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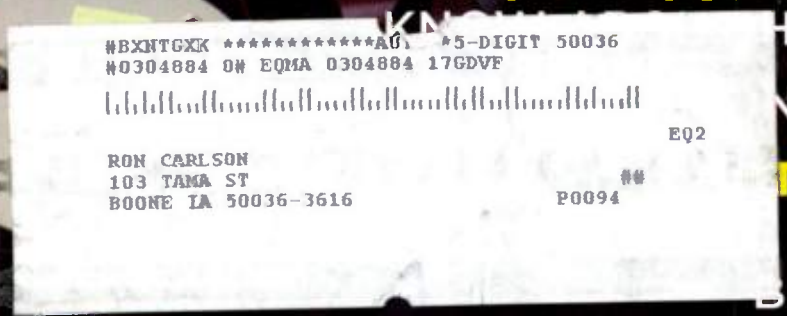

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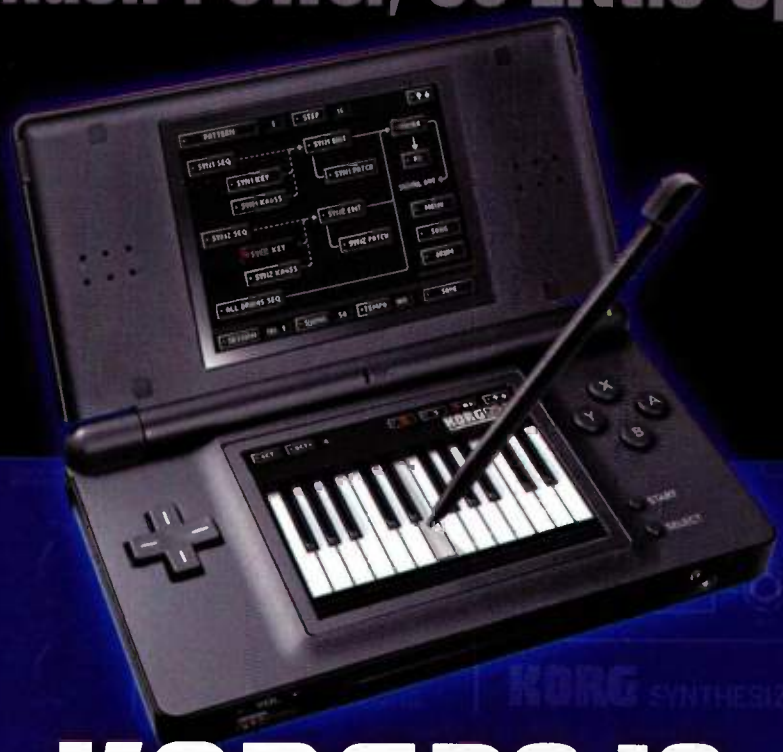

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Talk Box

DO WE REALLY NEED BIG STUDIOS?

With more and more hits—and even movie soundtracks—being recorded in home and project studios, and commercial studios going through some hard times the last several years, some have assumed that big studios are now obsolete and will pretty much go the way of the dinosaur. But is a trend forever destined to keep going in the same direction? Not necessarily. In fact, it wouldn't surprise me if we've hit the bottom of the cycle, and larger, commercial studios will make somewhat of a comeback.

Commercial studios used to be essential because only the wealthy could afford the cost of setting up studio facilities in a home. However, with today's gear—whose quality is on a par with some of the finest studios of yesteryear—this isn't really an issue.

But gear isn't the only reason to use a studio. Some musicians use commercial studios for practical reasons: They need a high-quality, large, live room to set up full drum sets, amps, and the like. This is particularly relevant now, as many groups are emphasizing the performance element of music by cutting "live in the studio." Or, they simply may not have the room for a grand piano. Recording a 10-piece band? Difficult to do in a garage. And of course, the louder the music, the more likely that neighbor issues will come into play; and using a home studio for commercial projects can lead to zoning conflicts.

Yet none of those reasons may be the most important factor in deciding to work in a commercial studio. As Matt Boudreau (of San Francisco's Broken Radio studios, formerly Coast Recorders) noted when I visited their facilities: "Technology has gotten to the point where a lot of musicians spend more time figuring out why something isn't working than playing. In our studio, there are maintenance people to handle that, and engineers to run the gear. Musicians play better when they can concentrate on playing."

One of the reasons for the decline of big studios was expense, because they had to charge a lot to amortize all that expensive gear. But the same price reductions that have benefited home studios have benefited larger ones as well. The brutal price-cutting phase should be pretty much behind us, making the use of commercial studios more affordable to up-and-coming bands. Furthermore, the transportability of digital recordings means that a band can track in a commercial studio, mix at home at their leisure, then employ the services of a professional mastering engineer—all while fitting within a reasonable budget.

The days of the "recording palace" are probably behind us, but don't count out commercial studios just yet—they remain an important element of many recording projects.

EQ

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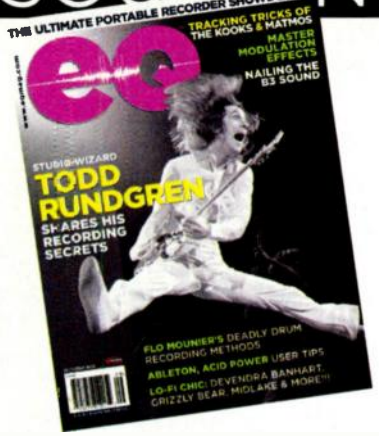

A LITTLE MORE PUNCH, PLEASE

Thank you for your review of portable recorders ["Portable Recorder Showdown"—9/08]. As a songwriter using guest artists on demos, I would like to have a portable digital recorder to work remotely. I thought I was getting that functionality with my DigiTech GNX4 workstation; however, it doesn't support maneuvering around and punching in/out within a track. This is a hardship for those artists whose takes are less than perfect.

With the overdub feature, the TASCAM DR-1 appears to be the songwriter's dream machine. However, it does not offer punch in/out recording either or, as your review pointed out, a high impedance instrument input.

Can you give me any gear ideas short of putting my recording software on a laptop and carrying all of the input paraphernalia?

Ron Free (via EQ*'s Letters to the Editor forum)*

Executive Editor Craig Anderton responds:

You might need to step up to something like the TASCAM DP-02, Boss BR-600, Korg D888, or a similar portable studio. But why not use the GNX4, record takes without worrying about punching, then transfer the tracks into the DAW software that's included with the GNX4? That would also have the benefit of letting the artist just keep playing, rather than having to wait for punch operations and the like. Ultimately, you'll have the most flexibility by recording remotely, but editing in your studio at your leisure.

REQUITED LOVE

I don't know how you guys manage to be so much better than the other recording mags of the world, but please do keep it up. I'm impressed on a monthly basis by your ability to be topical and interesting, in marked contrast to all of the other music magazines out there (save *Tape Op*). You guys always seem to get gear to review ahead of the curve. I often feel like I know everything I need to know about some piece long before I read about it in my copy of [*names of competing mags withheld because we are gentlemen*—EQ *editors*]. Your how-tos are things I actually find applicable in my own music, and you talk to artists who are taking recording in cool, new directions.

So this is a plain ol' kudos letter. As someone who used to be Managing Editor of a magazine, I know how few of those you get.

Andrew Vietze (via email)

Executive Editor Craig Anderton responds:

First of all, thanks for the kind words. Rest reassured we get a lot of kudos letters; however, any kind of critical letter gets priority in Sounding Board because we figure it makes for a more interesting read. (And by the way, we're with you on Tape Op*—as you may have noticed, we have no problems mentioning each other in our respective forums and publications, and we even share some of the same authors.)*

Of course, on a professional level, we want to put out the best magazine we possibly can. But on a personal level, we love what we do, and we love working in this industry—which makes it easy to stay excited about EQ *month after month. And you better believe there's a lot more to come!*

NEVER ENOUGH TODD

I just wanted to thank you for the excellent cover story on Todd Rundgren ["Bang the Drum"—9/08]. I only wish it was longer! The guy has simply created so much brilliant music. He's had a long, influential career, and produced a handful of true masterpieces, including the two most beautiful songs I've ever heard, "Cliché" and "Hawking."

I hope you are able to do further interviews with the man—perhaps one article focusing more on his own songwriting/recording and another on his production work for others? But I'm thrilled you put him on the cover for this issue; he's overdue for the exposure and attention!

Brad Page (via email)

Editor Matt Harper responds:

It will be a while before we do another piece with Todd. This is not because he doesn't deserve all the coverage—he clearly does (we've received tons of fan mail just like yours about the piece). It's just simply impossible for us to fit all of the deserving artists out there into the pages of the magazine and website, so our "re-coverage cycle" tends to be rather long. However, you'll be pleased to know that our sister publication, Guitar Player*, ran a lengthy lesson with Todd in their 10/08 issue. By the time you read this, the article should be online. Click your way over to www.guitarplayer.com/lessons and check it out for yourself.*

THIS TOO SHALL (HIGH) PASS

In the July installment of Cheat Sheet ["Recording Electric Guitar"—7/08] you recommend using a Low Pass Filter [LPF] for getting rid of hum and rumble. Wouldn't you use a High Pass Filter [HPF] for this instead?

Bob Mithoff (via email)

Executive Editor Craig Anderton responds:

Yes, you most definitely would! I meant to say Low Cut, as that's the term used on most mixers but a Brain Scramble occurred. I think I'll blame it on recent sunspot activity. Yeah, that's the ticket.

Got something to say? Questions, comments, concerns? Head on over to www.eqmag.com and drop us a line in our Letters to the Editor forum, send us an email at eqeditor@musicplayer.com or snail mail c/o EQ Magazine, 1111 Bayhill Dr., Suite 125, San Bruno, CA 94066 for possible inclusion in the Sounding Board.

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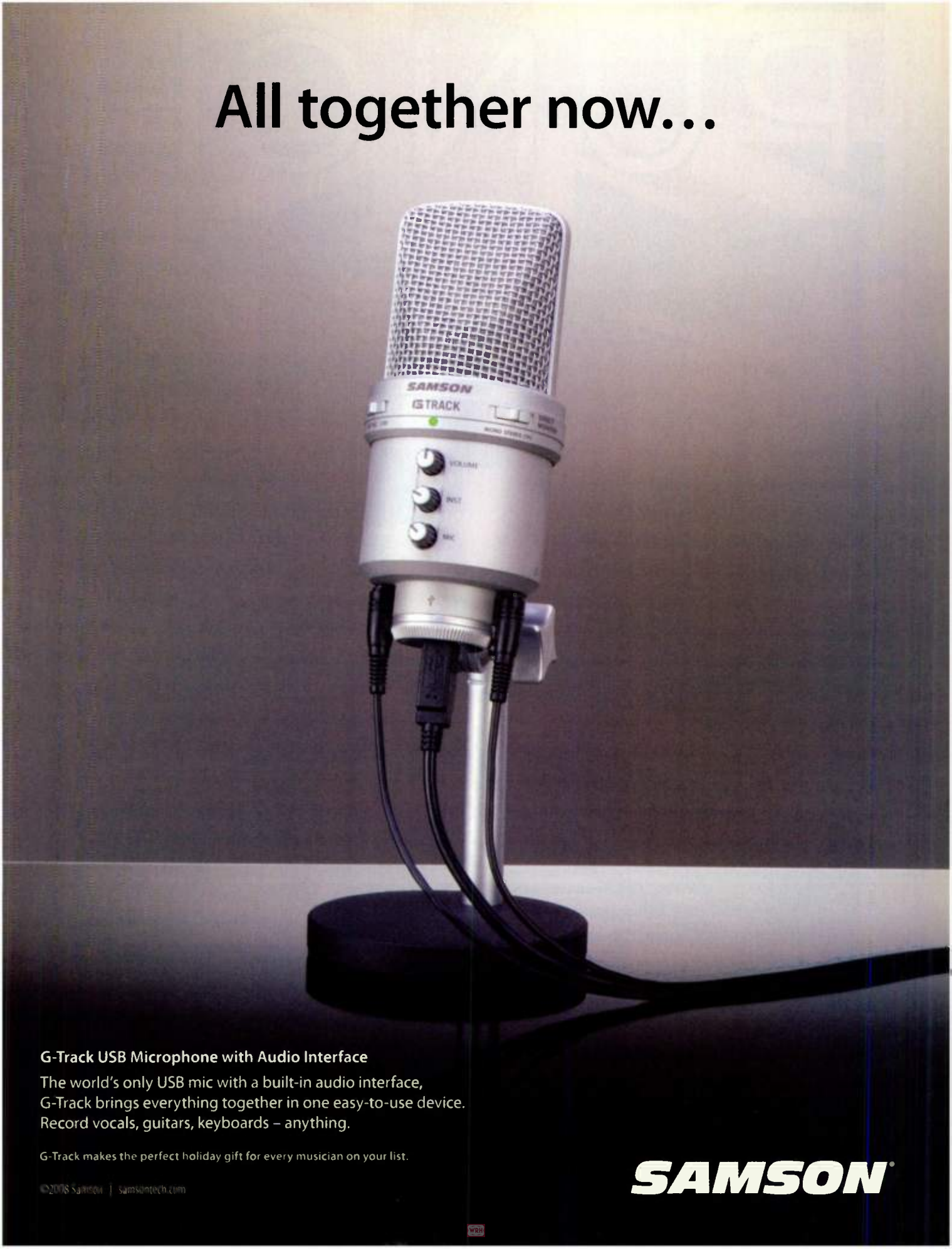

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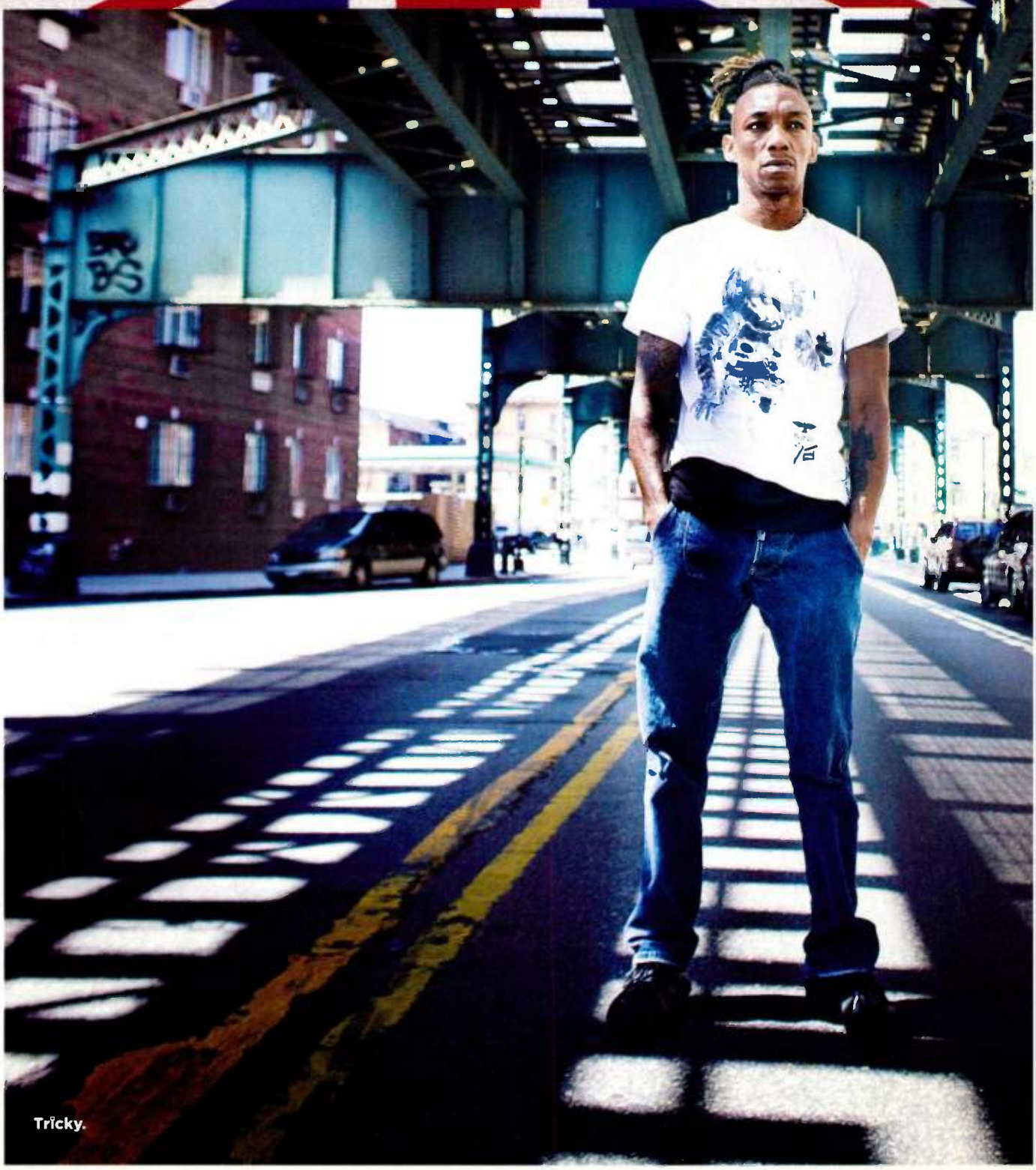


Tricky.

BRISTOL HOP

Laptop in Hand, **Tricky** Hits the Road to Record *Knowle West Boy*

BY LILY MOAYERI

Though Tricky's *Knowle West Boy* references the tough Bristol, U.K., town of his youth, the musician/producer says he doesn't currently have a home base from which to draw inspiration. Truly a resident of the world, the trip-hop pioneer is busy crisscrossing the globe, supporting his newest album, and writing and recording his next record in the same manner that he tackled *Knowle West Boy*: On a laptop loaded with Pro Tools LE. Outfitted with an Akai S1000KB and an MPC3000, as well as an unspecified Korg keyboard, the self-proclaimed "anti-musician" says he can create anywhere he damn well pleases.

Always in capture mode, Tricky says he has a track in Pro Tools armed at all times as he programs beats and constructs loops wherever the day carries him. "I'm a one-finger-at-a-time programmer," he says. "I'm like a kid drawing a picture. You give a kid crayons, and it starts with one line. Then another. Then a bit of color. Next thing you know, you have a picture. It's one finger and one note at a time. One kick at a time. One bass note at a time. It's even one note at a time for string parts. If I like it, I'll loop it up, and play another string note on top of it. By the time I've finished, you'd probably think I could play keys, but I can't."

Tricky came to LoRusso's studio in Los Angeles with relatively finished recordings of *Knowle West Boy*—tracks he felt were too straightforward and too quantized. The decision was made to deconstruct the tracks, and rebuild them so they more closely resembled the musical genres Tricky had called upon as influences for *Knowle West Boy*: blues, reggae, country, punk, and rock.

"It was like being someone else for a day," says Tricky. "One day, I was the Specials, one day I was Kate Bush, and one day I was Gary Numan. But everything was almost by mistake. I was just sitting at the keyboards, not knowing what I was going to get out of them. For example, I've got a thing for weird time signatures, but that's because I don't know what I'm doing. A lot of my stuff is just me being naïve. That's my sound—lack of knowledge."

"Tricky likes to track things, cut them up, move them around, rearrange them, and get new patterns from those elements," explains LoRusso. "I took into consideration the palette of sounds he likes to work with and his approach. He likes organic elements, but he wouldn't want a straight-up guitar part playing top to bottom. He'd rather sample a little guitar riff, flip it and cut it up, and play with that. It's whatever makes his ears stand up that day. There are no rules."

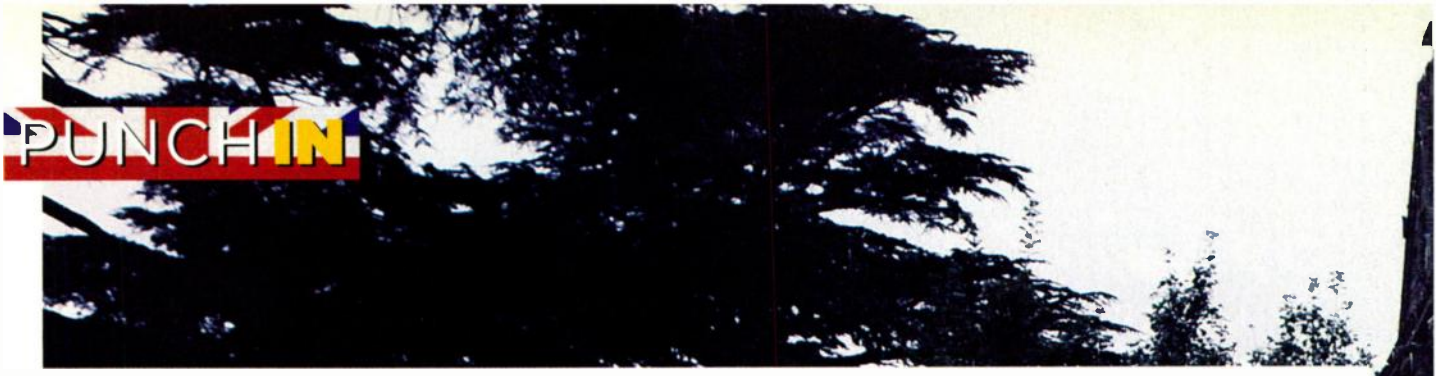
LoRusso used Drumagog to replace the original sounds Tricky applied to his sequences with more organic-sounding samples, and also called in human players (such as guitarist Mark Thwaite) to lay down licks live.

"Most musicians tend to play a song top to bottom three, four, or five times, and then save the best take or start comping," says LoRusso. "We'd go back, lift one or two *notes*, and start building the rest from there. Or Tricky would hear something he liked, and then have the players jam something completely different in order to build variations on patterns and loops on the fly. We'd later listen through the takes, find the pieces we liked, cut them up, and then put them in his MPC so he could play with the source sounds."

