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VOLUME 3 • NUMBER 2 • MAY/JUNE 1999



Barresi, who admits to a "gear-collecting addiction," has his own arsenal of recording equipment.

Joe Barresi Gets Big Guitar Sound With Classic Gear and BASF Tape

Manchu, Weezer, Kyuss, Skunk Anansie, and Monster Magnet.

How does engineer/producer Joe Barresi get that fat, hard-rocking guitar tone that has become his signature sound? The answer, says Barresi, whose current credits include Fastball's million-selling album *All the Pain Money Can Buy*, featuring the breakaway hit single "The Way," lies in great musicians, good studios, his own collection of classic (and sometimes weird) gear, and analog tape – specifically BASF SM 900.

"I still like analog," asserts Barresi. "Occasionally, I may use ProTools to correct performances or to manipulate the sound, but

the basic thing for me is getting a good performance down on tape. Everybody in the digital world seems to be going around in circles trying to get that analog sound, so why not just go to analog? I'm not afraid to have a drummer play four or five takes and then hack up the 2-inch tape to get the best performance. I call that 'JoeTools.'"

Barresi has been earning his guitar-driven niche by producing and engineering recordings by such alternative rockers as Loudmouth, the Melvins, L-7, Catherine Wheel, and Queens of the Stone Age. His numerous engineering and mixing credits include Hole, The Jesus Lizard, Fu

Based in L.A., Barresi usually works at a short list of area studios, including Bay 7 (formerly The Lighthouse), Sound City, and A&M Studios, that have the equipment, staff, and environment he favors. "It's important to have a really good console and tape machine," he notes, "so I always try to use an 80 Series Neve console and a Studer A800 recorder."

Also contributing to the Barresi sound is his own collection of classic gear. A guitar player and recording buff since age seven, Barresi admits to a long-term "gear collecting addiction." He figures he has something like 20 guitars, 40 amps, over 160 different guitar pedals, and

more outboard gear than he can begin to enumerate. He also mentions more exotic equipment, like parts of a vintage Helios console ("the kind that Led Zeppelin and the Stones did their early records on") and "crazy stuff like radio compressors." But these pieces of gear are not museum pieces for Barresi. They're part of what he does. "I'll bring that gear into the studio," he says, "because I know what it sounds like, and I know it'll always work. It's like having your own arsenal, something you can bring to the table."

Like his attachment to analog tape, Barresi's odd collection of gear serves his sound well. "Sometimes you'll see guys buying expensive pieces of digital gear to make a simple flange sound. I, being a guitar player, always loved the way,

Continued on next page...



FROM THE TOP

DTV is becoming a reality. The Federal Communications Commission (FCC) has mandated that all major television stations in the top 30 markets be broadcasting DTV signal by November 1.

So what does this mean for professionals dealing with the sound of the digital broadcast? For starters, it's the challenge of working with everything from a mono car commercial to a full bandwidth 5.1 soundtrack for a prime time feature film. DTV "ups the ante," so to speak, for quality of both image and sound. As a result, creative teams around the country are already working to achieve more realism, impact and clarity.

We are at the beginning of a new generation of sound delivery for the consumer, developments that could be compared to the evolution of recorded music, from 78s to LPs to CDs.

To accommodate these new opportunities, EMTEC engineers are working continuously to create new formulations for DTV, like our Digital Betacam professional video tape. We're also intent on enhancing the reliability and ease of use of existing products, like our recently introduced Formatted ADAT for 16- and 20-bit ADAT machines. We will continue to add new products to support multichannel and higher-resolution recording.

You can be confident that, wherever there's new technology, you'll find EMTEC and BASF-brand media.

Joe Ryan

President • EMTEC Pro Media, Inc.

says, a MXR flanger pedal sounded, so I'd bring that into the studio. I'm into re-amping sounds back through pedals, too. I use a box called the PCP (Professional to Cheesy Pedal) interface that a friend of mine, Jonathan Little, builds. It allows me to run various chains of pedals off tape, each with level control and phase switches.

"There was an '80s thing," he goes on, "that guys would never print effects; they'd always leave it for the mix. But I say, screw that, if you've got the sound together, why not just put it on tape?"

"I'm also a fan of using multiple amps when recording. I use a guitar splitter box that allows me to combine up to six amps at once so I can blend various combinations of heads/combos/DIs, etc. That way, I'm able to add more beef or clarity to a sound by adding another amp instead of reaching for EQ."

Barresi often resorts to his "arsenal of Sound City amps and cabinets that no one uses anymore. But they were popular in the '70s. Hendrix used them, as did a lot of British players. They're like the poor man's Hiwatt, and they're great-sounding amps. I also have a West Grande head, like Grand Funk used to use, and numerous little combos, like the Watkins Dominator, a pre-Marshall 20-watt class A amp that's monstrous in tone.

"In fact, I'm a big fan of the small amp," notes Barresi. "I did a whole Melvins record [*Honky*] with just small amps and we still got huge guitar

tones that way."

For all the gear at hand, "you still have to have great tape," says Barresi. For the past couple of years, great tape for Barresi has meant BASF SM 900. "I like the 900 because you can push the recording levels and still retain the high-end and the definition at the bottom – it gets a really fat sound."

Barresi wasn't always a fan of high-output tapes like the SM 900. "As soon as they began making high-output tape, people started doing +9 alignments and pushing the levels to death, and a lot of times the tape just couldn't handle it. The sound came back mushy and the transients were gone.

"To be honest, no tape sounds great at +9 to me," continues Barresi, "but the beauty of the 900 is that when I'm recording at a normal +5 or +6 alignment and then really hit the tape, the BASF is still clear and punchy. Even at higher levels, it won't fold up on you."

Often working with newer bands, Barresi discovers another advantage in SM 900 tape. "I do a lot of low-budget records," he explains. "That means working on a tape for, say, three weeks, 24-track all the way. BASF tape is able to take the abuse of repeated wear over the heads and still retain the characteristics of the sound that went down on it."

Barresi also credits BASF with a consistency that he hasn't found elsewhere.

"With the brand I was using before, I started getting more and more bad batches. But I've had good luck with the 900 in terms of consistency. If I'm working on something where I've had to use a different batch of tape, I've found the reels still sonically equal."

Coming up for Barresi next is a new Fu Manchu project. Barresi is also looking forward to increasing his producing projects along with recording and mixing.

"Sonically speaking, engineering is the more creative part, and I obviously like that. And, in many ways, producing is a lot of hand-holding – you have to keep everybody together and make sure they're all happy. But to me, the creative part of producing is helping bands realize their potential. Knowing when to push them and when to lay off.



Barresi prefers SM 900 because, even when pushed, it gets a really fat sound.

There are very good bands that just need someone to give them a little guidance, and help them keep it together when they're working 12-plus hours a day trying to perform. That's a challenge and equally as creative as engineering." ■

In Session With...



Sean Beavan

Many engineers spend the majority of their time and energy trying to capture the cleanest, most accurate sound they can. As the sonic mastermind behind such artists as Marilyn Manson, Nine Inch Nails and Kidney Thieves, Sean Beavan has taken a slightly different approach. His sound relies on a complete disregard for the rules of traditional recording, blending overdriven signals and noise into a cacophony of sound. Beavan's ear-bending sonics also have graced the projects of No Doubt, Golden Palominos, Prick, Megadeth, Pantera and the long-awaited new Guns 'n' Roses album.

In this issue of *Studio Observer*, the Doctor of Distortion shares his unique approach to recording.

Have you always been into the artful use of distortion and noise?

In the early '80s, I was an engineer trying to make things pristine and really clean. You know, "There's only one good kick sound and one good snare sound and one good vocal sound." I got involved with Trent Reznor of Nine Inch Nails and he kind of opened my eyes. Sometimes, when things sound bad, they sound great. I totally got into that philosophy, and I really enjoy it. It's a great way to mix – bringing different frequency ranges into play to give the song dynamics as well as just making things quieter and louder. Distortion provides that kind of glue that most people just throw reverb into the mix to get.

With the kind of production I do, you start to learn the subtleties of different types of distortion and how to use them. I have several different ways of getting distortion. A lot of it is just stressing gear until it starts to break up, and some gear does better than other gear. I love old Neve modules – they're some of the best. Old tube compressors and [UREI] LA4As are great for distortion as well. I just crank them up all in a row to get the craziness happening, and get some real nice, smooth distortion.

Do you use many ambience effects?

As far as digital reverbs go, I hardly ever use them. If I need a reverberant space, I'll use a room to get it. I just mic the room, pump the sound in with speakers and compress the microphones like crazy. I find that sound much more interesting. I only use digital reverb when I absolutely have to, and it's usually an Eventide H3000 because it has that not-very-pristine quality to it. The H3000 also doesn't

have a lot of high end. I don't really like a lot of high end in reverbs because I find it blurs the real transient.

I also like the TC Electronics Fireworks and old Harmonizers – the 910s are my favorite. The Zoom 9050 gets great weird sounds – it can sound like a cheap car stereo.

What's your favorite tape format?

Drums and bass to 16-track, 2-inch analog tape. I love using tape on guitars, especially if I'm going for big, beefy sounds. If I'm going for midrange, screaming guitars, it doesn't matter to me. I'm more likely to throw them into ProTools and manipulate them. I definitely like to mix to half-inch tape, and I track and mix with BASF SM 900.

I mainly use analog tape for signal processing. If it wasn't for the processing aspect of tape, I think I would track mostly to digital for the convenience and lack of hiss. You just can't deny that tape does something wonderful to bass, drums and guitar — there's something rock-and-roll about it.

I've even been using BASF CDs lately, and I do think their CDs are better-sounding. There's some nice definition in the low end that surprised me.

Why BASF SM 900?

Sonically, it just saturates nicely in the low end. Every time I hear something play back, it sounds better. It just has thicker bass. If you get a great drum sound with lots of bottom, you play it back and all of a sudden it's smoother. It's exactly what you would have done with a great compressor.

BASF's top end is really good too, and really clean. It doesn't get that "dulled edge" to it. With some tapes, when you record a really harsh guitar, it smoothes the sound out a little too much. I like BASF tape because it maintains most of the character of that upper mid-range. If you work with the biasing a little bit, you can get exactly what you want out of it.

I've been using BASF on and off for quite a while, and I've started to use it almost exclusively in the last two years. I think they've just developed the right tape. You can push it and get some really nice compression and crunch out of it. It's a really good format. I haven't had any complaints or dropouts. I'm really satisfied with SM 900. ■



Tape Talk

JEAN TARDIBUONO

Vice President of Sales and Marketing
Studio and Broadcast Products
EMTEC Pro Media, Inc.

DVD's Next Challenge

In early March, after an agreement was reached regarding copyright protection, the DVD Audio format was cleared for take-off. Software and players for this successor to CD audio could be hitting the stores as early as this fall. The sales success of such DVD music videos as Eric Clapton *Unplugged* and James Taylor's *Live at the Beacon* reveals some initial demand for this more realistic, higher-resolution medium.

Many have compared the development of DVD Audio to Quad (four-channel playback). Although Quad was ultimately unsuccessful in the 1970s, in the two decades since then the average consumer – accustomed to having a multichannel audio experience at movie theaters, for instance – has come to appreciate what 5.1 channel sound can deliver.

But widespread demand for audio beyond CD quality is not there yet. As an industry, we must excite the average consumer – someone who may or may not care to spend a few hundred dollars on a new piece of gear – about this new technology. Everyone from artists and producers to engineers and manufacturers must work together to generate an appetite for DVD Audio by creating compelling content.

Perhaps this is the next great challenge for DVD Audio. ■

For more information on DVD Audio, refer to: www.dvdforum.org.

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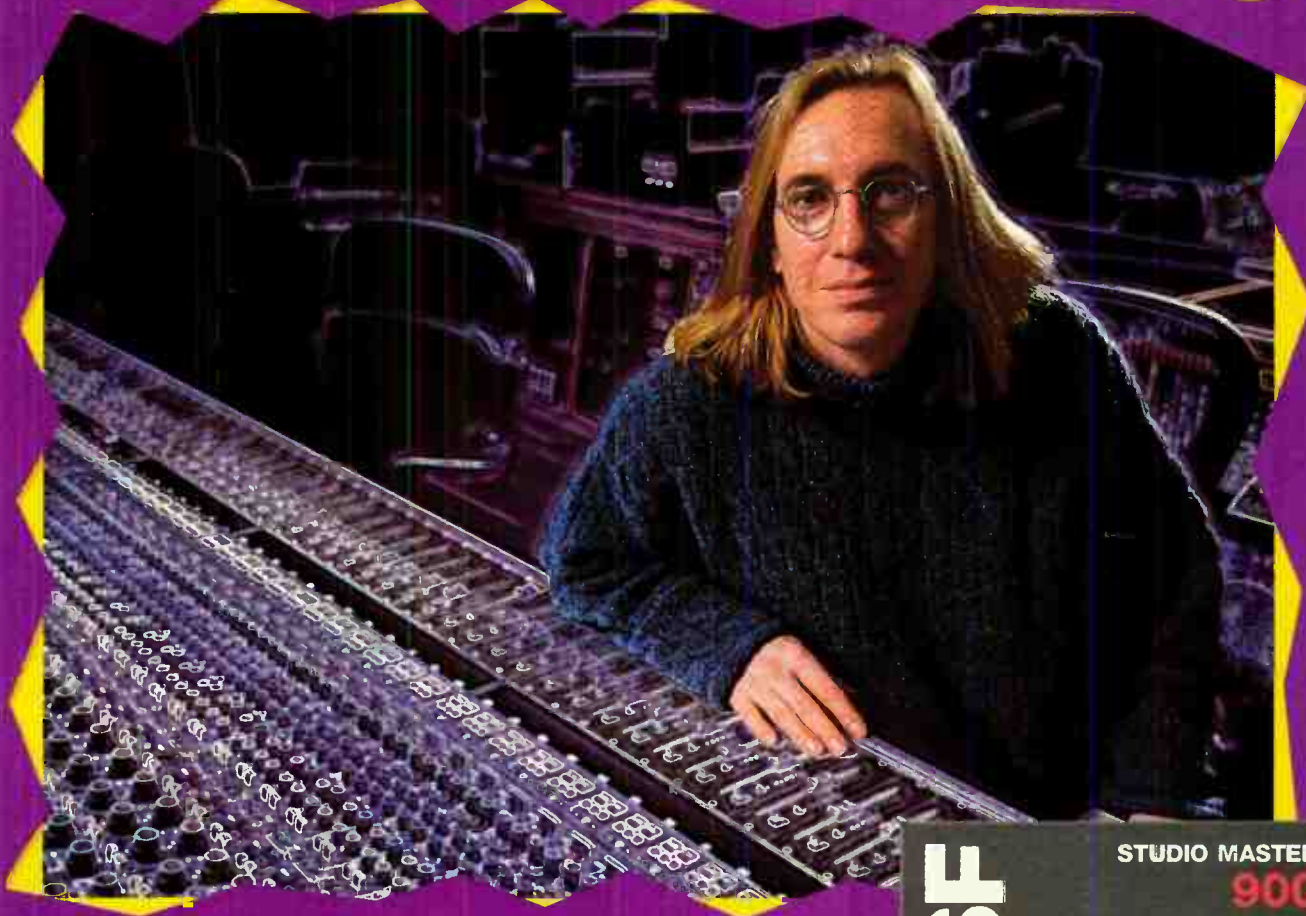
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Chuck Ainlay

Photo: David Crenshaw Studio: Oceanway Nashville



on **BASF** *tape*

“I’ve worked in digital for a good deal of my career, finding it a better alternative to noise reduction or high-output analog tapes. The tapes seemed a bit harsh to me. Then I ran across BASF SM 900 analog tape. I love that warm bottom end and the tape compression you can get by pushing it. SM 900 holds up. I’ve been mixing to it for archiving purposes as well as for its sound. A tape’s stability over time is definitely something to consider.”

Chuck Ainlay has recorded such artists as **Trisha Yearwood**, **Vince Gill**, **George Strait**, **Wynonna** and **Reba McEntire** during his 20-year career. His recent credits include the **Dire Straits** reunion album **On Every Street**, as well as several **Mark Knopfler** solo albums and movie soundtracks.

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MICHAEL DeLORENZO



Double threat **Michael DeLorenzo's** acting credits won him a role on "NY Undercover"... his musical gifts landed a recording deal. "The sound of this console is as good as any big analog console I've worked on," he says, adding "My producer **Peter Michael** and I were so surprised by the quality of the onboard dynamics and reverb that we plan to mix the whole album without outboard gear."

WHY GO DIGITAL?

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LEE ROY PARNELL



Lee Roy Parnell's upcoming Arista album may start a new trend in artist-producer-label communication. At every stage of each song's progress, mixes get modemed between Parnell's studio, producer **Ed Cherney** in Los Angeles, and Arista-Nashville president **Tim Dubois'** Nashville office on Music Row. (This won't make the airline industry too happy.)

POKE



Poke (above) and co-creator **Tone's** credits include "Allure," Will Smith's "Big Willie Style" album, and NAS' "It Was Written." Their opinion of our new digital mixer? "Making records on the D8B is for real. Tight mixes and we love not having to give up the bread it used to cost to get great sound."

MAD JEF



Mad Jef's platinum credits include engineering and programming for the likes of Michael Jackson, Janet, Jam & Lewis, and Grammy winners Sounds of Blackness. Jef didn't expect much from the D8B's processing. His opinion after several mixes? "The onboard effects are so good I'm getting rid of a bunch of outboard gear."

NAUGHTY BY NATURE



Naughty By Nature cut and mixed the platinum album "Next" on their analog 8•Bus, so buying a D8B to mix their new release "19 Naughty IX" was a no-brainer. NBN's KG says the band avoided other digital mixers because they "mess with your sound."

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WALTER AFANASIEFF



You'd think with more than 100 million album sales to his credit, we could have treated pop producer **Walter Afanasieff** better. But even his dazzling production credits and deposit at a local retailer couldn't land him a D8B until recently. Was the 9-month wait worth it? As Walter's engineer **David Gleason** says (in his inimitable British accent): "Walter and I both really love this desk."

JIMMY JOHNSON



Few know the evolution of recording better than Muscle Shoals legend **Jimmy Johnson**. He engineered hits for Otis Redding on a big-knob mono console, did the Stones' "Brown Sugar" on the first 8-track, produced Lynyrd Skynyrd on 24-track, and is now one of the first to own a Mackie D8B. Johnson says, "The sound I'm getting out of this console is phenomenal. Why did I have to wait so long to get it?"

ARROWHEAD STUDIOS



Virgin/Nashville President/CEO **Scott Hendricks** has produced over forty #1 records. His newest commercial recording facility is built around a pair of Mackie D8Bs. With a 48-track Sony, 24-track RADAR, oodles of outboard gear, and Pro Tools 24 on hand, Arrowhead Studios' double-D8B 144-channel Mackie rig gets a serious digital workout.

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VOLUME 10, ISSUE 6
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ON THE COVER:

Nile Rodgers sits in his Connecticut-based project studio. Photo by Wes Bender.

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Talking 'Bout Our Generation...

It's a new industry, and a new generation of pro project recordist is taking charge

For nearly ten years, *EQ* has defined the project studio marketplace. Many of you will recall that we were the first to identify the way you do business — in a production environment exclusively devoted to your creative and professional needs. We have evolved our editorial as you have evolved — from a small niche of creative recordists to a dynamic, influential, and highly active group of project recordists.

Yes, the project marketplace has come of age. While there is still a growing group of hobbyists and recording musicians, *EQ*'s readership has emerged as a powerful group of project professionals. Think back to where your studio was ten years ago. Now look around at that collection of gear you've accumulated, that busy schedule, that backlog of diverse projects in music, post, and multimedia. Things have changed, huh? Your project studio is clearly a professional environment. You can now afford tools that would make many commercial (for rent) studios envious.

Professional project studios are now the most influential group of purchasers of professional audio equipment in existence today. According to our research, you buy more products, influence more buyers, and are willing and able to equip your project rooms with more value-added technology.

You're Generation EQ — the new force to be reckoned with in professional recording. The way you work, and where you choose to work, is changing the way that music is being recorded and the way that pro audio technology is being invented.

In this issue, you'll notice several vital changes that reflect the evolution in our readership. Our cover story is devoted to Nile Rodgers, who, not so coincidentally, graced the first cover of *EQ* that we controlled. Nile has evolved his career from performing to producing to operating his own project studio to running his own record label — it's a pattern, possibly on a grander scale, that is common to many of our readers. Generation EQ is willing to break the rules, change the way business is being done, and work outside of the mainstream of convention.

Your business is no longer just music recording, either. That's why we'll be launching new sections devoted to multimedia, post, dance, live, and studio computing in the coming months. Our news section will give you the kind of business information you need to make the kind of strategic decisions that come with the responsibility of running your own operation.

And there's more. In the coming months, we'll be celebrating ten years of project recording with special editions that put this entire recording revolution that we've all participated in into perspective. Stay tuned.

Your creativity has changed recording forever. Your success has, likewise, resulted in *EQ*'s own tremendous growth, as well as the prosperity of those manufacturers who have supported your work with the right tools. We're proud that many of you grew up and grew your businesses reading *EQ*.

The industry is ours. Generation EQ is now running the show.

