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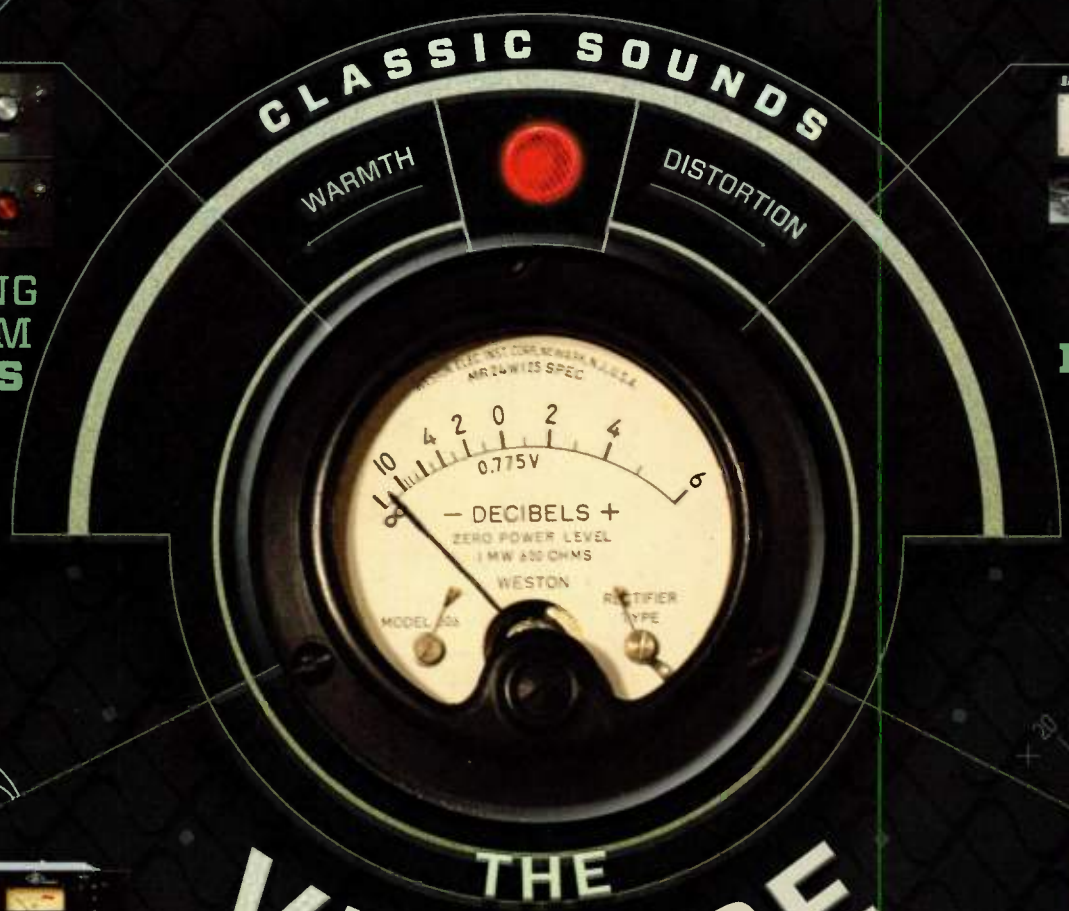
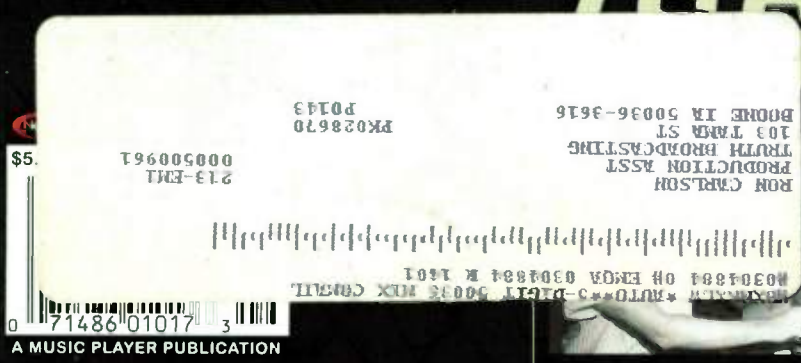


THE INS AND OUTS OF BUYING **USED EQUIPMENT**

OLD-SCHOOL DIGITAL STYLE: **CHIPTUNES**

THE VINTAGE ISSUE



SUN SESSIONS

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A MUSIC PLAYER PUBLICATION

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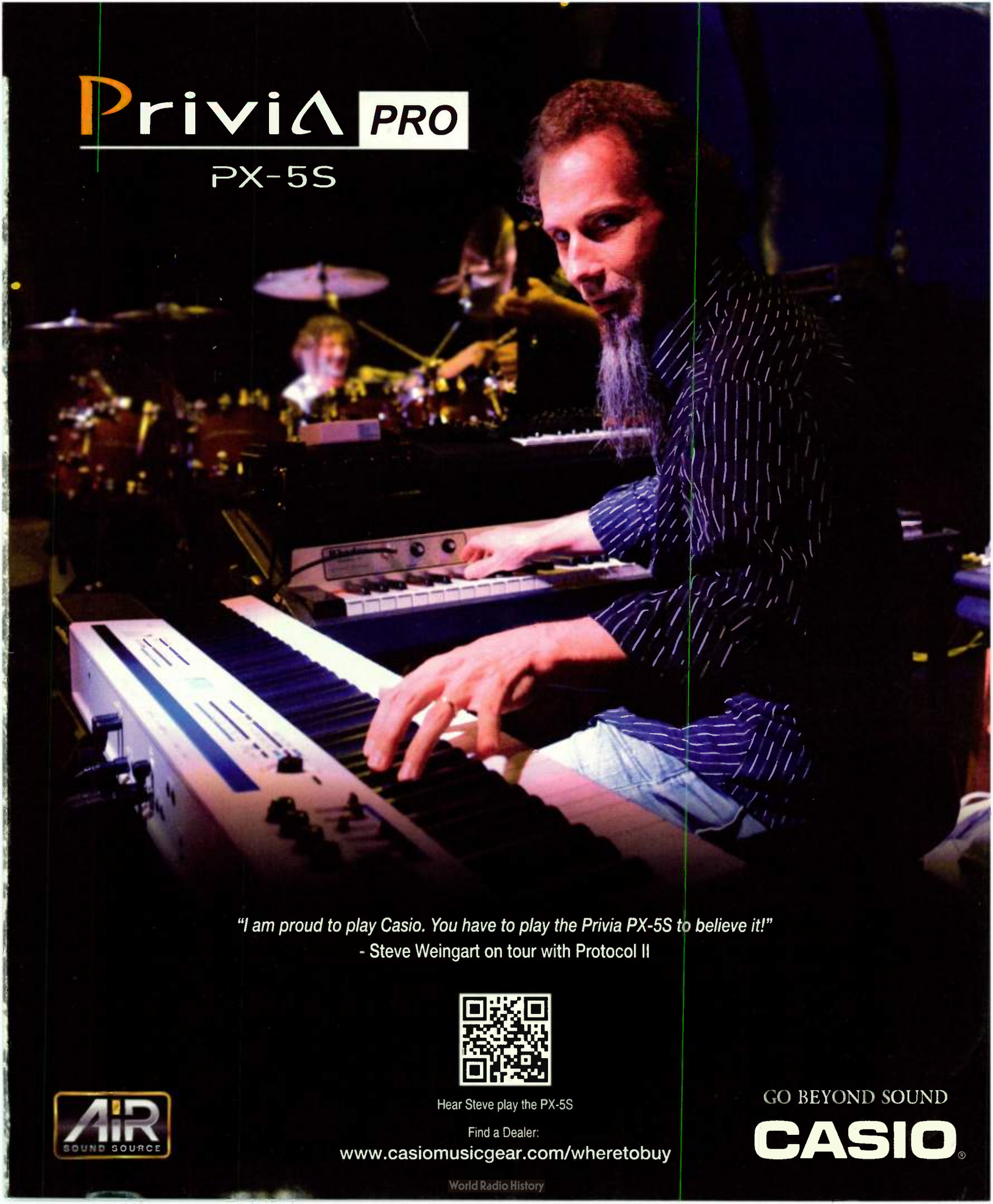

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Mario from Indianapolis, IN

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NEW!

NEW!

AKAI professional MPK261

Take total control! The 61-key MPK261 gives you great playing feel, thanks to its semi-weighted keys. But this workhorse goes way beyond what you'd expect from a keyboard controller. Take full advantage of authentic MPC workflows, an onboard arpeggiator, assignable control surfaces, and more.

NEW!

M-AUDIO Trigger Finger Pro

In addition to its 16 illuminated, velocity-sensitive pads, the Trigger Finger Pro gives you a collection of faders, buttons, and layers — 48 assignable controls in all. But the real star of the show is the onboard step sequencer. You'll get more from your virtual instruments!

Roland AIRA

Roland's AIRA series instruments deliver old-school simplicity and hands-on playability, and they integrate easily into your live or studio rig. Choose among four amazing instruments: the System-1 Plug-out synthesizer keyboard, the VT-3 Voice Transformer effects processor, the TB-3 Touch Bassline synth, and the TR-8 Rhythm Performer drum machine. Put the control you need right at your fingertips!

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NEW!

LIVID Guitar Wing

Control your virtual effects or DAW from your guitar! The Guitar Wing puts wireless MIDI controls right on your axe and at your fingertips. Best of all, this innovative controller is amazingly affordable.

Ableton Push with Live 9 Suite

This hardware/software system gives you a powerful platform for music creation and performance! You get hands-on control plus all the instruments, effects, and processing tools you need — all from one great package.

NEW!

behringer Motor49

Compact and loaded with the features you need, Behringer's Motor49 MIDI keyboard controller is also a fantastic value. Its 49 semi-weighted keys provide an expressive, dynamic playing experience, while a well-placed array of velocity-sensitive pads, motorized faders, buttons, and rotary controllers put you in command of your DAW, instruments, and plug-ins.

NEW!

MISA DIGITAL INSTRUMENTS Tri-Bass

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COVER FEATURE

22 **Vintage Appeal** Top producers and engineers demystify the unique qualities of their favorite classic hardware, and share tips for re-creating those signature sounds at home.

30

FEATURES

30 **Old-School Digital** Chipmusic, aka 8-bit, aka Chiptunes, revels in the sounds of decades-old computers and videogame systems, via hardware hacks, plugins, and lo-fi production values.

36 **Inside *Sun Sessions*** We go behind the scenes of the PBS/YouTube series that showcases live artist performances at the birthplace of rock 'n' roll.

42 **Clap Your Hands Say Yeah** Alex Ounsworth and engineer Dave Fridmann create a minimalist production palette showcasing simple chord structures and layered synths on *Only Run*.

GEAR

ROUNDUP 48 **Hybrid Soft Synths** Seven unique instruments that provide exciting new timbres

NEW GEAR 16 Production tools to help you make better music

MOD SQUAD 20 **Make Noise Teleplexer** Repatching never sounded so good.

REVIEWS 56 **KMI SoftStep 2** MIDI/OSC foot controller

58 **SoundNess SoundSoap 3** Audio restoration software

60 **Ploytech PL2** Pocket-size synth

64 **Millennia Media HV-37** Stereo preamp

09.2014

16

HOW TO

MASTER CLASS 66 **Using Waves MultiRack at Front of House** Get the most out of your plug-ins onstage.

TECHNIQUES 72 **Production** Emulate classic gear with plug-ins.

74 **Production** Tips for buying used gear

DEPARTMENTS

10 **Community**

PLAYLIST 46 Music reviews from *Electronic Musician* contributors

CRAIG'S LIST 82 **Five** Tips for Effective Communications with Tech Support

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EDITORIAL DIRECTOR Michael Molenda
mmolenda@nbmedia.com

EDITOR Sarah Jones
sjones@nbmedia.com

TECHNICAL EDITOR Gino Robair
gino@ginorobair.com

MANAGING EDITOR Barbara Schultz
bschultz@nbmedia.com

CONTRIBUTORS
Jim Aikin, Michael Cooper, Marty Cutler, Steve La Cerra, Kylee Swenson Gordon, Emile Menasche, Ken Micallef, Lily Moayeri, Markkus Rovito, Bud Scoppa, Tony Ware, Geary Yelton

FOUNDING EDITOR Craig Anderton

ART DIRECTOR Damien Castaneda
dcastaneda@nbmedia.com

STAFF PHOTOGRAPHER
Paul Haggard *phaggard@nbmedia.com*

PUBLISHER Joe Perry
jperry@nbmedia.com, 212.378.0464

ADVERTISING DIRECTOR, EASTERN REGION, MIDWEST & EUROPE
Jeff Donnenwerth
jdonnenwerth@nbmedia.com, 770.643.1425

ADVERTISING DIRECTOR, WESTERN REGION & ASIA
Mari Deetz
mdeetz@nbmedia.com, 650.238.0344

ADVERTISING SALES, EASTERN ACCOUNTS
Anna Blumenthal
ablumenthal@nbmedia.com, 646.723.5404

SPECIALTY SALES ADVERTISING, WEST
Michelle Eigen
meigen@nbmedia.com, 650.238.0325

SPECIALTY SALES ADVERTISING, EAST
Jon Brudner
jbrudner@nbmedia.com, 917.281.4721

PRODUCTION MANAGER Beatrice Kim

THE NEWBAY MUSIC GROUP
VICE PRESIDENT, PUBLISHING DIRECTOR Bill Amstutz
GROUP PUBLISHER Bob Ziltz
EDITORIAL DIRECTOR Brad Tolinski
SENIOR FINANCIAL ANALYST Bob Jenkins
PRODUCTION DEPARTMENT MANAGER Beatrice Kim
DIRECTOR OF MARKETING Chris Campana
MOTION GRAPHICS DESIGNER Tim Tsuruda
SYSTEMS ENGINEER Bill Brooks
CONSUMER MARKETING DIRECTOR Meg Estevez
CONSUMER MARKETING COORDINATOR
Dominique Rennell
FULFILLMENT COORDINATOR Ulises Cabrera
OFFICES SERVICES COORDINATOR Mara Hampson

NEWBAY MEDIA CORPORATE
PRESIDENT & CEO Steve Palm
CHIEF FINANCIAL OFFICER Paul Mastronardi
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VICE PRESIDENT, CONTENT & MARKETING
Anothony Savona
IT DIRECTOR Anthony Verbanic
VICE PRESIDENT, HUMAN RESOURCES Ray Vollmer

LIST RENTAL: 914.925.2449
danny.grubert@lakegroupmedia.com

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insight

The Allure of Vintage

WHAT'S THE big deal about vintage gear? It's easy to fetishize certain mics, preamps, and synths because they were part of what made our favorite songs sound amazing. But is a classic piece better than what's made today?

As with everything having to do with musical equipment, the answer is—it depends. Many classic products were made to order or produced in small quantities—what we now call *boutique* items—hence their rarity. The best of them were designed to do one or two things exceptionally well, not to be an all-in-one product that's made cheaply offshore and sold in the millions.

I would argue that the upper-tier boutique products of today are better in many ways than much of the gear from half a century ago in terms of parts tolerances, audio specs, and in some cases, durability. (Manufacturers have learned a lot since The Beatles were on *The Ed Sullivan Show*.) I'm not referring to re-creations of old designs, but gear that's built to support high-res recording and the wider dynamic range that contemporary audio formats offer.

Whether vintage or modern, there is something to be said for overall quality, and that, you have to pay for, no matter what you're after. Even if you're lucky at the flea market, expect to invest more in upkeep on a classic piece than with a modern product.

And no matter if it's new or used gear, skill is still a requirement to use it. That's what this issue is all about.

GINO ROBAIR
TECHNICAL EDITOR

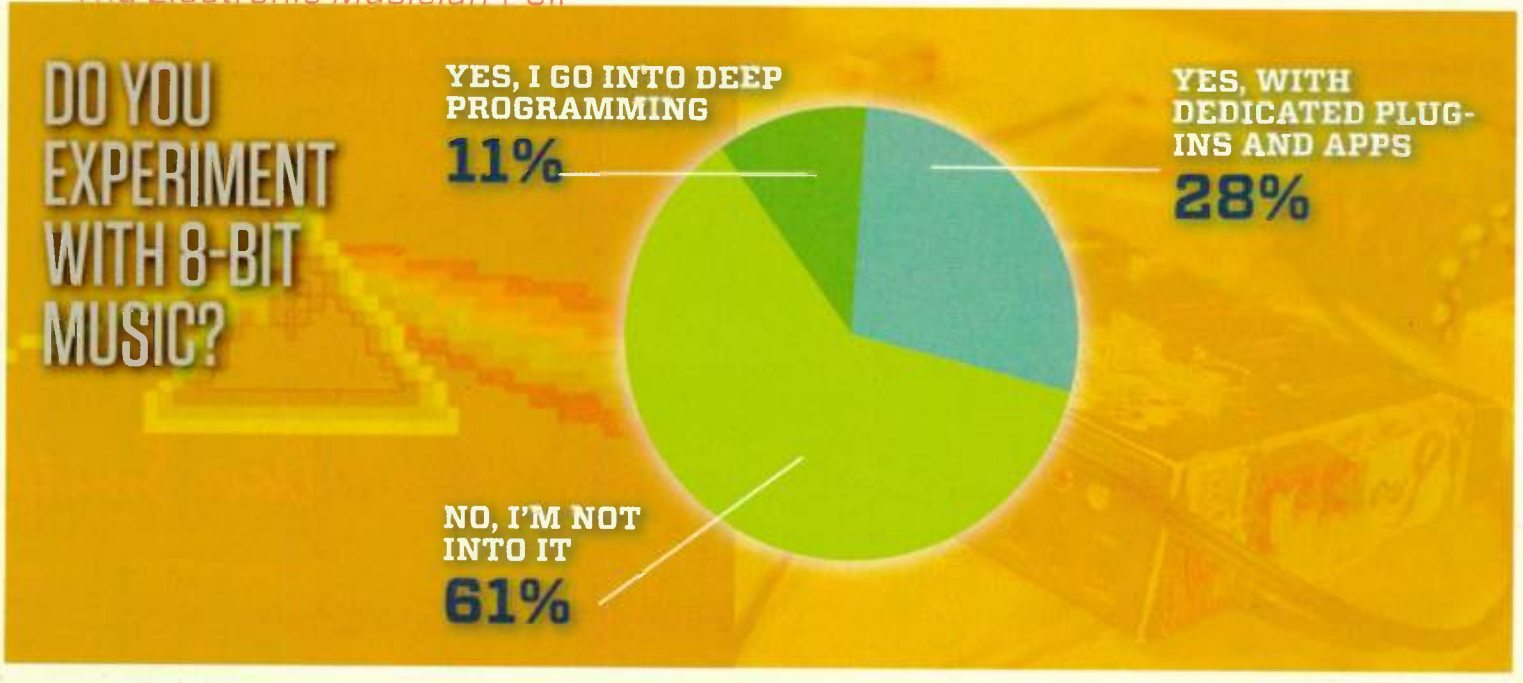
COMMUNITY

"TECHNOLOGY IS WHAT'S CHANGING THE BUSINESS; GOTTA GET WITH IT. I TAKE MONEY, NO MATTER IF IT'S COINS OR DOLLARS."

50 Cent on accepting Bitcoin payments for his new album, *Animal Ambition*, on Reddit, June 7, 2014

The *Electronic Musician* Poll

DO YOU EXPERIMENT WITH 8-BIT MUSIC?



IN THE STUDIO

>> Ty Segall with Chris Woodhouse

BY BARBARA SCHULTZ

DENEE PETRACEK

TY SEGALL HAS A NEW SOLO CREATION ON THE WAY. *MANIPULATOR* (DRAG City) is the first album he's made on his own in a proper studio. "I've worked with Chris [Woodhouse, in his studio, The Dock] in the past with the bands I'm in, Slaughterhouse and Fuzz, and he's an amazing engineer, but when I've done solo records, everything was with friends in home studios."

Another process change for Segall: Whereas he's commonly written and recorded songs in the same session, in the moment, this time he spent a year writing, arranging, and demoing tracks—in analog. "I was at home with my 8-track reel-to-reel," he says. "Finally, I just brought all the demos to Chris and tried them all out"

The new songs explode with spectacular sounds of '60s punk and psychedelia—killer distortion meets virtuosic spacey soloing, with Segall playing almost all of the parts himself, piece by piece, to a Studer 16-track tape machine in The Dock. Segall's vintage-awesome guitar sounds are captured with a Shure SM57, placed up close to his "lucky amp": "I've got this one magic amp—the only amp I'll ever use," he says. "It's this '72 Fender Quad Reverb silver-face, and I think it's broken. It breaks up way too much. It's way too distorted. I have played out of other Quads and they're a lot cleaner. I don't know why mine is so screwed-up sounding, but it's my lucky amp.

"There's basically two [guitar] sounds [on this album]," Segall continues. "There's a tube distortion sound, and that's just the amp. I turn every knob to 10, but then we master at like 7 or 8, and that's just golden distortion. The other sound is, I have the [Death by Audio] Fuzz War pedal, which is the only pedal I use. Through the lucky amp, it's really f*cked up sounding, which I love."

ask!

MY CURRENT DAW DOESN'T INCLUDE MIDI EFFECTS PLUG-INS. BUT I'VE BEEN THINKING ABOUT SWITCHING DAWS FOR VARIOUS REASONS AND WONDER IF IT'S WORTH CHOOSING ONE WITH MIDI EFFECTS. HOW USEFUL ARE THEY? WHY CAN'T YOU JUST APPLY AUDIO EFFECTS TO A VIRTUAL INSTRUMENT'S AUDIO OUTPUT, OR USE MIDI EDITING FUNCTIONS, TO DO THE SAME THING?

ANTHONY HUNTER
KANSAS CITY, KS
VIA E-MAIL

Logic Pro X includes several MIDI effects, such as the MIDI modulation source shown here.

Several programs, such as Cubase, Sonar, Live, Reaper, Digital Performer, and Logic, include MIDI effects. (Find extensive background information at emusician.com/gear/0769/the-case-for-midi-in-the-21st-century/134095. Also, check midiplugins.com for a listing of third-party MIDI plug-ins.)

MIDI effects' main value is that they can work in real time. For example, if you're writing a song and have recorded an inconsistent MIDI drum part, you can quickly tame the velocities and quantize notes by inserting MIDI effects. Other MIDI effects analyze chords, perform step sequencing, create rhythmic functions, add echoes, split notes, snap to scales, and the like. Although you could obtain similar or perhaps even identical results with MIDI editing and/or audio effects, the plug-in option is faster and more fluid.

Their usefulness to you depends on not just their compatibility with your host program, but also your workflow and musical style. For straight-ahead rock recording, MIDI effects are probably of limited value. But if you use MIDI-driven virtual instruments, or work with MIDI in the context of "groove"-oriented music, MIDI effects can help speed up workflow (especially when songwriting) as well as jump-start the creative process.

THE EDITORS

>>> Got a question about recording, gigging, or technology? Ask us! Send it to ElectronicMusician@musicplayer.com.

Disc Makers Talks Vinyl

In June, Disc Makers announced that it would begin offering vinyl pressing services again for the first time in 15 years. We sat down with CEO Tony van Veen to get the full story.

BY SARAH JONES

Vinyl has seen a resurgence over the past five years. What was the determining factor that led Disc Makers to get back into the game now?

We've been watching the vinyl growth very carefully to determine if it was for real or just a passing fad. After five years in a row of 30 to 35% annual market growth, vinyl has finally gotten to be big enough to be interesting as more than just a micro niche product. And it has shown staying power. Disc Makers getting back into the vinyl business has been met with great enthusiasm, by artists as well as by our own staff.

What did it take to get the equipment back up and running?

The equipment includes the same presses that our records were being pressed on in the late '90s when we stopped offering vinyl. We're partnered with a company that has restored the presses, which is not a simple process, since it's virtually impossible to get parts for record presses that were originally built almost 50 years ago. It takes a combination of engineering skills and MacGyver ingenuity.

Do you have your own vinyl mastering engineer?

We do. Our vinyl mastering engineer still works here in our SoundLab mastering studios. Problem is, we sold our cutting lathe a few years ago after it had been collecting dust for over a decade. So as of this writing we are using a third-party mastering facility to cut our lacquers.

What's the most important thing for artists to know if they are considering releasing on vinyl?

It's not a CD, it's not a download, it's not digital. You can't compress and limit the crap out of your music to have it sound as loud as possible, and still have it work on a record. It likely needs to be mastered separately for your vinyl project. Your music will sound different on vinyl than in digital form, and benefits from more dynamic range. Also, the amount of time per side becomes a limiting factor. A 65-minute CD can't be squeezed into one vinyl LP. But it feels oh so good to slide that 12-inch platter out of the protective paper sleeve and drop it onto a turntable.

Disc Makers is a pioneer in vinyl pressing, going back to 1946. How has the landscape changed the most since those early days?

In the early days of the record industry, there was an abundance of demand, and the supply was strictly controlled and filtered by relatively few labels. We heard what they wanted us to hear. Today, those filters and barriers are completely gone. I'm proud that Disc Makers has played a leading role in smashing those barriers by pioneering the sale of complete record packages directly to artists in the 1980s. Artists today realize that it's very difficult to get signed, and that it's even harder to get heard on the radio. That's why every artist today makes his or her own CDs, and distributes his or her own music digitally. That was not possible 30 years ago.

Where do you see the future of the CD as a delivery format?

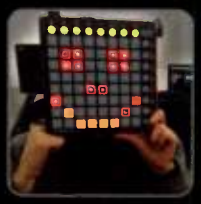
It continues to be an essential tool for independent artists. Today, with downloads and streaming, CDs are no longer the primary delivery format for music. The role of the CD has changed, from primarily a carrier medium, to more of a souvenir. Today's independent artists make a disproportionate part of their music revenues from performing live, and from selling CDs and merch at their gigs. The CD, when autographed by the artists, becomes a souvenir. My kids (who are in college) never bought a CD in their lives until they started going to concerts by indie artists. Then all of a sudden they started buying CDs. Sure, it's possible to release a project digitally. But there is still a segment of the market that likes the physical product, and any artist who doesn't have discs is leaving money on the table.

Disc Makers' pressing plant.

I WOULDN'T BE HERE IF IT WASN'T FOR THE **LAUNCHPAD**

M4SONIC

"The Launchpad is my platform and my workstation to get the most out of my music. I can do anything I want. To be able to to modify and break the rules with my hardware - that's exciting!"



"The Launchpad makes **my life easier** every day"

Matt Davis - [namethemachine]

Drake, Bassnectar, The Glitch Mob

"This is definitely something that is going to **take over the industry**"

Henry Strange - Music Producer / Programmer

Kanye West, Drake, Trey Songz, Pitbull, Mike Posner, and many more!

"Scene-launching with the Launchpad is pretty amazing... Anything that lights up is good – **the more lights, the better!**"

Matt Robertson - Musical director

Björk

"**Essential component** to run my live shows..."

Laura "Alluxe" Escudé - Electronic Music Producer / Programmer (Electronic Creatives)

Kanye West, Jay Z, The Weeknd, Bon Iver, Yeah Yeah Yeahs, Herbie Hancock

Cat Power, Silversun Pickups, Garbage, Childish Gambino

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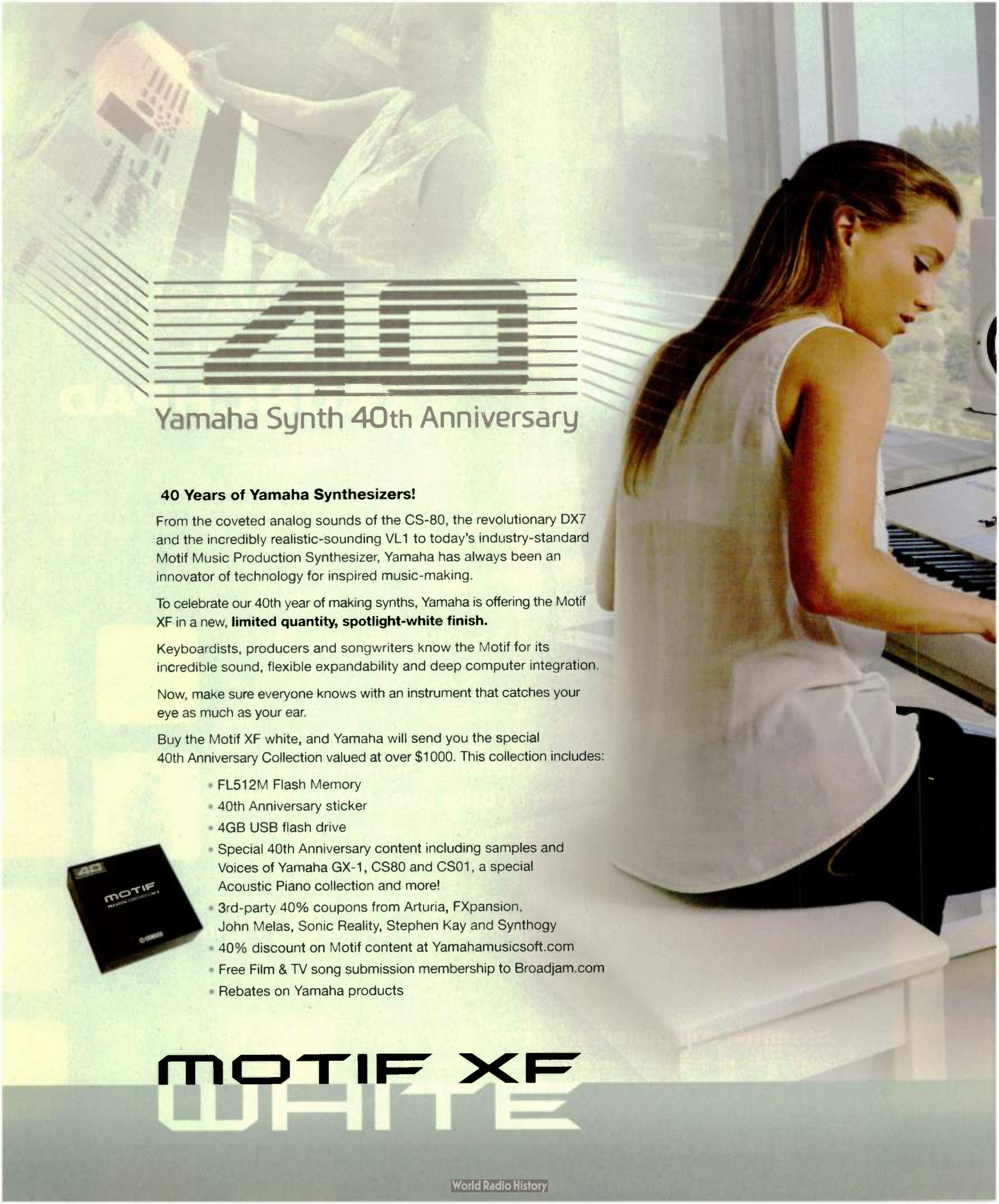

40

Yamaha Synth 40th Anniversary

40 Years of Yamaha Synthesizers!

From the coveted analog sounds of the CS-80, the revolutionary DX7 and the incredibly realistic-sounding VL1 to today's industry-standard Motif Music Production Synthesizer, Yamaha has always been an innovator of technology for inspired music-making.