LoRusso says that Tricky's vocals were recut to ensure sonic consistency, but that he decided to adhere to Tricky's historically lo-fi approach to tracking his voice. "Tricky's voice sits in this strange high-end range, and no matter what mic you put on him, nothing seems to mellow it out," says LoRusso. "I find cheaper mics tend to work best, and a Neumann TLM-103 was as high end as we would even try. A Røde NTK is what he really responded to. It usually produces a brighter, yet more brittle high-end, but it works for him."

Whether Tricky is recording in his bathroom using the preamps in a Digi 002 rack, or at LoRusso's place through an SSL AWS 900, the standing order is to avoid vocal booths. Background noise is the name of the game. "The noise adds to the raw feel," says LoRusso. "When you compress his vocals along with all that extra noise, it makes for a very aggressive sound. In addition, whatever we have in front of us is what we will use. If there are some spoons and a box on the floor, then we're playing spoons and a box that day. It's guerilla style, and it comes across in the recordings. Of course, Tricky will never claim to be a typical musician. He wants to do it his way. He does not think about music like anyone else I have worked with."

"I've always been told that I work backwards," admits Tricky. "But I'm going to make sure you give me what I want. All I need you to do is what I say. It's really simple." EQ



FAST AS A SHARK

These New Puritans Track *Beat Pyramid* in Six Days

BY ANGELINA SKOWRONSKI

These New Puritans seem to be onto something with their Wu-Tang Clan-inspired, Sonic Youth-esque, electro/hip-hop/indie/punk mash-ups. However, the Southend-on-Sea U.K.-based foursome—composed of vocalist Jack Barnett, drummer George Barnett, bassist Thomas Hein, and keyboardist Sophie Sleigh-Johnson—were in a precarious financial situation when recording *Beat Pyramid*, and a shoestring budget forced them to track the album at breakneck speed. Here, veteran producer Gareth Jones [Erasure, Interpol, Depeche Mode] and engineer Jeff Knowler [gUiLLeMoTs, Goldfrapp] reveal how These New Puritans created a 16-song album in less than a week—and still made their rent payments on time.

You say that the recording process was quick, brutal, and unrelenting. Please explain.

Jones: We allocated five or six days in Miloco Three: The Square Studio—which is a cheap, yet very functional tracking room in London. We tracked one song the first day, and we had the whole album tracked by day four. We then moved to a smaller, even more inexpensive studio called the Toy Shop—which is really just an isolation booth and a control room—to do all the additional overdubs for two days. To streamline the process, we set up a Universal Audio 6176 channel strip and an RME FireFace 400, and ran everything through those. We'd just switch out the mics, not the front-end. We tracked all the guitars direct into Native Instruments' Guitar Rig to save time on miking amps. We had to keep the session moving.

Knowler: The band was tracked live—all in the same room, and playing the songs pretty much as if they were in a gig situation. This created a good sense of atmosphere, and kept them fired up. But it also was the fastest way to do things. We'd never get anything done in that time frame if we were tracking instrument-by-instrument.

How did you mic the band during the live sessions so that you got the performances quickly, but didn't have to spend so much time in the mix correcting or spicing up the signals?

Knowler: The first and most important thing to getting a good performace fast is to fit the band comfortably into one room so that they can make eye contact and maintain visual cues. Actual mic placement is second in the list of priorities. We'd make sure "good" mics were used for the big-picture room sounds. A Neumann U87 was used to record the room, and contact mics, Shure SM57s, and AKG C451 Bs were used all over the drums and cabinets. We didn't track with any compression—except on the room mic—because it's difficult to remove, and, as you get a fantastic amount of headroom in today's DAWs, recording levels don't need to be right near the red like they used to.

Jones: It's all about the big picture. It's not about what the instruments sound like alone. I'm more interested in putting the faders up, and hearing what the band sounds like. So we approached this session knowing that we weren't going to go for perfect sounds on each instrument.

How did you handle the mix so that you weren't wasting any time?

Jones: I mixed this record entirely in the box using Apple's Logic 8. Avoiding the outboard gear saved a lot of time, because I could save and recall my plug-in settings. I used my FireFace 400's Total Mix as a summing mixer. That way, I was able to route, say, 13 stereo pads into my FireFace, sum them internally, and then route them back into Logic. It makes for a fat sound, and it's also logical from a workflow perspective. I really enjoyed using gear with full recall ability—like the FireFace—because the process involved making quick decisions, and then coming back and slightly readjusting them. I also use a lot of external DSP with my rig to keep the computer running smoothly. I have a TC PowerCore that I was using with the Sony Oxford Dynamics and Inflator. I have a Waves APA44-M, and a Focusrite Liquid Mix that I was using for its solid-state compressor on the bus, as well as its Fairchild 670 emulation. I mostly used my UAD-1 card—I use its Fairchilds, Pultecs, and 1176s constantly—on the bus and individual channel outputs.

If you had all of the time in the world to work on an album, would you still stay in the digital world?

Jones: I have a lot of experience in tracking to tape, but I have been tracking mostly to a DAW now, and I find it very creative, time saving, and cost effective.

Knowler: We tracked *Beat Pyramid* to Pro Tools, and I have to say that I love it. Pro Tools has a range of features that make it ideal for tracking, such as multiple playlists and beat detecting. Gareth and I *love* that tape sound, but time and budget usually dictate that digital is the preferable medium. EQ

These New Puritans (left to right)—Sophie Sleigh-Johnson, George Barnett, Jack Barnett, and Thomas Hein.

DEAN CHALKLEY

JANE GRANT

John Matthias.

MUSICAL MIND

John Matthias Dissects His "Brain"

BY GREG REYNOLDS

Pop quiz: When was the last time you were listening to an album, heard a vaguely familiar sound pattern that you couldn't quite place, and said to yourself, "Aha! Neurogranular synthesis! I knew it"?

The answer, of course, is never.

That is, unless you've given English multi-instrumentalist John Matthias' *Stories from the Water Cooler* a listen. Why? Because Matthias, along with co-conspirator Nick Ryan, is responsible for developing and recording a new musical instrument, dubbed "The Brain." Based on a model of spiking neurons, this experimental instrument was prototyped just in time to introduce it on Matthias' latest collection of droney folk-pop observations.

What was the basic premise behind *Stories from the Water Cooler*?

The idea was to create music with very simple song structures, overlaid with very simple ideas, but so that when they all came together they formed a rather complicated sound. I have a PhD in physics, and I have always been interested in quantum fluids, and the fact that individual atoms don't really have any meaning. It's the whole collection of behavior that has meaning, and what makes it flow in such an amazing way. The same thing is true to a certain extent with traffic flow, the flow of people through cities, economies, stars, and loads and loads of systems if you look at them in their entirety—even music.

Tell us about The Brain.

We wanted to build something that had correlated rhythms that weren't completely correlated like a drummer or musician. We started looking at models of the cortex of the brain, and we found that neurons firing are unpredictable, but they have interesting rhythms that aren't necessarily random.

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Explain how you make this work within the context of a musical instrument.

A neuron is an object that has a voltage on it. The voltage builds up until it gets to a certain level, and then the neuron lets it go. The hundreds of other neurons that it's connected to also receive these spikes, and you get all kinds of signals building up and feeding back. In our instrument, we use a mathematical model—a network of spiking neurons where when one of the neurons fires, it takes a fragment of sound from a sound file. This spiking then continues on down the network, grabbing other temporal aspects from different locations of the same sound file.

What exactly can you do with The Brain?

We can turn it into rhythms, we can create MIDI events, and we can create rhythmic events from other instruments.

How would you describe its sound?

We started the song "Evermore," for example, by recording a microphone being dragged across the pages of a book. The 15-second sample was fed into the prototype that scans through it and plays bits or "grains"—20ms–100ms in length—of the original sample with no correlation. If you go below 20ms, you can't hear any frequency in a grain, because there aren't enough wiggles in the wave for your ear to detect frequency. So the user controls the lengths of the grain in order to play it—it's not just indeterminate. With a few manual tweaks—such as duration, voltage, etc.—we had pulsing grains of sound that we added as an extra texture to build the song around. Call it the "sonification" of a network of neurons. But for an example with longer grains, one of my collaborators, Jane Grant, made a piece 17 minutes long called "Threshold." She uses the instrument with grains up to a second, which sounds very different and surreal. It's less "clicky."

Will you be marketing The Brain? What does it look like?

We're hoping to make these instruments available, but we're not sure if we're going to do something commercial just yet. Right now, it looks like a computer screen and a microphone. I'd like it to look like a box with four dials on it, and all the necessary inputs and outputs. You would plug a microphone into it, or load a sound file, and the dials would change individual parameters that affect the neurons—the number in a network, the geometry of how they're all connected together, how to simulate the neurons more, and how long each grain would be allowed to play.

NEUROGRANULAR SAMPLES

To hear the newest versions of neurogranular synthesis, check out John Matthias and Nick Ryan's *Cortical Songs*—an orchestral album with remixes by Thom Yorke [Radiohead] and Simon Tong [Gorillaz]. Also, click to www.thefragmentedorchestra.com to check out Matthias, Ryan, and Grant's *The Fragmented Orchestra*, composed of streaming audio from 24 different microphones in public sites throughout the U.K., and mediated through a neurogranular instrument.

This Month on EQTV

Join us at EQtv—*EQ*'s own video channel chock full of tips, tricks, tutorials, behind the scenes footage of some of the hottest sessions, and tons more. To check it out, visit www.eqmag.com and click the pretty little link, or go direct to www.eqmag.tv. You'll be glad you did. This month you'll see:

- Ryan Hoyle [Collective Soul] Shows You His New Studio, The Cave
- Jeff Balding [Megadeth, Rascal Flatts, Jewel] Shares His Mixing Tricks
- Ben Fowler [LeAnn Rimes, Brooks and Dunn] on How to Make Your Mix a Nashville Hit
- Location Recording 101 with Chris Mara, WEBER, and High Crimes

AND TONS MORE!!!

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EQ and JZ Microphones want you to share your favorite kick-drum miking techniques with our readers. In return, what we offer you is a shot at winning a JZ BH-1 Black Hole multi-pattern condenser (reviewed in the 04/08 issue of *EQ*, and archived online at www.eqmag.com/gear). That's a $2,295 value! All you have to do is click on over to the *EQ* website, access our forums via the top menu, and leave a detailed description of your technique and a link to a sound clip or a tune that showcases said technique on our Letters to the Editor forum. The winner will be announced in an upcoming issue of *EQ* and hooked up with a brand new JZ BH-1 Black Hole. So what are you waiting for? Get off your butt and get posting!

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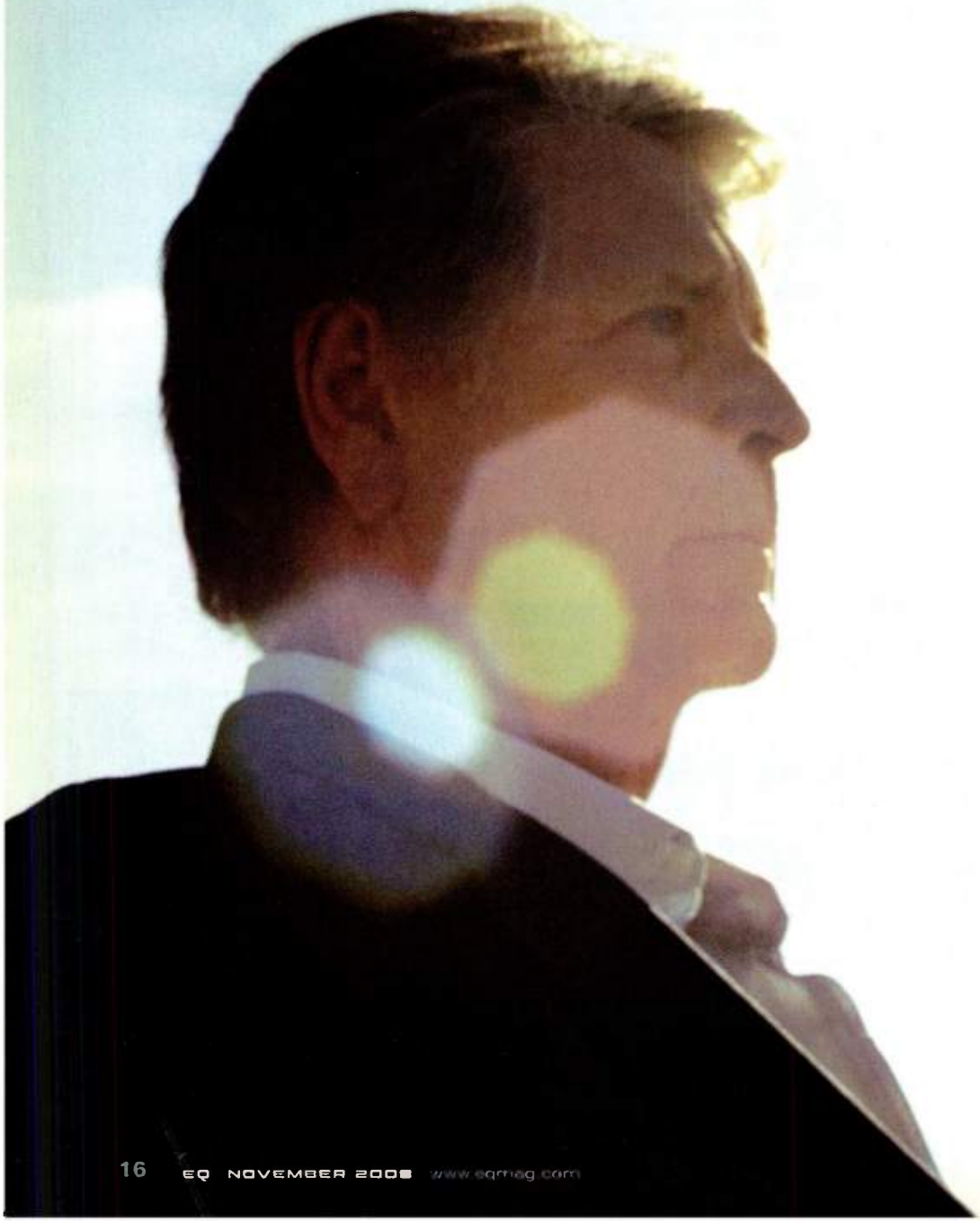


THER DAY

Peering into the Creative Genius of Brian Wilson

How does one of the most highly regarded pop musicians in the history of the recorded song still manage a successful career some 46 years after his first single scaled the charts?

"By being inspired to want to make someone happy," Brian Wilson responds in a matter-of-fact tone.

By Ken Micallef

Photograph by James Minchin III

ANOTHER DAY

Wilson is a rejuvenated, road-ready musician with energy to burn when *EQ* interviews him on a sunny L.A. day. Clearly, this wasn't always the case. The legendary figure—best known for his contributions to the Beach Boys during their peak years, writing, producing, singing, and playing bass on masterpieces such as "Good Vibrations," "I Get Around," "Surfin' Safari," and "California Girls"—was near mad and a total recluse for two decades. From approximately 1968 until 1988, Wilson was entrenched in a battle with drugs and a variety of mental illnesses. An infamous '70s *Rolling Stone* cover story depicted an overweight Wilson wrapped in a multicolored terrycloth robe, wandering the halls of a local all-night pharmacy, and rumors of Wilson being diagnosed with schizophrenia and treated for a drug-induced stroke saturated the media. It appeared Wilson was destined to become just another casualty of the rock-and-roll lifestyle—not at all unlike Pink Floyd's founder, the late Syd Barrett.

With the help of family, friends, and more than a few therapists, Wilson eventually reclaimed his mind and his music, re-entering the world as a solo artist with 1988's *Brian Wilson*. A series of albums of varying quality and commercial success appeared between 1990 and 2004, culminating in Wilson's full embrace of the album that almost never was—*SMiLE*. Assisted by pop provocateurs the Wondermints, wife Melinda, and longtime engineer Mark Linett, Wilson tackled the unfinished *SMiLE* project—an album that was conceived 37 years earlier, and was considered a catalyst in Wilson's ensuing mental breakdown. The resulting release was a tremendous success, hitting the Billboard charts at #13, garnering Wilson his first Grammy, and proving to the world that he still had the goods to create the glistening pop music found therein.

It's four years later and Wilson has returned with *That Lucky Old Sun*, a full-length homage to all things Los Angeles. Back in the Wilson camp is long-time collaborator Van Dyke Parks (the man responsible for the entirety of *SMiLE*'s lyrics), engineer Linett, and Wilson's faithful 11-piece backing band, including multi-instrumentalist/co-producer Scott Bennett and the Wondermints' Darian Sahanaja. Emboldened by *SMiLE's* rapturous universal welcome and several successful tours—and surrounded by what amounts to a loving family of familiar musicians, orchestral arrangers, producers and engineers—the 65-year-old Wilson has created what is arguably his best album since *Pet Sounds*. With songs such as "Oxygen" and "Midnight's Another Day," Wilson recaptures the magic of *Surf's Up* and *Pet Sounds* with ambitious sonic experimentation. And tracks like "Good Kind of Love" and "Going Home" find Wilson singing with a confidence and clarity not evident since his youth, turning out the kind of sun 'n' fun-loving ditties that made him a household name in the first place. *That Lucky Old Sun* even references the gorgeous lost Beach Boy's track, "Can't Wait Too Long"—a classic example of Wilson's musical prowess and vocal genius.

After the premier of *That Lucky Old Sun* at London's Royal Festival Hall over a year ago, *EQ* decided to paint an explicit picture of how one of the world's first and foremost musician/producers tackles the album-making process. This story isn't about Wilson and his crew's miking techniques, or tracing signal paths on a track-by-track basis—it's about exploring the creative process of one of the most mysterious, misunderstood, and unmistakable artists alive.

PART I: BRIAN WILSON ON BRIAN WILSON

Known to be elusive even after his recovery, securing an interview with the former Beach Boy was challenging. But we caught up with him at Capitol Records HQ in Los Angeles for a very brief interview. It immediately became obvious that there would be no lengthy explanations. Instead, what we got was a candid look at the self-perceived simplicity of Wilson's creative process.

What inspired you to write a concept album about L.A.?

I didn't write the concept; I came up with "That Lucky Old Sun" theme song. The concept came from Van Dyke Parks, who wrote the lyrics for the narration about L.A.

Why did you want to cover "That Lucky Old Sun"?

I liked it. I thought it was a good African-American spiritual song to do.

The record is very upbeat. Did you feel emboldened coming off the success of SMiLE?

We were riding the crest of the *SMiLE* album, but we weren't sure if it was going to be better or worse than *SMiLE*. Now, I think it is better.

I can see why. It is a rock and roll album that is also very orchestral. Scott Bennett said you worked out the songs at his home studio. Did you arrive with the songs fully fleshed out, or did you work them out at his studio?

I wrote the songs. Then, when I got to Scott's studio, he and I played around with the arrangements.

Did you enjoy working in Pro Tools?

I don't know much about working in Pro Tools, but it seems to work pretty good.

You didn't find the process faster or slower than how you used to work?

A little slower, but it was more efficient.

What sparks a song like "Good Kind of Love" or "Oxygen"?

The chord pattern comes first, then the melody, and then the lyrics.

I've read that you would hear the entire production of a song in your head before you entered the studio. Did it work the same way with *That Lucky Old Sun*?

No. I hear it as we go.

Do you prefer the digital way of recording to the old days of analog?

Yes, because you can make pitch correction a lot better.

Are you tough on vocalists when you arrange their parts?

Yes, because I want them to be right. I want them to be good.

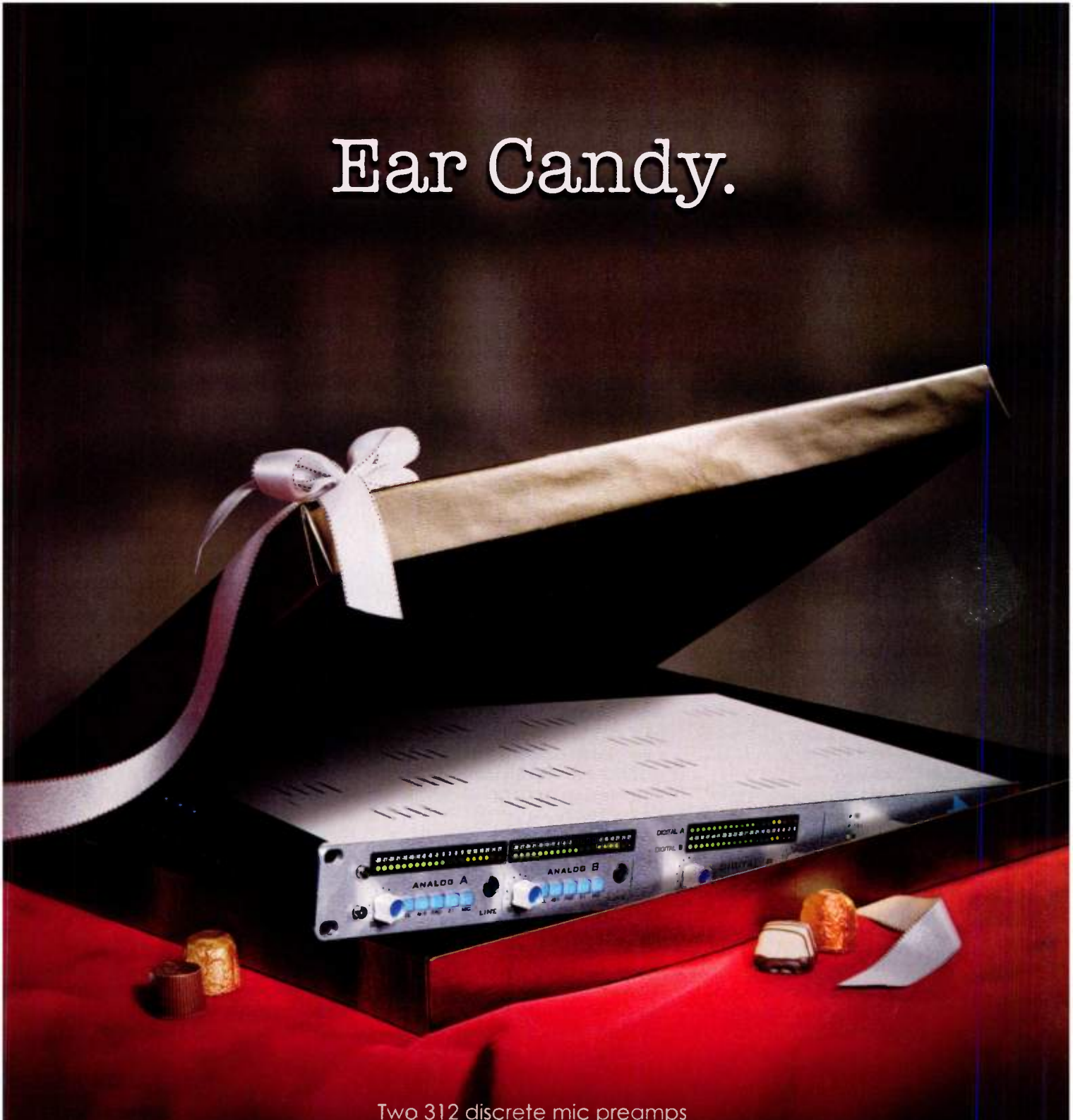
Is it difficult for the background vocalists to grasp your concepts?

