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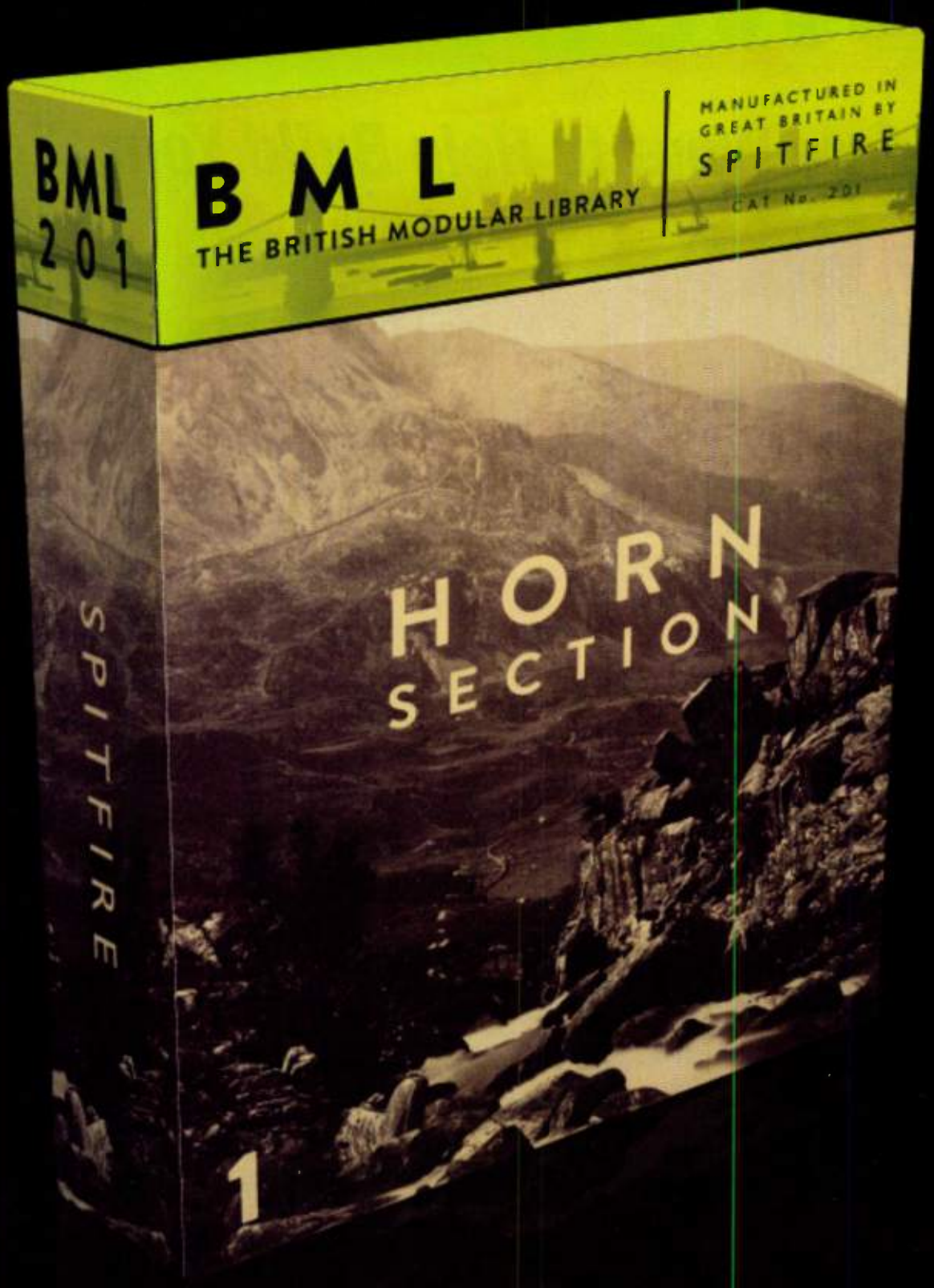

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Cover photo of Pretty Lights by Dave Vann

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Honoring Your Influences

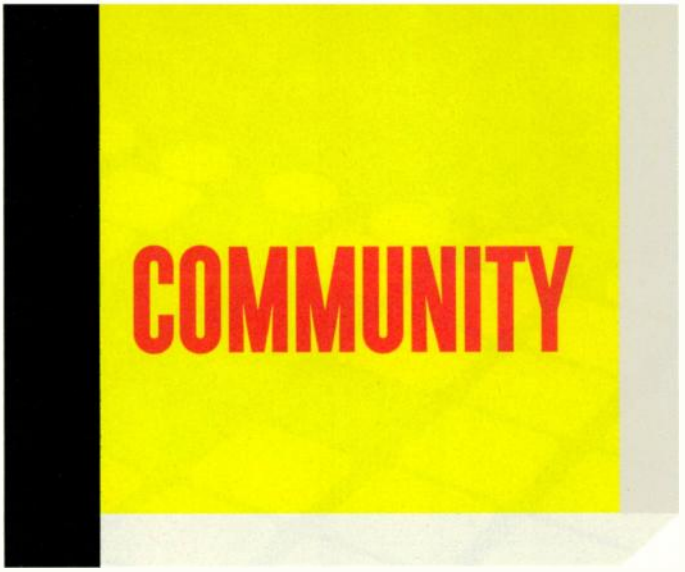
LAST YEAR, I attended the premiere of *The Re:Generation Project*, which followed DJs Pretty Lights, Mark Ronson, Skrillex, the Crystal Method, and DJ Premier as they collaborated with various artists to "re-imagine" traditional styles of music, from Motown to country.

Following the movie, Ken Jordan of the Crystal Method explained that they were all ultimately paying respect to common influences: "R&B, rock, it's always been our inspiration. So we want to take this opportunity to show people that it all works together. The music we make, we never called anything. We call it electronic now, but it's the music we come out with from all of these inspirations."

Pretty Lights echoes this sentiment in this month's cover story (beginning on page 14). "I viewed my style as sort of a collage of music of the last century brought together with techniques and production from the present, to create something new and fresh." He takes this concept even further, however, on *A Color Map of the Sun*: For this record, he spent two years assembling groups of musicians in styles ranging from funk to soul to jazz, recording original material on vintage gear, to tape, pressing the recordings to vinyl, then meticulously layering these new "samples" into a work that can be best described as analog electronica.

Projects like this do more than pay tribute to their musical insipration; by immersing in traditional methods, processes, their *spirit* of creation, they carry on the legacy in groundbreaking new ways. How do you express your musical influences? Tell us at ElectronicMusician@musicplayer.com.

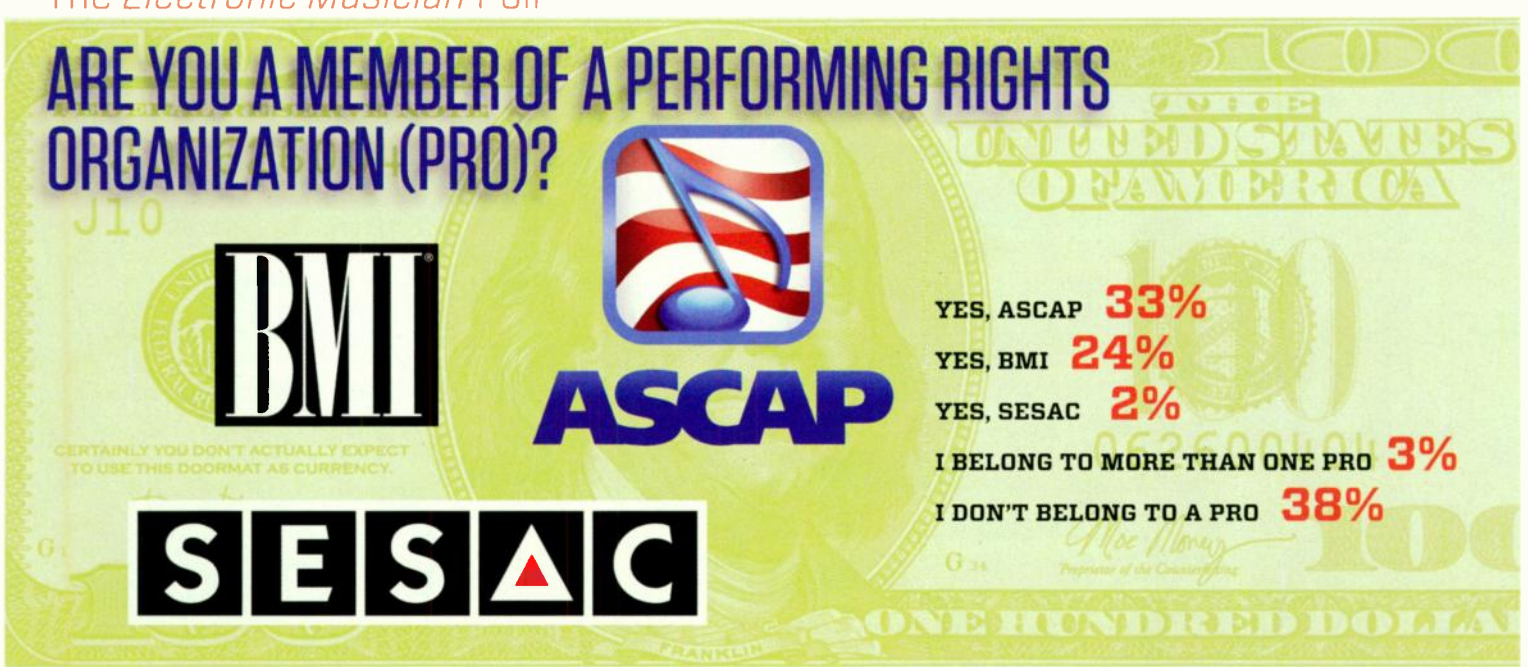
SARAH JONES
EDITOR
sjones@musicplayer.com



"THE INDUSTRY OBSESSES ABOUT DISCOVERY, THEN OBSESSES ABOUT OBSESSING ABOUT DISCOVERY . . . BUT DO AVERAGE MUSIC FANS REALLY CARE THAT MUCH?"

Digital Music News' Paul Resnikoff reporting on new music-recommendation platforms, May 29, 2013

The *Electronic Musician* Poll



DIG MY RIG

This is my home studio in Thailand. This particular room required a great deal of analysis prior to building: first, a clear understanding of the kind of audio production it would be used for, and then applying that to the build with an understanding of what was available here in the jungle. (Okay, it's not quite the jungle, but it is only a three-hour drive to the Golden Triangle.) Studio uses include voiceover, mixing, and restoration.

This room was problematic, square with a 9-foot ceiling. My first consideration was to keep the sound from going out. Then, of course, to keep the jungle sounds from coming in. Double walls were out of the question, as that would make the room too small. Acoustic panels were imported from China and placed floor to ceiling, covering the entire room. Six-plus inches of plywood, foam, and then plywood again finally covered the wall panels that were used to block the large window. A solid teak wood door was fitted and air-sealed with auto door-seal rubber. The ceiling was treated with acoustical tile and M-Sorb panels.

Many years ago, I bought an Ultimate Support studio stand. I bought more poles and supports and continued to build the thing until I had all my equipment floating and/or attached to the primary studio stand. It is extremely light and strong and über-fun to cut, plan, and shape. You can adjust, reposition, and build poles, supports, and securing sockets to any specification; only a hack saw and allen wrench are needed.

Gear includes: Avid Pro Tools 9 and various plug-ins, Mackie Blackbird, Neumann 103, Avant C-12, Rode NTA-2, Aphex 230 Master Voice, Aphex 207+109, Yamaha HMS50M/HMS80Ms, Mackie 10″ sub, Auratone Mix Cubes, Mackie Big Knob studio control, TASCAM Pro 900 CD, and Mac with four 1TB drives.

TOM PARKER
CHIANG MAI, THAILAND

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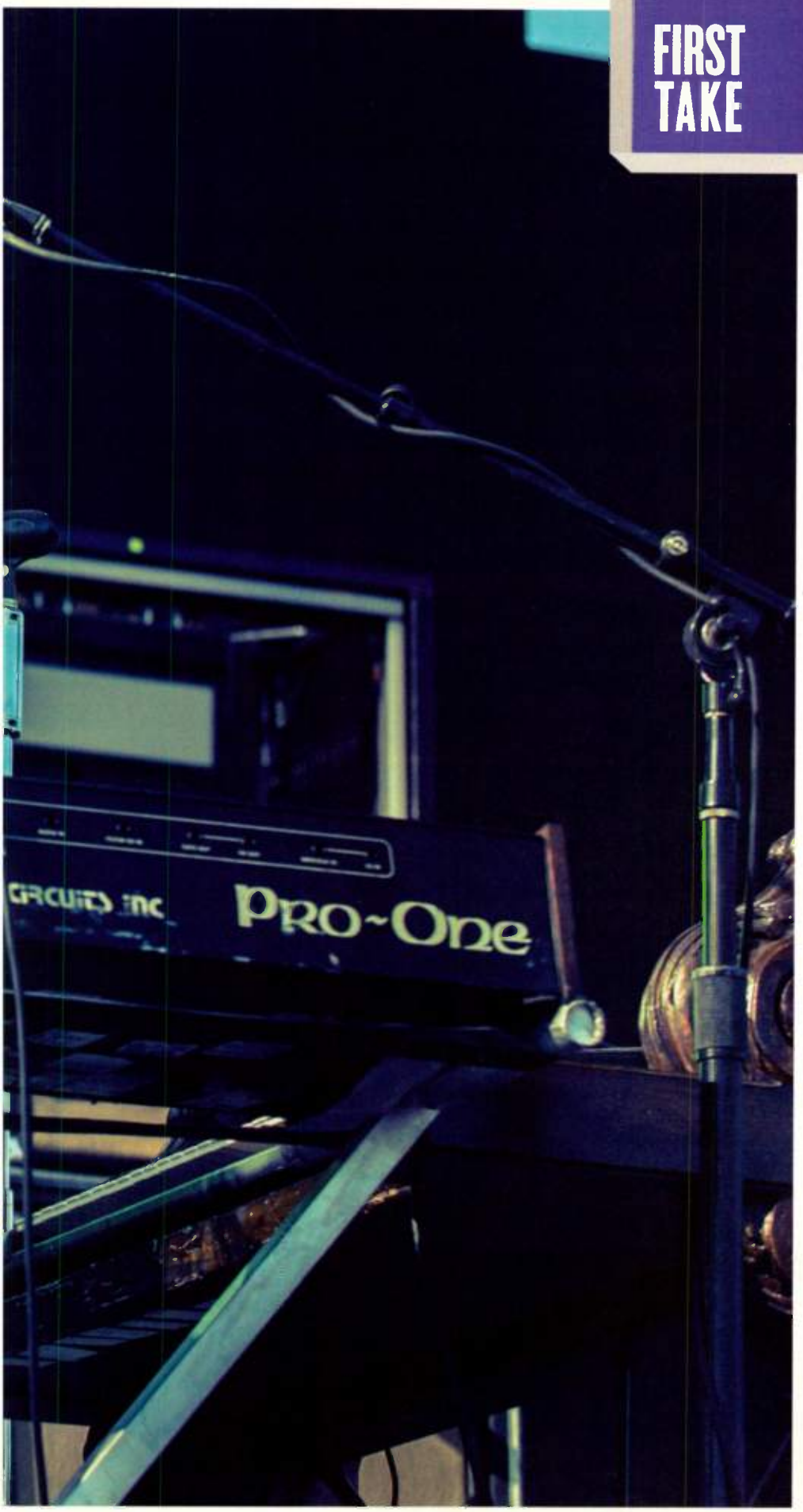
EVA-LYNN ADAMS
ROCHESTER, NY
VIA EMAIL

The Roland R-26 lets you record six channels as three stereo files, using its two built-in stereo mics (one cardioid pair in XY and one omni pair) and two XLR inputs.

Every portable digital recorder intended for tracking music (as opposed to simple dictation) has a 3.5mm external stereo mic input. The options that work with this type of input range from inexpensive consumer-grade microphones to moderately expensive pro-quality mics. Look for a recorder that offers plug-in power, which is used to power the higher-quality condensers. Plug-in power should not be confused with phantom power, which is offered on the recorders with dedicated XLR inputs.

Portable digital recorders with XLR jacks are increasingly common, affordably priced, and also include the 3.5mm mic jack, so you can decide which mics make sense for a given situation. For example, the built-in mics can be used as distant mics for capturing a group, while the external mics can be used as spot mics for soloists. Often, products with XLR inputs allow you to record additional tracks—commonly, a stereo file from the built-in mics and a separate stereo file from the XLR jacks. The Roland R-26 can even record six channels as three stereo files, using its two onboard stereo mics and two XLR inputs. However, you should also base your choice on the sound quality the recorder produces, as well as its ease-of-use, size, weight, and build quality. The easier it is to get up and running, the more often you'll put your recorder to work. **THE EDITORS**

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



METRIC AT COACHELLA
A DESERT STORM

INDIO, CA
APRIL 12, 2013

Since their emergence on the Canadian indie rock scene in the late '90s, Metric has enjoyed a slow-and-steady career arc, with highlights that include multiple Juno Awards, composing for the *Twilight Saga: Eclipse* soundtrack, performing for the Queen of England, and most recently, playing the main stage at Coachella. Lead singer Emily Haines took to her ever-present Sequential Circuits Pro-One, invigorating the sun-scorched crowd with an searing set that closed with a "Gimme Sympathy" singalong, ultimately answering the song's "who would you rather be, The Beatles or the Rolling Stones" question by declaring that she "would rather be the Velvet Underground." Not a bad choice.

PHOTO BY DAVE VANN

PRETTY LIGHTS

On *A Color Map of the Sun*, DJ/musician/producer Derek Vincent Smith layers improvised, organic "samples" into intricate, futuristic sonic collages, with a nod to the sounds of decades past

BY BLAIR JACKSON

MAKE NO mistake about it: Derek Vincent Smith *is* Pretty Lights. The first credit on the new Pretty Lights album, *A Color Map of the Sun*, reads: "All songs written, composed, sampled, mangled, reconstructed, flipped, chopped, and arranged by Derek Vincent Smith."

If you've heard any of Pretty Lights' previous releases, you know what an amazing polyglot of sonic ideas Smith is capable of creating—skittering samples collide with devastating drops and passages of unreal grace and beauty, then are overwhelmed by distortion and indescribable weirdness that take songs to a new level.

Smith has made each of his albums available free over the Internet, and undoubtedly helped build his ever-growing following that way. But it's fair to say that it is his incredible live performances that have catapulted him into the top echelon of EDM artists. Smith masterfully mixes and manipulates an astonishing, variegated array of samples plucked from records of every era, sometimes backed by a drummer and accompanied by a mind-blowing light

PRETTY LIGHTS

DAVE VANN

Pretty Lights at Summer Camp 2012.

show. Over the past five years, Pretty Lights has played just about every major U.S. festival there is, electronic or otherwise: Coachella, Bonnaroo, All Good, Electric Zoo, Outside Lands, Electric Daisy Carnival, Wakarusa, Electric Forest, Lollapalooza, and on and on.

This summer, the schedule is packed with more multi-act festival dates across North America and, increasingly, Pretty Lights is occupying slots as headliner or spotlighted second act. No question about it, Pretty Lights is still ascending, and the strength and musical diversity Smith displays on *A Color Map of the Sun* (released July 2 as free download and in various pay formats) is certain to attract legions of new fans.

It couldn't happen to a nicer guy. The Colorado native, who still calls Denver home and has a studio there, is relentlessly upbeat and optimistic, and the joy he gets from creating and performing music courses through everything he does. Growing up an hour north of Denver in Fort Collins, Smith played in a punk band and then in a funky hip-hop guitar-bass-drums trio ("trying to be the Beastie Boys and 311 with a little Korn on top," he once explained) during his high school years. In the early 2000s, he gravitated to the local hip-hop, electronic and rave scenes, while at the same time landing a job as an engineer at a recording studio in Fort Collins.

> "I was a massive hip-hop fan and obviously hip-hop production was very heavily sample-based, so my productions started off going down that route. But since I was also a musician, it has always been a fusion of live instrumentation and sampling."
>
> —DEREK SMITH

On the side, he started developing his own style of music, artfully layering electronically altered samples from mostly obscure vinyl sources, along with live and programmed beats, synths, voices, and other textures. A true musical omnivore, he drew from a staggering range of artists to create his pieces: On the first Pretty Lights album, 2006's *Taking Up Your Precious Time*, Smith included samples from such eclectic acts as Lightnin' Hopkins, Etta James, Fairport Convention, McCoy Tyner, Aaron Neville, Ella Fitzgerald, and the Chamber Bros. And with each successive release, he drew from more varied sources—Sting, Led Zeppelin, Radiohead, Nirvana, Buffalo Springfield, Al Green, O.V. Wright, Firefall, the O'Jays, Shirley Bassey, John Denver, and a host of names from

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SAMSON

PRETTY LIGHTS

the rap/hip-hop era, from Tupac to Eminem to Jay-Z. No one was safe! Even the Pretty Lights name has its foot in another era: It came from a poster for a 1966 New Year's Eve concert in Manchester, England, featuring The Move, The Who, and Pink Floyd—"Come and watch the pretty lights," it exhorted.

"In this [EDM] scene right now," Smith says, "most producers came from a DJ background, and then there are a handful of producers who came from a musician background. I definitely came from that musician background, and I got into production through hip-hop because I was a massive hip-hop fan and obviously hip-hop production was very heavily sample-based, so my productions started off going down that route. But since I was also a musician, it has always been a fusion of live instrumentation and sampling. I viewed my style as sort of a collage of music of the last century brought together with techniques and production from the present, to create something new and fresh. I really pushed to take sampling to a new level, so all my old records are collages that have 20, 30 samples in a single track, seriously manipulated and with other instruments added to make it even more musical."

Two years in the making, *A Color Map of the Sun* represents a radical shift in the way Smith creates his music. This time around, he didn't use *any* samples from other artists' records. "I never had any notion that I produced with samples because I couldn't produce with newly recorded music," he explains. "I produced with samples because it had this warmth and grit I liked and because you can *hear* the time period, whether it's the '60s and '70s, or the '20s and '30s, for that matter. But I got it in my head that I could literally re-create the recording process that would have been done in the late '60s and early '70s to make the sounds have the timbre that I was really going for. So I set boundaries for myself that made it extremely difficult, but in a fun, challenging way, where I didn't want to use anything that was current, or even an emulation of something old. I wanted to use all gear that was in fact vintage, from the mics and the board to all the hardware."

Okay, that's a quaint idea, but not exactly groundbreaking—many folks are using vintage gear to record these days. But wait, there's more; lots more. And because the process ended up being so complex and multifaceted, ranging from seriously old-school analog techniques to the latest digital devices, Smith needed a tech partner to help him realize his vision. Enter Joel Hamilton.