To celebrate our 40th year of making synths, Yamaha is offering the Motif XF in a new, **limited quantity, spotlight-white finish.**

Keyboardists, producers and songwriters know the Motif for its incredible sound, flexible expandability and deep computer integration.

Now, make sure everyone knows with an instrument that catches your eye as much as your ear.

Buy the Motif XF white, and Yamaha will send you the special 40th Anniversary Collection valued at over $1000. This collection includes:

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- Special 40th Anniversary content including samples and Voices of Yamaha GX-1, CS80 and CS01, a special Acoustic Piano collection and more!
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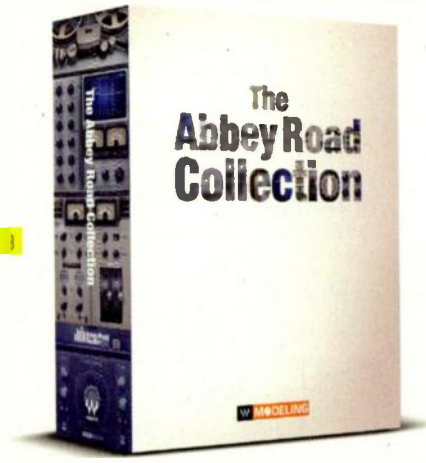
- 40% discount on Motif content at Yamahamusicsoft.com
- Free Film & TV song submission membership to Broadjam.com
- Rebates on Yamaha products

MOTIF XF WHITE

NEW GEAR



1
Dave Smith Instruments
Pro 2
Hybrid keyboard monosynth
$1,999

HIGHLIGHTS Four digital oscillators and a sub-oscillator • newly designed 4-pole lowpass (*a la* the Prophet-5) and Oberheim-like 2-pole state-variable analog filters that can be run parallel or in series • multitrack step sequencer (configurable as 32x8 or 16x16) • four CV inputs and outputs plus gate output • 4-voice paraphonic mode • audio input • BBD delay emulation • analog distortion

TARGET MARKET Keyboardists working in the studio and on stage

ANALYSIS A powerful synth that brings back classic analog filter sounds.

davesmithinstruments.com

2
Kenton
GPMX-16
Bidirectional GPI-to-MIDI converter
$467

HIGHLIGHTS Works with the IEEE-488 General Purpose Interface standard, also known as GPI, typically used with computer-based editing equipment • 16 9-pin GPI inputs and outputs • 5-pin DIN MIDI In and two MIDI Out ports • de-bounce settings • built-in MIDI analyzer • multiple units can be daisy-chained together • Increment, Decrement, and Select buttons for editing • EEPROM for saving parameter settings

TARGET MARKET Broadcast-level post-production

ANALYSIS A welcome utility device designed for a very specific environment.

kenton.co.uk

3
Waves
Abbey Road Collection
Native plug-in bundle
$600

HIGHLIGHTS Developed with Abbey Road Studios, these plug-ins include models of classic tube consoles, microphones, tape machines, and effects • the package bundles together several plug-in products, including REDD Consoles, RS56 "Curve Bender" Passive EQ, J37 Tape, King's Microphones, and Reel ADT • AAX 64-bit/RTAS/AU/VST

TARGET MARKET Engineers and musicians who want top-quality plug-in versions of vintage gear

ANALYSIS A realistic way to get the recognizably British vibe of the kit used in Abbey Road Studios for decades.

waves.com

4
DigiTech
Luxe Polyphonic Detune Pedal
Pitch-shifting stompbox
$TBA

HIGHLIGHTS Features the same polyphonic pitch-shifting algorithm used in the Whammy pedal • variable detune range ±50 cents • adjustable wet/dry mix of detuned signal • true bypass • includes 9VDC power supply • 24-bit/44.1kHz conversion quality

TARGET MARKET Guitarists

ANALYSIS Like the DigiTech Whammy without the pedal, it's designed for fattening up your sound with subtle intonation changes.

digitech.com

All prices are MSRP except as noted

5

Korg/Detune Ltd.

DSN-12 Analog Synthesizer

Virtual synth for Nintendo 3DS gaming device

$TBA

HIGHLIGHTS 12 monophonic analog-style synthesizers • effects include reverb, delay, compressor, flanger, chorus, and kick • 64-step sequencer • chain together 64 sequences; up to 99 scenes • 3D oscilloscope display with Wave and Lissajous modes • exchange sound and song data locally • can also be used with Nintendo 2DS/3DS XL • available from the Nintendo eShop

TARGET MARKET Gamers who make music

ANALYSIS The follow-up to three other Korg DS-based synths that you play with a stylus.

detune.co.jp

6

Zoom

H5 Handy Recorder

Digital portable unit

$269

HIGHLIGHTS Records four tracks at once • includes x/y stereo capsule • accepts the same interchangeable capsules as the H6 • two phantom-powered XLR inputs • can be used as 4-in/2-out USB audio interface • compressor, limiter, and lowcut filter • supports SD cards up to 32 GB • runs 15 hours on two AA batteries

TARGET MARKET Anyone interested in a 4-channel portable recorder

ANALYSIS Fills the gap between Zoom's H4, with its non-removable capsules, and the H6, with its removable mics.

zoom-na.com

7

Focal

Alpha

Powered studio monitors

$349-$599

HIGHLIGHTS 2-way monitors available in three sizes: Alpha 50, with 5" woofer, 75W total; Alpha 60 with 6.5" woofer, 105W total; Alpha 80 with 8" woofer, 150W total • 1" aluminum inverted-dome tweeter • front-facing bass ports • XLR and RCA inputs • shelving filters • bi-amped Class AB amplifiers • auto-standby mode after 30 minutes of non-use

TARGET MARKET Professional, personal, and multimedia studios

ANALYSIS The most affordable Focal monitors to date, with sizes and prices to fit various needs.

focal-fr.com

8

XILS-lab

XILS 4

Software synth

$244

HIGHLIGHTS Emulation of the EMS VCS4, a prototype-only analog synthesizer featuring side-by-side VCS3s • six pairs of aliasing-free oscillators with wave shaping • includes virtual patching matrix. keyboard, 256-event sequencer, voltage processor, envelope follower, pitch tracker, and sample and hold • effects include ring mod, delay, chorus, phaser, and a spring reverb emulation

TARGET MARKET Musicians, composers, and fans of '70s prog and Krautrock

ANALYSIS The only thing better than having one VCS3 is having two!

xils-lab.com

Continued

NEW GEAR

10

12

9

11

9
Zivix
PUC
WIFI-based MIDI interface for iOS devices
$129

HIGHLIGHTS Control MIDI devices wirelessly from an iOS device or other device supporting wireless Core MIDI • control iOS synths from external MIDI hardware devices • single MIDI I/O port • iOS devices require PUC Connect app (free) • powered by USB or two AA batteries

TARGET MARKET Tablet and iOS owners

ANALYSIS A convenient way to work with music apps that also solves the issue of connector mismatches with various portable devices.

mipuc.com

10
Modartt
Pianoteq 5
Physical-modeling software instrument
$129-$519

HIGHLIGHTS A collection of physically modeled acoustic and electric pianos • new K2 grand piano • keyboard percussion instruments added • includes historical 18th- and 19th-century keyboards from the Kremsegg Schloss Museum collection • 15 new microphone models provide additional timbral options

TARGET MARKET Composers, arrangers, and keyboard performers

ANALYSIS Physically modeled instruments provide sonic realism that sample-based instrument libraries cannot touch. Pianoteq is a stellar example of this technology.

pianoteq.com

11
Applied Acoustic Systems
String Studio VS-2
Physical-modeling string-synth plug-in
$199

HIGHLIGHTS Redesigned interface • compressor, limiter, and EQ effects • revamped multi-effects processor • Native 64-bit for AAX/AU/VST • 500 presets by producer Sean Divine • backward compatible with String Studio VS-1 presets • supports Scala scale files for microtonal tuning • free trial available

TARGET MARKET Composers and performers looking for string-based timbres, from bowed and plucked instruments to ambient and pad sounds

ANALYSIS The simplified interface and backward compatibility with version 1 makes this update a no-brainer.

applied-acoustics.com

12
Electro-Harmonix
B9 Organ Machine
Organ-emulator stompbox
$293

HIGHLIGHTS Nine presets that model popular organ tones, including Jazz, Gospel, Cathedral, Classic Rock, Continental, Octaves, Fat and Full, and Bell Organ • modulation-speed control • Click control adds organ-like, harmonic-percussion sound • ability to mix processed sound with unprocessed input • discrete outputs for Dry and Organ • includes AC adapter

TARGET MARKET Guitarists who want to play organ tones without having to use a synth setup

ANALYSIS Classic keyboard tones in a pedal—what's not to like?

ehx.com

All prices are MSRP except as noted

RXA5: 5-inch: 70 watts, 50Hz-27kHz

RXA6: 6-inch: 100 watts, 45Hz-27kHz

RESOLV RXA ACTIVE STUDIO MONITORS deliver the sonic elements essential to any studio setup, featuring Samson's newly-developed *Air Displacement Ribbon Tweeters* for extended high-frequency response and increased dynamic range.

Sold individually in 5 and 6-inch models, RXA monitors offer a true reference sound with no hype, just precise audio imaging for authentic and critical sound reproduction.

SAMSON

Make Noise Teleplexer

Repatching never sounded so good

BY GINO ROBAIR

ALTERNATIVE CONTROLLERS such as capacitive touch plates, force-sensing resistors (FSRs), and theremin-like modules offer greater gestural control than a standard keyboard. But imagine using such a controller to quickly change patch routings in your modular system.

Make Noise has come up with an ingenious way to do this by creating an instant signal router. Taking inspiration from the telegraph, where you press down a key to make an electrical contact, the Make Noise Teleplexer ($115) provides an array of 14 contact points, logically arranged in 8 rows, that you use to send signals from one module to another. This is done by connecting one end of a patch cable to the output of your source module and touching the tip at the other end of the cable to the surface of the Teleplexer, which is connected to the destination module. The instant connection allows you to quickly change tone colors or add rhythmic variety as you scrape and tap the module's surface with the plug.

The Teleplexer has three output jacks that route the signal from the source cable to the inputs of other modules (perhaps back to the source module itself to create a feedback path!). The outputs provide a hot enough level that you can use a passive (non-buffered) mult or TipTop Audio's Stackable cables to route a signal to several destinations without loss.

Each Teleplexer output has an associated Aux Input jack that allows you to alter the signal going through each channel with whatever source signal you touch against the modules's conductive plates.

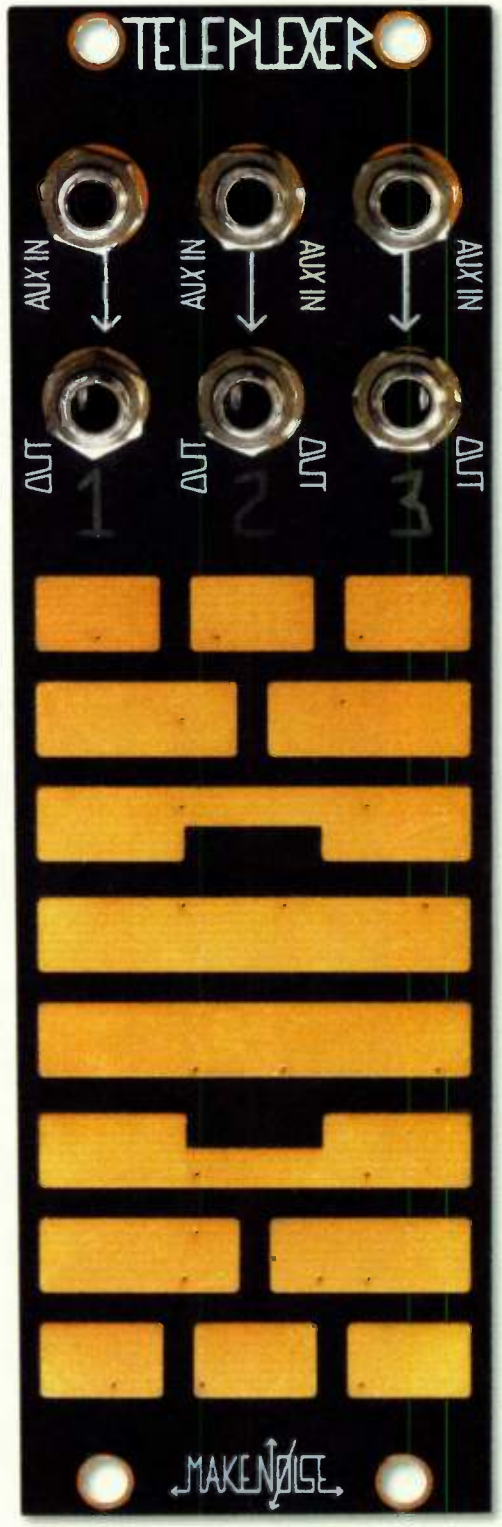
The touch point layout is well thought out and musically useful. Notice that the top four rows of horizontal lines are the mirror image of the bottom four rows. The pads in the upper rows pass the source signal through unaltered, while the lower rows invert whatever source signals are received.

Depending on the pad you use, you can send your source signal to any combination of outputs with a single touch: The top and bottom row have discrete pads going to each output; the second and seventh rows send your source signal to outputs 1-2 or 2-3; the third and sixth rows control outputs 1 and 3; and the fourth and fifth rows are routed to all three outputs. Lighted numerals below each output jack show you which ones are receiving the source signal (indicated by a green number) and if it's inverted (a red numeral). When more than one signal is sent to the same output, the signals are combined/subtracted, depending on the combination of pads you're touching. It's an elegant and intuitive way to create complex and immediate changes in a patch, while providing a richly performative interface.

For example, one technique is to hold the ends of several plugs (each coming from a different source) in your hand and drag them across the module's various contact points. With practice, you can precisely control where each plug in the bunch touches. Or you can throw caution to wind and let them dangle a bit and make contact in an indeterminate way. I used the latter technique to quasi-randomly scan through the matrix of a Make Noise René module while simultaneously controlling parameters of a resonant filter—serious analog glitch timbres.

Another trick is to hold the ends of your source plugs between the fingers of one hand and touch the Teleplexer's contact points with the fingers on your other hand. The voltage is attenuated by your body, resulting in more subtle changes to your patch depending on how much skin is in contact with the conductive plate.

Considering the Teleplexer is only 8HP wide and reasonably priced, you may end up with more than one in your system. ■



You can send signals to three or more destinations by touching the end of a patch cable to the conductive surfaces of the Make Noise Teleplexer.

Mad Aunt Maud says...

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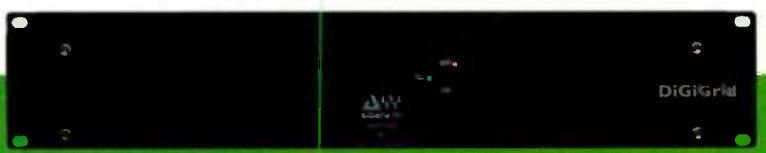

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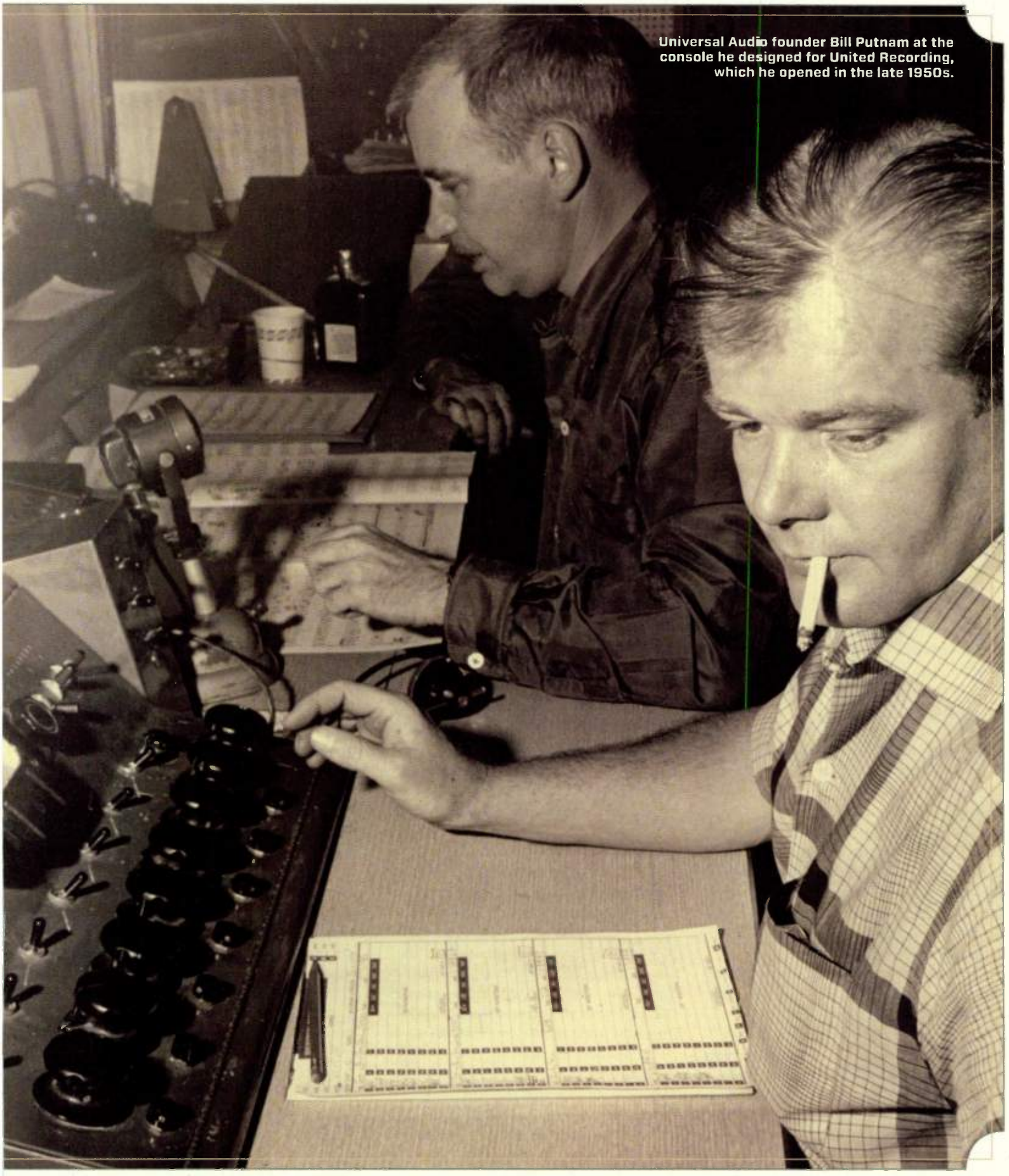
For U.S. sales: www.waves.com

Vintage Love

Engineers embrace the special qualities of classic hardware in the age of excellent plug-ins and reliable DAWs

BY BLAIR JACKSON

IN THIS era of hybrid analog/digital recording (and full-blown retro analog-only projects), vintage gear has never been more prized—or more expensive. It seems as though engineers and producers of every age group today, enamored of the warmth and power of classic recordings of the '50s, '60s, and '70s, are still looking to capture that mysterious, hard-to-define, sonic *je ne sais quoi* that gives old recordings by The Beatles or Led Zeppelin or Aretha or Pink Floyd or John Coltrane so much life and presence. Was it the medium itself—tape, a rarity these days—or the lovingly crafted consoles and all those simple-looking metal outboard boxes with names and numbers so familiar to recording aficionados: LA-2A, 1176, Pultec, 670, 1073, 140? Then there are the truly obscure vintage pieces known to and owned by only a relative few—rare compressors from Eastern Europe, EQs plucked from aging radio station consoles, one-off or limited hand-built items that have some special quality and function.



Universal Audio founder Bill Putnam at the console he designed for United Recording, which he opened in the late 1950s.

Vintage Love


The Putnam console, 1957

The last thing we want to do here is promote Gear Envy—we know how hard it is to find and buy vintage audio tools and instruments. But engineers dig this equipment for a reason. Part of it is familiarity, of course—they get used to a sound that a particular box or console or old amp offers. However, many have also A/B'd their vintage gear with modern plug-ins (or even hardware re-creations) and found the newer pieces lacking in one area or another. We spoke with six far-flung engineers—all of whom have embraced analog/digital hybrid recording—to talk about some the vintage pieces they still turn to in their day-to-day work, and get tips for readers who want to emulate these sounds at home. (For the purposes of this article, we are not talking about vintage mics which, let's face it, *everyone* loves and covets.)

Jim Scott Scott's star-packed resume includes the likes of Tom Petty, Red Hot Chili Peppers, Wilco, Sting, and Tedeschi Trucks. He works out of his own analog-heavy Plyrz studio in Santa Clarita, near L.A.

"My thing is the mighty Neve console. I have three—one is a stunning 8048, from RCA Records in New York, built in 1975, and then I have two Neve BCM 10 sidecars I've been dragging around town with me for years. I'm old as a tree and I grew up on consoles, and some consoles just sound amazing. The Neve consoles of a certain vintage—like the *Sound City* movie says—just do a wonderful, great creative rock 'n' roll thing. I grew up on them in a way, once I figured out what things sounded like, as soon as I heard a Neve, I knew that was my thing.

"I have a little trick for your readers. I didn't invent it, but I sure use it. I use a compressor almost like a reverb. You can use whatever you've got. I use Neve compressors—2254s in the console—and also use Blackface 1176s in my rack. I designate a send to a compressor and return it to the console like you would any other effect: like any other reverb or delay or anything. So I can send anything I want to any compressor at any time, instead of putting a compressor directly on top of a certain thing. I can send it to a compressor left or right or center and it gives it a little bit of that effect, but it maintains the dignity of the original recording. I'll use it on simple things—like, putting the kick drum and the bass guitar on the same compressor does really lock them together and [unifies] the low end.

"Here's another trick. Rock 'n' roll is big on distortion, and there are a million guitar pedals and all sorts of boxes that distort things, but another great distortion device is a Neve mic pre. If you send a line signal into a mic pre, it's going to distort and you have control over how much and how little. It's in a channel, so you can EQ it, you can turn the mic pre up or down, you can turn the fader up or down. You can do so many things to it to make it Cream-y or like Sly & the Family Stone or Creedence or whatever you're looking for. Or if you want a really gnarly bass sound, send it something like that, that's all blown up. It adds so much excitement and edge and you can just tuck it right in there underneath the pure signal, and it gives the pure signal some teeth."

Dave Tozer Jack-of-all-trades Tozer—a New York-based musician/producer/engineer/mixer/programmer/songwriter—is best known for the multiple projects he's worked on with John Legend during the past decade-plus, as well as work with Kanye West, Justin Timberlake, Kimbra, and Natasha Bedingfield. He has his own Manhattan studio and also frequently works out of Germano Studios.

"I use a lot of the usual suspects when it comes to vintage gear, and that's because a lot of the gear you hear about became common because they've withstood the test of time and are great," he says. "Saying you love LA2As and 1176s is like saying 'I love The Beatles.' It sounds obvious, but it's for a reason.

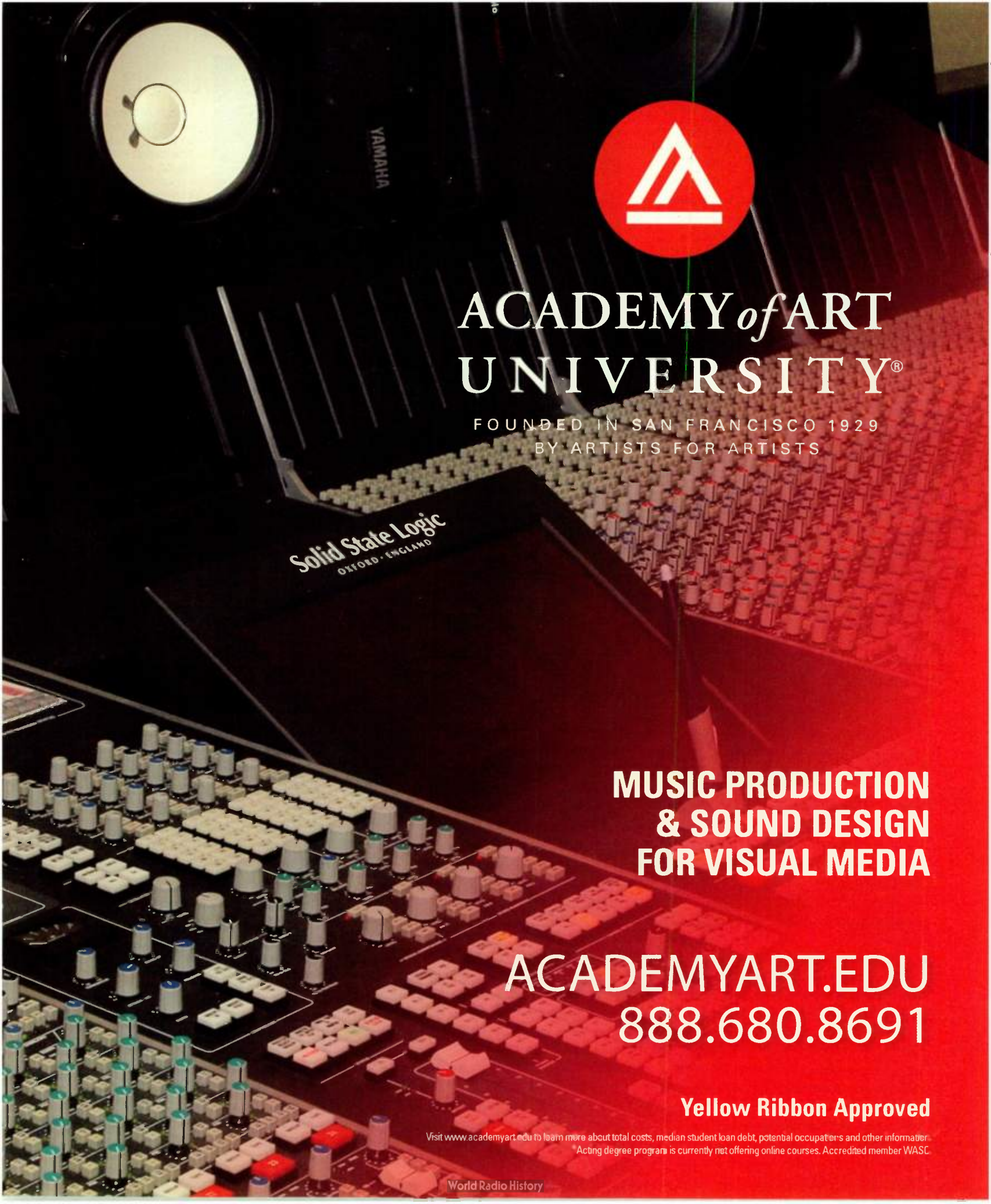
"One of the things about vintage gear in terms of hardware is that people find unique, unexpected uses for them. With the 1176, for example, there are buttons on them that have the compression ratio—4:1, 8:1, 20:1—and some engineers along the way figured out you could mash them all in together and make them go, as George Bush said, "nucular." Tube gear is also like that. You hit these things at levels they weren't designed for and it gives you very cool distortion.

"In the digital world, software companies will try to acquire a 'golden' unit to model, because they want their software version to be the best model possible. With the nature of hardware units having their own little anomalies from unit to unit, they're going to possibly sound a little different from each other. In some ways you can see that by going to the different manufacturers of software plug-ins as well—the Waves version of the Fairchild 670 does, in fact, have a different tone than the Universal Audio one. And some of that could just be the nature of the different hardware units they modeled."

Justin Lieberman As chief engineer and co-manager at San Francisco's Studio Trilogy, Justin Lieberman gets to ply his trade on a remarkable range of projects, from commercials to film, TV, and game soundtracks to popular rock, jazz, and acoustic music artists.

He notes that he and Studio Trilogy engineer Willie Samuels both like to use the studio's two Pultec EQ P1s: "If Willie and I are in Studio A mixing, those *live* on the stereo bus. Everything rides through the Pultec, even if we're not really doing that much with them—there's a little *presence*, there might be a tiny bit of distortion or transformer sound running through the tubes. It's a glue that he and I have really grown accustomed to and depend on at the mix stage. It's nice to have just a little treble or bass at the end. We love them because you can't get too picky with them. If I had something too controllable, I'd probably mess stuff up. That's the number one thing we're really relying on where there's nothing in the software world that can come close."