—Martin Porter, Executive Editor



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CLOSET CASE

I liked the article on "Ways to Reduce Hard Drive Noise" by David Miles Huber (May '99), but just to expound on the idea of a remote "closet," here's what I did for my studio:

I built a big closet down the whole rear wall of my control room (now the side wall, since I rotated the room to accommodate my 5.1 speakers) and closed off the one side with a 6-foot sliding glass door. I bought the door used for 50 bucks from someone remodeling their porch, but you can get a new one for maybe \$200. Into the closet went a pair of tall racks and a heavy-duty shelving unit. And then I mounted everything in it that whizzes, whirls, and otherwise makes noise: three ADAT and TASCAM multitracks, my trusty TASCAM 42 reel-to-reel, and a pair of noisy computers with extra drive bays that serve as my workstations. Since there was an outside window in the closet, I was able to mount a small window fan to exhaust air to the outside. This keeps the room nice and cool, and since it pulls in filtered air from the studio, the equipment stays a lot cleaner (and, as Eddie Ciletti would (or should) say, "Cleanliness is next to Godliness," or something to that effect). Then I put in connections from the closet to the monitor, keyboard, BRC, and mixing console with a variety of ADAT optical, TDIF, DB-9, S/PDIF, and computer extension cables. Now, when I want quiet, I just slide the door shut and I can still keep an eye on the whole works. If I need to get to something, I just slide open the door and load in tapes (or curse at the computer, as the case may be).

Mike Sokol
EQ Contributor

BORN COUNTRY

I thought for the longest time that *EQ* didn't know (or at least acknowledge) that country music existed. Then you proved me wrong with a great article featuring one of country's finest engineer/producers — Ed Seay. As professional engineers, we all do our best on each project that we work on. However, we all have our favorite type of music, too. You know — the music we play for sheer enjoyment after the day's (or night's) work is done at the studio. For me, that will always be country. And there is a lot of Ed Seay's work repre-

sented in my music collection. I hope you will continue to feature country engineers and producers in your fine mag. Thanks for the great reading and info each month.

L.D. Barr
Rebel Wolf Studios
via Internet

LETTERS ON LETTERS

In your March 1999 issue, there was a response in the "Letters to *EQ*" that I would like to respond to. The title was "EQ Sells Out." It was a slam on your February 1999 cover story about Mr. David Lynch.

Firstly, I applaud David Lynch for accomplishing such a diverse and artistic history! I think he is a very knowledgeable man, and has definitely earned his place on the cover of your excellent and informative magazine.

David Lynch, I am sure, has worked extremely hard to earn the money he makes. The film and arts industry are a highly competitive and, frankly, a ball-busting business. If he chooses to spend his hard-earned money on some wonderful recording equipment, who is anyone to put him down or question his motives?

I found Mr. Lynch's story to be informative, interesting, and inspiring. I am sure he and his studio will make lots of hit records. David Lynch achieved his accomplishments with a mindset of unlimited thinking.

Thank you *EQ* magazine. You folks are #1. Keep up the great work!

Christopher Lee Clayton
Los Angeles, CA

REFLECTIONS ON BRUCE

I really enjoyed reading Bobby Owsinski's interview with producer/engineer Bruce Swedien (*EQ*, March '99). All that stuff about "early reflections" was very enlightening! His comment that: "there are no reverb devices that can generate that" should add a whole new dimension to the ongoing analog-digital debate in recording. There's nothing like the real thing, after all. Then again,

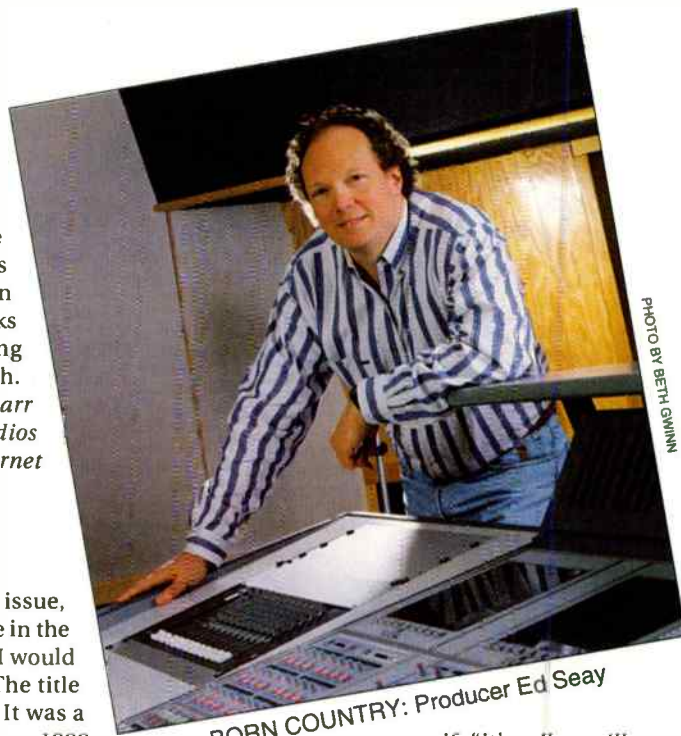


PHOTO BY BETH GIMINN

BORN COUNTRY: Producer Ed Seay

if "it's all an illusion," as the Buddhists say, then what difference does it make? The answer to Mr. Swedien's questions of hearing "sounds as colors" is to be found nine pages back. The term he was looking for is a title of one of the solo albums of Andy Summers: *Synaesthesia*. It is an ancient Greek word that means: "united sense perception."

George Koumantzidis
Lowell, MA

HUNGRY HEART

Thanks for the *EQ* Editorial insight titled "The DNA of *EQ*" [Match, '99]. It was so right on. Why do we do it? Because we love it. I don't make a huge amount of money at my day job, but I'm at least stock piling gear so I can say bye bye to the day job and starve in complete happiness.

Scott Colburn
GRAVELVOICE
www.gravelvoice.com
via Internet

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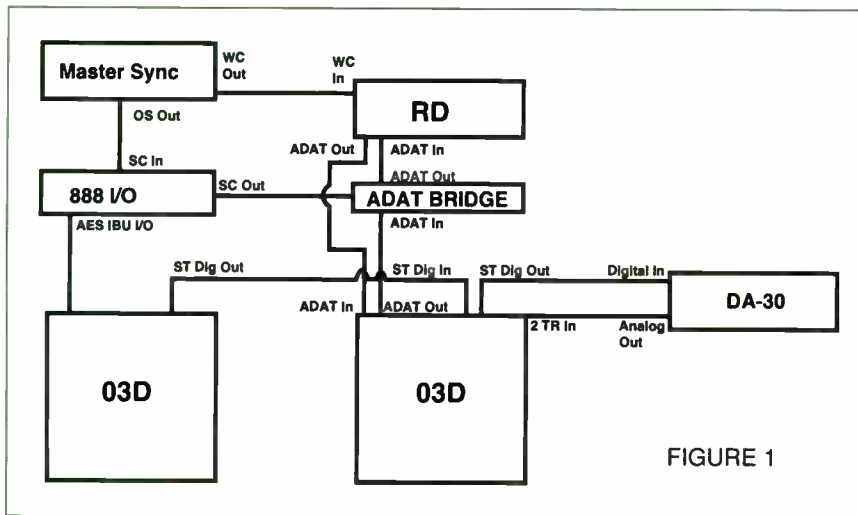


FIGURE 1

SYNC'ING SUSPICIONS

Q How do you get two Yamaha 03D's (one w/AES card, one w/ADAT card), a Fostex RD8, a Digidesign PT 888 I/O, a Digidesign ADAT interface, and a TASCAM DA-30 DAT machine all to play nicely together? I've been trying to get all this stuff sync'd together to no avail.

My goal is to be able to comp and record through the 03D's into Studio Vision Pro. Then maybe bounce comps over to the ADAT, do more stuff in SV or Pro Tools, hit Play, have everybody lock up, play back, and have it all show up on the 03D's for final mixdown. However, what syncs to what? Do I need something like an Opcode Studio 64XTC or Aardvark's SyncII to get the job done? Are there too many "digital sync cooks" in my sync'ing kitchen?

Thomas Bares
Rocket Factory, Inc.
Willoughby, OH

A Yes, there are too many "sync cooks in your kitchen." A general rule about synchronizing digital systems is that there can be only one word clock master. All other devices must slave to that one master device. In your situation, a separate clock generator like the Aardvark Ardsync II or the Opcode Studio 64XTC would simplify the setup. Both of these devices generate Super Clock (also called Slave Clock or 256x Oversample Clock) for the Digidesign gear and word clock for everything else except your DA-30, which has no word clock sync capability. (See fig. 1 for my

setup recommendation.)

Both of the 03D's clocks should be set to SLOT1/2 and the RD8 should be set for word clock input sync. The DA-30 is fed digitally by the 03D's digital stereo out and returns to the 03D analog via the 2-track in. The DA-30 should be set for Digital Input. This should make your studio happy.

Marc Lopez
Product Manager
Yamaha Commercial Audio

DOMAIN GAME

Q I recently bought a used Yamaha ProMix 01 to finish mixing my recording project. The recording is an analog multitrack recording made on an Akai MG-1214. The ProMix will allow me to facilitate mixing this project. My master DAT recorder is a Technics SV DA10.

Since the ProMix 01 has only a 48 kHz digital output, and I ultimately plan to make my own CD, what would be the best way to send this to my mastering DAT recorder? Should I use the 48 kHz output, or instead sample-rate convert it to 44.1 kHz? It occurred to me that staying in the digital domain would mean a quieter signal. Then again, it also occurred to me that I don't need any extra aliasing noise resulting from sample-rate conversion. Perhaps it would be best if I just go with the analog out into the SV DA-10?

I'm not yet very familiar with the ProMix 01, but I suspect it is going to really help facilitate finishing my recording. It's an amazing little mixing board.

I would appreciate any thoughts. (OK, not just any, but if it's something I can use, great!)

Doug White
Worcester, MA

A You have presented the two options for downsampling a 48 kHz signal to a 44.1 kHz. I generally recommend using the analog outputs to do your downsampling because, typically, the quality of sample-rate converters has not been completely acceptable. The ProMix does have high-quality 20-bit converters, and they wouldn't be the "weak link" in an analog chain. On the other hand, there are people who want to keep their studios completely digital, and downsampling sounds just fine to them. If keeping your studio digital is a priority, try comparing the quality of a sample-rate converter to the analog output so you can judge what's sonically acceptable.

Marc Lopez
Product manager
Yamaha Commercial Audio

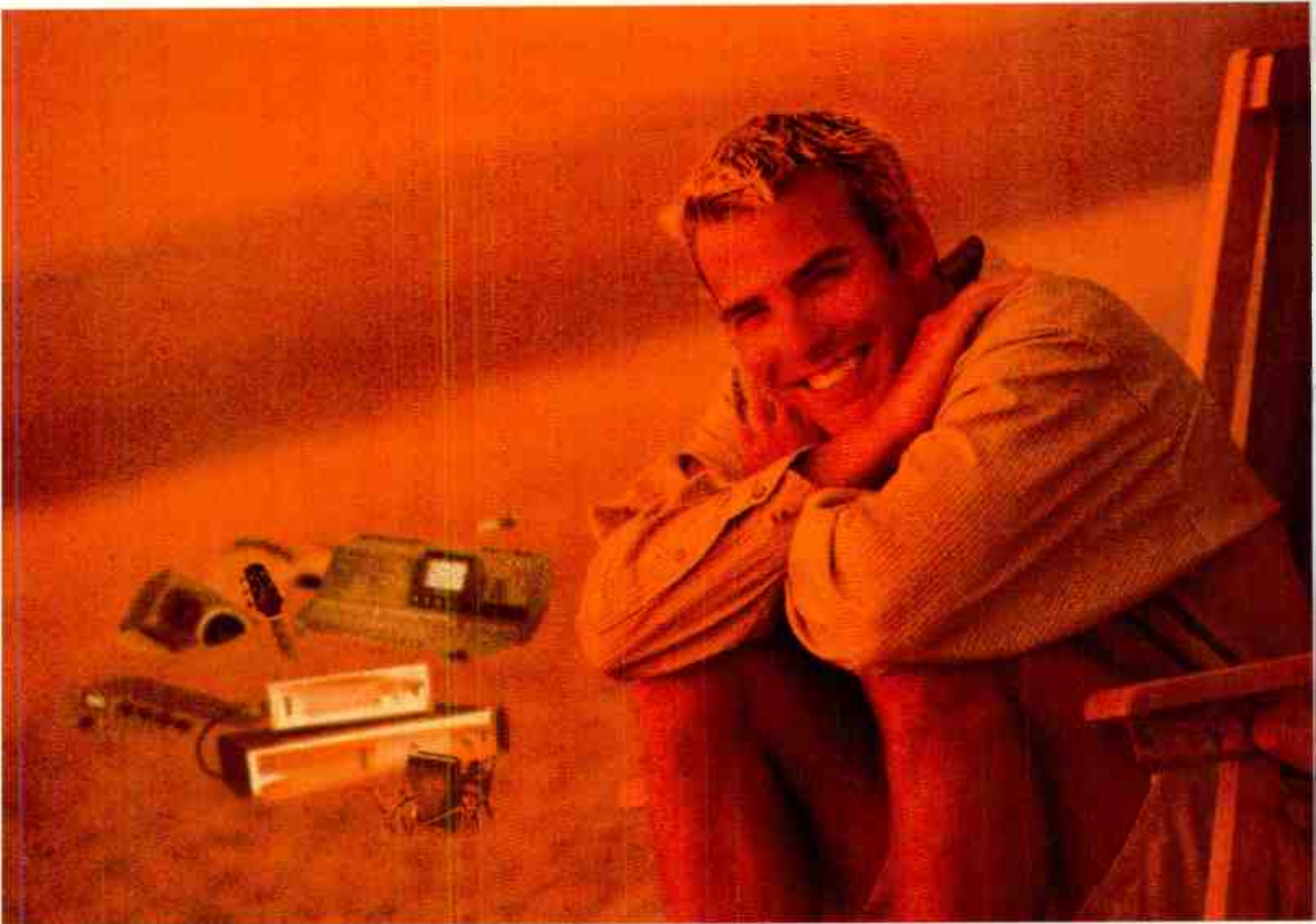
FLUTE MIKING

Q Do you have any insights on miking flutes (C flute)? I have seen three placement types: [1] mic on the head joint; [2] mic in the head joint; and [3] two mics spaced along the flute and positioned a few inches away from the flute.

Jerry Bacchetti
Flutist
via Internet

A If you were trying to capture the overall room tone for a symphony-type recording, then a close mic won't do it at all. In such cases, consider something like an AKG 414 or Neumann U 87 placed maybe a foot or two away. If you're looking for live sound reinforcement, then I have some other ideas. Mics in the head joint sound hollow to my ear, and seem to have the problem of moisture buildup and, therefore, eventual failure.

One of the best flute sounds I've gotten recently used a Crown vocal mic that mounts on a headband (for example, Garth Brooks or Janet Jackson-type mic) positioned up next to the player's cheek. This kept the mic out of the breath blast, and the talent was able to



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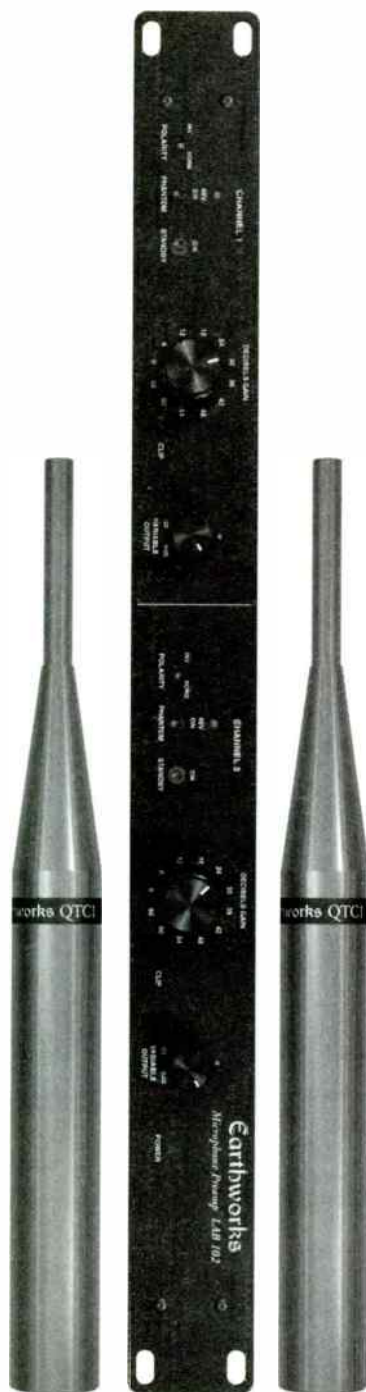
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use different flutes without changing mics. And, best of all, he had a UHF transmitter (wireless) on it so he could walk around stage while playing — certainly more dramatic than being tied to a single mic position.

Mike Sokol
Contributing Editor
EQ magazine

TUBE IDENTIFICATION

Q Ever heard of a 6JD6 tube? I found one at a flea market, and it looks a lot like a 12AT7. Westinghouse made it (Westinghouse ID# is 6535), but the original gray stamp reads: "6JD6." I want to put it in an amp, but I don't want to blow up anything. Do you have any advice?

Todd McMechen
via Internet

A I don't have my old tube reference manual handy, but my vintage Heathkit tube tester has two completely different settings for the 6JD6 vs. a 12AT7. According to the chart, the 6JD6 appears to be a single element unit, while the 12AT7 (as well as its close cousins, the 12AX7 and 12AU7) are dual-triode designs. I would say don't put it in your amp; you might get a meltdown. Tube amplifiers are horribly expensive to fix, especially if you smoke the power or output transformer. Don't risk it.

Mike Sokol
JMS Productions

IF YOU CAN'T STAND THE HEAT...

Q I have a TASCAM 488 Mk II Portastudio™ (some of us still dig this cool 8-track cassette recorder). Recently, after the 488 had been in use for about four straight hours, the tape counter in the fluorescent display started behaving erratically: it would not synchronize up with the tape. I tried a 20-minute cool-down period, assuming that doing that might clear up the malfunction. When I powered the unit up after 20 minutes, the problem had indeed cleared up.

I had previously noticed that the display window gets darn warm to the touch during long sessions. Could the electronic tape counter have gone into some sort of error from excessive heat, which a cool-down should faithfully

clear, or is there some other legitimate problem that should be checked out?

Lawrence Todd Josephsin
West Haven, CT

A It sounds as if you're working the 488mkII like it's a 2-inch, 24-track in a commercial studio. Nonetheless, since I feel that TASCAM builds rugged products, your question invited me to grab a unit from company inventory and beat it up.

The first thing I did after opening the box was clean the heads and pinch rollers. Then I popped a fresh, high-bias, 60-minute cassette in the bay and started recording. Since I wanted to replicate your hard use but didn't have time to sit and write a hit song, I set two memo points about four minutes apart and hit the Repeat button. After about an hour had passed, I checked the 488mkII for heat, but it was cool.

Leaving the recorder in the Repeat mode, I went off to perform other daily tasks like hanging out at the water cooler, etc. After three hours, I checked the 488mkII again. Still no heat build up. Then it occurred to me that I should be recording; maybe that would make the radiator boil over. Therefore, I started working on a tune. After about two hours of trying to be creative at the TASCAM cube farm, and receiving strange looks from the office personnel (hold the image of a large business office and this guy with headphones shaking and jerking to the music he is trying to create), the LCD was still not hot and was still performing strong. My last attempt to fry the Portastudio™ was to leave it in the Repeat mode overnight. From 5:30 PM to 8:00 AM the following morning, the 488mkII ran a loop. When I returned to the office that morning, the unit was still looping, and the display was not hot.

I wandered over to the service department to see if any of our technicians have repaired a 488mkII for heat stroke. The response was, "No way." Their main repair woes are broken input jacks (from hardcore metal bands slamming their 1/4-inch cable ends into the mixer input section) and [lack of] cleaning the heads.

I hate to admit this, but maybe you should send your unit to an authorized TASCAM service center for repair. I am assuming you keep your 488mkII maintained and you clean the heads every time you use the unit. Also that you are using a top-quality, high-bias cassette. If you're doing that, then maybe it's time for service.

Karl Moet
Product Training Manager
TASCAM

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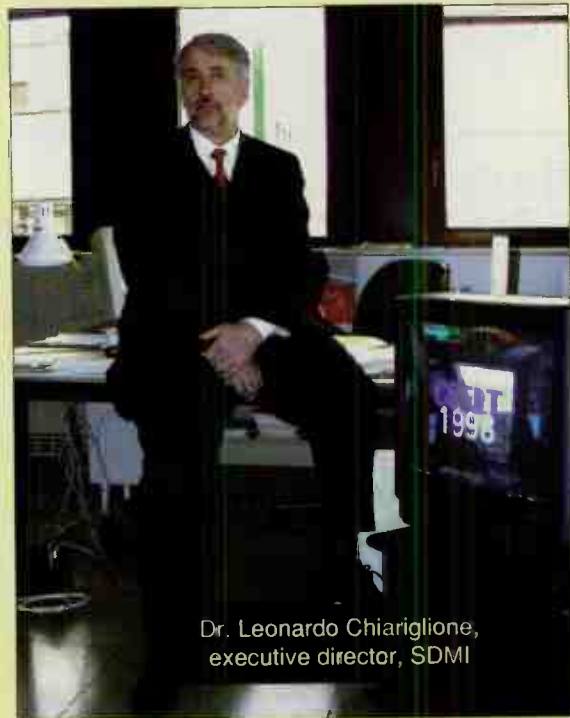
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SDMI Protects Artists' Rights

Record biz Internet group executive discusses the organization's objectives.

BY RIC DUBE

Dr. Leonardo Chiariglione is executive director of the Secure Digital Music Initiative (SDMI), a collaborative effort by technology and music companies to establish a technical data standard for Internet music delivery. The project, initiated by the Recording Industry Association of America (RIAA), has set out to determine an interoperable, open standard for secure digital music — downloadable music that sounds as close to a compact disc as possible, and to the best ability of SDMI, guards the rights of copyright holders. SDMI is striving to accomplish enough of its objective for companies to market consumer products by this coming holiday season. The following interview is excerpted from the



Dr. Leonardo Chiariglione,
executive director, SDMI

Web site Webnoize (www.webnoize.com). The full interview is on their site.