Hamilton is co-owner (with Tony Maimone, of Pere Ubu fame) of Studio G in Brooklyn, which is packed to the gills with choice vintage and newer analog gear—starting with a Neve 5316 console originally built in 1977 for BBC Scotland. (Yes, the studio also has some digital pieces, but for this project Smith and Hamilton tapped its analog resources exclusively.) As a producer, engineer, and/or mixer, he has worked with such artists as Sparklehorse, Howie Day, Dub Trio, Marc Ribot's Ceramic Dog, and perhaps most famously, the BlakRoc rock-rap hybrid featuring the likes of the Black Keys, Wu Tang's RZA, Mos Def, Raekwon, Q-Tip, and others. Also a multi-instrumentalist, Hamilton has brought a number of his own group projects into Studio G, as well, including The Working Title and Book of Knots.

> "You're part of the feedback loop that is improv. Just like the musicians, Derek would hear me start to ride up some weird little effect and he'd be like, 'Yup, hold that *there*.'"
> —JOEL HAMILTON

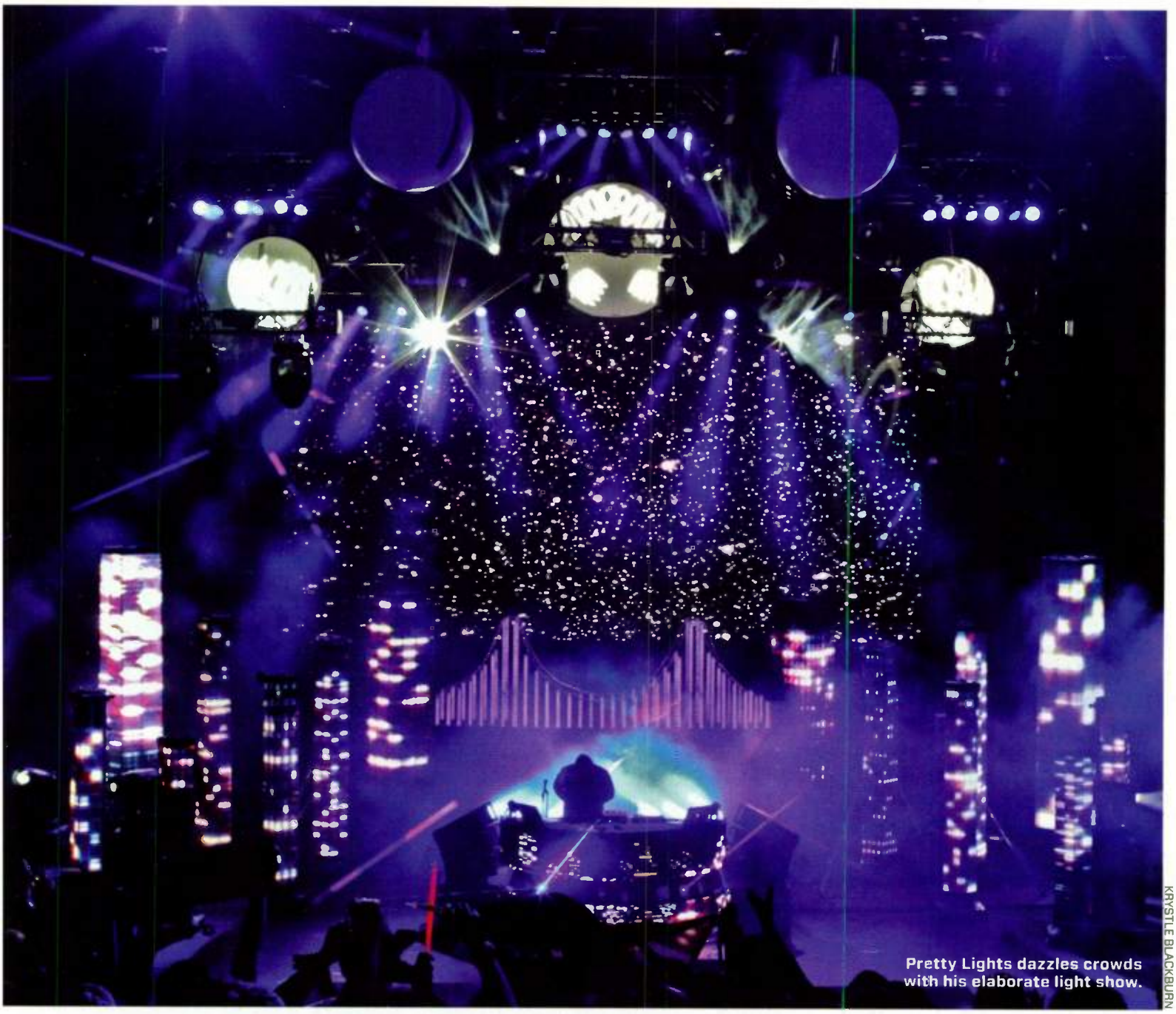
"I think my initial point of contact with Derek, which was probably about two-and-a-half years ago, was that I had worked with Lettuce and Soulive and all these people he'd looked up to in the funk realm," Hamilton says. "And he'd had Adam Deitch, the drummer, playing with him a few tours, and I'd done things with Talib Kweli and a few others that had Adam on them. Adam knew that my record collection would make sense to Derek, when I could reference anything from the Ohio Players to The Beatles to Funkadelic. It's really hard if you don't have the vernacular when you're jumping around stylistically the way somebody who digs through crates [of vinyl records] can jump and feel comfortable going from a Metallica record to the weirdest off-brand Allen Toussaint thing from '72 that nobody really knows. We had a lot of the same reference points, so that sped things up incredibly and we really hit it off quickly, based on that and a mutual love for f**king with sounds, basically."

Smith's concept was that he would create his own library of vinyl recordings from scratch, assembling groups of musicians at Studio G and directing them to play "breaks" that captured specific moods and feelings that recalled some of the older styles he loves so much.

"Nothing had been created, no ideas had even been toyed around with," Smith says. "I just knew I wanted to record with as many musicians as possible. So that happened first and it was all done to stereo tape. It's funny, because when I called [Studio G] and said I wanted to do it to tape, they had their 2-inch 24-track Studer tape machine ready to go, and I was like, 'No, I must have miscommunicated. I want to use the [Otari MTR-15] quarter-inch stereo tape machine and run it on 7.5 ips so we're really getting into emulating a garage recording studio in the '60s in Detroit or Cleveland or some place like that.' They said, 'Are you sure? You won't be able to change it later.' I said, 'Yes, I want it to be very destructive,' which in an audio sense means you can't go back and change it.

"There were no demos. I had a Wurlitzer and a small Virus Polar polyphonic synth so I could come up with chord progressions on the fly and bring it to the musicians, one at a time. I would literally go to the guitar player and say, 'All right, strum *D*-minor,' and he'd strum that, and then I'd say, 'Okay, now add the 9th. Now strum it slower; now finger it up on this register. No, strum it up instead of down. A little faster.' He'd finally get the strum and the chord exactly how I wanted it and I'd say, 'Great! Stop, remember that. Stick with that.' Then I'd go through the same process with the keyboard player on the Hammond and Wurly, the other guitar player, the horn players, and the bass player. A lot of times I would play bass, too, so we'd have two basses.

"Simultaneously I'd be working with the engineer to get the effects right and the amps right. We did everything in the same room, with no isolation, so the guitar amp was getting drum bleed on purpose and the Leslie mic was getting bass amp bleed and kick drum bleed. We were not looking to have 64 tracks on Pro Tools all separated out perfectly clean," he laughs. "What I was trying to compose were parts of genres,



Pretty Lights dazzles crowds with his elaborate light show.

KRYSTLE BLACKBURN

parts of songs, part of records that if I were to find them in an old record store, I would flip out, immediately rush home and want to chop them up. I was trying to create that in a long list of genres from a long list of time periods.

"Finally we'd arrive at something," Smith continues, "and when everything sounded right, I'd say 'Roll tape!' A lot of times it would take a minute or two for everyone to fall into the groove, so there aren't real start and stop points on most things. The sessions and the breaks lasted anywhere from five minutes, if it was really simple and we nailed it right away, to literally 30 minutes long. And the reason it might last 30 minutes is I wanted to get all these different combinations of instruments. I wanted to get Wurlitzer with just slide guitar; I wanted to get wah and slide and piano; I wanted to get upright and harmonics and wah. So I was directing people to drop in and drop out, sort of conducting it."

From Hamilton's perspective, the pre-session work involved copious experimentation with mics, amps, and outboard gear to come up with the correct sonic palette for each break. Then, as he mixed live to the 2-track, there was a lot of "diving for the faders" on the Neve to bring instruments up and down and apply various effects in the moment. "You start to hear the gesture come at you from the rhythm section and you respond accordingly with your fingers and your brain," he says. "You're part of the feedback loop that is improv. Just like the musicians, Derek would hear me start to ride up some weird little effect and he'd be like, 'Yup, hold that *there*.' The same way, on the talkback he'd be telling the drummer, 'Stay with that, I like that ghost note thing.' Everyone's finding their place and I'm finding the sound that works with them finding their place, and it was exciting because the focal point was Derek. It would have been chaos if there wasn't somebody I had faith in to take charge of the room and actually produce. Derek always seemed to have a clear vision of where to go with this."

The group recordings at Studio G stretched over many sessions and involved 20 musicians and singers at different times, plus a whole bunch of instruments one rarely encounters in this era, including the nyckelharpa (a Swedish fiddle), trumpet violin, music box, toy piano, Marxophone (a fretless zither), harmonium, and waterphone. Smith played a number of these instruments himself.

"My first two-and-a-half-week session in Brooklyn, Joel had a massive modular synth, and we used it for effect chains," Smith says. "We would patch up filters and distortions and then use them as auxiliary effect chains through his modular synth. So on one of the breaks, there's a vibraphone and you can hear that the vibraphone has a filter LFO on it, and that's because we ran the vibraphone mic through the modular, and I was running the modular live while the dude was playing. But through that first session, I so fell in love with analog modular synthesis, and I feel my ears really learned the lesson and could hear the difference between what my Virus sounded like when I just played a saw waveform and what the modular sounded like when I played a saw waveform. So that's when I made the decision to make even the synthesis aspects of the record completely analog and modular. I built a big old modular synthesizer that I had to teach myself to use, and I used that for everything monophonic, and then I also purchased a polyphonic Dave Smith Prophet for the chord synthesis."

Another set of sessions at Piety Street Studios in New Orleans—engineered by Wesley Fotenot and featuring local musicians tackling other grooves and textures using the Brooklyn methodology—produced many more hours of raw recordings. There was also a day spent recording just drummer Adam Deitch at Studio G—his work is as prominent as any other element on the finished album.

"The idea was to emulate those *Drum Crazy* CDs of old drum samples," Smith says. "So we had 12 vintage mics on the drum kit, but we would only use, at max, three or four at a time. Sometimes we'd use two, sometimes only one. Joel and I would be in the control room and he would tweak all the hardware and the preamps and I would play around with whichever mics we were using, and we would get it to sound like it was a different break from a different studio, and I had a mic to the Adam's headphones and I'd tell him what beats to play. I'd click off the tempo and say, 'Okay, I want a hip-hop breakbeat with minimal hi-hat, with only snare fills.' So he'd do that for a minute. Then I'd say, 'Now do *this* tempo, and I want it to be double-handed 16ths, no hi-hat, minimal toms with a lot of swing.' We did that for six hours or so and ended up with around 60 different drum beats that I could cut up and use however I wanted.

"On the produced album, *Color Map of the Sun*, it's a combination of the drums from the actual recording involving the musicians, the drums from just the recordings of the drummer, and I would also add sequenced kick and snare to really make it hit hard."

After the raw recording sessions, which also encompassed various specialized stabs at capturing horns. strings, rappers, and singers (Smith wrote the sung lyrics, or "re-imagined" ones from old gospel and folk records), "I had boxes and boxes of quarter-inch tape and I went to a vinyl guy and I said, 'I want all of this tape put on acetates,'" Smith says. "And he said, 'You're f**ing insane!' He was used to putting albums or EPs on acetate, and I'm sitting here with 40 hours of music, two different times. He did it because I paid him for it, but he thought I was crazy at first."

In the end, Smith had close to 100 session

acetates from which to sample and that was the start of the next phase of the project. "Derek took everything back to Colorado and that's really where he made the record," Hamilton says. The 2-track recordings became the foundational elements for the songs Smith constructed for *A Color Map of the Sun*. Just as he would when sampling off other peoples' records, he loaded bits and pieces of seemingly unconnected parts of the different original breaks into Ableton Live 8, figured out an arc for the piece, and then went to town, chopping and layering and adding effects and more modular synths.

"I used a custom-made [Akai] MPC 2000XL to sequence my modular synth, but for cutting up my vinyl to sample and arrange it, I simply used the 'Arrangement View' in [Ableton] Live or Drum Rack; I love Drum Rack! I use other stuff now, like Sampler and all the NI [Native Instruments] stuff and UAD-2 [plug-ins], but for the album I just used good-old-fashioned slicing and warp pins straight in Arrangement mode."

Hamilton says, "It's in Derek's soul to work that way—the tactile manipulation of the record is so important: the way he'll search for the next part by dropping the needle in different places, rather than going through what basically amounts to file management in Pro Tools or Ableton. The basic process was acetate to Ableton and then f**king with it."

"When you dig through records for samples, things are rarely in the same key and never in the same tempo, so you have to utilize a certain skillset to match up those samples," says Smith. "So, for example, I had purposely recorded some of the vocals in a way where they were not supposed to go together. I would write a lyrical phrase and I would have one of the singers sing it and I would have planned this lyric to be on, say, song A, but I would have the singer sing the lyrics over break C, which was a totally different tempo and different key, because I wanted to emulate the process of matching samples. I did that so my vocals were not in key with the music, so I would have to manipulate them to make them fit. It was another part of trying to maintain the style of sample collage production, even though I wasn't sampling anyone else's music."

"He took it to a level that made it really fun for me," Hamilton notes. "I'd say, 'Man, you've got to check out this filter, you've got check out this Harvest Man module—it really f**ks up your song!' And he would come back at me with some track that was *all* that module. He'd say, 'I really got into this and made it talk to Ableton, but then stayed analog, so it's a free-running sequence, and then I re-chopped it.' He was really going after it. All great stuff starts with a vision and then the tools just become a way to pursue that vision. Derek has got vision for *days*."

Smith did preliminary mixing at his studio, monitoring the sessions through a Dangerous 2-Bus and utilizing an analog sum box, then sent stems to Hamilton at Studio G, "and he would sort of reprint the stems through some more tubes and old hardware and comp them down, send them back to me, and I'd make all the volume changes I wanted so everything sounded right," says Hamilton. "Then I flew back to New York and actually bounced all that through his equipment—through the Fairchild 670 and through the Neve, as well. After I finished the songs and bounced up the stems, the files were sitting in Pro Tools, but they weren't mixed with Pro Tools. Maybe once or twice we used volume automation on Pro Tools on the mixing sessions, but it was 98 percent done with hardware changes and compressor gain changes and things like that."

> "I had boxes and boxes of quarter-inch tape and I went to a vinyl guy and I said, 'I want all of this tape put on acetates,'" Smith says. "And he said, 'You're f**ing insane!'"
> —DEREK SMITH

Hamilton mixed on Studio G's SSL 8048 G+ "because there were like two trazillion tracks, so I needed to be able to lay it all out," he says. "SSL is a sort of neutral platform for me to be able to patch in something here from 1955 and the channel sounds like an old Federal compressor, or the 670, or the Duquesne limiter, a Maxson tube limiter that was made for the Department of Aeronautics—tube gear that is really obscure at this point; running things through attenuators and UTC transformers almost in a *musique concrète* way, where you just run the signals though something static to create texture. The SSL can feel a little bit like Pro Tools 3D sometimes, where it doesn't really do much to the sound, but every single overload light is on, blinking at me all day long. We were kicking the crap out of it. That's a big part of the aesthetic. It should sound like the process can't handle how big it is, in certain ways, and then it should also sound like the process has more headroom than anything when the bass drop happens."

The end-result of all this is an incredibly diverse album that brilliantly juxtaposes phat beats, crunching rock riffs, wheedling and buzzing analog synths, elegant soul grooves, bursts of hot jazz, psychedelic guitar, haunting quiet passages that seem to float in air, and a surprising number of truly catchy hooks. That all these elements work together as well as they do is testimony to Smith's vision and skill—it really does feel like many different eras simultaneously, at the same time it is completely contemporary and even forward-looking.

One of the cooler aspects of the release, too, is that Smith has put together a second disc containing excerpts from 13 of the untitled live-in-the-studio sessions in Brooklyn and New Orleans, in effect sharing some of the base elements and letting us hear where this or that part of one of the finished songs came from. As Hamilton says, "The fact that Derek is bold enough to present the world with the raw materials that he was using shows a genuine enthusiasm for the art of making music that's sadly absent in so many other genres right now. That's incredible to me." A documentary about the making of the album is also forthcoming. Naturally, *A Color Map of the Sun* is also available on vinyl. (Check out prettylightsmusic.com for the wide range of options.)

And then, of course, a lot of these songs will be coming to stage near you. "It's going to be huge live; *pummeling*, but in the best way possible," Hamilton says with a laugh. "I was on the stage at the Governor's Island Festival here in New York City when one of the songs we worked on came on and the bass drop was just *ridiculously* gigantic. I watched in awe as 30,000 23-year-olds found God when that bass drop hit. Every light came on—because he has 4 zillion lights—and it was like every face as far as the eye could see was in disbelief and happiness and total euphoria. It's like paying for an ogre to shake you!" ■

Blair Jackson is a contributing editor at Electronic Musician.

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Read interview outtakes with Derek Vincent Smith and engineer Joel Hamilton.
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FEEDBACK
electro-harmonix
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BLEND
VOICE
ATTACK
DECAY
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electro-harmonix
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VOLUME
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BIG MUFF π
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AMOUNT
HOLY GRAIL PLUS
LEVEL
TIMBRE
Ravish Sitar
PRESET
TUNE
STATUS
BYPASS
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VOICE BOX
LOW HARMONY
HIGH HARMONY
LOW + HIGH
MULTI HARMONY 1
MULTI HARMONY 2
OCTAVES
VOCODER
PRESET
electro-harmonix
TOP BOOST
MM
MICRO METAL MUFF
electro-harmonix
MADE IN NYC, USA
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RATE
NEO CLONE
VOLUME
TONE
SUSTAIN
BIG MUFF π
electro-harmonix
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PRESET
99
SELECT
HOLD TO SAVE
hog2
foot controller
DOWN
UP
electro-harmonix
MADE IN NYC, USA
POCKET
SCOOP
MM
METAL MUFF
Germanium
BIG MUFF π
electro-harmonix
DEPTH
SHAPE
RATE
Stereo Pulsar
VARIABLE SHAPE TREMOLO


deluxe bass
BIG MUFF
electro-harmonix
HOLY GRAIL
SPRING
HALL
FLERB
REVERB
RATE
FLANGER DEPTH
CHORUS DEPTH
stereo
electric mistress
MADE IN NYC, USA
MULTI EFFECT
DEPTH
RATE
STATUS
RATE
COLOR
SMALL STONE
nano
MADE IN NYC USA
V256
vocoder
MIC BYPASS
MIC GAIN
FAST
SLOW
LATCH
EFFECT LEVEL
FREEZE
SOUND RETAINER
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FILTER
REPEATS
DELAY
HAZARAI
stereo
MEMORY MAN
with Hazarai
ECHO
MULTI TAP
DÉJÀ VU
TAP / RECORD
BEAT
STATUS
BYPASS
SMALL CLONE
EH 4600 FULL-CHORUS
ELECTRO HARMONIX
VOICE MIX
FILTER SWEEP
bass
MICRO SYNTH
DIST.
RESPONSE
BASSBALLS
TWIN DYNAMIC FILTERS FOR BASS
FEEDBACK
MODE
SWEEP FILTER
TUNE/DELAY
WIDTH
SWEEP RATE
stereo
POLY CHORUS
ANALOG FLANGE/CHORUS
OVERLOAD
GLIDE
RATE
OUTPUT
RTG
RANDOM TONE GENERATOR
HIGH FILTER
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BASS FILTER
SUB
OCTAVE
MULTIPLEXER
BLEND
MODE
ATTACK
DECAY
ENIGMA: Qballs
OUT A
OUT B
TUNER
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TOP BOOST
TREBLE
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BASS
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OVERLOAD
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Echo/Chorus/Vibrato
VOLUME
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DRIVE
bass
Blogger
DISTORTION
SWITCH BLADE
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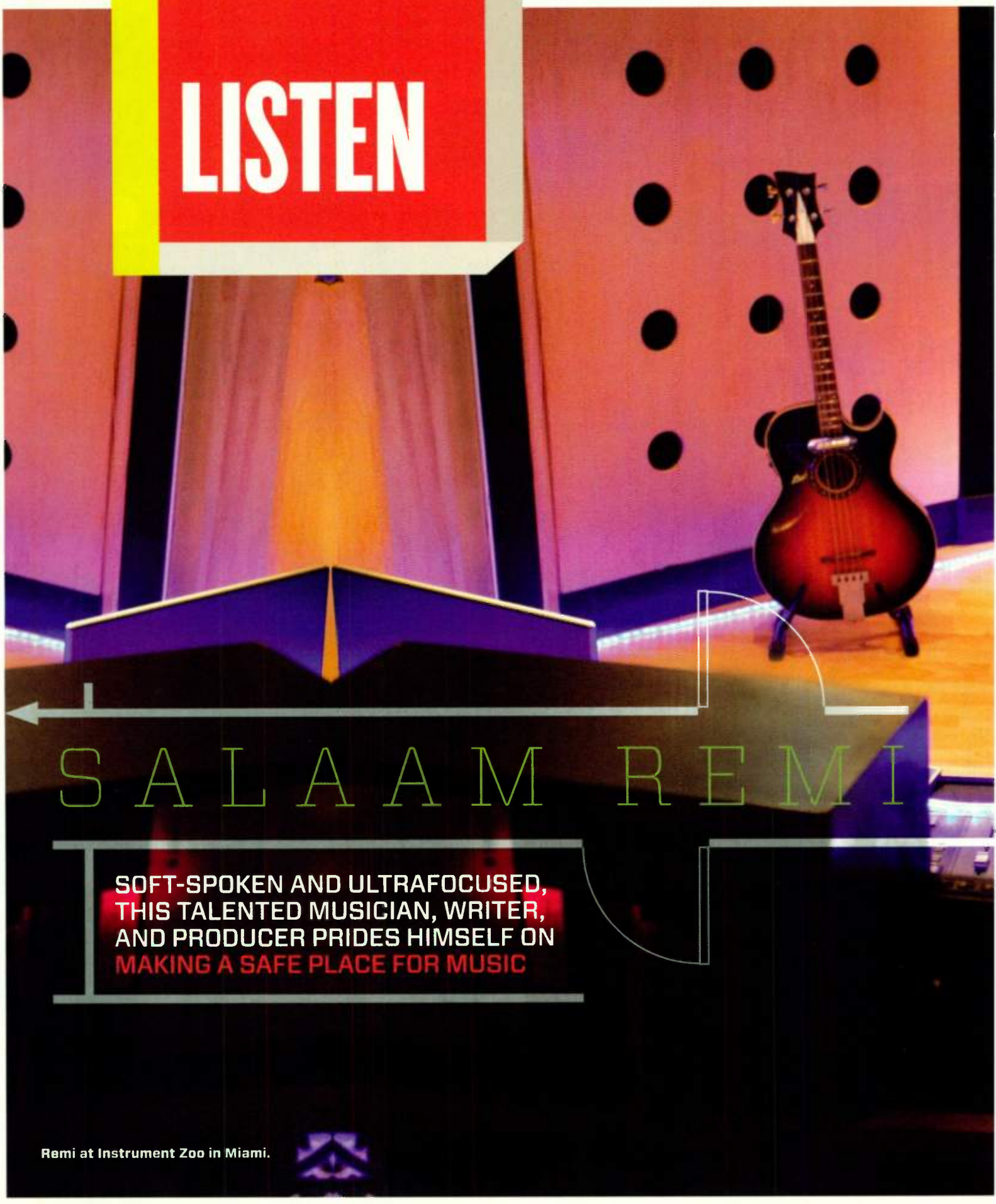

SALAAM REMI

SOFT-SPOKEN AND ULTRAFOCUSED, THIS TALENTED MUSICIAN, WRITER, AND PRODUCER PRIDES HIMSELF ON MAKING A SAFE PLACE FOR MUSIC

Remi at Instrument Zoo in Miami.

