and disk drives, getting on his tracks. "Disk-drive noise is particularly tricky because it goes up and down depending on the intensity," he says.

He started using the Waves Z-Noise plug-in to clean up the tracks and has been very happy with the results. "I've been using it so far on guitar, upright bass, and spoken voice, and I think I've used it on the sung voice," he says. "And as far as my ears can tell, I haven't heard it mess with the original signal."

Here he describes his approach to using it on music tracks: "I'll open it up and put it on the learn function and do about 30 dB of noise reduction, and just move the threshold until the noise goes away. I'll then leave that setting and put it on the track using AudioSuite."

Z-Noise offers a number of settings to adjust the behavior of the plug-in depending on the nature of the transients in your material. The Punch setting is designed specifically for situations where you want to preserve the transients as much as possible (see **Fig. 3**).

Bassist and producer Kevin "Brandino" Brandon (brandino.com) describes a massive audio-restoration job he did, making a CD (*A Voyage Again/Con Mucho Gusto*; N' House Records, 2006) from a cassette master of a live performance by jazz pianist Milcho Leviev from the Don Ellis Big Band, which was recorded back in the '80s. The playing was great, but the audio was quite noisy. Brandon and engineer Michael Gunderson turned to the software tools in Sony Sound Forge to clean it up (see **Web Clips 2a and 2b**).

They first used a pretty heavy dose of Sony's Noise Reduction (see **Fig. 4**), which is a broadband-noise reducer, but found that a subtler approach was necessary. "I listened back and discovered it was too clean," Gunderson says. "It took some of the life away from the material."

They then started over with a more gradual approach, applying denoising in layers, using both Noise Reduction 2.0 and the (fixed) noise-reduction algorithm in Sound Forge's Audio Restoration tool. "First I did one pass of Audio Restoration using a minimal to moderate setting, and it seemed to clean up the noise floor, but there still was some tape hiss," recalls Gunderson. "So I did three passes of the Noise Reduction 2.0 to really strip away the tape hiss, using a very minimal setting each time. At this point you might wonder about any sound degradation. I would say it was minimal at best."

Because audio quality is always paramount in music recordings, you have to be even more

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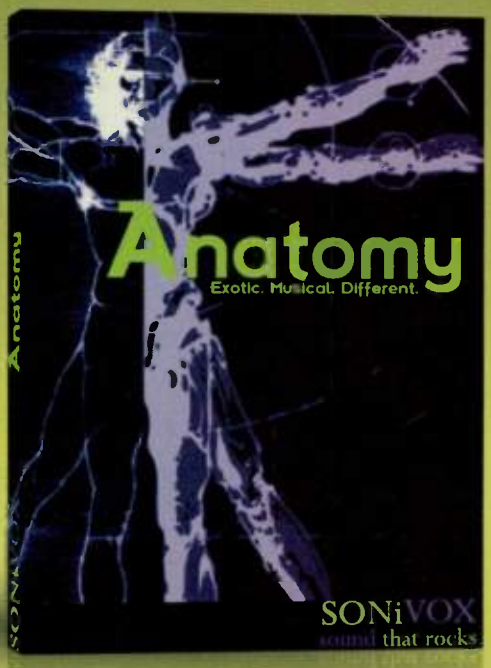

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judicious in your use of AR processes than you might be in spoken-word applications. Be sure to solo and compare the track both processed and unprocessed. Be extra careful to apply settings that don't noticeably degrade audio quality.

Destructive Thinking

In most DAWs, if you're denoising using a plug-in, you have the option to use it (or other AR processes) nondestructively throughout the entire duration of your track, or apply it destructively to specific sections where needed. The former scenario can be advantageous because instead of committing to a setting right away, you have the option to change up until the point that you actually bounce or run the mix. This is also helpful because it's easy to make your initial noise-reduction settings too strong.

But when you're dealing with intermittent broadband noise, or noise that changes in intensity or content over the duration of your track, applying AR processes destructively (such as using the denoiser as an AudioSuite plug-in in Digidesign Pro Tools), with specific targeted settings, is probably easiest. If you're using Waves' Z-Noise plug-in, you can turn on Adaptive mode, which is designed to change its settings automatically as the noise levels change in the program material. That gives you the advantages of nondestructive processing and the ability to handle a changing noise profile. (If you don't have Z-Noise, you could use automation to change your plug-in's settings over the course of the audio track.)

Before you apply destructive processes to your audio, it's always wise to make a backup copy in case you overdo it. In my work as a Podcast producer, I've had a number of situations where I used broadband-noise-reduction software on a track, only to decide later that I'd degraded the audio quality too much in the process. Because I had a backup, I had options to redo the processing in a more sonically pleasing way.

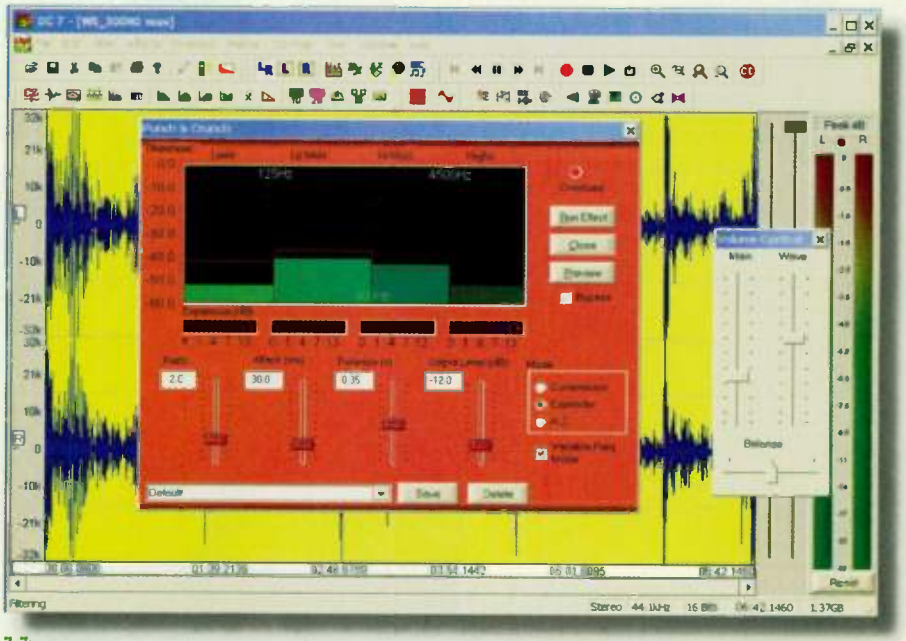

FIG. 2: Punch and Crunch, the multiband compressor/expander in Enhancedaudio's DC Seven program, can be used to home in on the target audio in particularly noisy passages.

Ho Hum

Sometimes you're up against electrical hum, which is much more predictable in terms of its frequency and behavior than broadband noise typically is. The hum removers in AR software generally use EQ to notch it out, with presets at the basic hum frequencies of 50 or 60 Hz that extend up to harmonics of those frequencies. If your noise is electrically based, the hum remover can be very effective.

Jason England is a sound editor for film and television who uses BIAS SoundSoap Pro to deal with a range of noise problems, including hum. "I need something that's just click and go. The hum-and-rumble remover, you just turn it on. As an audio person you already have an idea of the frequency that you want to hit, and then you just slide it and do it."

Even if you don't have AR software, you can use conventional EQ to try to reduce hum and rumble. For hum, set a steep cut with a very narrow bandwidth at 50 or 60 Hz and see if that helps. You can also use a highpass filter or brickwall filter to get rid of rumble. A good starting point for the former is to begin rolling off at about 60 Hz. With the brickwall filter, start out at 40 Hz. Of course, you'll want to experiment to find the best possible setting.

> Too much reduction will cause glassy or watery-sounding artifacts.

Pop Goes the Click

Pops, clicks, and crackle can plague an audio recording. The latter two are particularly problematic when transferring from vinyl. Luckily, AR programs and plug-in suites are all equipped to deal with these intermittent pests.

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Often you can set a click-and-crackle remover plug-in to run across the length of a track and automatically remove them.

But as with broadband-noise-reducing software, setting the remover correctly takes some work. Some people will listen to the noise-only signal and tweak the settings until they hear only clicks and crackle, and no source signal. Crowe takes a different approach.

He likes to listen to the full signal when setting the click remover in DC Seven. He finds a short, representative section, maybe 15 seconds long, and loops it. "I want to hear the same thing again and again and again. My ear gets used to it," Crowe says. "I then adjust it with my mental focus on the clicks until I make them all go away. And then I bypass the filter, and instantly, while it's playing, it stops filtering. And then I hear all the clicks come back, and then I shift my mental focus to the target signal, the music, or whatever. And then I pop the filter in and out, in and out, while I'm listening. And if I can't hear any degradation in the target signal, then I've reached my point."

Manufacturer Contacts

Adobe
adobe.com

Apple
apple.com

BIAS
bias-inc.com

Enhancedaudio
enhancedaudio.com

iZotope
izotope.com

Sony Creative Software
sonycreativesoftware.com

Steinberg Media Technologies
steinberg.net

Wave Arts
wavearts.com

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FIG. 3: Waves designed three presets into Z-Noise that let you tailor the plug-in's response depending on the transient character of the source audio.

But clicks and crackle don't occur just on vinyl. England is often bedeviled by RF static that gets onto the dialog audio after being picked up in the actors' wireless lavalier mics. He uses BIAS SoundSoap Pro to help remove these impulse noises.

England applies SoundSoap Pro's click-and-crackle remover differently depending on the severity of the problem. "I might zero in on that one little area where there was a little static," he says, "but sometimes it's the whole take that's staticky, and I might just process the whole take."

As with denoisers, overly high settings on a click remover can reduce transient response. So if you're declicking a rhythmic track, use moderate settings if possible. (For more about click removal, see the **online bonus material** "Click Away.")

Distortions of Reality

Digital audio is very unforgiving when it comes to clipping. If you go into the red, you're likely to get nasty-sounding distortion. I used to think that if a take was clipped, it was ruined.

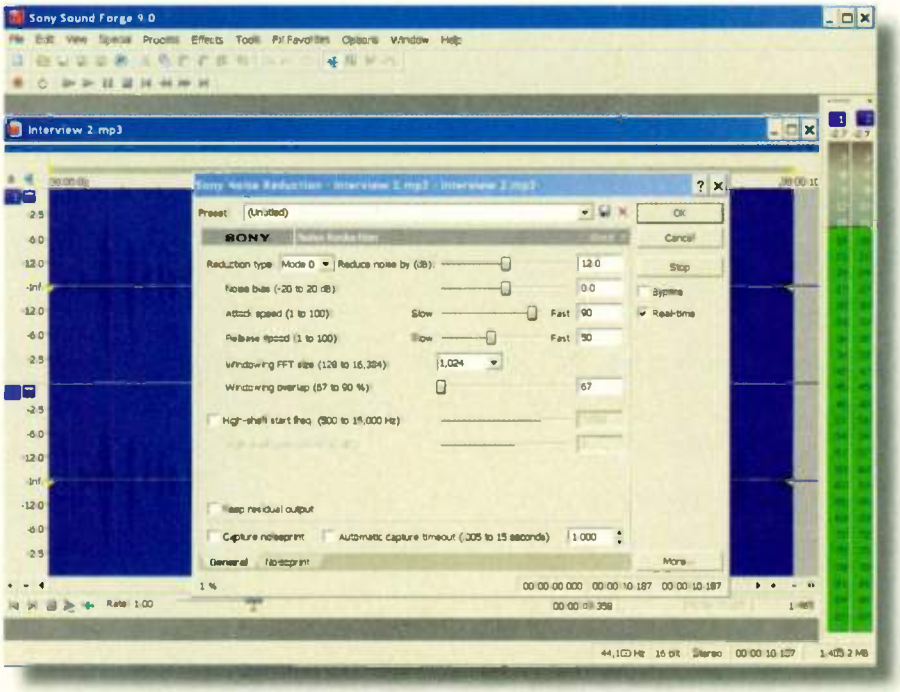

FIG. 4: Sony Sound Forge 9 with the built-in Noise Reduction effect open.

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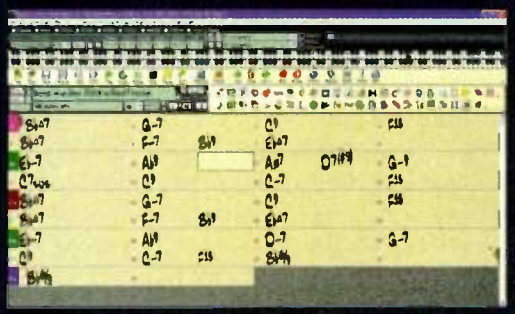

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However, while researching this story, I discovered that there are actually software-based remedies for clipping that can sometimes salvage a distorted recording.

Some AR programs, including RX and DC Seven, have declipping tools built in. These processes use interpolation; that is, they analyze the clipped waveform, calculate what it would look like if it hadn't gone over, and then use that information to generate a nonclipped replacement.

Crowe explains more specifically how the declipping algorithm in DC Seven works. "It measures the slope on the positive-going part of the wave and then on the negative-going part, and then it calculates what the clipped-off top should have been. But it is [only] a prediction."

Declipping tools are not foolproof. They often require trial and error with different settings to get a satisfactory result. Sometimes they're simply not effective. Still, they give you a chance to recover otherwise ruined recordings.

Crowe suggests a surprisingly effective alternate tool for dealing with clipped audio: a de-esser. "Clipping results in harmonic bursts of energy that shouldn't have been there," he explains. "And so they're all higher than the fundamental frequencies that we do want. A de-esser cuts the top-end frequencies, and you can see how that would help. I typically set it to around 2 kHz."

While previewing the de-esser effect, Crowe adjusts the frequency range until he finds the right level of attenuation. "I'm going to adjust until I've gotten rid of the distortion without killing the high end. And I back it off until I reach the right balance, and you can't predict until you do it what that right balance point is."

I tried Crowe's de-esser method on some clipped segments on an interview recording, and it worked quite well (see Web Clip 3). Because virtually all DAWs have de-essers, you don't even need dedicated AR software to apply this remedy. You will lose some high end, but for spoken-word recordings, that's not always critical.