Is SDMI more about protecting music than compressing it?

SDMI is about creating, for the long term, an architecture that will enable secure delivery of content throughout a variety of delivery mechanisms and for use in a variety of end-user equipment. So compression is an important technology, since uncompressed music is 1.5 MB per second, a huge amount of data that can't be expected to move through the Internet or other delivery systems. This is about defining a new way of providing music to consumers, and a new way to remunerate authors and rights holders. Which is the better format for both com-

pression and audio quality, MP3 or AAC?

A subjective test carried out by MPEG shows the difference. Beginning with 1.536 MB per second uncompressed stereo music applied with MP3 compression, there is transparency to "golden ears." That is, specialists in music quality will not perceive difference from the original, at 192 kb per second. Thus, rather than a full 1.536 MB per second, you can offer the same listening experience at 192 kbps.

On the other hand, if you apply AAC, you get the same result at 128 kbps, two-thirds of the bit rate you need for MP3 — a substantial reduction in necessary bit rate.

This is no surprise when you consider that AAC was approved for

Industry Mourns Loss of Bruce Fairbairn

Noted producer Bruce Fairbairn died suddenly in his sleep of undetermined causes on May 17th. He was 49 years old. Fairbairn had a successful career that spanned more than two decades, working with artists such as Aerosmith, AC/DC, Van Halen, Bon Jovi, INXS, and KISS.

Fairbairn, who was featured with KISS on our Jan. '99 cover) is survived by his wife, Julie Glover, and his sons, Scott, Kevin, and Brent. In lieu of flowers, donations in memory of Bruce may be made to the Vancouver YMCA or a charity of your choice.

publication in April of 1997, while MP3 was approved in November, 1992. MP3 is a rather old scheme.

Now, consider MPEG-4 — which encompasses AAC. We have devised a system by which it is easy to plug in a protection system. Using MPEG-4, and thus AAC, you have a simpler job. But, in principle, it can be done for MP3, there is no problem with that.

How is SDMI dealing with the issue of intellectual properties such as patents for security or e-commerce?

I would not make a distinction between the two in the context of SDMI, but the text of the terms of participation that have been adopted say that, at my judgment, once the work of writing the specification is sufficiently advanced to the extent that the technology components are clear, SDMI participants are requested to confirm the availability to license their technology on fair and reasonable terms.

Could rights management make rights organizations like ASCAP or BMI become obsolete?

I would rephrase the question. Could the fact that digital music is becoming more easily moved from here to there change the role of the players in the delivery chain? My answer is yes. How will it change? I don't know. If you are a player in the chain and you simply stand still and don't do anything, you are bound to be wiped out. But if you are bright and understand what the technology offers you in the way of opportunity, you will re-invent yourself and your role, perhaps even enhancing your role. This applies to the players you mention, but, of course, to all players.

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Article reprinted courtesy of Webnoize, the authority on music and new

Massenburg DesignWorks Debuts

Introduces products designed for both ends of the pro audio market.

George Massenburg has announced the formation of a new company — Massenburg DesignWorks, LLC, an electronic design group headed by George Massenburg, producer, recording engineer, and designer of audio equipment.

The new organization provides software and hardware tools for GML and other companies, “bringing sophisticated audio technology previously restricted to the very high-end of the audio industry,” as their press release states. The first product from Massenburg DesignWorks is the 2x2 high-resolution parametric equalizer. The 2x2 is a double-sample rate plug-in that runs on the effects board of various manufacturers’ consoles. The Mackie D8B digital console and Sonic Solutions Sonic Studio HD are the first products using this

proprietary digital technology.

Other GML-manufactured products include the reference-standard GML 8200 parametric equalizer, the GML 8900 dynamic gain controller, the GML 9500 mastering equalizer, and the GML 9550 digital noise filter.

And speaking of the aforementioned “high-end of the audio industry,” Sony has announced that they have collaborated with Massenburg in developing a plug-in processing module for their OF-R3 Oxford digital mixing console. The software-based module, called the DMSK-R3001, recreates the sound of two of George Massenburg Labs’ analog signal processors — the 8200 equalizer and the 8900 dynamic range controller.

For more information, contact Audio Intervisual Design at 323-845-115.

Roland Moves into New Digs

On Monday, May 10th, Roland Corporation U.S. opened for business in its new headquarters. The new facility consolidates what used to be three buildings into one large structure.

With roughly 47,000 sq. feet of office space, Roland’s new facility incorporates



HEY JOE! Jimi lives in Roland’s new tech support area

numerous provisions for enhanced customer service. The new Media Center (formerly known as the Learning Center) consists of a main hall, a dedicated control room, and a series of video monitors positioned throughout the facility to enable guests to have a first-hand look at the front stage activities no matter where they may sit. Additionally, the new technical support area enables Roland’s product specialists to have far more equipment present in their cubicles to better assist customers with operational questions.

The new address is: Roland Corporation U.S., 5100 S. Eastern Avenue, P.O. Box 910921, Los Angeles, CA 90091-0921. Tel: 323-890-3700. Fax: 323-890-3701.

Opcode Cuts Prices on Programs

Opcode has announced that they are lowering the prices of their popular Vision DSP and Studio Vision Pro programs by an impressive 60 percent. The new manufacturer suggested retail price for Vision DSP is \$199, while Studio Vision Pro drops to a manufacturer suggested retail price of \$399.

Furthermore, the company has also announced that they are offering a shareware version of Vision DSP. This version, available from their Web site (www.opcode.com), won’t have several

of the amenities of the full version — including a printed manual and tech support — but costs only \$59. (It will include a manual in PDF form, and some technical help can be found elsewhere on the Web site.)

Finally, Opcode has promised that new versions of both programs will be introduced at the Summer NAMM convention. For more information, contact Opcode at 650-429-2400, fax them at 650-429-2401, or visit their Web site at www.opcode.com.

Conservatory Obtains Solid Addition to their Studios

The Conservatory of Recording Arts & Sciences announces the acquisition and implementation of a Solid State Logic SL-4056 G-series console in their main studio. The addition comes as



part of an ongoing three-quarter-million-dollar capital improvement package that the Conservatory is currently engaging.

Kirt Hamm, conservatory administrator, feels that the upgrade will help create the opportunity for graduates to enjoy even more successes than they have already. Other equipment recently acquired by The Conservatory includes two TASCAM TM-D8000 digital consoles, FOH and monitor consoles from Spirit, SR loudspeakers from Community, and a huge array of amps, EQ, dynamics, and digital signal processors from UREI, Manley, Klark-Teknik, Hafler, and Eventide. Hamm explains

that the upgrade was made in spite of good experiences with previous equipment so as to “...raise the bar and keep our students ahead of the technology curve.”

Another part of this upgrade was the commission of two new 48-track rooms (B and C rooms). In addition to the SSL console, the Conservatory’s A room features a Studer A-827 24-track machine, two TASCAM MMR-8 hard-disk recorders, DAT machines from Panasonic and TASCAM, and a rewritable CD-R from TASCAM.

For more information, contact The Conservatory of Recording Arts & Sciences at 602-858-9400.

Pro Audio Retailers and Catalogs Merge, Affecting Industry Scene

Recent agreements between large pro audio retailers change the way we buy.

Have you seen your favorite pro audio retailer lately? Recent mergers between several heavy-hitters are changing the face of the industry's retail scene. The pairing of Sam Ash and Thoroughbred Music, as well as the joining of Guitar Center and Musician's Friend, mark major changes in how many of us purchase our gear.

Sam Ash Acquires Thoroughbred Music
On April 30, Sam Ash Music signed a contract acquiring the assets of Thoroughbred Music, a retail musical instrument chain. Sam Ash will take over the operation of all Thoroughbred locations in Clearwater, Tampa, Sarasota, and Orlando, FL, as well as its newest 35,000-square-foot facility in Nashville, TN. Sam Ash will operate this multimillion dollar chain as "Sam Ash Music" in all markets.

Now, with the acquisition of Thoroughbred and the opening of four additional Sam Ash locations in Chicago and California, Ash will have added nine stores in its current fiscal year. Sam Ash's store count will be 29 by the end of the second quarter 1999.

On May 8 and 9, Sam Ash celebrated its 75th anniversary with a chain-wide promotion including \$5000 in merchandise give-aways at each store. The additional stores are located throughout New York, New Jersey,

Pennsylvania, Ohio, Florida, California, Illinois, and Connecticut. Visit Sam Ash online at www.samash.com.

Guitar Center and Musician's Friend Merge
Guitar Center Inc. has announced its agreement to merge with Musician's Friend Inc. in a stock-for-stock transaction, combining Guitar Center with the mail order catalog and e-commerce retailer of musical instruments. Musiciansfriend.com and Musician's Friend will merge with Guitar Center to be a multichannel retailer of musical instruments, with 61 stores and a combined mailing list of four million customers being supported by two distribution/fulfillment centers.

The new company will be called Guitar Center Inc. While the mail order and Internet business will continue to operate under the Musician's Friend banner, the majority of the Musician's Friend retail stores will be converted into the Guitar Center format. Guitar Center Inc.'s headquarters will continue to be headquartered in Agoura Hills, CA, while the mail order and Internet business will be headquartered in Medford, OR.

For more information on this new merger, contact Guitar Center Inc. at 818-735-8800.

Take Better Care of Your ADAT

EMTEC Pro Media, Inc., the North American sales and marketing group for BASF-brand magnetic recording products, and Alesis Corporation have joined in producing a 45-minute instructional video entitled *Care & Feeding of Your ADAT*.

The video, which is available from both companies, demonstrates basic

cleaning and maintenance procedures for ADAT recorders, emphasizing the importance of using the highest-quality ADAT tapes for best recorder performance and longevity. *Care & Feeding of Your ADAT* also covers proper handling and storage of ADAT master tapes.

To purchase a *Care & Feeding of Your ADAT* video, or for information on BASF-brand products, including 20- and 16-bit ADAT Master tapes, contact EMTEC Pro Media, Inc. at 888-295-5551. For information on Alesis products and obtaining a *Care & Feeding...* video, call 800-5-ALESIS. The company Web sites are: www.emtec-usa.com and www.alesis.com, and information can be found there as well.



Online Retailer Happenings

• **Sweetwater Gets Sweeter:** Sweetwater Sound, Inc. announces a new look and design for their Web site. The Web site, www.sweetwater.com, has been updated with a new design that makes it even easier for visitors to access the over 3000 pages that currently make up Sweetwater's site.

Currently receiving over 3 million hits per month, including visitors from 180 countries, www.sweetwater.com features "inSync," the industry's first daily.

• **New MCY On-Line Music Store:** MCY Music World is launching its new online music distribution Web site this spring, paving the way for artists, labels, and rights-owners to reach their audience directly and quickly. MCY licenses music content, digitizes it, puts it up for sale on the www.mcy.com site, and archives all content within its warehouse.

As a member of the Secure Digital Music Initiative (SDMI), MCY has developed advanced encryption software, called the NETrax software system, which digitally encodes each download to prevent unauthorized duplication of songs.

So how does one sign up with MCY? Richard Stumpf, MCY Music World vice president of product acquisition and development, is responsible for signing artists, labels, and rights-owners to MCY. Those interested can contact Mr. Stumpf at rich@mcy.com.

• **Cyber Record Label Launched:** The Stereo Society recently launched a revolution in online record labels when it opened for business solely on the Internet. The fully interactive Web site, www.stereosociety.com, offers CDs from four new and established recording artists, each of whom can be previewed by consumers before purchase, which may be made via direct download or mailed as a conventional CD.

Another feature of www.stereosociety.com is that it's designed to allow consumers to share their comments and opinions, submit their own reviews, and interact directly with The Stereo Society recording artists.

For more information, contact The Stereo Society at 212-989-4764 and visit their Web site at www.stereosociety.com.

EQ PRODUCT VIEWS

MINI AND MIGHTY

Neumann's new KM 180 Series miniature microphone series is targeted mainly to project studios and consists of three compact matte black or silver nickel miniature microphones. According to Neumann, the mics are well suited for the reproduction of acoustic instruments including strings, horns, and woodwinds. Featuring a new DC-to-DC converter, the mics are not affected by the possible unbalanced inputs of equipment such as DAT recorders. The KM 180 Series microphones feature balanced outputs and are phantom powered. The suggested retail price is \$749 each. For more information, call Neumann at 860-434-5220, fax them at 860-434-3148, or visit www.neumannusa.com. Circle EQ free lit. #101.



MINDING THEIR QS

The QS7.1 and QS8.1 are the two newest members of Alesis's QS Series of keyboard synth modules. They offer a number of features, including a newly designed backlit LCD. The units also include dedicated buttons for "Transpose" and "Sequence Select," allowing the user to immediately access these functions without paging through menus. The QS Series offers a 16 MB



on-board sound library, comprising 640 programs and 500 multi-timbral mixes. These keyboards are also compatible with Alesis' QCard ROM expansions, so users can add

another 16 MB of additional samples and program/mix information. Other features include four edit/control sliders, two pedal inputs, a 76- or 88-key weighted keyboard, and more. For more information, call Alesis at 800-5-ALESIS, fax them at 310-255-3401, or visit www.alesis.com. Circle EQ free lit. #102.



NORD FOR LESS

Armadillo announces a price reduction on the Nord Lead2 and Nord Rack2 synthesizers from Clavia DMI. Because of the increasing amount of "analog modeling" synths on the market, the U.S. retail price has dropped. The retail on the Nord Lead2 is now \$1799 and the retail price of the Nord Rack2 is now \$1399. With this price reduction, Armadillo Enterprises hopes to keep the Nord products on top. For more information, call Armadillo Enterprises at 727-519-9669 or go to www.armadilloent.com. Circle EQ free lit. #103.

FIT TO PRINT

Add some color to your CD-Rs with the Discmatic OPAL7 CD-R Printer, which offers seven-color, 1200 x 600 dpi resolution, ink jet CD-R printing. The OPAL7 comes with dedicated label design software that allows the user to manipulate objects in layers and precisely position them on the CD. The printer offers a precision-engineered positioning tray mechanism that automatically centers the CD. The printer also offers an automatic numbering feature for serial number placement, allows text to be written in an arc around both the inner and outer edges of the disc, and permits set up of a database for importing text. The OPAL7's software operates on Windows 95 and NT 4.0 systems and features a parallel port interface. The suggested price is \$1998. For more information, call Discmatic at 800-422-6707, fax them at 516-864-9710, or visit www.discmatic.com. Circle EQ free lit. #104.



TANGO UPGRADE

Frontier Design Group has upgraded its successful Tango audio converter system to

full 24-bit digital resolution, improving



audio performance without increasing cost. Dubbed Tango24, the new product features ADAT Lightpipe digital I/O for maximum flexibility in the studio. Tango24 connects to Lightpipe-equipped I/O cards in computers, digital mixers, and tape machines. Tango24 also features balanced +4 dBu analog I/O on 1/4-inch TRS jacks for clean connections to other analog equipment. The unit shares many features with its predecessor. Word clock input and output are provided on BNC connections for synchronizing multiple units or for locking Tango24's clock system to an external master. Tango24's front panel includes eight sets of level meters, switchable to inputs or outputs. The suggested price is \$699. For more information, call Frontier Design Group at 603-448-6283, fax them at 603-448-6398, or visit www.frontierdesign.com. Circle EQ free lit. #105.



DUPE-IT UP

Corporate Systems Center's (CSC) CD Dupe-It pro audio CD recorder/duplicator can duplicate any CD. All the user has to do is connect their source to the unit, press Record, and their music is copied to the internal AV drive. A built-in sample rate converter automatically converts from 32 kHz to 48 kHz input sample rates to the CD standard of 44.1 kHz. A coaxial S/PDIF digital input records from any digital source, while a coaxial S/PDIF digital output records to any digital device. RCA analog line input jacks record from any analog source. For more information, call Corporate Systems Center at 408-588-1110, fax them at 408-969-2655, or visit www.corp-sys.com. Circle EQ free lit. #106.

STOP POP

The Stedman Proscreen 100 and 101 are professional pop-eliminators for vocal applications. These designs utilize a unique patented metal screen that eliminates pops more effectively than fabric filter designs. Both Proscreens promise to allow more sound passage without high-frequency loss and offer increased comfort for the vocalist with a less obstructive, no-surround bezel style. The Proscreen 100 has a 180-degree adjustment swing on a standard thread mount. The Proscreen 101 has a 13-inch flexible gooseneck with an adjustable clamp to allow attachment to a mic stand or boom. For best results, the Proscreen should be placed between the vocalist and the mic with at least two inches between the screen and mic. For more information, call Stedman at 616-629-5930, fax them at 616-629-4149, or visit www.stedmancorp.com. Circle EQ free lit. #107.

EQ PRODUCT VIEWS

THE FUTURE OF DAT

TASCAM's DA-40 digital audio tape recorder offers trim controls for the analog inputs, XLR outputs, character pack recording and playback, two memory locate points, variable AUTO ID time



setting from one-half to three seconds in half-second steps, auto END ID recording, variable REC Mute time from two to seven seconds in one-second steps, and programmable repeat times. Standard sampling frequencies supported are 48 kHz, 44.1 kHz, and 32 kHz at 16-bit linear resolution for SP mode and 12-bit nonlinear for LP mode. The DA-40 includes a full-featured shuttle/data dial, SCMS-free recording with selectable copy ID, and a CAL/UNCAL level switch for the analog inputs. For more details, call TASCAM at 323-726-0303, fax them at 323-727-7635, or visit www.tascam.com. Circle EQ free lit. #108.



REDESIGN FOR EQUI=TECH

Equi=Tech has introduced newly redesigned versions of its rack-mount balanced power systems. The Model ET1.5R (15 amps) and ET2R (20 amps) are designed to eliminate noise in recording studios. Formerly housed in a 3-rack unit, the new models now occupy only two rack spaces like the company's Model ET1R (10 amps). Suggested list prices are \$889 for the Model ET1R, \$1189 for the Model ET1.5R, and \$1389 for the Model ET2R. For more information, call Equi=Tech Corporation at 541-597-4448, or visit www.equitech.com. Circle EQ free lit. #109.

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EQ PRODUCT VIEWS

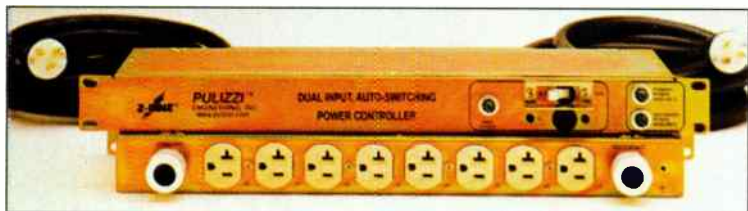
COME PREPARED

To make the lives of studio installers easier, Russound now offers the PlateMate, a prepackaged modular system of connectors and wall plates. It's not unusual for a single installation to require binder posts, banana plugs, RCA connectors, F connectors, and RJ-11 and RJ-45 telephone connectors. The PlateMate is an affordable assortment of standard and Decora wall plates that accommodate 1, 2, 3, 4, 6, or 8 audio or video connectors. All connectors are made with premium heavy-duty gold plating. Prices vary depending on the assortment. For more information, call Russound at 800-638-8055, fax them at 800-915-5519, or visit www.russound.com. Circle EQ free lit. #110.



BACK-UP PLAN

Don't rely on just one power source to keep your computer systems up and running. Use a secondary source in case of a power failure on the primary source. Pulizzi Engineering's TPC 2234 RackPower auto-switching power distribution systems provide a primary and secondary source input. When power is lost on the primary source, the TPC 2234 will automatically switch to receive power from the secondary source, thereby preventing equipment connected to the unit from crashing. When power returns and is stable on the primary source, the TPC 2234 will automatically switch back to receiving power from the primary source. Prices start at \$199. For more information, call Pulizzi Engineering, Inc. at 714-540-4229, fax them at 714-641-9062, or visit www.pulizzi.com. Circle EQ free lit. #111.



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C 414 B/TLII

Specifically designed for vocals, the C 414 B/TLII features a transformerless output and the legendary C12VR capsule that enable vocals to soar over the rhythm section without disturbing the microphone's pristine sound.

Klein+Hummel O 198 Studio Monitor

K+H attempts to set a new standard for compact nearfield monitors

BY ROGER MAYCOCK

Designed to deliver "the highest degree of true, natural sound with exceptional frequency response and perfectly guided horizontal and vertical acoustic dispersion," Klein + Hummel's new O 198 active studio monitors are designed as a no-compromise answer to the search for the ultimate compact nearfield monitor. To meet the demands for authentic reproduction of recorded material, K+H has opted to build a 3-way system as their solution to professional monitoring of a great variety of sound source materials.

The O 198 employs an 8.25-inch (210 mm) cone woofer constructed from a special polypropylene material that is very light and provides high acoustic stiffness. The long voice coil enables the woofer to handle a wide dynamic range at low frequencies down to 45 Hz with almost undetectable distortion levels. Coupled with the O 198's closed cabinet design, bass reproduction aims to be tight, clear, and powerful. With its large, high-power magnet, the woofer is designed to maintain the extended dynamic range of today's audio material.

As the midrange frequencies are where all the action is in terms of vocal reproduction, K+H paid special attention to the production of the system's 3-inch midrange driver. The fabric soft dome diaphragm is extremely light when compared to cone-type speakers, and is said to deliver better pulse behavior and flat frequency response. When combined with the speaker baffle's "waveguide" (more on this in a moment), this driver achieves a broad, even dispersion.

The O 198's high-frequency system uses a 1-inch titanium alloy dome that was chosen for its ability to deliver flat frequency response, uncolored sound, and true upper harmonics. It should be

noted that all three drivers in the O 198 are magnetically shielded — making it possible to place the speaker next to a TV or computer monitor without causing any screen problems.