SALAAM REMI speaks softly and carefully about music making. There are no distractions, no digressions, and no agenda; he has no prepared self-promotional remarks. His approach to a simple conversation, it seems, is one window into the source of his remarkable success as a producer, musician, and composer. In all things, this superstar is thoughtful, focused, generous with his talent.

Remi received his first Producer of the Year Grammy nomination this year, for a varied collection of massive hits by Anthony Hamilton, Amy Winehouse, Alicia Keys, Nas, Miguel, Melanie Fiona, and Usher. And that one year's worth of projects opens another view into Remi's strength: He commands a broad range of musical languages that span several decades of popular music. From Winehouse's original blend of jazz, modern R&B, and '50s doo-wop to Alicia Keys' fusion of pop vocals with rock and hip-hop beats, Remi helps each artist stretch to find the right voice and the right sound.

It seems Remi was actually born to be a musician. His parents and his uncles all performed professionally, and some of his earliest childhood memories involve visiting

music shops and studios with his dad, session musician Van Gibbs. "My dad was involved with loads of records that people had no idea he was involved in, so I came up understanding that it wasn't about being up front in order to be successful," Remi said in an interview for Largeup.com last year. "My success isn't based on that. It's based on what's lasted this amount of time. I've lasted this long by doing what's right to me."

What were some of your early musical experiences?
My musical experiences definitely started early on. My parents and my uncles were musicians. That's how my dad met my mother; my uncle and my dad were playing in bands together. So from the womb all the way out, I had some sense of music. My first real experiences were playing drums. There's a picture of me: one year old with the afro and a bongo. That was like my first beat.

When I was a little older, like three years old, [Miles Davis Quintet drummer] Philly Joe Jones had a drum shop [in New York City] at 46th or 47th Street above Broadway, and I was there with my dad. I remember that [jazz drummer] Elvin Jones was there, and he was just watching me play. He was just watching my sense of rhythm. Then, he actually put together a drum kit for me, which I still have. There's a large floor tom that he made—a kick with a little pedal in there—a snare and a hi-hat that were low enough for me to be able to play. He made a miniature drum kit for me. That was one of my first memories.

When did you start getting into recording?
I remember going to the studio with my dad a lot when I was really young, but really it kicked in when I was about 10 or 11, and my dad got me a Yamaha Portasound, which I also still have and I used on a record last weekend.

So I had this little music box that I could scroll through it and actually program beats. I started with that in junior high. I was on the school bus, listening to the thing and actually programming.

And then one Christmas—I think 1984—my dad got me a Roland 707 drum machine, a Yamaha DX21 [synth] and a four-track—actual recording stuff. At that point, I guess I was a real electronic musician, and I started figuring out how everything worked.

You came up during the time when the recording industry was on the edge of moving into digital formats. So you had a background of learning real instruments first and then getting into programing and electronic music. How important is it for people coming up now to know what you do about electronics and musicianship?
I think if you're able to manipulate both, that's good, but sometimes the greatest things come from people who don't know better. We love the greatest mistakes. I have rooms and rooms full of equipment now, but I can also simply work on my laptop and I've created many records that way. It's about always being able to take the experience where it needs to go. I'm always looking for new products, being a producer, but there's no wrong way or right way.

> "I'm just always up for the moment, whether it's an electric guitar or MIDI guitar—whatever you're into. I'll tune champagne glasses with different amounts in them and play that, and have fun. That's the biggest thing about recording at home: Enjoy the process."

I'm just always up for the moment, whether it's an electric guitar or MIDI guitar—whatever you're into. I'll tune champagne glasses with different amounts in them and play that, and have fun. That's the biggest thing about recording at home: Enjoy the process.

A lot of the singer/songwriter types we talk to say they're always writing. As a producer/composer, are you always creating new music, or is creating new music something you do more when a specific artist has asked you for a song?
I go through different periods of inspiration. Often, if I'm creating in my mind, I'll just drive or walk because I need absolute silence. People ask what tools I use, but I do most of my work in my head. There's rarely a point when I can't just sit down and come up with ten ideas out of my head in that moment.

Can you describe the way you took a song from idea to the final track? What about Alicia Keys' "Girl on Fire"?
For "Girl on Fire," I had been in Alicia's studio writing for a couple days, and she mentioned that [producer] Jeff Bhasker was there working downstairs—in the same studio, in another room.

I'd been playing this little motif on a guitar part in Logic and Alicia started singing to it, and Jeff was like, "I think a [Yamaha] CP70 might sound good playing those chords." So just at the beginning of the record, the sounds start on CP70. Then as we started getting into the song, toward the chorus, Alicia was like, "Now I want it to take off because, you know: 'This Girl's on Fire,'" so we started to get the chorus going where it was going, and that's when I thought of the Billy Squier "Big Beat" [drum sound]. I thought, since she wanted to go up and loud with the hook, let's put the "Big Beat" under there.

So now, we had the song, the sounds, we had the beat down. And then Ann Mincieli, Alicia's engineer, took that and put it through many different changes—plug-ins and amps and different stuff—to make it spread out like it was growing. To me, the song starts as a Beatles- or Carole King-type keyboard thing, and then we got the hip-hop drums in there with the "Big Beat." We had Alicia Keys singing "Girl on Fire," and we were looking out at the New York Skyline. Pretty much that day, we got the whole record.

You often work in your own studio, correct? What's your personal studio like?
My main studio is in my house in Miami. I have different areas in there with different types of things. I have a room with all my records and my MPC [Akai controller] and a couple keyboards, and Logic and Pro Tools. That room is really vibey, and it's called my Dub Room; it's just for that type of creation, if I'm going into hip-hop sampling mode. I have another room with a [Hammond] C3, Fender Rhodes, loads of keyboards, upright bass. Then I have—basically all over the house—every type of instrument. I have an upright piano, upright electric, baby grand piano, basses, guitars, Ampeg amps, Fender amps, different drum kits.

Whatever I'm trying to get across, we'll just get the instrument. In general, I don't have any one setup for composing or one way for recording. It's really just me figuring out

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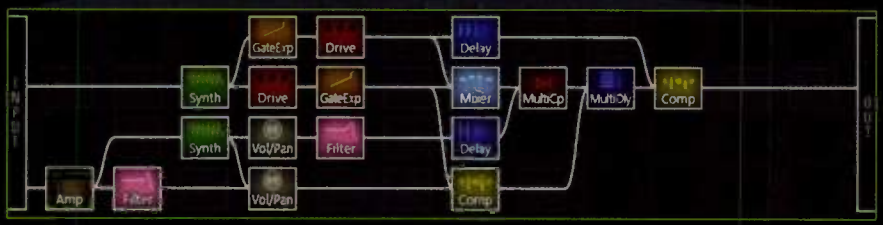

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what's needed today, because I could have a full orchestra on a song, or I could just be plucking knobs on my laptop. And I love switching between those extremes—either way.

Do you also live in this house?
It was my home, but then it got taken over. When we were recording Amy Winehouse on *Back to Black*, I had another studio, but Amy came here and saw the two story area in my living room, and said, "Can I sing right here?" So then I ended up putting a U47 [Neumann mic] in the living room and a laptop up, and we ended up recording all her vocals right out in the middle of the living room.

What was the process like when you were making records with Amy Winehouse? Did you sit in a room and write together?
Most of her songs were created with her writing on guitar or piano, and I would be sitting in a room with her. She'd have an idea and I'd be there with her, playing bass or electric guitar and I'd be nudging her along with her lyrics. Most of it started with raw

"Most of [Amy Winehouse's] songs were created with her writing on guitar or piano. . . . She'd have an idea and I'd be there with her, playing bass or electric guitar and I'd be nudging her along with her lyrics. Most of it started with raw sketches and one instrument, and then us coming up with different arrangements."

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sketches and one instrument, and then us coming up with different arrangements. I would arrange a song two or three ways, until I felt like I came up with one that I thought felt right and served the song and the album.

Most of the songs we did on *Back to Black* were actually done first in the way of *Frank*: more jazzy. But then she decided she wanted to almost doo-wop them, so we redid songs to fit more in that line.

What were those tracking sessions like?

I played most of the rhythm section on a lot of songs. I always played bass. I usually kept her playing guitar and then built around it. Some songs were like "Me and Mr. Jones," where I played bass, guitar, drums, piano. On other things, we brought more people in to play guitar, woodwinds, brass. And we'd cut four or five different versions of a song, like on "Some Unholy War" we also did a ballad version and we made that the B side to the single. You want a song to be strong enough to stand up in different arrangements.

> "Often, if I'm creating in my mind, I'll just drive or walk because I need absolute silence. People ask what tools I use, but I do most of my work in my head."

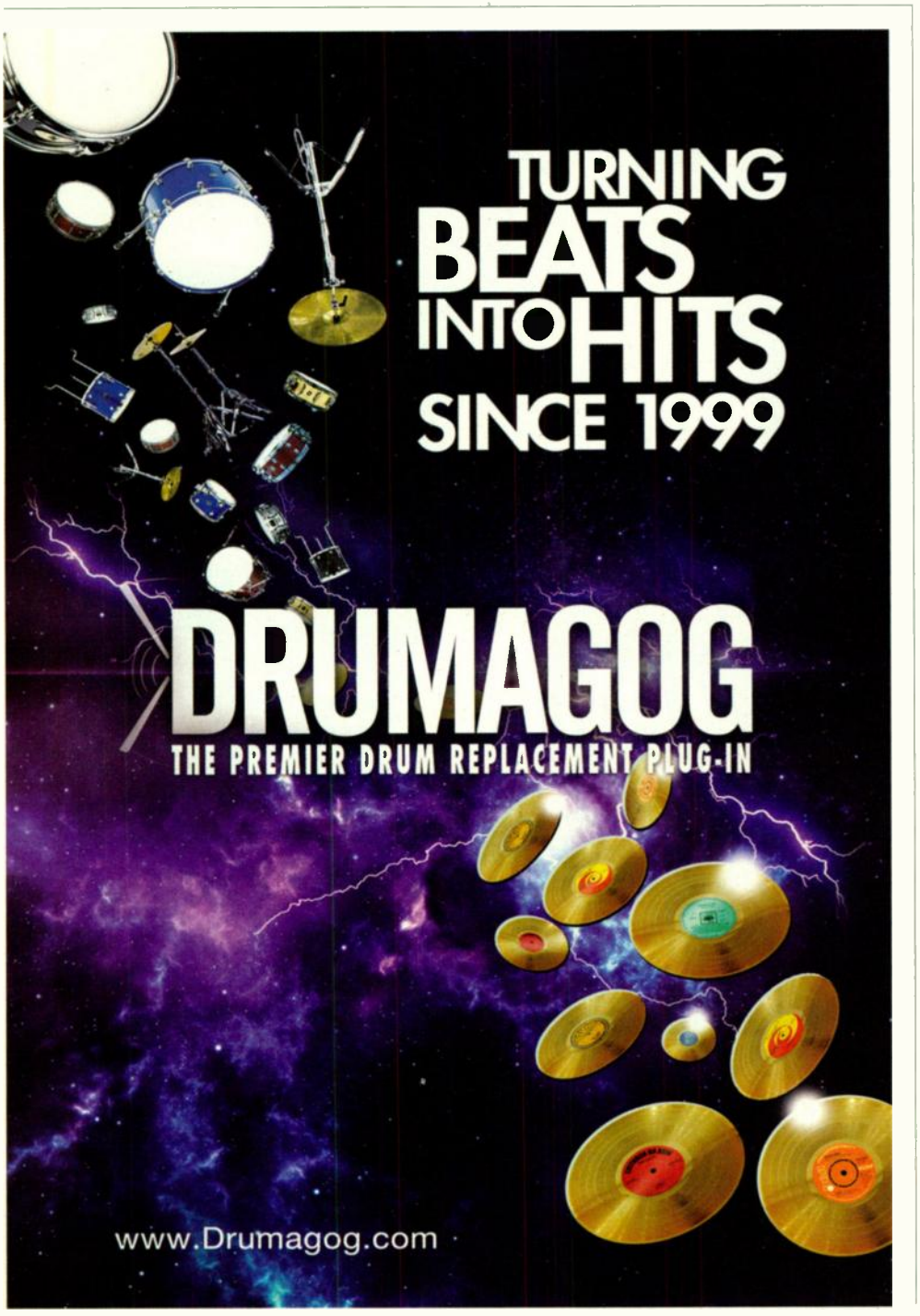
Amy was always really focused on what she knew she wanted to do musically, and she would always take the time to write. It was the one habit of hers that made sense. Usually she'd have three lines and then the fourth line was the punch line. It was about having those lyrics that really knocked you out, and then being able to sing them. She'd do three or four takes on a song, and she'd always sing from top to bottom. Her takes couldn't be edited together because they'd be phrased differently.

As a producer, do you have an MO about working with artists with substance abuse problems?

I normally don't. Even Amy, while we were doing the whole *Back to Black* album, she didn't really drink. I'm a sober daytime person. I'm not like some nocturnal music people who are up in the studio all night and may be a little inebriated themselves. I am sober first thing in the morning all the way through the work day. Then you finish, go home, go to the beach—have some fun. That's my MO, and that's what I reflect, regardless.

I'm a sanctuary. I'm a garden. I'm a person who you can feel comfortable to let your guard down. Who I am in music is who I am in life. I'm not a person who's trying to make any type of problem. I'm insightful and I'm paying attention, but I'm not nitpicking. I think my personality allows me to make a really safe place for the music. ■

Barbara Schultz is a contributing editor at Electronic Musician *and* Mix.



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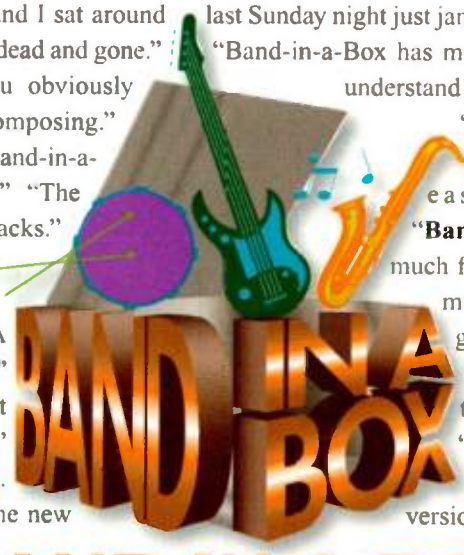
Can a music program create professional, real-sounding arrangements and solos for your songs from only a chord progression?

"Are you sure it is legal to have this much fun?" "I'm looking for those **perfect band mates** and I just discovered they live in a box." "The soloist sounds amazingly like **real people** improvising!" "The program **sounds so much better** with **RealTracks**... A thousand times, Thank You!" "Band-in-a-Box is some of the **most fun** you can have with a computer." "I can load my **MP3** in and see the chords play on the screen." "My buddy and I sat around last Sunday night just jammin' away..." "As an old BE-BOPPER circa late 40s, most of the cats I played with are dead and gone." "Band-in-a-Box has made me a **much better player.**" "Can't say enough good about your products. You obviously understand our needs exactly." "BB makes it so easy to quickly build an arrangement for composing." "Thanks to BB I can still swing with the help of the **fabulous cats** living inside BB." "Band-in-a-Box was the solution to an old fustration: being a musician. Now I am a musician." "The ease and way to make **high-quality** background tracks." "**RealTracks** is by far the easiest accompaniment software." "This is so "**Band-in-a-Box** is the **holy grail** for buy happiness." "This is absolutely a much fun." "I'm speechless." "Who says you can't whole other level of sophistication." "A must-have item." "**Band-in-a-Box** is now on a coming!" "It blows my mind." giant leap forward""Keep the **RealTracks** realism." "I was absolutely **blown away** at "**RealTracks** add a whole new dimension of **in-a-Box** program is **extraordinary!**" the quality of **Band-in-a-Box**." "Your **Band-**"A fantastic leap forward." "Un. "Your product is **AWESOME! THANKS**" generate **RealTracks** and renders with the new Believable" "I can't believe how fast I can and I'll be singing the praises of version." "They've **outdone themselves** this time, "This new musical concept you **Band-in-a-Box** every chance I get." evolutionary. If it were a living have created is nothing short of species." "I'm awestruck." "Just creature, it would be a whole new as **"Brilliant!"** "All of the new when you think **Band-in-a-Box** is must say, the pedal steel is perhaps instruments are just **smashing.**""I history of this brilliant the greatest accomplishment in the **fantastic** and provide **great** program.""The RealTracks are a great gift to jazz musicians, **inspiration** for creativity." "This is **This changes everything.**" "It's educators, and singers." "Oh, wow. useful piece of software." "I tried **stunning.**" "Thanks for a superbly detection is **amazingly accurate!**" with many audio files and the chord item." "Wow, I'm learning tunes "This is absolutely a must-have Wizard." "It finds the exact chords fast with help of your Audio Chord **"I am blown away!** The jazz/swing to the song... perfectly." "Wow!" **"Awesome."** "Is this cool or what?" RealTracks stuff is amazing." "I'm in seventh heaven" "You won't regret it (and if you do, there's the **30 day money back guarantee**)." "I never thought I'd see the day this was possible." "I know it's been said before, but you guys are **incredible**." "This is **gonna set the world on fire!**" "I'm so stoked about how good everything sounds I can hardly stand it." "This is just killer." "Amazing, simply amazing." "[RealDrums] is really awesome sounding. Good work!" "Many kudos all around." "You never cease to **amaze** me. You got it." **"Wow and Double Wow."** "The **RealTracks** and **RealDrums** sound awesome." "Long live PG Music!" "Mind bending." "I am frankly amazed at most of the styles." "I am absolutely ***Kudos*** to you and your team!" "First time I did a song with **Band-in-a-Box**, **I couldn't believe it!**" "I use it in the classroom and also in creating music in my studio. It is a fantastic piece of music software to own. I am greatly impressed." "I am very impressed with your fantasic ***improvisational*** program." "It's a great educational tool." **"Awesome software at a fantastic price!"**



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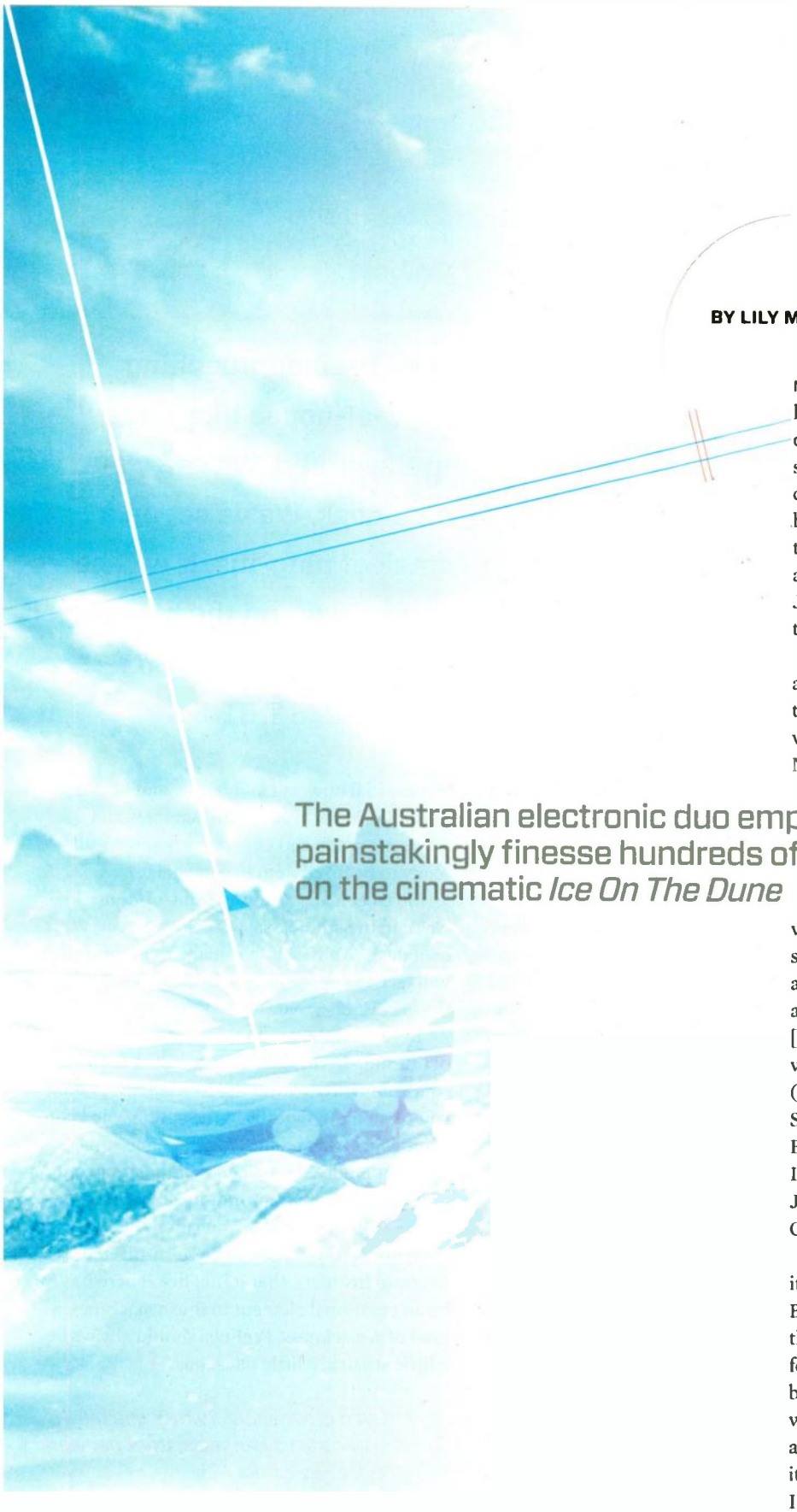
EMPIRE OF THE SUN



Empire of the Sun—Luke Steele (left) and Nick Littlemore.