"We also got two old UA175 compressors that are totally weird. One of them we got from



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Vintage Love

[engineer] Mark Linnett and was allegedly used by Brian Wilson, and I'm not sure where the other one popped up from. They're totally quirky—even from day to day, they might be a little different. I think it's a function of old circuits that have been maybe repaired or modified through the years, and they're the furthest thing from 'matched' ever, but it's super cool, because if we want to get something weird going on, stereo-wise, you can use both of them; I tend to use them a lot [in] parallel. If I want something pretty drastic, I'll hit 'em real hard, or if I just want a little saturation and distortion is happening, I'll hit 'em a little lighter. They respond really strangely to low end depending on how hard they're hitting—it can sound really good or completely wrong. If I were tracking a 20-piece string section, I wouldn't go near the UA 175 at all. But I'm not scared of the Pultecs. We've spent a lot of time making sure they're clean.

Lieberman shares a tip for getting some "quirkiness" out of plug-in versions of vintage gear: "I've had a lot of luck stacking plug-ins. I might make a stem of my snare drum through a couple of plug-ins and then print it back into Pro Tools and then turn off the original and treat that as what I'm working from. Then I find myself kind of adding a few things onto that. Stacking stuff, you can really mess stuff up, but also get something interesting. Printing the stem and saying, 'Okay, this is where I'm working from now' frees up DSP and allows you to make a commitment, which is the biggest issue for me in the digital world. There's such a tendency to second-guess yourself."

Miles Walker The admittedly "gear-crazy" Atlanta-based, Grammy-winning engineer and mixer has worked with such artists as Beyoncé, Rhianna, Usher, Katy Perry, Britney Spears, and Wiz Khalifa. He works out of his own mix room at Silent Sound in the ATL, and also travels to work with the production team Stargate and others.

"Other than a few select UAD plug-ins," he says, "I don't think in-the-box compression sounds as good as its analog counterpart. Some of the EQs are excellent, and there's a nicety to having that many flavors very easily in your hand, even if you own all the vintage pieces, which I do in most cases. I love the old 1176s—*all* of them. To UAD's credit, that's one of the plug-ins I think sounds very good—their new reissued 1176 collection is excellent, but I'll still use [the hardware version] if I can. I also love

Sylvia Massy: "Here is a photo, from my rack, of an original Gates Sta-Level (below) next to a modern reproduction by a company called Retro. The modern version is also good and maybe a bit more stable than the original '50s version."

Summit's TLA 100. I'm familiar with Softubes' [plug-in version], and it's nice—I do like that it has a wet-dry parallel thing on it—but it doesn't do the same sort of saturation break-up, even though it has a saturation knob on it. It's not *quite* like the real one. I used the real one on Usher for a million years, so I'm incredibly sensitive to it. Even if you're not using the compression circuit—because you can turn that all the way down—the true gain of it has a real nice richness you push right to the top. It's like, 'I'm using a *lot* of energy on this tube,' which can be really nice.

"I also really love old hardware reverbs. And this isn't to discredit some of the plug-ins, but the truth is, if you're looking at a [Lexicon] 960 or even a 480, that was a dedicated machine, expensive in its heyday, and it didn't do anything else. When people went in-the-box, they didn't want to pay for outboard reverbs and, in turn, reverb fell out of fashion. I think plug-in delays sound excellent and there are some really good model delay plug-ins, but I'm not blown away with the reverbs yet. So because of that, a lot of people don't like reverb in their mixes and that's a real bummer. You take a classic record that has a really beautiful ballad vocal and the reverb was almost like the background vocals; the sonics of your reverb supported the lead. I miss the sonics of that. I have a 480 that we use from time to time, and even the old [Lexicon] PCM 91s."

Charles Godfrey Talk about a plum gig—Charles Godfrey was a former Guitar Center employee and recording hobbyist who eight years ago managed to land a gig at the splendid five-studio (two studios at the time) recording resort known as Sonic Ranch, a little southeast of El Paso, Texas, Godfrey's home for the past two decades. Like so many top studios, Sonic Ranch offers an impressive selection of great analog gear—Neve and SSL consoles, preamps, compressors, and mics, as well as scads of digital pieces, for the ultimate in hybrid

Sonic Ranch's vintage outboard gear collection includes API 512 and API 212 mic pre's, API 550b EQs, API 560 graphic EQs, Black-Face 1176 compressors, dbx 165 compressors, Distressors with British mode, Alan Smart stereo compressor, LA2A compressor, Pultec EQH 2 EQs and more.

recording.

Explaining his preference for vintage analog gear, Godfrey says, "To me, it sounds better—it's analog love; the trained ear can hear what the difference is. It resides in the fact that electrons moving at the speed of light encounter resistance and slow down as they run through copper connections and specifically tuned transformers. The slowing and characterizing of these electrons will never be able to be replicated by the digital world. Say you are in our big Neve room, and you have racks of this vintage [outboard] gear behind you, and you could put a real 1176 on this vocal channel, and let's throw one on the snare drum as well—that's fantastic! Then you think 'Man. I wish I had one for my guitars.' So at that point I dive into plug-ins. So I use the real vintage outboard gear on the priority tracks. Then to make an awesome mix, it's important to be able to spread great plug-in versions of vintage pieces across multiple channels.

"It comes down to the feel of it, obviously. It's hard to describe the subjective differences, but when you can put your hands on the knobs and see the VU bouncing up and down and

AT GUITAR CENTER

KASKADE

GRAMMY-NOMINATED DJ TALKS PIONEER POWER

Having started with vinyl, Kaskade had multiple considerations when he moved to the digital world. "I'm very comfortable with the Pioneer gear. I love the 900 Nexus—I've been using this mixer since they introduced it. And I've been using the CDJ—I had the first model—the touch wheel was very different. So I've been [using] these guys for a long time," he says. "I think the reason I chose this equipment is because I learned on [Technics] 1200s. I grew up playing vinyl, so it was very comfortable to have a tactile interface and a tempo control on the side. When [Pioneer] designed these, they were meant to replace the 1200. So when they put the design together, although it looks and feels different than a 1200, it's the closest thing to it."

One of the major advantages of going digital is how much it's simplified life on the road. "Now, this is my preference because it's very quick and easy—I put stuff on an SD card, I load it up, and I know how to move. It's similar to digging through a crate of vinyl and throwing it down," Kaskade says, "[but] this is a lot quicker and easier. I used to have to carry around two 80-pound crates of records. Now it's just a little SD card. I feel very comfortable on this setup."

Read the entire interview and learn more about Pioneer power at guitarcenter.com.

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you hear it responding on the speakers, you know that there's no digital processing going on."

"There's also something about being able to blend sounds in the analog world. Obviously you put your multiple mics on a guitar amp or a drum kit or whatever. But if you're bringing them into the digital realm individually for blending and sub mixing within a DAW, it doesn't hold a candle to running it through a Pultec mixer, or running it through the Neve buses. Say I have my three guitar mics coming up on three channels; I'll bus them out on one or a stereo bus, getting that warm, delicious bus of the Neve, and record a single track in Pro Tools. Obviously this makes it simpler down the road when mixing as well, because you have committed to the sound. I've never found anything in the digital world that comes close to analog summing."

Sylvia Massy Working out of her new, fabulously equipped studio operating out of an old church in Ashland, Oregon, Massy continues to be an in-demand producer, engineer, and mixer. Her credit list includes such notables as Johnny Cash, Prince, Tool, System of a Down, and the Red Hot Chili Peppers.

"One piece I can't live without," Massy comments, "is the UA 175B compressor. The sister to that would be the Gates Sta-Level, which is a mono tube broadcast compressor. It has similar characteristics to an LA-2A, but it's a little ballsier, a little more full-bodied. The fun thing about Gates compressors is that they were never meant for recording studios. My understanding is it was strictly marketed to radio stations and the broadcast world in the '50s and '60s.

"What I love about the Sta-Level is it adds color; it's warm and 'furry.' I like to use that word to describe a nice wool blanket you put over things to warm them up. If you push it hard you can hear every intimate part of singer's performance, and then it softly pushes away the transients without a lot of pumping or obvious compression. But if you want to have the effect of compression, it's easy to achieve that, too. I'll often gang together a Gates Sta-Level with another outboard compressor, like a UREI 1176, patched together one after another on a vocal—the Sta-Level takes care of the soft, big control, and the UREI will take care of the little stuff and even it all out. These days you can find a great re-creation of the Sta-Level by Retro.

"Other vintage pieces I use a lot are the 500 Series-sized EQ modules out of an old Aengus console. The Aengus consoles I know about were at Indigo Ranch [in Malibu]. I can't remember how I acquired these EQs, but I use them on everything—they're really special on guitars in particular. They're thumbwheel, graphic-style EQs. If you remember what the first Korn record sounded like—or Korn in general—that sound is due a lot to the Aengus EQs that Ross Robinson used on that record. He changed the face of heavy rock music with that sound, and a great deal was the sound of that EQ. So far I haven't found any EQ plug-in that I really trust yet, they all have a little tinny-ness to them." ■

Blair Jackson is a regular contributor to Electronic Musician *and* Mix *magazines.*

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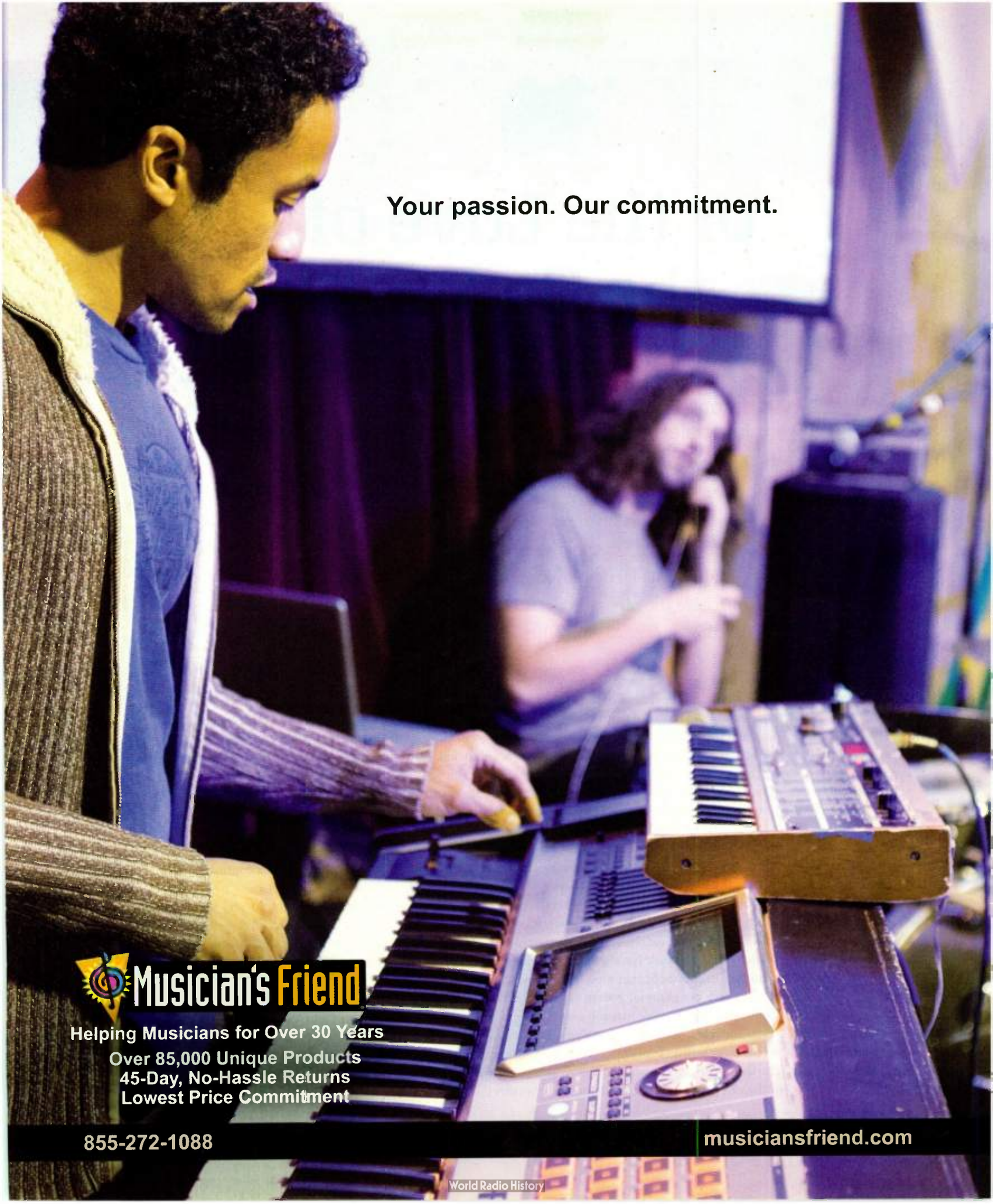
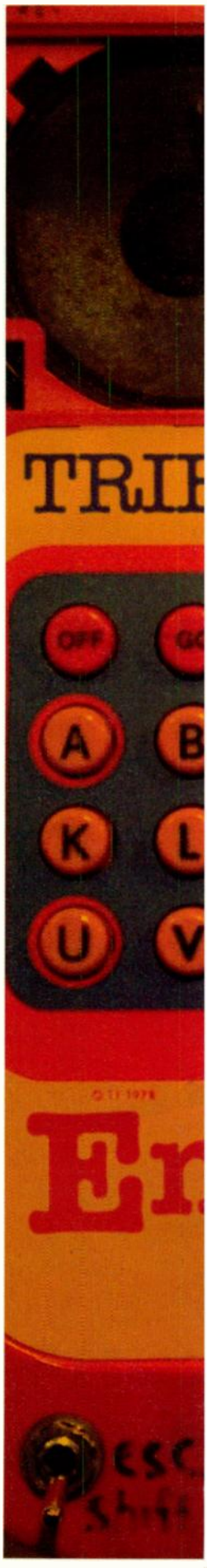


For the Love of the Game

Chipmusic perpetuates the sounds of three-decades-old computers and videogame systems in a celebration of lo-fi resourcefulness

BY MARKKUS ROVITO



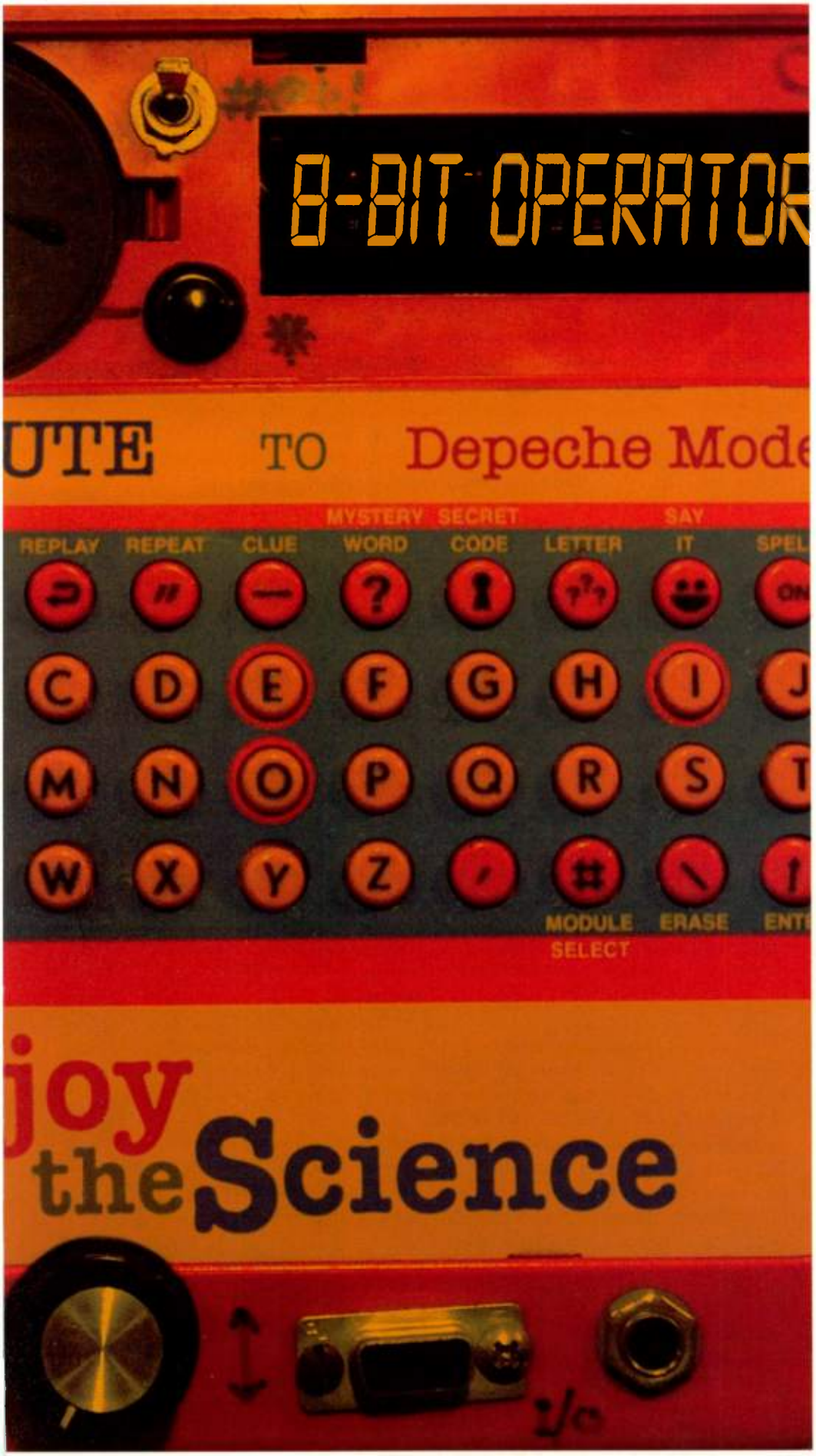
FOR WHATEVER reason, a huge proportion of people of all ages and backgrounds know the first 16 repeating bars of the *Super Mario Bros.* theme music, either by heart, or they know it when they hear it. Plenty of people who never even played the best-selling Nintendo Entertainment System game can hum along to the monophonic melody with greater accuracy than they can to the "Star Spangled Banner" or even "Happy Birthday."

Certainly, hundreds or even thousands of hours of direct or indirect exposure to the Super Mario game burned the music into our brains. But also, the melody and the timbre of the sounds have found their way into our hearts. There's a nostalgic emotional connection to the sounds and music of many classic '80s videogames, such as *The Legend of Zelda*, *Tetris*, *Donkey Kong*, *Pac-Man*, *Burger Time*, and *Mega Man*; the list goes on and on. So it's not entirely surprising that when certain musically inclined '80s videogame addicts came of age, they were attracted to making music with the same distinct sounds that emanated out of their videogame and vintage-computer friends. Thus, chipmusic was born, around 1990.

The label chipmusic is more of a catch-all term applied retroactively to almost any form of electronic music made entirely or partially with the sound microchips (or the main CPU) from early computers and videogame systems such as Amigas, Apple II, Commodore 64, Atari computers and game systems, and Nintendo DS, NES, and Game Boy—most of which are 8-bit chips. These days, producers can also make chipmusic with dozens of plug-in emulators in a DAW or on mobile apps on a phone or tablet. The term chipmusic encompasses many other monikers for music, including 8-bit, Bitpop, Chiptune, Gameboy music, Micromusic, Nerdcore, Chip-Hop, and others.

Some music software, such as primitive soft synths and trackers, began to trickle out for these computers in the mid- and late '80s, and some recorded music followed soon after. However, easily accessible, surviving examples of what we now call chipmusic don't date until about 1991. (See Nebula II's "Séance" on YouTube: http://bit.ly/1sVa91Y.) That year, Urban Shakedown's "Some Justice" hit the UK Top 30. Since then, chipmusic has exploded, and ridden several waves of popularity. The "demoscene" surrounding chipmusic congregates in online communities, sharing music, free software trackers (which became the standard for sequencing chipmusic), and ideas, between plans for getting together for themed lived music events in meatspace.

Today, chipmusic is as common and accessible to make as ever. It's easy to spot 8-bit chip sounds in different genres of popular music, but pure chipmusic crossover successes are rare. Beck released an excellent chipmusic remix EP in 2005 called *GameBoy Variations*. One of the most well-known chipmusic acts, Anamanaguchi, uses live instrumentation along with hacked Nintendo game systems. The band scored the *Scott Pilgrim vs. the World* game, and its song "Jetpack Blues, Sunset Hues" is the opening music to Chris Hardwick's popular Nerdist podcast. Let's run through some basic tools and resources.



CLASSIC HARDWARE

COMPUTERS: AMIGA 1000/ 500/1200/OTHERS
SOUND CHIP: PAULA
YEARS: 1985-1992

The Amiga's Paula sound chip supports four PCM sample-based sound channels with 8-bit resolution. Teijo Kinnunen released a popular tracker program for Amiga called OctaMED in 1991, which through software mixing allows eight or more virtual channels. The computers were known for good sound output, and third-party sound cards enable DSP, multitrack recording to disk, additional hardware sound channels, and higher audio resolution.

COMPUTER: APPLE IIGS
SOUND CHIP: ENSONIQ ES5503
YEARS: 1986-1993

Apple produced about 1.25 million of these machines, and they included the same Ensoniq ES5503 8-bit sample-based wavetable synthesizer chip that Ensoniq used in its Mirage samplers and synth keyboards of the day. The ES5503 supported 16 channels and 32 voices, with a whopping 64KB of dedicated RAM.

COMPUTERS: ATARI ST/STE/TT/FALCOM
SOUND CHIP: YAMAHA YM2149
YEARS: 1985-1993

The Atari ST family of computers were the first to come up with built-in MIDI ports, which led to their mass adoption by musicians and music software developers. Both Cubase and Logic started out on the Atari ST platform, and some high-profile producers, such as Fatboy Slim, used the computer line long after it was discontinued. You can still get native chiptracker software for these machines today.

COMPUTERS: COMMODORE CBM-II/64/128/MAX MACHINE
SOUND CHIP: MOS TECHNOLOGY SID (SOUND INTERFACE DEVICE) 6581/8580
YEARS: 1982-1994

The Commodore 64 is still known as the best-selling single computer model; this and the Commodore 128 are estimated to have sold more than 20 million units. And their SID chips are among the most revered in the chipmusic scene. Bob Yannes, who later co-founded Ensoniq, engineered the SID chip and infused it with his experience in the synthesizer industry. The SID's features read like synth specs: three programmable oscillators, each with four waveforms, oscillator sync, and an ADSR amp envelope; a multimode filter; three ring modulators; external audio input; and a random modulation generator. There are many chiptrackers available for the Commodore 64, and even more software or hardware DSP emulations of the SID chip synths.
In 1999 boutique synth favorites Elektron

CHIP TRIBUTES
8-BIT OPERATORS HAVE THE SCENE COVERED

According to Jeremy Kolosine—and a quick YouTube search—there's no shortage of cheap chipmusic cover versions out there that are little more than public MIDI files of popular tracks fed through 8-bit emulator plug-ins. "I'm not against any of those tools, as long as the finished product is an actual artist's representation," Kolosine said. "You have to change something."

After exploring electro-punk with Futurisk in the '80s and synthy shoegaze in the '90s with Shakespace, Kolosine fell into the chipmusic scene in 2003 after a fascination with the handheld General MIDI synth/sequencer Roland PMA-5. After trying the handheld music capabilities of the Nintendo DS and Game Boy (using cartridges like LSDJ and Nanoloop), he fell in love with 8-bit sounds. Under the name Receptors, Kolosine has released albums using the Commodore 64, Ataris, Nintendos, and circuit-bent creations, as well as an entire album using only the Nintendo DS with Korg DS-10 cartridge.

Since hooking into the sprawling social aspect of chip music, Kolosine started 8-Bit Operators, which he calls a "chip-scene collective," to put out tribute albums to "bands that are highly important to the evolution of electronic pop music." Since debuting with a tribute to Kraftwerk in 2007, 8-Bit Operators have taken on The Beatles (2009), Devo (2012), and now Depeche Mode, with the new compilation Enjoy the Science. The New Wave icons have been on Kolosine's most-requested list since he started 8-Bit Operators, and the album comes a decade after Nullsleep's chipmusic classic, "Depeche Mode Megamix" (Nullsleep.com). "In a way, this is a tribute to that tune," Kolosine said.

Much more than a simple rehashing of Depeche Mode's monster tracks, Enjoy the Science presents the full spectrum of moods, styles, and sounds that chipmusic can encompass, which may pleasantly surprise the uninitiated. Some of the strongest tracks are stellar versions of the band's earliest singles, such as "New Life" by Patokai and "Dreaming of Me" by Gameboymusicclub. Awesome instrumental versions of obscure album tracks like "(Set Me Free) Remotivate Me" by Aonami and "Boys Say Go" by Goto80 prove that these artists don't need to lean on the hits to impress.

Enjoy the Science also showcases some of the evolution of chipmusic, where live instrumentation and analog synths are sprinkled in with the trademark videogame and computer sounds. For example, Crashfaster lays down some chunky guitar backdrop to "Never Let Me Down Again." "Because it's a guitar song, I put it at 11 in honor of Spinal Tap," Kolosine said.

The 8-Bit Operators series is now 75-tracks deep and includes dozens of chip-scene artists, including the most "popular" acts like 8-Bit Weapon, Anamanaguchi, and the aforementioned Nullsleep. It will go on, and while Kolosine doesn't want to say which band will be honored next, he did drop some hints pointing to both Sparks and The Cure.

For now, however, Enjoy the Science transcends mere novelty, definitely deserving repeat listens for any Depeche Mode fan. The band seems to approve, as well, having linked to the album from its Twitter and Facebook feed. "This has been amazing," Kolosine said. "Even the negative stuff I always expect and kind of enjoy, like 'oh, that's such a nerdy vocal.'"

So-called "nerdy" vocals on "Enjoy the Silence" by Herbert Weixelbaum and the vocoded vox on "Strangelove" by ComputeHer just add to the charm of the album, which Kolosine thinks shows the overall strength of the chipmusic scene. "People were singing the death tolls of the movement," he said. "But I think it's being taken seriously again. You can't even keep track of it now because it's so big." —MARKKUS ROVITO

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bought up a bunch of the still-functioning SID 6581 chips and packaged them into a professional hardware synth with MIDI In/Out/Thru called the SidStation. It added four individual routable LFOs for plenty of funky modulation options. It still retains a lot of its value on Ebay and would be a great find for chipmusic makers.

GAME CONSOLE: ATARI 2600/ VIDEO COMPUTER SYSTEM SOUND/DISPLAY CHIP: TELEVISION INTERFACE ADAPTER (TIA) YEARS 1977-1992

In 2002, Texas artist Paul Slocum of the band Tree Wave created the Synthcart cartridge for the Atari 2600. It requires two Atari keyboard controllers, rather than joysticks, and it lets you create two-voice synth arpeggios along with one or two pre-programmed noise beats. Other Atari 2600 mods allow it to be controlled via MIDI. Indie band Black Moth Super Rainbow has been known to use Atari 2600 sounds.

GAME CONSOLES: NINTENDO GAME BOY/NES/DS SOUND CHIP: VARIOUS YEARS: 1983-2007

The chipmusic universe centers itself around these three Nintendo machines more than anything else. With more than 300 million combined units sold worldwide, there's plenty of fodder to keep chippers glitching out for years to come. All of these machines have accessible cartridges available for making chipmusic, although their current availability is spotty at best. You can access classic 8-bit sound of the RP2A03 chip in the Nintendo Entertainment System (NES) by purchasing the MIDINES 1.1 cartridge/hardware interface, which allows MIDI control of the NES chip. The cartridge also includes 256 vintage drum machine samples and other chipmusic staples.

For one totally awesome recent example of a modded NES, go to Thereminhero.com, where you can find the NESKeytar, made from a still-functioning NES, a *Guitar Hero* controller neck, a toy keyboard, some Arduino boards, MIDI I/O and more.

In 2001, the Little Sound DJ (LSDJ) cartridge for Game Boy came out, and it exploits the sound capabilities built into the main Sharp LR35902 CPU to offer four channels with 4-bit sound. It includes a tracker-style sequencer, 59 phonems for programmable speech, and sampled drum kits from 15 classic drum machines, such as the Roland X0X series. You can sync two Game Boys running LSDJ together, or sync one running LSDJ to one running Nanoloop, the other great Game Boy music option.

Nanoloop came out in 1999, and produces simple noise and synth waveforms for its sequencer. The more updated Nanoloop 2 for Game Boy Advance takes advantage of the upgraded 8-bit sound and has a more advanced sequencer/soft synth feature set. Modified versions of Nanoloop are also available for iOS and Android mobile devices.

Jeremy Kolosine of Receptors and 8-Bit Operators (see sidebar on page 32) calls the Game Boy with music software "the ultimate music machine designed for a human's opposable thumbs only." Judging from the way the Game Boy seems to dominate the chipmusic space, many people agree with him.

The Nintendo DS is the second-highest selling videogame console of all time, and it also has the most accessible music software available for it. You can get the NitroTracker for 16 channels of vintage tracker-style composition, or for a more modern experience that starts to fall outside the realm of chipmusic due to its high sound quality, you can get Korg DS-10 for the DS or Korg DS-10 Plus for the Nintendo DSi model. The Korg program gives you six tracks of sequencing, including two very modern and fully featured synth parts and four drum/synth parts.