Spectral Visions

Another effective tool for audio restoration is an editor with a spectral display. The spectral view sometimes allows you to see anomalies

FIG. 5: iZotope RX's main view offers overlaid waveform and spectral editing views. RX's Spectral Repair module uses interpolation technology to fix audio glitches.

much more clearly than in a typical waveform display. Programs like RX (see Fig. 5) and Adobe Audition offer spectral views that you can actually edit in. One way this can be useful is if you have an audio problem that occurs within a limited frequency range. You can zero in on it visually and edit it, while leaving the rest of the audio unaffected.

RX, for example, lets you select by time (across the frequency spectrum), by frequency and time (a selected frequency range in a selected time range), and by frequency (a selected frequency range across the entire file). You can choose to listen to the selected area only, which is useful for homing in on the selection you want. You can then apply one of RX's many processes to the selected area.

A unique and incredibly effective tool in RX is its Spectral Repair module. It provides several options for repairing audio problems, including Replace mode, which uses interpolation to replace a small section of problem audio based on the audio surrounding it. For instance, it works great to remove string squeaks from acoustic guitar tracks, essentially replacing the squeak (which you've isolated in the spectral editing view) with audio generated from the note surrounding it. Like any AR tool, it takes some trial and error. I've found RX's Spectral Repair able to fix a range of otherwise unsolvable problems ranging from severe clipping to stray noises (see Web Clip 4). It's the tool I turn to when nothing else seems to work.

Noise No More

Audio restoration offers many options for quieting noisy recordings. Which product you use and how you use it are up to you, but the bottom line is that digital technology has made the repair of damaged and badly recorded audio much more possible than ever. Whether you're planning on buying a dedicated program or plug-in suite or you just want to learn to use the AR features available in your 2-track editor, I highly recommend that you dive right in. The knowledge and skills you gain are sure to come in handy sooner or later. EM

Mike Levine is EM's executive editor and senior media producer and the host of the monthly Podcast "EM Cast" (emusician.com/podcasts).

Creating Realistic String Parts

Vienna Special Edition makes legato phrasing easy | By Steve Skinner

When Vienna Instruments introduced the affordable version of its Vienna Symphonic Library (VSL), Vienna Special Edition (VSE), which is Digidesign Pro Tools compatible, the company added features that solve two of the most challenging problems in sampled-strings arranging: note connections and dynamics (see Fig. 1). These facilitate some of the processes I described in "Making Tracks: Create More Realistic Strings" in EM's August 2006 issue.

When playing legato, string players will move their fingers to the next note while they continue bowing. The result, particularly with multiple musicians, is a very smooth transition from one note to the next. A player may even slide from note to note. Because each musician plays that slide somewhat differently, the effect cannot be duplicated using a simple synth-style portamento.

A Nonstarter

Most sampled-strings instruments restart each sample as it is played. In the August 2006 "Making Tracks," I suggested moving the sample start time up for legato notes so that the attack portion of each sample is not heard. Although an improvement, the result still does not sound completely convincing.

VSL went one step further and sampled the note-to-note transitions of each section. When you play note transitions with an overlap, VSE finds the sample of that transition and plays it.

The VSE legato instruments are all monophonic, so you must open separate VSE instances for each string section in your arrangement and write monophonic parts. When one section is playing more than one note (called *divisi*), either open a new instrument or use a MIDI controller or keyswitch to change the player to the sustain articulation.

To ensure that all the notes in your arrangement play legato, first quantize all their attacks and releases. Check visually that each note overlaps the next, then add 50 or so tics to the duration of each note. (In Pro Tools, use the Legato function in the Change Duration window.)

Check that there are no repeated notes in the arrangement, because moving the Note Off command of the first note to 50 tics after

STEP-BY-STEP INSTRUCTIONS

Step 1: In the Patch Assign window, load legato violins (055 VI-14 legato) into patch 1A.

Step 2: Click on Edit Cell and lower the dynamic range (DYN.R.) to 10. You may also want to increase the release time.

Step 3: In the Perform window's Perform Control tab, turn Velocity X-fade on.

the Note On of the repeated note will cut off the repeated note; when you need to repeat notes, leave a space between them. There is a bit of latency involved in playing the transition samples, so shift the track playback offset until the timing feels right.

The best way to add dynamics to your strings is to vary their volume and timbre with MIDI Volume (CC 7) or Expression (CC 11) continuous controllers. Rather than using just volume and filter changes, VSE lets you gradually fade between samples that are played with different dynamics. That gives you a much more realistic crescendo and decrescendo.

Smooth Move

Here's how to set up the performance parameters to enable smooth dynamic changes that work within a pop arrangement (see "Step-by-Step Instructions"). Because the volume range in a pop arrangement is usually limited, the strings should express dynamics without large volume changes. For orchestral or solo string pieces, you may want to tweak the settings or keep the VSE default settings.

In the Patch Assign window, load legato violins (055 VI-14 legato) into patch 1A. Click on Edit Cell and lower the dynamic range (DYN.R.) to 10. You might also choose to increase the release time (REL).

In the Perform window's Perform Control tab, turn Velocity X-fade on. Next, in the Perform window's Map Control tab, click on Velocity Crossfader and select ControlChange as the source and 7 Volume as the controller (CC 11 works just as well).

Now MIDI volume commands will affect both the volume and the crossfade between samples. Velocity will not affect the dynamics at all. When CC 7 affects sample crossfade and volume, the volume change is too great for pop music, but when CC 7 is turned off, the volume change is too small. The solution is to pull the Velocity crossfade curve to the right (concave) and the volume curve to the left (convex). Tweak both curves until the dynamics feel right to you. A concave crossfade curve has the added effect of spreading the crossfade area over a greater range, making for a smoother transition (see **Web Clip 1**). Play your parts while using a MIDI volume fader or pedal, or—my preference—play the parts and then draw in the dynamics on your DAW.

ONLINE BONUS MATERIAL

FIG. 1: The Vienna Instruments interface shows the Special Edition patches on the right. The legato violins are loaded.

The VSL Appassionata Strings and Chamber Strings collections (not included in VSE) work well in other contexts. The Chamber Strings collection suits retro-sounding tracks, because many older records used smaller sections (see **Web Clip 2**). The Appassionata Strings collection, with its heavier vibrato and larger sections, fits a modern classical crossover arrangement (see **Web Clip 3**). em

Steve Skinner is an arranger, programmer, and producer based in New Jersey. See his record credits at steveskinnermusic.com.

Step 4: In the Perform window's Map Control tab, click on Velocity Crossfader and select ControlChange as the source and 7 Volume as the controller.

Step 5: Pull the Velocity crossfade curve to the right.

Step 6: Pull the volume curve to the left.

FIG. 1: Absynth's A channel processes Lounge Lizard 3 (via Osc A) with allpass and lowpass filters modulated by the envelopes at the bottom.

One for the Rhodes

Add synth processing to your favorite modeled instrument. | By Len Sasso

In the world of virtual instruments, a physical-modeled electric piano is as close as you get to the real thing. The premier examples of this type of instrument are Applied Acoustics Systems (AAS) Lounge Lizard 3, AAS Electric in Ableton Live 7, and Apple Logic EVP-88. In a bow to authenticity, these models offer very little signal processing beyond standard effects such as phasing, flanging, tremolo, and reverb. Synthesizers, on the other hand, are loaded with signal processors, ranging from classics like enveloped multimode filters to more-arcane processes like frequency shifting, formant filtering, and waveshaping. Although that kind of processing takes you beyond the electric-piano paradigm, it yields sounds you won't be able to get from a synth or a modeled electric piano by itself.

Many synth plug-ins provide audio input as an alternative to one or more of their oscillators. Route your virtual electric piano into that, and the rest of the synth's signal path is at your disposal. For my examples, I used Lounge Lizard 3 and Native Instruments Absynth 4 in Ableton Live 7. The process varies only slightly with different synths and DAWs.

Plugging In

Like many other synth plug-ins, Absynth 4 comes in two flavors—effect and instrument—and depending on your DAW's routing options, you can use either one. Although not absolutely necessary, routing MIDI to Absynth enables a broader range of processing. If you insert the Absynth effects plug-in after your electric piano, you'll need to route MIDI from another track directly to the plug-in. If you insert the Absynth instrument on a MIDI track, you'll need to route audio from your electric piano to the plug-in. Live 7 offers both options, and I prefer to insert the Absynth effects plug-in after Lounge Lizard 3. If you choose not to route MIDI to Absynth, set Auto Trigger at the lower right of the Perform page to either Always On (simulates permanently holding a note) or Audio (uses an envelope follower to trigger Absynth's envelopes).

Fig. 1 shows an Absynth configuration for applying envelope-controlled filters. The stereo electric-piano signal is routed into the Osc A component, which then feeds an allpass filter for a phase-cancellation effect followed by a resonant lowpass filter. Absynth's Poly setting, found on the Perform page, is critical to the sound. A setting of 1 keeps the Sustain mode envelopes from retriggering until all notes have been released. When you play and hold a chord, the envelopes advance to their sustain breakpoint, and you can then play lines over the chord (see **Web Clip 1**). The patch is still polyphonic, however, because you're playing the electric piano.

ONLINE BONUS MATERIAL

Bass Shift

Frequency shifters are rare, and Absynth's is a great tool for sound shaping. For example, you can create a gritty keyboard bass by inserting a frequency shifter in each of the three channels (see **Web Clip 2**). That works best for monophonic parts but is also useful for consonant musical intervals (octaves and perfect fourths and fifths, for instance).

Start by activating the Osc and Mod 1 tab in each channel, setting the oscillators to stereo Audio In mode, setting each modulator's type to Freq Shift, and selecting Ratio in the Frequency pop-up menu. Set the first frequency shifter for a negative (minus sign) shift, with a ratio of 0.5; set the second for a positive shift, with the same ratio; and set the third for a positive shift, with a ratio of 1.5. These settings produce an octave shift down, a perfect fifth up, and a major tenth up. Use automation or route a mod wheel or an *x-y* controller to set the levels of channels B and C. For more grit and a phasing effect, try the waveshaper and the Pipe effect in Absynth's Master channel.

If you're an advocate of the happy-accident school of synth programming, browse Absynth's factory instrument presets and, when you find one you like, try switching one or more of its oscillators to Audio In mode (see **Web Clip 3**). If you want the results to remain roughly like an electric piano, look in the Mallet Instruments, Pianos/Keys, and Plucked Strings categories. Try the Vocal, Bowed Strings, and Soundscape categories to create layered sounds. Try Percussion presets for sequenced and single-hit patches. em

Len Sasso is an associate editor of EM. For an earful, visit his Web site at swiftkick.com.

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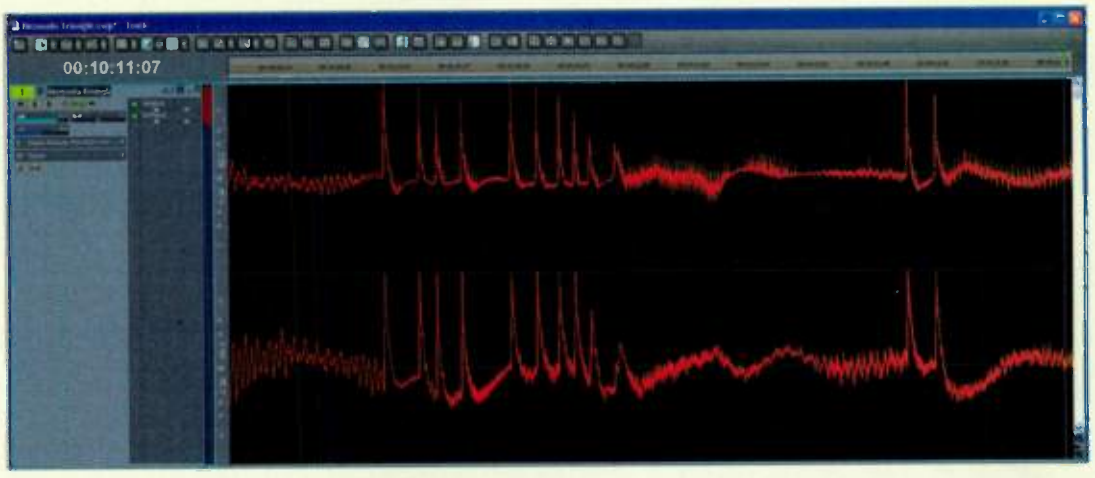


FIG. 1: This screen shot shows some of the unpleasant damage you see when transferring old tapes or vinyl records for preservation, repurposing, or archiving. Fixing such damage is the object of audio-restoration software.

Snap, Crackle, Pop

How audio restoration can undo the damage of age and abuse. | By Brian Smithers

As the saying goes, stuff happens. No matter how hard we try to avoid it, a steady chain of events works to degrade every recording we make (see **Fig. 1**). Recording devices and analog media introduce noise into a recording, then media break, scratch, and wear. At some point, the accumulation of those effects makes us need to look for ways to restore the original glory of a valued recording. And that's where the art and science of audio restoration comes in.

Various techniques, such as the RIAA curve for vinyl or the various Dolby noise-reduction methods for tape, are employed to improve the performance of recording devices. But audio restoration is used when the damage has already been done and such preventative processing is no longer an option. Analog techniques exist: for example, if you have two damaged source copies, you can splice them together to circumvent the flaws in each. And there are 2-stage analog declickers, which are designed to find clicks using a highpass filter and then reduce them by engaging a lowpass filter.

The use of digital signal processing (DSP) has brought great advances to the field of audio restoration and has simultaneously opened it to a much wider audience. Even very inexpensive software now includes tools to remove clicks and hiss from recordings, making it easier than ever before for users to create good-sounding digital files from their favorite LPs. More-sophisticated versions of these tools are being used to archive and restore recordings of great historical, commercial, and cultural value.

Meet the Enemy

The damage that occurs to recordings—whether as a result of the recording/reproduction process or the physical degradation of the medium—can be broadly divided into two categories: short-term damage and long-term damage. Short-term damage includes clicks (see **Fig. 2**), crackle, thumps, and pops; long-term damage includes hiss and *wow*, or speed fluctuations. (Distortion is another type of damage, but one that is primarily beyond our current capabilities to repair.)