BY LILY MOAYERI

NICK LITTLEMORE is looking to get disciplined. The stay-at-home half of Australian duo Empire of the Sun doesn't have a lot of restrictions—at least not professionally. In the five years since the release of Empire of the Sun's internally acclaimed debut, *Walking On A Dream*, Littlemore has sent his other half, Luke Steele, on the road. During this time he composed the music for Cirque Du Soleil's *Zarkana*, released another album with his project Pnau, made a remix album with Elton John, worked with Groove Armada and Mika, and moved to New York City.

When it came time to create the next Empire of the Sun album, *Ice On The Dune*, Littlemore and Steele, as well as their studio counterparts Peter Mayes and Donnie Sloan, were not restricted by location. Wherever they were living—New York, Los Angeles, Australia, New Zealand—that's

The Australian electronic duo employs a team of superproducers to painstakingly finesse hundreds of sonic layers into a shimmery finish on the cinematic *Ice On The Dune*

where they worked. Littlemore's and Steele's multiple home studios offer leisure and comfort, but legendary spots such as Westlake Studios, Studio City Sound, and Avatar Studios, according to Steele, offer "Heritage. You feel the presence [of the musicians who recorded there]." Additionally, they were able to work with hit-making producers like John Hill (Santigold, Rihanna), Benny Blanco (Katy Perry, Britney Spears), and Roy Hendrickson (Paul McCartney, Mary J. Blige), who brought their discipline to Empire of the Sun. In addition, Serban Ghenea (Taylor Swift, Black Eyed Peas), Jason Cox (Gorillaz), and Mark "Spike" Stent (Beyoncé, Lady Gaga) each had a hand in mixing the album.

"John Hill was cutting up the chorus chords so quickly, it brushed past anything we had done," says Steele. "Benny Blanco brought in 50 hi-hats, layered them up, and would go through and carve out the frequencies that weren't needed, for one ultimate frequency. Hi-hats don't have that sound. You bring in the frequency you need to get that sound. [Blanco] would bring 40 keyboards, sample the notes, build them up, and massage it down to make one sound. Then he would do it to the second note in the chord and third note in the chord. It was endless, completely fine-tuning. No frequency was left untouched. It's like watching an amazing movie."

"Anyone who is great at what they do, it's in the way they think," says Littlemore. "Roy Hendrickson put some of our songs onto tape on a 24-track machine. We pitched the tape

machine and then tracked it back as a way of pitch shifting. We've been doing that for years, but we're working with better engineers than ever before, so the result is a lot stronger."

Ice On The Dune is an upgraded *Walking On A Dream*. It retains its predecessor's cinematic, sci-fi/fantasy personality, only wackier, with more sheen, more soundtrack readiness, and more elements of '80s synth-pop. ("Don't say '80s," Littlemore says. "It's very timelessly 1975, the peak of human existence. We are ahead of our time for 1975. We're behind the times for the '80s. That's a much better way of putting it.") With or without expert producers and mixers, *Ice On The Dune* has songs with relentless hooks, danceable rhythms, chiseled melodies, plus the mysterious lyricism that production alone cannot create. Check the effervescent "DNA," the bouncing "Concert Pitch," the '70s-police-action sound of "Old Flavours," or the sugary disco of "Celebrate."

"We went back and listened to the first record about a month before finishing this one," says Steele. "There were a lot of things that we wanted to keep, particularly that '70s analog feel, and make the songs better. [Littlemore] and I like the texture a bit grimy. Our technique is less shiny [without the producers]."

The Omnichord plays a large role in Steele's writing process, as does Ableton Live 9 with the Novation LaunchPad controller, along with piano and guitar. The two also spent around 10 grand on vinyl, buying anything from African music to house to spoken word to sound effects records, from which they create a palette that dictates the sonic identity of the songs. Using only equipment from the '70s and '80s further dictates the character of *Ice On The Dune*. Pieces such as Publison DHM89, Yamaha CS-80 keyboard, E-mu SP-1200 are heavily used, but no soft synths or emulators, even though modern recording techniques are employed.

Steele's vocals follow the same signal path no matter where they are being recorded: Telefunken ELA M 251E microphone into a Chandler Limited LTD-I EQ/preamp then a Distressor. Vocals then get filtered and pitch-shifted through various Eventide effects.

"We treat the vocals so seriously," says Steele. "There are songs I have re-sung 20 or 30 times. When we record, we loop the chords. Sometimes the vocal take will go for 30 or 40 minutes just looping. [Mayes] has the fun job of going through and picking the takes. We're really big on how words are phrased and pockets of the vocals."

Vocals aren't the only tracks that go through such painstaking processing. Tracks are put through various effects, out through speakers, amplifiers, and FM tuners, and returned to a radio in another room then recorded back.

The 30- to 40-year old gear that made the music the two grew up listening to is what gives *Ice On The Dune* its quality, what Steele calls "warm glow," and what Littlemore calls "milky-ness." At Studio City Sound they had access to a Moog modular that had been looked after by Bob Moog himself. Granted they had to turn it on two days before using it and tune it every day, but it worked. In this manner of thinking, they avoided artificial reverb and insisted on spring reverb, such as the Fostex rack spring that features prominently on *Walking On A Dream*.

"People discount the spring reverb in the studio setting," says Littlemore. "You go into most large studios these days, they'll have a modern reverb and a plate like an EMT 140. The spring reverb is such an incredible sound. It still has a physical reaction the way a plate does. You feel that every time. It is noticeably different and it is articulate in its noise."

The two try to not rely on any gear so much that it completely dictates their sound, however, and this approach applies to the songwriting as well. For example, they don't allow chords to lead the song, but try and keep the focus on the melody. The attempt is to keep things as open and simplistic as possible, although it may not sound like it on *Ice On The Dune*. "We tried desperately to remove most of the sounds, make it as minimal as we could. That's easier said than done, but we tried," says Littlemore.

This removal of sounds is one of the things Littlemore learned while working on *Zarkana* for Cirque du Soleil. "You're dealing with people a lot older than you who are rejecting most of what you're doing, which is an incredible discipline," he says. "It toughened me up. It put me in a space where I could rewrite anything at any time. As precious as ideas were, and still are, I'm happily able to move on quickly to something else and not get hung up and not get teary. I got on with the job because there's a circus waiting for me to nail it."

No matter how much the sound might be pared back on *Ice On The Dune*, it is still a very produced record, one that is a challenge to reproduce live, especially when the equipment

"I've been approaching front-of-house like we're in the studio. We carry our own desk. We've set up a stack of plug-ins. It will be Crystallizer on the hi-hats, flanger on the vocals."
—LUKE STEELE

it is created on is old and fragile and not very portable. To get around this, samples and stems are made and effects are bounced, all ready to be fused with live musicians.

"I've been approaching front-of-house like we're in the studio," says Steele. "We carry our own desk. We've set up a stack of plug-ins. It will be Crystallizer on the hi-hats, flanger on the vocals. It's great."

Even with the produced nature of Empire of the Sun, there is an avid attempt at keeping some humanity within the technology. "When you're doing 18 months in the studio, you keep coming back in and hearing the same song," says Littlemore. "You keep building it up and doing more production, adding another layer, adding another section. You run so far away from instinct; you have to be re-inspired. It has to retain instincts, that initial fire. There has to be an emotional element to those machines, a kind of seasickness. Feelings should always be a little seasick, a little nauseous." ■

Lily Moayeri is a freelance writer and teacher librarian living in Los Angeles; track her work at www.pictures-of-lily.com.

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Guitar Center

iOS RECORDING

Record Anywhere, Anytime

From your couch to the studio to the stage, tablet technology makes high-quality music production incredibly portable and immensely powerful. Whether you're sketching out a new tune, crafting a beat, scoring a music cue or working on a tricky mix, our selection of flexible iOS-ready hardware and accessories helps you make music wherever you happen to be. From studio-quality mics that plug directly into your tablet to versatile audio and MIDI interfaces, you can take full advantage of the very best audio software iOS has to offer. Plus, a variety of stands, clips, and other accessories mean you can set up your tablet to work comfortably anywhere, so you're always ready to capture the moment when inspiration strikes, or when you just need to check that score or lyric sheet. Wherever you are, however you make music, iOS makes it easier—and Guitar Center is here to help you make the most of it.

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Designed for versatility, the Blue Bluebird large-diaphragm condenser is a perfect complement to your iOS recording setup. Equally at home recording vocals or instruments from delicate acoustic sound to loud guitar amps, Bluebird's fully discrete Class-A circuit and custom transformers make it an indispensable sonic tool.
(22200)

APOGEE DUET 2 iOS-READY INTERFACE

Apogee's Duet audio/MIDI interface, with single-knob simplicity and their renowned converters, rapidly became a standard for mobile laptop recording. The latest generation of Duet adds iOS compatibility for even more record-anywhere versatility, with a feature set that stands apart from other iOS audio interfaces.
LIMITED AVAILABILITY
(DUET IOS MAC)

APOGEE MiC

Once again, Apogee's dedication to impeccable audio quality shines through with MiC, a compact condenser mic with a direct connection to your iOS device. Once you hear the results, it will become an integral part of your mobile recording toolkit.
(MIC)

APOGEE JAM AUDIO INTERFACE

One of the best-sounding ways to get guitar or bass into your iOS device, Jam uses Apogee's PureDIGITAL connection and renowned converters for the pristine sound quality you've come to expect. Best of all, it's completely plug-and-play with any CoreAudio compatible application.
(JAM)

IK iKLIP STUDIO iPAD STAND

With the wide variety of available music software, both for creation and performance, an iPad has become an essential part of every musician's toolkit. IK's iKlip gives you a safe, secure way to mount your iPad to a mic stand, so it's there when and where you need it.
(IPIKLIPSTUDIOIN)

APPLE LIGHTNING TO 30-PIN ADAPTER

Apple's new Lightning connector is small, fast, and power efficient, but may leave many of your older iPad and iPhone accessories disconnected. This Lightning to 30-pin Adapter gives your accessories a new lease on life, enabling you to use them with the latest generation of iOS devices.
(MD823ZM/A)

SENNHEISER HD280 PRO HEADPHONES

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(HD280)

For more info on iOS-based recording, go to: guitarcenter.com/iOS or scan the QR code

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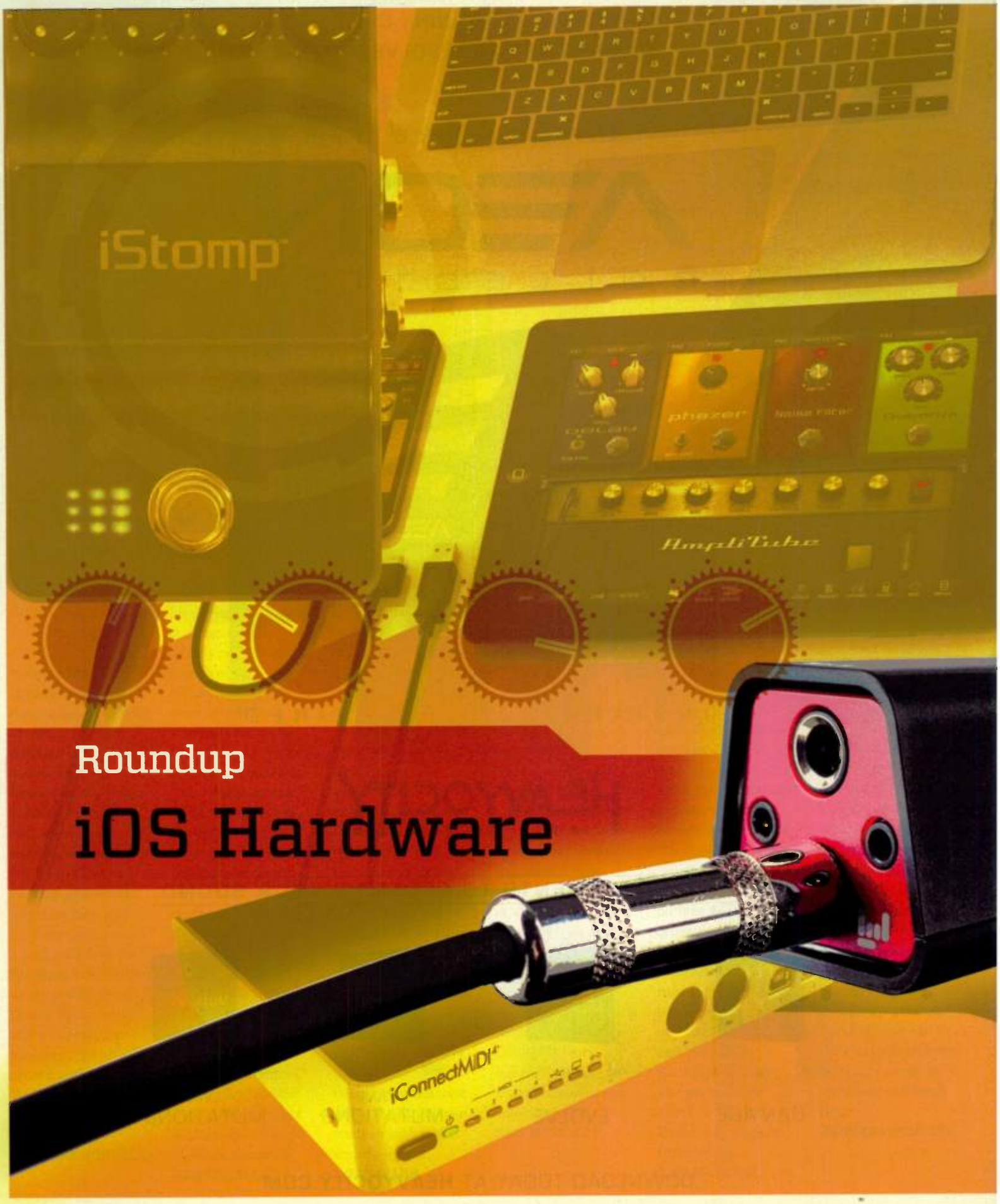


Roundup

iOS Hardware

LUST

Take advantage of the power of your iOS device with these audio and MIDI products

BY GINO ROBAIR

THE CREATIVE potential of Apple's iOS devices—the iPhone, iPad, and iPod touch—has grown quickly as manufacturers rush to support this exciting and extremely portable platform. With so many instrument and virtual-studio apps available, the demand has increased for interfaces with high-quality audio and plug-and-play connectivity, so manufacturers are stepping up to the plate. Here, we bring you some of the newest and most exciting products on the market.

One concern for many iOS device owners was the 2012 introduction of Lightning, the 8-pin connector on the iPad with Retina Display, the iPhone 5, and the fifth-generation iPod touch that superseded the 30-pin connector. At first, owners of these new products had to install Apple's 8-to-30-pin adapter cable to use their audio interfaces and MIDI controllers, though the extra cable length was a bit inconvenient. However, a number of manufacturers now include cables featuring both connectors. That lets users of new and legacy iOS products equally experience the joys of the latest interface technology .

IK iRig HD.

IK Multimedia iRig HD

IKMULTIMEDIA.COM
$99 STREET

No other music-related company has embraced the iOS revolution like IK Multimedia. After establishing themselves in a lead role with the original iRig guitar interface and mobile version of AmpliTube, the company has covered nearly every product category: There are the iLoud and iLoud Mini monitors, iRig Stomp, iRig Mic, iRig Pre (a mic interface with an XLR input), iRig Mic Cast, iRig Keys, iRig MIDI, the iRig BlueBoard pedalboard controller, the iLine cable kit, a variety of stand adapters such as iKlip 2, and my personal favorite, the 2013 Editors' Choice Award-winning iRig Mix. Whew!

Their latest release is the iRig HD, an instrument interface that is 1" wide, less than 4" long, weighs a mere 1.25 ounces (without the cables attached), and works with iOS devices *and* Mac products via USB. Consequently, the first difference you'll notice between the original iRig and the HD version is the connectivity. The original iRig connects to your iOS device's headphone jack, and you connect your guitar or bass and your stereo headphones to the iRig itself.

The iRig HD, on the other hand, connects to your iDevice or computer digitally using special cables that are included. From there, you plug your instrument into the other end of the iRig HD and connect your earbuds to the headphone jack on your iPhone, iPod touch, iPad, or Apple computer. The digital connection provides higher quality sound than running everything through the iOS device's headphone jack. The 24-bit A/D converter can work at 44.1 and 48kHz, depending on the app you're using. Best of all, the high-impedance 1/4" input is designed to handle guitar, bass, and line-level signals, and an input gain control is located on the side of the interface.

As you would expect, iRig HD is powered by your iOS device or computer. A multicolor LED tells you if the unit is connected properly and roughly indicates the input signal strength. The unit comes with three 2.25' cables that match any Apple device you have—USB, 30-pin, and Lightning. I already have copies of AmpliTube 3 on my laptop and iPhone, so all I had to do was connect either one to the iRig HD, plug my Strat into the other end of the interface, and fire up the app. The sound quality of the app through this interface is excellent.

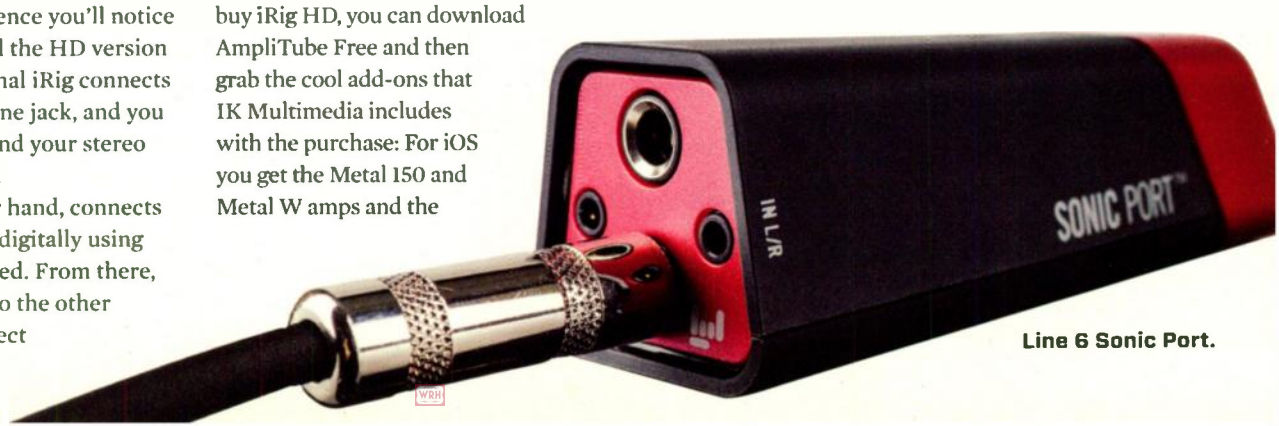
If you don't already have the app, once you buy iRig HD, you can download AmpliTube Free and then grab the cool add-ons that IK Multimedia includes with the purchase: For iOS you get the Metal 150 and Metal W amps and the Wharmonator and X-Flanger stompboxes, while for Mac OS you get the AmpliTube Metal collection and AmpliTube Custom Shop software. From there, you're ready to rock!

Line 6 Sonic Port

LINE6.COM
$99 STREET

Line 6 is also a major player in the world of iOS, with their Mobile In interface, MIDI Mobilizer and MIDI Mobilizer II, and Mobile Keys controllers. However, the hot new item in their catalog is the Sonic Port, a 24-bit, 48kHz audio interface designed to work with all of the recent iOS products. The package includes two 41" cables, one with a 30-pin connector and the other with a Lightning plug.

Sonic Port is the length of an iPhone, weighs only 3.6 ounces, and sits solidly on the desktop. As you would expect, it has a 1/4" input for high-impedance, instrument-level signals, such as an electric guitar, but it also



Line 6 Sonic Port.

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includes a 3.5mm stereo minijack input for line-level signals. You can only use one of the inputs at a time, so if you have instruments plugged into both, the interface will default to the line input.

In addition to the 3.5mm stereo headphone output, Sonic Port has a stereo 1/4" TRS line-level output, compatible with a mixer or powered studio monitors as well as guitar and bass amps. You can use both outputs, simultaneously.

Line 6 recommends you download the free Mobile POD app, particularly because it can be used to install firmware updates when they become available. However, the Sonic Port works with any app that uses Core Audio.

Best of all, the Sonic Port is completely plug-and-play. Simply attach it to your mobile device, plug in your instrument, launch your favorite app, and you're in business. I was very impressed with the sound quality of the Sonic Port and could easily hear the differences between the various amp-and-effects app I use on my iPhone. And I appreciated having dedicated outputs for my studio monitors.

Squier by Fender USB Stratocaster

FENDER.COM
$199 STREET

My favorite iOS-compatible device of the year is the Squier USB Stratocaster, an Indonesian-made electric guitar that includes a built-in 24-bit, bi-directional audio interface. In addition to the standard 1/4" analog output that plugs into any guitar amp, you can simultaneously route a digitized signal to and from an iDevice or laptop (Mac or Windows) via USB. When you make the digital connection for the first time, it simply works, without hassle: I like that.

The USB Strat has an onboard headphone jack, which not only allows you to hear the virtual amp and effects you're playing through, but the sound files or streaming audio from sources such as iTunes and YouTube, as well. This makes the USB Strat perfect for practicing and learning songs.

The built-in interface is USB Class Compliant, supporting Mac OS X 10.7, iOS, and Windows 7. It works with any application that supports Core Audio (Mac) or ASIO drivers. The guitar comes with two cables, each with a USB Mini-B connector on one end, which attaches to the instrument. One of the cables has a 30-pin connector for iOS devices on the other end, while the second cable terminates in a USB Type-A connector that you can plug into your computer. If your iDevice requires Lightning, you'll need to use a 30-pin-to-8-pin adapter.

Remarkably, any latency you get when playing the USB Strat is nearly imperceptible, despite the fact that your guitar sound is being digitized onboard, sent to your mobile device, run through an app, returned to the guitar along with whatever song you're playing with, and then run through a D/A converter so you can hear it in your headphones. Once you start playing, however, you'll quickly forget the round trip your guitar signal is making, because the sound quality is exceptional and the response from the instrument is outstanding considering the price point.

The USB Strat is fairly lightweight thanks to its basswood body, and it has single-coil pickups in the neck and middle position and a humbucker at the bridge, so it sounds like a Fender Strat no matter what you plug it into. Hands down, it is the most convenient guitar for recording or woodshedding that you'll ever use.