No, not really. I go to the piano and sing and play each part for each person. Then, they record as a group. It usually takes from two to 20 takes for them to get it. It varies from song to song. I can't remember which song took the most takes. I sing some of the bass parts on the album, too.

Scott Bennett mentioned that one of your trademarks is that the bass vocal part is very atypical.

Well, the singers get it very quickly.

Ear Candy.



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There are no breaks between songs. What determined that?

My wife and Scott Bennett and Darian Sahanaja all teamed up to sequence the album. They are responsible for that.

What inspired "Oxygen"? It seems very autobiographical. . . .

It is the story of my life. I laid around and didn't do anything and was lazy. One day, I started exercising and I started eating right, and getting better sleep at night—stuff like that.

What inspired the melody for "Oxygen"?

What inspired the melody? Nothing. I just came up with it. I usually try out ideas on a synthesizer—a Yamaha.

That and "Midnight's Another Day" are both very frank and honest. Where did you find the strength to put those feelings in song?

I needed to express myself so I just did it.

What inspired your original stacked vocal harmonies in the Beach Boys?

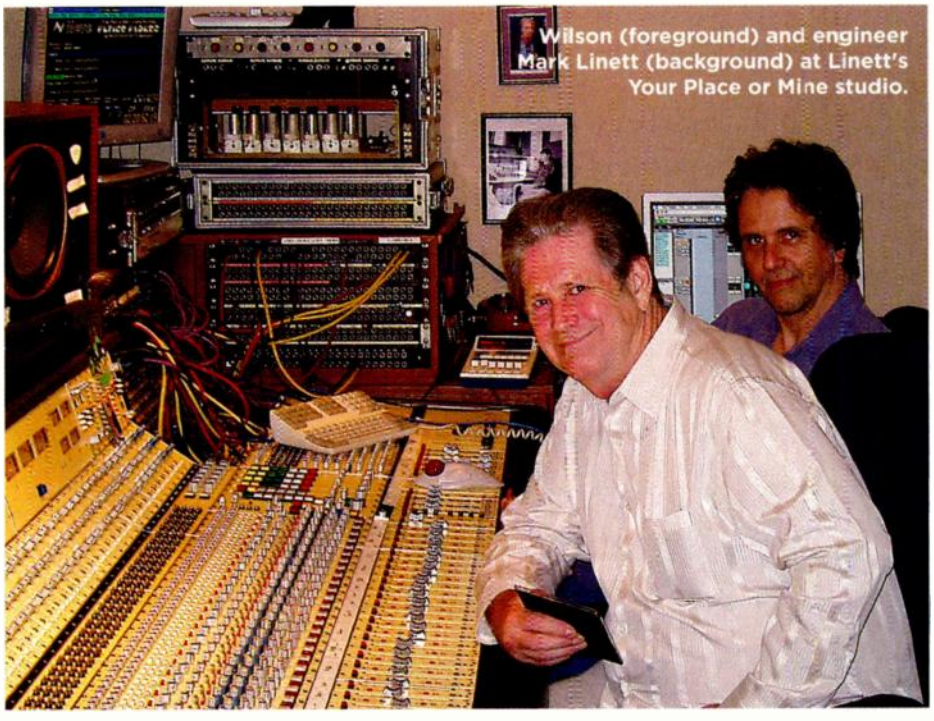
Ah, a bunch of different influences. I couldn't even mention them all to you. Bach, for sure.

What music are you listening to now?

I listen to my own stuff, the Beatles, and a station called KTRH-FM 101 in Los Angeles. I listen to "oldies but goodies" all day.

Do you have a favorite song on the album?

I think "Oxygen" is my favorite song on the album, because it is about myself. They are all about me, but that was more about me than any of the others.



Wilson (foreground) and engineer Mark Linett (background) at Linett's Your Place or Mine studio.

PART II: SCOTT BENNETT ON THE DEMO SESSIONS FOR *THAT LUCKY OLD SUN*

Multi-instrumentalist/co-producer Scott Bennett played a large role in the creation of *That Lucky Old Sun*, sharing songwriting and production credits for recording Wilson's initial Pro Tools sessions in a small home studio in Los Angeles. Throughout the summer of 2006, he and Wilson spent countless hours building and refining songs, as well as laying down scratch vocal tracks—many of which appear on the final version of the album.

Tell us about the genesis of *That Lucky Old Sun*.

This record began as a bunch of demos recorded in the bedroom of my house. Brian would call me and want to come over and record. I have a small setup based around Pro Tools LE running on an Apple G4. Besides a Kurzweil K2000, a Yamaha Motif, a PreSonus Digimax FS, a Røde NTK, a Gibson acoustic guitar, and the Yamaha HS50Ms, I pretty much have nothing. But because of my background doing commercial sessions, I could work fast, and that's why Brian wanted to work with me. It wasn't about gear, it was about getting stuff down fast, because Brian is real impatient. Back in the day, he could get all the guys in a room and hear the songs as they were happening, rather than using a click and some guide tracks. That's what he was used to. Early on, he became very frustrated with recording into Pro Tools. He said, "Scott, you've got to be kidding me with the tediousness of this process." But Brian was also knocked out that the tracks could sound so good in such a small space. He said, "This studio is better than Ocean Way!" For him, there was ultimately less pressure. It was just us experimenting.

Brian mentioned that he likes Antares Auto-Tune. Did you use the program a lot in the demo sessions?

There was no auto-tuning of Brian's vocals—we only fixed a few words here and there. He was impressed that we could change things like that. Brian would typically say, "Gimme a click." Then, he would start pounding on the Kurzweil. He would invariably dial up the Honky Tonk preset, because he likes that fat key sound. We would pound out a tune, and then add a guide vocal. Nine times out of ten, he did great vocal parts. There are a lot of final vocals on the album that came from my home studio, including "Good Kind of Love," "Midnight's Another Day," and "Morning Beat." A bunch of tracks were built out of composite vocal tracks, but that's because Brian doesn't have any consistency to his mic technique when he is singing. He is usually reading a lyric page, or looking away from the mic, so it can be tricky to get his vocals balanced.

One would think his technique would be better. After all, he is Brian Wilson, the vocal genius.

But in the '60s, Brian was not a close-mic singer. They used to just gather around a mic and sing. If the bass vocal part wasn't loud enough, they got that singer right up on the mic. Brian sang some beautiful lead

LOUD AND CLEAR

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vocals back in the day, but he was also an incredible vocal arranger. If he thought somebody was the right voice, he would have him sing it. Brian is like Dylan now—he won't take ten days to get a vocal track.

Tell me more about how you two wrote songs in your studio?

I never knew what the day would bring. Brian might show up and say, "Let's do 'Proud Mary' today." We did 19 songs at my house—ten of which appear on the record. We also did "Something Tells Me I'm Into Something Good," which didn't make it. There were quite a few guest performers who ended up coming by. Brian would say, "This song reminds me of Carole King. I'll call her to see if she will come over." And the next day, Carole King would be at my door. I actually had Carole King in my apartment duetting with Brian on a song that may end up being a bonus track. Tommy Morgan—who played harmonica on *Pet Sounds*—came over to play on "Going Home." Danny Hutton of Three Dog Night also sang on a couple of tracks. It was just this magical summer of us cranking stuff out. Brian was really on fire with lots of specific ideas. On "California Role," he dictated that exact drum beat. He is a very underrated rhythmic brain. He hears drums orchestrally, so you get a lot of interesting patterns—like those rhythms in "Good Vibrations." Because of Phil Spector's influence Brian is way into the "big boom."

Did he leave all the engineering to you?

Yes—though he would dictate his wishes. He would ask for more bottom out of a tom, for example. I must say that he is very aware of the vocals. These were just demos, so I would mess around with the songs later, because when Brian was here it was all about working fast. On "Mexican Girl" Brian laid down the keyboard and the vocal, and then he left. He let me stack percussion and trumpet and handclaps and guitar. He really liked it.

A snippet of an old Beach Boys' song, "Can't Wait Too Long," appears on *That Lucky Old Sun*. That is some really beautiful, classic Brian Wilson vocal arranging.

It's a *C* chord moving from a low to a high octave. The main upper-midrange part begins on the seventh, then it's about those *C* chords. It's a classic Brian sensibility of where to place the vocals. The basic harmony is a I-III-V progression, and we all move together—though Brian will experiment with people moving at different times. He tends to really be into sevenths and sixes—things that "rub" in a nice way.

What is it about Brian's approach to creating music in the studio that you find most strange?

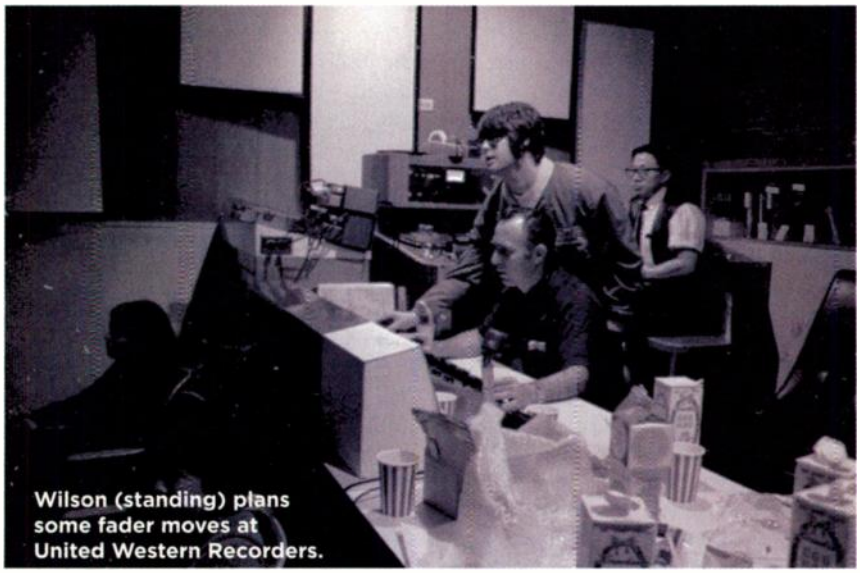
I think it's the fact that cymbals annoy him. If you want that kind of high-end percussive information, Brian tends to want to hear it from a tambourine or a shaker. That, and he always wants the drums to be more thuddy.

PART III: MARK LINETT ON THE MUSICAL SOUL OF BRIAN WILSON

As Brian Wilson's right hand man, Mark Linett has manned the console

LESTER COHEN

Wilson rehearsing with his band for the *That Lucky Old Sun* sessions.



Wilson (standing) plans some fader moves at United Western Recorders.

for every one of Wilson's recordings since 1998's *Imagination*—including various Beach Boys reissues such as *The Pet Sounds Sessions* box set, which earned him a Grammy nomination in 1998.

After working so closely with Brian Wilson on so many albums over the years, what would you say is his current perspective on the recording process?

Brian stopped worrying about the technical process when serious multitrack recording came in. Like a lot of people from that era, when it went from three to four tracks cut live in the studio to bigger track counts and layering and overdubbing, Brian stayed with the arranging and producing mode, and he left the engineering side to other people. Brian always knows what he wants to hear, but he still talks about recording in terms of tracks. He has no need or interest in knowing the intricacies of Pro Tools, and why should he? He doesn't like looking at a computer screen all day.

So at this point, he leaves it up to you?

Brian knows about flying vocals in, and how easy that is to do. That would never have been conceived of ten years ago, much less 40. He just approaches it from the artistic standpoint. It's more about the convenience now. We don't have to tell him we just ran out of tracks so we have to stop and make a slave or do a punch again.

Did Brian discuss with you the overall sonic sense he wanted for *That Lucky Old Sun*?

Not on this one. He did that pretty extensively when we recorded *SMiLE*.

What exactly did Brian want to hear on *SMiLE*?

We conceptualized doing it the way it was recorded in the '60s. We did multitrack, but we put everybody in the same room [Studio One] at Sunset Sound, where Brian recorded some of the original *SMiLE* and *Pet Sounds* sessions. Brian felt like that room was an integral part of that piece, and that it would be better to cut it that way, rather than try to make it sound like that after the fact with extra reverb and the like. We even cut the strings and horns live, though they were in an isolation booth.

What does Brian listen for while his band is tracking?

A good take—and any obvious blunders. Some arrangement changes were made on the floor. This is something they had already played live as a 36-minute suite of songs at London's Royal Festival Hall. Although this music had been performed, and we actually already recorded a live version at that point, once you get in the studio, things tend to change. *SMiLE* and *That Lucky Old Sun* were both put on their legs before we went in the studio. That is why we could cut this so quick. Everyone knew their parts.

There are moments on *That Lucky Old Sun* that recall *Pet Sounds* and other classic Beach Boys' records. Did Brian want a similar production sound?

ANOTHER DAY

The concept was to make the album slightly drier-sounding and more modern. Less reverb seems to be equated with a more-modern sound than the traditional Brian Wilson sound, but the finished mix sounds good.

The new album is arranged like a suite with no breaks between tracks. How did you record with that in mind?

The songs are distinct, and there aren't any segues, *per se*, except for the narration. But you can split it all up pretty easily. In a couple of cases, the band played the first couple of bars of the next section. The arrangement of the pieces we already knew—how these things connected timing-wise and arrangement-wise. The whole thing was arranged in demo form close to what was ultimately recorded. Then, the players learned to record it as one piece of music. By the time it got to the studio, all the pre-work was done—which is why it only took us two days to record the basic tracks.

I spoke with [drummer] Todd Sucherman, who mentioned that Brian would offer ideas that wouldn't seem to work in theory, but worked great in application.

That is something Brian is renowned for. One story has it that Brian was doing a session in the '60s with 15 guys, and he dictated a chord to the players, and somebody said, "Brian, that doesn't fit with the root." Brian said, "When I add the vocals it will." If you want a wonderful example of that, go to disc five of the *Good Vibrations* box, and listen to the backing track of "I Get Around." Understand that when that basic track was cut nobody was singing, and Brian had the whole conception of the record with the vocals in his head. On the second "Round, round, get around, I get around" before the vamp, you'll hear a chord you won't expect, and no one plays that chord live. It is a very odd chord, but it works perfectly with the vocals. It blew my mind that he had a bunch of musicians play that track knowing in his head what it would sound like with the vocals, but without hearing it. That's an amazing piece of work.

Is that reflected at all in the way Brian works now?

Yes, you get that sense. If Brian is doing his own backgrounds—as on the demos—he will build up a vocal stack equivalent to what he would do with his current band, or like he did with the Beach Boys. It's like he's a tape recorder, and you are just playing it back. Brian will lay down the first part, double and triple it, and then do the second part the same way. He will have the harmony structure in his head, and he will simply nail the parts. If others are doing the backgrounds, he directs each person—he has it all figured it out.

How does Brian like to record his vocals?

It's usually just him and me. We'll do a couple of takes, and once we get a take we think is pretty much there, we might do a little comping, and then go back and check different lines in different verses. I don't really get too many comments from him about the sound of his voice. We've used a variety of mics over the years. For this, it was pretty much a Neumann M49—though I've used a U67 a lot. He doesn't seem to mind which mic we use. One of the things that Chuck Britz—who did most of the recordings from the '60s—used to talk about was that he would record Brian's lead vocal on the equivalent of a Shure SM57. I can tell listening to the old recordings when that is happening, or when he is using an old Neumann U47, because you can hear a lot of wind blast. That didn't concern them in those days, because anything below 50Hz was chopped off the record in mastering.

What would you say is Brian's basic vocal tonality?

As he has aged, his voice has gotten a bit lower. When he was younger, he could hit ridiculous notes with his falsetto. He tailors his voice now toward a more mature sound. I record his vocals pretty much flat—usually through a custom Universal Audio 610 preamp. There is very limited EQ on that, so I will sometimes add low end—although I don't like to add EQ when I record. One of the advantages of high-resolution digital recording is that you don't have to worry so much about signal-to-noise. Back in the day, you had to be more conscious of putting something to tape because you weren't going to be able to

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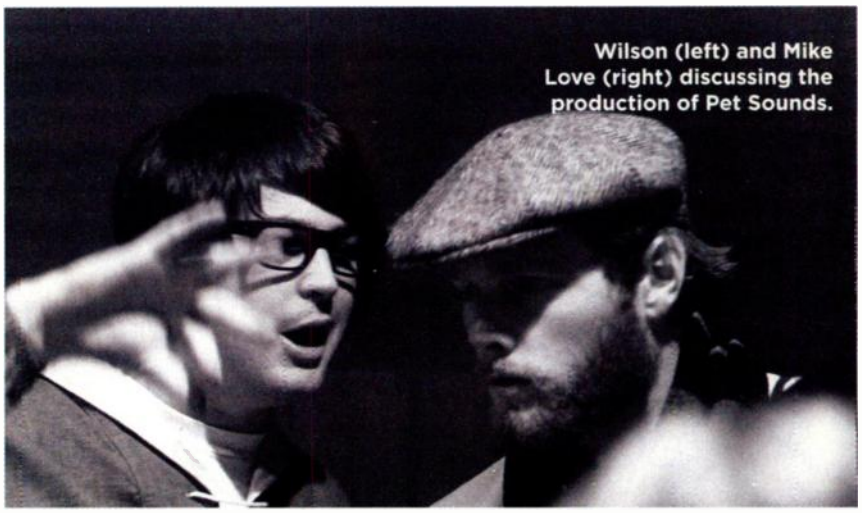


Wilson (left) and Mike Love (right) discussing the production of Pet Sounds.

process it much in the end. Now, we have a lot more flexibility in terms of EQ and compression. I tend to record Brian more with compression than with EQ. I don't want to over-EQ his vocals, because I know it will be a different sound by the time we add everything else.

How many background vocalists did Brian have you record for *That Lucky Old Sun*?

We set up a quad pattern—four sets of baffles together so the seven vocalists could sing facing each other on their own mic. Almost everything is doubled.

What personal changes have you seen in Brian, as far as being a recording musician, over the course of the years?

Brian has had a troubled life. But I have to say he has become so much happier and grounded and independent since I first met him. One of the biggest things was when he finished *SMiLE*. Everyone has been talking about this album for 40 years, obsessing about the album that never was. But Brian had also been carrying that around with him all this time, and it was a major turning point for him when he was finally able to finish that piece of music.