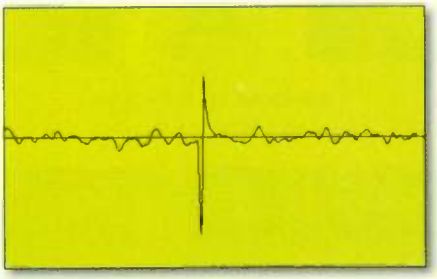


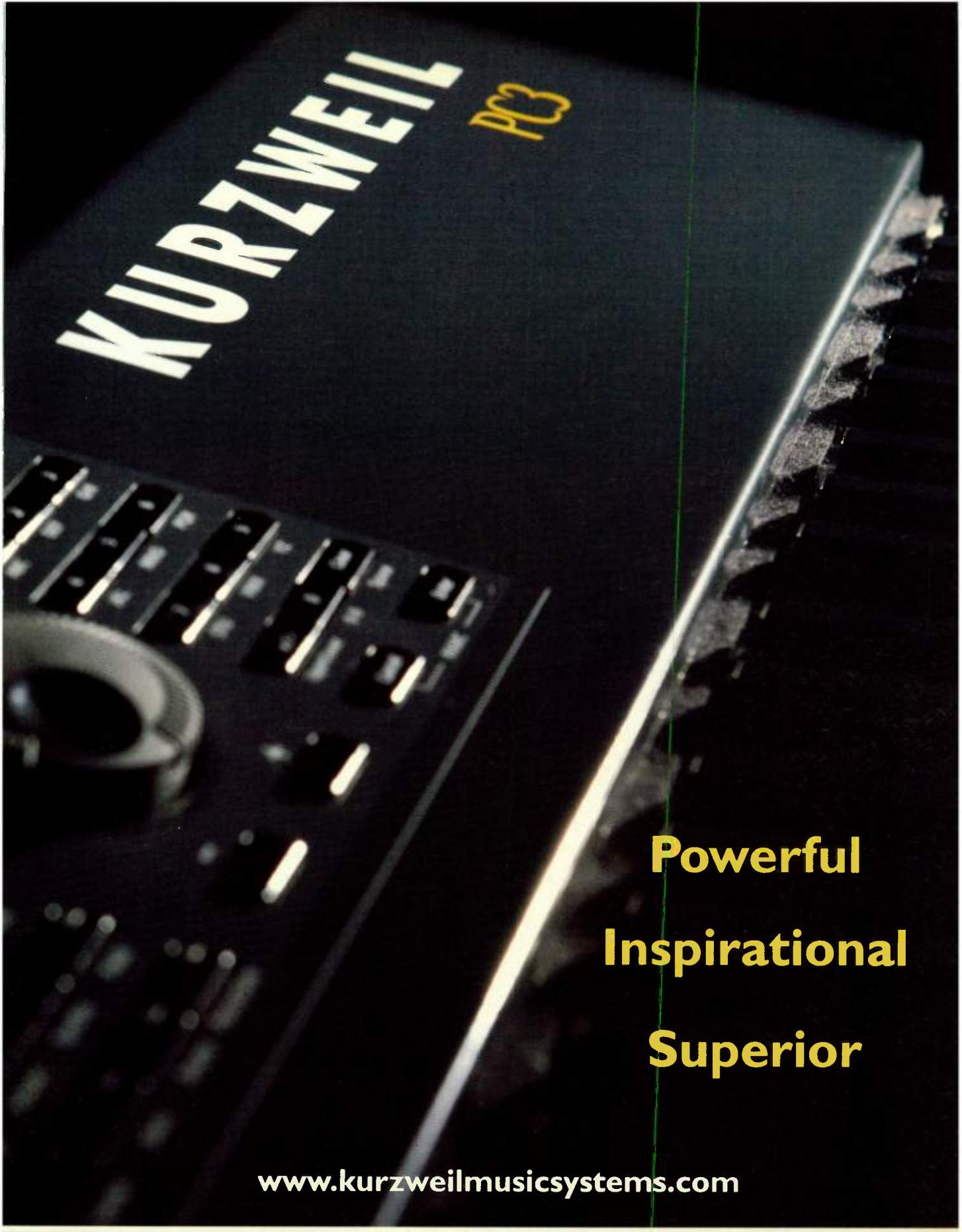
FIG. 2: A click is immediately apparent by its contrast with the surrounding music waveform, and intuitively just as easy to fix by interpolation.

In some cases the damaged signal consists of the original signal and an undesirable signal, but in other cases the damage obliterates the original signal, leaving nothing but the noise. To fix the former type of damage, you attempt to remove the noise and leave only the undamaged original; to fix the latter type, you try to reconstruct the missing part of the original. In both cases, however, you must first find a way to distinguish the noise from the original signal.

It turns out that the best tools for the job are your ears. Even the untrained ear can easily distinguish between the sound of music and that of tape hiss, clicks, and pops. If you are properly motivated, as when listening to a distant broadcast or a worn-out recording of a favorite musician, you can discard the interference and savor only the original signal. Audio-restoration software attempts to mimic this innate human talent through carefully crafted DSP algorithms.

Divide and Conquer

Several methods are available for detecting clicks, crackle, and other similar noises. Clicks are primarily



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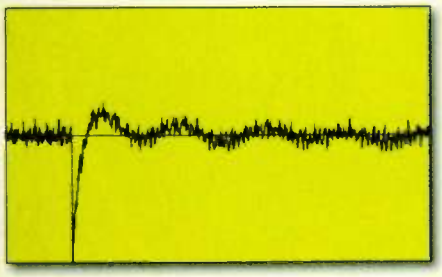

FIG. 3: A thump or pop is distinguished from a simple click in that it resonates for a short time. This resonance makes a thump or pop more difficult to repair than a click.

composed of high-frequency energy, so if you run the signal through a highpass filter, you can remove the useful energy and see only the clicks. Clicks have an extraordinarily short rise time, so you can analyze the waveform with wavelet filters (which see a signal in both the frequency and the time domain), and then flag the points that look like cliffs.

Algorithms exist that can dependably predict the behavior of a music waveform based on its prior shape. When a click occurs, that prediction will prove to be quite wrong. This sort of time-domain modeling of the waveform borrows from the fields of probability theory and random-signal theory. It is one of the major advancements in restoration and continues to be a hot topic of research.

Once a click is found, the simplest fix is to interpolate between the last good sample before the click and the next one after. Some more-advanced algorithms first dissect the signal on a frequency basis (by doing a discrete Fourier transform), and then interpolate within each frequency *bin* (storage unit) before reconstructing the signal.

In using interpolation, however, you assume that the original signal is unrecoverable. If you believe the signal is recoverable, you can attempt to remove the click. The trick is to know which part of the damaged signal is good and which is bad. One solution is to model the behavior of the click based on the analysis of similar noises. You can then subtract the estimated spectrum of the noise from the damaged signal, leaving only the original.

Making Hiss-tory

Eliminating hiss and other sorts of steady-state noise requires a different set of tools. Although lowpass filtering can reduce the most obvious part of hiss, it often dulls the original signal in the process. To avoid having that happen, hiss-detection algorithms first divide the signal into time slices, typically looking at windows of either 1,024 or 2,048 samples. At each window (or frame), the signal is then separated into frequency bins. If this sounds a lot like the sort of frequency coding that goes into many perceptual data-reduction codecs, it is. What we do with these frequency bins is different, however.

Because voice and music signals typically have fairly predictable patterns of fundamentals and overtones, relatively few of the frequency bins at a particular moment will hold most of the musical energy. The hiss, being unrelated to the music signal, is spread randomly across the frequency bins, leaving the music bins with an improved signal-to-noise ratio compared with the total signal. This makes the job of reducing the noise without affecting the music signal easier.

The most common way to characterize the hiss within a damaged signal is by taking a "noise print" from a silent section, such as the gap between tracks. Other methods may apply generalized noise profiles, while still others make assumptions about the characteristics of the desired signal and adapt the noise profile based on the current total (original plus noise) signal. The hiss is then subtracted at each frequency bin, and the frames are reassembled using an "overlap and add" technique to create the improved output signal.

A Little Birdie

One of the most common side effects of hiss reduction is a warbling sound affectionately known as a "birdie" or "musical noise." Because the hiss is subtracted on a frame-by-frame basis and it is not identical from frame to frame, the timbre of the residual hiss changes over time, creating a disconcerting semipitched warble. Often the most useful fix is to settle for less hiss reduction, and the majority of hiss-reduction algorithms allow you to vary the amount of reduction.

Some algorithms reduce the musical-noise effect by comparing each frame's spectrum with adjacent frames. Because music and speech most often depend on signals that remain steady over the very short duration of a few frames (whereas noise by definition changes randomly), a clearer distinction can then be drawn between the original signal and the hiss.

Psychoacoustic analysis is helping researchers design ever-more-useful algorithms by fine-tuning the trade-offs between hiss reduction and preservation of the original signal. Following the Hippocratic edict to "do no harm," you don't need to process those parts of the signal in which the hiss is unnoticeable as a result of masking. This reduces not only the likelihood of birdies and other artifacts, but also the computational load.

That's Not All, Folks

Thumps and pops are both defects that resemble low-frequency clicks except that they resonate for a short time (see **Fig. 3**). The attack of the thump may obliterate the signal (or nearly so), but as the thump resonates and fades, it is blended with the signal. This requires a more complex model of the defect's behavior than is needed for a click. The modeling is made more difficult because the resonance's pitch changes as the thump fades. Very often the original signal must be reconstructed by interpolation or modeling for the first few samples; the rest can be retrieved (hopefully) by subtraction of the thump.

> Audio restoration is used when the damage has already been done.

Wow (the periodic variation in a recording's speed, as when a vinyl record's hole is punched off center) can be addressed by mapping the speed fluctuations, and then performing a variable resampling on the source with a profile that is the inverse of the measured speed map. This is another application in which time slicing and frequency coding are useful. By comparing the dominant frequencies at adjacent frames (assuming once again that voice and music signals ordinarily sustain frequencies over multiple frames), you can track the pitch (and therefore the speed) fluctuations.

All of this analysis takes a lot of computing muscle, thus the first audio-restoration products depended on hardware DSP. Current research into ever-more-complex models for detection and repair banks on a continued increase in available processing power. As a result, you can look forward to more and better tools to restore your valued but degraded audio. EM

Brian Smithers is department chair of workstations at Full Sail University and the author of Mixing in Pro Tools: Skill Pack *(Cengage Learning, 2006).*

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FIG. 1: The subscription service 52 revolves around Ari Hest writing, recording, and releasing a song a week to his fans for a year.

Q&A: Ari and Danny Hest

Exploring new revenue models for indie artists.

Recording artists once looked upon a major-label record deal as the Holy Grail. But now, thanks to the Internet, signing one's rights over—often at the risk of being lost in the corporate shuffle—is no longer the only way to reach the musical masses.

By Elianne Halbersberg

Singer-songwriter Ari Hest (see **Fig. 1**) and his manager and brother, Danny (see **Fig. 2**), have launched a unique platform for showcasing Ari's music, communicating with fans, and turning a profit. The brothers' Web-based service, titled "52," allows subscribers to receive a new, original Hest song each week: 52 in 52. The service operates on a three-tiered ($20, $35, or $75) format. The higher the level, the more additional perks you get, such as merchandise, concert tickets, video, and bonus tracks. At the end of the year, subscribers will vote for their 12 favorite songs, which Hest will then remaster and release as a CD.

Ari Hest built his foundation as an independent artist by recording, touring, and developing a following. By the time he signed with Columbia Records, he was a recognizable name in the music world—but not to the degree needed to become a label priority. Released from his contract last year, Hest and his brother began brainstorming for a new way to put out his material, expand his audience, and remain fiscally secure. The result was their service, 52 (arihest.com).

Armed with a MacBook Pro running Apple GarageBand, Hest began writing, recording, and mixing his songs while his brother built their Web site, which launched this past January. And so far, they say, so good. Ari says that he had already written about 25 percent of the material needed; the rest he has to write as he goes. "I'm not doing any covers. I toyed with the idea of doing them or rehashing old songs," he says, "but it almost cheapens it to me. I want to challenge myself with this."

How is membership reaching, or even surpassing, your expectations?

Ari Hest: It's not blasting off, but we didn't expect it to right away. The first month was pretty good, then it slowed a little and it's still steady. We're having a great time with it.

Danny Hest: We set out on a pretty conservative track. My goal was 2,000 members for the year, and maybe five or six times that if it catches on. Frankly, I spent more time on the technical side of it than I wanted to. Now that it has taken off, I can concentrate on referrals and street time to encourage people to join. It takes a little convincing to get fans to try something different, so I'm pleased but not ecstatic. However, I see potential for growth.

I heard that you recouped all of your expenses after one song.

DH: The only expenses are our publicist, Monica Hopman, on a monthly basis, and two years of Web hosting that were paid for up front. I bought three books on how to build a Web site and spent maybe $100 on some digital Web tools. I used Joomla, a free, open-source content-management system. I had built a few sites for Ari before he was on Columbia. I taught myself; I'm decent at it. I learned out of necessity. Ari bought a new hard drive, monitoring speakers, and a mastering program. We did a preorder in the middle of December, and within a week we had almost completely recouped our expenses—so we knew this was a model that could actually work.

We're also offering songs in the traditional way on the MP3 store, and we uploaded the first 13 songs to iTunes and got a lot of sales from that, too. We're trying to put as much quality product out there as possible, and he's enjoying seeing the direct correlation to fans' excitement. It's been successful from a business standpoint.

How big a part did your major-label deal play in building your fan base and making 52 viable?

AH: I have a lot of respect for a lot of people I worked with at Columbia, and they'd agree that my experience there did not expand my fan base. They felt bad; their system wasn't working for me. I was independent before signing with Columbia—and I was selling records almost as much, with a decent fan base.