DigiTech iStomp

DIGITECH.COM
$229 MSRP, $149 STREET

While iOS devices provide a lot of bang for the buck when it comes to sounds, many guitarists are not inclined to bring their iPhone or iPad onstage where it can get brutalized. To address this, DigiTech introduced the iPB-10 iPad dock, an interface and pedalboard that can hold your patches on its own if you're squeamish about taking your iPad onstage. However, it's a pedalboard, and you may already have one.

So, DigiTech designed the iStomp, a 3"x5" stompbox that can host a single effect that is downloaded into the pedal from your iOS device. Once the effect is loaded, you can disconnect iStomp and use it independently of your iDevice.

Effects are managed within the free Stomp Shop app, which comes with two effects—Redline Overdrive, which is preloaded into the pedal, and Total Recall Delay. Additional effects are available for $0.99 to $9.99, and there are more than two dozen to choose from, including delays, reverb, chorus, boost, distortion, and so on. Of particular note are the Vintage Tape Delay and the 240 Plate reverb—both sound amazing and you won't want to let them leave your pedalboard.

Loading an effect into iStomp from Stomp Shop takes only 30 seconds. If you want to try an effect before you buy, you can download a time-limited (five-minute) demo version into the pedal. If the demo runs out before

Squier by Fender USB Stratocaster.

DigiTech iStomp.

you've made your decision, simply download it again. To hear how an effect sounds without downloading into iStomp, hit the Play button in Stomp Shop to hear a pre-recorded track with or without the effect.

The software algorithms used for the effects come from DigiTech's hardware products, but they've been tweaked to fully utilize the processing resources available in the iStomp's DSP chip. As a result, the audio quality is astounding overall, and they sound and behave as if you were playing them from within a dedicated hardware pedal.

The iStomp has four knobs, a single footswitch, and a pair of unbalanced 1/4" inputs and outputs, so you can use mono or stereo effects. The knobs are configured for the effect you load into the pedal, and reusable adhesive labels are provided so you can see at a glance how they're assigned. The pedal is powered by a 9V adapter, and it comes with the DigiTech Smart Cable, which has an 8-pin connector on one end that plugs into the pedal, and a 30-pin connector on the other for your iDevice.

Yamaha i-UX1 and iMX-1

YAMAHA.COM

$79 STREET AND $69 STREET

Yamaha offers a pair of MIDI interfaces for iOS devices that you can use to play instruments

on the mobile platform using standard MIDI controllers. The i-MX1 is an adapter with a 30-pin connector. MIDI In and Out ports are available by plugging in the included cables, which terminate in 5-pin MIDI DIN plugs.

The i-UX1 is a USB-over-MIDI cable that is just under 5' long. It has a 30-pin connector on one end and a standard USB B connector on the other. The cable is designed to connect your iDevice to the USB-to-Host port on an instrument such as an electronic drum kit, synth, or portable keyboard. Yamaha also offers Faders & XY Pad ($3.99), a Core MIDI app that you can use to control hardware MIDI instruments from your iPad.

Both interfaces are Core MIDI compliant, so they work with any MIDI controller, but owners of Yamaha products have additional options. For example, you can use the company's MusicSoft Manager app (free) to backup and restore data from your Yamaha instrument to your Apple device. Or use your iDevice to change file names and edit sounds on instruments such as the Motif XF or MOX. The app also lets you use iTunes File Sharing and Dropbox to transfer style and MIDI data

Yamaha i-UX1.

between an instrument, a computer, and remote storage.

iConnectivity iConnectMIDI4+

ICONNECTIVITY.COM
$249 MSRP, $199 STREET

For full integration of MIDI between your iOS device and your Mac- or Windows-based DAW, the iConnectMIDI4+ has you covered. As the name suggests, the unit has four sets of MIDI I/O ports, with a built-in MIDI manager for routing (MIDI Thru, merge, and filtering) and using snapshot presets. This Class Compliant device has three USB Host ports that allow you to hook up three computers, with the added ability to pass audio through the device as well as MIDI. An additional USB port is included so you can connect a USB controller directly or use a powered hub. The device can even charge your iOS devices.

On top of that, the iConnectMIDI4+ has a built-in Ethernet port providing network connectivity using a wireless router or Ethernet hub. As a result, any MIDI device connected to the iConnectMIDI4+ can be controlled over the network. Nonetheless, the unit is compact enough that two can be rackmounted side-by-side.

iConnectivity iConnectMIDI4+.

The company also offers iConnectMIDI2+ ($89 MSRP, $69 street), which has many of the same features as the bigger version but with two sets of MIDI I/O and two USB-to-Host ports, and iConnectMIDI1 ($79 MSRP, $59 street), a 1x1 MIDI interface with DIN connectors that is USB bus powered.

se·lec·tion [səˈlekSHən]

noun

1. the action or fact of carefully choosing someone or something as being the best or most suitable

2. a number of carefully chosen things

3. what you get with Vintage King

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Perfect replica of the famed Harrison 32 Console EQ

DAKING COMP 500
High-end, super easy to use VCA compressor / limiter

JDK V10
High-quality mic pre designed from the ground up by API

Mackie DL806

MACKIE.COM
$999 MSRP

Hot on the heels of their popular 16-channel digital live-sound mixer, Mackie has introduced the DL806, an 8-channel version that can be controlled wirelessly from your iPad, iPhone, or iPod touch. The hardware component, which acts as an iPad dock, has 24-bit Cirrus Logic converters and eight Onyx mic preamps, four of which have combo connectors that accept 1/4" inputs. Individual gain controls span the front panel, with a 1/4" stereo headphone jack and level control in the upper right.

The rear panel has a global phantom-power switch, four aux sends, main output jacks on XLR connectors, and an Ethernet port for use with a WiFi router, which you'll need for wireless operation. To control the device wirelessly, download one of the free apps from the iTunes app store—My Fader Control for the iPhone and iPod touch, or Master Fader Control for the iPad.

Once they are installed, mix levels and plug-in parameters for dynamics, EQ, delay, and reverb effects can be handled by your iOS device from a distance. In fact, you can have up to 10 iOS devices connected wirelessly. Use this power wisely! ■

Gino Robair is Technical Editor for Electronic Musician.

Mackie DL806.

dbx by HARMAN

Dial in YOUR mix exactly as YOU want it, in real time.

PMC 16

Personal Monitor Controller

The PMC16 Personal Monitor Controller is a digital remote control providing a cost effective and powerful personal monitoring solution. Whether using headphones, in-ear monitors, powered monitors, or traditional wedge monitors, the PMC16 allows performing musicians to control their own personalized stage monitor mix with ease. Using BLU link, and a Setup Wizard for ease of configuration, full 16 channel mixer level metering, and an intuitive yet powerful user interface, PMC16 gives you the power to dial in YOUR mix exactly as YOU want it, in real time.

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  - Faster and easier set-up
- Lexicon© Courtesy Reverb
  - 3 types of Global Reverb
- BLU link Compatibility
  - Works with ANY BLU link install

Heavyocity *Aeon Collection*

Sound design with a wider range

BY MARTY CUTLER

SUMMARY

STRENGTHS: A wide and dynamic range of unique, useful sounds with a tremendous degree of customization.

LIMITATIONS: The *Melodic* module's arpeggiator could benefit from a swing feature.

$299 MSRP (*Aeon Melodic*), $199 MSRP (*Aeon Rhythmic*), $399 MSRP (*Aeon Collection*)
heavyocity.com

WITH SO many sound libraries marketed as being "cinematic," the word has become meaningless. Most collections rely inordinately on loops of clipped, bit-reduced, and reverb-drenched percussion. Larger-than-life, "bone-crushing" sounds have their place, but as in most music—and cinema—range is everything.

The giant-size sonics are present in Heavyocity's latest product, *Aeon Collection*, but they are tempered with a generous distribution of more intimate, natural-scale sound, as well, with plenty of tools to rough up and process things as needed.

Aeon Collection comprises two independent but related modules for Native Instruments' Kontakt 5 and Kontakt Player: *Aeon Rhythmic* and *Aeon Melodic*, which are also available individually.

Aeon Rhythmic focuses on sliced-loop playback and sequencing, whereas *Aeon Melodic* offers sampled synths, basses, hits, and other sounds. Still, there's plenty of overlap: The *Melodic* module can be as rhythmically active as the rhythmic component. Both components can take advantage of *Aeon*'s powerful arpeggiator—a step sequencer with detailed editing for each step, including pitch, velocity, duration, rhythmic value, and Trigger FX.

Trigger FX, which rely on keys outside of each patch's playing range, enact discrete DSP on the patches, such as bit reduction, distortion, filtering, and other sound-altering techniques. You can radically change the character of the patch from subtle to aggressive and up-front with a simple turn of the Punish knob, which adds or removes compression and saturation. The Twist control tweaks the patch's tone color. Use an LFO to animate timbral changes by setting a rate and a starting point for the animation.

Aeon Rhythmic's unique loop-tune feature offers two octaves of loop playback in the bottom octaves of the patch. The result evokes the Korg Wavestation's wave-sequencing capabilities, which are adapted to different keys and tempos. (Find audio clips demonstrating these examples at emusician.com; here, listen to Audio Clip 1.) The Trigger FX section lets you sequence modulation effects, providing tremendous animation control over each loop slice or arpeggiator event. Still, there's a bit of room for improvement: Because triplet values can be overkill when you just want a bit of swing, a swing control knob would be a welcome addition to *Aeon*'s arpeggiator, particularly in the *Melodic* module.

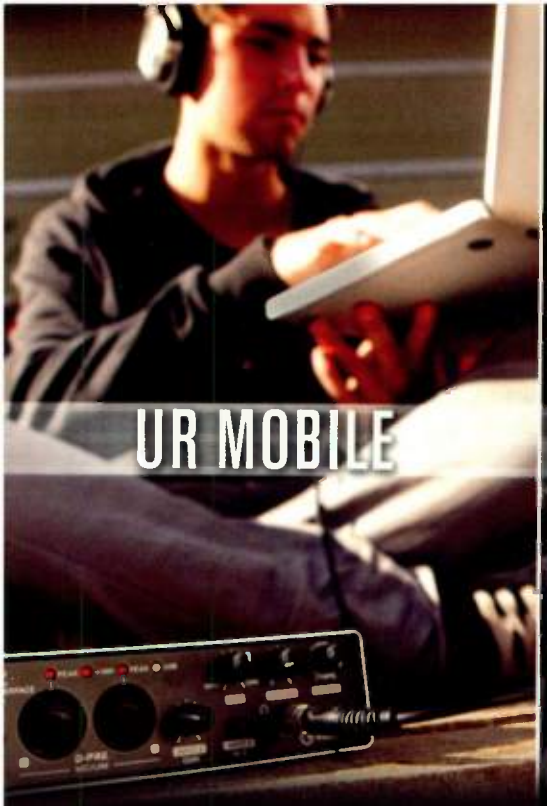
Aeon Rhythmic hosts folders of loop menus and individual loops. Use the menus to audition loops or create construction kits of massive, polyrhythmic clusters, or load the individual patches that you like. Choose between the more aggressive, rough-hewn stuff like Bit-Reducing Bass, or more delicate sonorities such as Plunk (Audio Clip 2).

The menu structure of the *Melodic* module is somewhat different, holding Hits and folders titled Hybrid, Organic, and Synth, with arpeggiated variants of the latter two. Hybrid folds synth-generated tones into electric and acoustic timbres, but not in any way that you might expect. Heavenly Crotale Swells sounds like an Oberheim Expander pad with a chiming, rhythmic high-end (Audio Clip 3). Other favorites include the sweet, rolling percussion of Tank Drum Steel M-Arp (Audio Clip 4). Timpani M-Arp is atmospheric and haunting, especially with triggered effects (Audio Clip 5). Apart from presets, you have plenty of tools to put your own stamp on your sounds.

Aeon Melodic and *Aeon Rhythmic* blend together beautifully and they are a great addition to the Heavyocity line. *Aeon Collection* may be all you need for unusual, cinematic sounds. ■

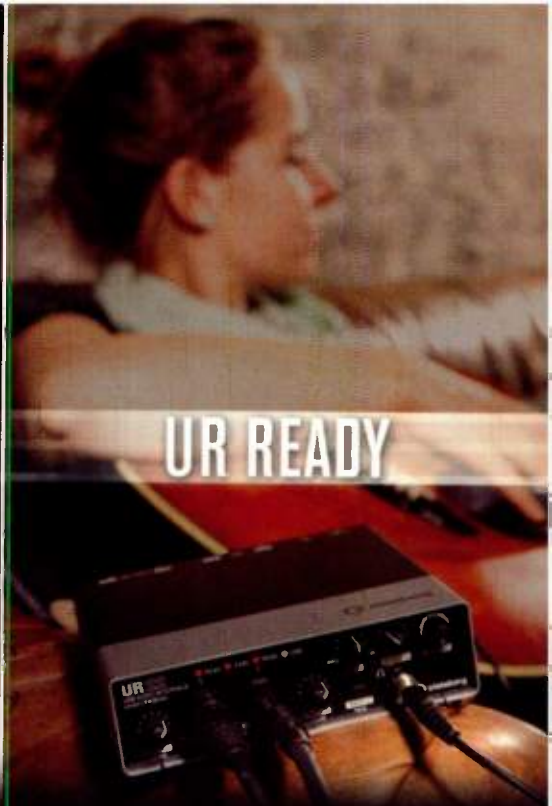
Marty Cutler is a sound designer and a bluegrass banjo player of note (or many notes).

More Online
Listen to audio clips of examples here.
Emusician.com/august2013



UR MOBILE

UR CREATIVE



UR READY

With a rugged steel construction and outstanding sound quality, the UR22 is the newest addition to Steinberg's UR series USB audio interfaces. With two Class A D-PRE mic preamps supporting 24-bit/192 kHz and zero-latency hardware monitoring, you've never sounded better in your studio, or on the go. Unleash your creativity with the included Cubase AI software, or any other compatible software. Offering unrivaled value, you simply can't go wrong with the new UR22 USB audio interface.

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Fig. 1. With lots of knobs and buttons, Roland's flagship looper is ideal for anyone whose hands are free during a musical performance—particularly DJs, singers, and sound mixers.

Boss RC-505

Roland's newest Loop Station goes where none have gone before

BY GEARY YELTON

SUMMARY

STRENGTHS: Five syncable, independent stereo tracks. Unlimited overdubs. Loads of recording time. Versatile effects processing.

LIMITATIONS: May require taking your hands off your instrument to operate. 16-bit, 44.1kHz audio format only. A bit pricey.

$799 MSRP, $599 street
rolandus.com

IF YOU'VE seen any solo guitarists onstage lately, chances are good they were using audio looping hardware to create rhythmic, repetitive patterns of sound. And chances are even better their hardware was made by Roland, who's been launching successive models of the Boss Loop Station since 2001.

Although most loopers sit on the floor like stompboxes, the RC-505 is a tabletop unit. It offers unlimited overdubs and can store as many as 99 5-track stereo recordings (called Phrases) of any length, as long as they total no more than three hours. It also has built-in effects and plenty of connections to the outside world. The RC-505's tactile user interface delivers just about everything you'd want for hands-on operation.

Hybrid Hardware All the electronics are housed in a unit weighing 3 lbs. and made entirely of plastic. When I set the RC-505 up, I immediately noticed how firmly its feet gripped my desktop, making it unusually resistant to sliding. Six knobs, five faders, and 32 buttons of various shapes and sizes populate the surface (see Figure 1). Rather than the footswitches you'd find on most loopers, five large, circular buttons—one for each of the five tracks—trigger loop recording and playback. In addition, each track has Stop and Edit buttons and a level fader. Controls for the effects are in the two upper corners, and buttons for functions that aren't track-specific surround the backlit display, a 16-character-by-2-line LCD that provides just enough information to see what's going on at any angle.

The RC-505 has four analog audio inputs (see Figure 2): two unbalanced 1/4" instrument jacks, a balanced XLR microphone jack, and an aux minijack for connecting an MP3 player. You can enable phantom power for the mic input from within a system menu. Alongside the inputs are two unbalanced 1/4" audio outputs and a 1/4" headphone jack. Digital connections include MIDI I/O and a USB port for sending audio and MIDI data to and from a computer. A 9V wall-wart supplies power. A single 1/4" jack on the rear panel accommodates an expression pedal, a single footswitch, or a dual footswitch. You can use two separate footswitches if you have a splitter cable with a TRS plug at one end and two TS plugs at the other.

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Fig. 2. The RC-505's back panel supplies almost as many I/O connections as Roland's previous flagship looper, the RC-300.

Thrown for a Loop Pressing a track's Record/Play button the first time initiates recording. Pressing it a second time loops the track and initiates overdubbing. A third press disarms recording and begins playback, which repeats until you stop it. The button is backlit to indicate its status—red for record, yellow for overdub, and green for playback—and a ring of LEDs encircling the button indicates the loop's position in time. If you want to record on adjacent tracks, you can easily switch from one track to another without missing a beat. During playback, you can choose to not loop a track by enabling one-shot mode.

If you make a mistake, press the Undo/Redo button, select the track, and press the Undo/Redo button again to delete your last overdub. Repeat the procedure if you want to redo it. Better yet, a footswitch can accomplish undo or redo in one click.

As with any looper, capturing the first beat and ending the loop at exactly the right moment can be tricky. If you set the tempo manually using either a knob or tap tempo, you can enable a one-measure count-in to improve your accuracy. It's also possible to quantize your button presses to the selected tempo. If you don't set it manually, the RC-505 will calculate the tempo based on the loop length and the time signature. Normally, all subsequent tracks you record will play in sync with the first track, but you can disable synchronization if you prefer.

An onboard rhythm track can accompany your loops and help improve your recording accuracy. The RC-505 furnishes hundreds of preset rhythms—ranging from metronomic to complex grooves in a variety of musical styles—in 17 different time signatures, including 7/4, 11/8, and the ever-popular 15/8.

You can apply effects to your loops as you're recording them (Input Effects) or during playback (Track Effects). Most of the 25 effects types can process either inputs or tracks, but four types—Beat Repeat, Beat Shift, Beat Scatter, and Vinyl Flick—are exclusively for track playback. The variety of effects is impressive, ranging from everyday distortion, chorus, and reverb to an envelope follower that makes your voice sound like a synthesizer and a vocoder that uses one track to modulate another.

With a USB connection, importing 16-bit, 44.1kHz WAV files from your computer is a simple drag-and-drop operation, and so is backing up audio files from the RC-505. USB also lets you integrate the Loop Station into your computer-based studio setup. Once I'd installed Roland's downloadable USB driver, I got my DAW to recognize the RC-505 as both a MIDI device and an audio interface. I could start and stop recording and playback, sync tempos, select phrases using MIDI Program Change messages, and control parameters with Control Change messages. The documentation doesn't yet explain which MIDI CCs control which parameters, though, so I had to discover them myself.

Remote Control When you connect a footswitch or expression pedal, you can assign its function independently for each phrase. By default, an expression pedal controls input level, one footswitch controls undo and redo, and a second footswitch turns the rhythm track on and off—all very useful functions. You could also turn recording and playback on and off, switch effects types, control playback levels, and much more.

I wish the RC-505 had more footswitch jacks, because so many functions would be better served by footswitches when your hands are busy playing an instrument. Sure, you could place it on the floor and tap the five track buttons with your foot, but the buttons appear less rugged than real footswitches. Likewise, an expression pedal is helpful because the level faders feel too flimsy to operate with your feet. At the very least, I'd hope for a second jack for external foot controllers, which would keep me from having to squat down on the floor so often—something you see looping guitarists do all the time.

Looperific Because most other loopers are designed for guitarists, the RC-505 is bound to have widespread appeal. If you've ever spent any time looping, you can only imagine the fun of recording on five separate tracks, switching between them, and playing them in tandem. Unlimited overdubbing lets you quickly build up dense textures and complex musical arrangements. And with so much recording time, you have room to stretch out and experiment.

I think of the Loop Station as a cross between a studio processor and musical instrument. Like with a processor, you must get to know it thoroughly to maximize its capabilities, and like an instrument, you must spend some time practicing and developing your technique to get the most musical results. It isn't cheap, but the RC-505 is certainly one of the deepest loopers around; this review only scratches the surface in explaining all the features available.