In its quest to produce a 3-way monitor design with a small footprint that didn't compromise audio quality, K+H elected to integrate "waveguides" directly into the baffle. These waveguides are made from a specially formulated new material with the name Low Resonance Integral Molding (LRIM), and the drivers are mounted in such a way that the acoustic source centers are both very close to one another

and in the same flat plane.

The speaker's midrange driver is enclosed in a short, round waveguide, while the 1-inch tweeter is mounted behind an elliptical waveguide. This configuration is intended to deliver a greatly enlarged horizontal listening area that matches the on-axis sound while avoiding edge diffractions of the enclosure. As an added benefit, the incorporation of LRIM material into the O 198 results in the suppression of unwanted standing waves within the cabinet, as there are no flat or parallel surfaces. K+H claims this characteristic

continued on page 123



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World Radio History



IK Multimedia T-Racks Software

Get analog-sounding processing through your computer

BY ROGER MAYCOCK

IK Multimedia's T-Racks, distributed by Ilio Entertainments, will soon be available for both Mac and Windows, and is designed specifically to create analog-sounding master mixes on your computer. T-Racks' interface has the look and feel of a rack of tube-based signal processing equipment, complete with knobs, metal switches, and analog VU meters. IK's programmers took a good, hard look at what makes vintage tube circuitry work its magic and applied its proprietary filter design theory to create physically modeled DSP algorithms. The result is a three-component mastering suite, including EQ, compressor, and multiband limiter integrated into a very simple one-screen interface that is truly reminiscent of the analog era. All three components employ floating point internal processing for the highest possible audio resolution while better simulating the analog nonlinearities that affect signals in the analog domain.

The top component in the "equipment rack" is the 6-band parametric equalizer. Signal processing capabilities include 4th order parametric, high- and low-pass filters, a parametric low shelving control, a parametric high shelving control, a parametric lo-mid control with low or high "Q," and a parametric hi-mid control with low or high "Q." You'll find on-screen versions of the classic metal switches for Reset All and Bypass functions, plus a pretty nifty window for checking your EQ curves.

Moving down the equipment rack, the next component is the tube compressor. Modeled after vintage-style compressors of yesteryear, processing capabilities include the ability to generate the tried-and-true classic warm "in your face" sound of old tube mastering levelers, soft-knee compression with no threshold

point, stereo image width control and mastering-oriented variable time constraints. Additionally, this module provides a gain reduction VU meter, rotary balance control, output level control, and bypass switches.

The third component in the rack is the multiband limiter. This module features a 3-band limiting stage, fast peak detection, ultra-linear and accurate band mixing, density control for management of limiting and saturation, a soft clipping feature for warm analog emulation, a gain reduction VU meter, peak LED indicators at the outputs, and an output stage with hard/soft selectable clipping.

The analog-style interface is user customizable and includes provisions for fade in/out, transport control keys to initiate playback, etc., timeline markers for instant start from any position, snapshot capability for recalling setups, and a host of presets to help get you started.

It is important to note that T-Racks is a stand-alone program, not a plug in. With its full array of tools, you will be well positioned to enhance mix frequencies, broaden the stereo imaging, or level the dynam-

ic range of a file without introducing unwanted artifacts. It can function both as a real-time processor or an offline processor, enabling you to ride the controls as you work on a project or run a process faster than real time. The program also includes dialog boxes that enable you to compare several different mixes.

In terms of system requirements, Mac users should have a 233 MHz or faster PPC604e or G3 PowerMac, System 7.5 or higher, 64 MB of RAM, and a digital I/O audio card for true professional-level mastering. PC/Windows users should have an Intel 233MHz Pentium II class system with 64 MB of RAM, Windows 95, 98, NT 4.0, or Windows 2000 operating systems and a digital I/O audio card. It should be noted that these are the recommended requirements. Minimal requirements are somewhat less.

Price is \$299. For more information, contact Ilio Entertainments, Tel: 800-747-4546/818-707-7222. Fax: 818-707-8552. Web: www.ilio.com. Circle EQ free lit. #112.



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Kent's State

Film scorer Rolfe Kent surrounds himself with sound and all the comforts of home

STUDIO NAME: Ecoplex

LOCATION: Los Angeles, CA

KEY CREW: Rolfe Kent

PROJECTS: Scores for the films *Slums of Beverly Hills*, *House Of Yes*, *Theory of Flight*, *Oxygen*, and *Election*

CONSOLE: Mackie 24•8

KEYBOARDS: Yamaha KX88 master controller; clunky upright piano

MIDI SAMPLERS: AKAI S950 and S3000; Roland S760

MONITORS: Rogers Sound Lab RSL2600

AMPLIFIER: Panasonic 501

COMPUTER: Apple G3/300 MHz

SOFTWARE: Emagic's Logic Audio Platinum; MPEG Audio Encoder; SoundApp PPC

RECORDERS: Logic Audio/Audiowerk8; TASCAM DA-88 and DA-30

OUTBOARD GEAR: Alesis Quadraverb; Lexicon MPX100

MICROPHONE: AKG C1000S

POWER BACKUPS: UPS 1400

STUDIO NOTES: Owner Rolfe Kent comments: Ecoplex is a cluttered little writing studio with a patterned rug on the floor and lots of wind and percussion instruments hanging out. It is very friendly and comfy, with lots of daylight. Even though I call it a writing studio, a lot of finished work has come from here. While sounds for most scores are replaced by the real orchestra or ensemble, some sounds — percussion in particular — may not get replaced. They endure e'en unto the final mix, yea e'en to the big screen. *Halleluya!*

FAVORITE GEAR: Kent continues: My favorite thing is being able to record parts from my instruments into Logic Audio,

and then play around with them to make them work. Often, it is just a small phrase on a xaphoon or angklun, or marimbas played through distortion. I love to be able to integrate real performances into the MIDI work, and it is so much simpler than it was with analog tape. You can screw up several times, but as long as you get one good phrase, it can be edited in. Then when we go to the final recording sessions with the band or orchestra, these tracks come along, too, as they are often so distinctive that they cannot be replaced.

I also love the Dolby theater sound system; I use the surround setting, which really reminds you that you are composing for the movies. I think directors

like it, too, as it helps them feel one step closer to the finished project. Surrounded by sound you get a real feel for the thing and it helps keep nasty dialog (in the center channel) away from the lovely music (left, right, and surrounds).

My final favorite is the MIDI volume pedal. I know lots of people do without one, and I just don't know how they cope. All the phrasing of strings and woodwinds depend upon the volume control, and the pedal makes it so easy. I don't really think of it as a favorite, I think of it as an absolute essential. All those subtle dynamic changes, the ability to softly slide in and slide out that is crucial to film scoring — require the pedal. **EQ**



KNOW THE SCORER: Rolfe Kent uses his Los Angeles-based project studio to compose music for major hollywood theatrical releases.

Perhaps The Last Mastering Software (Or Hardware) You'll Ever Need.



If you record music with digital gear, you already know how challenging it can be to get that warm, broad, analog sound...

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World Radio History

Roland MC-505 Groovebox

Put more of a groove in your mixes with these tips

BY JIM NORMAN, ROLAND'S GROOVE PRODUCT MANAGER

I use an MC-505 in my MIDI studio. I want to use it as a sound module as well as a controller with my computer. Is there a preferred way to set it up for MIDI configurations?

The MC-505 is designed to be used both as a stand-alone synth or a sequencer. It can also be configured to work like a keyboard workstation along with a PC. However, there are some basic steps to follow to get the MC-505 set up for this.

First, you need to go to the MIDI set-up parameters by holding the Shift button and pressing keyboard pad #12/MIDI. Press the Page buttons (< or >) until the display reads "SYS: MIDI, Remote Kbd=On."

You want to turn the local control of the MC-505 off — just like you would with a typical keyboard. This essentially disables the front panel by breaking the connection with the MC-505's on-board synth. It also splits the Groovebox into both a controller and a sound module. You now need a computer setup to externally control the MC-505.

Press DEC or INC to change the display to "Remote Kbd=OFF." Scroll over with the Page buttons until the display reads "SYS: MIDI, Thru=ON." Change this by pressing DEC or INC to change the display to "Thru=OFF."

Remember, the front panel controls of the MC-505 will be unresponsive unless you have your computer sequencer's thru turned on and MIDI cables connected to and from your computer's MIDI interface. To get the MC-505 back to its normal state, you have to

do the above steps in reverse or initialize the System parameters.

Another important thing is to have all of the MC-505's Parts set to the MIDI receive switches. This tells the MC-505 to respond to the MIDI information of each individual Part. This is normally turned on when the MC-505 is shipped from the factory. Check to see that the Parts are set to receive MIDI.

From where we left off when we turned on the "SYS:MIDI Thru" setting, press the Page button (>) until the display reads "SYS: MIDI Rx SW." The display shows a row of "+"s with whatever Part you are currently on and its status. You now need to tell the MC-505 which Part can receive external MIDI information. This is important since the computer is acting like the controller and the MC-505 is now set up like a sound module.

Press the Part Select button so that it is lit. Press the Part button for each Part and press DEC or INC or turn the Value knob to set the receive status of each Part. If you want all the Parts of the MC-505 to receive MIDI from your computer, make sure that all Parts are turned on.

Once you have followed these steps, all the Part selecting and editing will be determined by your computer's sequencing program. Make sure you have the MIDI

Thru switch turned on in your program. At this point, you can set the Channel/Part that you want to record or adjust in the program. After setting that parameter, it will be the same as a MIDI keyboard. This is like using the Part Select button on the MC-505, but since we are using MIDI, it must be done externally.

For instance, you can play on the keypad for the Part you selected on the computer and it will play the sound assigned to that Part. If you have a MIDI keyboard connected to your computer's interface you can play the MC-505's Part on the attached keyboard.

After recording the Part, you can go back and add some tweaks from the front panel of the MC-505. The knobs on the front panel sends real-time MIDI controller information. For instance, you could record a bassline on Part 2 with a keyboard and then go back and add filter tweaks (filter cutoff and resonance) to the same Part by using the knobs on the front panel. Just remember to have the Part set correctly on your sequencing program. Most of the front-panel knobs on the MC-505 send standard controller information. The MC-505's Owner's Manual has a list of the controller numbers to knob functions on page 233.



GET INTO THE GROOVE(BOX): Learn how to set up the Roland MC-505 for MIDI configurations.

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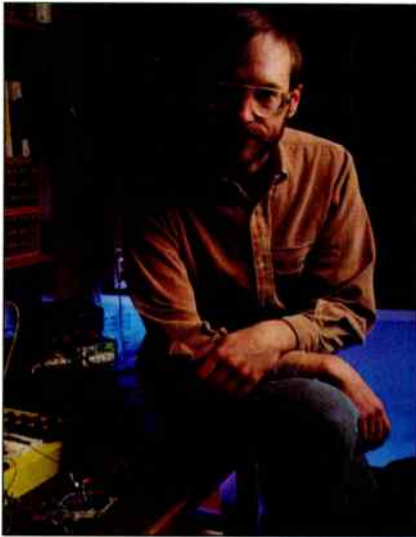
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Pseudo-Multiband Compression

Perk up your mixes with this compression technique



BY CRAIG ANDERTON

Multiband compressors are powerful tools: they allow focusing on a specific frequency band and compressing just that band. In extreme examples, you can do something like zero in on one tom, compress it, and pull it forcefully into the mix.

The following application is not “true” multiband compression, but, instead, a way to use parallel compression to emphasize just the high, low, or midrange frequencies. I’ve used this technique for mastering work (specifically, to compensate for various deficiencies while re-working “live” cuts or doing restoration on older program material), but it can also enhance individual instruments. For example, older samplers that lack high-frequency “sparkle” or drum machines that need a solid low-end punch can benefit greatly.

PATCH TIME

Suppose you want to add some high-frequency emphasis to an otherwise dull-sounding stereo tune, but find standard EQ too strident. First, set up

the necessary gear. The basic idea is to “Y” (or “mult”) the two original channels to two additional mixer channels through either a Y cord, a direct out from the original two channels, or the “send” connection from an insert jack on the original two channels. (For more on using inserts as sends, see the article “The Art of the Console Insert” in *EQ*, March ’99.) We’ll assume you’re using the direct outs to do the multing.

The additional channels need to have insert jacks for inserting the compressor of your choice (fig. 1 shows the basic patch setup). It is important to switch the inserts post-EQ. If this is not possible, then patch the direct outs to a quality equalizer (more on this later), then to the compressor, then to the additional input channels.

If your mixer includes on-board compression, that simplifies setup as you can just mult into the two additional channels and use those channel strips’ compression and EQ modules. Again, make sure the compressor goes post-EQ.

GEAR TIME

For general high- or low-frequency processing, I prefer an EQ with a high-pass or low-pass filter option, respectively, because this isolates the frequency response to just the range to be processed. Purely parametric EQs will work, but are not as effective because they don’t do as efficient a job at cutting out frequencies other than the desired range. For example, for high-frequency processing with a 4-stage parametric EQ,

you’d need one stage to boost the high end and the other three stages to reduce response at low frequencies. Shelving works somewhat better, but you still have to remove unwanted frequencies.

If you don’t have a high-pass or low-pass option in your EQ, a crossover can work instead of a traditional equalizer, as it allows you to send only the highs or lows to the additional channels.

Regarding the compressor, you (of course) want the highest quality possible. If you have outboard compressors and compressors within your mixer, A-B them to see which one you prefer. But don’t go too nuts into golden ears-land; ultimately, the processed signal will be mixed pretty far back anyway.

SETTINGS TIME

Typical settings are hard to give, because “your mileage may vary” depending on the material. Here, nonetheless, are some guidelines.

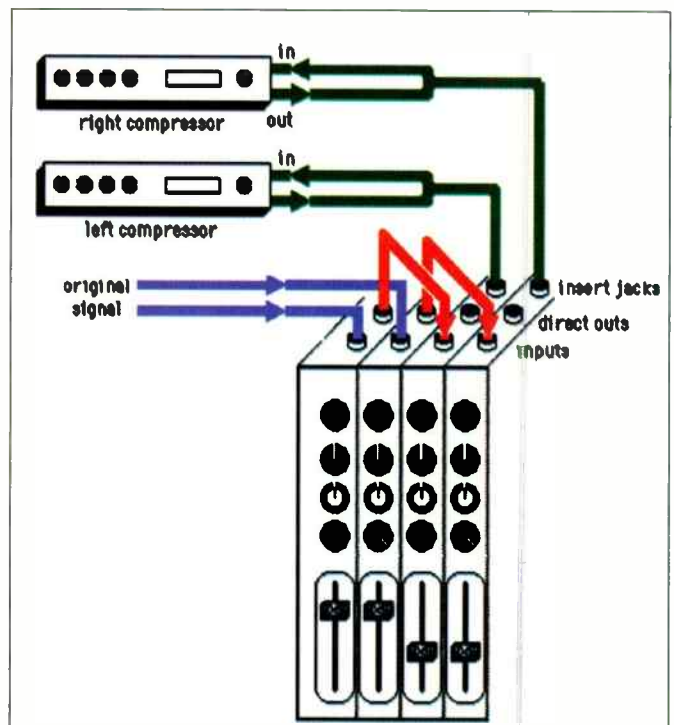


FIGURE 1: Setting up the patch for stereo “multiband” mix enhancement. Switch the inserts (shown as TRS types) to the post-EQ setting if possible.

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For a high-frequency lift, start off with a high-pass corner frequency of around 1–2 kHz. For low-frequency emphasis, I generally use this technique to add a sort of “pseudo-subwoofer effect,” so the corner frequency ends up being quite low — around 100 Hz or so. Anything higher makes the sound overly “tubby.” (The low-frequency boost is particularly useful when restoring vinyl; low frequencies were often rolled off to keep the cutter from freaking out.)

As to the compressor settings, because the compressor is post-EQ, it’s not seeing a lot of signal — particularly if you’re working on the high frequencies. Start with a ratio of around 3:1 to 5:1, and the threshold will be quite low (often under –40 dB or so). As always, check the gain reduction meter: you want a maximum of around 3–6 dB of gain reduction.

Midrange band compression is much trickier. Here you need one parametric stage to select the band to be processed, and use whatever you have available to cut the frequencies higher

and lower than the selected band. In general, this “pseudo-multiband compression” technique works best with high- and low-frequency processing, but I mention the midrange option for the experimentally minded.

FINISHING UP

Okay, the boxes are patched in, the settings are approximate, now let’s fine-tune.

Start off by soloing just the additional channels. With high-frequency emphasis, the sound will be very tinny. Set the compression to avoid an overly squeezed sound; it’s particularly important to include around 5 to 10 ms of attack time so the compression doesn’t nuke all the transients. The same general advice goes for low-end processing, but remember to select only the very lowest frequencies. If you can hear too much of the music, the overall result will be muddy.

Now turn down the additional channels and bring up the main channels. Listen to the unprocessed material for a while as a “reality check.” Slow-

ly bring up the additional channels until there’s just the right amount of cool processing, then bring the faders back a dB or two just to make sure you’re not going overboard. There! You’re done.

By the way, although I’ve emphasized using the compressor post-EQ, also try the pre-EQ setting. I’ve found this to be the less satisfying of the two options, but it does create its own sound that might work for some applications — in any event, give it a try; you never know.

Pseudo-multiband compression really can make a big difference in perking up anything from a finished mix to an individual track, so check it out.

Craig Anderton is working hard on his next CD release. To check out some of his recent music production work, surf to www.kac-cohen.com. His books (Multieffects for Musicians, Home Recording for Musicians, Digital Projects for Musicians, etc.) are available online at Amazon.com.

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Clubowners: Can't Live With 'Em...



PHOTO BY JONATHAN POSTAL

...Can't get 'em to
dress up in
Czechoslovakian
underwear

BY AL KOOPER

I apologize for the subject matter in my last few columns — including this one — but I've been on the road for the last few months promoting my book and doing solo shows in clubs. I am far from my project studio at home. This has brought me into close proximity with the mostly satanic majesties of touring — the clubowners.

Let's start with a few of my pet peeves about clubs themselves. The comfort of the customer nowadays is one of the last considerations you'll find in most clubs. I truly believe that to enjoy most live music (not including metal and rap), one would benefit from sitting down comfortably, preferably in a chair, and have good sight lines to the performers and a sound mix that is not painful or lacking in correct balance. Restrooms dissimilar to the one in *Trainspotting* are also extremely de-

sirous and rare. Now, for an hour or two at between \$12.50 and \$35, is this *really* too much to ask?

Evidently, it is. Most clubs herd you in like cattle onto a cement floor of a room with lousy ventilation. The sound system is so loud that any conversation is impossible; especially with the waitpersons who show up on the average of once an hour. The restrooms are small, filled with an indescribable bouquet, and almost always require waiting on lines longer than to get into the club itself.

But, at age 55, I still *have* to go see Booker T and the MGs, NRBQ, Toots & The Maytals, Coco Montoya, Little Feat, and a few other assorted wonderfuls whenever they come through town. After each show, I vow I'll never do it again, but by the time they come back through town again, I forget the indignities of the last sojourn.

Not that it's any easier for the performers themselves. Here are a few of my favorite things.

1. Clubs where the owners refuse to supply the acts with their alcoholic beverages of choice. They are also forbidden to bring in their own personal bottles. They must purchase one-at-a-time drinks at special musicians' rates.

2. Clubs where the house sound guy has a chip on his shoulder 'cause you bring your own sound guy. I can't think of one club where the house guy is pleasant and does everything he can to assist your sound guy.

3. Clubs with no dressing room. The kitchen or the owner's office are provided as pseudo dressing rooms. Ever try to change your clothes in a busy kitchen in the middle of the summer or the winter?

4. Bars that pretend to be patrons of the arts and have a postage-stamp-sized stage. The reality is, they are actually meat markets, primarily concerned with moving booze, and using the music as a way to get people through the front door. The size of the stage and the condition of the sound system is usually the tip-off.

5. Why do the best clubs pay the worst? So they can stay open would be the reply from the owner.

Here are a few quick stories from the vault and the last few months.

One clubowner called my agent

and said he had a last-minute cancellation, and could I please help him out and play there in a month or so. We accepted the gig. The next day, the clubowner called my publicist and demanded, quite abusively, eight bios, three books, ten photos, and three CDs by the next day or he would cancel the gig. When she asked for his FedEx number, he refused to pay for the shipping. She called me in tears, and I told her to call the guy back and cancel the gig. I called my agent and told him I would never play there or take an offer from that place.

One club that we used to call home let us have the club for one night for a benefit for a club employee who had been mugged and sent to the hospital for awhile. The benefit was to pay for his voluminous hospital bills because the club paid him no benefits to work there. Many people had pitched in to help backstage and to perform. As I was in charge, I went to the store and bought a case of beer for all the people that were working there that afternoon. As I carried it into the club, the owner came running up to me and refused to let me bring the beer into the club. Against house rules. But what about the extenuating circumstances of the benefit, people working for free, etc.? He didn't wanna hear about it and the beer was refused entry. While everyone was watching, I called him back over to me. "Please give me a hug, Jeff (not his real name)." He just looked at me in disbelief. "No, really, Jeff. Gimme a hug. I need to be hugged when I'm being f**ked!" This brought the house down and humiliated him in front of all his employees. PS — we *still* couldn't bring the case in.

There's *no* business like show business. I am glad God blessed me with a modicum of writing ability so I have something to fall back on when the sh*t gets too thick.

In closing, I'd just like to say that there were, and are, a few good clubowners out there. Bill Graham was the role model for the great clubowner, and there are a select few owners that emulate the high standards he set all those years ago. Good luck out there, guys and gals!



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Jacquie Turner



PHOTO BY ED FREEMAN

A conversation with the Real World engineer on her recent trip to the States

BY MR. BONZAI

Bonzai: Is it like a college campus at Real World?