DH: The best thing Columbia did at [that] point in Ari's career was to let him out of his contract. They wouldn't have gone for this idea. This came out of wanting to do something creative and release all the material he had. On a label, with the traditional way of marketing, it's hard for them to adjust their schedules. For a prolific artist, that's not conducive. They certainly tried on his first record, but he never got the full benefit of being on a major label. And on his second record, everything was falling apart—people were being fired, and it almost did damage to what we built up. Ari was in the spotlight for about a minute, and then they pulled the plug. Every time we were about to get somewhere and rally support for the next record, there was a new president [or] this and that person to prove ourselves to. The timing was never in our favor until they let us off the roster. It was remarkably easy to get out of the deal.

Will artist subscription Web sites eventually be a common way to sell CDs?

AH: I think we will see more of this kind of thing, but it's contingent on the artist wanting to learn how to record, EQ, and mix. I had no idea. I don't know the proper way to mix; it's all done on two speakers I got from a friend, and then going to different stereos in my apartment and car to test it. I'm still not sure what compression does. But I'm motivated. If an artist isn't willing to learn, technically, they probably won't get far with this idea.

DH: [Some of my other artists] are thinking about it. Several are on labels, so the likelihood is very small. Several industry people are intrigued by the model. It also takes a very particular type of artist to pull this off—a very prolific songwriter, adept at recording themselves and making things sound good, and who's willing to work that hard to come up with and do the production for a song every week. And it takes a fan base to start with, to make it plausible as a model. If Ari were starting from scratch, I don't know whether we would have been able to consider this model right from the start. We're lucky that he made albums over the years and people were eager for the next thing he would do. It's not right for everybody.

There might be variations on this model for other artists. A fan wants everything put out by their favorite bands. Artists have been doing subscription fan clubs for years, providing access for more content and special content. There are companies that specialize in making these Web sites. The difference in what they pull off and what an artist in real time can pull off is amazing. Fans here are part of the creation, and there is something very powerful about that happening in front of them, versus someone releasing an old show every two weeks.

COURTESY DANNY HEST

FIG. 2: Danny Hest, Ari's manager, was instrumental in developing the plan for 52. Danny also built the Web site.

What is your advice to artists trying to find new ways to advance their careers?

AH: Playing a lot of shows is important. What's also helpful to me is being motivated to learn about new things. When they don't come naturally, you have to figure them out for yourself. It's annoying. It's not something you look forward to. But you have to force yourself, because it's only going to help you. It's increasingly hard for new people to get their name out, and the more you can do for yourself, the better. Having been independent, on a major, and then independent again, it's clear to me that the best way to go is independent, because labels don't know what they're doing and they wouldn't do a project like this. They are in no position to take this on. They're still in album/single mode, and they need to get out of that or they will go away. I think that in a few years we will see a lot more subscription things from artists and labels. My street team has also been great.

DH: My advice is, and always has been, do as much as you can on your own. With the Internet and social-networking tools out there, and how recording costs have dropped, it's far easier to make recordings sound great and spread the music through other means. I also tell artists, "You shouldn't wait around hoping someone will discover and sign you." That's a rarity. Take the mind-set of making something happen for yourself. It's very rare for a manager, agent, lawyer, or label to pick someone out and create a career around them. You have to be a self-starter. It takes a vision from one person to get people excited about your music, and sometimes that one person is the artist. em

> Take the mind-set of making something happen for yourself.

Elianne Halbersberg is a freelance writer for Mix *and AllHipHop.com. Her features have also been published in numerous other music-industry magazines.*

FIG. 1: With rich sounds derived from the Korg Radias, the battery-powered Kaossilator is a one-finger party to go. Its onboard audio looper lets you build 4-bar grooves through endless overdubs.

Korg
KO-1 Kaossilator
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By David Battino

PRODUCT SUMMARY

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PROS: Fantastic sound. Extremely portable. Solid construction. Nice price. Easy yet deep.

CONS: Maximum loop length with undo is eight beats. Locking overdubs pauses playback. Cutesy sound effects may grow tiresome.

FEATURES	1	2	3	4	5
EASE OF USE	1	2	3	4	5
AUDIO QUALITY	1	2	3	4	5
VALUE	1	2	3	4	5

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ONLINE BONUS MATERIAL

Within five minutes of touching the Korg KO-1 Kaossilator at Winter NAMM, I knew I wanted to play more. This palm-size, battery-powered synth and audio looper sounds fantastic, and its one-finger interface delivers musical results right away. But the Kaossilator also offers far more range and expression than you'd expect from a nonprogrammable synth under $200.

> I could play it during red lights and traffic jams.

The Kaossilator is the latest in a series of touch pad–driven products from Korg, starting with the original Kaoss Pad effects processor, a 2000 EM Editors' Choice Award winner. When I reviewed the flagship KP3 Kaoss Pad (see the July 2007 issue, available at emusician.com), the synthesizer patches were one of my favorite parts, so I was eager to see how synthesis translated to the smaller package.

Top-Panel Tour

The Kaossilator looks like a yellow version of Korg's smallest Kaoss Pad, the Mini-KP (see Fig. 1). The metal top panel wraps around the front and back, covering a sturdy plastic body. A 2.5 × 2–inch *x-y* touch pad dominates the top face. As you slide your finger around the pad, the 3-digit LED display above it lights segments to roughly indicate your finger's location. The pad's smaller size relative to the KP3's makes it hard to hit specific notes, but the Scale function can help.

Above the touch pad are three buttons and

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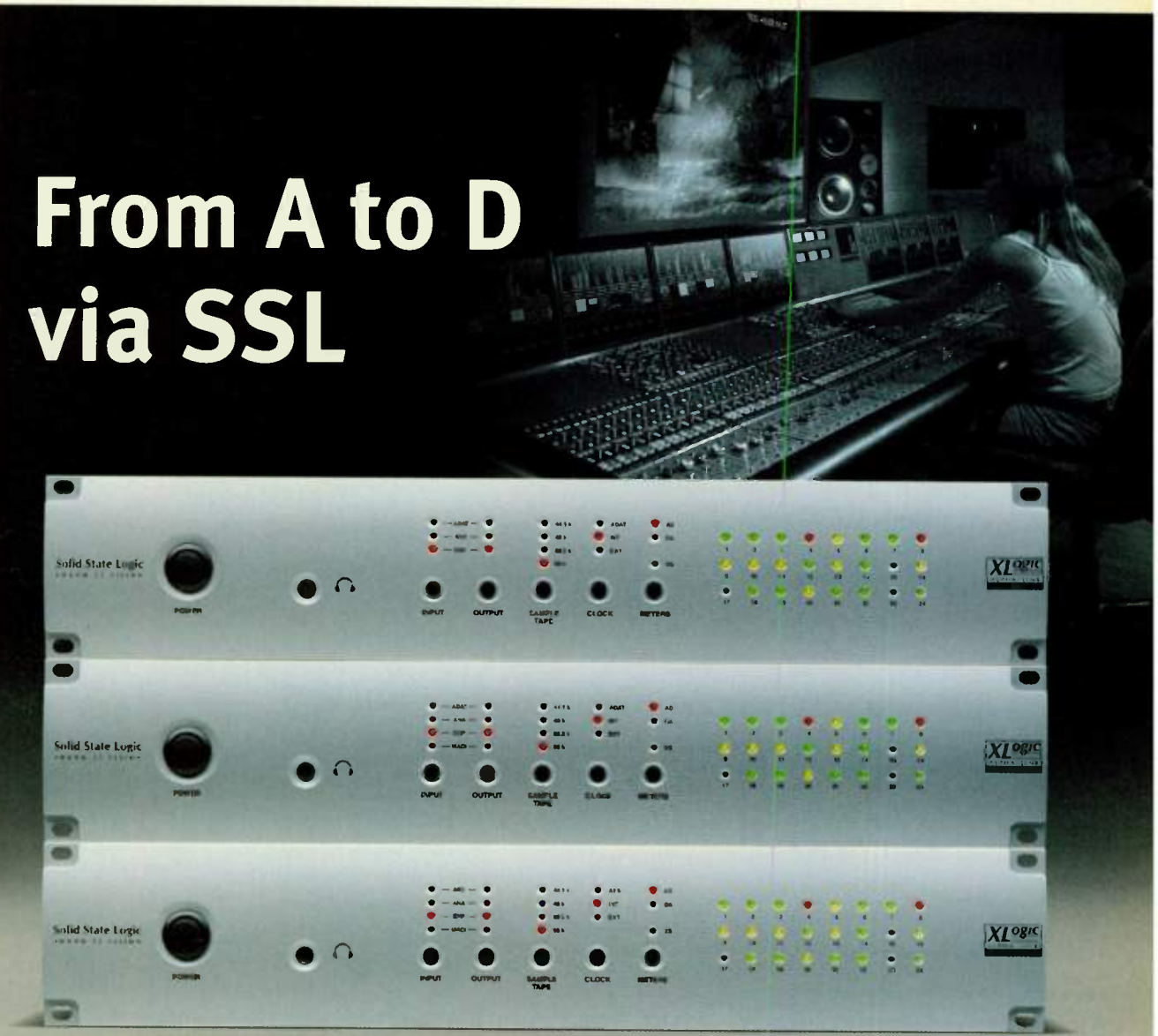

- **Alpha-Link AX (top):** ADAT ⟷ Analogue
- **Alpha-Link MADI AX (centre):** MADI ⟷ ADAT ⟷ Analogue
- **Alpha-Link MADI SX (botttom):** MADI ⟷ AES/EBU ⟷ Analogue

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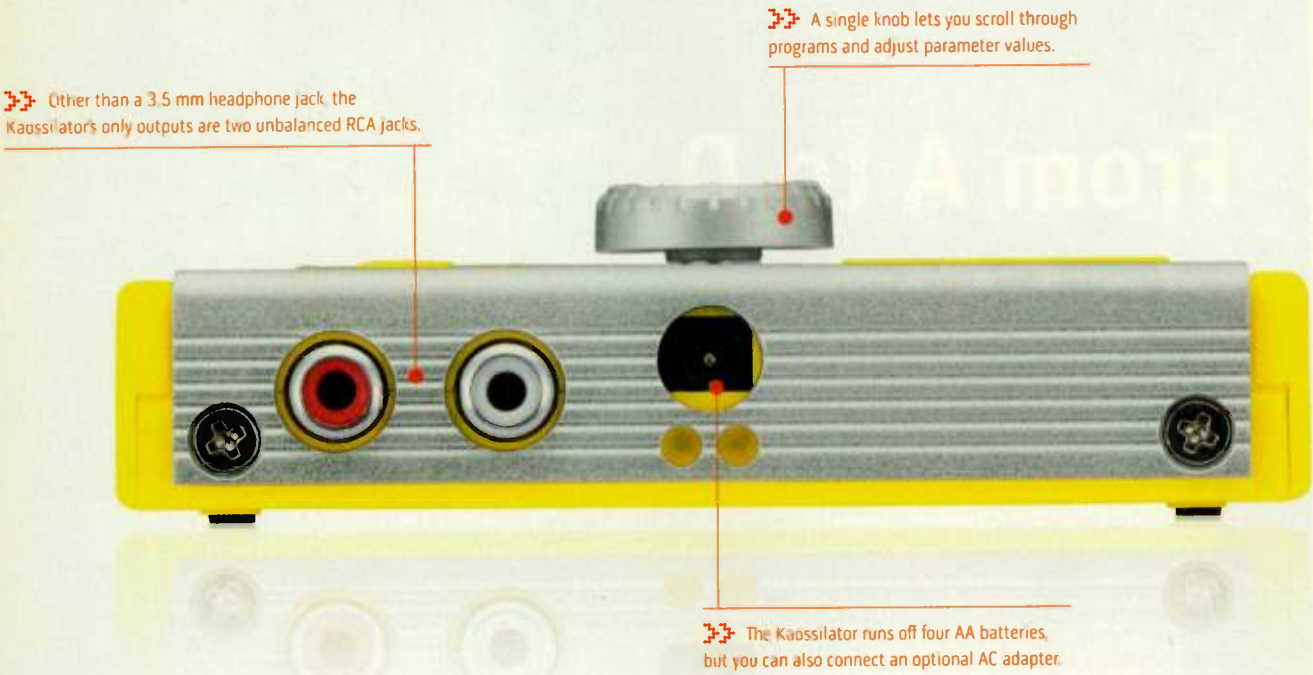

FIG. 2: Two line-level outputs, a power jack for the optional AC adapter, and two small holes for a security cable complete the back panel. The power switch is on the case's left side. The headphone jack, volume knob, and arpeggiator toggle are on the front.

a detented knob to select programs and adjust values. The buttons do different things depending on whether you click them, hold them, or press them in combination. Nonetheless, I quickly got the hang of using them, because all their basic functions are clearly labeled on the panel. In fact, the entire Kaossilator manual is printed on a single sheet of paper. Beginning electronic musicians would have benefited from definitions of the jargon, but this is an instrument that rewards experimentation quickly.

> The Kaossilator offers far more range and expression than you'd expect.

Kaoss on the Side

A fourth button, Gate Arp, lives on the case's front edge. It turns on the Gate Arpeggiator, which applies one of 50 rhythmic patterns to the note that you're holding on the touch pad. The patterns range from simple quarter notes to swinging grooves. A tiny card shows the rhythms in piano-roll notation; I scanned it and enlarged it for easier reading (see Web Clip 1).

Next to the Gate Arp button is the headphone jack and volume knob. Two holes let you attach a string or strap so you can hang the Kaossilator from your neck, Flavor Flav–style. The left side of the case holds the power switch. Although it's marked On and Standby, the Kaossilator resets to default settings and clears the loop-recorder memory when you switch to Standby.

On the back of the unit are the power jack, a pair of holes for attaching a security cable, and a pair of RCA jacks for line-level output (see Fig. 2). I didn't hear hiss from the outputs; this is a clean-sounding little synth.

Touch Pad of Genius

The 100 preset sounds are divided into 7 categories (see the specifications chart online and Web Clip 2). In general, left-right pad movements change the pitch, and up-down movements control the filter, volume, or LFO.

But many patches, especially the drums and effects, have more unusual routings; be sure to peruse the manual for details. You can set the *x*-axis to one of 31 standard or exotic scales, or turn pitch quantization off for smooth sweeps.

The sounds tend toward the electronic, with lots of thick sawtooths, rasping pulse waves, and mournful squares. I particularly liked the theremin lead (program 03), although having the pitches quantized through the Scale function made me wish for a third controller to add vibrato. Here's hoping a future Kaoss instrument adds pressure sensitivity to the pad.