Even if you've never used a looper before, you'll quickly catch on, thanks to the RC-505's intuitive controls. Nonetheless, you may need time to get to know its deeper functions. And if you're a veteran loopmeister, you'll find lots to appreciate about the RC-505. ■

Former Electronic Musician *senior editor Geary Yelton wants to help make Asheville, NC, the first place you think of when you think of electronic music.*

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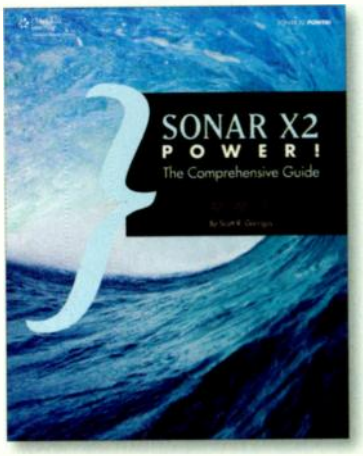


4

2

1
Steinberg
Nuendo 6
Audio post-production DAW
$2,000
HIGHLIGHTS Upgraded channel strip and high-quality plug-ins • redesigned mixer • remote control editor • sound-matching capabilities with Voxengo CurveEQ • collection of new metering tools and a dedicated loudness lane • built-in ADR workflows • multi-channel surround mixing and upmixing • 1.5GB of pro-level, 24-bit sound effects
TARGET MARKET Individuals and studios specializing in sound for picture
ANALYSIS With its comprehensive collection of audio tools, Nuendo 6 is designed to meet the demands of a modern post-production facility.
steinberg.net

2
ZapZorn
Elements
Sample library and effects
$139
HIGHLIGHTS Uses Kontakt 5 or Kontakt 5 Player • includes nearly 2GB of 24-bit, 96kHz samples of wood, plastic, metal, and glass objects at multiple velocity levels • use up to 9 effects at a time • 64-step arpeggiator • convolution reverb with 24 inpulse-response samples
TARGET MARKET Sound designers and composers
ANALYSIS An inexpensive sample-playback module loaded with a ton of sounds and an array of effects that will provide hours of satisfying sonic exploration.
zapzorn.com

3
IK Multimedia
iRig HD
Guitar interface for iDevices
$99.99
HIGHLIGHTS Electric guitar and bass interface for iPad, iPhone, iPod touch, and Apple Mac computers • 24-bit, 44.1 and 48kHz resolution • 1/4" high-impedance input • includes detachable iDevice (30-pin and Lightning) and USB cables • preamp gain control • includes AmpliTube Free, AmpliTube Custom Shop, and AmpliTube Metal apps
TARGET MARKET Guitarists and bassists with Apple mobile devices and computers
ANALYSIS A lightweight, portable device that makes it easy to run your instrument (including keyboards) through IK Multimedia's excellent virtual amps and effects.
ikmultimedia.com

4
Cengage
Sonar X2 Power!
Comprehensive power-user guide
$49.99
HIGHLIGHTS Step-by-step instructions on using Sonar X2 • Takes the reader from setup to advanced techniques • authored by Scott R. Garrigus, an expert with the program • covers beat making, automation, and grid functionality • extensive info about ProChannel features, including the Console Emulator Module
TARGET MARKET Beginners through pros who want to learn this Windows-based DAW.
ANALYSIS Sonar X2 is a pro-level app that offers a ton of features. This book will show you how to use them to their fullest advantage.
cengageptr.com

All prices are MSRP except as noted

5
Zynaptiq
Unchirp/Unfilter
Audio-file correction plug-ins
$399 each

HIGHLIGHTS Realtime plug-ins for diminishing unwanted audio artifacts • Unchirp removes frequency-domain problems that result from low-bit-rate, lossy audio encoding • Unfilter reduces comb filtering and chorus effects from poorly recorded files • VST, RTAS, AAX, and AudioUnits support for Mac and Windows platforms

TARGET MARKET Musicians, engineers, and broadcast sound professionals

ANALYSIS Up till now, there has been little you can do to fix poorly encoded or recorded sound files. Zynaptiq provides the tools at an affordable price.

zynaptiq.com

6
Ableton
Push
Controller for Live 9
$698

HIGHLIGHTS 64 pressure- and velocity-sensitive, multi-colored pads made by Akai Professional • touch-sensitive encoders and touch strip • play melodies and chords based on shapes visible from the lighted pads • diatonic and chromatic modes available • comes with a version of Ableton Live 9 • USB bus powered

TARGET MARKET Anyone who wants to compose and perform using Live 9

ANALYSIS It's hard to resist a purpose-built, affordable controller that includes one of the most popular DAWs for sequencing and recording.

ableton.com

7
Metasonix
S-2000
Tube-based analog synthesizer
$1,500

HIGHLIGHTS Two tube-based oscillator/resonant filters • tube-based VCA • 400mm ribbon controller with 3-octave pitch range • 3 types of envelope generator • CV/gate I/O • external audio input with bandpass filter • heavy-duty aluminum enclosure • 3U rack mountable • includes external 12VDC adapter • handmade in California

TARGET MARKET Adventurous musicians who want to explore subtle to extreme timbres

ANALYSIS Provides purely analog sounds that have attitude and the expressive capabilities of an old-school ribbon controller.

metasonix.com

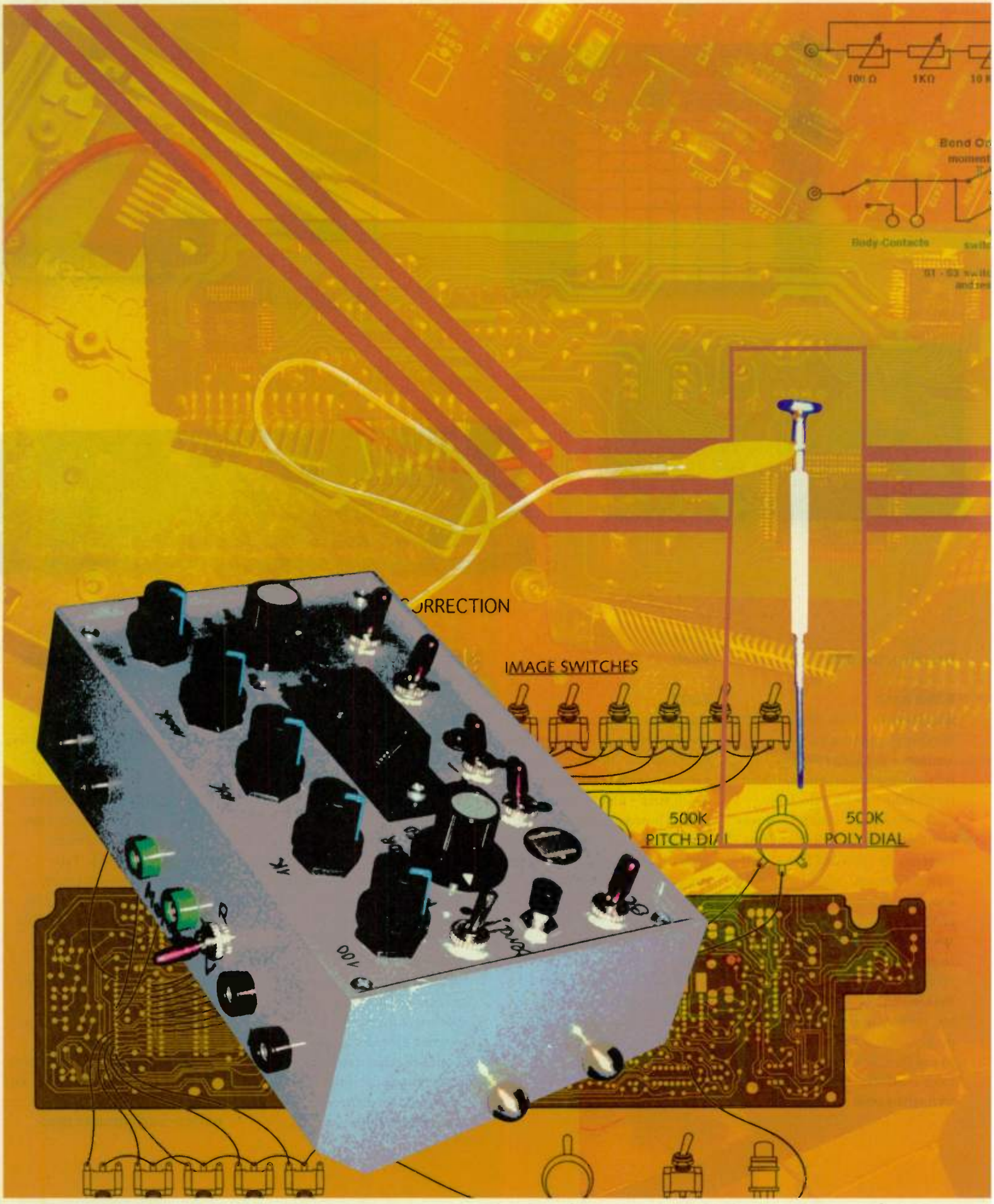
8
Native Instruments
Abbey Road '50s Drummer
Virtual instrument/ sample library
$99

HIGHLIGHTS A collection of '50s-era Gretsch and Ludwig drums recorded at Abbey Road studios • Uses Kontakt 5 and Kontakt 5 Player • mixer channels offer direct, overhead, and room mics • effects include Tape Saturator, Transient Master, and Convolution Reverb • 800 grooves with variations and fills

TARGET MARKET Songwriters, composers, and producers looking for a high-quality drum library

ANALYSIS A collection of vintage kits that focuses on early rockabilly, rock 'n' roll, R&B, and country sounds, but is perfect for modern productions.

native-instruments.com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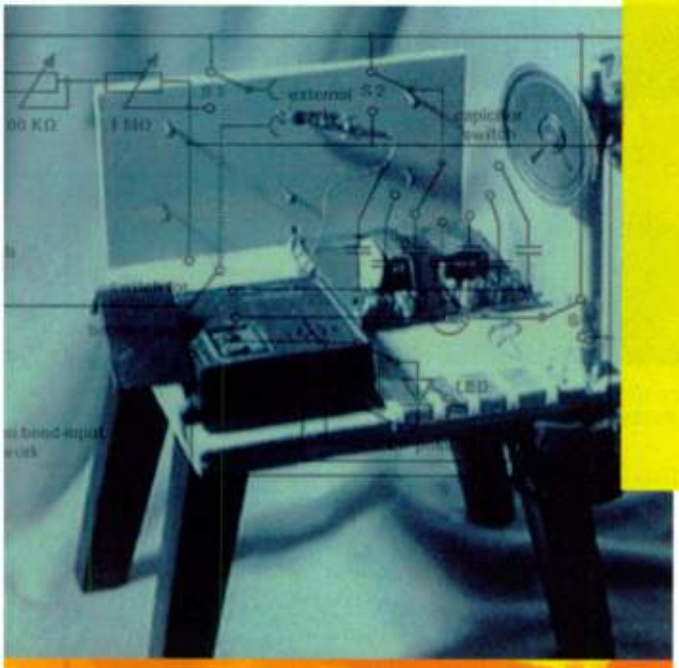

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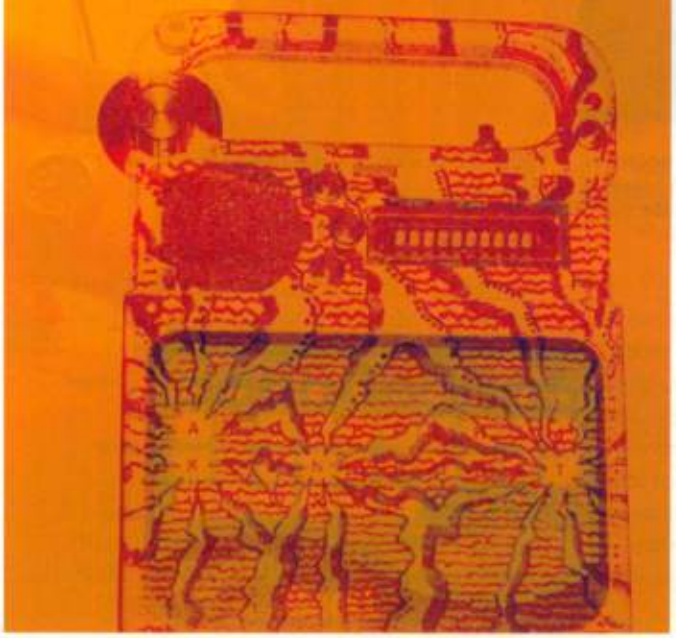
The Art of Circuit Bending

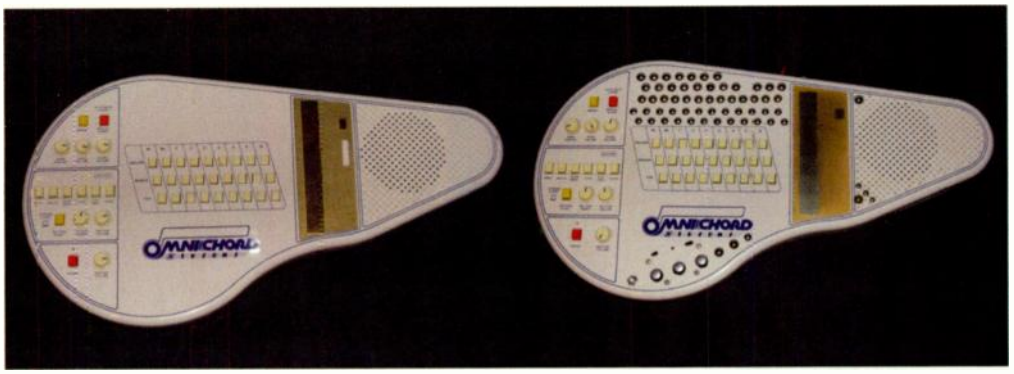
Creative, curious minds have always modified and enhanced audio hardware. But in the past two decades, a growing number of people have hacked into circuits to transform simple instruments into alien beasts of sound.

BY JOKER NIES



THE TERM "circuit bending" was coined in 1992 when Reed Ghazala began publishing a series of articles in the *Experimental Musical Instruments Quarterly Journal* titled "Circuit Bending and Living Instruments." Ghazala, who had developed his skills since the late '60s, defined a couple of simple rules that would enable anyone to safely explore and modify audio electronics, without a degree in engineering.

About ten years later, the first annual meeting of circuit benders, the Bent Fest, was organized by Mike Rosenthal and Daniel Greenfeld at The Tank. For three days in the spring of 2004, this lively mid-Manhattan art space brimmed with energy from the many creative forces that came from all around the world to attend the gathering. The festival included workshops, tutorials, concerts, and showcases centered on the creative use of electronics that were not necessarily designed for the purpose of making music. This event, which lasted until 2011, became the annual meeting of the creative crop of circuit benders and hardware hackers, and was the birthplace of some highly individual electronics and sounds.



The Suzuki Omnichord OM-27 before and after bending. The three silver knobs on the lower side belong to a Ibanez DE-7 delay.

What is Circuit Bending? So, what is it, really? How do circuits bend? The short answer: Circuit bending describes the modification of an electronic sound device beyond the designer's intentions, adding new sonic and functional possibilities. Although there are many approaches to circuit bending, in general, the bending target will preserve its normal operation and is just enhanced with switches, potentiometers, body contacts, or jacks that will invoke the functions or sounds.

Circuit benders usually are not electronics experts, nor do they have service and repair manuals for the devices to be bent. The process of bending is one of trial and error, carefully avoiding risking the health of both the bender and his target. Anyone, even children (supervised by a seasoned bender) can do it, as long as some basic rules are followed.

The Rules The first and most important rule is written in stone: **Never bend anything that plugs into the wall. Circuit bending is strictly battery powered.** The safety risk is just too great. The maximum voltage considered safe at all times is around 6-9 volts. That range complies with most common bending targets, which are powered by 4 or 6 batteries. (I make one exception with the Suzuki Omnichord, a wonderful bending target, which needs to be powered with 12 volts.)

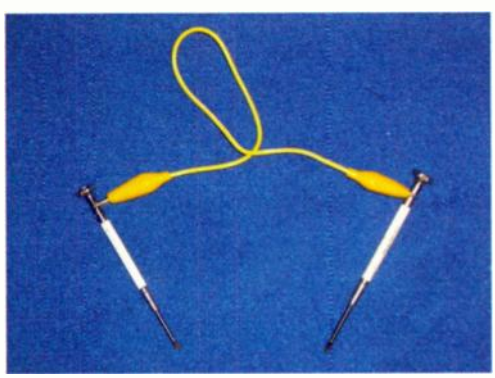
Do not bend anything that you are dearly attached to, or is difficult to replace. Usually circuit bending does not harm your targets, but sometimes things go wrong and you might accidentally fry the piece you are working on. It has happened to me, so be warned.

Avoid contacts that produce loud pops and clicks, drop the volume substantially, dim displays and LEDs, or heat up components significantly. Also, avoid the area where the power supply connects, especially these pins on ICs.

Be aware of electrolytic capacitors. Elcos that are bigger than a cigarette tip can store a significant amount of energy that will melt the tip of a screwdriver when shorted. Never reverse polarity or they will explode. Wear safety goggles!

The Tools You will need some basic tools to perform circuit bending:

- A set of screwdrivers (especially Phillips nos. 0, 1, and 2, and some flat-blade models) to take apart the device. You'll also need a set of watchmaker's screwdrivers for tiny screws and to access individual points on a circuit board.
- A wire cutter, pliers, and a tweezer, to handle screws, wires, and other parts.
- A couple of cables with alligator clips.
- A low-wattage soldering iron and some solder.
- A drill and a reamer, to make holes for the additional parts, such as switches and pots.
- Assorted parts: resistors, cables, capacitors, diodes, LEDs, body contacts, etc.
- Gaffer tape. This will help you to keep internal batteries in place.
- Helpful but not mandatory: a multimeter to measure voltages and resistance.



The basic bending tool for shorting selected pins on a circuit board. With two alligator-clip cables, you can place components such as a pot or a capacitor between pins.

The Targets Okay, we know the rules, we've got the tools. What can be bent? Pretty much anything that is battery operated! I have seen people bring some awkward things to bending workshops, such as a broken wireless phone from the dumpster that was transformed into a funny dial-tone feedback-screamer. But usually, small keyboards, speech-generators, stomp boxes, drum machines, or cheap Chinese sound toys are common bending targets.

As a rule of thumb, consider the 1980s as the Golden Age of bending targets—especially the small keyboards manufactured during that time by Yamaha, Casio, and lesser-known brands that had very limited "intelligence" onboard. These instruments are easily "convinced" to interpret their operational information, hard-coded in ROM chips, in unusual ways by shorting some pins with other pins. This will lead to surprising and often beautiful results, soundwise, but also with the arpeggiator and play-along features of the instruments. Most modern synths with more sophisticated CPUs will crash when you attempt to bend them.

The Yamaha PSS-270 and Casio MT-240, as well as speech toys like the Texas Instruments Speak & Spell family, are among the great bending targets, with simple logic and big, easily accessible ROM chips.

The first and most important rule is written in stone: Never bend anything that plugs into the wall.

Some devices that offer very limited "standard" capabilities can be greatly enhanced with body contacts. The Suzuki Omnichord or the rare KoolShades Electronic Drum Set, or even a Boss Metal-Zone MT-2 distortion stomp box, are great body-contact targets.

It is a good idea to search the internet for information on the specific device that you intend to bend. Apart from instructions and how-tos (which in my opinion spoil the fun of exploring the possibilities), you will often find at least some feedback on the "bendability"

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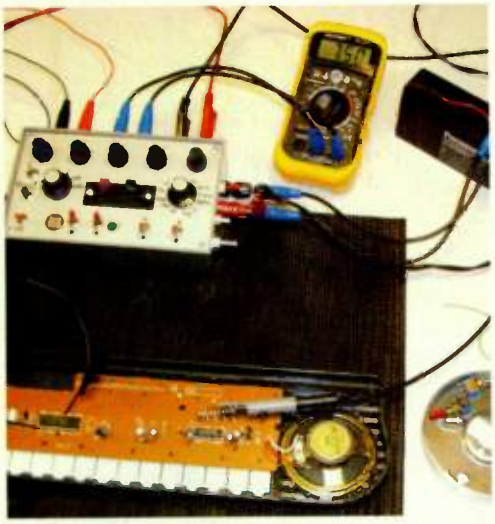


Bending setup with bending box and external power supply from a 12-volt battery through an LM 317 power regulator. The target is a Casio SA-20.

Bending Targets

These are bending targets with proven bending potential. This list is in no way complete; you will find more models on the internet.

Keyboards
Casio SK-1, SK-5, SA-2, MT-240, SA-10, MA-101, Concert Mate 380 (SA-2)
Yamaha PSS-270, PSS-470, PSS-780, PSS-790
Fujitone 3A
Neurosmith Musini

Speech Toys
Texas Instruments Speak & Spell, Speak & Math, Speak & Read, Touch & Tell
V-Tech First Talking Computer, My Little Talking Computer, V-Tech Apple
Hasbro Furby

Guitar FX
Distortion/body contacts: Boss MT2 Metal-Zone, Boss DS-1, Pro Co Rat
Delays: Ibanez DE-7, DL-10

Drum Machines
Korg DDD-1, DDD-5
Roland TR-505, TR-626
Yamaha DD-6, RX-11

of your device. Occasionally, and this is an exception to the rule, some instruments turn out to be duds, where no bending attempt shows any usable result.

Bending Techniques Bending targets are highly individual in terms of modifications that will work on them. There are three basic modifications that you can apply individually or combine on most of your bends:

Short two (or more) points on a circuit board. Depending on the instrument and your preferences, this is performed with a switch, a momentary switch, or through a patch bay.

Connect two points through a resistor of a specific value, or a potentiometer (which is an adjustable resistor). A special resistor that changes its resistance as a function of the brightness of light (LDR) is a nice mod that will allow you to use gestures instead of touching a knob to control your bend. For best results, combine that with a pot to control the range of effect. Often, resistors of any kind are combined with a switch to turn the bend on and off.

Use a body contact to make you part of the circuitry. By connecting one or more points you will act as a variable resistor, like a pot. The more surface you touch, the lower the resistance will be. Some connections will work only with a fairly high resistance. The resistance of your skin falls between 100 kilohm and 1 megohm depending on its moisture. If you have very dry hands, the resistance will be in the megohm range; if you have sweaty hands, it can be below 100 kilohm.

Other electronic parts, especially capacitors but also diodes, coils, etc., might have the right effect on your bending target. It is up to you to try them out.

As a rule of thumb, consider the 1980s as the Golden Age of bending targets.

Preparations Before we start exploring our target, we should prepare our setup. In most cases, you can open the target by loosening the screws on the back side of the instrument and carefully taking off the back. The wires connecting the battery compartment are often quite short and can rip off easily, so take your time.

Now we should see some sort of circuit board, mostly showing the soldering side. Take a photo of the soldering side (and also of the component side, if easily accessible), and print out a couple of sheets. (I prefer bright, black-and-white prints.) This will be your "notepad" to mark the hot points on the circuit board and take notes about their behavior with other points.

It is always a good idea to write down the labels of the chips and Google them. For most chips, you will find data sheets that will explain their function and show the pin-out. That way, you will know the pins where the power supply connects, and avoid them.

It is tempting to just solder up whatever you have found, while exploring the circuitry. But the photo method will reward you with valuable info for later reference and encourage you to plan the best layout and bending technique *before* you start drilling holes.

Speaking of soldering: If you have never used a soldering iron, it is not a good idea to start soldering right on your bending target. Find an abandoned circuit board (such as a PCI-slot graphic card) to practice on; there are many great soldering tutorials out there on the web; see the "Helpful Links" sidebar for more information. After you have successfully soldered some cables to neighboring contacts on a chip, without shorting them or just "glueing" the joint (by not heating it up enough), you are ready to work on your bending target.

Let's Get Started! For this example, we will bend one of the most rewarding and iconic bending targets, the Casio SK-1 sampler. After batteries are fixed in place, we will start our exploration by checking the circuit board for chip-pin patterns.

On the left side of the circuit board, three vertical double-rows of pins indicate the three ROM chips; this is where we start (see Figure 1 on page 61). Now we need our alligator clips. Link two watchmaker screwdrivers with it, and presto—there is your "precision bent-point detector."

Now we come to the somewhat uncomfortable fact that we need make the instrument play while we are working on the back. Luckily, most synths have demo songs that start on one button press, so we can use those and concentrate on the backside. Choose one of the pins as a master pin and connect that to all other pins on the ROMs, while the demo song is playing. You will notice the sounds and playback patterns change significantly, but the connection of some points will crash the instrument; you will know this has happened when the sound freezes or mutes and nothing happens when you press

The Casio SK-1 is one of the best-documented and explored bending targets, with a wealth of great bends and a stable and reproducible behavior. This model is enhanced with a breakout box for the additional components.

any buttons or keys. This is not a big issue or reason to worry. Disconnect the battery or switch the SK-1 off and back on and start over. As this procedure is somewhat tiresome, I install an NC (normally closed) momentary switch into the positive battery wire (red), so I can reset the SK-1 with the push of a button, with easy access.

In addition to the ROMs, you'll often find some kind of tuning trimmer. You can connect that with a variable resistor, like a pot or an LDR, or a combination of both, to certain points on the circuit board. Sometimes these trimmers relate directly to the speed of the CPU; to keep it from crashing, a minimal resistance needs to be detected and inserted as a resistor at the wiper (middle) lug of the pot. Be sure to make this mod switchable, so you can always fall back to the original tuning.