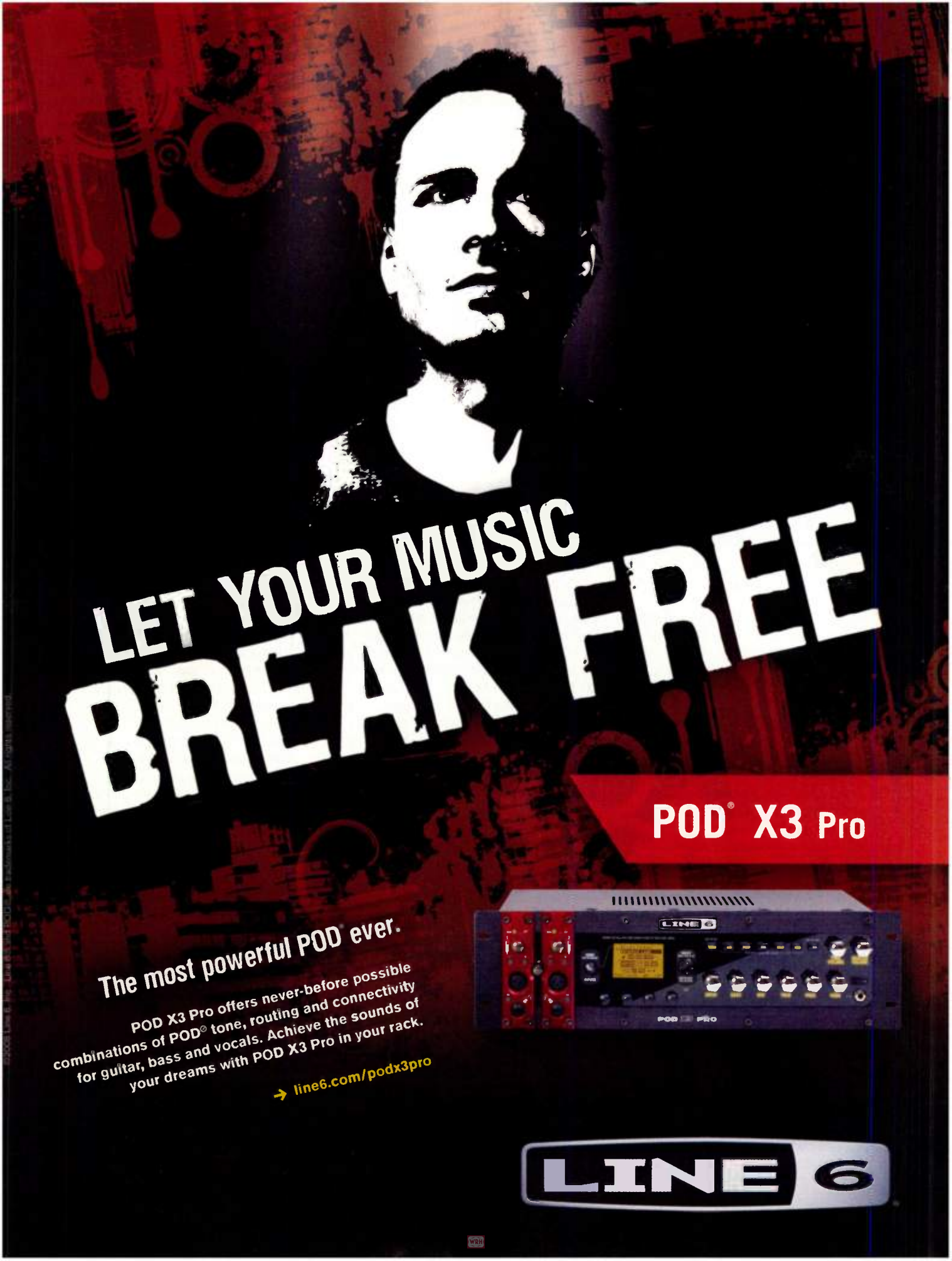
We mixed *SMiLE* in three sections. Brian is not somebody to sit around and watch digital paint dry. Darian Sahanaja was involved, and when we got each section together we would have Brian come down, play him the whole thing to get his changes, and then he would take a CD home. When we had done that the third time, I said, "Brian, that's it. That's *SMiLE* completed." It's not an exaggeration to say that when he realized *SMiLE* was finally finished, Darian and I literally saw something change in him.

It's interesting to think of somebody like Brian who isn't like most of us. Most of us are programmed to follow the mantra of "This too shall pass." Most of us can get over death or a disability, and it makes sense, because it's what we have to do to survive. But Brian isn't able to put things aside. A disappointment like *SMiLE* wasn't something of which he could say, "Okay, it didn't work, I will go on to something else." Brian did great work after that, but *SMiLE* haunted him for all those years.

So the change I've seen is in his level of confidence and happiness that he finally completed something that was so important to him. That was the peak of his art at that point of time. Up to that point in 1967, making and recording music was the joy of Brian's life. *SMiLE* began that way, but by the end it was a horribly painful experience for him to work on, and that is why he dumped it rather than allow it to completely destroy him. And he suffered for it. It took Brian a long time to come back from that. Finishing *SMiLE* was a big deal for him personally. He realized this thing that had been hanging there for 40 years was now finished. He completed what he started in 1967, and now he's moving on. EQ

More Online!

For an interview with Mark Linett focusing on the recording of Brian Wilson's SMiLE, go to www.eqmag.com/article/an-evening-with/Dec-06/24480.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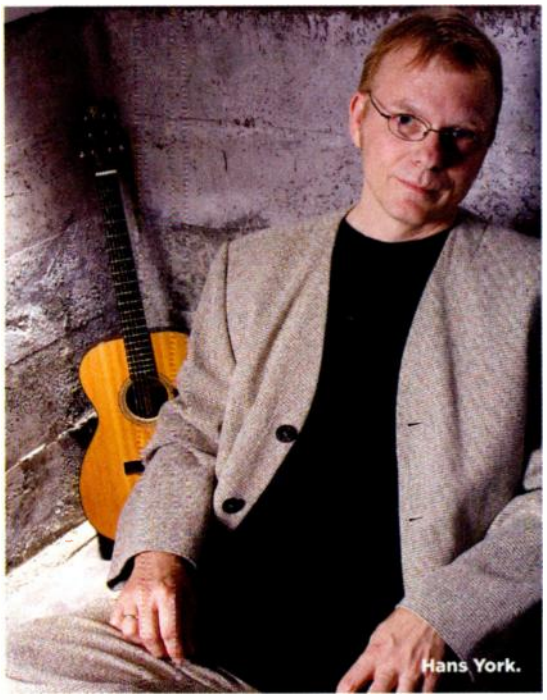
Hans York.

TAMING SIGNAL BLEED AT ACOUSTIC SESSIONS

by Shane Mehling

To spend a few months on a record is common nowadays, but guitar virtuoso Hans York wanted to avoid a drawn-out process, so he and his band spent only two days recording the tracks for his new folk-jazz gem, *Young Amelia*.

"I wanted to get back to a live-performance style—the way music used to be recorded," says York, who went through about 150 guitars before he found a Santa Cruz acoustic that was "just right" for the album.

To ensure a live approach would still produce a pristine, modern sound, York sought out 30-year studio veteran David Lange, who has plenty of experience miking all kinds of acoustic instruments. Of course, York's decision to sing while playing meant the first hurdle for the *Young Amelia* sessions was eliminating signal bleed.

"Hans has done enough recording, and he knows his instrument well enough that I wouldn't tell him what he could or couldn't do," says Lange. "With someone else, I would give the pros and cons of playing and singing simultaneously, and then ask if they really wanted to record that way. Voice bleed into guitar mics definitely does not sound pretty."

To diminish as much bleed as possible, Lange placed a Sennheiser MKH 50 near the body of the guitar, a B&K near the 12th fret, and made sure York was as close to the vocal mic—a Neumann U87 (which was routed through a Neve 1272 module and an ADL 1000 tube compressor)—as was comfortable.

"The MKH 50 is very efficient at rejecting voice bleed—especially when it's down on the body," says Lange. "The B&K was a little more problematic—if you soloed the B&K, you'd get some bleed, but it was pretty negligible. Happily, Hans is great at balancing the volumes of his guitar playing and vocal performance."

Lange's studio was also a factor in keeping the live recording feasible. "The room is big—about 20x30—but it's pretty anechoic," he says. "There's about four inches of absorption in the ceiling, so it's really dead sounding. When you walk in, it isn't very pleasant, but I can get away with recording a few things in the same room because the ambient sound is very clean and precise. For that reason, I tend to use little or no effects—maybe a little Altiverb or Lexicon reverb. I hate big effects chains, and outboard gear doesn't excite me. Good mics and preamps are what excite me. I may throw a little compression on a vocal or the bass, but I usually don't touch anything going down. We like to come from a 'quote unquote' *natural* place.

"However, I do find myself making far too many EQ adjustments. I will listen for problems—mostly in the lower midrange—and then just work that area until I tone it down. I've gotten better at finding the bad parts."

Bass frequencies tend to be Lange's biggest issue, and he says keeping the mic away from the guitar's soundhole eases the problem somewhat. "Off the body, it always seems that there's too much going on at 600Hz. When miking the guitar's neck, it always seems the *A* note is too resonant. Obviously, I will turn down those frequencies."

When it comes to finding the perfect spot for the guitar in the mix, Lange likes to go big. "I usually go for a wide stereo sound," he says, "especially with singer/songwriters. I go as wide as possible so the guitar stays out of the way of the voice. I'll get the voice in the center, and then flank it with guitar. You know, I just love the air moving from a piece of wood. When people want to do something electronic, I'm not that useful, but with acoustic music, I can usually get people the sound they're looking for."

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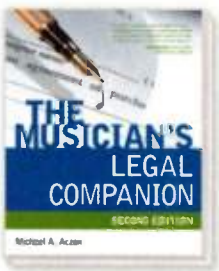

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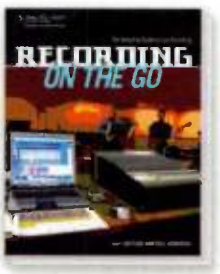

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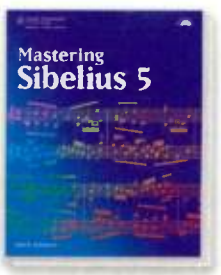

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Rascal Flatts (from left to right)—Gary LeVox, Joe Don Rooney, Jay DeMarcus.

THE RASCAL FLATTS BIG BOOM METHOD

by Michael Papatonis

Just like their previous releases, Rascal Flatts' *Still Feels Good* sold like a record executive's wet dream. They're about as hot as a band can get, and no wonder: The songwriting is great, the performances are emotional, and the audio production—by Dann Huff with mixer Justin Niebank—is exquisite. The low end, in particular, is a thing of beauty, with a classic-meets-modern approach that allows the bass to be felt as much as heard. Recently, Rascal Flatts bassist and vocalist Jay DeMarcus took some time out of his touring schedule to reveal to *EQ* readers how *Still Feels Good* got such a big bottom.

Did you plan such a massive bass sound from the beginning of the recording process, or did the sound develop during the mix?

I think that has always been a part of my sound. I use an Aphex Bass Xciter pedal, so I definitely hype up the low end, and have some of that subsonic thing in there. Also, Justin is a bass player himself, so the low end is very important to him. He really focuses on it when he mixes.

Did you track with an amp and a DI simultaneously?

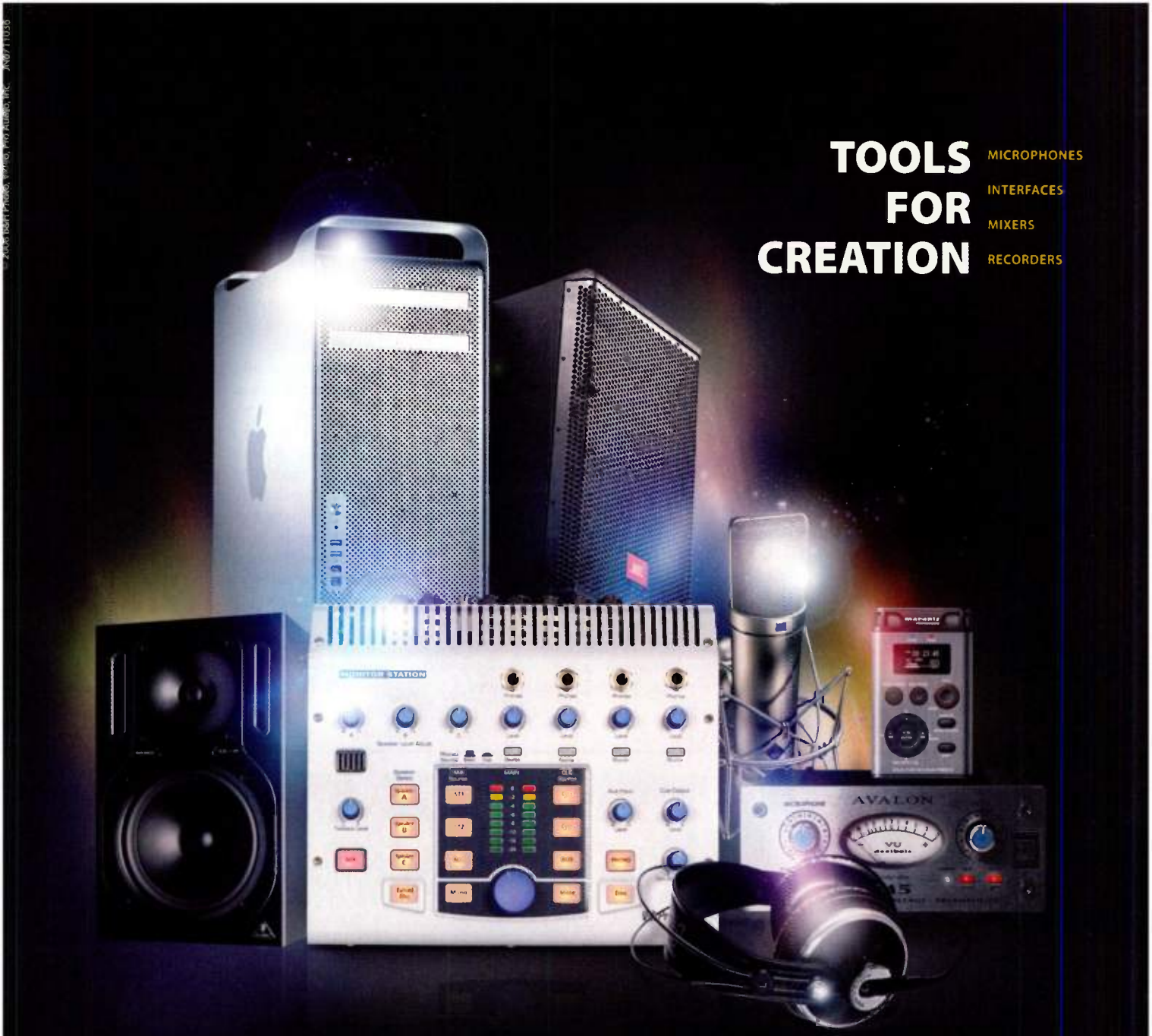
Yes. I used both signals. I have got an Ampeg SVT with an 8x10 cabinet that we miked up, and we also took a direct line out of my rig.

What's your direct signal chain?

I'm running through an Avalon 737 into an Empirical Labs Distressor, and then the engineer adds a little bit more compression with a Universal Audio 1176.

So you send the engineer a compressed signal?

Yes, but I try not to overdo it with



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Producer Dann Huff (left) with DeMarcus in the studio.

the Distressor. If I'm playing live, I'll hit it harder, but, in the studio, I lighten it up a bit. I use just enough to get some sustain and some squash. Over the years, it has become harder for me to play without compression. I need that squeeze.

Why is the Distressor your choice of compressor?

Justin turned me on to it. It has a nice sustain and release to it, but I really love the way it grabs the tone right at the beginning of the signal. Mine has the British modification, and I use a quick attack and a slow release.

Did you hit the Avalon preamp hard?

No. I'm going for very clean with the Avalon, so everything is set at zero. I'm going for a pure tone, so I don't even use any of the onboard EQ—nothing.

During the mix, how much of the DI versus the amp was used?

It depended on the song. If it's a rockin' song, I'll crank up my amp to get a little bit of growl and dirt, and we'll use more of the mic signal. If it's a ballad kind of thing where we need a cleaner bass tone, we'll use more of the DI signal.

During the tracking process, are you in the same room with drummer Chris McHugh?

I'm in the room with Chris, Joe Don Rooney on guitar, and also our road guitarist, Tom Bukovac. We do very few overdubs, unless it's a steel guitar or a fiddle or something. We

play it down, and we might get a take on the first try or the tenth. It's all about the energy.

What basses do you use?

My favorite is a '63 Fender Jazz Bass, and I also have a '59 Fender P-Bass. If I'm looking for that old-school rock and roll vibe, I grab the P-Bass. If I need something to speak a bit more and cut through the mix, I'll use the Jazz. Lately, I've been tuning down a minor third, and using heavier-gauge strings, so I can grab some lower notes that you usually can't get with standard *E*, *A*, *D*, *G* tuning.

Do you restring before a session?

I leave my strings on there a pretty good while, because I don't like the clicky sound of new strings. I like mine to be broken in a bit—to have a little bit of that funk on them.

Do you subscribe to "the tone is all in the hands" approach?

Absolutely. I feel the way that you attack, bend, and mute strings has a lot to do with whether your tone sings. This is why one player can dig in and sound beautiful, and another player can use the exact same bass and signal chain, and just sound like an ass because he might not know how to hold the bass right [*laughs*]. Technique is definitely a lot of your sound. EB

DeMarcus at the board.

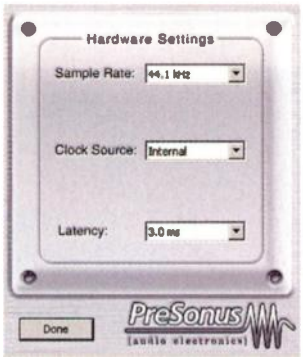

Fig. 1. Setting the latency in the Interface Control panel.

6 WAYS TO REDUCE SOFT SYNTH LATENCY

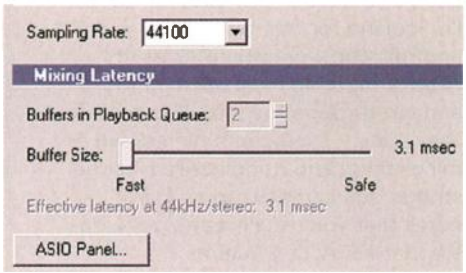

Fig. 2. Setting the latency in the DAW Audio Preferences window.

by Bruce Bartlett

Has this happened to you? You set up a soft synth in your DAW and monitor its signal. When you press a key on your MIDI keyboard, the sound plays after a short delay. This is called *latency*—the time it takes your gear to process the signal flow—and it can really mess up your timing. You need to hear the synth at precisely the same time you press keys on your MIDI controller. Here are six options to reduce latency.

DON'T MONITOR THE SOFT SYNTH

- If you're playing a synthesizer, connect its audio output to your monitor system.
- If you're playing a MIDI controller, connect its MIDI Thru port to a hardware sound module plugged into your monitor system.
- Set the synth or module to a patch like the soft synth's.
- Listen to that signal instead of the soft synth. Disable Echo Input Monitor (or similar function) in the DAW track containing the soft synth.
- Set the buffer high. Record your part on the MIDI sequencer track. During playback, you'll hear the soft synth play without a delay.

MONITOR WITH HEADPHONES

Monitoring with headphones has less perceived latency than monitoring with speakers, because sound takes time to travel from the speakers to your ears. For example, if your speakers are six feet away, that adds 5.3ms of perceived delay to the monitored signal.

TRY A DIFFERENT DRIVER

Drivers affect latency, so download the latest drivers for your audio interface. However, note that earlier versions of drivers are sometimes faster than later versions. Also check out third-party drivers such as CEntrance Ideal Driver (www.centrance.com) for Win XP, and asio4all (an ASIO overlay for WDM drivers; www.asio4all.com). You have to set up your audio software to use ASIO in order to notice any change in latency. Avoid MME drivers.

TRY A DIFFERENT AUDIO/MIDI INTERFACE

Some interfaces have less latency than others. Check the specs.

REDUCE BUFFER SIZE

In your interface control panel (Figure 1), or in your DAW (Figure 2), you can set the size of the buffer. The smaller the buffer, the lower the latency. Buffer size is indicated in samples or in milliseconds. Latency (ms) = buffer size (samples) x 1000 divided by the sample rate. For example, if the buffer size is 256 samples and the sample rate is 44.100Hz, the latency is 5.8ms.

As you reduce the buffer size and play the audio, you'll hear drop-outs or crackles in the audio at some point. How small you can set the buffer depends on how well you've tweaked your computer for speed (more on this later). So, a small buffer gives low latency, but tends to cause audio glitches. A large buffer increases latency but prevents glitches. Which setting is best?

To solve this conflict, use two different buffer settings. Set the buffer/latency small (under 4ms if possible) while recording a soft synth. During playback and mixdown, set the buffer large (maybe 25ms). The bigger buffer will reduce the load on your CPU, and let you use more plug-ins and tracks without creating drop outs and crackles.

TWEAK YOUR COMPUTER FOR SPEED

If you adjust your computer settings to reduce the load on your CPU, you can lower the buffer size to a usable value without problems. Optimizing your computer is a whole subject in itself, but try these tweaks for starters.

- Disable unused MIDI inputs.
- Remove unused audio drivers.
- Reduce video acceleration: Select Start > Settings > Control panel > System > Performance > Graphics > Advanced. Reduce Hardware Acceleration as much as you can without degrading the display of your audio program.

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• Freeze or bounce tracks that have effects, or temporarily disable any plug-ins. You might also render or freeze other MIDI tracks to audio tracks, then disable their soft synths. Archive and temporarily delete tracks you don't need to hear while overdubbing.

• Set up a bus with reverb or echo set to 100 percent wet or 100 percent mix. Use aux sends in tracks to create reverb/echo, instead of using a reverb plug-in in each track.

• Right-click My Computer > Properties > Advanced > Performance > Settings > Advanced > Processor scheduling > select Background Services. This setting allocates more processor time to background activities, such as streaming audio and ASIO drivers.

• Use one hard drive for the operating system and programs, and another hard drive for audio files and samples. EQ

WHAT CAUSES LATENCY?

It's all about the time it takes to process this signal flow:

- A key press generates a MIDI note-on message at the MIDI Out connector.
- That note-on message enters your audio/MIDI interface, which converts it to a USB, FireWire, or PCI signal.
- In your computer, the interface driver (a small program) lets your DAW software communicate with the interface.
- The MIDI signal triggers the soft synth.
- The audio from the soft synth—and all the other tracks—goes into a buffer (a small chunk of memory that holds the audio signal before playing it).
- The digital audio from the soft synth gets converted back to analog audio in the audio/MIDI interface.
- That analog audio goes to your monitor speakers. You hear the soft synth note that you played.

Now, the total delay between key press and note sounding is the sum of these latencies:

- MIDI-note generation: about 1ms per note in a chord.
- Driver: about 4ms to 6ms, depending on the driver.
- Output buffer: whatever you set it to—say, 1ms to 25ms.
- D/A conversion: about 1ms.

So, if you set the buffer to 3ms, the total round-trip latency when you play a MIDI soft synth is about 9ms. That's not bad, considering that 9ms is just noticeable to many people according to CEntrance. You can measure your round-trip latency with the Centrance Latency tester (www.centrance.com).