The ten acoustic patches—piano, trumpet, sax, and so on—are a mixed bag. They're not terribly realistic, but they do add an organic contrast when layered in the looper. Basses—again, with the exception of acoustic emulations—are excellent: big, bold, and cutting.

I really enjoyed the chord patches. Vertical pad movements tease out harmonics or even change chord quality from major to minor.

The Kaossilator furnishes a walloping big collection of sound effects, ranging from a cutesy Pac-Man gobble (program 74) to a

Secret Hack

My biggest wish for the Kaossilator was 4-bar looping, but it turns out that it's already there. Holding down the Loop Rec and Tap buttons while powering up will temporarily double the maximum loop length from 8 beats to 16 (the display will show DLY to confirm the new mode). This hack works by disabling the undo buffer, which means you can no longer fix overdubs, but the extra musicality of 4-bar phrases is well worth it.

spooky drone you can drive into raging feedback with a trip up the *y*-axis (program 60; see Web Clip 3). I asked the Kaossilator's sound designer why he included so many sound effects at the expense of more organic sounds. You can read his interesting reasoning in Web Clip 4; in short, it's because sound effects are easy to layer over other music yet difficult to control from normal keyboards.

The drum and drum-pattern programs are especially fun. With the latter, a groove starts playing as soon as your finger touches the pad, and subsequent movements change the timbre or bring individual drums (or synchronized echo effects) in and out. Once again, though, I would have liked some more natural sounds such as jazz and rock drums.

Looping, from Pad to Verse

What makes the Kaossilator especially engrossing is its infinite overdubber. Hold down the Loop Rec/Play button, and the instrument records everything you do on the pad, up to a length of eight beats. It even does some crossfading at the loop point, so you can wrap sustaining sounds around (see Web Clip 5).

Eight beats—two bars in 4/4 time—is disappointingly short. Even a 4-bar loop breathes much better, because it gives you time to set up tension and release. Luckily, Korg included an "Easter egg" that doubles the loop memory (see the sidebar "Secret Hack" for details).

The performances are recorded as audio, which means you chop into the loop (or create a gap) if you change the tempo; the audio does not time-stretch. Holding down the Loop Rec/Play button allows you to set the current recording so that you can undo subsequent overdubs. Unfortunately, playback stops during the setting process, which breaks the creative flow. You can also spot erase the recording; again, set tracks are not erased. All is lost on power-down, though, so you'll need to record the Kaossilator's analog output in real time if you want to save your loops. I got in the habit of carrying a tiny flash recorder for that purpose (see Web Clip 6).

Finger-Flickin' Good

Fun, affordable, well built, rich sounding, and unique, the Kaossilator is an instrument I constantly find myself looking forward to playing. I even kept the Kaossilator on my car seat for a while so I could play it through the stereo during red lights and traffic jams, but that got a little too distracting.

Any criticisms must be tempered by the prospect of having this much sonic goodness in such a small, affordable package. If I were to spec out a Kaossilator II, it would have longer loop time, buttons for both thumbs, pressure sensitivity or a mod wheel for times you want vibrato *and* volume control, and many more percussion sounds and acoustic models. I'd also want an SD card slot to off-load loops and jams. Of course, those upgrades would bump up the cost, so I think Korg made some good trade-offs, especially considering the hidden loop-length feature.

Touch pads can be remarkably intuitive and expressive, and I'm looking forward to more great things in the Kaoss series. Korg now has mini Kaoss devices in red and yellow—how about some Kaoss in every color of the rainbow?

David Battino (batmosphere.com) is the coauthor of The Art of Digital Music *(Backbeat Books, 2004) and the audio editor of the O'Reilly Digital Media Web site (digitalmedia.oreilly.com).*

The entire manual is printed on a single sheet of paper.

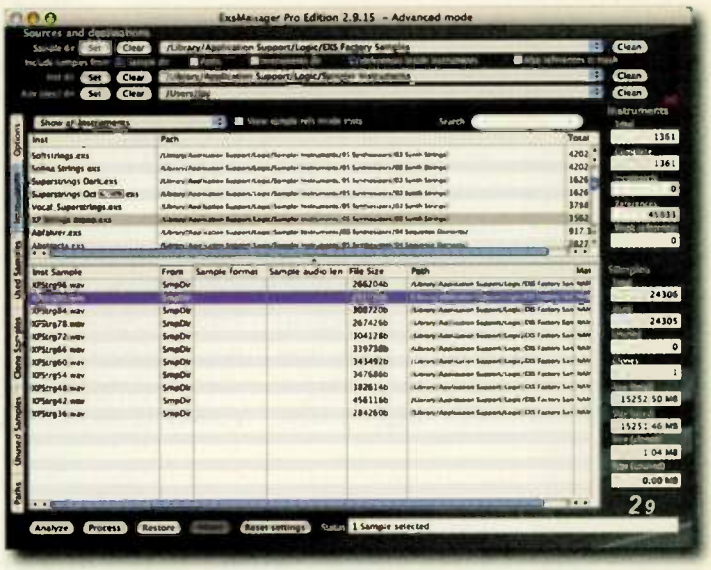

FIG. 1: ExsManager Pro scans your EXS instrument library and reports which samples are used by which instruments. Advanced settings let you fix errors.

Redmatica

Compendium 1.5 (Mac)

Multisamplers never had it so good.

By Len Sasso

PRODUCT SUMMARY

multisample management tools	$389.99
with printed manual	$529.99

PROS: Versatile suite of multisampling tools. Automates many tedious tasks. Powerful non-destructive DSP options.

CONS: User interface is crowded. Some processes could be more straightforward.

FEATURES	1	2	3	4	5
EASE OF USE	1	2	3	4	5
AUDIO QUALITY	1	2	3	4	5
VALUE	1	2	3	4	5

Redmatica
redmatica.com

ONLINE BONUS MATERIAL

Compendium is a bundle of Redmatica's three tools—ExsManager Pro, AutoSampler, and Keymap—for creating and managing multisampled instruments. Although all three work with sampler instruments in Apple Logic EXS24 mkII format, they are standalone products, and because most software samplers can import EXS-format instruments, they are powerful tools for working with any sampler.

ExsManager Pro manages EXS instrument libraries. It will be most valuable to those with large EXS libraries, but if you use AutoSampler and Keymap with other samplers, ExsManager will help you manage the sampler instruments they create. AutoSampler takes the drudgery out of resampling hardware and software virtual instruments, letting you get that aging synth or drum machine into your Mac before it expires. Keymap, the most versatile of the trio, simplifies and automates many of the tasks in converting a bunch of samples into a playable, multisampled instrument. That includes loop and riff libraries as well as sampled acoustic and synthesized instruments.

Management Crisis

After importing third-party sampler instruments and installing or upgrading content for multiple EXS-compatible hosts like GarageBand and Logic, you're bound to wind up with instruments and their samples spread all over your hard drives. ExsManager Pro helps you make sense of this mess by relinking instruments with their samples, reorganizing instruments and samples without breaking their links, and finding and optionally deleting duplicate samples. It also makes it easy to search through your library, back it up, and consolidate samples into monoliths, which are easier to transport and archive.

ExsManager Pro does not maintain a database of your sampler library; it analyzes the library each time you launch it. Therefore it never gets out of sync. You point the program to the location of your instrument library and, optionally, other places to look for samples, and click on the Analyze button (see Fig. 1). This is not the time to go for coffee—the analysis will probably be finished before you get out of your chair. For my medium-size EXS library of 1,361 instruments, the analysis takes roughly 30 seconds.

As with most samplers, EXS instruments contain references to the samples they use. If you don't include other sample locations, ExsManager will simply report whether the internal references are correct. That's the fastest possible analysis (in my case it takes about 10 seconds), and if no errors are found, it's sufficient to let you know that your library is in working order. Adding other sample-search locations lets you find duplicates and missing samples, change sample references within instruments, and otherwise reorganize your library. That process is considerably more complex and must be used with care—for example, you don't want to delete or move samples used by other applications—but if your hard drive is clogged or your library is in complete disarray, ExsManager Pro offers the tools to fix it.

One from Column A

AutoSampler automates the process of resampling hardware or software instruments (see Fig. 2). If you have a synth some of whose presets you'd like to convert to multisampled virtual instruments, AutoSampler will save you hours of tedious work.

To do the job manually, you'd have to launch your recording software, route the output of the synth for recording, then play and record many notes at many Velocity levels and, perhaps, with a variety of MIDI controller settings. You could create MIDI clips to partially automate the process, but it would still entail hours of laborious, hands-on work. After capturing the sounds, you'd need to split them into individual hits, trim them as needed, and then arrange them into multisample maps for your sampler.

Alternatively, fire up AutoSampler, point it to your synth's MIDI input and audio output, set up its multisample parameters (note range, notes per octave, Velocity increments, and so on), then let it rip. You have a variety of options beyond simply sampling across note and Velocity ranges. You can layer instruments using multiple audio and MIDI ports and channels. AutoSampler will automatically change synth patches, letting you specify in advance which patch numbers to sample. A process called MultiDimensional Sampling (MDS) will automate two synth parameters and crossfade between multisamples for different parameter settings.

FIG. 2: You set the note and Velocity intervals along with MIDI layering conditions that AutoSampler uses to create a multisampled instrument.

AutoSampler creates multisampled EXS instruments, and some of its more exotic features may not translate to other samplers. I used MDS and layering with two virtual instruments running on my PC, then opened the resulting EXS instrument in EXS24 mkII, Native Instruments Kontakt 3, and Ableton Live Sampler. In EXS and Kontakt, the layering and crossfading worked perfectly, but in Live Sampler, the MDS crossfading was not implemented because Sampler doesn't support grouping. If your target sampler has similar limitations, you might use AutoSampler to create basic multisampled instruments and then set up their layering and crossfading within your sampler. Alternatively, just use Keymap to separate the MDS groups and save them as individual EXS instruments.

Multisampling Toolbox

Keymap, winner of an EM 2008 Editors' Choice Award, is the most complex application in the Compendium package, and there's a 360-page manual to prove it. The program contains many idiosyncrasies, but its basic purpose is straightforward: to let you quickly create layered and grouped multisamples, edit their zones individually or in bulk, and set up how the zones relate within an EXS instrument. Keymap's capabilities go beyond anything you can do directly in the EXS editor, and most tasks are easier to perform than in even the most full-featured samplers. If you create your own multisampled instruments on a Mac and your sampler is EXS compatible, Keymap is for you.

You start with a project, which might be empty or might be based on existing EXS instruments (a project can hold many EXS instruments). Instruments within a project have a slightly more complex structure than their EXS counterparts—they have multiple layers, each holding zones and zone groups. Layers are an artifact that makes it easier to manage overlapping zones, and they disappear when an instrument is converted to EXS format. If a project contains several instruments, you can easily combine some or all of them in a single EXS instrument, assigning them separate or overlapping key and Velocity ranges or crossfading between them with a MIDI controller. That's managed in Keymap's Setup window.

As in most samplers, you build your own multisampled instruments by loading or dragging samples (WAV, AIFF, SDII, MP3, and

FIG. 3: Zones in each Keymap layer are automatically tiled as they are created. You can set up zone crossfades individually, as shown for the center zone here.

AAC) to a two-dimensional Zone window with columns representing notes and rows representing Velocities. Alternatively, draw in empty zones and fill them with samples later. A zone's width and height represent its key and Velocity range, and you can stretch zones in any direction.

In Keymap, zones cannot overlap; when you drag or stretch one zone into another, all affected zones are tessellated (tiled), with split zones being created as necessary. That's one reason for having layers—zones in different layers can overlap. You don't need different layers for key and Velocity crossfading, however; you can set up crossfades between zones on the same layer either individually or globally (see Fig. 3).

Resynthesize This

Keymap gives you a variety of sophisticated tools for processing the samples, and most of those tools apply to individual zones or to all selected zones. All of the processing is DSP based and doesn't rely on EXS components such as filters, modulators, and effects. And all of Keymap's DSP is nondestructive; the original samples are never altered. Instead, new samples are created as necessary when instruments are saved in EXS format.

Harmonic Resynthesis is among Keymap's most useful sample-munging features. It lets you manipulate the pitch, time, formants, and amplitude of the sample independently. The pitch, time, and formant operations are designed for monophonic material and work best on single hits rather than, say, bass or vocal loops. However, those operations often produce interesting results on unpitched sounds like speech and percussion. For example, you can pitch-shift speech without

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affecting formants or time to produce familiar chipmunk or Darth Vader effects without altering the rhythm of the original clips (see Web Clip 1).

The pitch and formant algorithm, which is the most sensitive to the material being transformed, has three modes: with formant adjust, without formant adjust, and standard pitch-shifting (like speeding up or slowing down the clip). With the first two algorithms, you can actually raise the pitch while using the independent time-shifting algorithm to lengthen the clip and vice versa. In addition to time and pitch adjustments, you get dynamics processing, highpass and lowpass resonant filtering, and saturation effects.

When you simply want to start with a sampled note and map it across a range of keys, you have the standard multisampling alternative of widening the key zone, but Keymap gives you another option called Polyphonate. That automates the Harmonic Resynthesis of pitch for a selected zone to create new, adjacent pitch-shifted zones over a range of up to two octaves. That's useful, for instance, when you have a sample with natural vibrato or tremolo and you want to preserve its rate.

Time to Split

Keymap takes a lot of the drudgery out of splitting and looping samples. It will automatically split single audio files at regular intervals or by detecting transients. It will then trim the individual hits based on attack and decay thresholds you set, and automap them to a new layer.

You get two approaches to automatic looping. Select a portion of the sample (a rough loop, for example) and let Keymap refine the boundaries to get the best loop. You can even apply that process simultaneously to multiple zones. The other approach, single-cycle looping, sets a very short loop to produce a specific pitch. Once the loop size is set, you change the loop location and the timbre by moving the start point with an onscreen slider.

Five drag-and-drop areas in the Instrument editor called Magic Pads invoke macros for common multistep processes involving splitting, looping, trimming, and layering groups of samples. I usually found that some hands-on editing was required after using the Magic Pads, but even so, they save a great deal of time.