Jacquie Turner: Mostly it just feels home-ly. There's a big family atmosphere here. There are lots of people about, because the site is home to many companies — Wom-

ad, Real World Records, multimedia folks, etc. I love it. It's very beautiful, there are swans and a kingfisher on the pond. Oh, and the intercity 125 main line to London that goes through the house. Sometimes there's a dipper, a solitary bird with a white breast that lives by the water. Peter [Gabriel, Real World's owner] is a great presence. A few weeks into a long session there's sometimes the odd joke about escape and sirens. My boss, Owen Leech, says we are a serious, professional recording studio.

Who is the boss of Real World?

The whole thing is Peter's creation.

Who are the "star" engineers?

Me!! No, Richard Chappell, Peter's engineer, does an amazing job. There's Rich Evans, who is just a natural. And Ben Findlay, who quietly gets lovely sounds.

Why does it take so long for Peter to make an album?

Er...Um....

Who introduced you to Real World?

I first came during Recording Week in 1993. I was working for Nigel Kennedy

at the time, and it felt so great to be here that I just wanted to stay. I didn't, but after much campaigning and petitioning of the studio manager, I managed to get back eventually.

Could you give me a brief description of the studios?

There are four main studios. Two of them are exclusively Peter's and both house Sony Oxford Digital consoles with Sony HR machines. Upstairs, the "Work Room" is my favorite. It's all wood, windows, and doors. There are two balconies for looking out across the valley or shouting cries of exasperation.

The other two main studios are SSL rooms — both 48-track analog. There's a smaller room, the Production Room, with a live room off it

Suspect: Jacquie Turner

Ancestry: Anglo-Saxon, Celt, Roman, Norman, Viking?

Occupation: Engineer, Producer

Birthplace: Chester, UK

Residence: Long Dean Mill

Employment: Real World

Vehicle: Multi-colored BMW 320i

Diet: No animals; loves champagne and edamame (boiled soy beans).

Pet Peeves: Negativity, dishonesty.

Credits: Turner recently recorded and mixed Nigel Kennedy's Hendrix project for Sony Classical; an album for Les Innocents for Virgin France; produced and engineered the groups Nenes and B'net Houariyat for Real World Records (yet to be released); recorded Sister Soleil for Universal Records; mixed a track for the up-and-coming Guitar Trio (John McLaughlin, Al Di Meola, and Paco De Lucia); and recorded and mixed Joseph Arthur for the *Hell's Kitchen* soundtrack. As an assistant engineer, Turner has worked with Loreena McKennitt, Placebo, and scores of Real World artists.



JACQUIE TURNER PHOTOS BY MR. BONZAI

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where you can stand on glass right over the river, where the mill wheel used to be. The Big Room is *huge*. I love working in there — you can cycle around it, play football with the dog, or record the whole band and string section in there. Peter's setup is the only one that ever made it look small. At sunrise, the light reflects in ripples off the pond onto the ceiling. Why did you become an engineer? To help my (ex-)husband. He's a

singer/songwriter and we had our own cottage industry going.

What are your personal and essential recording tools?

My ears and my radiant personality. Seriously, though, apart from a gadget I built called "The F***er," you should read Tchad Blake's answer to that question. [EQ, March 1997]. I used it as my shopping list — so I could show him how to use the gear properly. I recent-

ly bought a Leslie cabinet for £90, and that's one of my current favorites.

How do you mic the bass?

Well, that question presupposes an upright bass, or do you mean how do I mic a bass amp? Either way, I would decide according to need. For the Kennedy record, I used a [Neumann] KM 54 high up. I wanted clarity, and there was a loud monitor system, so I had to mic it close. An [beyers] M88 or a [Neumann] FET U 47



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CIRCLE 75 ON FREE INFO CARD

World Radio History

on the bass cab is pretty good for an amp, but a DI and SansAmp get a fine sound. SansAmp sounds good on the upright mic, too — or “The F***er.”

By the way, could you tell me the secret of The F***er?

It was supposed to be an SSL talkback compressor, but I think all the capacitors are the wrong way ‘round along with a few other mistakes — I don’t know what it does exactly, but it’s nice and warm....

What do you listen to while you’re driving?

My car engine. I managed to wire my speakers in mono and they crap out over a certain volume. I think it’s caused by some weird feedback. Anyway, they don’t go loud enough to hear anything once I’m up to speed!

If you could go back in time before the birth of recording, what would you like to hear? I can’t think of anything that I can’t live without. I enjoy stuff like the birds and God knows what else that I can still hear every day outside. Do I sound like an old hippy? I’m not, I’m hard, me.

What did you learn from Tchad Blake? His stuff is very exciting and bold and has a unique distinction. His work reinforced my instincts to go with my instincts — to take chances and have fun. To believe in oneself. He’s talented. I want to be better than him.

Who were your engineer heroes when you were getting started?

I didn’t know what engineers were! But I wanted Del Palmer’s job when I went to Kate Bush’s studio.

Who do you respect and admire today? Asimov, Newton, Darwin, Faraday, Galileo, and those guys. Firemen — they do a pretty heroic job, and doctors. Lots of others I should mention if I go down that road — Dwight Yorke — he just got Manchester United through to the European Cup final. Stuart Pearce — he used to captain Forest, who are my favorite football [soccer] team.

Is there anyone in the world you would like to record?

I love working with anyone who loves to play and does it well and conveys a joy or emotion. I guess I most enjoy the sound of instruments in close proximity, particularly acoustic ones — ‘though electric instruments can be more fun sometimes. Astor Piazzolla, Martin Carthy, Latin Playboys perhaps.

What makes a great producer?

Someone who makes a great record that translates the emotion and energy of the music and people involved — and, at the same time, someone who lets me go home and get enough sleep.

Any advice for getting a good start in the recording business?

No. I think one of the most important things is initiative. Anyone who has that won’t need my advice!



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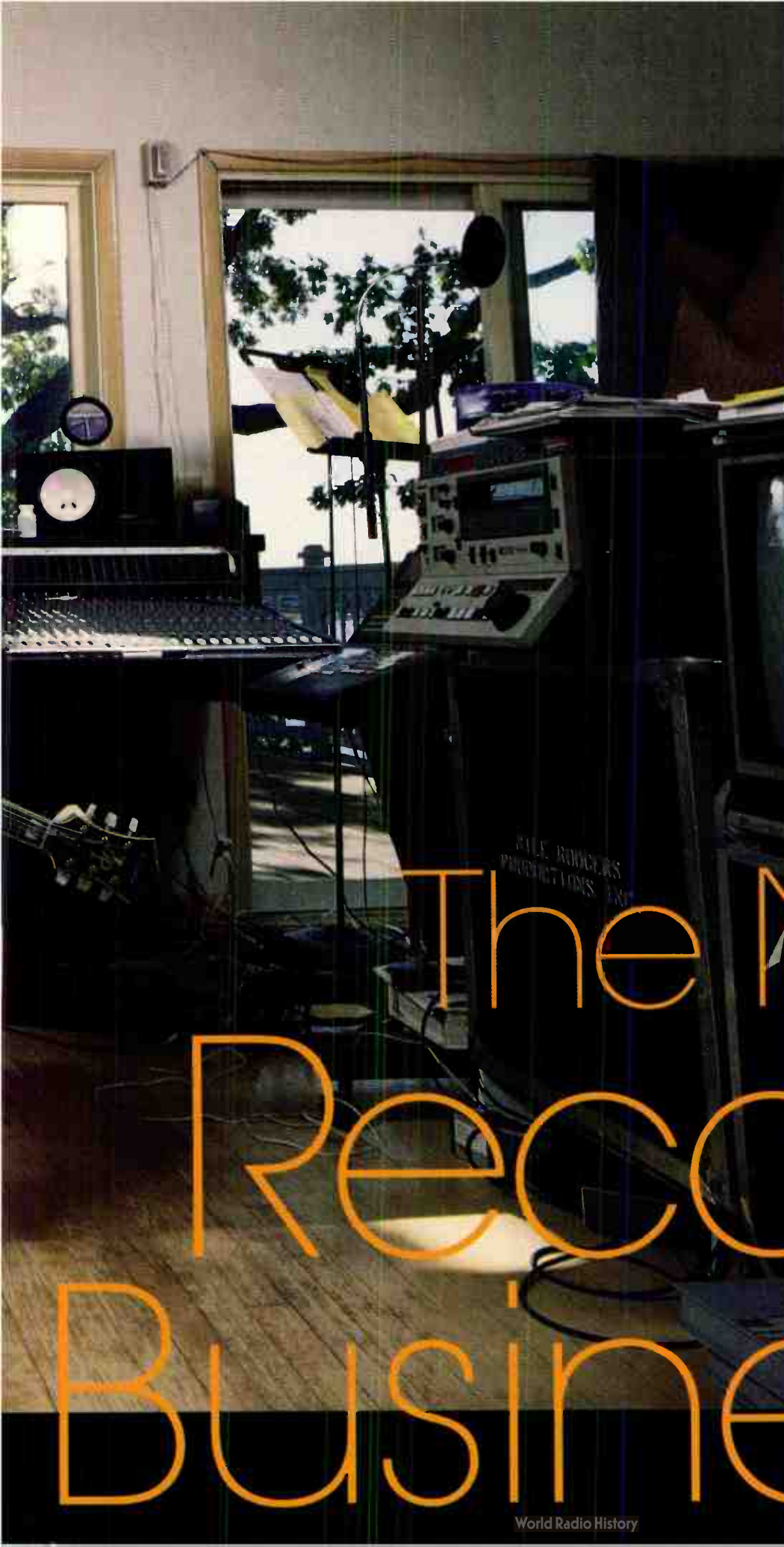
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CIRCLE 45 ON FREE INFO CARD



BY STEVE LA CERRA



Famed
artist/producer
Nile Rodgers
reveals his
unique business
plan for his new
independent
record label

The New Record Business

Some people recognize Nile Rodgers as the motivating power behind the multiplatinum act Chic. Other folks may recognize him as the producer who paired Stevie Ray Vaughan with rock legend David Bowie for Bowie's hugely successful record Let's Dance. And yet others may associate Nile with Peter Gabriel. Or Mick Jagger. Or Madonna. Well...you get the point. Regardless of the association, Nile has certainly made his mark on contemporary music. Most recently, Nile began a quest to make his mark on the music business by starting his own record distribution company, Sumthing Distribution — a move that many producers aspire to. Nile was kind enough to share some insight regarding his business endeavors with EQ for the benefit of those project studio engineers/producers who are considering taking the plunge.

EQ: First, the obvious question — why?

Nile Rodgers: It's sort of a twofold answer, the main reason being control. I wanted to have a better relationship with my product as far as its life span is concerned. Here's what my whole life has been: I make a record and, after I master it, it's out of my hands. I have to be honest with you — when I had my band, Chic, a huge amount of our success was based upon intuition and knowing how to market our own music. Had we not had that insight and had we not been correct, who the hell knows what would have happened? What if we had just delivered the record and said, "OK, what do you guys think?" Oh my God. [Nile is referring to the lack of understanding that most record companies had for Chic at the time when the band was trying to get signed. —Ed.] We had a plan with a beginning, middle, and an end. Thank God we were able to stick to our guns.

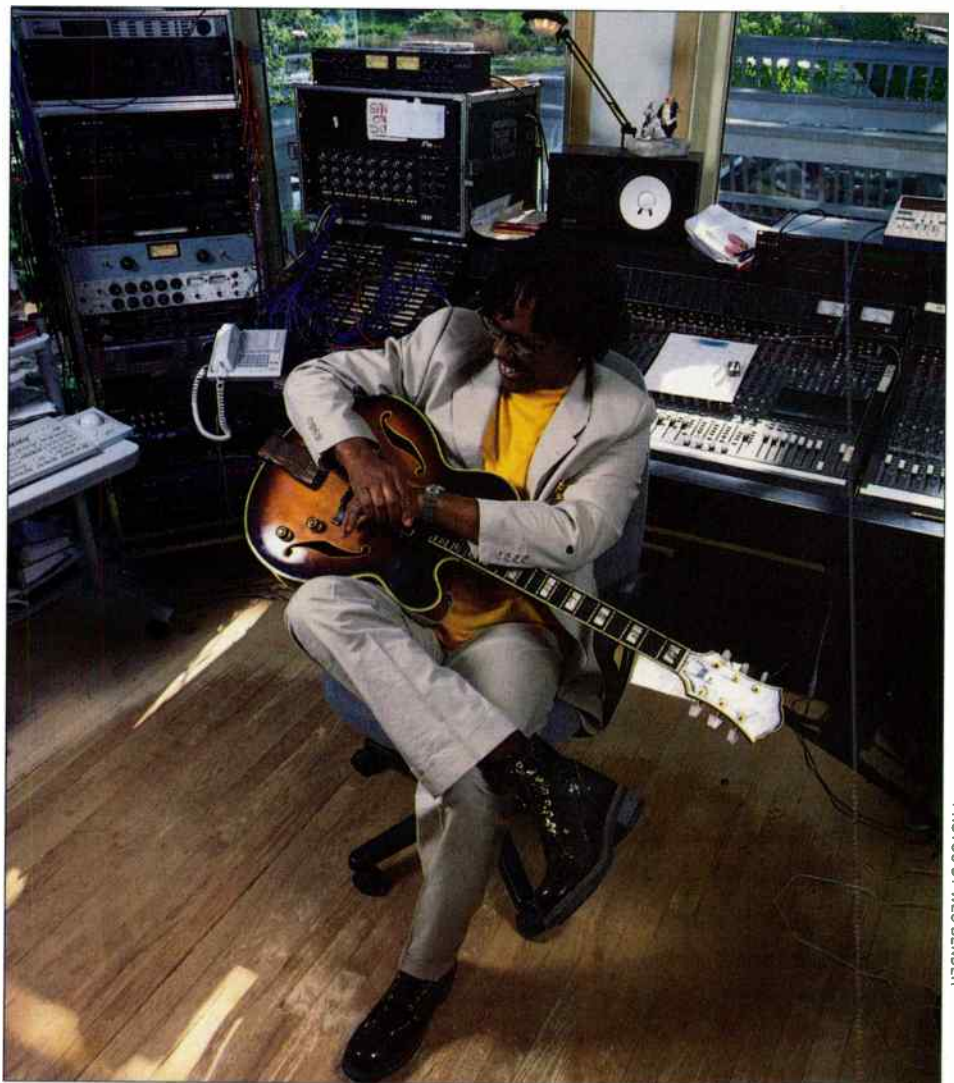
If you ask people who were involved in the project what they felt about Chic when they first heard it, they'll all tell you they thought it was amazing. But the fact of the matter is exactly the opposite. We took our same demos to the same record company five different times. (When I say "demos," I really mean the record because we never re-did it. They were finished masters.) We took the exact same product to different people in

the A&R department at Atlantic, and the person who eventually signed us was the president of the label.

Other people couldn't hear it or didn't understand it. They kept saying, "What happened to the music?" when we did breakdowns in the songs. Now that's a standard musical format, but at the time it was not only new — it was radical. We tried to explain that it wasn't radical if you knew what the audience was listening to. The interesting thing is that even though it was a dance audience, we knew it would translate on the radio. That's how I got into the record business. Prior to us taking control, we were at the mercy of people and were never able to get a hit record. We were able to get signed and produced, but the record never saw the light of day until Bernard (Edwards) and I took over.

As a relatively new artist, how did you

manage to convince, persuade, threaten, or otherwise manipulate the record company to let you remain in control? We weren't just big talkers — we could back it up. When the "powers that be" would ask us a question, we'd respond with "let me prove it to you. Let us take you to see this..." We could go to any nightclub where they'd never heard us — remember we weren't out yet — but we were confident you could go to the lamest club, wait until the dance floor emptied out, play Chic, and watch the reaction. Of course, [the execs] never did it, but once they saw that kind of confidence, they believed in us. People love to believe in people that really know what they're talking about. You've heard all the standard jokes about "how many producers does it take to screw in a light bulb?" (Nile changes his voice and answers his own question with a chuckle...) "I don't know, what do you think?" Ha!



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The New Record Business

Rarely do you meet people in this business that are willing to put their career on the line, and these days it's worse because the dollars are so huge.

The point is that now I'm — as David Bowie likes to say — the same but different. I'm in my mid-40s, I no longer drink, I'm no longer a drug addict, I'm not going to clubs to pick up girls. I'm going to the clubs to do field research. That's exactly how I started with Chic. I only went out to see what other people were doing, what they were into, what kind of hair styles they were getting — because I want to know what people think is cool. If they think something's cool and I think the same thing is cool, then we're close.

The way that translates into this business is that I've always had respect and — this is important so I want you to really hear me when I say this — I have respect for pop music. I have great respect for a hit record. When I started out in this business, my teacher was a serious "jazzier" as we used to call them — a serious musician who played with Wes Montgomery and all the cats. He taught me some invaluable lessons, and the most important were not only how to play guitar better. Once he asked me why I wanted to play guitar. And I said, "What'ya mean? I want to be a professional musician. All I want to do is play music all my life." He asked me how I planned on doing that. I told him that I wanted to make records, have hit songs, and all that. He said, "What if you never get a hit? Think before you answer." Before he could finish the words, I told him I'd keep trying. And he said, "Nile, that's why I love you, that's why you're my favorite student, and that's why you're going to make it. Because you love playing music and you can't stop."

At the time, I

didn't realize it was such a big lesson. I thought *everybody* felt like that. You keep going until you bring your music to people. When we got to Atlantic, they realized we were a force to be reckoned with. If they said something that made no sense, we'd say, "I'm sorry. With all due respect, that's a bad idea." They'd stop in their tracks.

How did you manage to deliver comments like that as a rookie?

Because we made our own record. We had it done and then Atlantic gave us the money to finish the album. Basically, we walked in with a hit record, but the only guy at the label who could hear it was the president. Thank God for Tom Cossie, a promotion guy who called up the president of the label and said, "Hey, I got my hands on a smash. I hope you can hear it." He played it for Jerry Greenberg and Jerry loved it. Our edification into the business was real hardcore. It wasn't like somebody heard us, liked us, and signed the band, then went in with a producer and made a record. We had already done

that with lots of big producers and it never worked for us. As soon as we did it ourselves, we had success.

Do you think the success came because you were being true to yourselves? I've never been any other way — even when I was drugged out and weird. The same passion that I enjoy adding to a record, I want to add to the music business. There is absolutely no reason why I can't. I've read *Hit Men*, I've heard all the horror stories about the music business, and I have to tell you: I grew up in this business. The only jobs I've been proud of have been in this business and there is no way I'm going to let my part of this business go down. There are too many talented people, too many great artists, there are too many great music chains — hell, they want to sell more records, too, and I want to help them! I want stores calling me going, "I love that!! I want 50,000 more!"

And that's why you decided to get into the distribution end as well.

Absolutely.



What makes you think that you'll be different and that you won't turn into the type of label that's not in touch with the real world?

It's f**king impossible for me to do that. I love making records, and when I say I love it, that's what saved my life.

I had a meeting yesterday with an artist who has great dedication and artistry, and anytime I'm attached to an artist like that I will go to the wall for them. I promise you that every artist I sign I will be like that. Today you might see in *Billboard* that Evan-der Holyfield signed with me. Why? Because it's sincere. I won't take a label unless it's sincere. I want to know that a label is just as sincere as I am. I don't want to go out there and bust my hump telling everybody how great an artist is and then the artist doesn't back me up.

I can only deal with one cause at a time, and right now the cause I'm most close to is making it better for all musicians: Latin musicians, as well as a polka band. If there's a label that represents a polka band, they're dedicated and they're happening, and they've defined their fan base — if they say, "Nile we want to be with you," I'll take it just as seriously as the hippest blues artist.

Do you feel this will be what keeps Sumthing Distribution from becoming a fat, overblown dinosaur like many major labels have become?

First of all, my concept is to stay slim and trim. One thing I understand about the record business right now is that agility is king. When I first got into the record business, if my record wasn't on the street in two weeks I wouldn't have gotten signed to Atlantic. I just did a record with David Lee Roth. I asked David how quickly he could get the record done, and he said three weeks. I said, "Cool, it'll be in the store in four." It's that kind of delivery system.

If it's a major label, what kind of a lag are we talking about?

I recently completed a project with Paula Abdul, but I don't know what the release date is. It was months before another of

my recent productions saw the light of day because the label needed setup time. Don't get me wrong — everybody needs setup, but the point is that my setup can be on a one-to-one approach. I can get records to people in a real retail situation because we're small, agile, and we know the buyers. It's like boxing: power is great, but speed always wins because if you beat the person to the punch, they never have the chance to hit you. My business is

modeled after other forms of business, not the traditional record business model. Now, when I'm making a record, the things I know as a producer far exceed what I knew when I first started. Therefore, just that expertise allows me to do other businesses.

Can you be more specific? When I first started making records as a producer, this is how I'd produce a record: "OK, I'm working for Duran Duran. They're big stars, so whatever they say goes, and whatever I say goes." Whatever we want, you call the label, and it's their job to make sure that — whatever the request — it shows up. We spent *millions* on some records. But now, because I run the business, I see the numbers and I understand what is going on. Even though the number isn't what I'm thinking of when I'm buying tape or

hardware or whatever, I'm absolutely aware of it. When I was younger, I was oblivious to it. I was just makin' rock 'n' roll records.

With gear availability and prices so low, there's really no reason to spend millions of dollars on making a record.

I'm a firm believer that a record costs whatever a record costs. I'm not going to keep from doing something because it's expensive. I do not believe in that, but I am *aware* of it. I'll still do whatever it takes. A recording artist is like a painter, and the more colors they have on the palette, the more they can express themselves. It's the essence of what we are trying to capture because it's all about feel and it's all about life. Life is ever-changing. Every second that we live is different from the one that preceded it or the one that will follow it. It's all moving, and

The same passion that I enjoy adding to a record, I want to add to the music business. There is absolutely no reason why I can't.



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What do you see as the possible differences?