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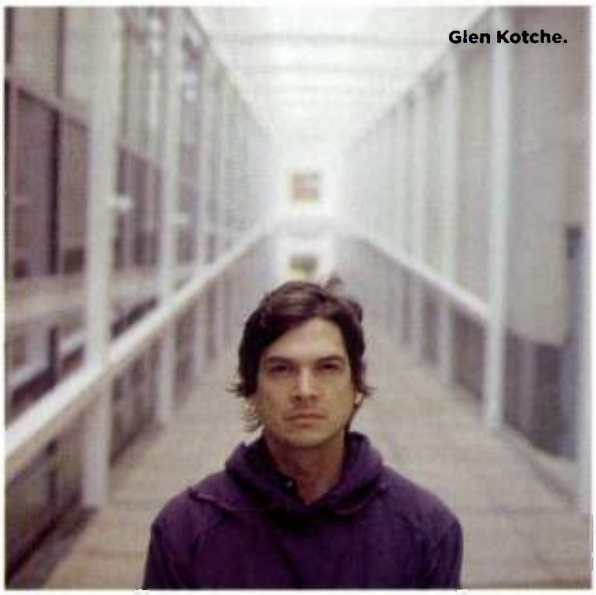


Glen Kotche.

MICHAEL WILSON

WILCO'S GLENN KOTCHE DETAILS HIS HANDMADE DRUM APPROACH

by Merrick Angle

Like all the best superheroes, Glenn Kotche leads something of a double life. The Chicago-based percussionist has been working with Wilco since 2001—after post-rock guru Jim O' Rourke introduced him to the band—contributing to *Yankee Hotel Foxtrot* (2002) and *A Ghost Is Born*. Kotche is also a well-respected composer, recently writing for the likes of the Kronos Quartet and the Bang on a Can All-stars.

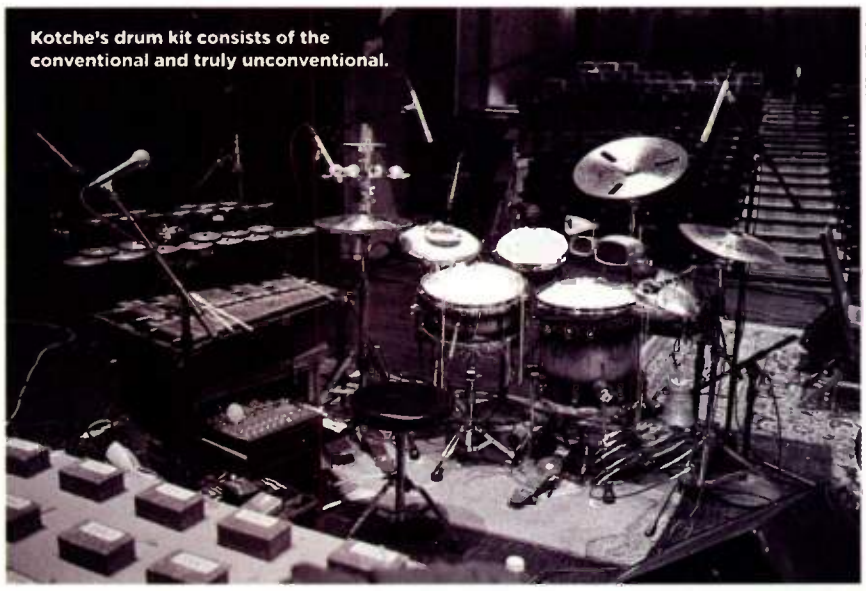
"I've been playing in rock bands since I was 12," he says, "and I love creating music with other people. I'd really miss that if I wasn't playing with Wilco, as composing can be a very solitary process."

Kotche's kit is by no means your usual "rawk" drum set. His conventional Sonor kit is tricked out with orchestra bells, high and low Crotales, an Almgloken, a gong sheet, the occasional congo, and even a fruit basket. Further idiosyncratic modifications include his "hi-hat shaker" and the "Mani tom"—which is named after Mani Neumeier, the influential drummer with jazz-tinged Krautrockers Guru Guru.

"I'll envision a particular sound, and if I can't find just the fight thing on the market, I set about building my own," says Kotche. "The hi-hat shaker is essentially some egg shakers placed inside a bracket attached to a hi-hat. It's a fairly subtle heightening of the sound, so it works best in the studio. The Mani has a plastic tube placed into the vent hole of the tom that I blow into to increase air pressure within the shell, which results in pitch changes. The effect is not unlike a timpani glissando."

When it comes to miking his drums, Kotche doesn't spend a lot of time trying to get everything to sound clean and pristine.

"I'm more concerned with color, timbre, and capturing the idea," he

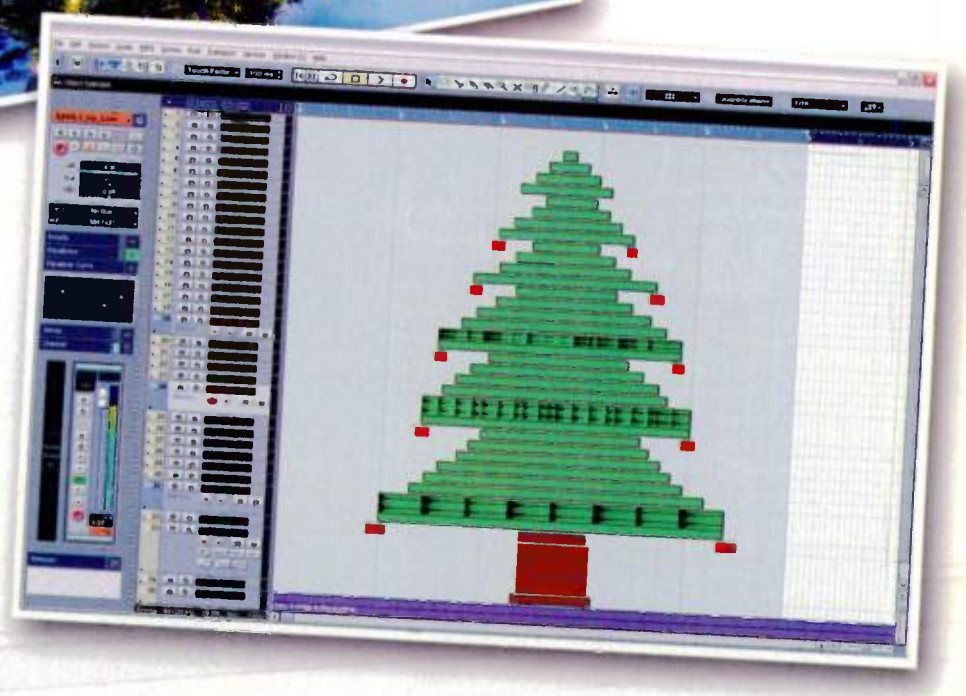


Kotche's drum kit consists of the conventional and truly unconventional.

MICHAEL WILSON

WHICH CHRISTMAS TREE DO YOU FIND MORE INSPIRING?

a.



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says. "When I do my solo work, I'll literally record with anything that's around—old analog 4-tracks, MiniDisc recorders, iPods, and whatever. However, Wilco records live, so we use close mics and a couple of overheads to capture the drum sound. But I began experimenting with some homemade contact mics that I positioned right on the drums. This resulted in a big, distorted, almost industrial sound. I started controlling the blend of the contact mics with a foot pedal, which gives me more tonal options. I can start with a clean acoustic-sounding kit, and then suddenly shift into this big, distorted kit."

Wilco's Loft Studio—which is a ten-minute walk from Kotche's house—also allows experimentation. "It's on the third floor of a building with this amazing set of concrete stairs," he explains. "You can play instruments—percussion or otherwise—at the top, and place a mic at the bottom to get really amazing sounds."

When it came to recording his third solo outing *Mobile*, Kotche turned to Wilco band mate Mikael Jorgenson to engineer and produce. Jorgenson—a talented engineer in his own right before he joined Wilco—was drafted to manipulate live sound for Wilco, before the band discovered his talents as a keyboardist.

"The sessions for the new Wilco album were brief, intense bursts of creativity, punctuated by people having babies," says Jorgenson. "It was kind of the same working with Glenn, because we'd do a few days, and then go away for three weeks before we came back to the studio. During the sessions, the Loft was a lot more—let's say 'basic'—than it is now, so making the album was quite an experience. For example, we were recording to Pro Tools|HD, but the monitor speakers were in the same room as Glenn, so we had to turn them down when he was playing, and then back up to hear what he did. We were also quite limited regarding mics, because most of the band's recording equipment was in storage. We relied on a few Shure mics for the kick, snare, and overheads, but that ended up being good, because I *wanted* the setup to be pretty basic. You see, when you make a straightforward rock album, there are thousands of records to compare it to. But when you make an experimental percussion record such as *Mobile*, where is your touchstone? So my strategy was to keep things as simple as possible. We didn't do too much in the way of effects, as what Glenn does is so layered and so dense, that too many effects would have compromised something. Basically, I listened to what he was playing, and I just asked him if there was anything he wanted more detail on." EQ

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

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

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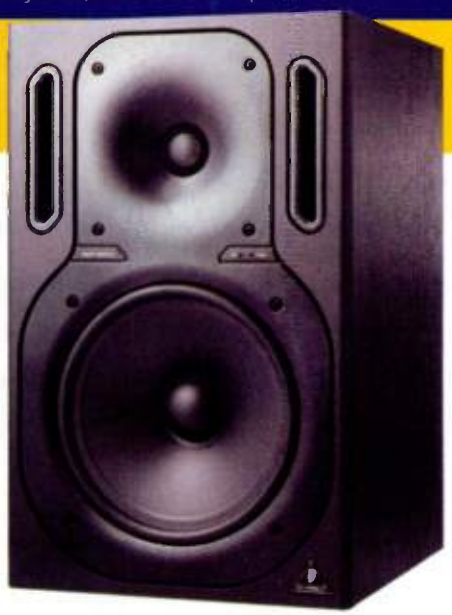

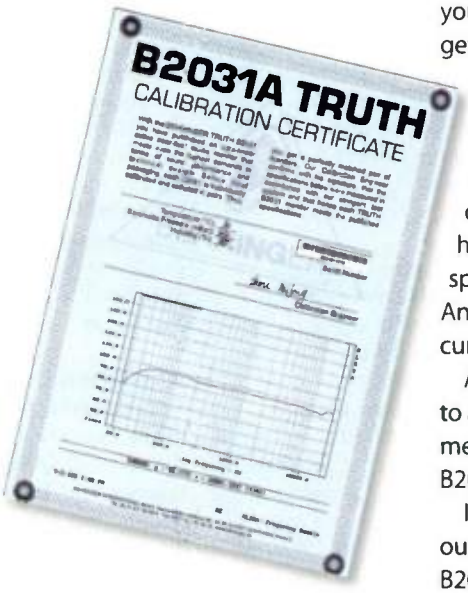

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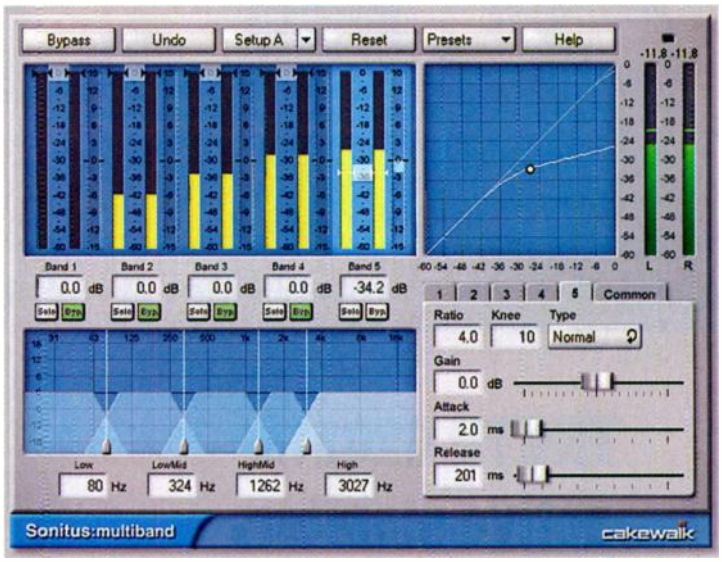


Fig. 1. A multiband compressor plug-in set up as a de-esser.

6 WAYS TO BEAT COMMON SONIC GREMLINS

by Bruce Bartlett

SIBILANCE

Singers can produce "s" and "sh" sounds (known as "sibilants") in the range of 3kHz to 10kHz, and some vocalists produce more sibilance than others. So, if you're recording a singer with a condenser mic that has a rising high-frequency response, you might hear annoying hisses. If you want to smooth out the "s" sounds, try one of these fixes.

• Use a de-esser or a multiband compressor set to compress from 3kHz to 10kHz, and with a short attack and release time (Figure 1). Or use a compressor with a side chain, and boost the side-chain signal at around 7kHz.

• Try a mic with a flatter frequency response, such as a Shure SM7, ElectroVoice RE-20, Neumann U87, Shure KSM32, or any ribbon mic.

• Bring in your favorite EQ, and turn down the highs around 7kHz to 10kHz.

"NATURAL" DISTORTION

I've recorded singers whose voices sounded like distortion. It wasn't the mic or the preamp overloading—it was just their voice. If you don't want that effect, try one of these solutions.

• In a multiband compressor, enable the filter from 2kHz and up. While the vocal track is playing, gradually turn down the threshold so that the compressor kicks in when the singer gets loud, and their voice gets edgy.

• Mic the vocal about 45 degrees to the side. Edgy-sounding high frequencies radiate from the mouth mostly straight ahead, so a mic placed away from the front will pick up less edginess and sibilance.

TOO BOOMY

Let's look at the other end of the spectrum: lows. When a vocalist sings very close to a microphone, the sound becomes bassy. That's due to the proximity effect—the rise in low-frequency response of directional microphones at close-miking distances. The closer you get to a cardioid, supercardioid, or hypercardioid mic, the bassier the reproduced tone.

• To diminish proximity effect, sing at least eight inches from the mic. Place a hoop pop filter about four inches from the mic, and ask the singer to use his or her four fingers as a spacer between mouth and hoop before each take.

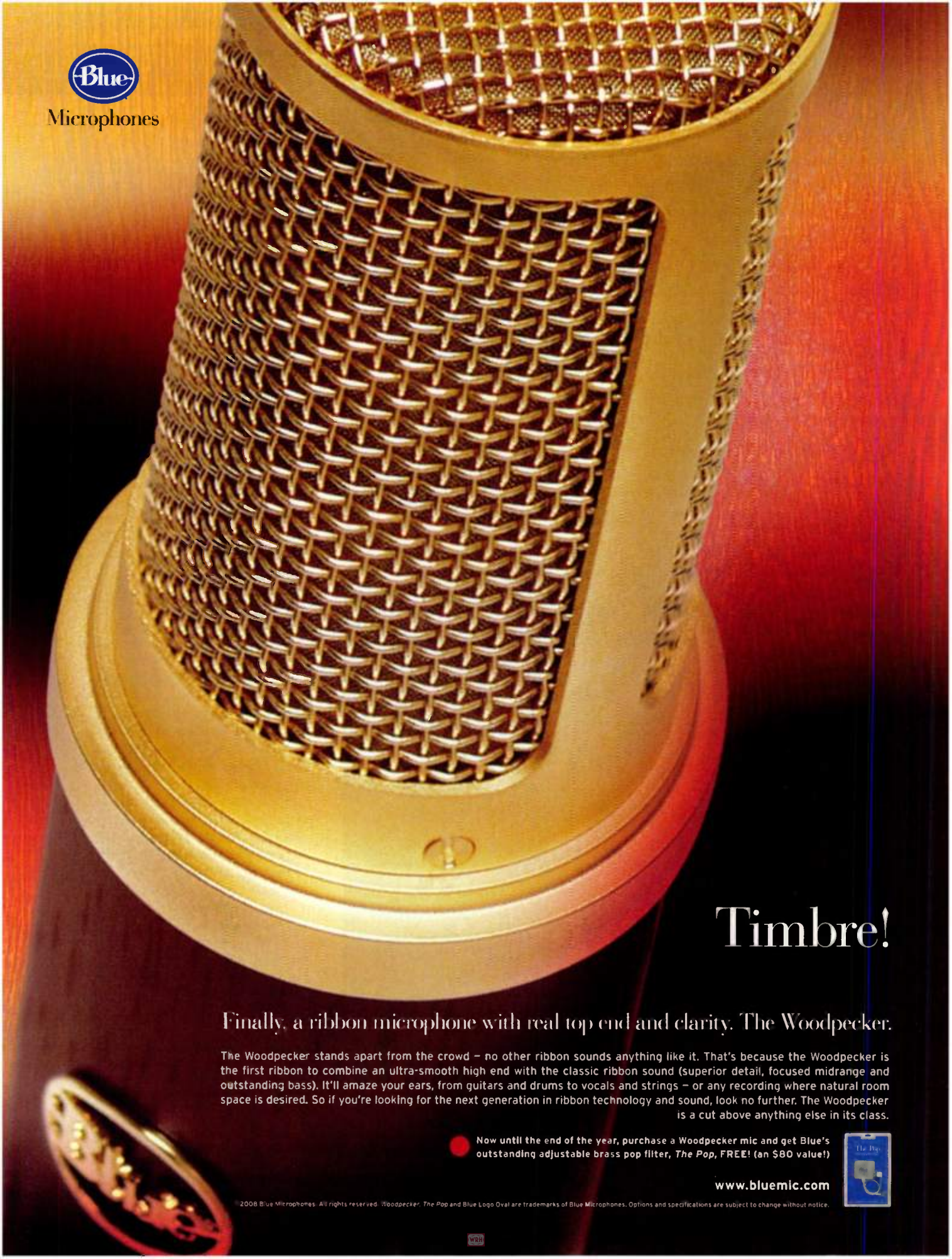
• If the singer must be close to the mic for isolation, turn down the lows in your mixer, plug-in, or engage the mic's low cut filter if it has one. Proximity effect can extend all the way to 500Hz, so if you roll off around 100Hz, there may still be a 500Hz bump in the vocal signal that produces a puffy, "cupped hands" tone. Take down 500Hz a bit as well.

• Try an omnidirectional mic (or set the mic's polar pattern to omni). Omnis have no proximity effect. You'll hear more room acoustics when you use an omni pattern, however, so you may need to position your mic closer than usual.

PING-PONG DYNAMICS

Vocals tend to have a wider dynamic range than their instrumental backup. Sometimes, vocalists blast the listener, and, other times, they sing quietly and get buried in the mix. There are ways to deal with this.

• Back away from the mic on loud notes, and come in closer on quiet notes. Listen over headphones while doing this to judge the right distances.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• Use a compressor. A typical setting might be a 3:1 ratio, and 6dB of gain reduction with a soft knee. An extreme setting might be a 4:1 ratio and 10dB of gain reduction.

• Use mixer automation or track volume envelopes to turn down loud phrases. This approach tends to sound more natural than compression.

POPS

When a vocalist sings plosive sounds with the letters P, B, or T, a turbulent puff of air shoots out of the mouth and hits the mic diaphragm, causing a thump or small explosion. This is easy to fix. Simply place the mic out of the path of the rush of air by positioning it above or to the side of the singer's mouth. You could also put a hoop pop filter between the mic and singer. This type of pop filter reduces high frequencies less than a foam windscreen, and is more effective.

PHASE CANCELLATION

When you record a singing guitarist, the vocal might sound filtered or hollow because of phase cancellation (the reduction in the volume of certain frequencies when two equal signals from different distances are "combined" by the mic) between the vocal mic and guitar mic. Try one of these solutions.

• Mic the voice and guitar very close. Roll off excess bass with your mixer EQ. Try miking the guitar three inches away, and about three inches to the right of the soundhole toward the neck.

• Use a pickup on the guitar instead of a mic.

• Place two bidirectional mics so the tops of their grilles touch. Aim the "dead" side of the vocal mic at the guitar, and the dead side of the guitar mic at the mouth.

• Place just one mic—or a stereo mic—midway between the mouth and guitar, and about one foot out front. Adjust the balance between voice and guitar by changing the mic's height.

• Delay the vocal mic signal by about 1–3ms to help the two signals get in phase with each other. eq

Nic Hard putting the final touches on a mix.

NIC HARD'S 7 STEPS TO A GREAT MIX

by Greg Reynolds

Mixing a song—let alone an entire album—can become a tedious, ear-numbing process if you allow it. That is why it's important to understand what needs to be achieved, and how to achieve it. Nic Hard [The Bravery, The Church, Aberdeen City] maintains that the three most important aspects of a mix are clarity, atmosphere, and dynamics, and that all of these elements need to be in place before the tune loses that "fresh" feeling. So Hard has developed a get in/get out approach to producing great-sounding mixes in just a few simple steps.

THE FIRST IMPRESSION

Give the song a quick listen and determine what the band is trying to do stylistically. Listen for any problems with the tracking, think about what effects you may want to try out, and recognize where dynamic changes need to take place. "Don't be afraid to f**k things up a little bit," says Hard. "Push things to distortion, or use heavy compression as an effect. Sometimes, especially when people work on their own music, the mix engineer tends to be afraid to do things like that, and they pull back, but there's really very little you can do that's 'wrong.'"

DRUMS

Get the drum sound together by pulling everything else way down (or muting the rest of the tracks), and adjusting the individual drum track levels until you have a full-sounding kit. Hard likes to use an API 550A to equalize drum tracks, and he begins by cutting out all the unnecessary low and low-mid frequencies. He may also duck a few dB between 350Hz and 550Hz to make the drums sound clearer, as well as to leave some room for other instruments in that range. A Vintech 609CA stereo compressor set to a 3:1 ratio, with a medium attack and a fast release, ensures all levels are relatively constant. "I tend to like hearing compression and so I'll push things until they start pumping a little bit," says Hard.