As much as anything else, saving time is what the three applications in the Compendium bundle are about. You can accomplish most of what these programs do with a DAW and a full-featured sample editor. But Redmatica has painstakingly identified the most tedious tasks involved in creating and managing multisample libraries and has automated them to make things much simpler. In the process, it has added some very clever bells and whistles.

Len Sasso is an associate editor of EM. For an earful, visit his Web site at swiftkick.com.

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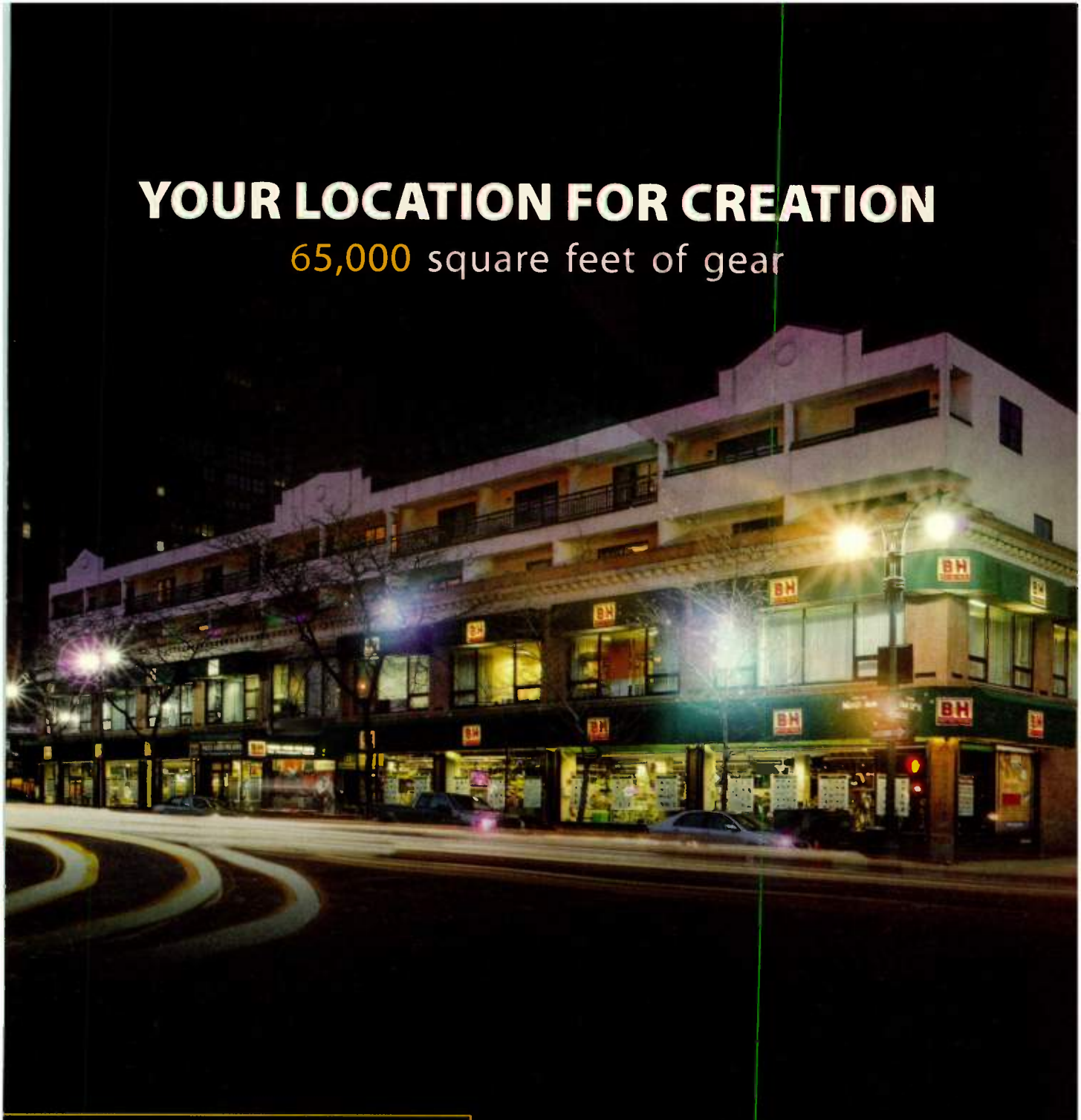

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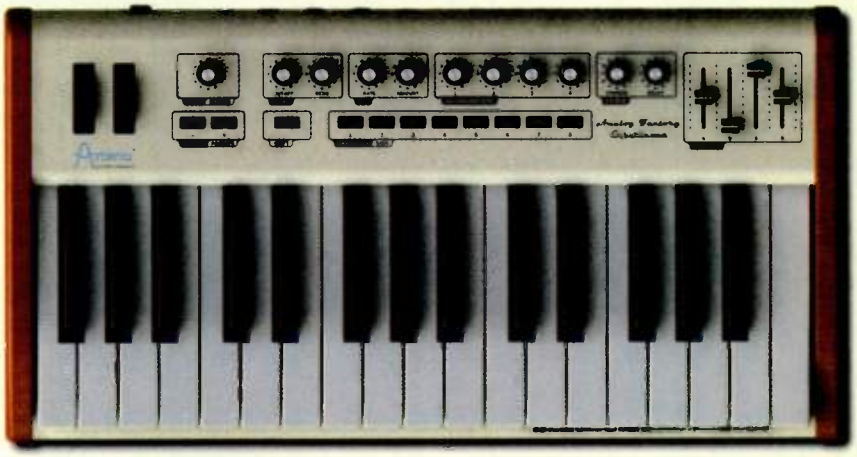

FIG. 1: Sporting real wood side panels, Analog Factory Experience's keyboard controller eschews a graphical display in favor of the immediacy of old-school knobs and sliders.

Arturia

Analog Factory Experience 2.0 (Mac/Win)

Thousands of classic sounds and a keyboard to control them.

By Marty Cutler

PRODUCT SUMMARY

soft synth and controller	$349
upgrade from Analog Factory 2.0	$249

PROS: Solidly built keyboard. Nice keyboard action. Convenient shift functions for patch selection. Addition of Jupiter-8V offers more timbres.

CONS: No MIDI In or Thru ports on keyboard. No user-programmable Pitch Bend. Fixed MIDI-channel transmission.

	1	2	3	4	5
FEATURES			●		
SOUND QUALITY				●	
EASE OF USE					●
VALUE				●	

Arturia
arturia.com

ONLINE BONUS MATERIAL

Arturia enjoys an established reputation for authentic-sounding and detailed software replicas of classic synths. Many computer musicians, however, prefer straightforward access to vintage synthesizer sounds with a less complicated approach to customizing presets. Enter Analog Factory, which subsumes the sounds of Arturia's vintage instruments and provides simplified sound-design options in a remarkably easy-to-use soft synth.

> Analog Factory Experience emphasizes simplicity.

Analog Factory Experience (AFE) bundles the software synth with a hardware keyboard controller that duplicates its virtual knobs, buttons, and sliders. The keyboard also has navigation facilities that obviate any need for the mouse. Version 2.0 software adds Jupiter-8V sounds to the collection of vintage instrument timbres, many of which include the arpeggiator and sequencing features of the instrument's Galaxy module (see the **online bonus material** at emusician.com). In this review, I will focus on the hardware controller and its integration with Analog Factory software.

Keys to the Factory

In addition to the standalone versions for Mac and Windows, Analog Factory software supports AU, RTAS, and VST on the Mac and RTAS and VST in Windows. The software authorization procedure has changed

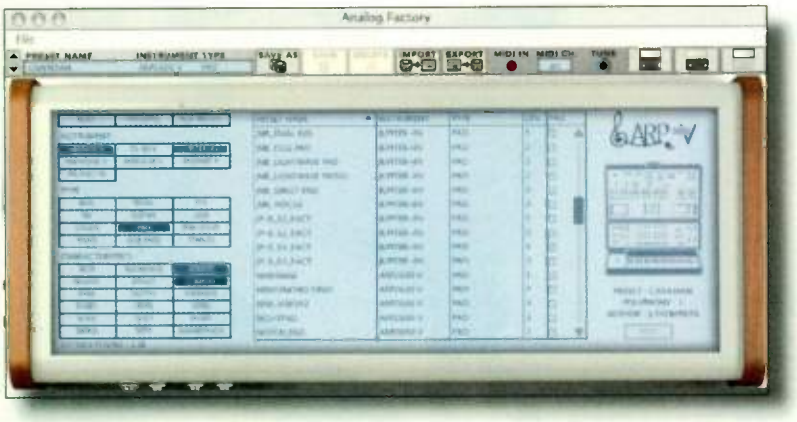

FIG. 2: When the Shift button is lit, you can rotate the Level knob to quickly scroll through categories and presets. Pressing down on the knob lets you select any criteria that fit your needs.

slightly—and for the better—in that you now have the option of authorizing a single computer or purchasing and authorizing a Syncrosoft USB hardware key, in which case you can install and run the instrument on any machine of your choosing as long as you have the key inserted.

The absence of LCDs or LED displays and sliders, and buttons feel securely ensconced in the unit, with no wobble.

Factory Work

Some controls perform more than one task, and secondary functions are operative when the Shift button is lit. Those controls name their secondary function on a stenciled tab with a light background, with its primary function in a dark background. For example, the Level knob normally controls the instrument's gain, but when Shift is engaged, you can navigate through Analog Factory's browser and define criteria for patch selection by pressing down on the knob (see Fig. 2).

Pressing Shift turns the Octave plus and minus buttons into patch-selection buttons for any of the sounds you had previously delimited. Likewise, the eight buttons that select snapshots let you save snapshots when shifted. The ability to shift between functions is sensibly laid out, although I occasionally forgot and found myself selecting patch criteria when I wanted to adjust the volume, or transposing when I wanted to move through the presets (a red LED in the Octave button flashes with increasing frequency as you transpose downward).

Next to the Level knob are the Filter section's cutoff frequency and resonance knobs. These integrate smoothly with the software instrument; I never heard a trace of zipper noise. The knobs need to reach the programmed value of the parameter before the parameter actually updates, but I prefer that to a radical jump to a new value. It's also helpful that Analog Factory shows the preset knob position onscreen, so you get visual feedback as you make the tweaks.

The LFO section lets you adjust rates and levels, but it is often difficult to know beforehand what parameter the LFO is tied to. In some cases it is oscillator frequency, and in others it is filter cutoff or amplitude.

The four Key Parameter knobs, because they relate to several different synthesizer architectures and many different patches, follow suit in their unpredictability. In one instance, a knob might invert a filter envelope, or it could scan Prophet VS wavetables. In other patches, it may detune oscillators by slight degrees or in intervals. It's probably best to familiarize yourself with Key Parameter knob assignments on a patch-by-patch basis. According to Arturia, a forthcoming software update will display onscreen the parameters assigned to each of the four knobs. Handily, the aforementioned Snapshot buttons sit just below the LFO and Key Parameter sections,

FIG. 3: You can choose an optional 12V DC adapter to power the AFE keyboard, or draw power from your computer's USB connection.

the controller's sturdily constructed 32-note keyboard with wood side panels underscore an old-school, analog ethos. Its weighty, solid form factor assures stability when sitting on your desktop (see Fig. 1). The full-size, Velocity-sensitive keys have a nice, springy, synthesizer-action feel. I wish the keys were also Aftertouch sensitive, but at AFE's price, it's hard to complain. Above the keys on the instrument's left, notched pitch-bend and modulation wheels are easy to reach and feel solid, with a strong spring-action return for the pitch-bend wheel. Likewise, all knobs,

> The package strikes a balance between flexibility, control, and value.

allowing you to store your favorite tweaked sounds or eight instruments whose controls you have memorized, simply by hitting one of the eight buttons with Shift active.

Don't look for anything fancy in the FX Mix section. All you can do there is dial in the amount of chorus and delay you'd like for a patch.

Four sliders in the controller's upper right corner control the patch's amplitude ADSR. As noted in EM's review of version 1.2 (see the March 2007 issue, available at emusician.com), the lack of access to the filter's envelope generator is a bit of an impediment to more powerful sound shaping, but in general, the Key Parameters are sensibly assigned. It's important to remember that Analog Factory Experience emphasizes simplicity.

To the Rear

On the rear panel, the power switch sits within easy reach behind the pitch-bend and modulation wheels. A jack for an optional 12V wall-wart power supply is to its right. The USB 1.1 port provides bidirectional MIDI communication as well as a power alternative to the wall wart (see **Fig. 3**). A pair of jacks accept sustain and expression pedals.

Capping off the rear-panel connectors is a single MIDI Out jack. I wish that the controller had an In and a Thru port, as many keyboards do. Anyone wishing to switch to an alternate controller, such as a MIDI guitar or drum pads, would need an additional MIDI interface to accommodate the extra inputs.

Wish List

I found a couple of other missing ingredients in the controller's MIDI capabilities. It currently offers no way, either through a hardware switch or SysEx messages, to change the unit's transmitting MIDI channel. That can be a problem when the keyboard needs to address multitimbral hardware or software instruments. For me, this was particularly problematic in Apple Logic 7.1, which does not normally rechannel incoming MIDI data (without tinkering with its Environments). To be fair, most other sequencers let you easily redirect MIDI input to other channels.

When I'm working with synthesizers, I often change the Pitch Bend range; unfortunately, AFE offers no facility—hardware or software—that lets me do that. To complicate matters, the range varies from one preset to the next—sometimes a whole step, sometimes a minor third, and sometimes a couple of octaves. Such issues may never be a problem if you want to use AFE as a standalone controller-and-sound-source system, but the larger issue is the controller's integration into an existing MIDI and sequencing setup.

Arturia is really on to something with its combination of vintage synth emulations and a specialized controller. I do wish the hardware's MIDI implementation were a bit deeper. Despite the fixed MIDI-channel transmission and unalterable Pitch Bend values, though, the package strikes a terrific balance between sonic flexibility, control, and value, which is well nigh impossible to beat. I love the patch-selection filters and the way the keyboard integrates with the onscreen browser. You may never play all 3,500 sounds, but they'll be available when you need them. Combine AFE with a laptop, and you have a worthy batch of authentic-sounding vintage synths at your fingertips. Download the demo software from Arturia's Web site and see for yourself.