I believe that the changes will come from the artistic community, thank God. I am tired of the business community affecting the changes. I cannot take the business community shaping so much of the career of the artist. I'm upset at the small playlists on radio. I used to love it when I was a kid and a new album would come out. The DJ would play the record so we could understand what Led Zeppelin or Sly and The Family Stone were doing. I believe that radio was able to do that at the time because they were the trendsetters. Radio responded to their listeners. Now radio is *dictating* to the listeners what we're going to hear. A playlist is so small that if you're one of those acts and you do well, then it's fantastic. When you're a top performer and you're in the system, you're doing great — but that's not America.

Do you feel it will be important for you to concentrate on one style of music?

No. I have never concentrated on one style of music in my production career, never in my spiritual career, and I certainly will not do it in my business.

It sounds like you're laying out a doctrine to shake up the music business...

Well, I don't know if I can do that, but I know that this is America. There's more than 200 million people here, and all my life I have been able to connect with a certain percentage of those people musically. Yeah, I have eclectic musical tastes, but I like a good pop record just as much as the next person — and I'll admit to it. I thought the first Spice Girls record was the bomb. I loved those songs, and will admit it. I loved the Milli Vanilli album and will admit it. That doesn't make me any less cool. My musical tastes go totally wacky, and that's the way I approach production. I go into the studio with a plan, but I have no idea what the result of that plan will be at the end of the day. I'm a very flexible, open-minded person. In the business world, I have a plan, but my plan is just as ridiculous as the lyrics to the song I wrote this morning. By tonight it could be different.

How would you proceed?

I believe that change is good for the soul.

When I say that my plan is ridiculous or ludicrous, that doesn't mean it sucks, but I'll probably come up with a better way. I talk to people in the financial world about business plans and I think we can go back in time to look at this plan. Let's take this plan and apply it to a record that just went through the roof. Then let's apply it to a record that's struggling. The way that I have designed my business, even this record has a chance, because I'm doing business in a way that I will not allow myself to take a bath on a record. If the record becomes a hit, you have the money to go around. But if it isn't a hit, then why should you go out of business trying to seduce someone to sign with you?

The best thing that's happened to my life in the past 4-1/2 years since I've been on this sort of musical/spiritual quest is that I have learned the power of the word "no." And it's a friendly word to me. It lets me know that something is over. If I'm trying to do something but it's not going to happen and a person says, "No," I think, "Cool. I understand now. I'm not going to try and sit around negotiating... no is fine. I'll do something else." I've always been able to rebound. It's a great word. You mentioned that you want to be sure that different artists get the same chance. **What about an artist that has a record that is out of the norm?**

I love those kind of records. You have to understand that this is the one thing I know very well. When I first started in the business, my teachers and band leaders would always tell me, "Nile, know your audience. If you write a song, imagine which radio station it'll be on." That's the best lesson I've ever learned because if it doesn't sound like it's going to be on the main station I listen to, then the song doesn't work. That's an easy way to judge. It keeps your ego in check. The problem most artists have is that merely because they wrote something, they

believe that it's good. I learned very young in life that I could hear records on the station. I could easily hear Chic records on WBSL when we did them. As a matter of fact, not only could we hear it, but we thought it'd make the station sound cooler. Know if it fits the format. We knew the New York rock stations

weren't going to play it. It would be ridiculous. We didn't think it would be on jazz stations, but it got on them because they liked our musicality — which shocked us. Traditionally, when Chic released a single, we put an instrumental on the B-side. So the A-side is the vocal and the B-side is an instrumental (different song). We wanted people to understand that we were a band. That we were the same thing as Yes, The Beatles, Jethro Tull, and The Police. We were not Silver Convention and Donna Summer. The B-side always had an instrumental that showed where the band was coming from. Since the jazz stations didn't know who we were, they heard the B-side, thought it was cool, and played it. We actually got chart action. They didn't realize that the vocal side was the A-side.

What happens when a label believes in the music they are producing but that music does not fit into a major music format? How do you bang the door down?

Well, why would you bang the door down? That door shouldn't be banged down. If you have music that's not mainstream and you want the mainstream to accept it, that doesn't really make any sense. That's like saying, "OK, we have a race track — the Indianapolis Brickyard. But we have a go-kart and we want to race it in Indianapolis." It doesn't make any sense. That track is for a certain type of car. Why do you want to be on that one? What you need to do is say, "I have this alternative product and I think people will like it if they get the chance to hear it. Let's figure out where those people can hear it." Then you go to

The problem most artists have is that merely because they wrote something, they believe that it's good.

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those markets. There are lots of secondary and tertiary markets in America. Whenever I travel around, I always hear weird stuff and think, "Man, listen to that station."

That happened the other day when I heard a station play a Daniel Lanois song. I almost drove off the road.

When we were younger, mainstream radio would do that every now and then. It was almost like the DJs had a limited amount of freedom as a reward for being a cool DJ. You could play the regular playlist, but for maybe 15 or 20 minutes a day you could play a Jethro Tull B-side or play Smokey Robinson even though you were on a rock station. You could play it because it was cool. That was radio. It was art, it was music, and it was still business, but now there's no room for that. A station that does that type of thing would be listener-sponsored or college radio. The nature of that is saying, "We are not going to sell a lot." That's the weird part. If you're a secondary station, you're automatically assuming a lesser role and I can't stand that. If you're a college station, don't accept that you won't break hit records. You stand for the alternative lifestyle. In our minds, Chic was a novelty band. When we put out a song like "Dance, Dance, Dance" that's the only song on our record like that. Or like "Le Freak." We figured novelty records were a good way to get out there because that's what people remember. They love weird music. Tiny Tim doing "Tiptoe Through The Tulips."

If an unknown artist was trying to get a foothold at a successful label, but they didn't have any name recognition, where could they start, given a "good" record? Here's the problem: there's no absolute formula. When you think about unknown records, unknown artists, and unknown labels — to me it's all the same — that means it's a person in search of an audience. The most effective tool to reach an audience is radio. However, when you realize that radio is not an option for you, there are many other ways to reach the audience. People like Tiffany or the artists that I went to see the other day have a huge following from coast to coast, and they've built it up by touring. They have really made themselves a force to be reckoned with. They make a good living. A woman I'm about to sign did the record on her own, put up a Web site. She went to Tower Records, and they liked it so much that they put it on the listening booth. When Chic got started, the DJs in NY were so into our music that even if we

never got a deal, we'd have been able to sell it ourselves. So many people knew about us just because of our tenacity.

When an artist really feels that their music is important, they make everyone around them feel the same way. That's the difference with a person like Madonna (even though she was basically unknown at the time) — she made me feel it. A person that's got the goods makes you believe in it. I love those kinds of people. If you like it that much and you think it's that good, then hopefully the rest of the world will follow suit with you. But you have to understand when it really is that and when it's just ego.

Is there a way to draw that line?

I believe that you have to intrinsically know that. It's all about respect. Once you respect what other people are doing, then you learn how to respect yourself. When you can respect a commercial artist the same way you respect an artist that makes you feel good, you can respect your own music. You don't have to like the Spice Girls or NIN, but if you can respect their dedication to their particular product, it helps you respect yourself and it also gives you humility — which I think is a great artistic characteristic. Some of the best artists I've worked with are people who love other artists' work. When I first met Peter Gabriel, half of what made me love him was the fact that he likes so many other people's work. You don't even have to play any music — you just sit down and talk all day long. That's what I love and appreciate.

I have young artists and producers who make me proud because they're students of the game. These are well-rounded people interested in music, and the spirit of music is all about cultures coming together. When they say that it's a universal language, it really is. When we see a film and we've never gone to Borneo but we hear the indigenous music, we know that it's Borneo. We do not have to have been there. All of a sudden we hear instruments like a gamelan and know it comes from a certain part of the world that has nothing to do with us. We hear the difference between African drums and South American drums or the American Indian wood flute versus the Japanese wood flute. It's magic. It's the same reason animals respond to it — it's a primal thing. It's vibration. I don't want to sound corny, but it's true: through music we can communicate with people anywhere when we can't even speak their language.

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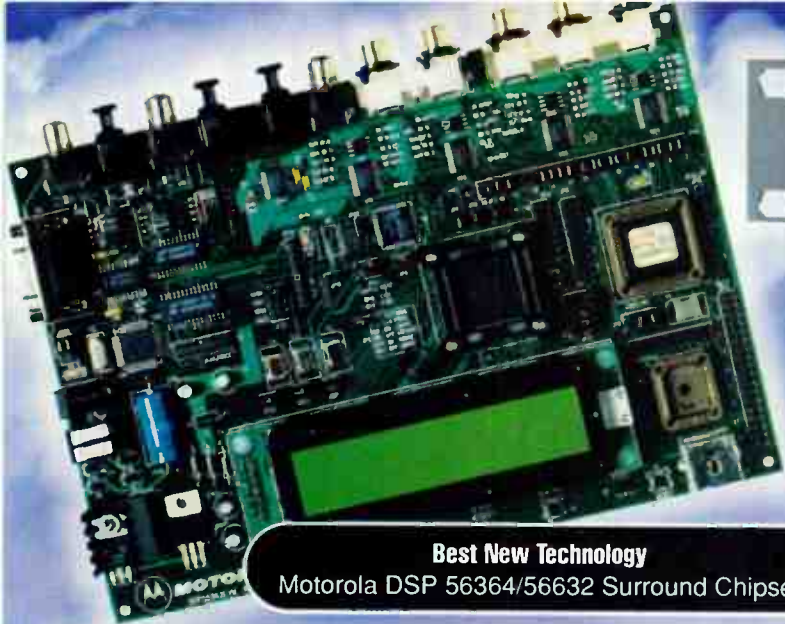
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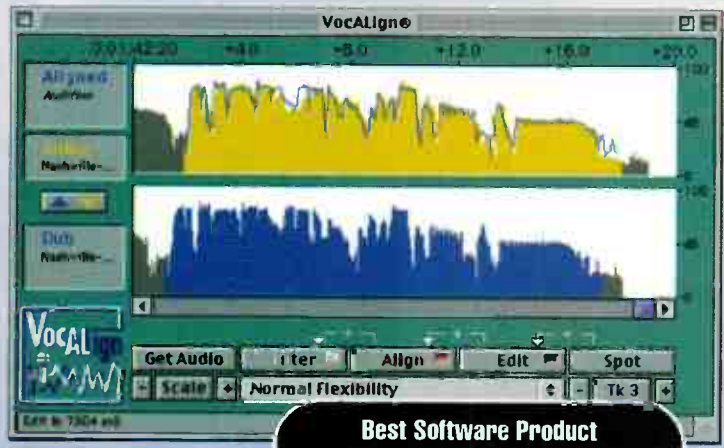




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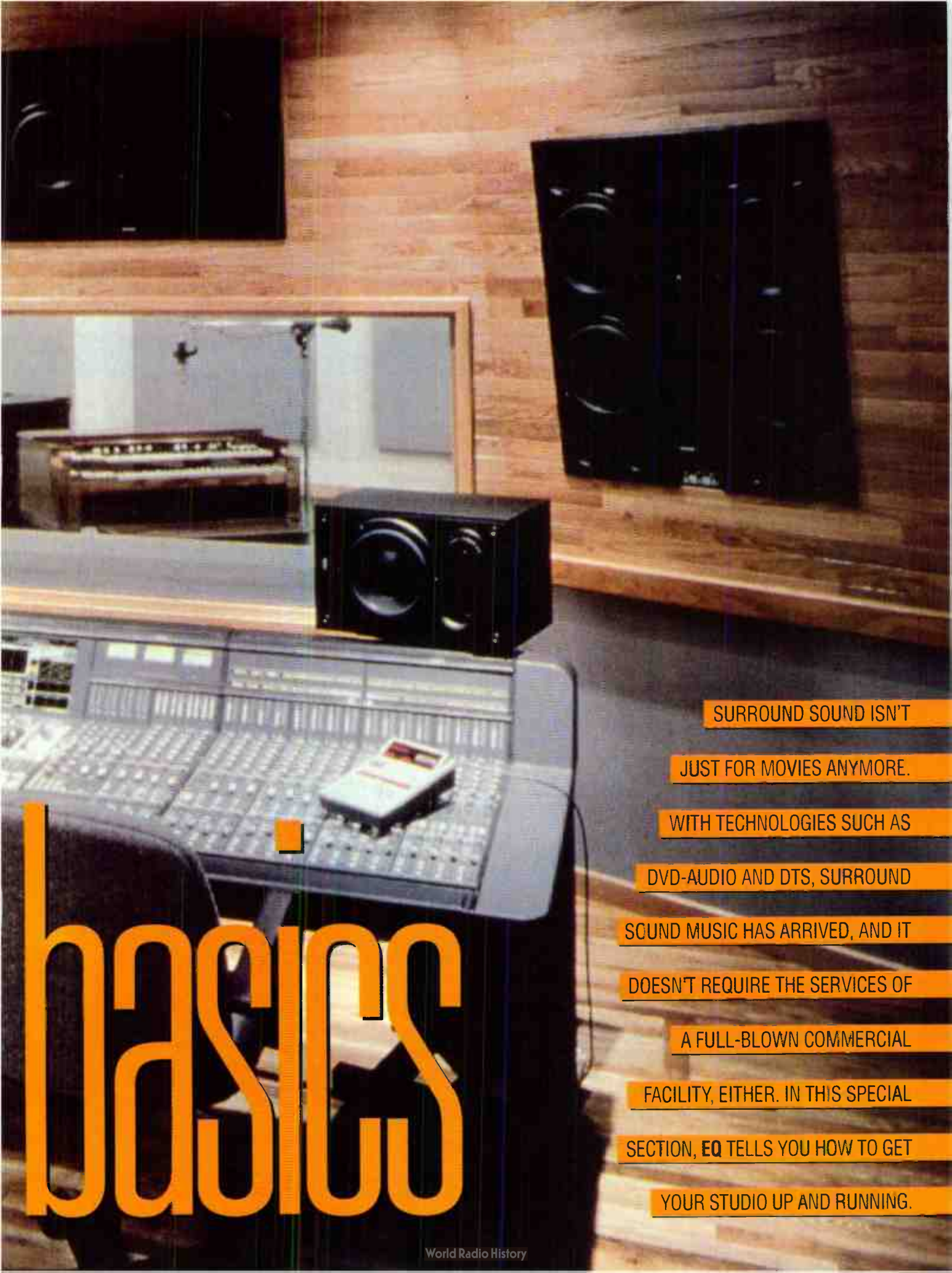
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BY MIKE SOKOL

Bass Management in the Real World

How to handle the low frequencies in your 5.1 surround sound mixes

In my previous article on bass management for 5.1 surround music, we discussed the theory and operation of bass management controllers (BMC's) in the studio. As a review, 5.1 surround audio (for DVD Dolby Digital, DTS, or DTV) uses five full-bandwidth channels (20 Hz to 20 kHz) for the Left, Center, Right, Left Surround, and Right Surround speakers, and one limited-bandwidth channel (3 Hz to 120 Hz) for the subwoofer audio.

Potential problems crop up when the monitor speakers you use in your studio don't have full bass response. The classic example for stereo mixing is the ubiquitous Yamaha NS-10's. Some engineers take a set from room to room since they are a constant (albeit flawed) reference to check their mixes on. The reason I say "flawed" is that they have no real low-frequency bass response. There's simply not enough cone area and cabinet volume to output much acoustic energy below 60 Hz. Furthermore, with mixing, there's an inverse curve effect going on. For instance, if you have speakers that put out extra high frequencies, then you'll tend to put in less high-frequency EQ on a track. If deficient in bass, you'll tend to add extra bass level and EQ.

Now, if you're totally familiar with your monitors, you can predict how a mix done on them will work on either a full-range system or a typical consumer system. Again, that's why many engineers take their own monitors with them. They demand a standard reference so they can "tune-into" what's happening. Of

course, there have been countless stereo mixes done over the last several decades, but 5.1-channel surround sound music is a new game. And if you've not had enough completed projects where you've actually pressed a DVD or DTS disc, then you really can't have the experience of knowing how it translates to a consumer listening system.

In a 5.1 recording chain, the outputs

of each of the main, surround, and LFE busses on the mixing console go to six discrete tape tracks. Typically, you would record them onto six tracks of a DTRS (DA-88) or ADAT deck. (Incidentally, tracks 7 and 8 are an excellent place to put a true stereo mix of your tracks so that you don't have to rely on a fold-down version being used on a DVD-A disc (much more on that subject later).) This 6- (or 8-) track



THE PLACE FOR BASS: There are differing opinions on how to handle the low-frequency information in a surround mix, but all agree as to its importance.

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SURROUND basics

tape is sent to the mastering and then authoring facility where it is eventually encoded with an MLP (Meridian Lossless Packing), Dolby Digital (AC-3), or DTS algorithm and then put on a disc for distribution to the public.

Seems simple so far, right? You've got six discrete channels of audio to play with, so you just place whatever you want in the left or right or surround speakers and it comes out the same way in playback. Plus, if a particular instrument has lots of bass as part of its musical timbre, you just put more of it in the LFE channel.

The problem arises when you realize how the full-range and LFE channels interact in a typical home-theater environment. What's the problem? Well, the reality is that nearly all consumer 5.1 playback systems use something called bass management. Also called bass redirection, it uses the LFE speaker to reproduce the bass frequencies that exist in some of or all of the other five full-range channels. Redirecting the bass frequencies from the satellite speakers to the subwoofer cabinet allows the manufacturers to design and build smaller, more cost-effective satellite speaker systems that will actually fit in a house. This works quite well in the consumer playback environment since the small satellite speakers can't support frequencies much below 100 Hz. Moreover, the crossover point for bass redirection recommended by Dolby and THX is 80 Hz. But the dilemma here is that the bass management process will not only redirect the desired bass energy from the LCRS channels to the subwoofer, it will also move any infrasonic junk you were never aware of into a speaker that can reproduce it.

We like to track on big monitors because they give us warnings about problems at both ends of the spectrum. For instance, even when recording a female vocalist and acoustic guitar, I still want a monitor system that goes down to below 30 Hz. Why such a low frequency when the source should never have anything below 45 Hz? Good question. The answer is because there are numerous real-world problems that occur below 30 Hz. For example, foot tapping on a mic stand, trucks rumbling by in the street, and vocal 'plosives from inadequate pop filters.

If all five of the monitor cabinets you're using for the main and surround channels reproduce full-bandwidth audio

down to (let's say) 30 Hz, you really don't need to use bass management at all. You will be able to hear any super low-frequency information (let's call it "SLF bass" rather than "infrasonic bass"), that's being recorded on that channel and all will be right with the world.

If, on the other hand, any of your monitor speakers are not capable of reproduc-

ing all of the SLF bass down to the 30 Hz range, then you probably do need some sort of switchable bass management. Even if you have huge main (Left and Right) monitors with double 15-inch drivers, but your surround monitors have 6-inch woofers, then you probably still need to switch in bass management to be able to spot check your 5.1 mix. That's because you could have a sonic situation where extra unwanted bass energy was going to the surrounds, but you won't know about it because you couldn't hear it. Moreover, you won't hear it unless the bass frequencies destined for the bass-deficient surrounds get placed in a subwoofer. (Some folks, including the knowledgeable Bill Calma from Tannoy/TGI North America, would argue that monitor speakers having a frequency response of -3 dB at 45 Hz are adequate for

mixing the proper amount of bass in a music mix. But I feel that while this may be adequate for choosing the overall bass level in a mix for normal applications, it's not really low enough frequency response for extended bass playback such as dance clubs, car wars, and Dolby Digital DVD players using bass redirection.)

In a perfect world (and studio), we would install a separate subwoofer for each channel. That would, however, mean six subwoofers in addition to the five main speakers in the room. Very few studios have the real estate and bucks to support such hardware. Also, be aware that getting multiple bass sources to work properly in a small control room without lots of standing wave interactions can be

a nightmare in itself. That's why THX and Dolby are recommending single-source bass cabinets for small mixing rooms. (This seems like a cop-out to doing proper bass trapping in the room to begin with. Alas, it's not a perfect world.) If proper bass trapping and monitor/subwoofer placement is important in a stereo listening environment, then it's certainly much more critical

in a 5.1 environment where there's the possibility of six bass sources radiating into the same small space. There will be a lot of mistakes made with respect to variables like room dimensions, how far the subwoofer is placed from the wall, and other bass loading and nulling effects. Note that this has little to do with bass-redirection per se, it's something that has always been important to any monitoring situation. Great-sounding rooms are not born accidentally — they are made with a lot of effort.

On the positive side of bass management, removing the bass frequencies from the main and surround monitors does remove a lot of the stress from the small woofers. In essence, they're not pounding themselves to death trying to put out 30 Hz bass. This reduces inter-

modulation distortion products and allows them to do a better job on the rest of the spectrum. In addition, as in a standard bi-amplified stereo system, splitting out the low frequencies from the amplifiers gives them an increase in headroom since they're no longer spending most of their signal swing doing big bass notes. The resultant general increase in volume and clarity is a big benefit.

However, some warnings come with the territory. Remember that a lot of bass energy will be redirected to the subwoofer, so you can't afford to underpower it. If your subwoofer has to put out the combined acoustic energy of five other speakers and the LFE channel, then it may require the equivalent acoustic horsepower of all those speakers combined. Without lots of head-

The bass management process will not only redirect the desired bass energy from the LCRS channels to the sub, it will also move any infrasonic junk you were never aware of into a speaker that can reproduce it.

room, it could run out of steam before the main speakers do. In real-world terms, if the basic speaker sensitivities are in the same ballpark, the subwoofer/LFE speaker needs at least 2 to 3 times the power available to each of the L-C-R speakers. Therefore, if the front and center monitors are powered with 100 watts each, then the LFE/subwoofer channel needs a minimum of 200–300 watts, possibly more. I have a 350-watt sub sitting under my console, and it seems to match up with my 150-watt satellite speakers very nicely. JBL likes to recommend two subwoofers with its LSR28P speakers, which puts the total subwoofer power around four times that of a single speaker. This not only gives them extra power and headroom, it also allows them to use the multiple L-C-R-LFE inputs on the subs to do bass management without an external controller.