BASS AND GUITARS

Bring everything else in as quickly as possible, EQing and compressing as you go. Begin with a high-pass filter on the bass, and take off everything under 40Hz. Cut a dB or so between

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200Hz and 400Hz, and see if you can get away with rolling off everything above 3kHz–4kHz to leave room for some sizzle elsewhere. Hard uses an in-the-box compressor for bass (unless he's re-amping) set to a 4:1 ratio, and he varies the attack and release times depending upon the tune (fast/slow for a mushier sound, medium/fast for a tighter one). For the guitars, use a highpass filter to take out everything below 100Hz. Listen for any other low-mid rumbling that is clouding up the mix and notch it out. The 200Hz–400Hz range may need some attention for clarity, as well. Hard prefers not to compress guitars unless absolutely necessary.

VOCALS

Listen to how the vocals sit in the mix with the other instruments. Using the Digidesign EQ3, Hard will take off everything below 80Hz, shave off a hair around 100Hz, and create a slight dip at 400Hz. (Note that these are opposing frequencies to the ones carved out in the rhythm section.) Then, he will add some presence between 1.5kHz and 6kHz, and perhaps add some heavy compression with Purple Audio's MC76 set to a 4:1 ratio, a fast attack, and a fast release. "For vocals, I use compression for somewhat of an effect," says Hard. "I like how it brings up all the other noises going on—not so much the breaths, but the attack and decay of the words. I want to hear every nuance, every little thing the singer is doing."

MIX BUS PROCESSING

Hard adds some mix-bus compression with a 3:1 ratio, the attack set to 1ms, and the release set as fast as possible. Of course, this requires that your current track levels, EQ, and compression may have to be revised a bit to accommodate the overall mix compression). "If you carve things out right initially, your balances will sort of come together much easier, and you can raise and lower different instruments without destroying the whole mix," says Hard.

EFFECTS

Keep reverb plug-ins to a minimum to avoid creating a variety of different-sounding spaces. Hard recommends sticking with just two—usually a plate for vocals and acoustic guitars, and a room or big hall for electric guitars and keyboards (depending upon the song and its arrangement, of course). For any mono tracks that need more space and depth, Hard may also add a reverb plug-in on the track's channel insert. "I like to use one of the 'church' settings from Digidesign's DVerb," he says. "I usually set the reverb 100 percent wet, because it gives you a really wide pad sound, as well as a stereo effect to an otherwise

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"A proper duel is the only way to determine if the guitar solo gets boosted 2dB," says Hard."

flat-sounding track." Hard also encourages a "no fear" approach to adding a little distortion to just about everything, and, in fact, the "added element of distortion" has become one of his signature sounds. He typically uses SansAmp PSA-1, Digidesign Amp Farm, and Sound Toys FilterFreak plug-ins on everything from drums to bass to vocals.

FINAL TOUCHES

Practice or automate your fader moves so that the tune builds and drops out dynamically. "The key is to make sure you can feel the impact between sections," says Hard, who prefers mixing to 1/2" tape running on an ATR-102 at 15ips to achieve analog compression, coloration, and, yes, *noise*. He recommends listening to the mix on at least three different sets of speakers—his choices are typically Yamaha NS10s, Genelec 1030s, and a boom box—to ensure the tracks sound good wherever you take them. "It's a good idea to keep all your settings for the next song or mix session," he says. "I'll often use the same basic settings from song to song on an album—especially when working with bands—because I want them to sound like they are coming from the same sonic space." eq

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CHEAT SHEET

MIDI'S GREATEST HITS

by Craig Anderton

Cheat Sheet delivers concise, explicit information about specific recording/audio-related tasks or processes. This installment describes highlights of the MIDI spec.

MIDI CHANNELS

A single MIDI port carries 16 independent channels of MIDI digital data; MIDI devices (or virtual instruments) with additional physical or virtual ports can carry 16 channels per port.

VOICE MESSAGES

Voice messages express many different parameters, as described below. A MIDI voice message is stamped with a MIDI channel number, so each channel can carry independent voice messages.

- **NOTE ON**
  Hitting a keyboard key, MIDI drum pad, etc. creates a note-on message that specifies pitch. Note numbers range from 000 (lowest note) to 127 (highest note). Middle C is 60.
- **NOTE OFF**
  Occurs upon releasing a note. Has the same range as Note On messages.
- **VELOCITY**
  Corresponds to the dynamics of your playing; usually measures the time for a key to go from full up to full down. Values range from 001 (minimum) to 127 (maximum). A velocity value of 000 is the same as a Note Off.
- **PRESSURE OR AFTERTOUCH**
  Indicates pressure applied to a keyboard after a key is down. With *Mono* (or *Channel)* aftertouch, this data represents the highest value of all keys being pressed down. *Polyphonic* or *Key* aftertouch transmits individual aftertouch data for each key being pressed down. Values range from 000 to 127.
- **PROGRAM CHANGE**
  Selects a program on a MIDI device (*e.g.*, a particular synth sound). Program Change messages are standardized (from 000 to 127), but the way different manufacturers number their programs is not. One might number 100 programs as 00–99, and another as five banks of 20 programs.
- **BANK SELECT**
  Circumvents MIDI's 128 program change limit. MIDI Bank Select can choose up to 128 individual banks, with up to 128 programs each (16,384 programs total).
- **PITCH BEND**
  A synthesizer's pitch bend wheel (or lever, joystick, etc.) changes pitch much like the way a guitarist "bends" a string or uses a whammy bar. Instruments receiving the same pitch bend messages are generally set to the same pitch bend range.
- **CONTROL CHANGE**
  Control change messages alter values of parameters usually associated with adding expression (*e.g.*, using a footpedal to send messages that change filter cutoff, or a mod wheel to add vibrato). MIDI allows for 64 continuous controllers whose values span a continuous range of values, and 58 continuous/switch controllers (these can act like continuous controllers but some are assumed to choose between two possible states, such as on/off). Several, but not all, controllers are standardized; *e.g.*, modulation wheel is controller 01, and master volume is 07. Each channel can contain its own set of controller messages.

MODE MESSAGES

These describe how the MIDI device receives MIDI data.

- **OMNI MODE MESSAGE**
  Omni On mode receives data from all channels. Omni Off limits the number of channels, usually to one.
- **MONO/POLY MODE MESSAGE**
  Affects voice assignment within a synthesizer. In Mono mode, only one note at a time plays in response to voice messages, regardless of how many messages are received. In Poly mode, all available voices can play notes.

SYSTEM COMMON MESSAGES

These are intended for all units in a system, and are therefore not encoded with channel numbers.

- **SONG POSITION POINTER (SPP)**
  Keeps track of how many "MIDI beats" (16th notes) have elapsed since the beginning of a piece, up to 16,384 total. Sending an SPP messages allows units to autolocate to the same place.
- **SONG SELECT**
  Tells devices such as sequencers and drum machines which song to play.
- **MTC 1/4 FRAME MESSAGE**
  Provides timing messages based on SMPTE Time Code.
- **SYSTEM EXCLUSIVE MESSAGES**
  These start with a manufacturer's exclusive ID code and are intended only for equipment made by a specific manufacturer. This allows MIDI to translate non-universal data, such as a particular manufacturer's way of encoding patch information, into something that can be sent down a MIDI cable (or into a computer).

SYSTEM REALTIME MESSAGES

These messages contain timing information that synchronizes the units in a MIDI system. This category also includes some other "utility" messages.

- **TIMING CLOCK**
  MIDI sends out 24 timing messages per quarter note to which all devices synchronize. Thus, if the master sends out a timing clock, all other units advance by 1/24th of a quarter note. For accurate timekeeping, clock messages have priority over all other messages.
- **START**
  Tells MIDI devices when to start playing.
- **STOP**
  Tells MIDI devices when to stop playing.
- **CONTINUE**
  After issuing a Stop command, sending a Continue message re-starts the units from where they were stopped. This is different from a Start command, which always re-starts from the beginning of a song. After two units autolocate to each other via Song Position Pointer messages, the master usually sends a Continue message to the slave to start them both from that common point. EQ

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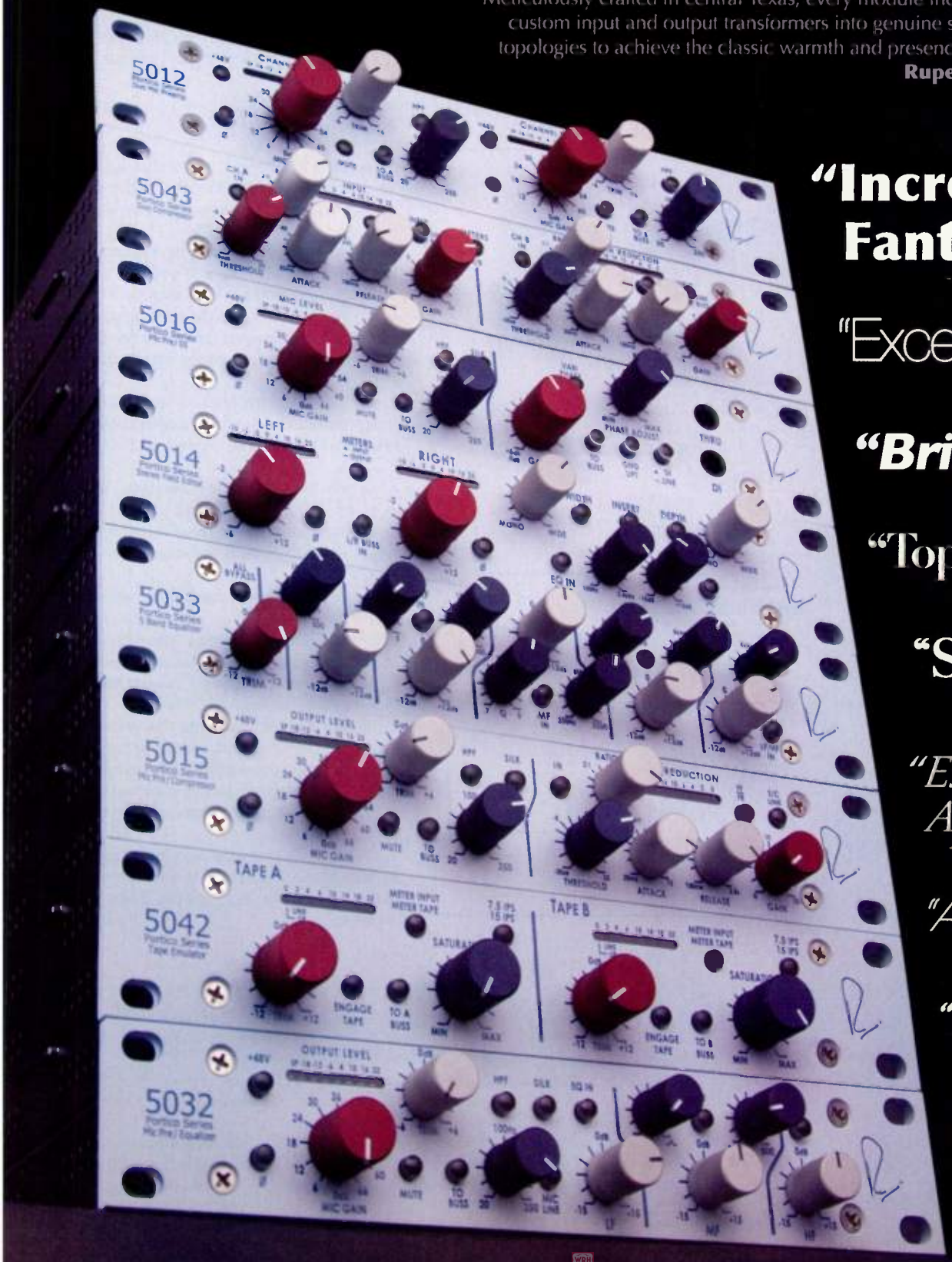

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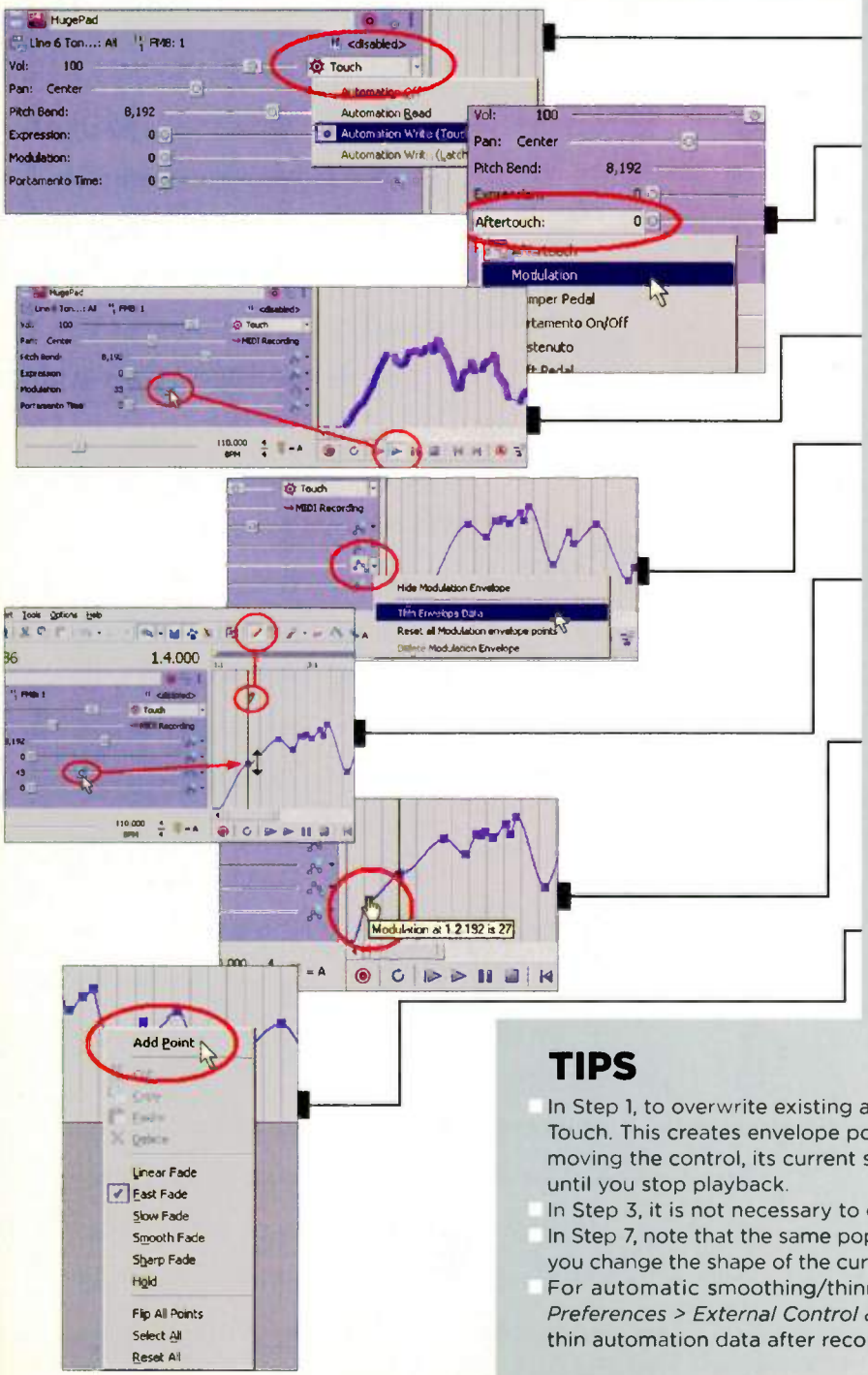
BY CRAIG ANDERTON

SONY ACID 6

Create and automate MIDI controller data

OBJECTIVE: Use MIDI controller data to add expressiveness to software synths.

BACKGROUND: Over the past few revisions, Acid has built up its MIDI capabilities to the point where they're on an equal footing with the looping and digital audio recording features. Here's how to add MIDI controller messages to MIDI tracks (for clarity, MIDI note data is not shown).



STEPS

1. Select a MIDI track, then choose "Automation Write (Touch)" from the Automation Settings drop-down menu.

2. You'll see four control sliders toward the bottom of the MIDI track. If you don't see the controller you want to use, click on a controller's label, and select the desired controller from the pop-up menu. In this example, Modulation is replacing Aftertouch.

3. Click on the Play button, then click and drag the appropriate controller slider to create an automation envelope in real time.

4. To thin the amount of controller data, click on the Envelope button to the right of the controller's slider, then select "Thin Envelope Data" from the drop-down menu.

5. To add a point manually but still use the slider to set the value, choose the Pencil tool and click at the time where you want to add the point. Then, move the slider to change the newly-added point's value.

6. To add a point manually that can be moved in any direction, place the cursor over the automation curve until it turns into a pointing hand, then double-click to create a point. Click and drag on the point to move it.

7. Another way to add a point: Right-click on the automation curve, and select "Add Point." Click and drag on the point to move it.

TIPS

- In Step 1, to overwrite existing automation data, choose Latch instead of Touch. This creates envelope points when you change a control; if you stop moving the control, its current setting overwrites existing envelope points until you stop playback.
- In Step 3, it is not necessary to enter record mode to record automation data.
- In Step 7, note that the same pop-up menu that lets you add a point also lets you change the shape of the curve between points.
- For automatic smoothing/thinning of automation data, go *Options > Preferences > External Control & Automation* tab and check "Smooth and thin automation data after recording or drawing."

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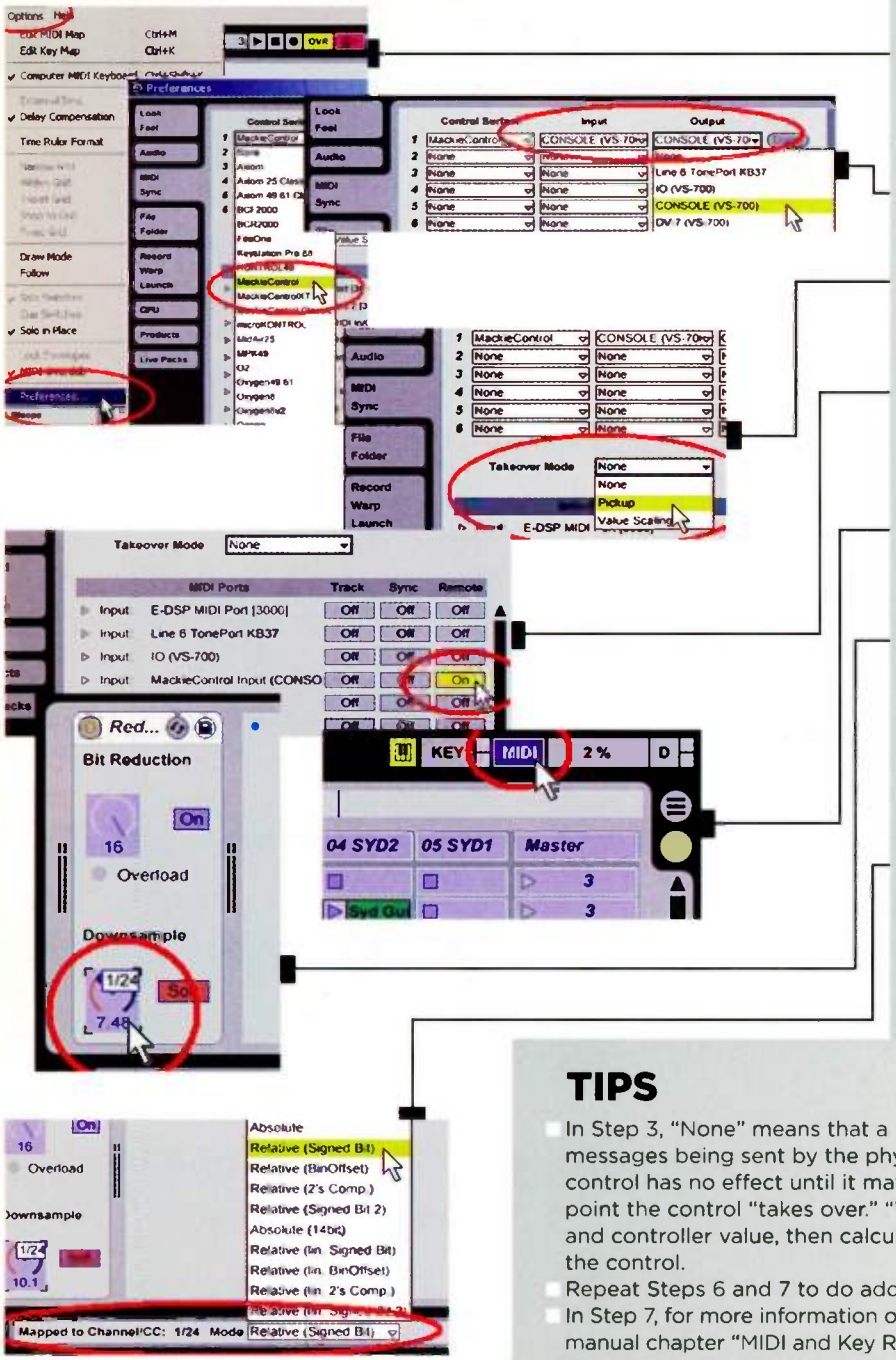
BY CRAIG ANDERTON

ABLETON LIVE 7

Boost Ableton Live's expressiveness with hands-on control

OBJECTIVE: Set up a control surface for hands-on control over various parameters in Ableton Live.

BACKGROUND: Live can accept control signals from several hardware control surfaces, including those with Mackie Control compatibility. In this example we'll use the Cakewalk by Roland V-Studio VS-400C controller, which does Mackie Control emulation. Other control surfaces work similarly.



STEPS

1. Go *Options > Preferences,* click on the MIDI/Sync tab, then choose the control surface you're using from the Control Surface list.

2. Choose the Input and Output ports associated with the control surface.

3. If the control surface includes non-motorized faders, choose a Takeover mode (see Tips below).

4. To use MIDI messages produced by the controller to control various Live parameters, under MIDI ports, turn on the Remote field for the controller you're using.