Over time, you should have marked the good and bad spots on the ROMs; now, think about your preferred way of making

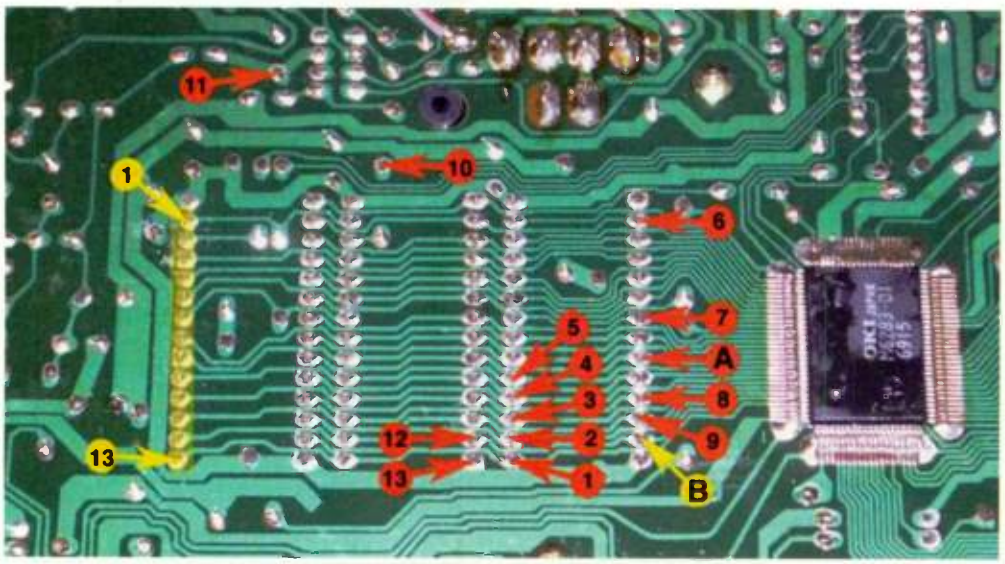
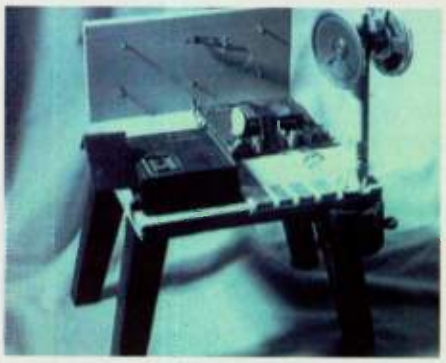


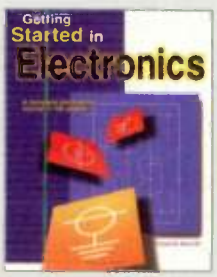
Fig. 1. The circuit board of the Casio SK-1. Here, three double rows of pins mark the ROMs. Note two main-points on the ROMs, and some of the interesting connections. There are many more possible connections, but not every single pin needs to be checked; some of the pins already connect to others on the same or another ROM.

Reference Books



A great guide to start out with, especially if you are totally inexperienced with electronics, is Reed Ghazala's *Circuit Bending: Build Your Own Alien Instruments*. The master shares his knowledge by explaining every step, electronic component, and technique carefully and in great detail, for many bending targets.

Another great read, with lots of examples from the world of hardware hacking, is *Handmade Electronic Music: The Art of Hardware Hacking* by Nicolas Collins. It also starts with detailed basics and unfolds into building your own little sound circuits. It also features an amazing collection of examples from sound artists, in pictures, description and sound (on DVD).



Finally, a wonderfully hand-lettered and drawn book to help you get familiar with electronics: Forrest Mims III's *Getting started in Electronics*. Its appealing drawings make this book an easy-to-understand read, covering all aspects and components of electronics.

them accessible. There are many ways to do so, especially with the Casio SK-1. (For inspiration, search the Internet for pictures of bent SK-1s.) The space inside is too tight for everything to be wired up in the instrument itself, especially if you don't want to sacrifice the speaker. So, if you like to max out the possibilities, it might be a good idea to use an external box and use a multicore cable to connect your switch or patch-board to the SK-1.

The procedures described here apply for pretty much all keyboards with ROMs. If the target is based on FM synthesis, such as the Yamaha SHS-10 or PSS-270, cutting the data lines between FM chip and CPU and rewiring them to switches will bring out the amazing sonic possibilities of FM synthesis beyond the "normal" sounds found in the instruments.

Body Contacts One of my favorite bending techniques is the use of body contacts. Body contacts provide very tactile and sensitive control of a connection; unlike switches or pots, they are as subtle as the fretboard of a violin, altering tone and timbre with the slightest movement. Almost every bending target has at least some body-contact points at the amplifier section. But usually these produce only very loud feedback.

But some bending targets, especially ones where the sounds (or lots of gain) are produced by analog circuitry, offer a wide range of feedback, at a controllable level.

Finding body contacts is really easy, and it's the first thing I check on any bending target. I simply touch the circuit board with my fingers (moistening them a bit if they are very dry). If you have found areas that work nicely, it is time to grab the watchmaker screwdrivers (this time without an alligator-clip cable between them) and break things down to individual points.

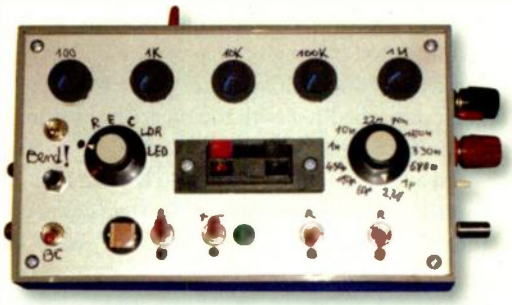
The best way to make those points accessible on the outside of the instrument is to use upholstery tags. These are cheap, easy to install, and have a nice feeling to the touch. Most importantly, you can solder wires directly to them. Drill a hole slightly smaller than the tag's pin, push it through the plastic case, bend it a little to keep it in place, attach the cable, and you are done.

One of my favorite body-contact feedback screamers does not even need that step. The Boss Metal-Zone MT-2, a distortion stomp box with high, low, and parametric EQ, has so many interacting points that I just sanded down the spiky pins on the board and rehoused it in a lightweight plastic case.

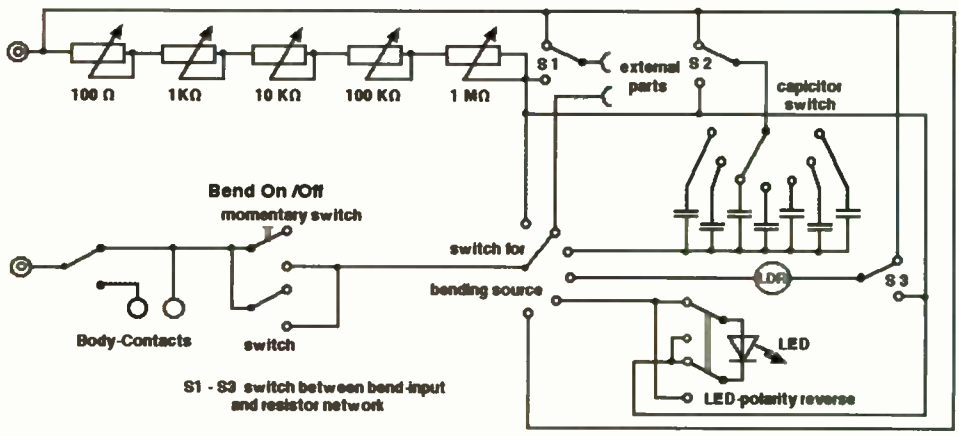
The KoolShades drum toy is a very lively body-contact bend. Note the upholstery tags used for the body-contacts and the mark sheet.

Tool of the Pros: The Bending Box If you like to practice circuit bending on a regular basis, you may want to optimize the process of exploring your target. A really helpful tool that you can easily build yourself is a bending box, which will contain assorted common components like a switch, temporary switch, body contacts, LDR, LED, capacitors, and a resistance decade. A resistance decade is made of pots connected in serial, with a resistance that increases ten-fold with every pot: 10 ohms, 100 ohms, 1 kilohm, 10 kilohms, 100 kilohms, and 1 Megohm would be the values of choice. This tool will enable you to precisely dial in any value between 1 ohm and 1 Megohm, which is very helpful to determine the best resistance or pot-range value for your special bend connection.

The bending box I built for myself also doubles as a power conditioner. I use a 12-volt gel/lead-acid battery through a simple circuit around a LM 317 power regulator, which lets me dial in any voltage between 3 and 11 volts.



Bending Box



Above right, bending box; below, its schematic. Note that the resistor cascade can be used in series with all other components with the switches S1-S3.

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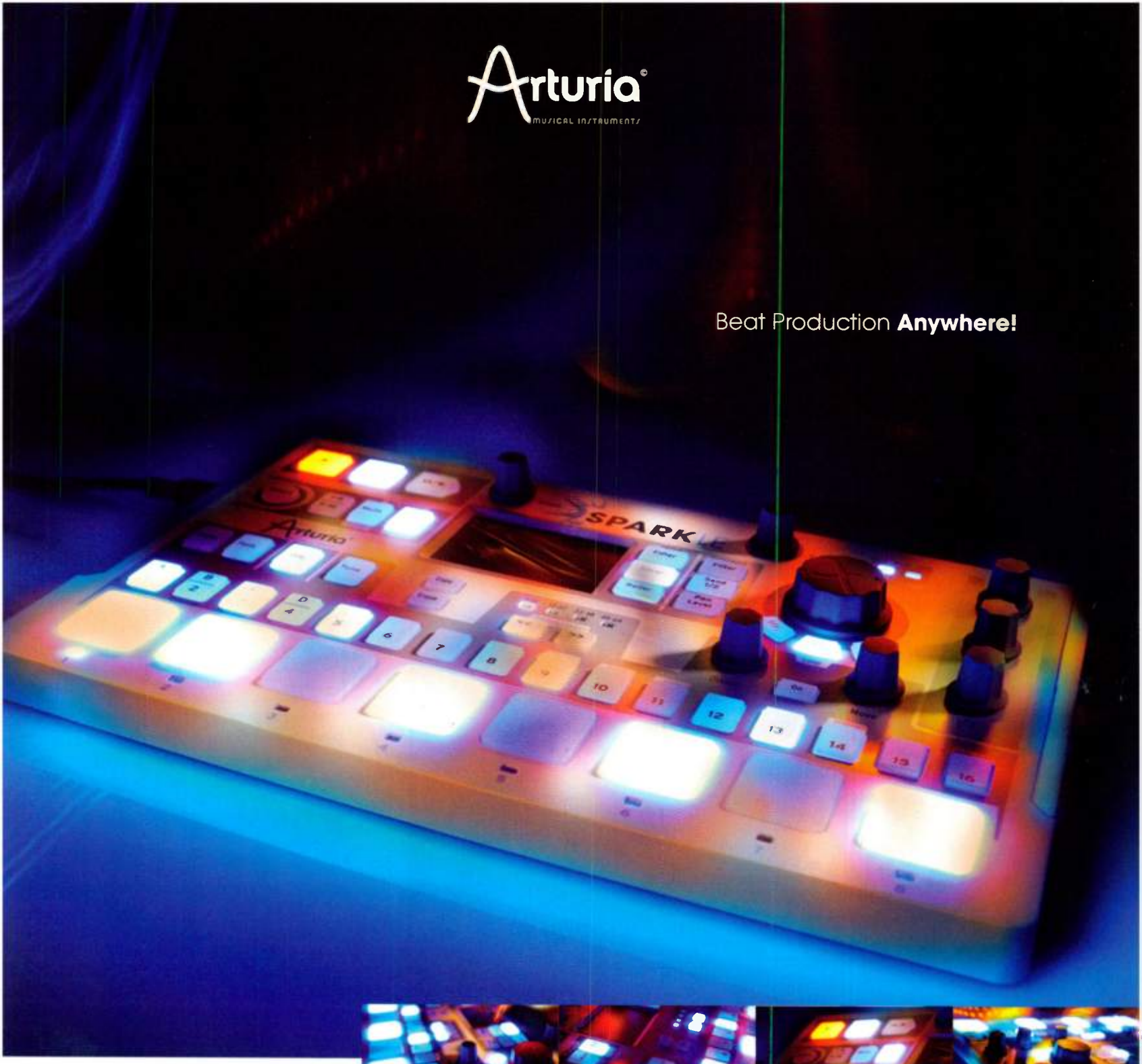

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I've only introduced you to the basics of circuit bending. There is so much more to learn and explore. Check out the books and Links listed here for some inspiration—and have a nice bend! ■

More Online
Watch Joker Nies' circuit-bending videos from Bent Fest.
Emusician.com/august2013

Joker Nies lives in Cologne, Germany. He is a musician, recording engineer, circuit bender, and editor for Sound & Recording *and* Keyboards *magazines. His circuit-bending career started in 1995 with a Suzuki Omnichord OM-27, which is still one of his favorite instruments to play.*

Helpful Links

Reed Ghazalas' informative homepage, with lots of info and photos of his gorgeous creations: anti-theory.com.

Issues of the *Experimental Musical Instruments* journal are still available online on CD-ROM, in case you want to read Reed Ghazalas' original articles on circuit bending: windworld.com/products-page/back-issues.

A great soldering tutorial in comic form: mightyohm.com/blog/2011/04/soldering-is-easy-comic-book.

A great collection of information on many common and rare toy keyboards and bending targets: weltenschule.de/tablehooters/instruments.html.

Lots of info on all aspects of the topic: getlofi.com.

This page specializes in stomp-box mods: circuit-bent.net/effects-pedals.

The British branch of circuit-bending; many drum machines found here: circuitbenders.co.uk

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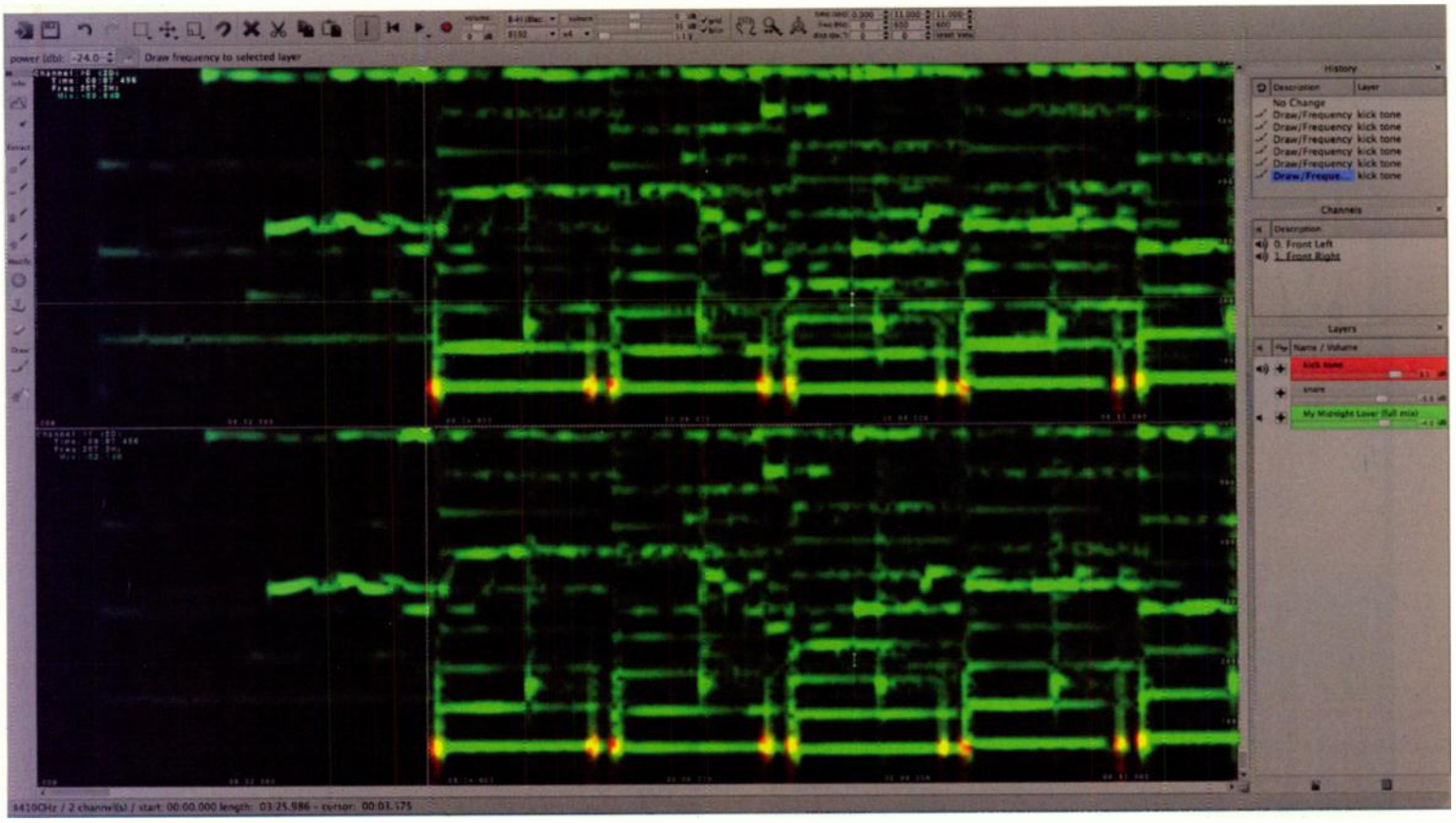


Fig. 1. In the spectral editor for SpectraLayers Pro, bass frequencies (displayed as red blotches) are painted with a mouse on thin-sounding kick drum hits to make them sound much fuller. The top half of the spectral editor displays the mix's left channel, while the bottom pane shows the right.

Impossible Mastering Solutions

How to fix seriously broken mixes

BY MICHAEL COOPER

EVERY NOW and then in my mastering work for clients, I'm confronted with a mix that has such a deeply embedded problem that I think to myself, how the heck am I going to fix *this*?!? Fortunately, there is almost always a technical solution for even the most challenging hurdle. The trick is to analyze the defect in terms of its distinct components, such as its envelope, ambience, and dynamic range, and the frequency band and channel it occupies. Here are three examples of seemingly impossible mix quandaries and their mastering fixes.

Thin Kick Drum With Full Bass Guitar The bass guitar has the perfect amount of low-frequency content, but the kick drum sounds paper-thin. How can I add basement frequencies to the kick without making the bass guitar sound too boomy?

The saving grace of thin kick drum beats is that they typically have shorter sustain than bass guitar notes. So, one cure for this ailing mix is to have a dynamic equalizer briefly add bottom end to kick drum hits and then undo its processing before the bass guitar has a chance to sustain.

The Brainworx bx_boom mid-side plug-in does the job posthaste. Instantiate bx_boom on your DAW's stereo master for the mix. Set the plug-in's mode initially to LO. Turn the bass drum (threshold) knob clockwise until the knob flashes on kick drum hits, but not so far as to make the knob constantly glow. Set thus, bx_boom will boost the mid channel's bass frequencies—centered around 32Hz—for 50ms whenever the kick drum voices and then quickly return to flat response. As you turn the bass drum knob farther clockwise, the amount of bass boost will progressively increase from +4 to +10dB. A knob setting of +40 to +50 (an arbitrary

scale) usually satisfies. If the kick still sounds too thin, try using MID (boosting at 48Hz center frequency) or HI (64Hz) mode, as long as that doesn't audibly reinforce the bass guitar.

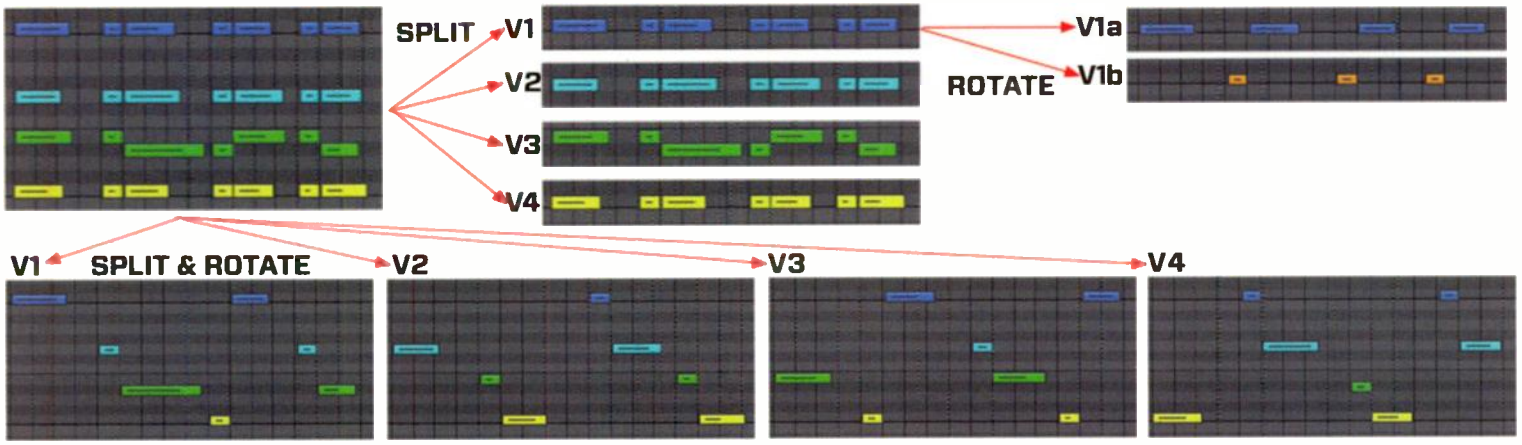
If you're not pressed for time, Sony SpectraLayers Pro offers a more surgical solution in the form of spectral editing. Import your mix into the standalone software, and create a new, empty Layer for adding audio (in this case, additional bass frequencies for the kick drum) to the mix. Select SpectraLayers' Draw/Frequency tool and, with your mouse, paint a sub-bass tone on each of the mix's kick drum hits in the GUI's spectral editor (see Figure 1). It will sound best if you paint a frequency that is the tonic for the key of the song (for example, 65Hz for the key of *C* major or minor). After you've added a sub-bass tone to each and every kick drum hit, adjust how loud you want the tones to be *en masse* by raising the fader for their layer in the Layers side panel. The entire process is time-consuming and painstaking, but done correctly, the kick drum hits can be made to absolutely thunder without audibly affecting any other element of the mix.

Boomy Kick With Balanced Bass Guitar This problem is the opposite of that in the preceding example. bx_boom is once again the antidote. To attenuate only the kick drum's bottom end—without noticeably affecting the bass guitar's—turn bx_boom's bass drum knob counter-clockwise until it flashes on beater strikes. As you rotate the bass drum knob farther counter-clockwise, attenuation of bass frequencies will progressively increase from –4 to –10dB (attenuating for only 50ms with each beater slap). A knob setting between –40 and –60 will usually winnow enough rumble from the kick drum to make it sit pretty in the mix.