The other caveat is to watch out for phase/polarity cancellations in the mix itself. It's possible to create a mixing condition where you get large amounts of out-of-phase bass in the main channels. This could accidentally be done with both incorrect mic polarity and placement, or something silly like an XLR cable wired

with pins 2-3 swapped (been there, done that). This polarity problem would be electrically canceled out while being redirected to the subwoofer. You might then think the problem is simply one of low-volume-level bass and crank it up rather than recognizing the warning signs of bass polarity problems such as flopping woofer cones. I'm looking for a polarity meter for 5.1 mixing to help warn of such problems.

I am going to go out on a limb and suggest a different frequency for the crossover point in professional monitoring systems with reasonably sized speakers. Instead of the 100 Hz of consumer systems, or even the 80 Hz of THX-rated systems, I think an octave lower (around 40 to 50 Hz) may be a better choice for a professional monitoring system. The reason for this is twofold. First, it would allow the mix engineer to hear the directionality of the bass-mixing choices he's making (and note any weird phase-cancellation things going on in the room). Second, it would still redirect any super low frequency and infrasonic audio into the LFE/subwoofer channel where we can monitor it and do something about it.

(Please e-mail me your thoughts on the matter, and I'll keep you posted on any experiments and comments.)

In summary, bass management and proper usage of the LFE channel are the most confusing aspects of mixing in 5.1 surround. So we've not heard the final word on the situation. Nevertheless, stick with good monitoring principals and you won't make any huge bass mistakes on your 5.1 mixes. If you can, make a test CD-AC3 disc as detailed in my article "Burning for Surround" in the February '99 issue of *EQ*. This will allow you to test the mix on a variety of consumer systems and really learn how the rest of the world will hear your creation. And that's what it's really all about.

Mike Sokol is a technical writer and audio engineer with 2.0 ears trying to mix 5.1 channels of music. He's proposed gene therapy as a way to add three extra ears in the front and back of listeners' heads, but for some reason can't get the medical community to take him seriously.

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Surround Speaker Placement and Calibration

The first step in getting good-sounding surround mixes

inevitably, the first two questions that dawn on a studio owner setting up a surround system for the first time are: [1] "Where do I place the speakers?" which is shortly followed by, [2] "How do I calibrate this system?" Since there are many aspects of surround sound that are far more critical than what we're used to in the stereo realm, the answers to these two questions are essential, since proper setup and calibration will affect every step afterward in a major way. Luckily, there's nothing terribly difficult about either process once you know how to do it, and, more properly, why things are done the way they are.

SPEAKER PLACEMENT

Let's look at speaker placement first, since this directly determines how you calibrate the system. Keep in mind that we're referring to a basic 5.1 surround system for mixing music, since there can be different requirements in post.

First, the speakers should all be set on the same plane and equidistant from one another with the mix position directly in the middle. I generally get out a tape measure and measure the distance from each tweeter to the mix position. (Make sure all speakers are at the identical height and then measure from midway between woofer and tweeter.) The distance from all should be equal, meaning that the center speaker will be set back a little from the Left and Right Front speakers. This has proved to be a good way to achieve a desirable front-to-back soundfield. If the surrounds are too far to the rear, the listener finds himself lost somewhere between two separate soundfields, rather than wrapped inside a single cohesive soundfield.

Now, the speakers must be aimed. With the center speaker directly in front of the mix position, the Left and Right speakers should be positioned 30 degrees away

from center at about a 60-degree angle aiming for a spot about 6 inches behind the mixer's head (perhaps less if your speakers have an extremely well-behaved polar response). Don't worry about this angle, as it can be reduced to 45 degrees or so as needed and still provide satisfactory results. (See fig. 1.)

The surround speakers should be positioned about 110 degrees off-center (± 110 degrees from the center loudspeaker), aiming at the exact spot where the Left and Right Front speaker are aimed. This puts them to the sides and somewhat behind the listener. This angle may look unusual, but several painstaking studies that show that this angle provides the best phantom image between the sur-

rounds themselves and between the front speakers and the surrounds.

THE SUBWOOFER

The subwoofer poses a lot of potential problems, since most rooms (especially in project studios) have some problems with standing waves. I can't tell you how many times I've gone into a room only to find the sub stuck in a convenient empty space (like under the console) rather than in the best spot. Let's look at some ways to find that best spot.

What we're trying to achieve is the smoothest low-frequency response at the listening position. Plus, we'd like to get the most level, since we really need as much headroom for the sub as we can get. While we can use trial and error to find the best

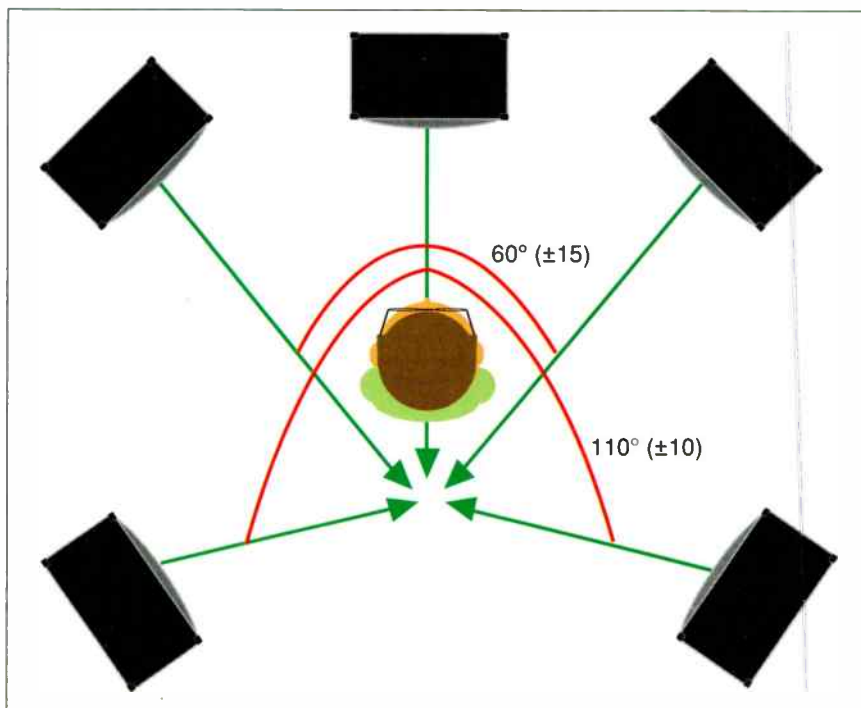


FIGURE 1

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QUICK AND EASY SURROUND CALIBRATION

Here's a quick step-by-step procedure if you're using an SPL meter.

1. Using pink noise, set the reference level for each of the five main channels to 85 dB SPL (or other reference level desired). You must calibrate each speaker individually with the others muted. Also, the subwoofer must be muted if a bass manager is used. Make sure that the meter is set for C weighting on the SLOW scale.

2. If you're using a bass manager, set the level of the subwoofer by first muting the signal to the main speakers. Set the subwoofer level to read 6 dB below the reference level (79 dB, if the reference level chosen is 85). If you aren't using a bass manager, then you can skip this step.

3. Set the level of the LFE channel of the subwoofer to 4 dB above the chosen reference level (89 dB, if the reference level is 85 dB).

position, this can take a lot of time and lead to a lot of back strain from moving a heavy sub around.

A far easier method is to place the sub at the listening position, play back some pink noise at reference level in the sub only (the main speakers should be muted), and walk around the room until you find the spot where the sub sounds the loudest. That's the spot where the sub should live.

Keep in mind that getting the smoothest response from the sub, not just the loudest, is a complex process and usually requires some serious test equipment to get it spot on.

POLARITY

But we're not finished yet. If it has a polarity switch, reverse the polarity of the sub. The position that produces the loudest bass is the correct polarity.

SYSTEM CALIBRATION

Two things are required before you can calibrate your surround system: a pink noise source and a calibration device like an SPL meter or real time analyzer (RTA). Many devices already connected to the surround system (like a digital console or monitor controller) may already have a pink noise source for calibration, but, if you need an external source, there are a few CDs and test tapes on the market. For CDs, I recommend Disc 1 of the Hollywood Edge Test and Measurement Disc series, since there are numerous cuts specifically tailored to surround system calibration, as well as a helpful manual that fully describes each test. I also use Tom Holman's TMH Multichannel Studio Setup and Test Tape (www.tmhlab.com), which comes in a DA-88 format (the *de facto* standard mix-master machine), and includes a host of great tests as well as a very helpful manual.

For a measurement device, you needn't spend a lot of money to achieve satisfactory results. A common Radio Shack SPL meter will do the trick just fine. Radio Shack makes two: an analog and a digital one. The analog meter, which is also the cheaper of the two, is actually better for calibration,

since it has a resolution of less than a dB while the digital model rounds the signal off to the nearest decibel. (Some folks may find the digital meter's readout easier to see.) Keep in mind that the SPL meter of any kind will only give you an approximation of the true level because it will read the highest peak of the pink noise in any band. For more precise calibration, especially for the subwoofer, a real time analyzer (which measures the level of each third octave frequency band individually) is required.

THE REFERENCE LEVEL

The reference level of the pink noise used for calibration varies depending upon the program material that you'll be mixing. On a film mix, for instance, the level is set at 85 dB SPL and rarely changes in order to maintain consistency between reels and because the film will play back in the theater at (hopefully) that same standardized level. It is a standard that never varies.

Television, on the other hand, usually uses 79 dB SPL as a reference since the quieter level translates better to the home. If TV sound is mixed at a higher level (like 85 dB), then the dialog is frequently lost when it's turned back down to a normal listening level.

A music mixer, however, will work at a variety of levels. He or she may start at a moderate level (of perhaps 85 dB), boosting to 95 for a quick check of the low end, then getting the remaining balances at a quiet 72-75 dB. There is no standardized reference level because the level that the mixer chooses is arbitrary and very variable, and it's the same for the listener. I recommend that you find the level (using the SPL meter) that you tend to stay at most of the time and use that as your reference level for calibration. If you're not sure, use 79 dB.

CALIBRATION BASICS

Start by sitting in your normal mixing position, holding the SPL meter at chest level with the microphone facing up at an angle of approximately 45 degrees at the

continued on page 130



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World Radio History

CIRCLE 98 ON FREE INFO CARD

BY DAVID FRANGIONI

Turning the Beat Around

How we turned a 10-year-old stereo mix into a 5.1 surround mix

With the advent of DTS and Dolby Digital consumer formats (soon to be joined by the forthcoming DVD-Audio standards), surround sound is reaching the masses. Last year saw the release of some great music titles in the DTS format (*FYI*: DTS is a 5.1 discrete digital standard used to encode audio onto CD, DVD, and LD).

Pop, rock, and country music DTS titles were abound, but what about other styles of music? Enter Brad Miller of HDS. Brad was familiar with an album called *Global Beat* by drummer Steve Smith (formerly of the band Journey). The album was over 10 years old and sounded fantastic. Not only was the recording great, but (more importantly) the music contained musical influences of jazz, Caribbean, fusion, and Latin, to name a few. Brad asked me to contact Kevin Elson (the engineer on the record) and see if we could remix it in 5.1. Kevin thought it was a great idea and, after a few phone calls, we had the master tapes on their way to Audio One studios in Delray Beach, FL for the remix. In fact, Steve Smith was going to fly in for the remix to join Kevin and me.

It's never as easy as it looks, is it? As soon as the tapes arrived, it was clear that they were one "play" away from completely shredding. The 2-inch looked as if someone had gone mad with black pencil erasers! Fortunately (and I mean *very* fortunately), New River Sound in Ft. Lauderdale, FL had the answer. They not only restored the tapes (six 2-inch reels in all), they transferred them to ADAT for the remix. The tapes sounded incredible.

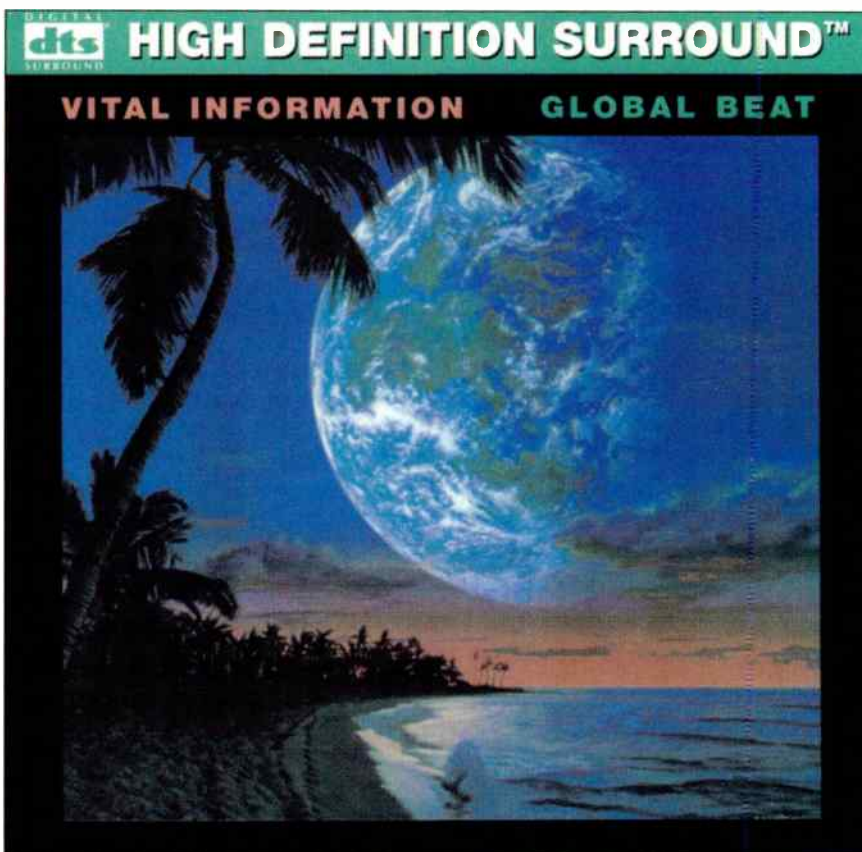
This mixing session had its share of "firsts." Kevin was remixing in surround sound for the first time. Steve, on the other hand, had never even heard music in surround sound! When everyone arrived, ready to mix, the studio was completely set up and properly calibrated. Kevin and I started by

getting basic sounds on each of the instruments for the first song on the record. This process included EQ, light compression, and any necessary repair work. After getting the basics sounding good, we started the placement of each of the tracks/instruments into the front and back left and right.

I have found that the most critical aspect of good, balanced surround tracks is the blend among the four main speakers. The key is to have a 360-degree soundfield, not four independent speakers. Obtaining

that musical balance has to do with the level, EQ, and effects that are distributed among the four speakers. At this point in the mix, both the center channel and the subwoofer were not being used — *yet*.

The mix was starting to take shape as it began to have a nice energy and feel. We then added effects to each instrument as necessary. The drums were processed with a Lexicon 480L and TC M5000. The guitars had some internal Yamaha 02R effects in addition to a Roland R880 and Korg A1.



THE BEAT GOES ON: Making the 5.1 mix for *Global Beat* was even more challenging due to the fact that the decade-old master tapes were nearly shedding.

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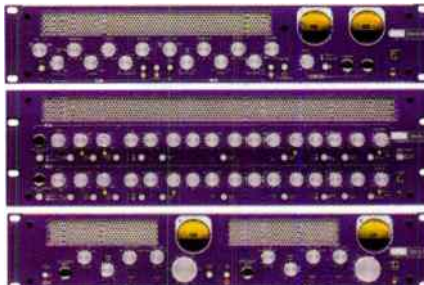


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SURROUND basics

The bass had a TC M5000 and an Eventide DSP4500, while the percussion had PCM81 and some Pro Tools24 plug-ins.

As a side note, we used the Pro Tools24 system for a lot of effects (both as digital inserts and send/returns). It made for an incredible outboard gear rack, providing for Drawmer compressors, Focusrite EQs, Lexicon reverbs, and TC Chorus. All patching was done via AES digital and clocked to an Aardvark Mastersync II word clock generator.

The balance of the effects were complete, and we were now ready for the "extras." This is where Steve and Kevin would listen to the mix and create the moving elements. For instance, there is a swirling sound at the beginning of each bridge section. We panned the sound among all four speakers four times to create a rapidly moving swirl. Of course, after writing a move like that, the level has to be adjusted (again). The O2R makes it so easy to edit, update, and overwrite au-

tomation, that it was a breeze to make changes. In the middle of the song, there was a break in the music, a big snare drum hit, and then the music returned. I set up a reverb send to a PCM91 that would trigger from the snare hit, pan front to back, and land in the middle of the circle when it finally decayed. It worked great and added a much more decisive feel to the break section.


Finally, it was time to add the sub and center. I've never been a big fan of center channel for music. The sub can sound great (*if used properly*), but the center always sounds awkward to me. First, I dial the BD, Bass Gtr, and any other very low instruments (deep tabla or gong bass drums, for instance) into the sub channel (typically Channel 6 of 6 on the master destination tape). I will add just enough so that when I mute the sub, you definitely feel the difference. I *never* rely on the low end of the mix to be dependent on the sub. The translation of the sub (and

center) channel when played through a multitude of home systems works best with this level balance.

The center is used for three reasons: [1] to center images such as the snare drum and other center-placed instruments at a low volume level, [2] add effects for one or two instruments in the mix that sound natural only playing through the center channel, and [3] because you have to use the center in order for it to be 5.1! Really, the center is not a big deal to have to use; it's just not a *necessary* element of great sounding surround *music*.

At the end of the mixing session, we loaded the 6-channel masters into Pro Tools24 at 20-bit resolution and mastered the entire project.

David Frangioni mixed the first-ever DTS music tracks in 1996 and, since then, has worked on several major music surround sound releases. Global Beat is dedicated to the memory of Brad Miller.



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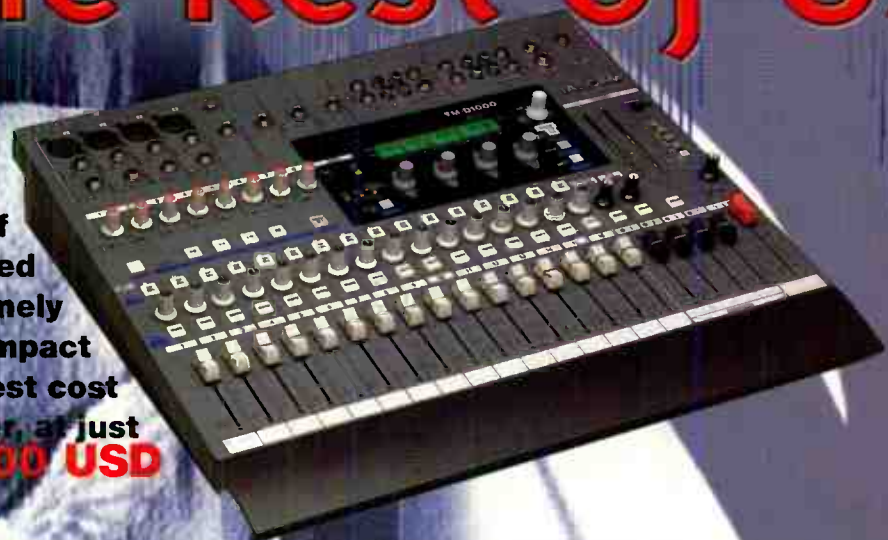
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Love

AT FIRST

Listen

BY MIKE SOKOL

Shall I compare thee to a summer's day?" —William Shakespeare
It's not often I get to quote Shakespeare in *EQ*, but microphone selection is such a personal thing, filled with so much excitement and trepidation, that it's difficult to pen the right words when you do find the right match. So I thought I'd get a little help from "Bill," since he was possibly the greatest wordsmith of all times.

Like love at first sight, love at first listen does happen. Moreover, unlike with personal relationships, with microphones you can have



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LOVE AT FIRST LISTEN

as many as you like (or can afford). In addition, the relationships can change from day to day and situation to situation. For instance, I can't imagine miking a snare without the Shure SM57 I've been dragging around with me for the last 20 years or so. Like an old friend, I know exactly how it's going to react in every situation. The same thing goes for Sennheiser 421's. I use them on everything from talking drums to male narration. Yeah, they're big and clumsy, I hate their mounting clips, and they won't fit in a mic case very nicely, but guess what? You can overlook the problems and accept them for what they are — simply great for many situations. I recently used four 421's on the "Imus in the Morning" show, which was uplinked to several million radio listeners as well as MS-NBC. During the show, their engineer called me on the hotline from New York and said it was the best-sounding remote they had ever had. I knew my 421's wouldn't let me down.

It used to be that great mics were only available to the rich and famous. However, in the last few years there's been a veritable explosion of large diaphragm designs in the \$1000 range, which makes them affordable for many studios. So when a bunch of microphones arrived a while ago, I knew there was some real fun on the way as well as the challenge of describing the various flavors and colorations of mics.

Auditioning microphones is a very personal and subjective procedure. When you pair the right microphone with the right performer, a chemistry is created that goes well beyond charts and empirical data. Some folks, including me, can get downright poetic when checking out new mics. That's why anytime you get the opportunity, take a chance and try out some different mics. It could be love at first listen.

AKG ACOUSTICS C 4000B

At first glance, the C 4000B doesn't look very spectacular. (You can't judge a mic by its cover....) It doesn't have the sexy black finish of some of its sister microphones, and the grille is strictly utilitarian.

MANUFACTURER: AKG Acoustics, U.S., 1449 Donelson Pike, Nashville, TN 37217. Tel: 615-360-0499. Web: www.akg-acoustics.com.