5. To assign a hardware control to a parameter, click on Live's MIDI Map mode switch.

6. While in MIDI Map mode, click on the parameter you want to control, then move the hardware controller. A small label will appear that shows the channel number and MIDI controller number (*e.g.*, 1/24 means channel 1, controller #24) corresponding to the hardware controller.

7. If the control surface generates Relative instead of Absolute MIDI control messages, choose the desired type of controller response.

TIPS

- In Step 3, "None" means that a parameter value jumps immediately to the messages being sent by the physical controller. With "Pick-Up," moving the control has no effect until it matches the existing controller value, at which point the control "takes over." "Value Scaling" compares the control setting and controller value, then calculates a smooth "morph" as soon as you move the control.
- Repeat Steps 6 and 7 to do additional MIDI control assignments.
- In Step 7, for more information on choosing the correct response, go to the Live manual chapter "MIDI and Key Remote Control," then refer to the section "Mapping to Relative MIDI Controllers."

THE HARDWARE CONTROLLER ROUNDUP

HERE'S HOW TO GET PHYSICAL WITH YOUR RECORDINGS

by Craig Anderton

Until digital recording appeared, every function in analog gear had an associated control: Whether you were tweaking levels, changing the amount of EQ gain, or switching a channel to a particular bus, a physical device controlled that function.

Digital technology changed that, because functions were no longer tied to physical circuits, but virtualized as a string of numbers. This gave several advantages: Controls are more expensive than numbers, so virtualizing multiple parameters and controlling them with fewer controls lowered costs. Virtualizatoin also saved space, because mixers no longer had to have one control per function; they could use a small collection of channel strips—say, eight—that could bank-switch to control eight channels at a time.

But you don't get something for nothing, and virtualization broke the physical connection between gear and the person operating the gear. People debate the importance of that physical connection; to me, though, there's no question that having a direct, physical link between a sound you're trying to create and the method of creating that sound is vital—for several reasons.

THE ZEN OF CONTROLLERS

If you're a guitar player, here's a test: Quick—play an *A#7* chord. Okay, now list the notes that make up the chord, lowest pitch to highest.

Chances are you grabbed the *A#7* instantly, because your fingers—your "muscle memory"—knew exactly where to go. But you probably had to think, even if only for a second, to name all the notes making up the chord.

Muscle memory is like the DMA (Direct Memory Access) process in computers, where an operation can pull data directly from memory without having to go through the CPU. This saves time, and lets the CPU concentrate on other tasks where it truly *is* needed. So it is with controllers: When you learn one well enough so that your fingers know where to go and you don't have to parse a screen, look for a particular control, click it with your mouse, then adjust it, the recording process becomes faster and more efficient.

IMPROVING DAW WORKFLOW

Would you rather hit a physical button labeled "Record" when it was time to record, or hold down Ctrl-Alt-Spacebar and then type "R"? Yeah, I thought so.

The mouse/keyboard combination was never designed for recording music, but for data entry. For starters, the keyboard is switches-only—no faders. The role of changing a value over a range falls to the mouse, but a mouse can do only one thing at a time—and when recording, you often want to do something like fade one instrument down while you fade up another.

Sure, there are workarounds: You can group channels and offset them, or set up one channel to increase while the other decreases, and bind them to a single mouse motion. But who wants to do that kind of housekeeping when you're trying to be creative? Wouldn't you rather just have a bunch of faders in front of you, and control the parameters directly?

Another important consideration is that your ears do not exist in a vacuum; people refer to how we hear as the "ear/brain combination," and with good reason. Your brain needs to process whatever enters your ears, so the simple act of critical listening requires concentration. Do you really want to squander your brain's resources trying to figure out workarounds to tasks that would be easy to do if you only had physical control? Trust me—you don't. But. . . .

PROBLEM 1: JUST BECAUSE SOMETHING HAS KNOBS DOESN'T GUARANTEE BETTER WORKFLOW

Some controllers try to squeeze too much functionality into too few controls, and you might actually be better off assigning lots of functions to keyboard shortcuts, learning those shortcuts, then using a mouse to change values. I once used a controller for editing synth parameters (the controller was not intended specifically for synths, which was part of the problem), and it was a nightmare: I'd have to remember that, say, pulse width resided somewhere on page 6, then remember which knob (which of course didn't have a label) controlled that parameter. It was easier just to grab a parameter with a mouse, and tweak.

On the other hand, a system like Native Instruments' Kore (covered in the 10/08 issue) is designed specifically for controlling plug-ins, and arranges parameters in a logical

fashion. As a result, it's always easy to find the most important parameters, like level or filter cutoff.

PROBLEM 2: IT GETS WORSE BEFORE IT GETS BETTER

So do you just get a controller, plug it in, and attain instant software/hardware nirvana? No. You have to *learn* hardware controllers, or you'll get few benefits.

If you haven't been using a controller, you've probably developed certain physical moves that work for you. Once you start using a controller, those all go out the window, and you have to start from scratch. If you're used to, say, hitting a spacebar to begin playback, it takes some mental acclimation to switch over to a dedicated transport control button. Which begs the question: So why use the transport control, anyway? Well, odds are the transport controls will have not just play but stop, record, rewind, etc. Once you become familiar with the layout, you'll be able to bounce around from one transport function to another far more easily than you would with a QWERTY keyboard set up with keyboard shortcuts.

Think of a hardware controller as a musical instrument. Like an instrument, you need to build up some "muscle memory" before you can use it efficiently. I believe that the best way to learn a controller is to go "cold turkey": Forget you have a mouse and QWERTY keyboard, and use the controller as often as possible. Over time, using it will become second nature, and you'll wonder how you got along without it. But realistically, that process could take days or even months; think of spending this time as an investment that will pay off later.

DIFFERENT CONTROLLER TYPES

There are not just many different controllers, but different controller product "families." The following will help you sort out the options, and choose a controller that will aid your workflow rather than hinder it.

Custom controllers. These are designed to fit specific programs like a glove; examples include Digidesign's C|24 and Command|8 for Pro Tools, Cakewalk/Roland's Sonar V-Studio, Steinberg's Cubase-friendly CC121 and MR816 CSX, WK Audio's ID controller for Nuendo, and the like. The legends are program-specific, the knobs and switches have (hopefully) been laid out ergonomically, and the integration between hardware and software is as tight as Tower of Power's rhythm section. If a control surface was made for a certain piece of software, it's likely that will be the optimum hardware/software combination.

General-purpose DAW controllers. While designed to be as general-purpose as possible, these usually include templates for specific programs. They typically include hardware functions that are assumed to be "givens," like tape transport-style navigation controls, channel level faders, channel pan pots, solo and mute, etc. A controller with tons of knobs/switches and good templates can give very fluid operation. Good examples of this are HUI (an aging, but still relevant, control protocol used primarily with Pro Tools), the Mackie Control (which has become a standard—many programs

Frontier Design's AlphaTrack is an inexpensive, single-fader controller that supports multiple programs.

are designed to work with a Mackie Control, and many hardware controllers can emulate the way a Mackie Control works), Euphonix Artist series controllers, Alesis MasterControl, M-Audio ProjectMix I/O (which supports both HUI and Mackie protocols, as does TASCAM's FW-1884), and TASCAM FW-1028. But there are also "single fader" hardware controllers (*e.g.*, PreSonus FaderPort and Frontier Design Group AlphaTrack) which while compact and inexpensive, take care of many of the most important control functions you'll use.

MIDI fader boxes. The late, great Peavey PC-1600 is a classic example of a MIDI fader box: It has 16 programmable faders and 16 buttons (there's a data wheel too), which can transmit almost any kind of MIDI message. Similar controllers are made by Kenton (the USB Killamix has a joystick, nine knobs, and nine switches), Evolution (UC-33e), Behringer (the BCF2000, with moving faders, and BCR2000 with rotary controls are mainstays of many MIDI-oriented studios), and CME—their Bitstream3X has a joystick, 35 knobs, eight sliders, 16 buttons, a ribbon controller, and tons of templates. While these don't have the "fit like a glove"

MIDI CONTROL BASICS

Most hardware control surfaces use MIDI as their control protocol. Controlling DAWs, soft synths, processors, etc. is very similar to the process of using automation in sequencing programs: In the studio, physical control motions are recorded as MIDI-based automation data, which upon playback, control mixer parameters, soft synths, and signal processors.

If you're not familiar with continuous controller messages, they're part of the MIDI spec and alter parameters that respond to continuous control (level, panning, EQ frequency, filter cutoff, etc.). Switch controller messages have two states, and cover functions like mute on/off.

There are 128 numbered controllers per MIDI channel. Some are recommended for specific functions (*e.g.*, controller #7 affects master volume), while others are general-purpose controllers.

Controller data is quantized into 128 steps, which gives reasonably refined control for most parameters. But for something like a highly resonant filter, you might hear a distinct change as a parameter changes from one value to another. Some devices interpolate values for a smoother response.

feature, the controls and switches are relatively easy to sort out, and you can generally create presets.

"Hybrid" mixers. These are often designed for DJ applications, but are applicable to any mixing scenario—they include both traditional mixing options and MIDI control. Korg's Zero4 and Zero8 mixers are outstanding examples of the genre, as is Allen & Heath's Xone:D series of products (particularly the Xone:D3 and Xone:D4).

Digital mixers. For recording, a digital mixer can make a great hands-on controller if both it and your audio interface have a multi-channel digital audio port (*e.g.*, ADAT optical "light pipe"). You route signals out digitally from the DAW, into the mixer, then back into two DAW tracks for recording the stereo mix. Rather than using the digital mixer to control functions within the program, it actually *replaces* some of those functions (particularly panning, fader-riding, EQ, and channel dynamics). As a bonus, some digital mixers include a layer that converts the faders into MIDI controllers suitable for controlling virtual synths, effects boxes, etc.

Synthesizers/master keyboards. Some keyboards, like the Yamaha Motif XS and Korg M3, as well as master controllers from M-Audio, Alesis, Novation, CME, and others build in control surface support. But even those without explicit control functions can sometimes serve as useful controllers, thanks to the wheels, data slider(s), footswitch, sustain switch, note number, and so on. As some sequencers allow controlling functions via MIDI notes, the keyboard can provide those while the

Behringer's BCF2000 has eight moving faders, and is a mainstay in budget studios.

MAPPING CONTROLS TO PARAMETERS

With MIDI control, the process of assigning hardware controllers to software parameters is called *mapping*. There are four common methods:

"Transparent" mapping. This happens with controllers dedicated to specific programs or protocols: They're already set up and ready to go, so you don't have to do any mapping yourself.

Templates. This is the next easiest option. The software being controlled will have default controller settings (*e.g.*, controller 7 affects volume, 10 controls panning, 72 edits filter cutoff, etc.), and loading a template into the hardware controller maps the controls to particular parameters.

MIDI learn. This is almost as easy, but requires some setup effort. At the software, you select a parameter and enable "MIDI learn" (typically by clicking on a knob or switch—ctrl-click on the Mac, right-click with Windows). Twiddle the knob you want to have control the parameter; the software recognizes what's sent and maps it.

Fixed assignments. In this case, either the controller generates a fixed set of controllers, and you need to edit the target program to accept this particular set of controllers; or, the target software will have specific assignments it wants to see, and you need to program your controller to send these controllers.

RECONCILING PHYSICAL AND VIRTUAL CONTROLS

With any controller that doesn't use motorized faders, one of the big issues is punching in when a track already contains control data. If the physical position of the knob matches the value of the existing data, no problem: Punch in, grab the knob, and go.

But what happens if the parameter is set to its minimum value, and the knob controlling it is full up? There are several ways to handle this.

Instant jump. Turn the knob, and the parameter jumps immediately to the knob's value. This can be disconcerting if there's a sudden and unintended change—particularly live, where you don't have a chance to re-do the take!

Match-then-change. Nothing happens when you change the physical knob until its value matches the existing parameter value. Once they match, the hardware control takes over. For example, suppose a parameter is at half its maximum value, but the knob controlling the parameter is set to minimum. As you turn up the knob, nothing happens until the knob matches the parameter value. Then as you continue to move the knob, the parameter value follows along. This provides a smooth transition, but there may be a lag between the time you start to change the knob and when it matches the parameter value.

Add/subtract. This technique requires continuous knobs (*i.e.*, data encoder knobs that have no beginning or end, but rotate continuously). When you call up a preset, regardless of the knob position, turning it clockwise adds to the preset value, while turning it counter-clockwise subtracts from the value.

Motorized faders. This requires bi-directional communication between the control surface and software, as the faders move in response to existing automation values—so there's always a correspondance between physical control settings and parameter values. This is great: Just grab the fader and punch. The transition will be both smooth and instantaneous.

Parameter nulling. This is becoming less common as motorized faders become more economical. With nulling, there are indicators (typically LEDs) that show whether a controller's value is above or below the existing value. Once the indicators show that the values match (*e.g.*, both LEDs light at the same time), punching in will give a smooth transition.

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Really cheapo controllers. Remember that old drum machine sitting in the corner that hasn't been used in the last decade? Dust it off, find out what MIDI notes the pads generate, and use those notes to control transport functions—maybe even arm record, or mute particular track(s). A drum machine can make a compact little remote if, for example, you like recording guitar far away from the computer monitor.

The "recession special" controller. Most programs offer a way to customize QWERTY keyboard commands, and some can even create macros. While these options aren't as elegant as using dedicated hardware controllers, tying common functions to key commands can save time and improve work flow.

Overall, the hardware controllers designed for specific software programs will almost certainly be your best bet, followed by those with templates for your favorite software. But there are exceptions: While Yamaha's Motif XS can't compete with something like a Mackie Control, it is designed to serve as a custom controller for Cubase AI—which might be ideal if Cubase is your fave DAW.

CAKEWALK/ ROLAND SONAR V-STUDIO 700

PRICE: $3,995

STRENGTHS: Integrates Sonar 8.0 tightly with a control surface, audio interface, and hardware synthesizer. ACT knobs provide soft synth and FX control. Surround and video control. Great-sounding audio I/O. Ten individual outputs are convenient for integrating external hardware. Mackie Control compatibility. Includes V-Link. Non-cramped layout. Very cost-effective, considering what the package includes.

LIMITATIONS: Takes up a fair amount of desktop space. LCD display is nothing special.

When Roland started working with Cakewalk, many predicted that Sonar would soon have a dedicated hardware controller. But the pair have taken it one step further: The latest Sonar software (8.0), when combined with the VS-700C control surface, VS-700R audio interface, and onboard Fantom VS synthesizer, creates a complete studio that Cakewalk/Roland call the "next generation" V-Studio.

VS-700C CONTROLLER

While the VS-700C is optimized for Sonar, it's also a Mackie-compatible controller that I've used successfully with Reason, Ableton Live, and other programs. This is a Big Deal, because the VS-700C isn't tiny—you don't want to need additional control surfaces.

The controller has five main areas: displays along the top, a "channel strip" section toward the center with nine 100mm motorized faders, an area to the right with jog-shuttle wheel/transport/surround panner/T-bar controller and loop/punch controls, and two sections toward the left. These include 12 knobs for EQ, sends, or "ACT" (more on this later), and an "access panel" with view, utility, and control keys. Of course we're just talking broad strokes; there are also buttons for automation, different views, various select buttons, and the like.

The VS-700C could have been made smaller, but as designed, it has a spacious, open feel that doesn't get in the way with serious projects. This aids workflow because you don't have to parse the controls: The lettering is legible, and there's enough space between controls that you needn't concern yourself with being overly precise.

Superficially, the controller may not seem that innovative; it offers familiar hardware control for familiar software parameters. But, there are a few twists.

The most visually obvious is the T-bar controller, which provides front/rear balance for surround, an ACT control, or the ability to determine the transparency of X-Ray compatible plug-ins (the latter is a Sonar feature where you can make plug-ins less opaque so you can see what's going on beneath them, or for that matter, make them disappear). While X-Ray isn't quite like adding an extra monitor, it's about as close as you can come in a software-only solution.

Another twist is having ACT control right on the control surface. The 12 ACT knobs let you control whatever soft synth or signal processor has the focus (assuming they expose VST automation), so you can move easily from controlling mixer faders to controlling filter, envelope, LFO, and other

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parameters. You can't realize how useful this is until you actually try it.

The third surprise concerns the VS-700R audio interface, so let's investigate.

VS-700R AUDIO INTERFACE

Just what the world needs . . . another audio interface, right? Well, in this case, yes. First off, it sounds great—Roland put some serious mojo into the mic pres. Second, it has lots of I/O: eight ins (XLR or 1/4" balanced/unbalanced), 10 separate 1/4" balanced/unbalanced outs, XLR main monitor outs, 1/4" balanced/unbalanced Sub out, and plenty of digital I/O—AES/EBU, S/PDIF, word clock, ADAT "light pipe," and MIDI. There's also a Fantom synth built inside the box, giving you a zero-latency hardware tone generator that takes the pressure off your CPU; and there's a card slot for an optional ARX expansion board if you want extra synth power.

But what makes this special is the integration with the console. The mic pres are digitally-controlled, so you can control gain directly from the console, and save presets for the interface—very convenient when switching between sessions, where in one case you want the pres to work with vocals, and on another, to mic a drum set and guitar amp. And while the synthesizer is integrated with Sonar so it appears like a virtual instrument, you can also play it like a physical instrument. Furthermore, the console itself has a front panel line/guitar input with gain control, and two headphone outs.

USING THE V-STUDIO

Although the unit being reviewed was a production prototype, glitches were not an issue and after a few days of testing, I started using it for mission-critical projects. That bodes well for what users can expect when everything is totally tweaked out, although it seemed like that point had already been reached.

The first thing I had to do was change around my (physical) desktop to accommodate the controller's size. By raising the monitors about six inches, I had no problem fitting the console between a QWERTY keyboard and the monitors.

The controls are all obvious, but the most important "accessory" is the PDF list of commands. In addition to the top-level controls, there are many supplementary functions you can access with Shift, Ctrl, Alt, and Command buttons. While logical, I recommend referring to the command list and committing the most important keystrokes to memory—it's worth the effort.

Overall, there's a *big* difference between using Sonar with "a bunch of other stuff" and using it as part of a tightly integrated system. For example, it may seem like a small thing, but being able to tweak the interface gain from the Console is a real time-saver. And while I've used control surfaces with Sonar, there was always a dichotomy between the moving fader device used for mixing, and a second control surface dedicated to ACT. Having them in one place—and being able to tweak EQ like a "real" mixer—makes for a truly comfortable working environment.

Bottom line: If you use Sonar on a professional basis, I predict that over the course of a year (or less) you'd easily save enough time for the V-Studio to more than pay for itself.

ARTURIA ANALOG FACTORY EXPERIENCE

PRICE: $349

STRENGTHS: Great variety of sounds with lots of presets. Tweakability is welcome. Sturdy, well-made keyboard controller. Fast and fun.

LIMITATIONS: Much more limited editing options compared to using Arturia's dedicated instrument software.

We covered using keyboard "workstations" like the Yamaha Motif XS and Korg M3 as control surfaces in last month's issue ("Studio Meets Stage"). But Arturia's Analog Factory Experience is something else: It mates VST/AU/RTAS virtual instrument software (with 3,500 sounds, useable stand-alone or as a plug-in) to a control surface designed specifically to tweak those sounds, thus restoring some of the "feel" of programming an analog synth.

As the controller is our main interest, we'll breeze through the software. It's version 2.0 of the original Analog Factory—essentially a "greatest hits" presets package from various Arturia soft synths: Moog Modular V, CS-80V, Minimoog V, ARP 2600 V, Prophet V/VS, and Jupiter-8V. Because there are so many presets, they're organized in a browser format so you can specify attributes (for example, "Minimoog V

synth bass sounds I use a lot"), and see a specific selection of patches.

The CME-made USB keyboard controller is sweet: 32 notes, wood end panels, physical MIDI output, and a solid feel. But the main feature is 11 knobs, four faders, pitch and mod wheels, and 11 switches. Controller settings are mirrored on-screen in the software, but with a difference: The knobs use the "add/subtract" method of changing data, while the sliders, which control envelope parameters, use the "match-then-change" protocol (see sidebar, "Reconciling Physical and Virtual Controls" below). When you call up a preset, the software shows the current slider parameter value as solid, and the physical slider position as "ghosted." This makes it easy to see the difference between the two. With virtual knobs, a blue ring around the outside shows the current setting.

I find the knobs more convenient for "tweaking" sounds than for real-time live performance "fader slamming" and knob twisting; they're fairly small and close together. However, I have used them for realtime control and as long as you don't have to make lots of really fast movements, they work fine. If needed, you can tie the parameters to an external control surface.

The four sliders adjust envelope attack, decay, sustain, and release. Two knobs are dedicated to the crucial filter Cutoff and Resonance controls, and another two knobs control LFO Rate and Amount. Four additional "Key Parameter" knobs bring out what Arturia considers a preset's four most important parameters, and put them under hands-on control. The remaining knobs affect level, Chorus amount, and (tempo-syncable) Delay amount.

The eight "snapshot" buttons seem more suited for live performance; you can save particular presets (edited or not), then recall them. These settings are saved on power-down. Remaining options include 1/4" connectors for Expression and Sustain pedals. What's more, all the controls and switches produce MIDI control messages, so you can use them to tweak parameters in other software.

While the Analog Factory Experience's goal is to put a lot of sounds and a keyboard at your fingertips for a low price, what sets it apart is being able to grab some knobs, make some tweaks, and modify a sound for your particular needs. Why sound like everyone else?

EUPHONIX ARTIST CONTROL SERIES

PRICE: MC Mix $1,399.99; MC Control $1,999.99

STRENGTHS: Gorgeous, ergonomic industrial design. Compact. Very readable display. With supported applications, EuCon protocol gives better performance than MIDI.

LIMITATIONS: Mac only (no support for PC apps). Few applications have native EuCon support.