Marty Cutler's favorite vintage instrument is David Grisman's Gibson Granada Mastertone banjo; he's still waiting for the software version.

FIG. 1: Roland's MV-8800 gives you a complete music-production studio by combining pattern-based and linear recording, a powerful sampler and effects, and integrated trigger pads in a single tabletop unit.

Roland
MV-8800
An integrated studio with power and flexibility.

PRODUCT SUMMARY

portable digital studio	$2,295

PROS: All-in-one unit capable of everything from tracking to finished CD. Integrated trigger pads. Powerful combination of pattern-based and linear recording.

CONS: A bit hefty in physical size and price. Needs more included tutorials and a larger library of instruments.

	1	2	3	4	5
FEATURES				●	
EASE OF USE			●		
DOCUMENTATION				●	
VALUE			●		

Roland Corporation
rolandus.com

ONLINE BONUS MATERIAL

By Allan Metts

Roland is certainly no stranger to the world of samplers, drum machines, and digital multitrack recorders, so it makes sense for the company to offer a device that combines the best features from all three product types. Released five years after the well-regarded MV-8000, Roland's MV-8800 provides sampling and synthesis, beat generation, multitrack recording, mixing, mastering, and CD burning in a single unit.

Weighing almost 20 pounds and occupying a wee bit more table space than a 16-channel mixer, this all-in-one production studio isn't something you'd slip into your carry-on at the airport (see Fig. 1). But the device is hefty for a reason: it sports 16 trigger pads (which support both Velocity and Aftertouch), a 320 × 240–pixel color display, a 40 GB hard drive, a CD burner, 8 assignable nonmotorized sliders, 3 assignable knobs, and nearly enough illuminated buttons to launch the space shuttle. For details on the MV-8800's physical connections and its sound generation architecture, check out the **online bonus material** at emusician.com.

I See a Pattern

Perhaps the one feature that distinguishes the MV-8800 from a typical DAW is its powerful combination of pattern- and song-based recording techniques. You build songs using a combination of MIDI tracks (up to 128), audio tracks (up to 8), a mute control track (which lets you switch tracks on and off using the pads at specific points in time), a tempo track, and a single pattern track.

You can edit MIDI tracks in much the same way you can in other sequencers, and all the most necessary operations are available. There are piano-roll, drum-grid, and event-list views, copying, moving, thinning, and all sorts of event transformations. Importing and exporting to Standard MIDI Files is also supported. You may not find the MIDI editing experience quite as satisfying as with a high-end software program, but you'll be able to get the job done.

The possibilities begin to boggle the mind when you realize that each pattern in the pattern track can contain 64 MIDI tracks as well as a single audio and mute control track. Each MIDI track (whether in a song or pattern) can connect to an internal patch; you can also route it to a single port and channel assignment on one of the two MIDI outputs (see Fig. 2). In addition, you can assign a Program Change and Bank Select message, which means the instrumentation of your entire rig can change

"I Got a $ix-Figure Indie Label Deal Because I Joined TAXI"

Jenna Drey – TAXI Member – www.jennadrey.com

My name is Jenna Drey. That's me sitting next to TAXI president, Michael Laskow.

For as long as I can remember, I've wanted to be a recording artist. I've studied music my whole life. I've read all the books. I've been to the seminars. In short, I've done all the same things you're probably doing.

Who Hears Your Music?

I'll bet you've also noticed that no matter how much preparation you've done, it doesn't mean anything if you can't get your music heard by people who can sign on the dotted line.

I found out about TAXI a few years ago, and have kept an eye on it ever since. The longer I watched, the more I became convinced it was the vehicle I needed for my music. When my demos were done, I joined. And guess what – it worked!

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Seven months after joining, TAXI connected me with a great Indie label that's distributed by Universal. The president of the label heard my song, "Just Like That," and just *like* that, I was offered a record deal, and that song became my first single.

Madonna, Bowie, Jagger, and me!

The icing on the cake? The label hired legendary producer, Nile Rodgers (Madonna, David Bowie, Mick Jagger, and the B-52s) to produce it! All these amazing things happened to me because I saw an ad like this and joined TAXI.

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each time the pattern changes.

You can record audio tracks in one of three ways: directly in real time from the audio inputs, remixed (bounced) from the other tracks, or as events that trigger Audio Phrases. Audio Phrases are samples that exist outside the realm of the patches you use in MIDI sequencing, and they're easily assignable to the trigger pads. They can contain either one-shot sound effects or entire grooves synchronized to the current tempo.

Make the Mix

The MV-8800 has a capable infrastructure for mixdown, with three effects processors close at hand. You can assign the audio from each internal instrument, and each audio track, to either the master mix bus or one of four auxiliary buses (if you have the $379 MV8-OP1 expansion installed, you can also choose a dedicated output there).

Two of the three effects processors operate on their own dedicated buses (one processor performs delay and chorus functions, and the other is devoted to reverb). Each instrument and audio track can feed its signals to those buses independently of their primary output assignment. The reverb and chorus processors send their output back into the master mix.

The third effects processor, labeled MFX (for *multi-effects*), contains a number of powerful settings and algorithms, including models of notable Roland and Boss processors such as the SBF-325 Flanger and RE-201 Space Echo. Many of the algorithms actually represent multiple simultaneous effects, including complete chains for guitar or vocal processing. There's also a basic Roland SH–style synthesizer in the algorithms. The MFX processor can use one of the four auxiliary buses or the master mix as its input, and it sends its output to the master bus.

You can assign three effects parameters (in each of the three processors) to the MV-8800's assignable knobs for easy access and record the knob movements representing MFX effects changes (but not the chorus or delay) as MIDI events. Additionally, you can record several mixer movements for each of the audio tracks and buses. These parameters include level, panning, and the send levels to the chorus/delay and reverb buses.

Once all the pieces are in place, you put the MV-8800 into mixdown mode. This process creates a single stereo WAV file on the internal hard disk, representing the mixed version of your audio tracks, sequenced instruments, effects, and any connected outboard gear. Immediately after the mixdown completes, you're asked if you would like to enter mastering mode.

The Master Plan

Mastering mode reconfigures the MV-8800 to achieve a single purpose: transforming the stereo WAV file you created during mixdown into a second stereo file that is ready for CD burning or distribution. In this mode, the MV-8800 devotes much of its processing power to a multistage mastering effects chain (the other effects are no longer available).

The mastering toolkit consists of nine stages, all individually configurable: EQ, a bass-cut filter,

FIG. 2: The MV-8800's back panel offers analog audio I/O, S/PDIF out, MIDI and USB ports, and connections for a monitor, mouse, and footswitch. Also shown here is the optional MV8-OP1 expansion.

an enhancer, input gain, an expander, a compressor, a limiter, output dithering with clipping reduction, and the mixer. Several stages operate on three frequency bands, and the mixer stage (appearing after the compressor) lets you adjust the amount of each band that appears in the final product.

Once your master is complete, you're ready to burn a CD. This feature works intuitively. Each of the mastered files on your hard disk is available for selection. You choose the ones you want, adjust their order and the track gap, and burn your disc.

Still There'll Be More

The MV-8800 has lots of additional features under the hood, including V-Link support and a Pix Jam feature that lets you call up images on an optional VGA monitor using MIDI tracks or the trigger pads. Obviously, these features relate more to live performance than recording, but it's worth noting that the MV-8800 is well suited for both stage and studio.

The trigger pads are easily configured to trigger sounds and synchronized grooves in real time while the rest of your music plays from memory. You can also leave the MV-8800 in pattern mode and use the pads to select the patterns that play (patterns can be up to 999 bars long and contain dozens of tracks).

You may find that the MV-8800's learning curve takes some time to conquer, but the device is intuitive and efficient once you find the lay of the land. The documentation is complete but sometimes hard to follow; more tutorials are needed. Roland provides a 10-minute video tutorial on DVD, but it only scratches the surface of the MV-8800's capabilities.

The MV-8800 is more fun than a barrel of baboons and capable of making some great-sounding music (see Web Clip 1). You should definitely spend some time checking it out at your local music store.

Allan Metts is an Atlanta-based musician, software/systems designer, and consultant. Check him out online at ametts.com.

MACKIE

MR5 Active Studio Monitor

By Mark Nelson

Featuring a 5.25-inch steel frame woofer and a 1-inch tweeter mounted on a molded waveguide, Mackie's MR5 monitors offer a broad sweet spot and surprisingly good bass response above 60 Hz.

EM HOT PICK

Any pro will tell you that your mixes will never amount to anything until you can truly hear your tracks. But the price of professional monitors puts them out of reach for many beginning recordists.

Enter the new MR5 active monitor ($149.95). Mackie has managed to squeeze a goodly portion of its acclaimed HR824mk2 reference monitors into a tiny package priced for the studio-in-a-bedroom crowd. I recently took a pair for a spin, and I was very impressed.

MR. MR

The MR5s feature a 5.25-inch steel frame woofer and a 1-inch tweeter mounted on a molded waveguide. According to Mackie, the baffle/waveguide reduces diffraction and widens the sweet spot. I can attest to the latter; unlike with some monitors I've used, moving my head or even sliding my chair from side to side did not appreciably alter the soundstage.

Each monitor features biamped Class A/B power amps, 55W for the bass and 30W for the top end. In case you were wondering whether a 5-inch driver produces sufficient bass (I was), the MR5's frequency response is a healthy 60 Hz to 20 kHz. To protect the drivers, frequencies below 60 Hz or above 20 kHz are attenuated.

The enclosure is made from high-density wood with beveled edges to minimize diffraction and interference. The designers claim increased rigidity and accuracy from specialized interior cabinet bracing; I can only say that they sounded solid when I thumped the enclosures.

SETTING UP

Rear-panel connections include a power socket and unbalanced RCA, balanced/unbalanced ¼-inch, and balanced XLR audio inputs. A rear-mounted switch engages a "soft" power-down cycle to reduce loud bumps. Nice.

Tiny knobs correct for variables in input level. Unfortunately, without hash marks it's difficult to set the two sides equally. Of course, this is something you have to fiddle with only once unless you move the speakers.

Two 3-position switches on the rear panel tailor the speakers' frequency response to your room. One adds either +2 or +4 dB at 100 Hz; the other boosts or cuts by 2 dB at 5 kHz. I salute Mackie for including such a useful feature in an inexpensive monitor.

FIRST LISTEN

I set up the MR5s next to my trusty Alesis Monitor One monitors and listened to some past projects I'd mixed. Even with the tiny drivers, the MR5s delivered a tight low end, though electronica producers may want to add a subwoofer. Highs were clear and smooth, with little of the fatigue associated with studio stalwarts such as the Yamaha NS-10.

As I switched back and forth between the two sets of speakers, I noticed that the hi-hat, tambourine, and other percussion sat back in the mix a bit with the MR5s when compared with my Monitor Ones. A quick flick of the Hi EQ switch brought things back into focus.

Better, the bass remained tight and well defined, with a hefty low end. The latter was a surprise, as I didn't expect much out of a 5-inch driver running at such low power.

When I cranked up the volume, the little guys held their own—at least until the levels got extreme, at which point I started to hear some graininess. That's not a dig; I would not expect concert volume from such small drivers.

Next, I hooked the MR5s up to my laptop—a typical entry-level setup. In spite of some grunge from the computer's built-in headphone output, the speakers sounded clear and smooth, with plenty of bass. I would recommend them to anyone needing a high-quality speaker for desktop music production, gaming, or even just listening to MP3s. The monitors are shielded to prevent interference with the computer screen.

WRAP-UP

Mackie's MR5 monitors provide very impressive quality at an attractive price. Good mixes sounded good indeed, while the flaws in inferior mixes stood out. That is the definition of a good monitor; I want to know when I need to keep working on a mix. Too many inexpensive monitors aim to make everything sound great. What's the use in that?

Mackie touts the MR5s as companions to the company's larger MR8s in a surround or multimonitor setup. That begs the question of whether it will add a matching subwoofer to the line.

If you're in the market for your first set of real monitors, or if you need a small set of close-fields to augment your existing system, give the MR5s a listen.

Value (1 through 5): 5

Mackie

mackie.com

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METASONIX

TM-7 Scrotum Smasher

By Eli Crews

Eric Barbour of Metasonix has a colorful approach to design, employing an all-tube audio path in his quest for unusual and sonically extreme products. The TM-7 ($449), code-named Scrotum Smasher, is certainly both unusual and extreme.

The Metasonix TM-7 gives you voltage control over the distortion characteristics of one of its tubes.

Like other Metasonix products, the TM-7 is housed in a taxicab yellow box. In this case, it is silkscreened with cartoon characters that, along with the manual, are for a mature audience and not for the easily offended (as the product's name suggests).

The TM-7 has ¼-inch input and output audio jacks and a ¼-inch CV (control voltage) input. The Scrotum knob controls the input volume to the first tube, a 6AK5, which was designed for military radios and makes "a bad preamp," according to the Metasonix Web site. The Mega Scrotum pot controls the gain of a second 6AK5 and works somewhat like a drive control. I say "somewhat" because nothing on this box works as expected—every parameter is highly interdependent on the positions of all other pots and switches.

The Double Scrotum switch engages a feedback loop into the circuit, which can get the TM-7 to self-oscillate, creating sound on its own. The SUYA knob determines the saturation of the third tube, a 6BN6, which gets switched into the circuit with the Smash switch. The 6BN6 wasn't designed to have audio pass through it, and it sounds like it.

It's important to note that the wall-wart power supply gives 12V AC to the box, not DC like other wall warts. DC voltage will damage the TM-7, so it's essential to keep this supply separated from all your others. The one thing noticeably lacking on the TM-7 is a bypass switch, which I'll also address shortly.

ON TRACKS

My first application was to test the TM-7 on various tracks during a few mix sessions. I enjoy using different colors of distortion to make instruments stand out—from adding a subtle electricity to a vocal to making a drum set sound like it's ruining your speakers—and I employ many stompboxes and rack effects to this end. Because the TM-7 wants an instrument-level input, attenuation from line level is necessary to take full advantage of the range of controls. Once the gain staging was right, the TM-7 performed extraordinarily well in this setting (see **Web Clip 1**).