MODERN CONVENIENCE

Diving into chipmusic in the purist fashion using only the vintage hardware, whether as-is or modded, can require a considerable time commitment to track items down and then learn how to use and/or modify them. Luckily, you don't have to decide to take that leap right away. There are plenty of freeware options or commercial plug-ins available that do a convincing job emulating one or more of the most sought-after vintage 8-bit computer sound chips.

And remember, you can add a little 8-bit flavor to any of your sounds at the drop of a hat just by applying a bitcrusher effect to them. No bitcrusher plug-in packed with your DAW? No problem. Here are three free bitcrushers that come in both VST and AU formats for Windows or Mac.

VIRTUAL CREATIONS 3LI73 REDUCER 2.1

A bit/sample rate reducer with pre- and post-cutoff filters, it's a quick way to inject some lo-fi into drums, instruments or vocal tracks, whether chipmusic or otherwise.
WWW.VIRTUALCREATIONS.DE

TOBYBEAR PRODUCTIONS DECIMATOR

This one gives you a bit quantizer and sample-rate reducer followed by a lowpass/highpass filter.
WWW.TOBYBEAR.DE

TAL BITCRUSHER

This low-CPU bitcrusher has low- and high-shelf EQ, as well as a noise cross modulator. It comes with 10 presets for bass, leads, and drums.
KUNZ.CORRUPT.CH

Now, why not dive into those irresistible vintage computer noises by way of modern plug-in software? These Windows/Mac emulators sound great; they usually add way more features above and beyond the originals; and they'll save you all the potential headaches of setting up 30-year old hardware. We won't tell if you don't tell.

REFX QUADRASID

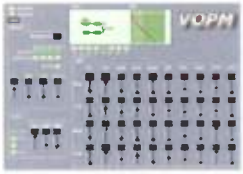
This Commodore 64 chip emulator will set you back $55, and for that price you could probably buy a whole C64 computer with music software. But QuadraSID will let you choose the original SID 6581 or the later SID 8580 chip emulation, and it gives you up to four chip emulations per instance. Bonus features include independent oscillator volume, an arpeggiator per oscillator, four LFOs, and MIDI modulation.
REFX.COM

CHIP32

This tiny 8-bit wavetable synth does the job of sounding an awful lot like the NES RP2A03 chip for the low, low, cost of nothing. There's a graphical wavetable editor, ADSR envelope, basic filter, bitcrusher, and not much more other than a smile on your face. It also supports MIDI CCs.

WWW.KVRAUDIO.COM/PRODUCT/CHIP32_BY_SAM/DETAILS

VOPM



You've probably always wondered what the Sega Genesis sounded like, because you know you didn't have one. Nobody did. But that doesn't matter, because the VOPM plug-in emulates the Yamaha YM2151 FM synthesis chip from the Sega Megadrive and Genesis systems. You can control the many sliders of its four FM operators and the LFO with MIDI CCs. It sounds like '80s Japanese game shows.

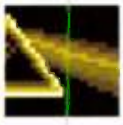
WWW.KVRAUDIO.COM/PRODUCT/VOPM_BY_SAM/DETAILS

PLOGUE CHIPSOUNDS

If you're sold on the whole idea of emulating old sound chips, maybe you're open to shelling out some money to get all of the emulations in one place. Chipsounds ($95) has you covered with emulations of the chips from NES, Atari 2600, Commodore 64, Game Boy, Amiga, and more (15 chips in all). It's kind of like dying and going to chiptune heaven, except that your computer will still use a mouse instead of the those Minority Report air-grabbing GUIs.

Enough of the emulations; you can still get authentic chipmusic hardware in a modern package for a downright reasonable price. Check out Twisted Electrons' AY3 SYNTHESIZER with two audio outs and MIDI In. It is built to order with two General Instrument AY-3-8912 chips, which give the AY3 6-voice polyphony and an absolutely huge sound when in unison mode. The AY-3-8912 is the most common variant of the AY-3-8910 chip, which was used in the Amstrad CPC computer and the Mattel Intellivision game console. The AY3 is a compact desktop module, but still offers 64 presets, a 16-step sequencer, glide mode, a mod matrix, and five pots with one push-button encoder to do all the programming. With its stellar sound, programming and low price of €197, the AY3 has the potential to be a cult classic.

TWISTED-ELECTRONS.COM ■



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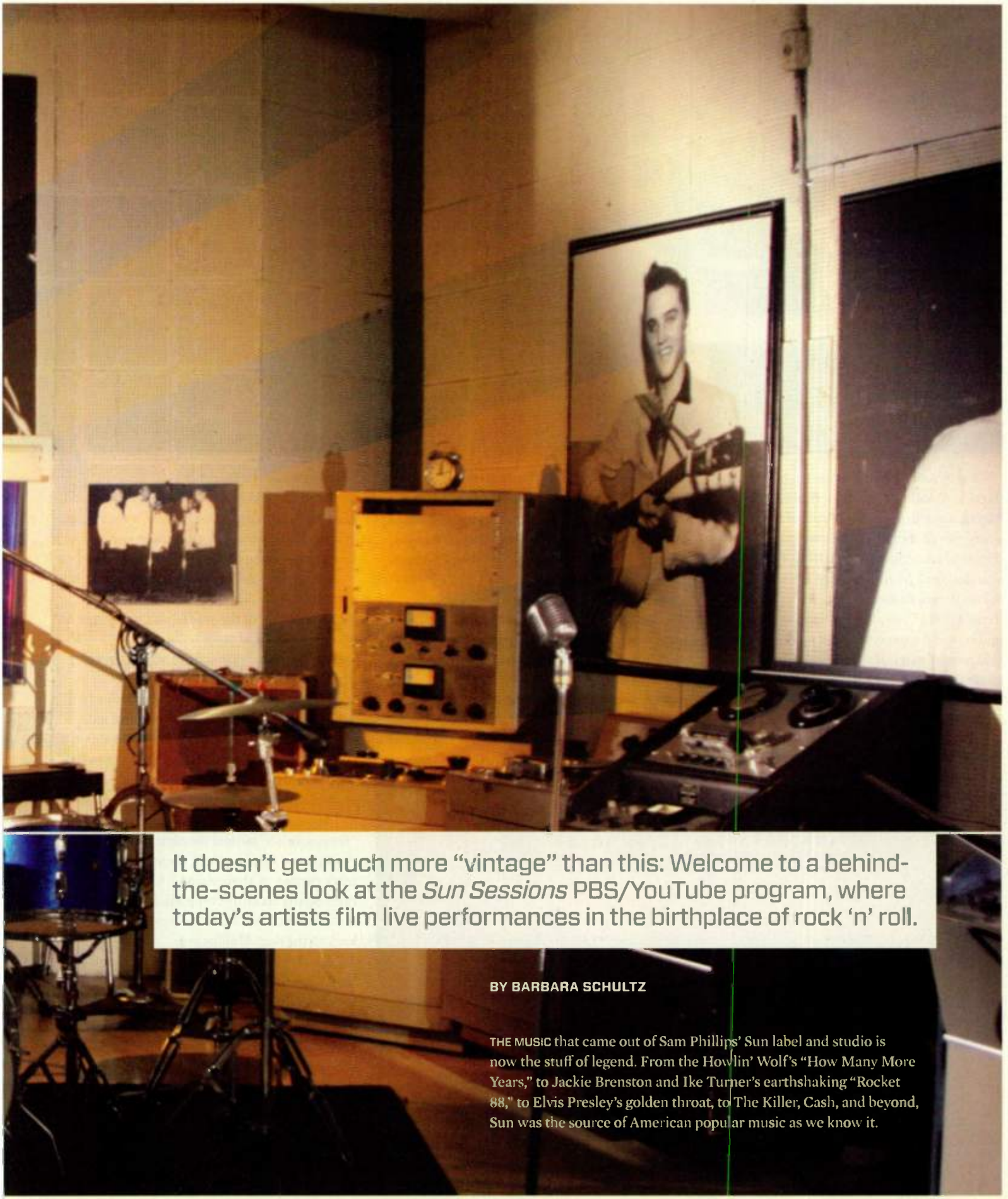
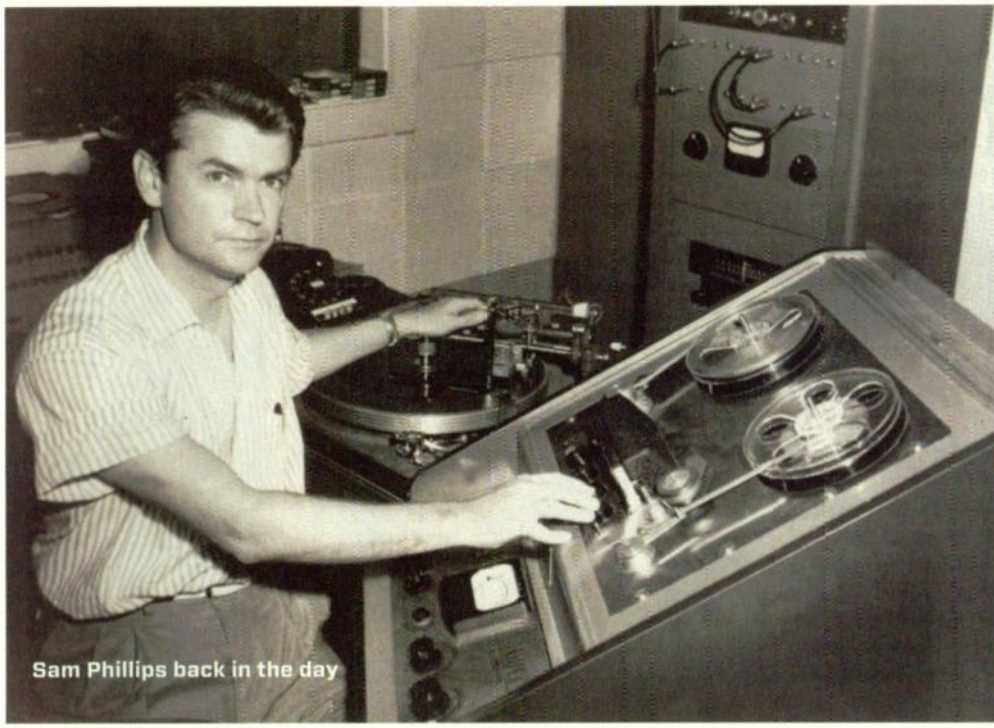
Sun Sessions



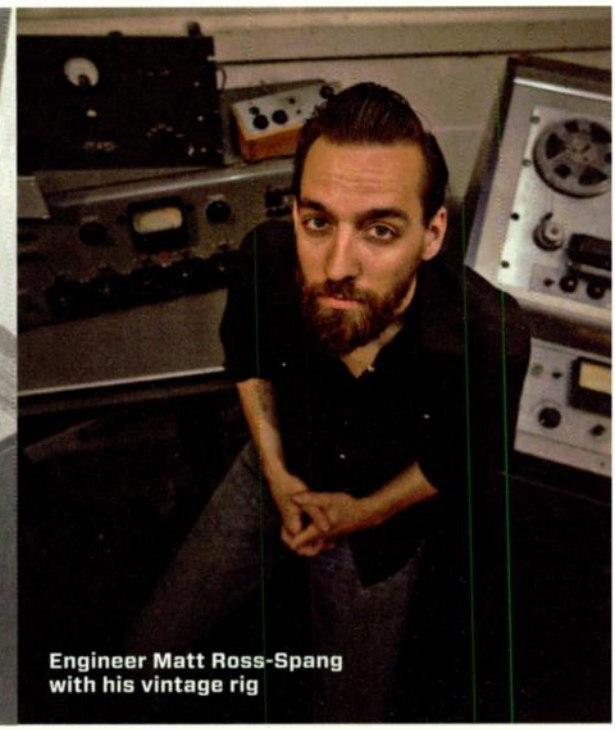
It doesn't get much more "vintage" than this: Welcome to a behind-the-scenes look at the *Sun Sessions* PBS/YouTube program, where today's artists film live performances in the birthplace of rock 'n' roll.

BY BARBARA SCHULTZ

THE MUSIC that came out of Sam Phillips' Sun label and studio is now the stuff of legend. From the Howlin' Wolf's "How Many More Years," to Jackie Brenston and Ike Turner's earthshaking "Rocket 88," to Elvis Presley's golden throat, to The Killer, Cash, and beyond, Sun was the source of American popular music as we know it.



Sam Phillips back in the day



Engineer Matt Ross-Spang with his vintage rig

Today, Sun Studio is at once a monument to rock 'n' roll history and a vital recording Mecca, drawing not just scores of tourists every month, but also reverent musicians who dream of recording like the King. *Sun Sessions* was designed to give modern artists (such as Jakob Dylan, Justin Townes Earle, Vienna Teng, Ha Ha Tonka, Ryan Bingham, Beth Hart, and more) the experience of working live in that almost magical space, and showcase a new generation of musicians.

"The music that came out of Sun Studio was real," says show producer Jeff Davidson. "The artists did not rely on overdubs and layered vocals. Most of the giant hits were done in just a few takes, and everyone performed live in this little room. The amount of talent to grace that room is extraordinary, and not only did it usher in a new era for music, it ushered in a new era for America. The first time I stepped into Sun Studio, I knew it was a place I wanted to spend as much time in as possible."

Davidson—an intellectual property and business attorney whose love of music moved him to bring his skills to the music business—co-created the show with Sun Studio's current ownership and is the force behind *Sessions* reaching 150-plus PBS-TV markets. Sun's chief engineer, Matt Ross-Spang, is the man on the floor, handling the technical side in a studio he first visited at age 14.

"I did this god-awful demo when I was a kid," Ross-Spang recalls. "The engineer wore a beret. and he cussed like a sailor and called you 'babe.' I thought it was the coolest thing in the world."

Ross-Spang got his first job, as a tour guide, at Sun a couple years later. "During the day, we'd give tours of the studio, so I would get off of high school and go be a tour guide till 6:30, and that's when we'd start recording every night," he says.

Like a lot of old-school engineers before him, Ross-Spang hung around, too, observing and offering help on sessions, and he learned about audio production from the Sun staff. As personnel shifted, he moved up the ranks until he took over as chief engineer in 2009, at the ripe age of 23.

"Matt is truly an old soul," says Davidson. "He is a direct musical descendant of Sam Phillips and Cowboy Jack Clement, and his work carries on their vision." A case in point: Ross-Spang recently completed a full technical restoration of Sun's control room, bringing it back to the Sam Phillips era.

"I learned everything from the ground up here," Ross-Spang says. "I started to realize, we didn't do anything like Sam did back in the day, and I tried to figure out how Sam did what he did with three or four microphones, live to mono with no EQ. He just had that one compressor he built himself."

Elvis Presley's original guitarist, Scotty Moore (also an engineer and former studio owner) proved to be a great resource for Ross-Spang's mission. "Sam passed away in 2003, so I had to ask Scotty and some of the

Volume vs. Tone

SOMETIMES LESS IS MORE, AND SOMETIMES MORE IS COOL

"From a mixing standpoint, the louder someone's banging on the drums, the more I have to bring them down because they're bleeding into the vocal mic. So the louder they're playing, actually the quieter I need to make them and the less tone you end up with. A guitar player might not want to turn his amp down because he's afraid he's going to lose his tone, but the louder it is, the more it's bleeding and the lower I have [to turn] his close mic. Whereas, if he had a lower volume, the tone that's going into the mic is very cool and then I can bring up the amp sound, and it's got a lot of depth to it.

"Some recordings will have a lot of depth because everything is bleeding into one another, and if you do that correctly, it becomes a cool, almost 3D sound image where you can feel the drums are there, but they're behind the vocalist and amp off to the left a little bit and they're kind of floating into the right. It doesn't work for everybody, but when it works, it's one of those catching lightning in a bottle things." —MATT ROSS-SPANG

Artists on *Sun Sessions*, such as Will Sexton (top left, with Amy LaVere on upright bass) and Jakob Dylan, track with equipment that Ross-Spang curated.

other old guys, and they explained some of the microphones. I started acquiring the old gear."

Five years after Ross-Spang took over as engineer, Sun Studio is refurbished with two Ampex 350 tape machines ("one to cut to, the other for the famous Sun slapback echo," he says), a 1940s 6N vinyl-cutting lathe with a Presto preamp, and an RCA 76D tube console: "That was a radio broadcast console," Ross-Spang says. "I couldn't find one for years. But the same week that I took over as chief engineer, a guitar of mine was at the studio, and somehow it got smashed. That guitar was worth some money, partly because it was signed by Robert Plant, Elvis Costello, lots of artists. I got a check from the insurance company. It's the most money I've seen ever, and then a couple of days later I actually located an RCA tube console, for almost exactly what the check was for. It was almost freaky."

However, on the *Sessions* show, the engineer uses a Studer console. "Cutting live to mono on the RCA scares a lot of people," Ross-Spang says. "So I also bought a Studer 1-inch A800 8-track machine and a 16-channel Studer 900 Series console, though I don't think I've ever used all 16 at once."

The legendary Sun tracking room is about 18 by 30 feet in size, and during filming, half of that space is occupied by film crew and equipment, so bands get up close and personal in that room.

"Once you accept that you have that limited space to work with, you realize you actually get a lot of rejection and a lot of great bleed," Ross-Spang says. "I've heard that Glyn Johns used to work this way, and he'd call it 'barn-stalling.' A friend of mine, Jeff Powell, used to work a lot of with Glyn Johns, and he said they would do things the way we're doing: where the bass amp and the guitar amps are parallel to the kick drum on each side.

"The other thing I think is great is, for the most part, we don't use headphones [on the show]. I have these old Altec 604s in the corner that I pump back into the room. It's amazing how much volume you can pump in there without affecting the actual recording. A lot of people don't know, because they're so used to headphones, how much they might prefer to sing that way."

For a band to tape live in a small space, they often have to adjust arrangements as well as their technical expectations, but Davidson sees that as one of the show's great assets. "An artist stripping down their music a bit for the Sun Studio Sessions taping allows them to get back to the true roots of their songs, and I think they have fun with that," he says. "It lets them reconnect with the songs and the emotions they intended to convey in the music."

On the other hand, for acoustic roots combos, in particular, the Sun space may be a natural fit. "I was one of the first to play the program when they started," says singer/songwriter/stand-up bass player Amy LaVere. "Then I went back later and did another session with Will Sexton, supporting him on upright bass. To me, the space is bigger than most stages we play. It's more like a live performance than a recording session where you'd use iso booths; in this case, you're controlling your own volume in the room—mixing yourself, essentially."

"But Sun is also different from a club or garage, or most studios, where you can turn your amp up to 10 and get your drums as loud as you want, and just focus on your one tone," Ross-Spang says. "The difference is, everybody is listening to each other and playing together. If you're too loud, you can't hear the vocalist, the drummer can't hear himself, and so on; that means you're way too loud.

"In a studio with isolation booths and personal headphone cues, inevitably, everyone just turns themselves up. Here, you've got to see the room as an instrument, and when you do that and play at a lower volume, it'll actually sound bigger than when you're playing really loud: You're not just getting the attack of the instruments, you're getting the overtones and harmonics, and you're not fighting the space. Sun is, I think, one of the few spaces that actually makes people better musicians and better bandmates, because you don't have the option to bring in your Marshall half-stack and turn it up to 11. You have to use a smaller tube amp, and the tone has to be in your fingers. A lot of people first turn to pedals and volume knobs, but here you realize there's much more to it."

(Not Just) Drum Miking at Sun

IN A SMALL SPACE, DRUM MIKING ISN'T JUST DRUM MIKING

"I never use more than three or four mics on the drums, and they're all also positioned to grab little bits of a B3, or the back of an electric guitar amp—anything I'm trying to add a little depth to. In other words, I'll usually do mono drums, but sometimes that depends on if there's two guitar players, for example; I might pan those a little bit because I also position them to pick up not just the floor tom but also some leakage from the amps. And then if you pan the amps 100 percent, you get this beautiful little early reflection from the amp toward the middle that adds more beef to the guitar and spreads it out a bit cooler.

"If you close-mike everything, you can pan it all you want and add additional reverb, but you're not getting a real sense of being in the room with that thing. Everything is played at different volumes, and the more I can create that sense with fewer microphones, the more I can re-create that cool Sun sound." —MATT ROSS-SPANG

Any band that comes in to tape a *Sun Session* may have to make some sorts of adjustments in approach, and Ross-Spang does, as well. "The main thing about *Sessions* that's different from a normal recording session at Sun is the way we can use the space. Not only is the film crew taking up half of the tracking room, we can't use any other spaces, like the little front office at Sun. You see it in old pictures of Marion Keisker, who was the secretary and Sam's business partner in the '50s. It's this weird-shaped room of glass with a tin ceiling, and it sounds amazing. It can sound anywhere from [Led Zeppelin's] 'When the Levee Breaks'-type drums to a beautiful short-decayed background vocal. It's a really cool little echo chamber. I can't use it on the show, but I use it in other sessions all the time."

Film also imposes limits on the type and size of gear Ross-Spang can use. "I might want to use a big old ribbon mic on the singer, but it blocks their face for TV," he points out. "But it's not a huge sacrifice. I think you'll see an SM7 on lead vocal on pretty much every shoot, and that's one of the best vocal mics in the world, whether you're cutting live or you're just cutting somebody on acoustic guitar and vocal."

On down his recording chain, Ross-Spang mainly sticks to the pre's in his Studer console for the show. He also loves to use his Spectrasonics 610 compressors, and a Gates SA39B compressor. "I have a tape echo and an Echoplate 2 reverb that gets used on *Sessions* a lot, too" he says. "But almost all of my EQ'ing is done by changing out or moving microphones."

Sam Phillips surely would have approved. In the early days of the Sun founder's career, when he engineered radio broadcasts for WREC, Memphis, Phillips was a pioneer in the art of tailoring mic placement to suit specific performances. And it's curious to note that reverting to the studio's '50s-era rig and techniques plays such a big part in the ongoing vitality of Memphis's first independent recording studio. The facility could easily subsist on its wealth of past glories, but instead Davidson, Ross-Spang, and some lucky artists, are making new memories.

"Some favorite moments from Sessions include sharing laughs with Jakob Dylan between takes, showing Lisa Marie Presley's son the very spot where his grandfather stood to record his first full song in 1954, watching Ryan Bingham pour his heart out into a scorching performance, hearing Lee Rocker's first-hand stories of playing with Carl Perkins," Davidson says. "But, a particular favorite moment was from the start of the very first taping we ever did in January 2008, when Grace Potter sat down at the piano and started leading her band, The Nocturnals, through their version of 'Mystery Train,' which had, of course, been first recorded on that same floor decades ago. She nailed it in her own way, bringing the song into the present while simultaneously paying homage to the past. It was thrilling, and we knew instantly we had something special." ■

Barbara Schultz is Electronic Musician*'s managing editor.*

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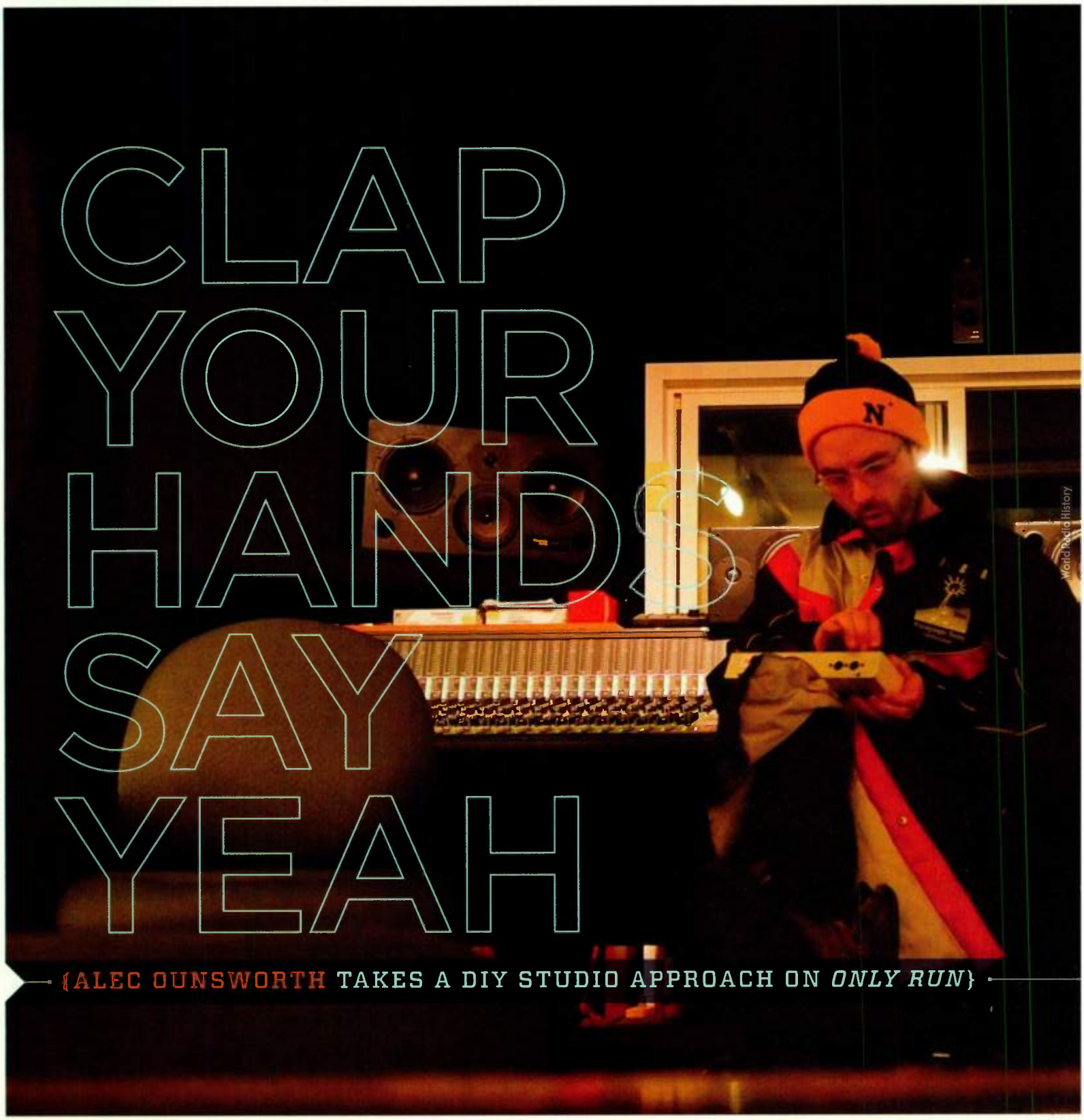
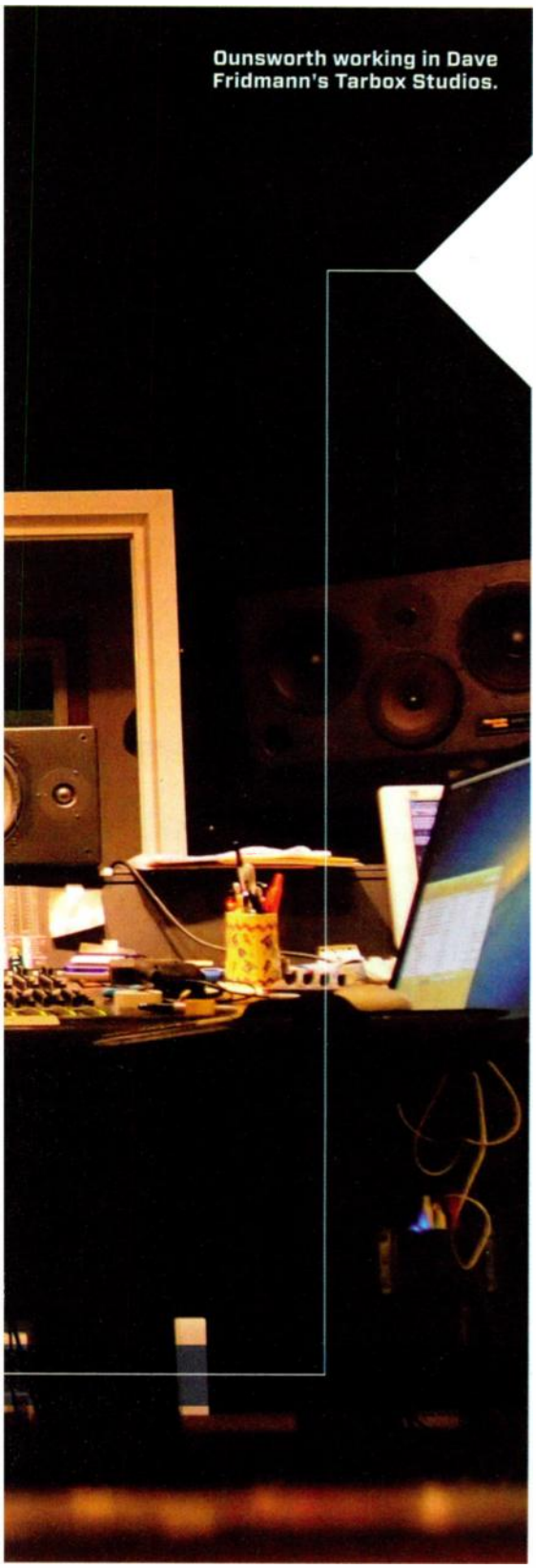


CLAP YOUR HANDS SAY YEAH

{ALEC OUNSWORTH TAKES A DIY STUDIO APPROACH ON *ONLY RUN*}



Ounsworth working in Dave Fridmann's Tarbox Studios.

BY KEN MICALLEF

ALEC OUNSWORTH'S Clap Your Hands Say Yeah occupies a weird sonic landscape. After jettisoning three band members, Ounsworth recorded all of the instruments except for drums himself. He creates post-punk/post-dance/post-rock with the kind of eccentric vocal performances that have been the stylistic domain of Brian Ferry or David Bowie. In an era when many bands seem afraid to truly commit to a vocal performance, Ounsworth glories in his ululations and self-production on *Only Run*.