Lead Vocal Is Too Dry Adding reverb to a mix will lend vital wetness to a desert-dry vocal, but it will also unpleasantly reverberate other elements such as the bass guitar and cymbals. Assuming the cymbals were miked in stereo with a spaced pair of mics, you can add reverb to only the mix's mid channel to isolate the cymbals from the reverb. However, the center-panned bass guitar will still sound like it's playing in a subway. Are we at a dead end? Nah.

The remedy is to filter the mid channel's reverb to weed out the bass guitar (and, while we're at it, any unwanted instruments voicing *above* the vocal's frequency range). iZotope Ozone 5 is the magic bullet. Insert Ozone 5 on the mix's stereo master, and assign its reverb module to the mid channel in mid-side mode. Drag Ozone's high- and low-frequency cutoff nodes in the plug-in's Mini-Spectrum Window (at the top of the GUI) to create a bandpass filter for the midrange. Reverb will be added to the lead vocal and any other center-panned, midrange elements (such as electric guitar) but will virtually leave the rest of the mix untouched. Mission Impossible accomplished! ■

Michael Cooper (myspace.com/michaelcooperrecording) has written more than 400 articles about pro audio over the past 25 years.



The original four-part MIDI clip (upper left) is split into a unique MIDI clip for each voice (upper middle), and then voice 1 is divided into two parts by rotation. In the lower section, all parts have been split and rotated together so that each part is played by a different voice in each chord.

Voice Splitting and Rotating

Repurpose polyphonic MIDI tracks to play separate instruments

BY LEN SASSO

ASSIGNING A unique instrument or choral voice to each part in a polyphonic score is as old as polyphony itself. But, in a technology dominated by keyboard input and polyphonic MIDI sequencing, realizing separate parts is not always a matter of simply scoring or recording them separately—for example, you might be starting with polyphonic MIDI clips from a collaborator or library, or you may achieve a better performance by playing them polyphonically on your keyboard. Still, splitting polyphonic parts is well worth the extra effort. Here are a few ways it expands your options.

Splitting The most common way to route notes within a MIDI clip to separate instruments is to assign the notes to different MIDI channels so that multitimbral samplers and synths can route them automatically. Among DAWs that support MIDI channels, Apple Logic stands out by making channel-splitting dead-simple with its Voices to Channels function.

Splitting a polyphonic MIDI clip into a separate MIDI clip for each voice is a more flexible approach, and it has the advantage of working in DAWs such as Ableton Live and Propellerhead Reason that don't support MIDI channels. The process is no more tedious than manually assigning notes to individual channels, and it allows many more options in editing and routing parts: You can apply separate automation, offset parts in time, double some parts, and so on. For example, try doubling the top part one or more times with a different sound, volume and pan automation, and differing time offsets to produce a multitimbral echo-like effect.

Rotating Once you've split a polyphonic clip into monophonic parts, you might try routing consecutive notes to different sounds—a process called rotation. That often works well with inner voices while preserving the integrity of the melody and bass. As with splitting, you can use MIDI channels or separate clips for rotation.

You can often combine splitting and rotating for polyphonic clips. For example, you might rotate the top-down voice assignments for each new chord, or you might rotate just the assignments of the inner voices. Keep in mind that you may run into problems if the individual voices are pitch-range limited (choral voices, sax or string sections, and such).

(Almost) Free Lunch None of the processes described above are realtime, but if you nose around a bit you'll find various tools for automatically rerouting both sequenced and realtime MIDI input. For example, a couple of inexpensive Rack Extensions for Reason, Blamsoft Distributor and Jiggery-Pokery Charlotte, make quick work of splitting and rotating up to eight MIDI voices. Distributor routes notes in the order received. A variety of controls affect voice selection, but you must slightly offset notes manually to control the voice order. Charlotte waits for the whole chord, using an adjustable wait time, and it allows you to select note priority (high, low, first, last, and so on). If you're so inclined, you might also try designing your own splitters and rotators in applications like Cycling '74 Max/MSP, Plogue Bidule, Logic's Environment, and Native Instruments Reaktor. ■

Len Sasso is a contributing editor at Electronic Musician.

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noun

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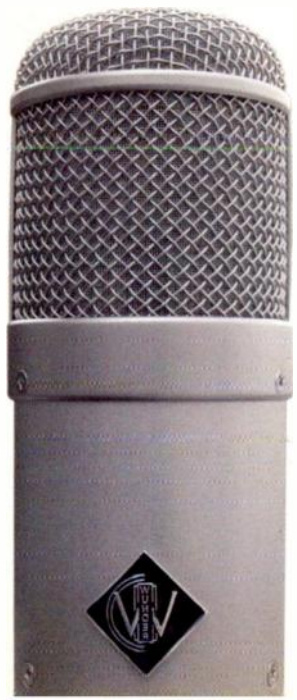

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For quick edits in Rob Papen Blue, you can mute or unmute single oscillators using the ABCDEF buttons along the top, change the filter cutoff, resonance, or type in the middle section, or edit the arpeggiator steps in the multipurpose window along the bottom.

Top Ten Tone Tweaks

Customize your synth presets to create killer new sounds

BY JIM AIKIN

THESE DAYS, most synthesizers ship with hundreds of great-sounding presets. I often find myself clicking through the presets, looking for the perfect sound to add to the mix. Sometimes a sound is close but not quite right. Customizing a preset is easier than creating a great sound from scratch. The ideas below will work equally well on software or hardware synths.

1. Dial Back the Reverb. Factory presets are often designed to sound huge when auditioned. In a mix, the reverb may add mud. Moving the wet/dry knob on a reverb or delay effect over toward the dry side can clean up the mix. Also try shortening the reverb decay time or lowering the delay feedback amount.

2. Adjust the Filter Cutoff. Adjusting the filter in the synth may be more effective than mixer EQ for adjusting the balance of highs and lows, especially if the filter has a sharp cutoff slope. Depending on the preset, you may need to raise or lower the filter envelope amount in order to change the cutoff. Adding or reducing filter resonance can also change the character of the sound in desirable ways.

3. Add Velocity Sensing. A surprising number of factory presets have little or no velocity response. In order to edit the notes in a phrase so that some are accented, or so that a phrase has a crescendo or diminuendo, you may need to add velocity response. This will affect both the overall loudness of the instrument and the filter cutoff frequency, so a bit of back-and-forth editing may be needed.

4. Tweak LFO Vibrato. I like adding vibrato with the mod wheel. Some presets use the mod wheel for a different type of expression, so you may need to rewire the modulation routings. The existing modulation may be cool too, in which case you can re-route its input so as to add it from aftertouch, or from a MIDI slider.

The LFO vibrato rate may be too fast or too slow. While changing the LFO rate, don't overlook the possibility of modulating the rate slightly from the mod wheel while also modulating the depth. This adds subtle intensity to the expression.

5. Check the Layers. Many presets use two or more sound layers—separate oscillators, parallel filters, and so on. Try soloing the layers one at a time to see what each of them is doing. If a layer is adding an attack transient, you might want to boost or cut that layer by itself. Sometimes two layers are tuned to the interval of a fifth, which can interfere with chord changes. Tuning a layer from the fifth back to unison can make the preset more useful.

6. Experiment With Envelope Times. Occasionally you may want to make a sound more aggressive by sharpening up the attack time on the amplitude or filter envelope. A pad sound with a long release time may bleed into the next chord, so shortening the amplitude release time may clean up the mix.

If your bass preset is mostly playing short notes, the decay time and sustain level settings may not be doing much. But when the bass needs to sustain a long note, the sustain may drop off too quickly, or not fade quickly enough. By raising or lowering the amplitude envelope's

Native Instruments Massive has eight Macro Control knobs (lower right) that are active in most presets for quick edits. Using the little blue button at the upper left corner of each module, you can mute or unmute oscillators (left), filters (upper center), or the dual effects processors (middle right).

sustain level and adjusting the decay time to make a smooth fade, you can avoid having to automate the track's mixer level.

7. Try Multiple Triggering. Lots of bass presets are designed for monophonic playing. This makes sense for bass, as you'll seldom want to hear two notes at once. The monophonic preset may be set to single triggering, in which case you'll get a new envelope attack only when there's a gap between two adjacent notes. When the preset has a snappy attack and a muffled sustain, single triggering can make some of the notes hard to hear. If you want every bass note to sound, switch to multiple triggering.

Conversely, if the bass preset is in polyphonic mode, every note will have a new attack, but you need to be careful to edit out the note overlaps in the sequence track, as any overlaps will add mud to the mix. In this case, consider switching to mono mode.

8. Edit Arpeggiator Patterns. With presets that use the built-in arpeggiator or step sequencer, you may need to edit the steps of the pattern to match the harmony or the groove of the song. Sometimes I set up two versions of a preset (on separate tracks) that are identical except for different step sequence patterns. This lets me switch back and forth to meet the needs of the song.

9. Automate for Expression. Most DAWs let you automate just about any parameter. With automation, you can make subtle or massive changes from note to note. Try adding a growl of distortion to certain notes, messing with the filter envelope decay, or cranking up the reverb at the end of a phrase so the last note will dissolve into the air.

10. Experiment! Most software instruments have dozens of parameters: oscillator waveform, glide time, panning, ring mod, pitchbend depth, effects, and more. You never know which obscure adjustment may turn a ho-hum track into a winner, so roll up your sleeves and experiment. ■

Jim Aikin has written hundreds of product reviews and tutorials for Electronic Musician *and other magazines over the course of more than 30 years. His books on music technology include* Power Tools for Synthesizer Programming *(Hal Leonard Publishing) and* Csound Power! *(Cengage Learning).*

LEARN recording

was working, we started talking about what the album version should sound like: Should the string part be performed on a Mellotron? Should it be me, overdubbed, like in the demo? Should we hire the London Philharmonic? After listening to "Eleanor Rigby" and Nick Drake's "Way To Blue" as references, we decided that a small ensemble would make the most sense, so I distilled the demo arrangement into a trio—a cello and two violins. In my mind, we'd do one pass live as a trio, then double that for a faux-sextet sound.

The uninitiated string-tracker might wonder why, with the ability to multitrack, one wouldn't be able to make a single string sound like an ensemble, or an ensemble sound like an orchestra. Leaving aside the obvious range limitations of a single given instrument, there are acoustical limitations: A group of players activates a physical space in a specific way that is for all intents and purposes impossible to recreate virtually. In the tracking room, the ensemble becomes a single entity, pushing sound waves around as a unified source. When the same players are double- or triple-tracked in the same space, spatial acoustic anomalies start to become noticeable, in some cases, as a low-to-midrange buildup that can peak exponentially with dynamic swells in the part. The more layered takes, the more pronounced these anomalies become. You've got some engineering wiggle room—and unless you're producing a classical recording, there's no benchmark for a "natural-sounding" recording—but the simple rule-of-thumb should be: If you want your part to sound like a quartet, hire a quartet.

String players need to literally breathe together, especially in the naked setting of a small ensemble.

After securing some players through recommendations from fellow musicians, I set about scoring the part in Sibelius. I played back my demo of the string part for my bandmates using general MIDI sounds. Here's where it would have made sense to find a decent string sample library and play the string part along with the demo piano recording. It's difficult to picture what will work and what won't when your reference sounds are so far from where you hope they'll end up. We ended up making changes to the arrangement during the tracking, something that could have been avoided had I put time into a more fully-realized Sibelius demo (see Precept 1).

The song was only about three minutes long, with the strings entering at roughly the halfway point. I scheduled the players for two hours, figuring that would be plenty of time to get a respectable 1:30 to tape. But after four hours, we still weren't sure that we had enough solid takes to piece together a usable comp (see Precept 2). At

that point, we had to stop because the violinist had a prior commitment. Panic set in.

I should make it clear that our players were great and can't be faulted for any of the stresses of the session. I had sent them the score and the demo recording a week prior to the day of recording, and they both showed up prepared. But as soon as we started rehearsing, a few crux production concerns abruptly revealed themselves. For starters, intonation is a killer. And inconsistencies in pitch become even more apparent when you're listening to three string instruments as opposed to 60. As a violinist myself, I was somewhat aware of this going into the session, but part of me assumed that once we started double-tracking the trio, those inconsistencies would blur in a pleasing way—something like the way a full string section generates a lush chorusing due to the miniscule playing inconsistencies from player to player. It turns out that pitch differential threshold is a lot higher than I would've liked. When the engineer and I listened back to a few layered takes, sour notes jumped out to the point of rendering some chord voicings nonsensical. Double-tracking only served to intensify intonation issues (see Precept 3).

I had decided—again, partially due to budgetary reasons—that I would play 2nd violin. This meant I was playing the role of arranger, producer, *and* player. It also meant it was impossible for me to accurately critique what was being tracked while it was being tracked (see Precept 4). After a few frustratingly almost-there takes, I stepped into the control room and let the violinist we'd hired alternate between the 1st and 2nd violin parts.

I did get at least one thing right, by accident: The hired players both had a history of playing together (at wedding receptions and corporate cocktail hours and the like) and had an established performance rapport. That's the kind of thing you can't engineer on the day of the session, and it's integral to capturing a professional-sounding ensemble recording. String players need to literally breathe together, especially in the naked setting of a small ensemble. Removing myself from that dynamic helped matters all the more.

After we sent the string players home, we decided to put the song away for 24 hours and work on something else, a move I credit to our engineer, Beau Sorensen (who also must be given credit for the wording of Precept 4). The next day, Beau pieced together a rough comp, and announced that we had a more than workable set of tracks from the previous day's efforts. The two of us then sat down and pieced takes together bar-by-bar, and after about 30 minutes ended up with a string part that had all the movement, nuance, and emotion I'd hoped it would have.

The next time I get the opportunity to produce strings, I'm going to make sure I:

- Hire a full, prefab ensemble
- Schedule at least a day of rehearsal prior to the studio day
- Produce a more fully-realized demo that uses a nice VST library
- Schedule more than enough time, then schedule double that.

I suggest anyone looking to produce a string ensemble do the same. ■

Owen O'Malley is a musician and freelance writer living in Chicago. His band is called Bailiff.

Image-Line FL Studio 11

Add and edit automation envelopes

BY JIM AIKIN

OBJECTIVE

Add expression to your synth tracks and mixes.

BACKGROUND

FL Studio gives you three ways to automate your synth and mix parameters: realtime recording with the mouse, realtime recording from linked MIDI hardware, or by creating automation envelopes. The first two methods create events within a standard MIDI clip, which can be edited with the pencil tool. Automation envelopes appear separately in the Playlist. The envelope breakpoints can be edited by dragging, and the curves between adjacent breakpoints can be adjusted and configured smoothly.

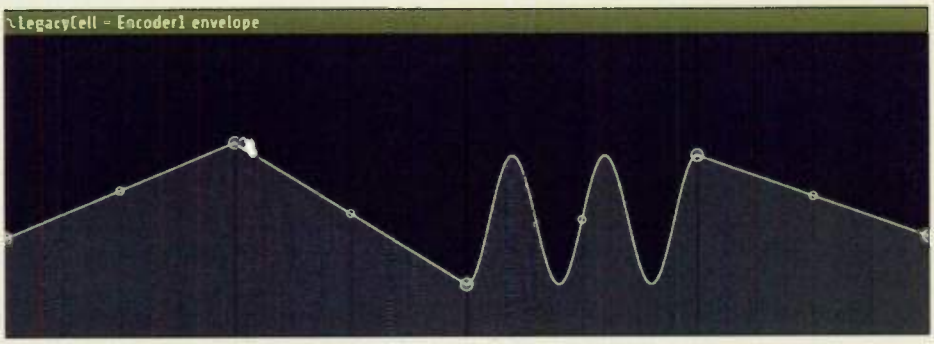
TIPS

- Step 4: If necessary, drag the lower edge of the Playlist track downward to create a deeper editing area, and click and drag the ends of the horizontal scroll bar at the top of the Playlist to zoom in on the clip.
- Step 4: Right-click on an existing breakpoint to choose a type for the curve to the left of the breakpoint.

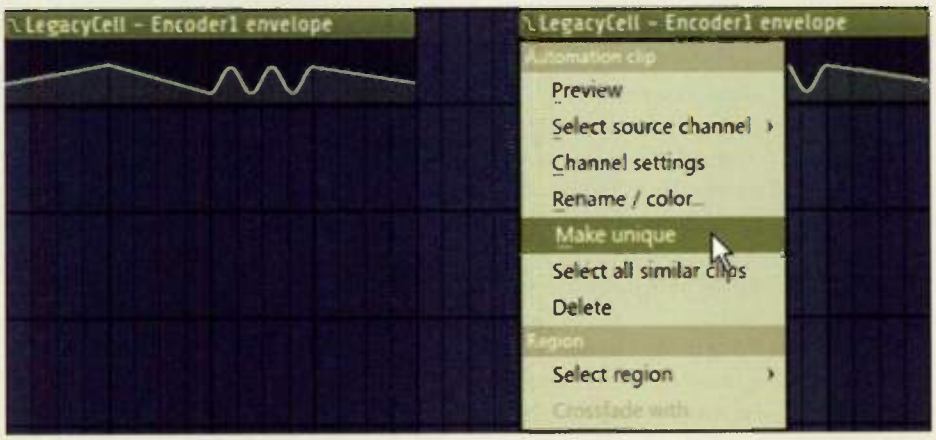
Step 1 Right-click and drag along the time ruler in the Playlist window to select the region where you want the envelope to appear.

Step 2 Using the mouse, wiggle the control that you want to automate.

Step 3 In the Tools menu, select "Last tweaked/ Create automation clip."



Step 4 Right-click in the envelope to add new breakpoints. Drag the breakpoints left or right, up or down, as needed.



Step 5 After shift-dragging to duplicate an automation clip, don't neglect to select "Make unique" from its pull-down menu. If you don't make the copy unique, any editing changes will affect all of the copies.

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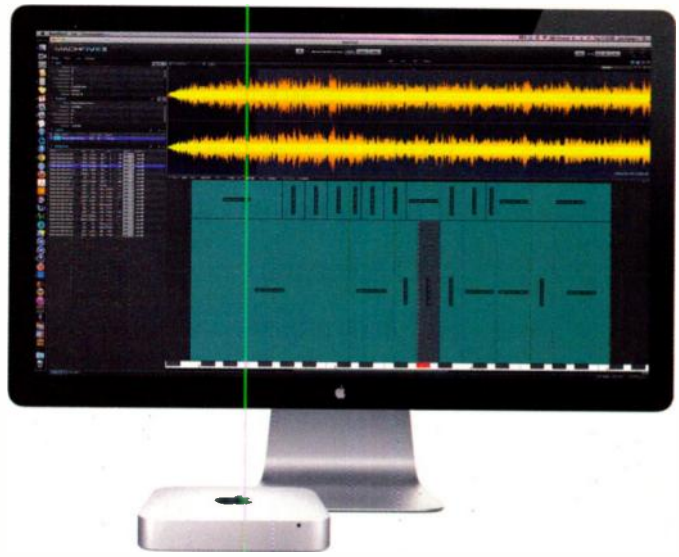

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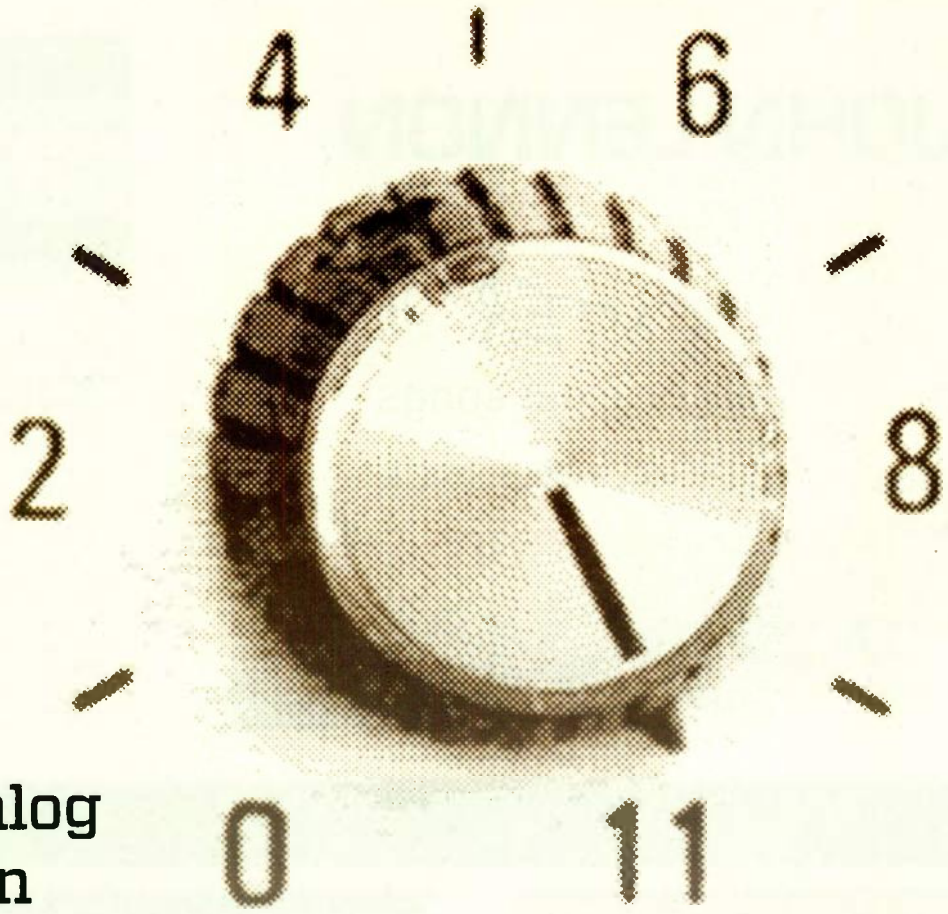

Why We *Love* Analog Distortion

BY CRAIG ANDERTON

1

Distortion upsets purists. Just think of the *countless* number of man-years that have been selflessly devoted to making electronic circuits as clean and distortionless as possible. There's something deliciously antisocial about totally negating all that effort, and as a bonus, it gets us in touch with our *inner Hun!*

2

Distortion stands for the joy of excess. Folk songs don't distort. Kenny G's sax doesn't distort. New Age music doesn't distort, nor does Justin Bieber's voice. Rock guitars, tonewheel organs, tubes, hardcore techno, and Nine Inch Nails distort. Draw your own conclusions.

3

Sine waves are the Rodney Dangerfield of synthesis. Well, okay, maybe in a moment of weakness you use sine waves in a layer—but let's face it, sine waves get no respect. Clip the crap out of them, though, and it's *party time!*

4

Analog distortion explains why some people don't like digital audio. Analog distortion gets more distorted at *higher* levels, while digital audio gets more distorted at *lower* levels. This is just plain wrong! Like Donald Trump's hair, it violates natural law, and furthermore, lends credence to the popular conspiracy theory that digital audio is satanic in origin.

5

Distortion conforms to the Spinal Tap "Rule of 11." Only the truly naïve believe the reason why knobs rotate is so you can select positions within their rotation. *Real* musicians know they rotate because it's satisfying to grab the knob and turn it up until it won't turn any further. That's where you get distortion. Case closed!


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