Euphonix created quite a stir when they went "downmarket" and introduced the Artist series controllers, and with good reason. We'll concentrate on the MC Mix, then include a bit about the MC Control.

The MC Mix has eight 100mm faders, eight knobs, multiple buttons, and an OLED (Organic LED) readout that is bright, readable, and informative. What's more, you can "stack" four MC Mix devices for 32 faders, and add the MC Control for another four faders—36 total. While the Artist Series does HUI and Mackie control emulation, it also offers the EuCon protocol, which is 250 times faster than MIDI and has eight times the resolution. Currently, only Apple Logic Pro, Steinberg Cubase and Nuendo, and Apogee Maestro (for Duet and Ensemble) support EuCon; MOTU's Digital Performer and Apogee Maestro (for Symphony) are slated for future support. With HUI/Mackie control, the list expands to include Ableton Live, Apple Final Cut Pro and Soundtrack Pro, Digidesign Pro Tools, Propellerhead Reason, and MOTU Digital Performer.

A unique aspect of the Artist Series controllers is that while the main application installs on your Mac, you can control additional workstations by installing client software (EuCon Workstation) on other computers, and connecting everything via Ethernet. What's more, the controller "knows" what protocol the application wants: For example, if you have Logic on one computer and Final Cut Pro on another, you can switch between applications and MC Mix will use EuCon for Logic, and Mackie Control emulation for Final Cut Pro.

My initial experience running Logic was positive: The faders snapped to

(CONTINUED)

attention, and all the controls worked in a fluid, obvious manner. I had less luck with Mackie emulation and Digital Performer, but Euphonix's support (which is excellent, as is the documentation) recommended repairing the Mac OS X permissions . . . problem solved. And when I ran into a problem getting the EuCon Workstation software to work, they again provided a solution (that again involved something I had to do on the Mac).

The knobs and faders are touch-sensitive, so the display jumps to what's appropriate for what you're touching—for example, touch the level fader, and a numeric value representing the slider setting replaces the track name. You can't "fine-tune" the fader setting (*e.g.*, by holding Shift while moving the fader), but the resolution is very fine anyway—for example, the fader value passes through eight discrete values while going from 0 to 1dB.

The only questionable aspect was moving ganged faders, as the ganged fader you're not moving lags slightly. Also, a quick flick of one ganged fader will often cause the other to appear to "overshoot" before settling back to the correct position. However, any discrepancies don't show up in the data stream they generate, so just consider the fader you're moving of a ganged group as "the real thing."

The MC Mix knobs have two main modes: Normal mode, where a knob affects the same parameter across multiple tracks, and Channel mode, where a knob affects multiple parameters within the same track. For example, when you punch the EQ button in channel mode, the left-most channel in the display is the channel you're affecting. But the knobs are a different matter: With Logic Pro, from left to right the eight knobs control Frequency and Gain for the four EQ stages. However, if you hit the Select button, the knob controlling Frequency now controls Q . . . and the On button underneath the stage control turns the stage on and off. Because we're in Channel mode, all the knobs affect one channel. But remember that Logic Pro has eight stages of EQ: Just hit the Page button, and now the eight knobs control the high cut/low cut/high shelf/low shelf parameters.

So which is easier, using the screen, or using the knobs? For making a single, quick tweak, I'd go for the screen. But where the knobs come in very handy is if you're working on a track and want to make a series of adjustments. In that case, you can keep your hands on the controller and move effortlessly among midrange, high end, low end, etc. What's more, you can edit two parameters at once because you have two hands—twice as good as a mouse!

There are also some cool little touches; as one example, with parametric stages, the Freq knob does double-duty as the Q control (you alternate between the two by hitting the SEL button). The gain remains as a separate parameter on a separate knob. It makes sense that you'd choose the frequency, and then, decide on the amount of gain/Q at that frequency.

Regarding the MC Control control surface, while it has four motorized faders along with eight programmable knobs and 12 assignable buttons *à la* MC Mix, it also has transport controls, monitor/control room level controls, and a customizable 800 x 480 pixel touchscreen (very groovy). The MC Control is intended to serve as a control center for your DAW, as the touchscreen can access EQ and plug-in parameters, show metering, display track names, and the like; it's also possible to set up macro commands to initiate command strings. Furthermore, the data entry wheel can provide zoom, jog, and shuttle, as well as edit parameters like trim, crossfade, and gain.

The expandable aspect of the Artist Series is noteworthy, as is the form factor: This is one controller that slides conveniently in between your QWERTY keyboard and monitors (or goes in front of the QWERTY keyboard). Overall, the Artist Series is a class act—as one would expect from Euphonix.

NOVATION NOCTURN

PRICE: $199.99

STRENGTHS: Compact. Easy to use thanks to Automap Universal 2.0 protocol. Cool-looking semi-transparent GUI. Handles hosts as well as plug-ins. Very cost-effective.

LIMITATIONS: Doesn't yet support Pro Tools on Windows (only on Mac), but support is imminent.

The USB-compatible Nocturn controller provides hands-on control for plug-ins (and mixing control for hosts); it offers eight touch-sensitive rotary encoders, a 45mm crossfader, eight buttons, and eight "function" buttons (*e.g.*, select page, learn mode, select mixer mode, etc.). But it also has a ninth rotary encoder that controls whatever currently has the focus, as determined by your mouse. And . . . it's cute and small, so you can almost certainly find a place for it on your desktop.

However, what separates Nocturn from the pack is the Automap Universal 2.0 software that ships with it. When you install the software (Mac OS X 10.4 or higher, Windows XP SP2 or 32/64-bit Vista), you're presented with a list of plug-ins in your system (VST, AU, and TDM/RTAS) which you can then select to be "wrapped" so they operate with Nocturn. (I just selected everything—hey, why not?) A program considers these wrapped versions as separate plug-ins, so if your software scans plug-ins on start-up, you'll see the Automapped versions being registered. Although Nocturn can't wrap "keyed" plug-ins that work only with specific programs, as long as they accept MIDI control, you can treat Nocturn as a regular MIDI controller where you create your own mappings.

Once the software is installed and the hardware plugged into the USB bus, the fun begins. As soon as you open up a wrapped version of a plug-in, the Automap GUI shows up with a graphic of the available parameters (if necessary, there will be more than one page). You can determine the window's transparency, encouraging you to keep it "on top" because you can see what's going on with your host or plug-ins underneath—and the transparency helps a lot if you choose to resize the window to a large size, which can be very helpful if you're running the remote at a distance from the computer. (You

(CONTINUED)

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can also press a "view" button on the controller surface to hide or bring up the window.)

Nocturn is loaded with useful features, like being able to determine the encoder sensitivity and acceleration, as well as minimum and maximum control values. The controllers have a smooth, predictable action; being endless encoders, they use the "add/subtract" method of matching physical position to virtual control value. Also, doing MIDI control is a snap—very handy if the crossfader is unassigned, and you want to do a custom mapping. What's more, there's a browser that shows all open plug-ins and mixers, so if you have a really busy screen, you can call up the browser and go instantly to what you want to control. It's really an extremely well-thought-out package; sure, maybe you'd rather mix with faders than rotary knobs, but for plug-ins the knobs work just fine.

When I first checked out the Novation website while getting ready for the review unit to arrive, it all sounded too good to be true: It's simple! It works with everything! It's really inexpensive! It looks cool! You can mix with it! Well, this is one case where you *can* believe the hype. If you're looking to get started with hands-on control, Nocturn is an excellent choice—and I could make a really strong case that it's your best choice, especially when support for Pro Tools on Windows becomes available (which may already be available by the time you read this). EQ

In Steinberg Cubase, Nocturn is controlling SSL's Drum Strip plug-in. Note the semi-transparent GUI.

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Alesis, www.alesis.com
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Arturia, www.arturia.com
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Sweetwater Control Surfaces Buyer's Guide with additional information: www.sweetwater.com/shop/computer-audio/control_surfaces/buying_guide.php

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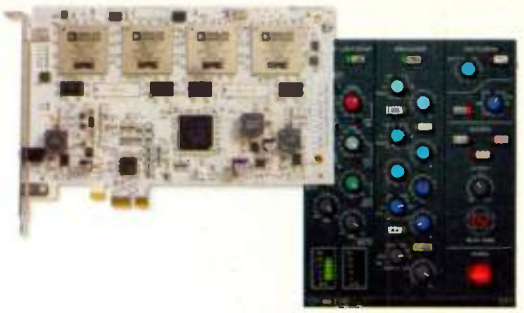

The Neve 88RS (right) is just one of many plug-ins you can run on the UAD-2 card (left).

ANALYSIS: UNIVERSAL AUDIO'S UAD-2 DSP CARD FAMILY

by Craig Anderton

Sometimes a review that covers only specs, pricing, and the reviewer's reactions misses the point, because a product has a backstory with deeper implications. At first glance, the UAD-2 DSP card might not seem that novel: Offloading processing from your computer's CPU to special-purpose DSP-based hardware dates back many years, and in some ways, it's easy to see the UAD-2 as simply a "more/better/faster" version of the UAD-1. Fair enough. But scratch beneath the surface. . . .

AN INTRODUCTION

For those unfamiliar with the UAD-1, it was introduced in 2001, back when computers had a hard time keeping up with native processing. Yet even as computers became more powerful, the UAD-1 remained relevant because all DSP power is not the same. In a computer, the amount of power being drawn from the CPU is in constant flux as various processes engage and disengage. With DSP on a card, the power being drawn from that DSP is relatively constant. You can often "red-line" a DSP card with no problems, whereas trying that with a computer begs for trouble.

However, it wasn't just the CPU angle that hooked people; it was the strikingly realistic, and musical, emulations of vintage (and not so vintage) gear. I knew a studio owner who had scored a vintage compressor on eBay, and set up a blind A/B test with the UAD-1 version so he could prove to himself once and for all that no matter how good emulations were, they couldn't really outdo hardware. Surprise: Shortly thereafter, the compressor ended up back on eBay.

BACK TO THE FUTURE?

Which brings us to the UAD-2. Probably not that many *EQ* readers were recording when a typical studio was an MCI (or equivalent) 24-track tape recorder, a big mixer, and a rack of outboard gear. Sure, the mixer had EQ; but there were times you wanted that gentle, strange curve that only an old Pultec could deliver, or a beat-up limiter with an optical response—hence the rack o' gear.

The UAD-2 (especially the Quad version, with four Analog Devices SHARC 21369 DSP chips) is much more powerful than the original UAD-1. Because of this, the UAD concept is no longer to replace a few cool pieces of gear, but to be the 21st century equivalent of that rack of special-purpose processors . . . or maybe even an entire mixer.

For example, the UAD-2 Nevana 128 bundle (based on the Quad card) can instantiate 128 mono instances of the Neve 88RS channel strip plug-in in 44.1kHz/24-bit projects with full EQ and filtering, and either the Gate/Expander or Compressor/Limiter engaged for each instance. Consider the implications: For a street price under $2K (list is $2,499), you're getting the heart of a Neve 88 console. And of course, you can run other UAD-compatible plugs, including esoterica like the Roland CE-1 and Dimension D. Perhaps more significantly, those who are wary of "mixing in the box" can use the UAD-2 DSP card to fold in processors that are not constrained by the computer's limits.

Bottom line: Slowly but surely, we're returning to the traditional studio paradigm—except that the computer is the multitrack recorder, sophisticated control surfaces provide the "hands-on" feel of traditional mixers, and DSP-driven devices replace racks of outboard gear. The end result is better workflow, fewer computer-related issues, and ultimately, a more musical recording experience—which suits me just fine. EQ

For an in-depth review of the UAD-2, see the November 2008 issue of *Keyboard* magazine or go to www.keyboardmag.com.

WHAT ABOUT OBSOLESCENCE?

While the UAD-2 isn't terribly expensive, purchasing the "optional at extra cost" plug-ins adds up—and your total investment is tied to the PCIe bus. Unfortunately, bus protocols don't last forever: Just ask my NuBus and ISA cards. (This applies to FireWire and USB 2.0 too; anyone remember the Apple Desktop Bus, or parallel ports for printers?) As a result, it's both fair and respectful of their customers that Universal Audio will let you upgrade your UAD-1 plugs to UAD-2 versions for free (even though that's a limited time offer, you'll still be able to crossgrade for a nominal fee after the "grace period" is up).

Too often, recognizing the value of software has been a one-way street: Companies want you to recognize that value and not copy their programs, but they also want you to abandon your investment when something new appears. It's encouraging UA realizes that with their cards, most people will invest more in software than hardware, and has provisions for you to transfer that investment to a next-generation platform.

For more information on crossgrading, go to www.uaudio.com.

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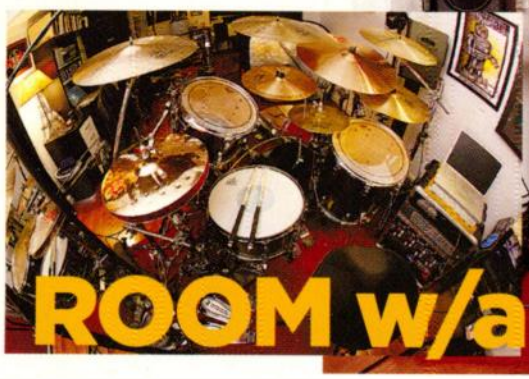

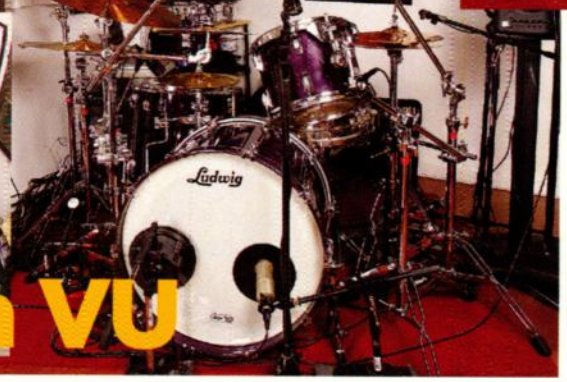

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ROOM w/a VU

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by Angelina Skowronski

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LOCATION: Hollywood, CA
CONTACT: www.ryanhoyle.com/thelab.html
KEY PLAYERS: Ryan Hoyle
CONTROL SURFACE: Digidesign Digi 002
COMPUTER: Apple MacBook Pro 2.2GHz Intel Core 2 Duo w/ 4GB RAM
DAW: Apple Logic Pro 8; Digidesign Pro Tools LE 7.4.2
CONVERTERS: Apogee Rosetta 800
MONITORING: Extreme Isolation Headphones; JBL LSR4328P
PRES/DIS: API 3124+; Apogee Mini-Me; Vintech 473
MICS: Audio-Technica AE 3000(3), A-T 4050 (2), A-T 4041, ATM 250, ATM 450, ATM 650; Audix D6 (3), i5; Heil PR40; Mojave MA-200 (2); Royer R-121 (2); Sennheiser 421; Shure SM57, SM98; Yamaha Subkick
ROOM TREATMENT: GIK Acoustics Acoustic Treatment and Diffusers
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KITS: 1940s Leedy Mahogany w/ 26" kick, 11", 13", and 16" toms; 1960s Ludwig 3-ply Hollywood w/ 22" and 26" kicks, 13" and 16" toms; Ludwig Classic Birch w/ 24" kick, 12", 13", and 16" toms; Ludwig Classic Maple Jazz w/ 16" and 22" kicks, 12", and 14" toms; Sonor Force Maple w/ 22" kick, 10", 12", 13", and 16" toms; Vintage '70s Roto Tom Kit w/ 22" kick, 12", 14", and 16 roto toms
SNARES: Ludwig 3"x13" Maple Classic, 6"x12" Maple Classic, 6"x13" Maple Classic, 1960s 5"x14" Supra-Phonic, 6.5"x14" Supra-Phonic, 1920s 4"x14" Universal Brass; Pearl 13"x13" Brass Piccolo, 6.5"x14" Brass Free-Floating; 1940s Slingerland 8"x14" Radio King; Tama 3"x12" Steel Piccolo; Yamaha 6"x14" Anton Fig Signature
NOTES: Drummer Ryan Hoyle has spent a fair amount of time packing venues and touring with alt-rockers Collective Soul, but he says that his focus is now on his newly-built home studio, Cave Studios. Hoyle tells us that the inspiration for constructing his new facility came from his numerous brothers-in-arms—the illustrious session drummers of the L.A. and Nashville recording scenes. "Tracking drums on projects at home becomes a huge question mark," says Hoyle. "Most can't get a good sound, and those who can—but can't get a good performance—sit there chopping up beats. I'm offering them an alternative."

Hoyle's alternative begins with a small studio dedicated entirely to drum tracking. "Here we have everything one would need to record and export drum tracks for other musicians," the drummer tells us. "It's a new way for drummers to market themselves. They can accept a session, lay down the tracks here, and send them off."

Why no compressors, EQs, reverbs, and other signal processors? "Why would you mix before it's been tracked?" Hoyle replies. "I'm about producing the highest quality in the front end, leaving all mixing and editing to the customer."

Still in its freshman year, the Cave already has a waiting list of projects. Hoyle, an industry veteran whose first recording studio flopped, says that he feels vindicated by his early success with the Cave. "If you are trying to open your own place, set a goal and then work backward," he says. "You can easily get distracted and end up buying all this gear before you've even recorded a song. There's no need to get knee-deep in tech support. Keep it simple. You can save a lot of time and money by just rehearsing instead of editing." EQ

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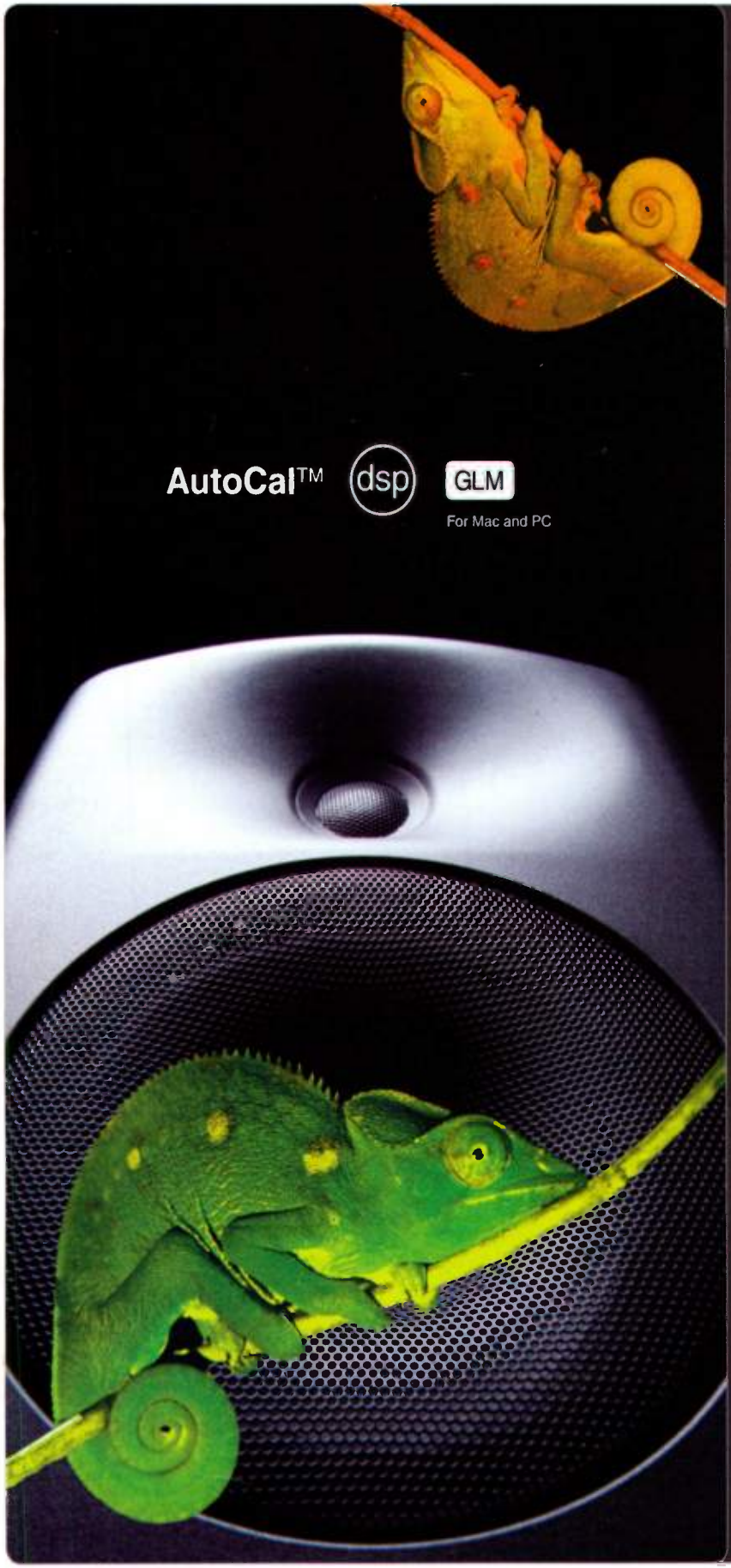

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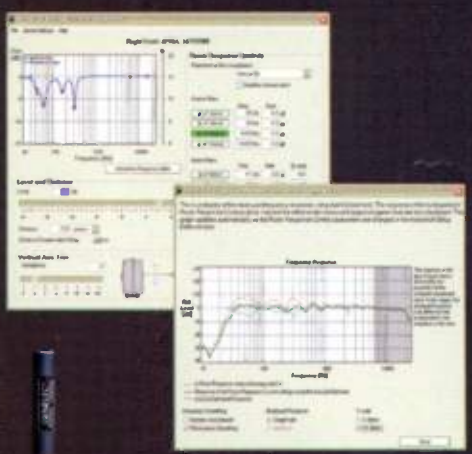

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