"I am used to working alone," Ounsworth says. "I know well enough what I want to get out of a vocal performance. I try all of the tricks, different microphones, and microphone placement, and I take a lot of care in the vocal. I am used to doing this after 15 years of making records. I don't have a problem with proper studios; I just like the innocence and the DIY quality. It's like being a painter: You couldn't paint something with people standing around while you're painting. It's a pretty isolated experience for me; it's always been."

After 2005's *Clap Your Hands Say Yeah*, 2007's *Some Loud Thunder*, and 2011's *Hysterical*, Ounsworth and drummer Sean Greenhalgh joined engineer Dave Fridmann to create a minimalist production palette in which simple chord structures layered on multiple synthesizers and guitars form a subtle backdrop to Ounsworth's splayed, soaring vocals. His DIY esthetic pervades the record.

"On the first record there was more time to consider everything," Ounsworth recalls. "I kept tagging things on. This time I did a number of versions of all the songs. Prince, Sly and the Family Stone, and Stevie Wonder were guideposts. I tried to capture my ideas with the bare essentials. I realized this was exactly what I wanted. Dave Fridmann understands that; not everybody else does."

Working in his 20x20 basement studio after closing a semi-pro studio in the barn behind his house (The Walkmen and Dr. Dog were recent clients), Ounsworth recorded the bulk of vocals and instruments in Pro Tools to an API 1608 console with a variety of microphones through Brent Averill and Neve 1073LB and 88RLB mic pres; he used API 550A and 550B plug-ins for EQ. Drums were recorded later at Fridmann's Tarbox Studios with the engineer's son Michael assisting.

Oddly enough given his penchant for eerie synth sounds, Ounsworth's go-to Desert Island Disc is Tom Petty's *Wildflowers*, a folk-rock gem of close-miked perfection produced by Rick Rubin.

"Tom Petty's *Wildflowers* sounds incredible," he says. "I don't how Rick Rubin recorded the acoustic guitar, but it's all so clean. I love it. Sometimes, if a record is too clean, it's sort of frightening. *Wildflowers* works on whatever system you hear it on and whether it's CD or MP3. It works everywhere and that amazes me."

When tracking vocals for *Only Run*, Ounsworth stuck to his DIY guns, comping as little as possible and preferring lower-cost mics to mega-buck pro studio Holy Grails.

"I try not to comp vocals too much, and get at least half the song right," Ounsworth explains. "I don't

comp words. I like Nick Cave because he's not always on point, but he gets the emotion behind each word. You miss that if you start cobbling too much and putting it together piecemeal. On our first record I'd do one vocal take or choose from three takes. Very little comping. Same on *Some Loud Thunder*, with Fridmann producing.

"We did mic shootouts between a Shure SM7 and a $7K microphone," he continues. "More often than not, we went with the cheaper mic, for whatever reason. It depends on the record you want to make. I tried to make everything sound as good as I could intuitively and make sure I had Dave onboard to clean it up in post. Even for *Some Loud Thunder* Dave had great gear in his studio, but we would often throw up an SM57 to track piano or something like that."

Tracking vocals through an SM7 on *Only Run*, Ounsworth joined a Neve 1073 to a Retro Instruments Doublewide Compressor.

"I love the SM7 for most of the vocals and it sounded really good," he explains. "That's the main thing Dave gave a true vote of confidence to. We manipulated everything else to a fair extent but the vocals sounded pretty great from the jump before we went into Tarbox."

Ounsworth created demos using, among other things, the same model Korg SR 120 Univox drum machine used by Sly Stone for *Fresh* and *There's a Riot Goin' On*. "Every time I used it, I would end up trying to make a Sly and the Family Stone song," he laughs. "And I have an Akai XR 20 [Beat Production Center], which can sound corny if you're not careful. I often did demos using a crappy Roland drum machine, then used the Akai. It sounded alright if I laid live drums over the drum machine to drive the track a little further."

Ounsworth stacked keyboards throughout the album, filling in holes with Native Instruments and Arturia soft synths. An Arturia ARP 2600 was layered with Korg MicroKORG, Juno 106, Yamaha DX7, and Korg Mono/Poly to create "bizarre sounds." Fridmann's Taurus and Teenage Engineering OP1 pedals also figured into the overall keyboard sound. When not running direct, keyboards were miked through a guitar amp using a Shure KSM44 in figure 8, close-miked, with API preamps and Brent Averill 312s.

"The Neve 1073 has more a defined sound so I leaned on that for vocals," Ounsworth explains. "But the Brent Averill has a certain darker quality that would push the instruments to the background a bit, which is what I wanted out of it. It was me in a project studio trying every trick in the book in a very intuitive fashion; that's how I function. I tried different amps, too; whatever bass amp that people may have left from a session."

The Fender Telecaster played on *Only Run* was effected via Electro-Harmonix Memory Man or Memory Toy pedals and amplified through a Fender Vibrolux Reverb or a Vox AC 30. After Shure sent Ounsworth a care package of microphones, he experimented, trying a KSM141 at a distance from the guitar amp, or placing two mics on an amp. Bass was recorded

direct to the API console and miked, and often reamped at Tarbox.

"Depending on the song, I stacked a lot of guitars, four or five in some places, including my DiPinto guitar that I bash around on stage," he says. "For 'Coming Down,' 'Impossible Request,' and 'Beyond Illusion,' I stacked at least two guitars per song."

Playing a CMC drum kit in Tarbox Studios' new B room, Sean Greenhalgh practically ran his own sessions after Fridmann set up microphones including an EV 858 on kick drum, Neumann 105 on top snare head, a pair of DPA 4006s as overheads, and a single Telefunken U47 for room tones. The record's generally humongous drum sound owes to the B room's 30x30-foot dimensions with drums placed in the corner and a center room mic compressed via Fridmann's Otari Concept Elite board.

As Sean Lennon noted in *Electronic Musician*'s recent feature on The GOASTT's *Midnight Sun* sessions (June 2014), Dave Fridmann has "incredible techniques for saving bad drum sounds. Instead of using the compressor as an insert, Dave sends a submix of the drums to the compressor so when you push up the fader you are changing the input level to the compressor. That lets you play with the distortion of the compressor, basically. And you can also have that same drum sound as an insert on another compressor for a more normal sound. Then you can blend those together on another submix to have a submix of three or four different compressors, some of them being pushed, some on insert and they can blend into one subgroup of drums."

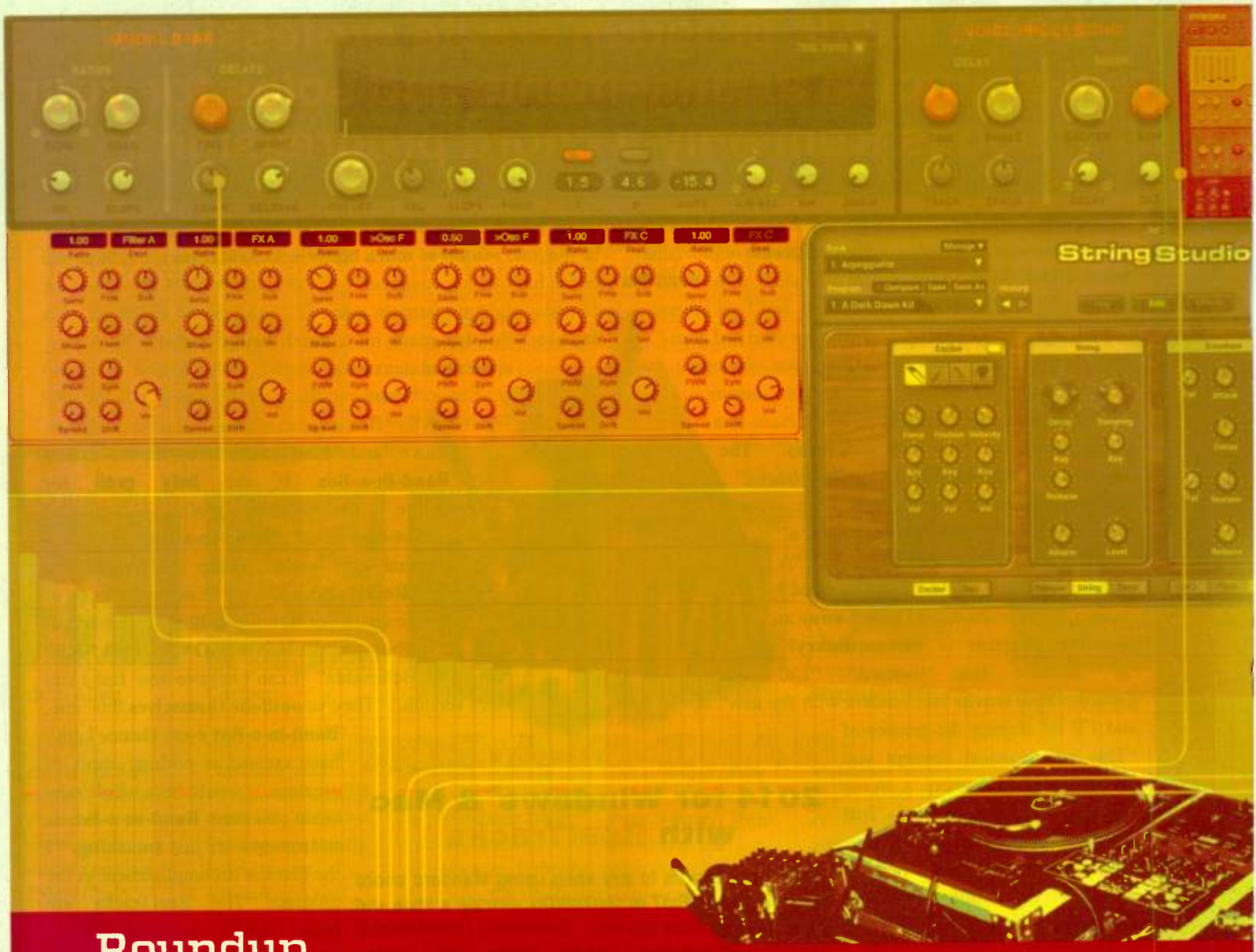
Explaining that most bands are "weird before they get to me and I help them achieve their maximum potential in that category," Fridmann further details his compressor secrets:

"You can use the compressor or a series of compressors in different subgroups so you're driving into them as a blend. You're creating the sound dynamically throughout the course of the song. As you are moving the faders you're changing how it's moving into the compressor and that keeps everything more dynamic and more alive and also gives you different results as opposed to a single compressor on a single sound or mic channel. Even on close-miked instruments there's always some room in there so you can always push that to the fore if you choose to."

Sticking to Ounsworth's DIY policy on *Only Run*, Fridmann saw minimal tracks before proceeding with his mix. "Alec had really sorted out a lot of the sounds beforehand," Fridmann says. "He was insistent that there were a limited number of tracks, a very focused production, so only whatever was necessary to make the song function was on there. If it wasn't necessary it got axed before it got to me."

"I don't want to self-produce every time," Ounsworth allows. "As much as I appreciate the romance of doing it all by myself, when you're in this bubble it helps to have a little outside perspective, which is what is so great about having Dave Fridmann onboard. This band started with just me with my rinky-dink gear, 15 years ago. I'd write the script and tell the musicians what I wanted to hear. Often the first songs were lifted off the demo, and we attached real drums. But it takes me a lot longer now than if I was a real engineer. In a real studio, I would have brought in a new version of a song every day and I would have hemorrhaged money, and made enemies burning through studios. And face it—a proper engineer would have strangled me." ■

When not writing for Electronic Musician, DownBeat, *eMusic.com, and* Modern Drummer, *Ken Micallef supports his vinyl habit by breeding rare African frogs in the nearby Gowanus Canal in Brooklyn, New York.*



Roundup

Hybrid Software Synthesizers

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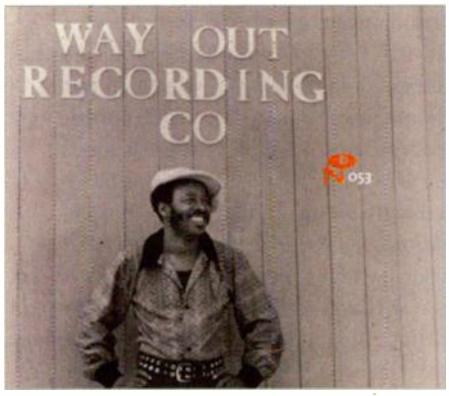


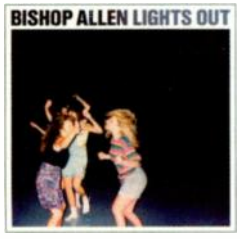
Eccentric Soul

The Way Out Label

NUMERO 053

Bankrolled by Hall of Fame football running back Jim Brown, Cleveland's Way Out Label (via Numero) provides a lost goldmine of late-'60s soul. The cast includes Motown arrangers, gospel choirs, the Cleveland Symphony Orchestra, and such onetime contenders as Volcanic Eruption and Lou Ragland & The Bandmasters. The double-disc, 40-track collection expresses '60s good vibrations in such blissful soul confections as Jesse Fisher's "Don't Cheat on Me" and Bobby Wade's polished "I'm in Love with You." Step back in time to an era of plentiful R&B talent, all-analog studios, and endlessly sunny horizons.

KEN MICALLEF



Bishop Allen

Lights Out

DEAD OCEANS

There are synth pop elements to Bishop Allen, and in their finest moments, echoes of the Jesus and Mary Chain. Guitar noise and keyboard riffs repeat in a mesmerizing fashion, with low vocals often seeming to come from the next room. This voice-as-one-of-the-instruments approach is particularly effective on the opener, "Start Again," (an appropriate song to begin the band's first record in five years) where the song becomes increasingly crowded with beautiful, harmonized guitar parts as the track progresses.

BARBARA SCHULTZ

Caribou

Our Love

MERGE

"Intimate" and "tender" are usually overused adjectives for open-mic treacle, but this latest album from Dan Snaith recasts those expressions with synthetic luster. Bass caresses, melodies swell, rhythms stroke. Compared to 2010's *Swim* there's even less psychedelic rawk and more euphoric circuit-bent rolls; Snaith gets less groovy and more groove. Like contemporary Keiran Hebden (Four Tet), Snaith balances serene and stark, presenting melancholy as life affirming and reimagining raw funk as his own singer-songwriter forum.

TONY WARE

Imelda May

Tribal

VERVE

A whole bunch of rock 'n' roll rebellion is packed into Irish rockabilly dolly Imelda May. *Tribal* is May's fourth album of snarling vocals dictating a rollicking good time. Putting punk, country, surf rock, blues, and electrifying rock 'n' roll touches on her rockabilly canvas, May goes from the taunting "wicka wicka" of "Wild Woman" to the torch singing of "Gypsy In Me." If Carl Perkins were alive, he'd be chasing May down for a roof-raising duet.

LILY MOAYERI

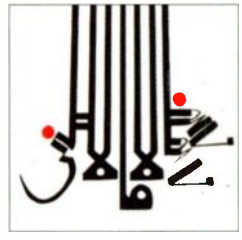
Puss N Boots

No Fools, No Fun

BLUE NOTE

Norah Jones' latest project is the trio Puss N Boots. Think of them as the East Coast Pistol Annies: more mood than attitude, more New York electric folk than Nashville badass country. Jones sings sweet harmonies and trades leads with Sasha Dobson and Catherine Popper on delicate, heartfelt covers including The Band's "Twilight" and Neil Young's "Down by the River." What a pleasure that a superstar like Jones continues to follow her musical bliss, and make lovely records with her friends.

BARBARA SCHULTZ



Shabazz Palaces

Lese Majesty

SUB POP

The follow-up to 2011's *Black Up*, this 18-track set of seven "astral suites" was produced in a custom-built studio and premiered in a Seattle laser dome. It's a reverb-saturated sprawl of electro-jazz verses, dank, unremitting bass, grinding robofunk, and wabi-sabi dynamics that sits comfortably on a mixtape alongside Death Grips and Flying Lotus, but occupies its own transcendental upheaval. Texture and tonality mutates from dreamy to drone, anchored by drum-machine tussles and ringing synth/guitar fills.

TONY WARE

Death From Above 1979

The Physical World

WARNER BROS.

Toronto duo Death From Above 1979 stomped out of 2004 on livid, lurid bass riffs, riding a drum kit like a drunk hook-up. Returning a decade later, DFA 1979 maintains unruly libido, while ramping up friction-burnt synths alongside more kempt melodies. Amplified more than overdriven production gives these 11 tracks depth of focus, contrasting textures, and automation that makes the last album's locked-in pummeling sound mono in comparison. While not as flaying and climactic, DFA 1979 retains potency.

TONY WARE

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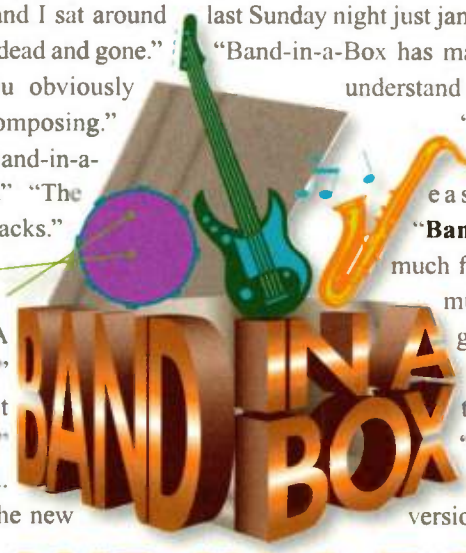

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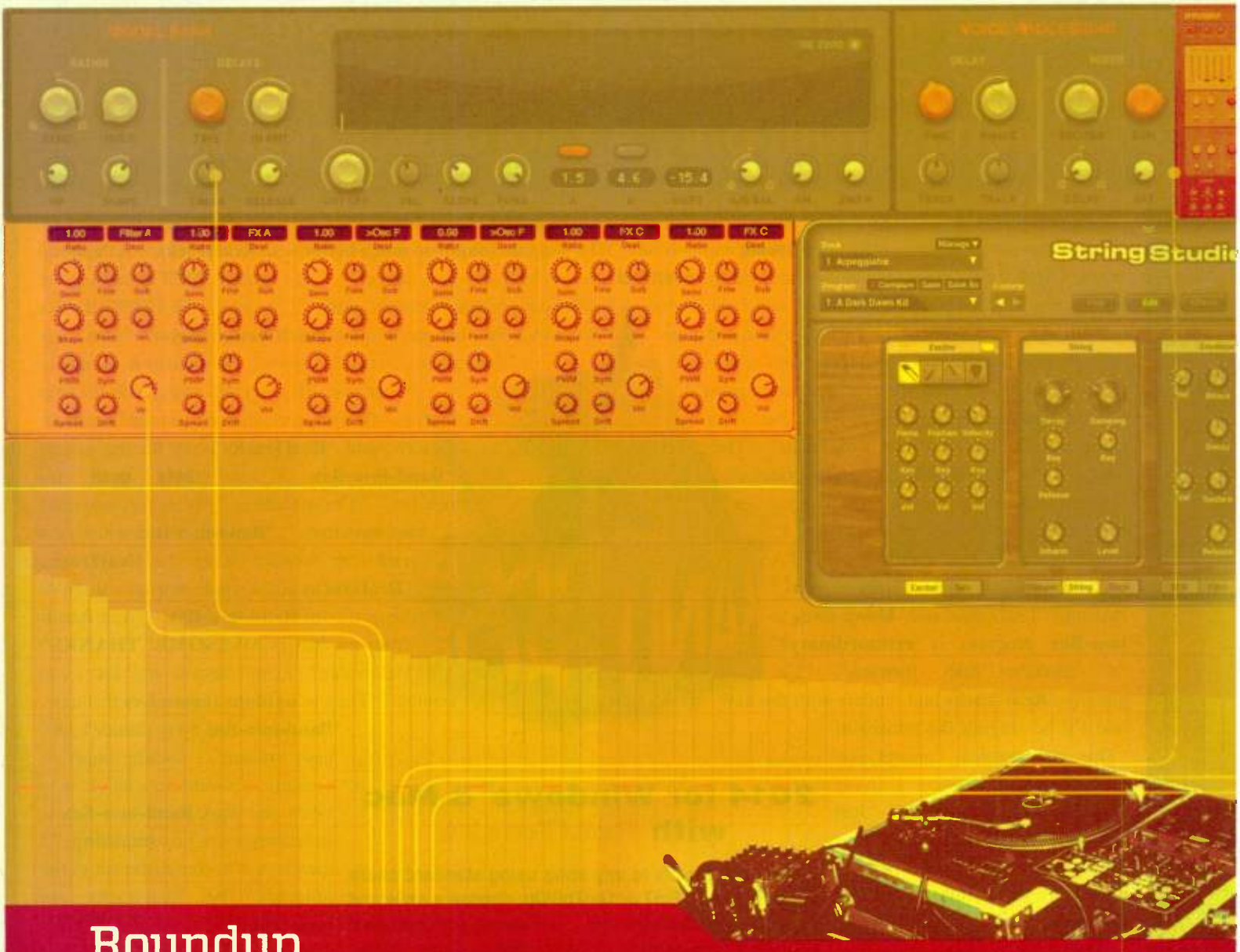
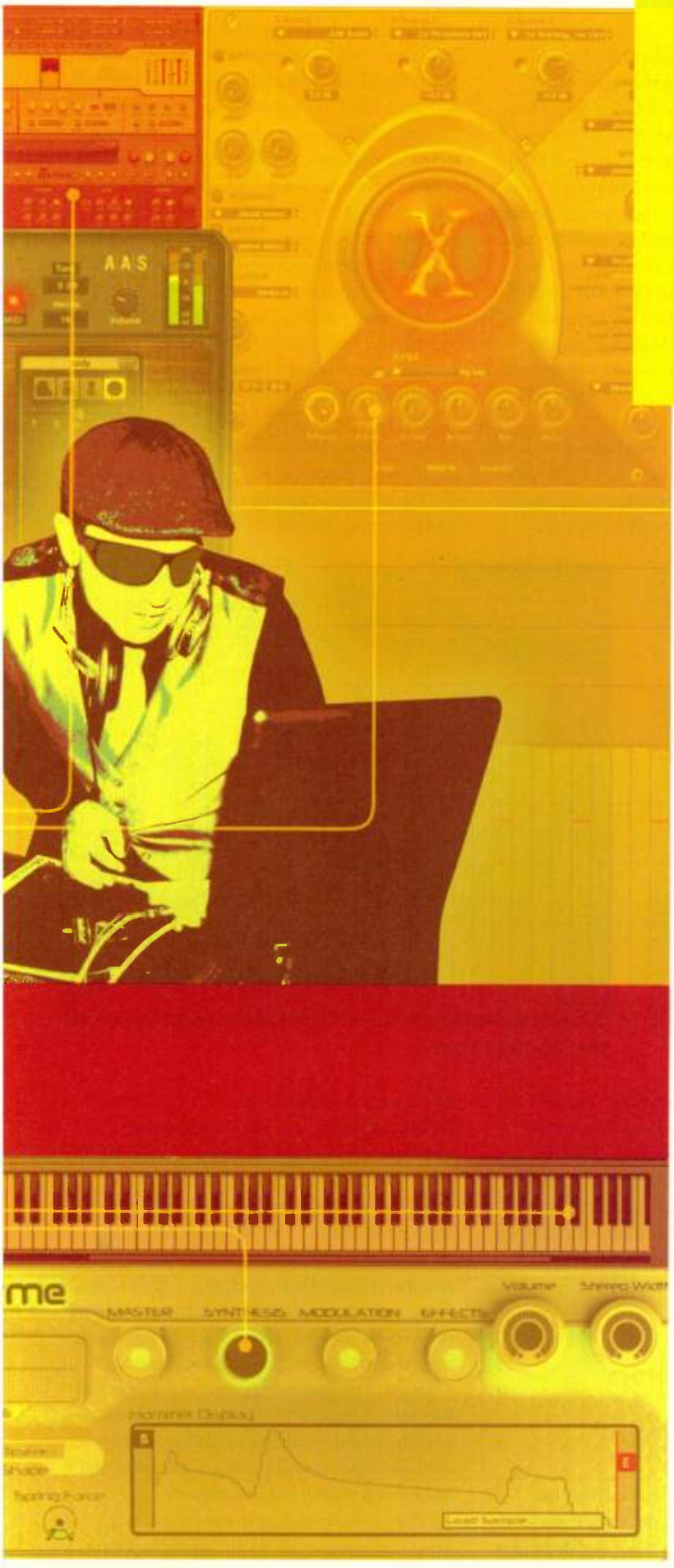


Roundup

Hybrid Software Synthesizers

GEAR



Seven unique instruments that provide exciting new timbres

BY MARTY CUTLER

ONCE UPON a time, the division between synthesis techniques within a single instrument was much more clear than it is now. For example, your instrument featured either real analog, modeled analog, wavetable synthesis, additive synthesis, FM, or sample playback. Of course it was inevitable that features from one instrument type would creep into the design of another, but the hybridization accelerated with the arrival of software instruments and computers powerful enough to run them. In this article we look at seven instruments that offer a variety of synthesis methods under one roof.

Humanoid Sound Systems

ENZYME
$49.95
HUMANOIDSOUNDSYSTEMS.COM

Enzyme stands in stark relief to most of the instruments covered here. Judging from the presets, Enzyme's sounds can be rude, distorted, and biting, often teetering on the edge of chaos—the party crasher in a room of polite sounds. However, Enzyme is also capable of creating sounds of great beauty and subtlety.

Fundamentally, the synth combines principles of physical modeling with wavetable and FM synthesis. The Enzyme manual doesn't go out of its way to explain its terminology, but anyone familiar with acoustic principles will find some familiarity with these terms and get an idea of how the synth works.

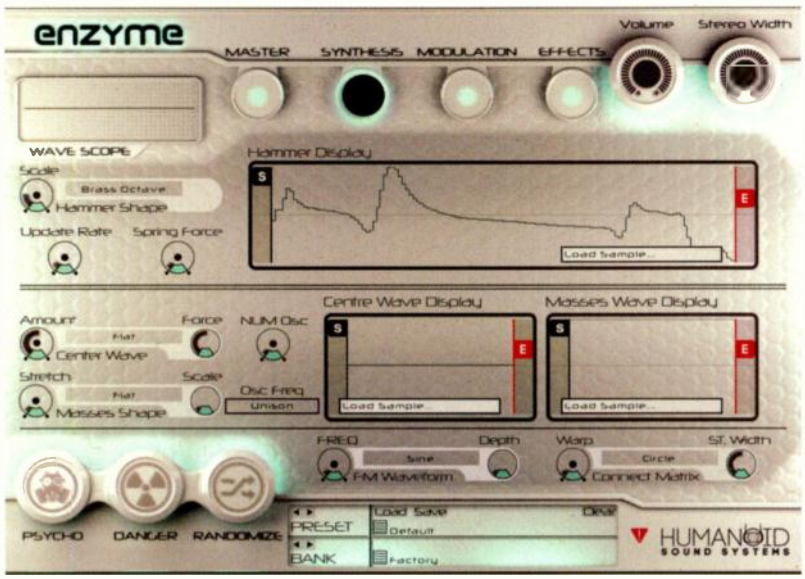
Enzyme's synthesis engine may seem a bit abstract, but in essence it works by re-creating the way sound waves are propagated in an acoustic instrument. An exciter (Humanoid calls this the Hammer) generates an impulse that interacts with Springs, much in the way a guitar (for instance) vibrates. Enzyme uses samples to generate shapes of the Hammer, the Springs, and the Nodes. The samples are scanned (you set the scanning positions and frequencies), providing continuous timbral motion. Moreover, you can import your own samples, which considerably expands Enzyme's versatility.

There's plenty more in the way of sound-shaping features, including the Connection Matrix—sets of algorithms that determine how the springs connect with nodes and interact with each other. Drum, Random, Circle, Circle1Way, and Bubbles are a few of the algorithms.

The Warp knob can change the connections on the fly in indeterminate, but audible ways. You can modulate practically anything—in fact, any parameter can be modulated many times over (with the caveat that Enzyme can get cycle-hungry). Add FM to the picture along with the ability to choose from several waveforms as modulators, and you can add as much grit as you need.

By and large, Enzyme's patches seem to cater to EDM and more rough-hewn tones, but the ability to load samples motivated me to invade my Absynth and old Cakewalk Dimension Pro folders, resulting in beautiful and delicate results. Using loops from a construction kit produced rhythmic, vocoder-like effects.

Enzyme's factory patches and the add-on Activator library make great starting points for developing your own sounds. And despite the manual having some shortfalls, it wasn't difficult to get stunning results simply by experimenting.



Humanoid Sound Systems Enzyme

Best Service Galaxy X

Best Service

GALAXY X
$335
BESTSERVICE.DE

Uli Baronowsky produced The Giant for Native Instruments Kontakt, an upright piano whose soundboard was roughly twice the size of a 9-foot concert grand piano and built into a wall. Baronowsky then upped the ante considerably by adding an entire bank of sounds convolved with a library of impulse responses (IR) ranging from piano resonance to industrial sounds, orchestral tune-ups, and reversed sounds. Galaxy X takes the concept and runs with it in ways that are by turns glorious and inspiring, creepy and unnerving, and sometimes just downright unearthly in the best possible ways.

Best Service's Engine, a very well-endowed sample playback synth, hosts Galaxy X and bestows a great deal of programmability, including the ability to load your own samples. The hefty supply of IR samples softens the blow that you can't add your own or third-party IR libraries.