ONLINE BONUS MATERIAL

Although it seems the TM-7 is being marketed primarily as a "guitar preamp," the aforementioned lack of a bypass switch makes it impractical for your average guitarist, at least in a live setup. In the studio, that lack of a bypass switch isn't a problem, but I found that guitarists trying the TM-7 for the first time were put off by having to turn their amp gain down enough to accommodate its high output. Also, in certain switch positions (notably when the 6BN6 gets switched on), the box becomes highly microphonic, and feeds back in front of a loud amp even without an instrument plugged into it. This could be a cool effect for a noise musician, especially because the feedback changes quality with different knob positions. I recorded some pretty extreme guitar sounds using the TM-7 (see **Web Clip 2**).

VOLTAGE CONTROLLED NOISE

The CV input, which controls the screen grid of the second 6AK5 tube, doesn't respond to a standard expression pedal but requires a stronger signal, such as that from an analog synth. Connecting it to modules by Doepfer, Livewire, and Plan B allowed me to create interesting effects, such as syncing timbral changes in the distortion to the tempo of a sequenced pulse.

In one patch, the speed and depth of an LFO rhythmically modulated the saturation amount—something you can't do with your average distortion box (see **Web Clip 3**). Metasonix offers an adapter kit if you want to mount the TM-7 in a Eurorack or MOTM modular system or in a standard 19-inch rack.

UN-MELLOW YELLOW

The TM-7 is a highly versatile, wonderfully erratic, and gorgeously raunchy distortion device. When you hear what it can do once you take advantage of the CV input, it's definitely worth the price.

The TM-7's design may seem crude at first glance, but there's an elegance to this processor that the cartoon characters belie. As a guitar effect, a synth module, or even a sound source, the TM-7 should be heard by anyone with a penchant for crunchy sounds.

Value (1 through 5): 4
Metasonix
metasonix.com

GALAXY PIANOS

Galaxy II Grand Piano Collection (Mac/Win)

By Len Sasso

Galaxy II ($330 boxed, $125 per-piano download) is a major upgrade of Galaxy Pianos' Galaxy Steinway 5.1. The full package gives you three sampled grand pianos: a Bösendorfer Imperial 290 and a 1929 Blüthner Model 150 baby grand in addition to the Steinway Model D270 sampled in Galaxy Steinway 5.1. The new pianos are sampled in semitones as opposed to the whole-tone sampling of the Steinway, but only the Steinway is provided in 5.1 surround. You now get release, sympathetic string resonance,

and una corda (soft pedal) samples.

Galaxy II is a Native Instruments Kontakt Player 2 virtual instrument and includes Kontakt Player 2 in standalone, VSTi, AU, and RTAS versions. Authorization is carried out online using the NI Service Center software. You can load the Galaxy II instruments in the full Kontakt 2 or Kontakt 3, but editing is disabled. The Kontakt engine is very efficient, and playing these pianos on my dual 2 GHz Power Mac G5 barely budged Kontakt's CPU and Disk meters.

INSTANT GRATIFICATION (OR NOT)

There are two ways to purchase the Galaxy II collection: on DVD from your local dealer or from EastWest Sounds Online (soundsonline.com), and by download from SoundsOnDemand (soundsondemand.com). In the download versions, the pianos are sold individually, and because buying all three is actually more expensive than buying the boxed version, the download makes sense only for those who want just one of the pianos.

The download versions have some important limitations. They are 16- rather than 24-bit, sampled in whole tones rather than semitones, do not include una corda samples, and come with 5 rather than 20 pads for layering. Galaxy Pianos promises an upgrade path from the download to the boxed version in the near future should you purchase the download and then decide you need those features.

Nine-foot Steinways and Bösendorfers are ubiquitous in sampled-piano collections, whereas finding a Blüthner baby grand is unusual. All three pianos have been meticulously sampled, sound great, and are fun to play. But the Blüthner stands out for its warm, intimate sound. If you're going to buy only one, this is probably it.

>> Six tabs along the middle of the Galaxy II user interface let you control every aspect of the piano's sound.

PIANISTIC

Galaxy Pianos has made extensive use of the Kontakt Script Processor (KSP) to give you precise control over these sampled pianos. Five custom-scripted panels address different aspects of the piano's sound, and a sixth, the Main panel,

replicates the most essential knobs and buttons from the other panels.

The Tone panel's Colour, Reso, and Warmth knobs together determine the tone quality. Colour and Reso are not simply filter parameters; they balance different sample sets for hard and soft playing and string resonance. Loudness and Low Key knobs affect the loudness contour and level of notes in the piano's bass register, respectively. The Punch knob, along with compression settings (type and amount), affects dynamics. You access filter settings to simulate three lid positions with the Lid drop-down menu, and you can switch to the una corda samples with the Soft Pedal button when you don't have a MIDI soft pedal (CC 67).

The Anatomy panel controls stereo width and perspective (player or audience), dynamics, tuning, and temperament. Unlike many sampled pianos, Galaxy II has separate samples for sympathetic string resonance, and you can set their level as well as enable silent keying, in which a note played softly doesn't sound, but the sympathetic resonance of its strings will be triggered by other notes.

The Noises panel sets the level of release samples as well as hammer, damper, pedal, and string noises. The Space panel sets up a convolution reverb offering 21 IR spaces.

AND BEYOND

The Warp panel provides access to five different special effects that take you well beyond the realm of sampled pianos. Here you layer in synthesizer pads, degrade and distort the sound, add flanging and filtering, dial in convolution effects beyond the reverb in the Space panel, and process everything with a flexible feedback-delay line. Each effect has its own editor subpanel, and a Random Warp button will randomly activate and set all Warp controls (see **Web Clip 1**). Each piano has a presets menu with standard piano setups and three categories of warping: Playing with Pads, Warped Pianos, and Totally Warped.

ONLINE BONUS MATERIAL

If you already have a collection of sampled pianos, Galaxy II is still well worth a listen. Features such as sampled sympathetic resonance and radical sound warping, along with the degree of control over the sound of these pianos, make it something special. em

Value (1 through 5): 4
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EM MARKETPLACE

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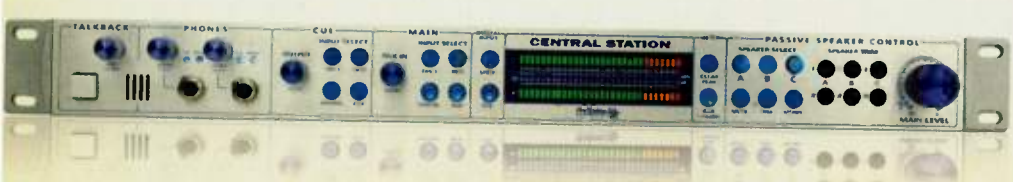

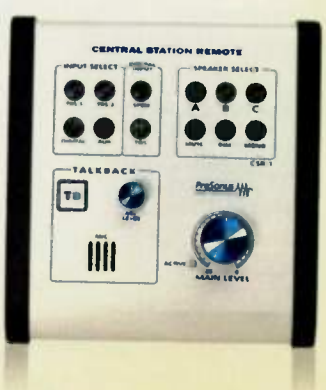

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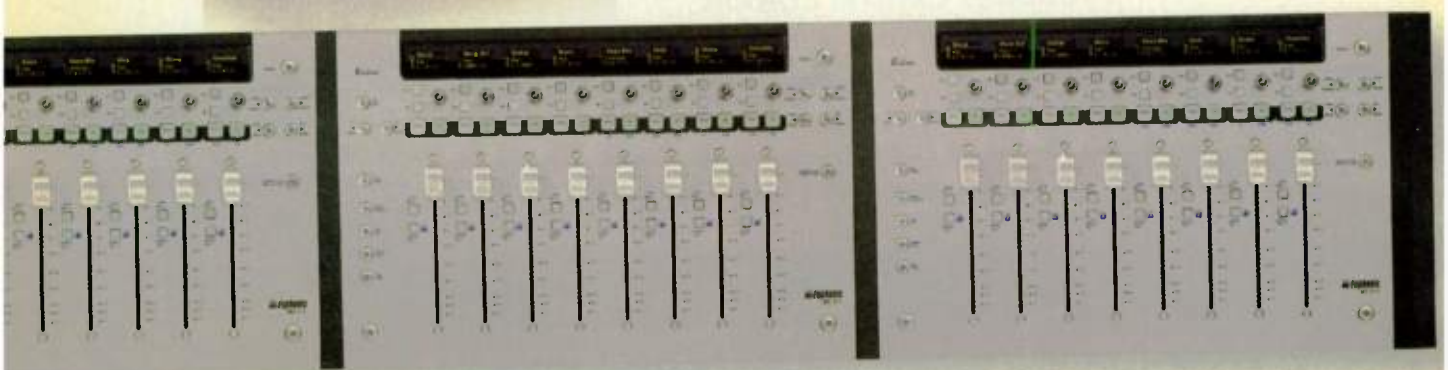
For Digital Performer users who want it all: 11 legendary instruments including KONTAKT 3 and the award-winning MASSIVE, combined with instant hands-on control. Choose from 7,500 presets in seconds and instantly tweak with real knobs.

NI Guitar Rig 3 Kontrol Edition
Guitar Effects & Amp Models

The ultimate all-in-one guitar and bass solution for your MOTU studio. Simply connect your guitar to the enhanced RIG KONTROL foot pedal and you are ready to go. Includes an incredible array of expertly modeled classic amps, cabinets, mics and effects.

Waves Platinum Bundle
Waves and DP together on Intel

The Waves Platinum Bundle delivers across-the-board Waves processing to Digital Performer on the MacBook Pro, Mac Pro tower and today's other latest Intel Macs. Waves processing is absolutely essential for any DP-based MOTU studio.



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The MOTU studio — compact and powerful

Novation Nocturn
Dedicated intelligent plug-in controller

Featuring touch-sensitive rotaries and Novation's exclusive Automap Universal 2.0 software, the Nocturn provides instant, intelligent, bi-directional control of plug-ins within DP. Easy to use "learn" feature makes customizing any of the Nocturn's controls a breeze. Unique "Speed Dial" controls anything directly beneath your mouse.

Shure KSM 44
Multi-pattern condenser mic

The flagship of the KSM line — and the new must-have mic for any MOTU studio. The KSM 44 has extended frequency response specially tailored for critical studio vocal tracking. Includes flexible polar patterns: cardioid, omni & bidirectional.

BIAS Peak Pro 6
Evolution of an award-winning standard

Whether you're a musician, composer, sound designer, audio editor, podcast/multimedia producer, or mastering engineer, Peak Pro offers more creative potential than ever before. Reliably mature, yet always inspired. Feature rich, yet flexible and friendly. Used side by side with DP6, Peak Pro streamlines your workflow with industry-renowned sonic quality and precision.

PreSonus Central Station
Control room monitoring with remote

The missing link between your MOTU recording interface, studio monitors, input sources and the artist. Monitor from among 5 sets of stereo inputs (3 analog and 2 digital) and manage your sessions with hands-on control room features like talkback and listenback.

Mackie Control Universal Pro

Automated control surface for Digital Performer

The ultimate hands-on control for Digital Performer. Nine motorized, touch-sensitive Penny + Giles faders, eight V-Pots and more than 50 master buttons let you tweak to your heart's content. Apply the included custom overlay for Digital Performer for dedicated labeling of DP-specific functions.

Mackie HR824mk2

Active studio reference monitors

These high-resolution monitors sound as smooth as they look. The new Zero Edge Baffle™ minimizes diffraction for a crystal-clear image and controls sound waves for wide, even dispersion. Acoustic Space, LF roll-off and HF controls let you tailor the sound to suit your MOTU studio space — and your taste.

Monster Power Pro 900 / 5100

Conditioning and surge protection

The Monster Power Pro 900 provides high-performance, optimized Monster Clean Power and surge protection for AC power lines. For even more complete protection, the Power Pro 5100 features Monster's Clean Power filtering, color-coded outlets, and audible and visual indicators for ground and protection status monitoring.

Who Said That?

By Nathaniel Kunkel

Many years ago, George Massenburg and I were having lunch and I asked him what facet of the engineering and production gig was his favorite. He told me that he loved to be in the studio: he loved the hang. He loved being around musicians and people who worked on music. Of course he loves music, too, but his love of the personal interaction in the recording studio was a great motivator for him. I feel the same way.

Some of the by-products of my own studio experience are the great things I have heard people say. This month I thought it would be fun to share some of their quotes with you.

I remember once blowing up a rack of Dolby SR on an Ed Cherney session at the Complex. (It's a long story.) The response from Ed was very forgiving, but also memorable. "Aw jeez, Nate. It's okay if you blow stuff up once in a while. Just try not to do it on your friend's session."

So noted, sir.

George Massenburg once told me during a severe chew-out that "excuses will only make *you* feel better." That certainly made an impression. It didn't make me feel any better.

No matter how memorable those quotes are, they're from situations that we hope to avoid repeating. However, the quotes that make me laugh every time are the ones I love the most.

My friend Edd Kolakowski, during a particularly troublesome session, likened our progress to that of "a herd of turtles in a bucket of peanut butter." A similar sentiment was expressed by my friend Steve Croes, who compared working with a particular artist to "painting a school bus with a toothbrush." He was right about that guy, too.

I've heard many a great quote as performers chided one another, such as "How long have you been on this gig, not including tomorrow?" Or the brilliant question, "How do you compare your work with what people are, you know, doing today?"

The great Don Grolnick had a vast collection of things you could tell an artist right after witnessing a performance of theirs that sucked, such as "Wow, that was timeless" or "You must be really proud of yourself" or "I don't know how you do it." Those still find use. It's sad how often, really.

If any of you have a funny quote or phrase that you use or have heard someone else use in the studio, email it to me at npk@studiowithoutwalls.com. If I get enough submissions, I will author a follow-up article to this and credit you. Think of it as our audio tribute to George Carlin. You game? em

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Nathaniel Kunkel (studiowithoutwalls.com) is a Grammy and Emmy Award–winning producer, engineer, and mixer who has worked with Sting, James Taylor, B.B. King, Insane Clown Posse, Lyle Lovett, I-Nine, and comedian Robin Williams.

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