The Galaxy sample library is roughly 17 GB and comprises three main folders: FX, Keys, and Loops. Don't let the broad categories fool you: You'll find plenty of intermingled instrument types in all folders including bells, pads, conventional keyboard sounds, wind instruments, choirs, and lots more. These are separate from a vast library of impulse responses, which includes folders of filter sweeps; analog effects, such as the Roland Space Echo; tape recorders; animal sounds, including bees, cows, and cats; acoustical resonances; reversed sounds; voices—the list goes on.

A ton of programming power is available from the Quick Edit page. Here, you can assign samples to each of the three sources and alter sounds with distortion, bit reduction, compression, and a flexible arpeggiator before convolution.

The convolution, or X section, hosts a drop-down menu of IRs and proffers plenty

of control, including amount, tuning, size, reverse, and sync. Once you have done that, you can add convolution reverb, filters, and ornate panning schemes—and that's before you've encountered the Pro Edit page, where you can access multistage envelope generators, EQ, more convolution reverb, step-modulators, and plenty of creative presets to try out for each. A serious sound designer could easily get lost in space with Galaxy X.

Native Instruments

REAKTOR PRISM
$69
NATIVE-INSTRUMENTS.COM

We've seen plenty of modeling techniques at work, whether it's for electric pianos, guitars, percussion, or analog-style synthesizers. Less common is the soft synth that provides the tools to go far afield of specific instrument types.

Stefan Schmitt's Reaktor Prism is a Native Instruments Reaktor Ensemble (for Reaktor 5.5 or the free Reaktor 5 Player) based on Modal Synthesis, which basically simulates an exciter (such as a pick, bow, or mallet) generating acoustic energy, which is shaped by a number of tightly tuned bandpass filters. In a manner similar to additive synthesis, the filters generate tuned sine waves, which, together, result in a complex array of partials that emulate the vibrational modes of different instrument body types.

Because the interface doesn't conform to the typical subtractive oscillator/filter/amplifier conventions or the additive harmonics-and-envelopes formats, familiarizing yourself with its signal flow can be a challenge, but Reaktor Prism lays it out in an elegant and user-friendly way.

Reaktor Prism gives you a multistage envelope for the exciter and another for modulation. Each envelope stage is represented by a fader. Adjacent to each envelope is an animated graphic readout, along with sliders for scaling such things as velocity response, the overall envelope, and the attack response (time and level).

I edited the Singing Stones patch to test the waters. Changing the attack on the Exciter Envelope not only affected the amplitude but changed the overall timbre of the attack, producing a sweet, breathy, flute-like sound with some unusually interesting overtones (reference Audio Clip 1 on emusician.com). Altering the Modulation envelope produced a rhythmic wah-wah effect.

A quick survey of Reaktor Prism's patches reveal that unlike some of the additive-based instruments in this roundup, a good number of them maintain pronounced, sample-like acoustic characteristics—plucks, scrapes, and strikes—with realistic transients, but without using any samples whatsoever.

There are plenty of sounds in the collection that are emulative in some aspect, but they're otherwise sparked with moving, sometimes jangly overtones. The guitar-like patches in the Plucked category are good examples: Jazz guitar has elements of a Wurlitzer electric piano; Djangle sounds a bit like a nylon string guitar played with a rotary brush; and Chinese Zither has a metallic attack followed by a quick but emphatic pitch swoop. Reaktor Prism's pads are not to be missed and I'll wager you have probably not heard the likes of at least one or two them before.

Linplug

SPECTRAL SYNTHESIZER
$159
LINPLUG.COM

Combine the seemingly opposite poles of additive and subtractive synthesis, and include waveshaping and extensive cross-modulation (including amplitude, frequency, and phase modulation), and you have the vast palette of sound-design tools found in Spectral Synthesizer. This is readily apparent even from a random sampling of the instrument's preset library.

Spectral Synthesizer presents up to four oscillators, each with a pane that illustrates its waveform, as well as a window that shows the levels of its partials. You can zoom in and adjust partial levels individually, or click and drag to reshape the entire waveform; the waveform pane reflects your changes as you make them. Once you've built your basic waveform, adjust the symmetry to taste: The oscillator's waveform graphic follows your tweaks.

Before you even get to the filter, you'll find plenty of familiar sound-shaping tools, including unison detune, as well as amplitude, frequency, and phase modulation. Cross-modulation destinations include any of the other oscillators and any of the filters.

Each oscillator has its own filter. Click on the filter graphic, and as with the oscillators, you can draw the filter's frequency response or load a saved shape. You can adjust the cutoff frequency and resonance parameters, as well

Native Instruments Reaktor Prism

Linplug Spectral Synthesizer

as superimpose an additional 3-pole, 18dB/octave filter.

ADSR envelopes for each oscillator's amplitude and filters flank the modulation matrix window. The modulation matrix is extensive, clearly illustrating destinations and sources, which you address from a pull-down menu for each.

On top of that, Spectral Synthesizer includes a flexible arpeggiator and generous effects routing options, with 16 multi-effects slots, each accepting up to seven effects. As you might expect, all of this processing can devour CPU cycles. But looking at most patches, you'll conclude that you're provided a surfeit of features; many of the best sounds use only a couple of oscillators.

The overall sound quality of the presets is strong: I often compare additive synths to my beloved Kawai K5000, and there is some sonic overlap here (Clip 2). However, Spectral Synthesizer's sonic palette is considerably more evolved, as are the options for bringing the timbres to life with controllers (Clip 3).

Spectral Synthesizer's strong suits are its sparkling, animated pads and expressive lead sounds, although every category presents sonic surprises. Add a logical and friendly user interface, and you could easily disappear for days cooking up new sounds.

Propellerhead

PARSEC
$119
PROPELLERHEADS.SE

Propellerhead's most recent synth, Parsec, comes in the form of a Reason rack extension. As with Spectral Synthesizer, Parsec's prime tone-generating engine relies on additive synthesis, although it deploys other familiar synthesis techniques in the voicing process.

Parsec starts with two Sound Engines (think "oscillators"). Rather than edit the level and envelope of each of the partials (each engine can produce up to 512 partials), a pair of preset modifiers are provided from pull-down menus to define each engine. You can turn the second engine off, if you choose; Parsec has a few nice analog bass emulations using only one engine.

You get a pair of context-sensitive controls based on your choice of modifiers. For example, a PWM modifier logically configures the first knob to set the pulse width, while the second controls the depth of the pulse-width modulation. Choosing Voice produces a knob for sweeping the formant and another for choosing a starting position for the formant (Clip 4). You can even choose Audio In, which will analyze incoming audio to create vocoder effects: Here, the first knob shifts the formant of the signal and the second sets the lag time before vocoding kicks in.

Just below each Sound Engine are Generators, which select the base harmonic content. The single knob changes contextually, although, in essence, it stretches intervals between harmonics to create new spectra.

Parsec also provides presets for simple FM synthesis, where the knob adjusts the FM amount (the frequency ratio is fixed at 1:1); Dual Sawtooth, where the control handles detuning functions; and Sparse Inharmonic, with a Ratio knob to adjust the range between inharmonicity and harmonicity an octave above the fundamental frequency. As you'd expect, different Sound Engines and Generators interact in different ways, producing a vast variety of sounds.

It's worth noting that Parsec successfully blends its additive synthesis with more familiar subtractive schemes. Rounding out its synthesis tools are a resonant lowpass filter with an adjustable slope up to 100 dB-per-octave, global and individual envelopes, a pair of syncable LFOs, and a rich modulation

Propellerhead Parsec

matrix. All are clearly visible in the center with sources, destinations, and scaling.

The presets provided by Propellerhead are a varied and interesting lot, running the gamut from simple meat-and-potatoes synths to sparkly, animated sounds. It's hard to go wrong when creating completely new sounds by experimenting with Parsec's functions and parameters. However, the manual is well-organized, lucid and detailed.

Parsec is truly a blast to play, and it adds wonderful timbral variety to Propellerhead's already formidable lineup of synths.

Rob Papen

BLUE II
$179; UPGRADE FROM BLUE $49
ROBPAPEN.COM

Maybe the first impression you'll have of Rob Papen Blue II is lushness. Using a range of techniques, it's capable of creating thick pads with evolving harmonic content, from familiar analog emulations to snarky, comb-filtered digital leads, while providing unusually expressive modulation capabilities. Much of this is due to a complement of no less than six oscillators. But there's much more at play here.

Rob Papen refers to the instrument as a cross-fusion synthesizer, and it's easy to see why. Blue II combines subtractive synthesis, sample playback, FM, phase distortion, waveshaping, and ring modulation, all with the ability to modulate each other in different ways.

A glance through the huge number of preset banks is evidence of the breadth of sound-design possibilities inherent in Blue II: There are 18 banks of ready-to-play patches, not including the bank of tutorial examples that provides examples of the various synthesis engines and how they interact. The last bank is a single, initialized patch for programming sounds from scratch.

Although you can create huge, layered sounds just by resorting to Blue II's subtractive synthesis engine, the instrument's six-oscillator configuration should ring familiar bells (wordplay intended) with anyone familiar with the ubiquitous FM synth, the Yamaha DX7. A glance at the tabs at the synth's bottom window reveals the Alg tab. Sure enough, clicking on it reveals the oscillators configured as an algorithm, with an arrow

that lets you scroll through a choice of 32 FM configurations.

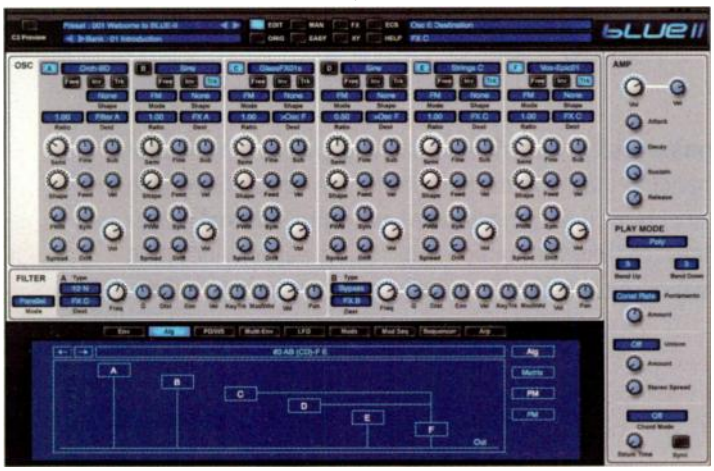
However, it's not an exact replica of the DX7. For one, none of the oscillators have a feedback loop. Nonetheless, the resulting tones sound remarkably similar to the old digital beast. One hugely important difference is that you have a tremendous number of different waveforms for each oscillator, as opposed to the DX7's restriction to sine waves.

vibrate when they are excited by some kind of performance technique, be it plucked, picked, bowed, or hammered. From there, you can recombine the rest of the stringed-instrument characteristics, which easily moves String Studio VS-2 into the hybrid category.

The screen real estate in the update appears to be more compact than in the original String Studio, but the GUI redesign is brilliantly laid out and is far easier to navigate. String Studio VS-2 has three main pages: Play, Edit, and Effects. Play is self-explanatory, laying out parameters related to performance, such as tap tempo for clock-driven events, unison and

Control Change (CC), you can modulate the position at which the instrument is picked or bowed, which is a tremendously expressive feature (Clip 5). You can also add a pickup and edit its position for any of the exciter types.

But where String Studio VS-2 gets really interesting—and where it qualifies with honors as a hybrid instrument—is the Body menu. In conjunction with the Exciter page, you can pick a body from a list of pianos, violins, guitars, or drums, and adjust the size of the body from tiny to huge and play them with bows, picks, or hammers. In the realm



Rob Papen Blue II

Applied Acoustics Systems String Studio VS-2

Additionally, each oscillator can be subject to phase distortion, shaped by symmetry and phase modulation, and subtractive synthesis, among other powerful programming options. And that's before considering the synth's tremendous modulation matrix and its generous supply of effects.

The Blue II manual is comprehensive and well-written. It even references patch examples to illustrate the instrument's features.

Rob Papen Blue II is a winner all around, supporting a marvelous synergy of synthesis techniques with excellent programming capabilities and the documentation to help you figure it out.

Applied Acoustics Systems

STRING STUDIO VS-2
$199
APPLIED-ACOUSTICS.COM

The fundamental process behind String Studio VS-2 is the modeling of the way strings

glide, mono mode, and arpeggiator parameters. A step sequencer is arrayed across the bottom panel. Just above the page buttons is a panel where you can make quick tweaks to the effects section.

The Edit button reveals the engine that makes String Studio VS-2 tick, and the GUI intuitively sets up the controls in a way any student of stringed instruments will understand. For instance, the first screen's buttons access Exciter and Geometry. The Exciter models the gadget that transfers energy to the string—in this case Bow, Pick, or Hammer. (There are two variations of Hammer.) As any stringed-instrument player will tell you, the thickness of the pick, the density of a bow, or the material of a hammer will have a profound effect on the tone and the ease of playing. Here you can alter relevant parameters for the exciter you choose. For example, Plectrum will offer knobs to adjust stiffness, how far the pick protrudes, and other picking behaviors, whereas selecting the Bow exciter will present force and friction.

The Geometry button governs position, among other aspects. Using an assignable

of more familiar, conventional synth territory, String Studio VS-2 adds a subtractive-synthesis panel replete with a resonant multimode filter, a syncable LFO, and a global ADSR envelope generator.

The sounds are impressive and unusual, mingling a strong assortment of stringed instrument emulations with wildly surrealistic keyboards, pads, and ambient effects imbued with familiar acoustic overtones. The manual is well-written, providing plenty of information about acoustics and string behavior as it explains the workings of the synth. String Studio VS-2 is a delight to play and program. ■

Marty Cutler has performed with a range of artists, including Tex Logan, Peter Rowan, and Twyla Tharp, and has designed sounds for Silicon Graphics and Korg.

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Listen to audio examples of synths reviewed here.
Emusician.com/September2014

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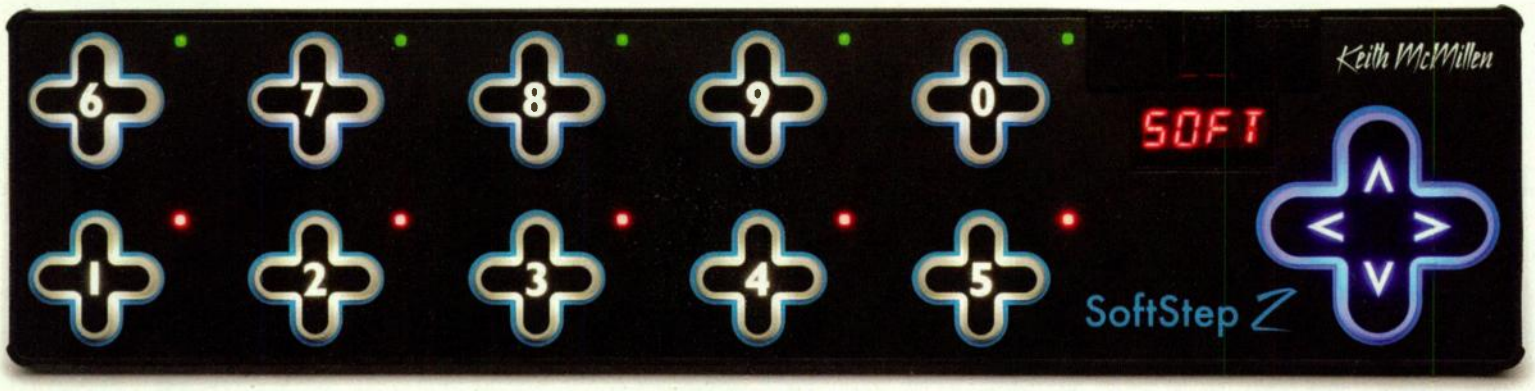

The new shape of the Smart Sensor pads on the SoftStep 2 makes for a better playing experience, while the editing software is more user friendly and easier to grok than before.

Keith McMillen Instruments SoftStep 2

Update improves and simplifies killer foot controller

BY MICHAEL ROSS

THE KEITH McMillen Instruments SoftStep 2 is a USB/MIDI/OSC foot controller with 11 Smart Sensor pads—10 Keys and the navigation pad—each of which can send up to six different messages (including Aftertouch), thanks to their ability to track in three dimensions (up/down, front/back, and pressure). As a result, the device provides a massive amount of control in a form factor that is small enough to fit into a backpack or gig bag.

This update builds on the original SoftStep's versatility, with welcome improvements in the hardware and the software. For example, the controller itself contains more memory, allowing you to store programs with greater complexity when using it in standalone mode.

SoftStep's pads are now backlit for increased stage visibility: Brighter LEDs have replaced electroluminescent wire as the source of Key lighting. The Keys' new cruciform shape is raised, making the tactile experience better by offering a more definitive feeling when applying foot pressure, whether for switching or continuous control. In addition, the back row has been elevated so there is less of a chance that you will inadvertently activate something in the front row while reaching over it.

The 4-character alphanumeric display is user programmable, and the LEDs next to each Key can be programmed to show a choice of data. The SoftStep 2's housing is about an inch thick, and its rubberized and carbon-fiber construction makes it strong, light (1.25 pounds), and purportedly beer proof.

The USB port lets you connect the SoftStep 2 to a computer or iDevice while allowing the pedal to be operated from bus power. The controller also has an expression-pedal port and comes with a ⅛"-to-¼" adapter cable (expression pedal not included). An expansion port for the KMI MIDI Expander (sold separately) enables you to use the SoftStep 2 with MIDI-based hardware when you are away from a computer or iDevice.

SoftStep 2 comes with presets for various music software applications including Ableton Live, the Avid ElevenRack guitar processor, and the Line 6 POD, but you will no doubt want to edit these or start from scratch using the downloadable editing software. The updated editor has been made easier to use (though its still by no means simple) through tool tips and a more user-friendly GUI. It now offers a Basic Mode, which can store ten presets in which each key performs a single function; and an Advanced Editor, which allows you to save 16 presets in which each key can be programmed to perform multiple, customizable functions. The new editor loads much quicker than the previous version, as well.

The sheer number of possibilities afforded by the Smart Sensor Keys can be daunting, but the Editor's Basic mode makes it manageable. For example, you can assign a MIDI Note, Program, or CC number to a Key and decide its behavior—toggle switch, continuous control via pressure, x/y, and increment—and whether the backlight is on. Other than selecting CC numbers, the navigation pad is not editable here.

The Advanced Editor offers a huge array of parameters pertaining to mapping, sensor response, and external expression-pedal and OSC details—you will be hard pressed to discover things SoftStep 2 can't do. (Check out Marty Cutler's review of the original SoftStep in the April 2011 issue of *Electronic Musician* or online at emusician.com for more details.)

If you are happy with your original SoftStep, you will be even happier with the new version. If you haven't joined the SoftStep party yet, 2.0 offers even more reasons to check out this highly portable and adaptable controller. ■

Michael Ross is a writer/musician/producer living in Nashville.

SUMMARY

STRENGTHS Serious improvements to a small, sturdy, highly flexible controller.

LIMITATIONS A steep learning curve for advanced users.

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- 95 ohm impedance for optimum compatibility with DJ equipment

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The Pursuit of Perfect Sound

Soundness SoundSoap 3

Easy and economical audio restoration

BY MIKE LEVINE

With its simple interface, SoundSoap 3 provides a number of useful noise-reduction features that are easy to use, all at an affordable price.

SOUNDSOAP 3 is the first product from Soundness, a company started by Steve Berkley, co-founder of BIAS, which is best known for Peak, its 2-track editor, and previous versions of its all-in-one audio restoration tool, SoundSoap. The update includes AU/VST/RTAS/AAX plug-ins (32- and 64-bit versions) as well as a Mac-only standalone version ($79 in the Apple store).

Typically, audio restoration software can be complex and intimidating. In contrast, SoundSoap 3's processing controls are all located in a single window and are designed to allow anyone to quickly dial in reductions of broadband noise, hum, rumble, click, and crackle—the types of things you run across when digitizing a record collection or editing audio in videos and podcasts.

Although not as flexible or configurable as other audio restoration tools, SoundSoap 3 has powerful algorithms under the hood. Moreover, it's considerably less expensive than other audio restoration software.

Broadband Noise The main screen is simple and clearly labeled. (To get a concise text description of any function, simply hover your mouse over any control or window.) The screen is dominated by two large knobs and a black-and-red circular window, all related to the broadband noise-reducing feature, which is designed for getting rid of steady-state sounds such as hiss, air conditioners, and fans. A standalone version includes a recording option, and offers many ways to share your files.

The software automatically sets its parameters based on the noise detected when you press the Learn Noise button during playback. It's best to do this at a point when you hear only noise and no source material. Unlike previous versions, the software no longer requires a 2- to 3-second noise sample.

Once SoundSoap 3 has learned the noise, fine-tune the results with the Noise Tuner (threshold) and Noise Reduction (processing-intensity) knobs. Changes are reflected in the graphic, spectragram-like display of the Wash Window, which is split in two: The left side represents the original file with the noise, and the right side, the file after the noise has been removed. The Noise setting of the Noise Reduction switch above lets you hear what is being removed, which helps you determine if you're processing your source material too much.

I tested these features on a variety of noisy sources and found that the automatic settings were usually very effective. If anything, they provided too much processing—typical with most noise-reduction software—so you'll often need to fine-tune the processing with the provided controls. (That's common with all noise-reduction software.)

Click, Crackle, and Hum The Remove Click and Crackle feature mitigates vinyl record-related artifacts, while Enhance is used to add a little high end when needed. The Remove Hum feature, which reduces 50- or 60-cycle hum, works well, but has no option for removing harmonic material above the fundamental frequencies; in some situations, I had to use broadband noise reduction to supplement the hum remover to completely eliminate a more complex noise signal.

The Remove Rumble button engages a highpass filter that cuts frequencies below 40 Hz, which is perfect for eliminating specific turntable artifacts. The Preserve Voice algorithm removes frequencies above the range of the human voice, helping clean up the high end of vocal-only material. All of these processes work effectively and operate independently of the broadband noise settings.

Noise Be Gone SoundSoap 3 lives up to its promise of powerful, yet easy-to-use noise reduction for records, videos, podcasts, and spoken-word recordings, as well as basic music-cleaning applications in your DAW. If you can live with its limited control set, SoundSoap 3 is an excellent value. ■

Mike Levine is a musician, composer, and producer from the New York area.

SUMMARY

STRENGTHS Good processing results. Easy to use. Concise online help. Low price compared to other audio restoration suites. Plug-in or standalone. Improved Learn Noise feature.

LIMITATIONS Few editable parameters compared to other noise-reduction applications. No harmonic options for hum-removal feature.

SoundSoap 3 $149; upgrade $49; standalone version $79
soundness-llc.com

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Ploytec PL2

A tiny synth with a huge sound

BY MARTY CUTLER

Fig. 1. The Ploytec PL2 provides a range of intense synth sounds. Small and lightweight, it can be conveniently attached to any controller or instrument.

I HAVE to keep reminding myself of the many surprising sizes and shapes synthesizers can take: A modular synth, for example, can span an entire electronic music lab. In contrast, the Ploytec PL2 synthesizer (which is, admittedly, not nearly as complex as a full-blown modular) is not much bigger than a gift box for a ring, yet it puts out some of the fattest, rudest tones possible (see Figure 1). And although its surface is too small to accommodate more than a single RCA audio output, MIDI input, and USB port, the programmable parameters are remarkably rich.

Squaresville With a footprint of less than a square inch and no front-panel controls, the PL2 handles programming, and setup happens via MIDI within the freeware editor (see Figure 2), which you can download at the Ploytec website. Because of its light, plastic build, I frequently pulled the synth off of the desktop with the weight of the MIDI cable. You'll need to affix the PL2 with double-sided Velcro or something similar. On the other hand, it is small enough to attach to the side of my MIDI guitar or sit on top of my half-rack Axon MIDI converter.

The PL2 draws power from its MIDI connection; no wall warts or other transformers are needed. You can also supply power through its USB mini-B jack using a wall-plug adapter or by connecting a USB cable to a computer. I set mine up on my desktop with the unit plugged into the MIDI Out of my Novation SL61 MKII keyboard controller, which, itself, was powered via USB. Templates for a wide range of controllers (including those by Behringer, Korg, Novation, Roland, Terrasoniq, Yamaha, and controllers for TouchOSC) are available online.

Editing Ploys There is no MIDI Out or Thru on the PL2, so the usual handshake protocols between MIDI devices isn't necessary to program sounds. It's understandable that, given the unit's limited real estate, it doesn't allow for the extra MIDI ports.

You get 32 preset locations and another 32 user slots. An additional 64 slots provide an assortment of random sounds, many of which are throwaways. Patch edits are created and stored in the user area only, so any tweaks made in the first 32 presets must be copied to the user locations in order to preserve them. You do this, sensibly enough, by hitting the Store button, or as soon as the unit receives a MIDI Program Change message from an external source such as a controller or sequencer. Program Changes issued directly from the editor, however, will reset the patch, but when receiving an external Program Change from a controller or DAW will store your work. You can of course, save the patch to disk for later recall—something I'd advise doing if you're attached to any of your tweaks.

A pair of tabs at the top of the window shuttle you between the editor and the setup screen. The setup screen also provides a firmware update page. There is no help or manual provided for the editor, and there is no handshake and no real confirmation that the editor is connected or the firmware updated; pressing the Firmware Update button will result in a successful firmware update message, even if the synth is not connected. At one point, the software lost contact with the instrument, and although everything worked fine in the DAW, I could not affect any changes in the instrument or trigger from the preset tests in the editor.

Although the manual for the synth states that it only receives on MIDI channel 1, with the version 2.0 firmware update, the editor lets you change reception to other MIDI channels. You can accomplish this by setting the new MIDI channel, checking the Use Extended Features field, and then hitting the Update Features Only button.

In the editor, you'll find parameters for MIDI output where none seemingly exists. In fact, they designate a separate MIDI output for the software.

Topology The editor still provides a good indication of the PL2's sonic capabilities, and

SUMMARY

STRENGTHS Fat, flexible, rough, and animated sounds. Pocket-sized. Analog filter.
LIMITATIONS Software editor has no documentation.

$99.95 street
ploytec.com

"The Audix D6 is in a class by itself!"

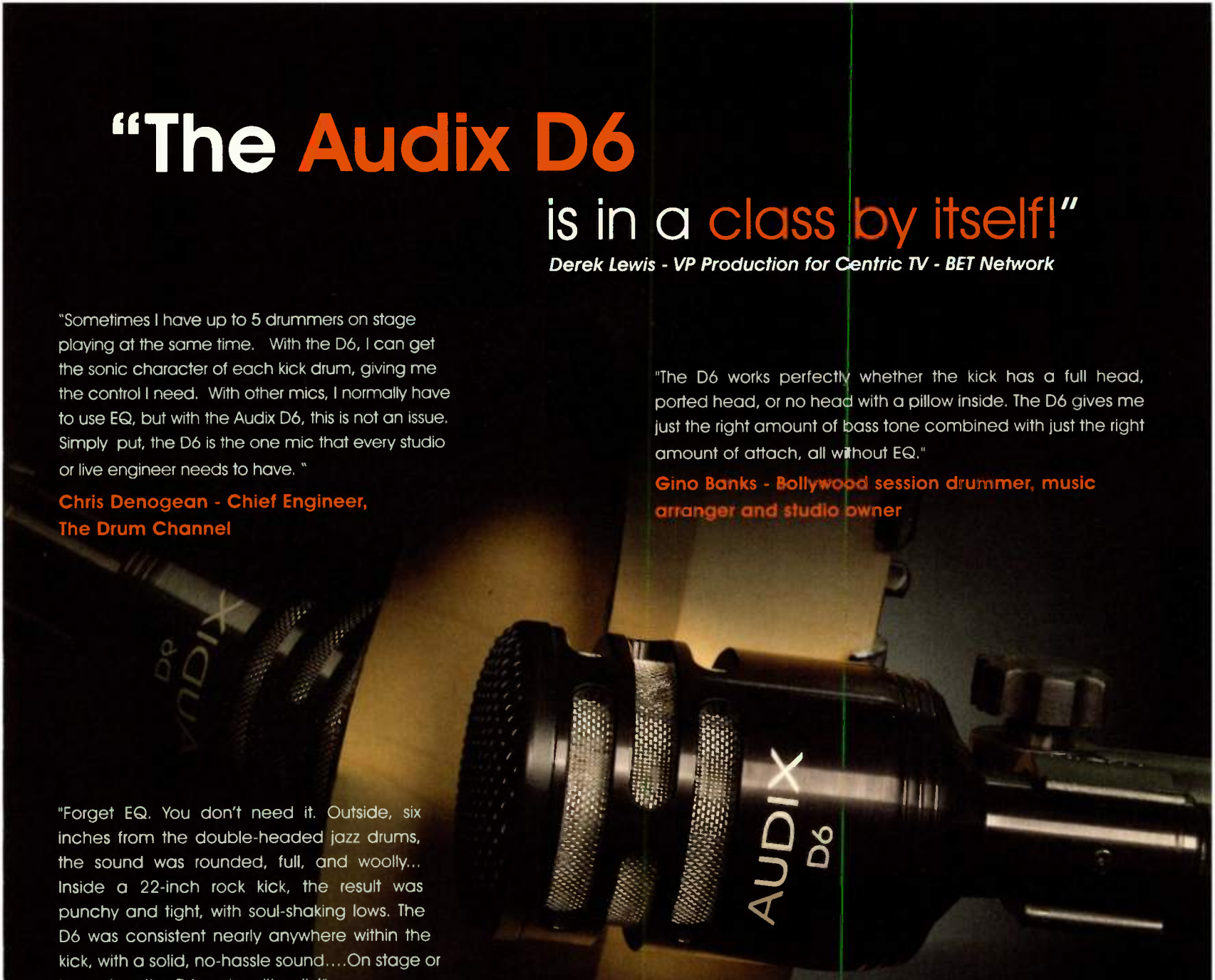
Derek Lewis - VP Production for Centric TV - BET Network

"Sometimes I have up to 5 drummers on stage playing at the same time. With the D6, I can get the sonic character of each kick drum, giving me the control I need. With other mics, I normally have to use EQ, but with the Audix D6, this is not an issue. Simply put, the D6 is the one mic that every studio or live engineer needs to have. "

Chris Denogean - Chief Engineer, The Drum Channel

"The D6 works perfectly whether the kick has a full head, ported head, or no head with a pillow inside. The D6 gives me just the right amount of bass tone combined with just the right amount of attach, all without EQ."

Gino Banks - Bollywood session drummer, music arranger and studio owner



"Forget EQ. You don't need it. Outside, six inches from the double-headed jazz drums, the sound was rounded, full, and woolly... Inside a 22-inch rock kick, the result was punchy and tight, with soul-shaking lows. The D6 was consistent nearly anywhere within the kick, with a solid, no-hassle sound....On stage or in session, the D6 rocks – literally!"

George Petersen - Editor, Front of House Magazine

"With the D6 and the Randall May internal miking system, my kick drum sounds the way it should sound, with no weird dips or spikes. It sounds just right to me!"

Steve "The Mad Drummer" Moore

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Paul Rogers - Front of House, George Strait

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AUDIX MICROPHONES

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they are pretty impressive. The synth has two analog oscillators that share an ADSR envelope generator. A button at the bottom of the editor lets you link the ADSR to the filter or disengage it. Technically, both oscillators start off with the same square wave, and each Waveform selection from the pull-down menu imparts a slightly different pre-filter modulation scheme.

Access the first four waveforms by selecting Normal mode in the editor; the waveforms include a square wave with pulse-width modulation (PWM) controlling both oscillators. The second waveform choice allows independent square-wave modulation over the oscillators with PWM 1 and PWM 2 parameters. The third and fourth waveforms allow more complex adjustments of the waveform by splitting changes on the duty cycle of higher and lower frequencies in different directions. The oscillator mode pull-down menu offers Mono (one oscillator), Poly (two notes), Dual (a detuned pair), and Octave, which sets the oscillator pair one octave apart. Dual mode produced sounds with enormous girth, and tying the resonant filters to the envelope generator produced delicious animation. (Audio examples are available at emusician.com; here, reference Clip 1.) The PL2 has no built-in effects processors.

The firmware 2.0 update provides, among other improvements, four additional waveforms. The first is an analog kick-drum waveform. Here, the PWM controls can alter timbre and attack parameters, and the DC offset changes the release. That's not very intuitive, but again, an editor software update can change that. It's anyone's guess what the remaining waveforms are, as they are documented by name only. The best description I can provide is that the second and third are spiky and somewhat nasal sounding, a bit like a clavinet, and the fourth has pronounced harmonic overtones, sounding like a chord.

The PL2 features a resonant, 2-pole, state-variable digital filter (useful for taming aliasing), followed by an analog lowpass filter. The digital filter's DC offset parameter in Normal mode helps create clipping effects, roughs up the tone, and increases the raunch factor considerably (reference Clip 2).

The new 2.56 firmware update (released at Summer NAMM but unavailable for this review) includes a vocal-tract modeler offering formant sounds and synthesized speech—a tribute to the General Instruments

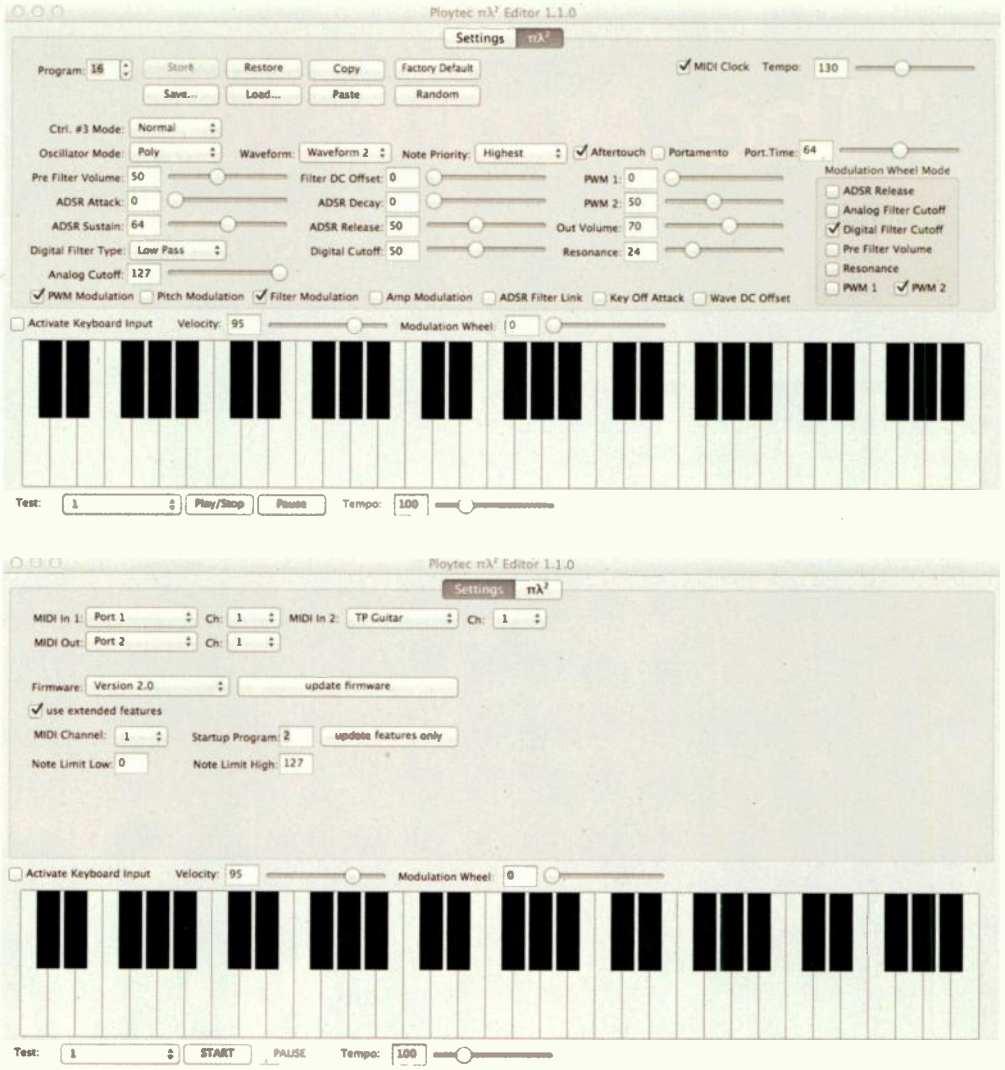


Fig. 2. A view of the two editing screens for the PL2. Although they indicate what the synth is capable of, they can also be somewhat misleading at times. The lack of editor documentation doesn't help.

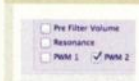
SP0256-AL2 chip of the early '80s. You can play the allophones (speech elements) on the keyboard and control the notes via the modulation wheel, or the other way around. Select between alphabetical or original order, or use a button controller, such as the Novation Launchpad Mini, to access all 64 allophones.

Attention, Shoppers If you're looking for silky strings, polished brass, or smooth pads, you're in the wrong aisle. Though you can tame the PL2's oscillators into more polite timbres, its stock-in-trade are rough, edgy sounds on the edge of stability that will spit, howl, and bite. If you like sounds in which aliasing is deliberately part of the package, this synth is for you.

The PL2 excels at creating eerie drones, growling basses, and stinging, distorted leads. The Kick Drum oscillator is nice and punchy. As a mono lead synth or bass, it offers adjustable portamento, but legato mode is strangely absent. Otherwise, practically every parameter has an associated (but fixed) Control Change message, and therein lies my plea for a plug-in version of the editor, which would make automation that much easier.

I have serious reservations about the PL2 editing software. Moreover, there are holes in the synth's documentation, and without a user manual for the editor, learning many of the parameters (in particular, as they apply to the different oscillator modes) is a shot in the dark.

Still, I'd recommend this synth. Priced below $100, the PL2 is an irresistible bargain and a welcome addition to tracks that need a little tough love. ■



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The Ribbon Mic button on the Millennia Media HV-37 adds +10 dB of gain to the input, which your dynamic mics will benefit from, as well.

Millennia Media HV-37

A stereo preamp that brings out the best in your mics.

BY GINO ROBAIR

SUMMARY

STRENGTHS High-Z input. Ribbon Mic setting. Pad, highpass filter, and polarity buttons. Separate phantom power for each channel.

LIMITATIONS A little pricey.

$1,439.99 street
mil-media.com

THE MILLENNIA Media HV-37 is the result of a unique, yet successful, journey in product reconfiguration. Its roots can be traced to the HV-3C ($1,853 street), a high-quality stereo mic preamp that is highly prized for its clarity and headroom. When Millennia Media entered the world of 500 Series modules with the release of the HV-35 ($718 street), it borrowed many of the HV-3C's design elements while adding features that a Lunchbox user would expect, such as a high-impedance input for electric guitars and basses.

The HV-37 is like having a pair of HV-35 modules mounted horizontally in a single rack space. In fact, the specs of the two models are identical, except for one important difference: The HV-37 has a dedicated, switching power supply, giving the manufacturer control over this important (but often overlooked) aspect of a preamp's sound. Anyone paying attention to the world of 500 Series racks knows that the performance of your system will be determined, in part, by the power supply you have in your Lunchbox rack. So for the price of a pair of HV-35 modules, the HV-37 provides two preamps with an internal power source that is guaranteed to meet Millennia Media's spec (and without the additional cost of a third-party Lunchbox, saving you several hundred dollars).

The HV-37 is by no means an exact replica of the HV-3C. Because of the various issues involved in fitting all the electronics into the small, lower-powered modular format of the HV-35, Millennia Media had to make some changes. For example, the HV-35 has 6 dB less headroom than the HV-3C, and a pad was included on the output stage to mitigate distortion when recording digitally. Nor does the HV-35 or HV-37 have the stepped gain controls or a 130V option for high-end mics. I don't miss either of these features.

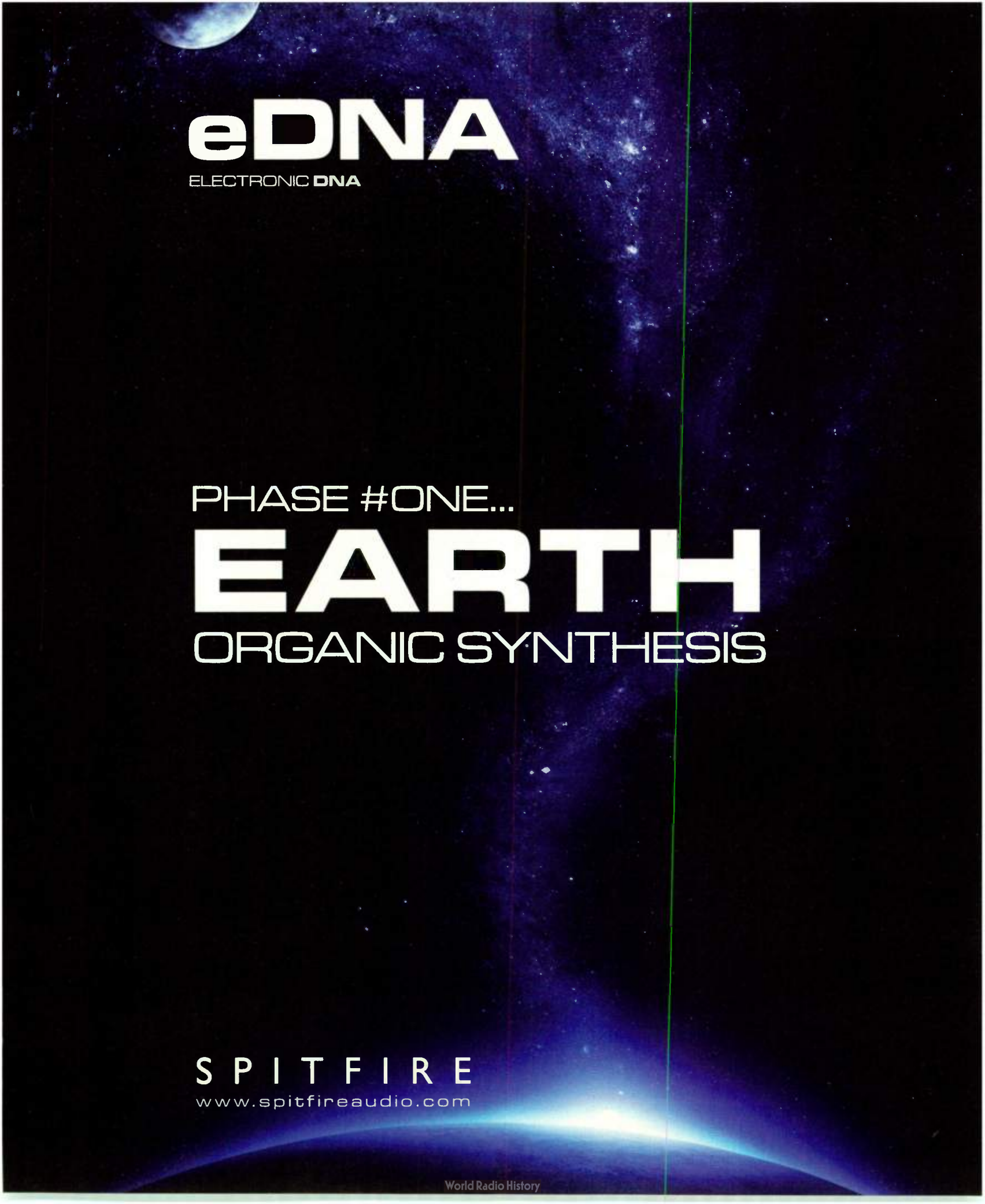
What I do appreciate about the HV-37 is a simple, uncluttered interface with dedicated, backlit buttons for the features I need—some of which are clearly marked so you can see the specs. For example, the highpass filter (lowcut switch) indicates that it rolls off at 80 Hz with -3 dB per octave, while the pad shows that it lowers the input by 15 dB. The unit has independent +48VDC phantom power for each channel, a button to reverse the polarity of each input, and buttons to engage the front-panel instrument inputs.

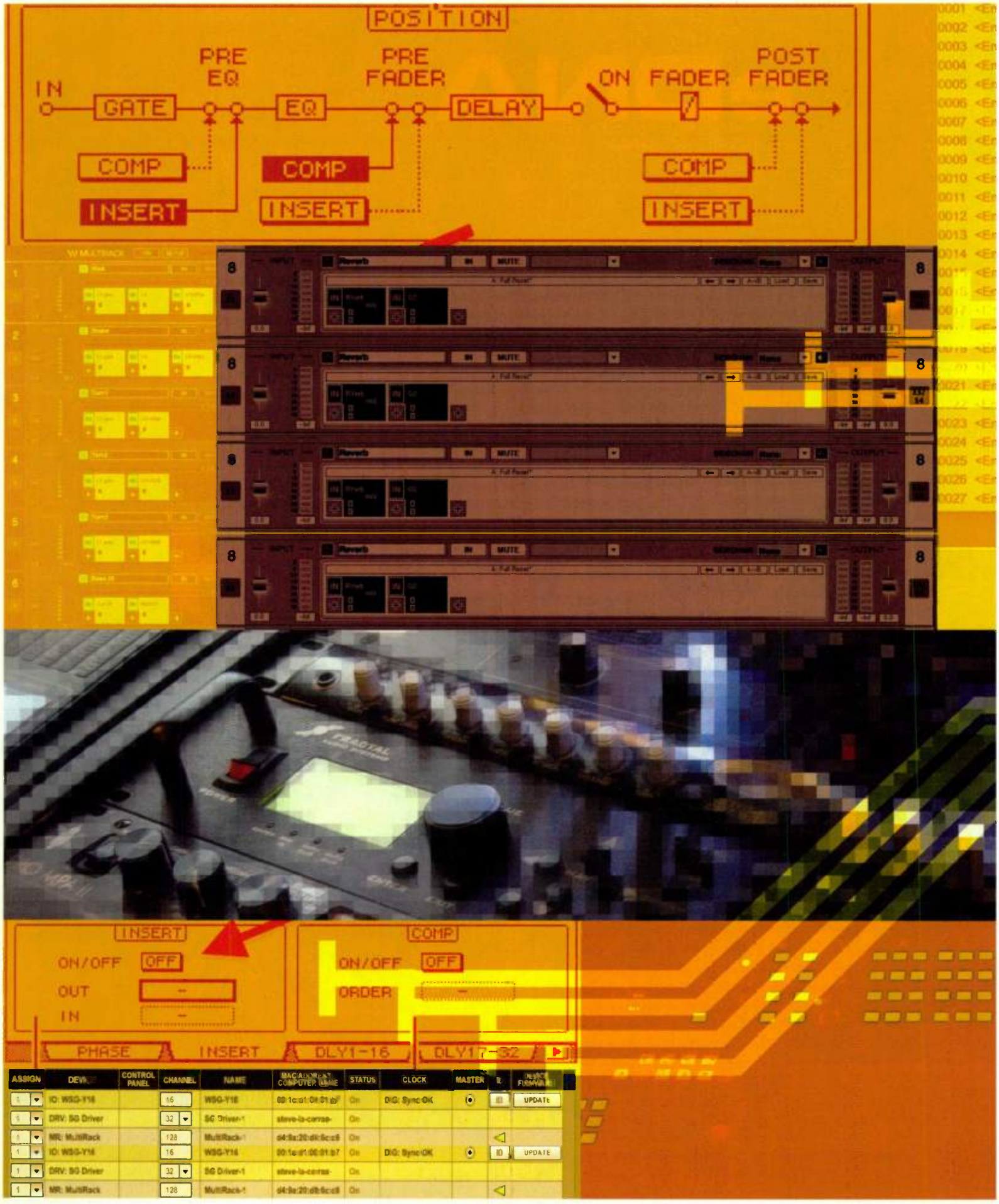
The highlight of the HV-37 (and the HV-35) is the Ribbon Mic button on each channel, which adds +10dB of gain, making available a total of +70dB gain for each mic. This allows you to adequately power not only ribbon mics but also low-output dynamic mics, such as the Shure SM57. If you're used to maxing out the input gain on your low-cost preamp/interface when using your favorite dynamic mics, you will be surprised at how great they'll sound through the HV-37 at moderate gain settings.

In fact, I was surprised at how clearly I could hear the differences among all of my mics when using the HV-37. The headroom and sensitivity of the preamps allowed me, for example, to get a better sense of each mic's self-noise so I could pick the quietest ones for the sampling session I'm conducting. None of my other preamps, which cost $300-$700 a channel (comparable to the price-per-preamp on the HV-37), provide that level of detail.

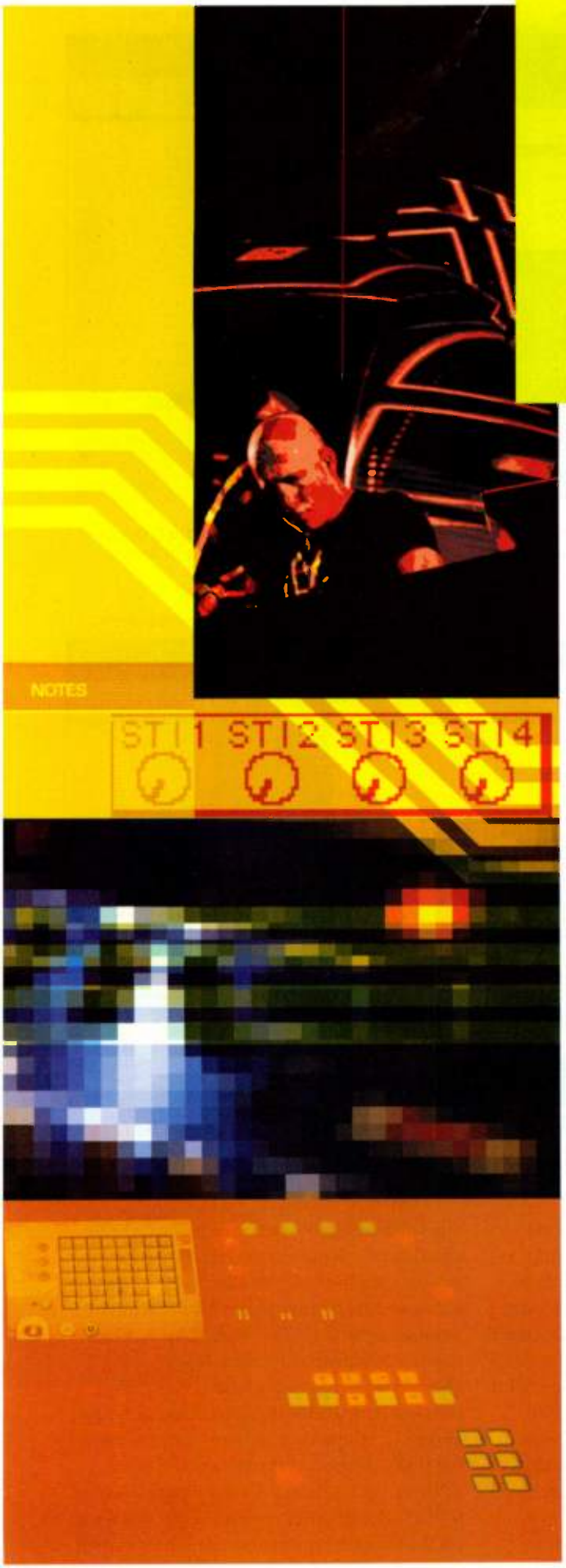
Best of all, the overall audio quality of the HV-37 is uncolored and gorgeous, pulling out the dimensionality of the instrument being recorded, as well as the room that it's in. Priced for the personal studio, this is the preamp you'll go to when you want to record exactly what you're hearing, and you have the quality microphones to match. ■

Gino Robair is Electronic Musician's *technical editor.*





HOW TO



Master Class

Using Waves MultiRack at FOH

Getting the most out of your plug-ins onstage

BY STEVE LA CERRA

WAVES' MULTIRACK was designed to provide a platform for running Waves plug-ins in a live context. Its software processing replaces traditional outboard hardware processing and effects: MultiRack serves as a virtual rack "shell" through which Waves plug-ins are run (as of this writing, MultiRack does not support third-party plug-ins, however the company has just released an API for third-party developers, so expect expanded support soon), and the virtual rack provides hardware inputs and outputs that interface with your audio gear. There are two ways in which to integrate Waves plug-ins with your live sound setup: MultiRack Native and MultiRack SoundGrid. Operationally the two systems are very similar, but the architecture of the systems is quite different, so let's examine each one.

MultiRack Native MultiRack Native uses your computer's CPU to provide the processing required for Waves plug-ins, so plug-in count and system latency depend on the speed of the CPU and the sound driver in use. When using MultiRack Native, connect your computer to any ASIO- or Core Audio-compliant audio interface, and the inputs and outputs of that interface show up as I/Os in MultiRack. To use MultiRack Native you'll need a Mac or PC for the host, MultiRack Native software to control the plug-ins (available from Waves for $500), Waves plug-ins, an audio interface or mixer/interface, and a USB key to manage authorizations.

Setting up MultiRack Native is very easy. After installing the software, visit MultiRack's Preferences, and under System Setup choose your audio device, sample rate, and buffer size. We'll have more to say about those parameters later, but for starters set the buffer size to 128 and the sample rate to 44.1 kHz. Click Apply and you're ready to go.

When MultiRack opens, you're greeted with an empty rack. You can load that rack "manually" (no screwdriver required) or open a session template from the MultiRack File menu. The onscreen message "Double Click To Add Rack" says it all. You can add up to 64 racks per session, each with a maximum of eight plug-ins. Every rack that you add has an input and output "rail"; clicking on the rail opens a menu that shows the available audio I/Os (mono or stereo). Alternatively, choose Auto Route All Racks via the Audio menu. At any time, you can switch a mono rack into stereo or vice versa. Clicking the + sign in a rack opens a plug-in menu (see Figure 1).

Once you've got those basics down, it's all about the application. I've used MultiRack with a MOTU Traveler audio interface to process input channels on older analog mixing consoles. The Traveler has eight analog I/Os that can patch into just about any desk. (Most analog inserts employ a single TRS connector for send and return—the TRS end of the input cable is plugged into the console and the other end of the cable breaks out to two ¼-inch TS connectors that connect to the input and output of the processor. Some analog consoles actually have separate ¼-inch send and return jacks for the channel inserts, in which case separate cables can be used for input and output.) As far as the console is concerned, the "effect" in this case is the Traveler—but it's really serving as MultiRack's A/D and D/A. The Traveler I/Os are routed within MultiRack so that input to rack 1 is fed from Traveler Input 1, and output of rack 1 is fed to Traveler Output 1. Additional I/Os are assigned in a similar manner. In Figure 1 you'll see six of the eight racks used in this configuration, with each rack dedicated to a Traveler I/O. This arrangement enabled me to run my favorite plug-in EQs and compressors on any analog desk—and believe me; some of those older desks had *terrible* onboard EQ!

MultiRack Native can be incorporated much more elegantly when using mixers that also function as audio interfaces. Take for example the PreSonus StudioLive 16.4.2AI (see the June 2014 issue of *Electronic Musician* for a complete review): The StudioLive 16.4.2AI features 16 analog mic inputs, but since it also functions as a multichannel recording interface, it provides 16 digital direct outs and 16 digital returns via FireWire (actually, more, but that's another story). Now here's a dirty little secret: The 16.4.2AI's mic inputs *always* feed the digital direct outputs—even when you set the channel input to digital return or when

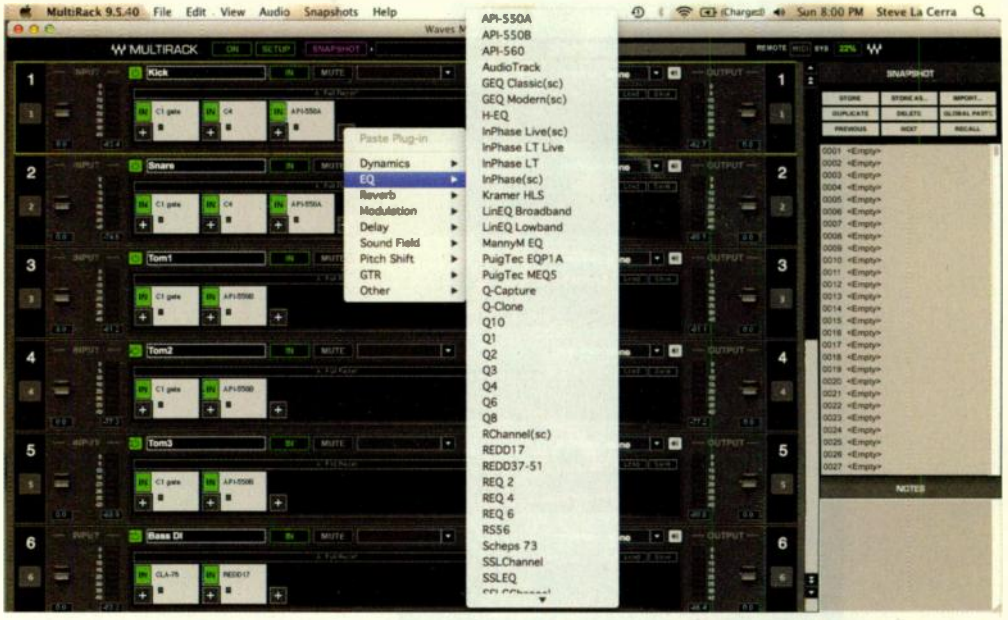


Fig. 1. Six racks added to a MultiRack session. Each rack has independent audio I/O and plug-ins that are accessed by clicking the + symbol in the rack. The open plug-in menu displays available EQs.

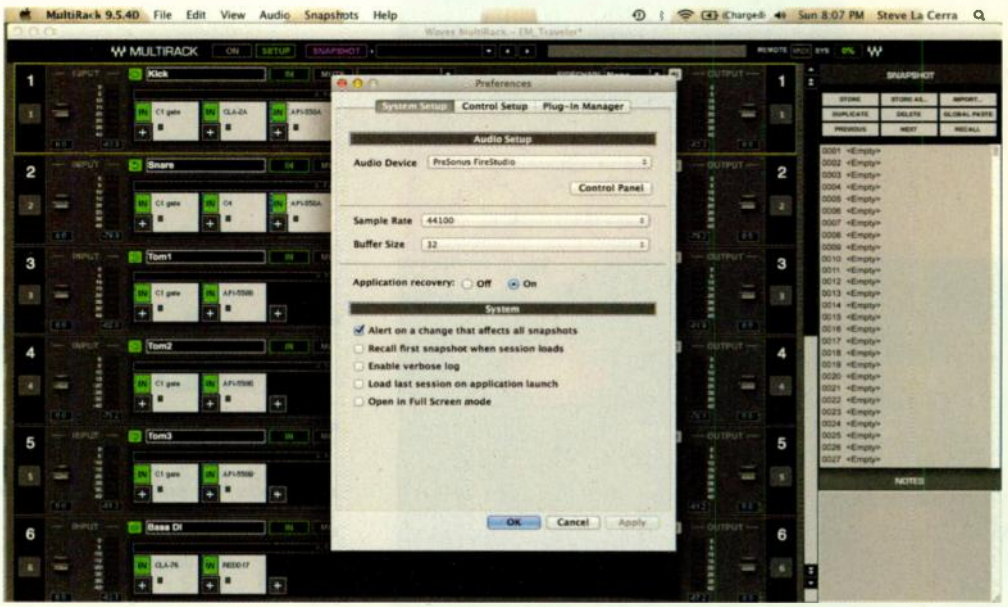


Fig. 2. The MultiRack Preferences Window. The Audio Device driver is set to PreSonus FireStudio.

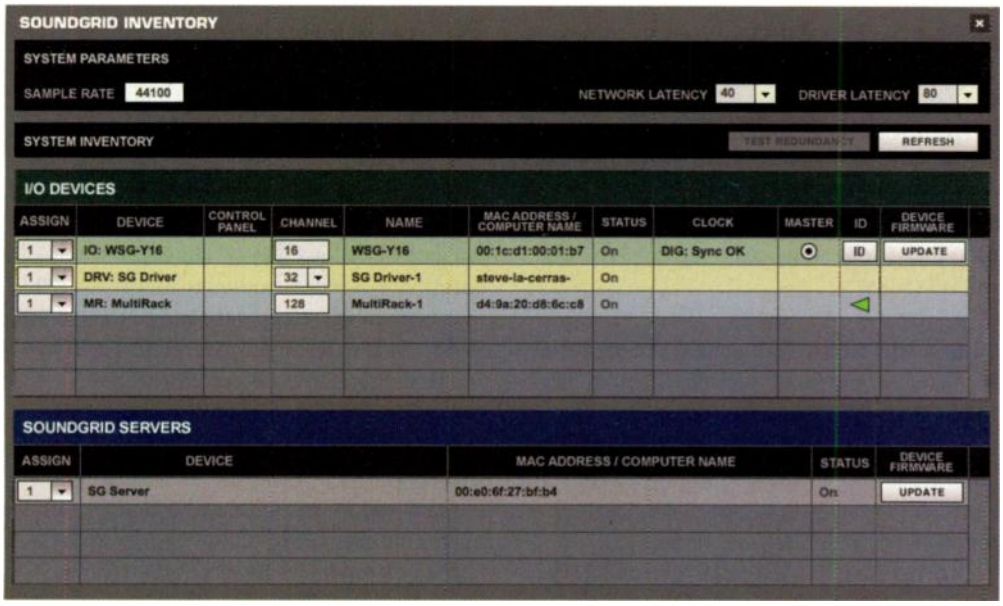


Fig. 3. The SoundGrid Inventory window displays all system components. In this screen, the SG Driver, Yamaha WSG-Y16, and MultiRack appear as I/O devices.

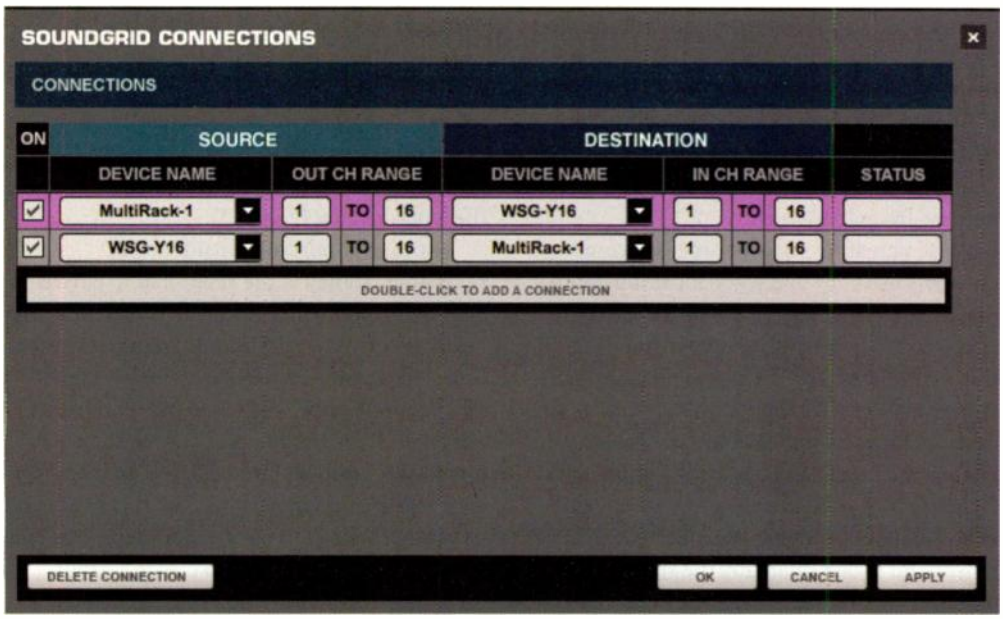


Fig. 4. The SoundGrid Connections window. MultiRack and the Yamaha WSG-Y16 interface are both set as sources and destinations, enabling bi-directional audio routing.

you mute the channel (though you won't hear it through the main house mix bus).

Take a look at Figure 2, which shows the preferences window of MultiRack. In the background you can see a rack that was created for a live show using the StudioLive 16.4.2AI. MultiRack has been set to use the PreSonus FireStudio driver. The rack is filled with plug-ins for kick, snare, toms, etc. What you can't see is that the StudioLive's input select switches are set to "D))"—the digital returns via FireWire. The mixer receives its channel signal from the FireWire return, which in this case is the output of the MultiRack—including all of your favorite plug-ins(!). Now you have the channel processing from the StudioLive plus the plug-ins patched via MultiRack. Awesome!

MultiRack SoundGrid MultiRack Native has certain limitations—namely that CPU horsepower will dictate the number of plug-ins and system latency. This is the *raison d'être* for MultiRack SoundGrid, Waves' audio network and processing platform. SoundGrid employs standard Ethernet hardware to stream audio and moves the plug-in processing to a dedicated DSP server, yielding lower latency, higher channel count, a more stable environment, and recording capabilities via the network. Audio is streamed from the audio interface card to the server, processed with Waves plug-ins, and streamed back to the card. Implementing a MultiRack SoundGrid system is a bit more involved than a Native system, requiring a computer to run MultiRack SoundGrid software, a SoundGrid DSP server, SoundGrid I/O interface, network switch, CAT 5e/6 cables, and a USB key for authorizations.

Serve It Up! SoundGrid DSP Servers come in several packages and price points. As you move up the chain, SoundGrid servers support a wider range of sample rates, higher amounts of onboard RAM, and more advanced CPUs, the latter two contributing to decreased latency and the server's ability to run more plug-ins. It should be noted that even at the entry level—the SoundGrid Compact Server—up to 34 plug-ins can be used, with less than 2ms of latency. To ensure maximum system stability, Waves recommends using one of the network switches that the company has tested and approved for reliable use with SoundGrid: the ProSafe GS108v3 8-Port Gigabit Switch from Netgear or the HP 1410-16G (J9560A) 16-Port Switch from Hewlett Packard.

InT'YerFace SoundGrid interfaces are available for Yamaha, Allen & Heath, or any console supporting coaxial or optical MADI I/O. Waves' WSG-Y16 expansion card is compliant with Yamaha's mini-YGDAI card format, so it can be used with just about any Yamaha digital mixer from the 01V96i up to the CL-Series (including the venerable PM5D). Each WSG-Y16 supports 16 channels of SoundGrid I/O, and up to four WSG-Y16s may be loaded into Yamaha consoles with multiple card slots—yielding up to 64 channels of plug-in processing(!).

When installed in a Yamaha 01V96i mixer, the WSG-Y16 can be combined with a SoundGrid Compact or SoundGrid Impact Server to create a small-scale, portable live sound system that runs Waves plug-ins. The Compact Server reduces latency to less than 100 samples while the Impact reduces it to around 50 samples (both at 48 kHz). Since the Yamaha WSG-Y16 routes audio via Ethernet, it must be connected to the network switch, along with the SoundGrid Server and computer.

When setting up the SoundGrid network for the first time, you'll need to check on a few things. Look at the setting for Local

LAN Port under Preferences>General. If Local LAN Port is set to None, you'll see the message "SoundGrid network not found." When you change to the correct port, the message changes to "SoundGrid network found." While you're in there, take a look at the Plug-In Manager tab and make sure the box is checked to select the authorized Waves plug-ins that have been installed. Next go to the MultiRack Audio menu>SoundGrid Inventory and confirm that all of the system components appear. In Figure 3, you can see that the SG Driver, WSG-Y16, and MultiRack all appear as I/O devices. Last, under the Audio menu, check SoundGrid Connections. MultiRack should appear as a Source to the WSG-Y16, and the WSG-Y16 should appear as a Source to MultiRack, thus enabling bidirectional connections (see Figure 4). When you open the input or output rails in the rack, the correct connections appear.

At the 01V96i you need to address a critical parameter or all of your efforts will be for naught. Each input channel has an insert that must be (a) turned on and (b) set to the correct I/O. These settings are accessed in the 01V96i's insert page by pressing Ø/Insert/Delay in the Display Access section, and then F2 underneath the display. (Follow the red arrow in Figure 5). The On/Off button must be set to On, and the insert Out and In must be set to "SLOT X," where X is the channel of the WSG-Y16 you wish to use to process the channel. To avoid confusion, make every effort to set the card slot numbers to match the channel number (i.e. use Slot 1 out and Slot 1 in for input channel 1). Once these parameters are set, the channel audio will be routed out of the WSG-16Y to the network, picked up by the SoundGrid Server, processed with the Waves plug-ins of your choice. and returned back to the WSG-16Y.

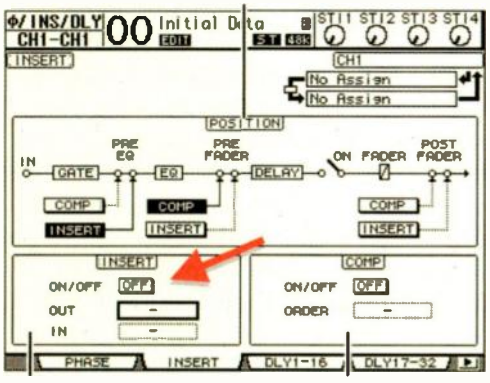


Fig. 5. Yamaha 01V96i Insert Page.

Tips and Tricks The sequence of processing is critical to your sonic success. If you revisit Figure 2, you'll notice three plug-ins on the kick drum channel: C1 Gate, CLA-2A Limiter, and API 550A EQ. Audio flows from left to right, so the gate is first in the signal flow, followed by the limiter, and then the EQ. This order is very deliberate. Gating removes unwanted leakage from the kick microphone and keeps it from being processed. If you limit or compress before a gate, dynamic range is reduced, making it more difficult for the gate to do its job. (A gate needs to detect a *difference* between loud and soft sounds in order to shut out the soft sounds.) The EQ is last so if the limiting action of the CLA-2A changes the high-frequency response, it can be corrected. If you use EQ before a limiter or compressor, your EQ settings may cause the compression to become frequency-sensitive.

When creating racks to process drum channels use copy and paste for faster setup. Start with a channel and create a chain such as the one shown in Figure 2 for Tom 1 (C1 Gate>API 550B EQ), select the rack, choose Duplicate Selected Rack from the Edit menu as many times as you have tom channels, then change the titles and I/Os for the duplicates.

Don't plug in a reverb on every tom and snare channel. It wastes too much processing power and makes changing the reverb a clumsy affair. (For example, if you decide to modify the reverb decay time for the toms, you'll have to change the decay parameter on every channel.) Instead, dedicate an input to one rack for a reverb. The 01V96i allows you to assign a Slot Out—in this case, a channel of the WSG-16Y—to any Aux Send (on the 01V96i: Display Access>Patch>Out Patch), so raising the Aux Send on a tom channel routes it to a reverb inside MultiRack. The output of the reverb can be routed back into the 01V96i on any channel (01V96i: Display Access>Patch>In Patch). If you patch the Slot to one of the Stereo Return Inputs in the 01V96i, you save a microphone input (see Figure 6). Aux Send 5 in the 01V96i is patched to Slot 11 out. Slot 11 feeds the MultiRack reverb rack. RVerb is plugged in, followed by Q2 for EQ, and the output of the rack is routed to Slot 13/14. (This rack is mono in, stereo out.) Inside the 01V96i, Slot 13/14 is patched into Stereo Input 1. Now you have Waves reverb in your 01V96i.

Tips Regarding Latency In SoundGrid Inventory, you'll see settings for Network Latency and Driver Latency. In general, higher numbers yield higher latency and better performance; lower numbers yield lower latency and decreased performance. A network latency of 96 samples when using the Compact Server results in a barely-audible 2ms roundtrip between the Compact and WSG-Y16 card. (Note that the lowest settings of 40 and 56 samples are supported only by Waves' Impact, SGS1, and SG Extreme servers.) If you find that system response becomes sluggish, try increasing the latency settings. Latency settings in SoundGrid seem to be much less critical than those in Native, no doubt due to the work load on the CPU.

Another important consideration regarding latency is the relationship between channels that form a group such as drums. In our session, we had different quantities and types of plug-ins on various drum channels, which could cause latency between those channels. For example, the kick channel might be slightly delayed relative to the overhead channels. You'll know this when you hear it: a slight flanging or comb filtering type of sound. The solution is to create a group for these channels inside MultiRack and use group latency compensation, which can be found under Audio menu>Latency Group Properties. Choosing Auto for the group latency setting automatically time-aligns all channels in a group.

Similar techniques can be applied using other mixing consoles with MultiRack Native or SoundGrid. In any case, the ability to incorporate Waves plug-ins with your live rig is a big advantage and a lot of fun. ■

Fig. 6. Rack with a mono input and stereo output, used for reverb send and return.

Steve La Cerra is an independent audio engineer based in New York. In addition to being an Electronic Musician *contributor, he mixes front-of-house for Blue Öyster Cult and teaches audio at Mercy College Dobbs Ferry campus.*

A R T

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Fig. 1. The Waves CLA-2A plug-in sounds remarkably like the famed Teletronix LA-2A Leveling Amplifier.

Fig. 2. Slate Digital FG-Grey convincingly emulates the compression curve produced by an SSL 4000 Series bus compressor.

Fig. 3. Slate Digital Virtual Tape Machines faithfully replicates the girth-enhancing and dynamic attributes of high-end tape recorders.

Supermodels

Three stunning vintage-emulation plug-ins

BY MICHAEL COOPER

HERDS OF software manufacturers have capitalized on the perennial hunger for vintage gear by releasing plug-ins that model hardware from yesteryear. Problem is, there's a lot of cobble among the gems, and not everything hoisting the "classic" flag sounds good. Here are three quintessential plug-ins that squarely hit the mark.

Waves CLA-2A The Waves CLA-2A plug-in faithfully models a vintage Teletronix LA-2A Leveling Amplifier from the '60s. The hardware tube compressor has two major attributes that have kept engineers enthralled with it for decades. First, its two-stage, program-dependent release sounds so natural and transparent, the LA-2A can compress the hell out of wildly seesawing vocals without making them sound at all squashed. Second, the LA-2A's slightly band-limited response automatically filters both bottom-heavy and screechy vocals, whittling their sonic footprint down to the perfect size. The result is LA-2A-blessed vocals virtually always sit in the mix remarkably well. Moreover, the compressor's spartan control set is so straightforward, you could steer it if you were in a coma. Simply raise the Peak Reduction control to increase compression depth, and adjust the Gain control for the output level you want. Done.

Of the many LA-2A knockoffs I've heard in plug-in form, the CLA-2A (included in the Waves CLA Classic Compressors bundle) sounds the most authentic (see Figure 1). Make that scary-accurate. It's important to realize that no two LA-2As sound exactly alike. The aging of a T4 opto cell results in a progressively less aggressive response over time. As a result, you might be able to get a hair more gain reduction out of a vintage LA-2A compared to the CLA-2A before hearing any hint of amplitude modulation. But we're splitting hairs.

CLA-2A sounds fantastic on more than just vocals. The plug-in transparently compresses electric guitar while beautifully enhancing pick strikes. CLA-2A's relatively slow attack time also adds punch to bass guitar tracks and snap to kick drum hits.

Slate Digital FG-Grey This awesome plug-in—one of three dynamics processors included in Slate Digital's Virtual Buss Compressors bundle—models the sonic characteristics of both an SSL 4000 Series console's bus compressor and the classic Saint Ives transformer used in dozens of Neve modules and consoles. While the dual modeling creates a hybrid sound, it most importantly replicates the fantastic, in-your-face onslaught of the SSL bus compressor better than any other plug-in I've heard to date. True, the SSL hardware lends greater detail and depth. But FG-Grey's

idiosyncratic compression curve sounds remarkably dead on. That's what other plug-ins have failed to precisely replicate.

The SSL bus compressor is famous for making drum tracks sound explosive, and FG-Grey does the hardware proud in this application. But if you really want to hear what makes the SSL bus compressor so unique, slap FG-Grey on a bus for strummed acoustic guitar playing in a dense arrangement (see Figure 2). Set the plug-in to 10 ms attack time, 0.1 sec release, and 10:1 ratio. Then adjust FG-Grey's threshold for roughly an 8dB crest factor. Slowly raise the track's fader. You'll be amazed at how big and close you can make the guitar sound without it stepping on the other instruments. It's this ability to simultaneously pump up and sit broadband, percussive instruments perfectly in a dense mix that makes the SSL bus compressor—and FG-Grey—special.

Slate Digital Virtual Tape Machines

Many so-called tape emulators do little more than roll off very high frequencies and bump up the low bass and midrange bands somewhat to imitate a tape recorder's frequency response. Um, you can do that with EQ; that's not what makes tape sound magical. Tape broadens the midrange band in a way EQ can never do. In this way, the best tape emulators—and they are very few—add girth to sterile, thin digital tracks. The other coveted quality of tape is the unique way in which it compresses percussive material—especially drums—when pushed hard. Some recently introduced tape-emulation plug-ins sound choked and phase-y when slammed—nothing like tape. The only plug-in I've heard to date that truly sounds like a tape machine in all regards is Slate Digital Virtual Tape Machines (VTM; see Figure 3).

Herds of software manufacturers model hardware from yesteryear. Problem is, not everything hoisting the "classic" flag sounds good. Here are three quintessential plug-ins that squarely hit the mark.

VTM's model of a 2", 16-track Studer A827 sounds fantastic on individual tracks. You can select an overbiased setting to saturate high frequencies and round off transients on drum-room mics and electric bass guitar. Use an underbiased setting to add snap to snare drum. VTM's model of a ½-inch, 2-track Studer A80 RC tape recorder—operating at 30 ips (inches per second) and using Quantegy GP9 tape—preserves more airy detail and punch than the A827 model; subtly softening and broadening the sound, it's the perfect recipe for 2-bus and mastering applications. Like CLA-2A and FG-Grey, VTM gives to DAW-based productions the best qualities that classic analog gear has to offer. ■

Michael Cooper is a recording, mix, mastering, and post-production engineer; a contributing editor for Mix magazine; and the owner of Michael Cooper Recording (www.myspace.com/michaeicooperrecording) in Sisters, Ore.

Buyer Beware

Tips for purchasing vintage gear

BY STEVE LA CERRA

THERE ARE some amazing plug-in versions of vintage audio gear out there, but no matter how good the simulation, sometimes only the real thing will do. Microphones and mic preamps rise to the top of the list of vintage "must-haves," because interacting with such precision audio tools is still a very different experience from running a plug-in, and at the moment there isn't much software that can model the tone of a Neumann U47 or RCA 44 microphone. If you'd like to take the plunge into the vintage-hardware world, start with these tips for making wise gear purchases. The term *caveat emptor* might be an understatement.

First, consider the transaction method. A face-to-face meeting with the seller enables you to see the unit firsthand and try it—and asking for a demonstration is not out of line. (In fact, if I were *selling*, I'd want to demonstrate a mic or preamp to a buyer so that there could be no dispute regarding its working condition.) When buying online, however, you'll need to be more diligent about asking questions and getting descriptions, photos, and documentation. A video demonstration of an item is pretty easy these days, since it can be taken with a cell phone and emailed. I can't emphasize enough that the higher price you might pay to a reputable dealer is money well spent if it gets you a return policy or warranty. (Thirty days is typical.) Plus, many dealers who specialize in vintage gear have techs who can test and perform basic maintenance on a variety of gear prior to the sale.

Use Your Eyes, Ears, and Brain Start by thoroughly researching the equipment you are buying, not only in terms of price, but the nature of the item itself. Take as an example the Universal Audio/UREI 1176: Let's suppose you heard one in a studio, loved it, and decided you need one. Are you aware that it is available in various revisions with significant sonic (and price) differences? Do you want the LN, the Blue Stripe, or the Rev F? Are you prepared for the possibility that the rear panel may use terminal strips for the audio connections and not XLR or TRS connectors? Perhaps most importantly: *Do you know what the unit is supposed to sound like?*

Old audio gear might operate properly, but that doesn't mean the audio path has maintained its integrity over the years. Electronic components such as capacitors, transformers, and power supplies suffer the wrath of time. Certain types of capacitors can lose their ability to hold a charge as they age. When used in the audio path, they may sound different from when they were new. Borderline or failing caps in a power supply can literally "starve" audio circuitry by not providing the correct supply voltage(s). Often these changes progress slowly over the years, and so the previous owner may be legitimately unaware that this deterioration has taken place. Ideally you will have experience with the device you are purchasing, or a "control" unit—a similar device owned by a friend that you could use for comparison.

The frequency response of a preamp or compressor can be easily tested by playing pink noise (or sine wave tones) into it and connecting its output to a spectrum analyzer or an analysis program such as SMAART or Metric Halo's SpectraFoo, then comparing input to output. Power supplies can be tested for proper voltages

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though that should be left to a qualified tech. Replacing capacitors and resistors doesn't seem to harm the value of most vintage gear, provided they were carefully exchanged by a qualified tech with components of the specified value. Find out if critical parts are intact or still available. A great deal on a vintage tape echo with a faulty motor does you no good if you can't get a replacement. Other likely candidates for replacement include tubes, so determine the cost of replacements before you buy.

Don't be afraid to ask the seller for a look at (or detailed photos showing) the interior and exterior. A rackmount unit with a bent front panel is a red flag; ditto for a microphone with a banged-up grille. Who treats gear like that? Examine circuit boards for loose components, burnt resistors, faulty capacitors, or leaking batteries, which can seriously damage circuit boards. Indications of capacitor failure include cracks at the top, brownish residue (it looks like rust) at the top or bottom, bulging, and splits in the plastic sleeve. Cigarette smoke residue can cause problems in electronics and you'll usually know it when you see it: a disgusting brown film on exterior and interior parts. Figure out if there are accessories that you'll need such as special cables, shock mounts, or power supplies. Tape machines will almost certainly need head alignment after shipping, so budget for a house call from your local tech. Documentation is very important, especially with tape machines. You'll need the procedures for proper electronic and mechanical alignment, pinouts for audio and power supply connection, and schematics for repair. Is the seller supplying this documentation, or are you on your own?

Is This Thing On? Also found under the heading *do you know what it's supposed to sound like?* are vintage microphones. The golden era of microphones is approaching 75 years of age. Over time, their semiconductors, tubes, and capsules have slowly aged and they may sound nothing like they did when they were new. In fact, when describing the sound of a vintage AKG C12 or Neumann U47, the question may not be, "does this sound like a C12 or U47?" but rather, "which particular C12 or U47 does this sound like?" The likelihood of two vintage condenser mics sounding the same is small. So which one is "right"? It takes experience to know the answer, just as it takes experience to know if the correct parts are still inside. This is where working with a reputable dealer gives you an advantage. It upsets me when I see a microphone on eBay with a photo showing the interior electronics, and *it's all wrong.* If you're going to lay down serious cash, it might be worth a few hundred bucks to have the microphone examined and appraised by a third-party expert who could verify the condition and let you know if it has been serviced, modified, or altered in any way.

If possible, make a test recording using the microphone. Use drums, vocal, or piano—familiar instruments. Drums and piano span a wide frequency range and help reveal a microphone's low-frequency response. Multipattern mics should be tested in every pattern; make sure you are aware of the sonic differences between the patterns so that when you switch them you hear what you expect. (For example, the low-frequency response of a Neumann U67 is more extended when the mic is set to omnidirectional.) A condenser microphone that functions only in cardioid may have a bad diaphragm on one side of a dual capsule, which could mean a pricey repair. If you can get a look "underneath the hood" (i.e. see what the capsule looks like under the head grille), check out the appearance of the diaphragm(s). Is it wrinkled? Are there spots where the vaporized gold has flaked off? Are there any visible pinholes or tears? Can you see cracks in the capsule mount?

Something that I often see in ads for tube microphones, which upsets me to no end, is "power supply and cable not included." This is almost as bad as "Works great. Power supply not included." *Really?* Reputable dealers notwithstanding, a missing power supply is a red flag. It stinks like *someone stole this mic but was too dumb to know it requires a power supply.* How can the owner of a tube mic know it works great if he or she doesn't have the power supply? This is a can of worms you don't want to open for several reasons. First, you'll have no way to test the mic when you receive it. Second, power supplies for vintage tube mics are not cheap. (Expect the cost to be somewhere in the range between $400 and $750.) Third, if the mic does not work, you'll be in a pissing match with the seller over whether or not you connected the correct power supply. Fourth, if the mic has been modified in any way, it may need a complementary change in the PS and/or cable, and you probably won't know about it. In my book, "no power supply and cable" equals "not interested."

When it comes to ribbon mics, the equation is somewhat less complicated due to the simpler design of most ribbon transducers. Ribbons are so fragile that it'd be a miracle if the original transducer of an RCA 44 were still up to spec, so you may want to factor in the cost of having the mic re-ribboned. When you balance the cost of a new ribbon (less than a few hundred dollars for a mic that could be worth between $1,000 and $2,000), the repair is worth it. Dynamic mics seem to stand up a bit better to aging, and since they tend to be more rugged than condenser or ribbon mics, chances for damage are decreased.

Owning a piece of vintage gear is sort of like owning a bit of audio history; plus, it can provide great sound and years of enjoyment. Just be sure to do your homework! ■

CONSIDER THE ALTERNATIVES
THE PROS AND CONS OF RE-ISSUES

Suppose that you have decided that you absolutely cannot live without a Neve 1073 mic preamp/EQ. (I might agree with you!) You can search for an original "vintage" 1073 module, which at this point in time is 40-plus years old. That's a lot of dog years on gear and you have no way of knowing how the unit was treated. True, cosmetic appearance is often a strong indicator of condition, but it's far from an absolute barometer. A working 1073 in good shape will cost somewhere in the neighborhood of $3,000 to $5,000, and then you'll need to buy or build some sort of rack enclosure with a power supply and audio connectors. (These modules were intended for installation in a console, not a rack.) A new "reissue" Neve 1073 costs in the vicinity of $3,400, and a rack to put it in costs another $900. Either way, it's a lot of cash, but the point is that you can get a new module for a little bit less than a used module. Some gear snobs will argue that the reissue doesn't sound as good as the original, while others will argue that a reissue may benefit from improved grounding schemes that reduce background noise, and higher reliability of modern components. The point here is that you may be able to get the sound you want, along with greater reliability (and perhaps enhanced performance), by purchasing a reissue. Think about this: How much is it worth for you to not have to deal with maintenance and down time?—*Steve La Cerra*

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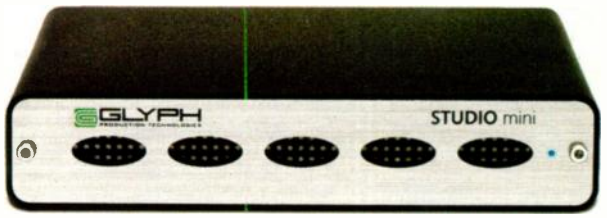

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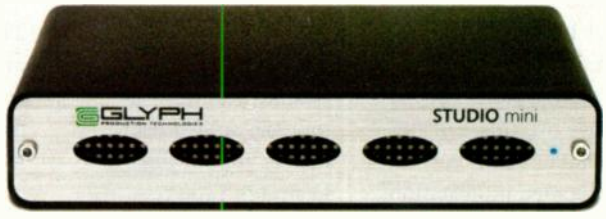

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Five Tips for Effective Communications with Tech Support

BY CRAIG ANDERTON

Can you hear the tech support gurus laugh hysterically in the background whenever the voicemail says "your call is important to us?" Hey, it's not easy doing tech support—but these handy tips will help you get results!

1

Don't be mean to tech support. People take tech support gigs because they like puzzles and challenges. If you give detailed information like how to reproduce a software bug 100% of the time, shame on you—you've taken away all their fun. To reward tech support's selfless service, provide *absolutely no useful information*—say something like "This software doesn't work; it's broken . . . what's wrong?" They'll love you!

2

Emulate a politician. Sure, you don't want to admit you were an idiot and spilled beer all over your keyboard. So, pretend you're a politician . . . lie! Say "Well, this guy told me in front of his girlfriend that your keyboards suck, so not only did I demolish his arguments and humiliate him publicly, his girlfriend asked for my phone number. He was so angry, he poured his beer into my keyboard—can you help?"

3

Threaten. Drop menacing hints about your friends in high places at OSHA and the IRS, and how they're *always* asking you for advice on how to meet their quotas. If that doesn't work, tell them their company's financial collapse is imminent because you are so influential that your *special powers* will cause all their customers to switch immediately to competitive products. Your obvious *awesomeness* will paralyze them with fear!

4

Creep them out. Efficient call processing is tech support's goal, so creep them out and they'll want to get you off the line pronto—win-win! Throw in some random comments like "I really need to get this working in time for our ritual satanic black mass next week . . . oh, and is there a way to protect the faders from *vomiting paranormal fiends*?" They just might say "We'll send a replacement unit at no cost if you get off the phone *right* now." Worth a try!

5

Write a letter, because "the pen is mightier than the sword." Well, unless you're engaged in hand-to-hand combat in the Middle Ages—for that, the smart money's on swords. Then again, pens aren't very mighty in the age of the internet, either. Maybe "fiber-optic cable is mightier than pens, which once were mightier than swords" is better. Or something like that . . . I'm working on it.

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