APPLICATION: Side-address condenser microphone for studio and live recording.

SUMMARY: Dual-diaphragm condenser mic with selectable pickup patterns, bass rolloff switch, and 10-dB pad. Transformerless output. Comes with a foam windscreen and shock mount.

STRENGTHS: Low noise floor; excellent RF rejection; up to 155 dB SPL with pad (and full 48-volt phantom); quick-twist shock mount; gold-plated connectors.

WEAKNESSES: Fixed omni, cardioid, and hypercardioid patterns; no figure-8 pattern; a little heavy for stage use, so bring a sturdy boom stand.

PRICE: \$848

EQ FREE LIT. #: 133



an with almost a military look. You immediately notice the rather large shock mount. You simply grasp the inner cage and rotate the lock ring and...*voila* — a totally secure mount with little effort. Plus, the suspension seems ideal for the weight of the mic, which at 16 oz. is a little Rubinesque. AKG also includes a nice foam pop filter, which seems to have little effect on the frequency response. If you're using it outdoors, it's a lifesaver. There's a built-in internal wind and pop screen that makes it fairly impervious to popping, except with very close-in work.

There are three selectable patterns — omni, cardioid, and hypercardioid. Alas, there's no figure-8 pattern, but very few engineers use that pattern, so it's not a great loss. Especially since the included patterns do seem right on the money. The 10-dB pad is ahead of the internal electronics, thereby raising the SPL capability to 155 dB SPL, which should cover anything you ever want to get close to.

I recorded several vocalists (singing as well as voice-over), acoustic guitar, flute, and percussion with the C 4000 B. On the first female vocalist, it just didn't do anything flattering, so we switched to a tube mic. On another young singer, Sarah English McDonald, though, it was

spectacular. I like singers with some "edges" in their voice, and this mic did a beautiful job of getting all those little rasps and breaths, which I find so emotional. On acoustic guitar, the sound was very even and balanced, with nice warm lows. On percussion with lots of ultrasonic frequencies (shakers, maracas, and rain sticks), the obvious extra headroom was great. The resultant tracks never sounded strained or brittle like with some early condenser designs. In addition, the sound from the flute was excellent. The internal windscreens allowed me to get the mic in very close without any nasty windblasts.

Overall, this is a great mic in the tradition of previous AKG products. I'm sure you'll find something or someone you'll love to use it on. And the price makes it very affordable.

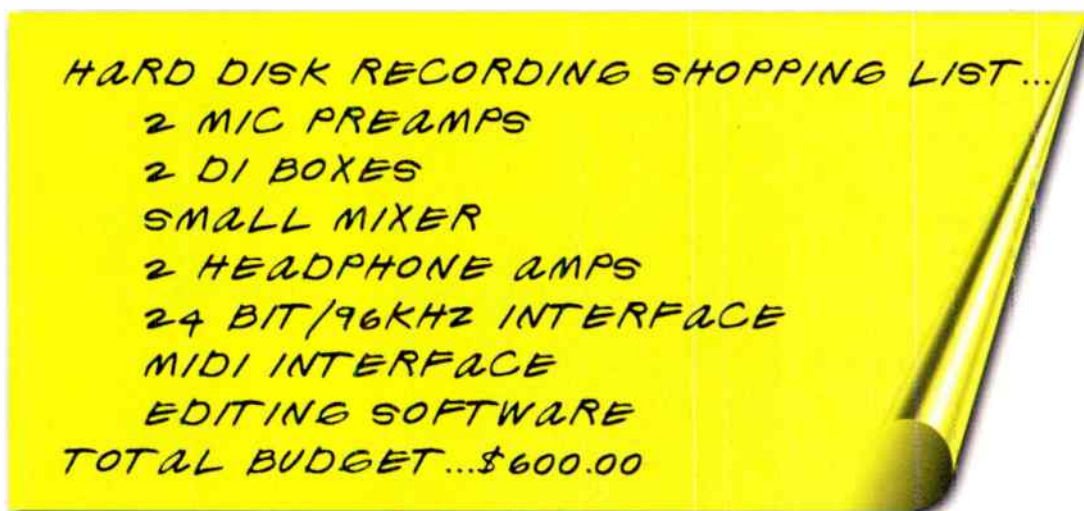


ADK A-51SD

ADK is a new kid on the block, and this is one of their first product offerings in the field of microphones. Nonetheless, it's a very interesting microphone in-



deed. According to the literature accompanying it, the design was done with a slant towards a particular coloration,



LOVE AT FIRST LISTEN

MANUFACTURER: Audio DeutchKraft, Inc. (ADK), P.O. Box 82282, Portland, OR 97282. Tel: 503-772-3007. Web: www.adk.cc.

APPLICATION: Dual-pattern condenser microphone for studio and live recording.

SUMMARY: Large-diaphragm condenser mic with cardioid and omni pickup patterns, 10-dB pad, low-cut filter, and shock mount.

STRENGTHS: Beautiful "woody" flavor is great on acoustic guitars and alto female vocals; transformer output.

WEAKNESSES: Internally mounted low-cut filter switch is awkward to reach; suspension mount can scratch the microphone's finish if not carefully inserted into the holder.

PRICE: \$770

EQ FREE LIT. #: 134

rather than a rigid reproduction of sound. So, in that context, they've succeeded very well. It's more "Neumanesque" both in looks and in coloration than many of the other current high-tech condenser mics.

I used the A-51sd on a number of recordings in the studio, and really liked it on both acoustic guitar and female vocals. In fact, a studio musician who brought in his gorgeous Martin acoustic instantly fell in love with the sound of it and wouldn't try any other mics after that. It was interesting because he totally lost his concentration while tuning — like a love-stuck teenager on his first hot date. He finally settled down after about 10 minutes of giggling and we tracked some great stuff. (He is, by the way, 40-something and has been in studios for many years, so it wasn't his first hot date.)

The mic has more self-noise than I like, which might be a problem on critical low-noise recordings, but ADK says there's a new FET design in the works that should lower the noise floor by a few decibels. In addition, the shock mount is awkward, requiring great care not to scratch the mic body, and it's hard to position it properly to keep the spring clips from resting on the suspension ring. Once they can get those details worked out, this will be a sweet setup.

The A-51sd's tonal coloration is a little darker than one might expect

from a FET coupled condenser mic — and, for many sounds, that can be very flattering. I also used it on an opera singer, and, after switching in the 10-dB pad, it did a great job. It sort of just found itself set up in the vocal booth for the next several weeks as a starter mic, and half the time we just left it there since it seemed "right" for the job. The sign of a good piece of equipment is when you start selecting it unconsciously.

Minor "beauty marks" aside, this is a great first entry into an already crowded field of low-cost condenser mics. It's a mic that actually "sounds" like something.

GT ELECTRONICS AM51, AM52, AM61, AM62

I think the boys and girls at Alesis are positioning themselves to take over the world. Not content to just bring us the ADAT tape format and affordable signal processors, etc., they're now adding things like studio-grade microphones. With the addition of the excellent

MANUFACTURER: GT Electronics, a division of Alesis Corporation, 163326th Street, Santa Monica, CA 90404. Tel: 310-255-3400. Web: www.gtelectronics.com and www.alesis.com.

APPLICATION: Side-address condenser microphones for studio and live recording

SUMMARY: Large-diaphragm mics in both FET and tube flavors with fixed cardioid patterns (AM 51 and 61) and multiple patterns (AM52 and 62). All models have a bass rolloff switch, 10-dB pad, and mount.

STRENGTHS: AM52 and AM62 have omni, cardioid, hypercardioid, and bidirectional patterns; very low noise floor; well balanced sound on a budget; love those tubes!

WEAKNESSES: Shock mount doesn't have a positive lock on the mic; could they make these things any heavier?

PRICE: AM51, \$549; AM52, \$699; AM61, \$999; AM62, \$1299.

EQ FREE LIT. #: 135



Groove Tube series of microphones to their product line, Alsis is becoming close to a one-stop shop. These GT series mics come in four flavors designed with a number of tastes in mind.

Available in both FET (AM51, AM52) and tube (AM61, AM62) variations, there's something here for practically everyone. The AM51 is a cardioid pattern mic with FET electronics and the AM52 is a multiple-pattern version. Likewise, the AM61 is cardioid-pattern-only tube mic, while the AM62 does omni, cardioid, hypercardioid, and bidirectional (a.k.a. figure-8). Of course, the tube versions use an external power supply and special cable to get power to the mic in order heat the filament and sling those electrons at the plate. The addition of the bidirectional pattern is an excellent move, since it opens up the possibility of M-S (Mid-Side) recordings.

I like the FET versions, and the sound was certainly accurate. In fact, I compared them as a stereo pair on a pi-

ano recording against B&K 4003's with a Millennia preamp, and they did a no-



table job. What I really liked, though, was the AM61 and 62. The AM62 set on cardioid in front of an acoustic guitar

was heaven. Nice bottom end, but with balanced highs. It also did a good job on female vocals — there was no high-end hype. Having all the pattern options really made my day, since I was able to experiment with one of my favorite miking techniques: Mid-Side stereo.

I took the AM61 and mounted it straight up facing the sound source. Then I inverted the AM62 directly over top of it, but facing sideways, and set the pattern to figure-8. Then, via a simple little cable arrangement I made a decade ago, I can decode the M-S signal into stereo that's completely mono compatible. The coloration of the AM61/62 pair was nearly perfect for the small, choral group recording. The stereo image held up beautifully, without flanging or "picket fencing" on moving sound sources. I really like the technique for choirs and string quartets, since it's less "peaky" than widely spaced mics and I can easily narrow the stereo width of the choir to make

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LOVE AT FIRST LISTEN

room for the trumpets, or whatever. (To get a quick primer on M-S recording, check out my Web site at www.soundav.com/link2.html. I'm sure I can talk Hector La Torre into letting me do a more complete piece for *EQ*, since it's a very useful, but little practiced, technique.)

On the downside, the shock mount doesn't seem to have a firm lock on the mic. Oh, it holds well enough, but it doesn't *feel* like it has a grip, and I really hate it when a mic dives for the floor. Furthermore, these mics are about as heavy as a piece of pipe. There's probably a good engineering reason for it, but hanging them way out on a boom might feel a little scary to some.

On the upside, you won't go wrong with any of the GT's — especially if you opt for the multipattern models. You may think you'll never need anything other than a cardioid pickup, but, when push comes to shove, "he with the most patterns wins" (or something like that). Simply stated, more patterns means more options, and that means you've got a better chance to do a really spectacular recording.

KORBY AUDIO TECHNOLOGIES CM3

For those unfamiliar with Korby Audio, the company originally started out as a microphone restoration company — someone you could trust sending your vintage Neumann or AKG mics to for restoration and tweaking. Korby took this expertise and passion for vintage mics and designed one of their own. Since they have their own vacuum chamber for sputtering gold on Mylar and assemble their own handmade capsules with individually drilled backplates, Korby can pretty much make anything they want.

The CM3 mic from Korby Audio is the most expensive mic in this roundup. In this case, you get what you pay for. The obvious attention to mechanical and acoustic detail is what one would expect from an "A-list" mic, and this transducer is in that category. The microphone body itself is somewhat Spar-

MANUFACTURER: Korby Audio Technologies, 23 N. Grandview Avenue, Crafton, PA, 15205. Tel: 412-937-1349. Web: www.korbyaudio.com.

APPLICATION: Side address condenser microphone for studio and live recording.

SUMMARY: Large-diaphragm, vacuum-tube condenser microphone, remote power supply with pad, low-cut filter, and continuously variable pattern. Packed in a beautiful wood case.

STRENGTHS: You can hear the passion that went into this thing.

WEAKNESSES: Needs a cool, more effective, suspension mount.

PRICE: \$2700

EQ FREE LIT. #: 136

tan in appearance, being a simple cylinder with a heavily chrome-plated grille. A jewel marks the front of the mic, and, at first, I thought it might glow, but Korby obviously didn't think that bit of theatrics was needed. They did, however, add something that none of the other mics in this test included: a continuously variable pattern control on the power supply. This is one of my favorite options in a dual-condenser microphone because you can actually feel the focus of the pattern sweep as the control is adjusted. Moreover, you also get a figure-8 pattern, allowing you to use it as the "Side" transducer to implement Mid-Side stereo miking.

So what's not to love? The only thing I didn't like was the rather utilitarian mounting clamp that serves as a suspension. While it's lined with rubber, it doesn't really "suspend" the mic with any real isolation. Korby should opt for something a little softer because once you get to 20- or 24-bit recording, every little foot thump and traffic rumble that finds its way into the element will be recorded.

The sound of the CM3 was very lush and flattering, almost a little retro, especially on female vocals. I had a young singer in the studio who has simply *huge* dynamics. She would be singing intimately for a few bars, then explode into almost a full shout within milliseconds. The CM3 took the abuse in stride, giving glorious detail of the

close-in quiet lines and never getting harsh on the loud parts. Some of that ability may be due to the Millennia mic preamp I patched it into, but this is a mic that deserves a decent pre that can handle the output without melting down.

I also tried it on acoustic guitars and some hand percussion with equally excellent results. What I really like about a good tube mic is the "softening" of the nasty transients that can wreak havoc with A/D converters. The knee points of the 5703 valve obviously were carefully selected to get a very natural-sounding dynamic compression, while adding just a hint of harmonics. It's the classic tube sound in a modern package. Sonically, this mic is a dream; it could help elevate the quality of your recordings to the next level. **EQ**



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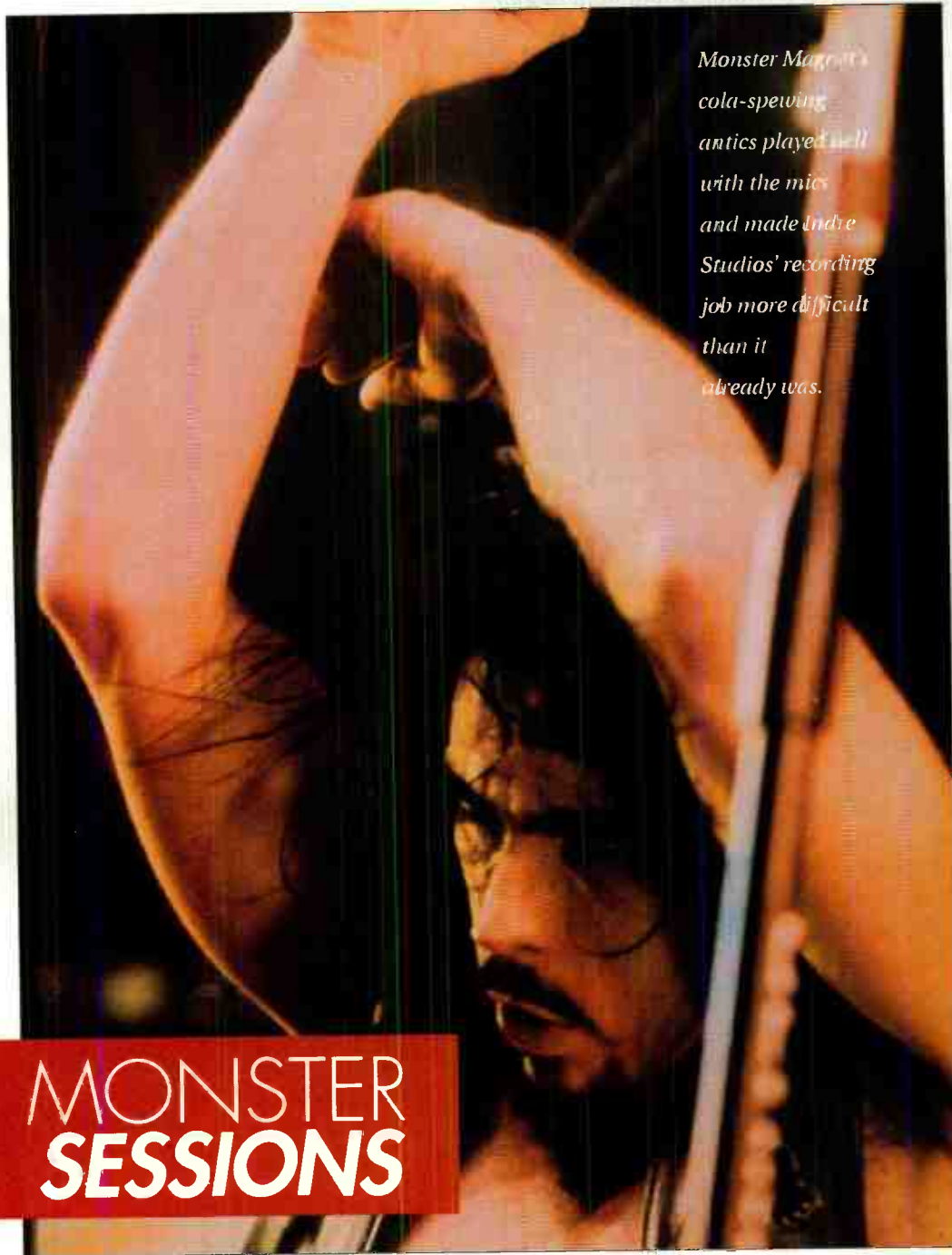
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EQ Live

EQ LIVE



*Monster Magnet's
cola-speaking
antics played well
with the mics
and made Indre
Studios' recording
job more difficult
than it
already was.*

BY STEVE
LA CERRA

Philadelphia, and in this article, *EQ* digs out the skinny on the technical details of recording *Rock Sessions*, including a recent broadcast with Monster Magnet.

The space at Indre Studios is a converted film soundstage about 50 feet wide by 75 feet deep. According to Indre owner/engineer Michael Comstock, "The control room is on the second floor of the studio, so we get a bird's eye view of the room, including the audience.

There's a stage with a loading dock at one end of the room, and there's a lighting grid so bands can shoot video if they want.

We can fit between 180 to, maybe, 225 people in there to watch the performance while still giving us plenty of room to comfortably record the show."

Comfortably recording the show is a concept paramount to the success

of *Rock Sessions*. As a former road manager and live sound engineer, Michael realizes "these things can be a huge hassle. We try to make them as painless for the band and their crew as possible by

Indre Studios captures Monster Magnet's live performance for broadcast on *Rock Sessions*

MONSTER SESSIONS

Rock Sessions is a series of live broadcasts aired on WYSP FM in Philadelphia, PA, and has featured artists such as Cheap Trick, Veruca Salt, Tonic, Creed, Black Lab, Brother Cane, Aquaport, Life

Of Agony, and Helmet. The series revolves around bringing bands into a studio and setting up live performances before an audience. For the past two years, that studio has been Indre Studios in



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having our act together technically. Many bands do these shows before an afternoon or evening load-in to another gig — so timing is key to making sure they're not late."

To facilitate equipment setup, Indre has installed a house PA system with Yamaha PM2000 monitor and FOH consoles. The house system utilizes Community RS440X (hipacks), CSI-118 subs (custom made by Clear-Sound Inc. in Philadelphia), and Yamaha P2200 power amps; six monitor mixes are available on stage through JBL-loaded Woodworx wedges and additional Yamaha P2200's.

IS THIS THING ON?

Obviously, just having a PA system doesn't make Indre Studios ready to record for broadcast, and that's where the studio's recording abilities come into play. Comstock notes that a "key piece to the studio is the transformer/splitter that we built for providing separate house, monitor, and recording feeds all on splits. It's a 3-way split with one direct out and two transformer legs. After spending all that time making the split, we probably could have gotten away with using a non-transformer split because we pretty much control all the power issues in the building. But it has come in handy, and, as a live guy, I like to have it there as a safety net in case of problems. I believe that the loss going through the transformers is about 3 dB, so those go to house and monitors. I'd rather get the full signal at the recording end from the direct output than sacrifice that part of it."

While the transformer outputs of the split are wired to the two Yamaha consoles, the direct outputs are routed upstairs to a 40-channel Neotek Élan M2 console that lives in the control room. Michael has found 40 channels to "really be a bonus for the live recording because we've done plenty of broadcasts where all 40 faders were used. If the band is under a time constraint where I have to mix live-to-DAT on the fly, I return the effects on the right hand side of the board. It's not uncommon to have 28 lines coming from the stage and then fill up the rest with effects." Although mixes occasionally do go live-to-DAT, most of the *Sessions*

are recorded to either an Otari MTR90 Mark II (2-inch, 24-track) or to a TASCAM DA-88 chased by five DA-38's.

"Most bands coming in here," Comstock continues, "have the impression it's going live-to-DAT, so they're happy when they find out it's multitrack. The way the series is structured, the band owns the product in the end, so this is a very cheap way to get live material for B-sides or possible tracks later on (like the band Tonic, who used tracks for Japanese-release singles). The sessions average from the short side of about 30 minutes to the long side of about an hour and ten minutes. When the recording is going to 2-inch, we have to stop the band every 15 minutes and put on a new reel. Most bands knock it out show-style, but there have been plenty of screw-ups where they'll stop. The material is all taped for broadcast."

TRACKING THE MONSTER

Monster Magnet in particular was recorded to three TASCAM machines for a total of 23 tracks. Michael and co-engineer Bogdan Hernik used a number of tried-and-true mic techniques that we'll get to in a minute, but they also employed two pairs of AKG C414's hung from the ceiling as room mics. Michael builds a fair amount of his mix "around what is going into those mics. It's a pretty neat-sounding room, very full — and that's something that sets it apart from a regular studio recording. The pair of 414's closest to the stage are about 25 feet back from the PA, with the diaphragms facing the cabinets. The ceilings are 22 feet high, so the mics are a good 15 feet higher than the top cabinet. Even though they're in front of the cabinets, there's still ambient sound in these mics because the PA is not blowing directly at them. I played around with the pickup pattern a lot, but lately I've been keeping this pair set to omni. The rear pair is about 3 feet from the back wall, which is about 65 feet from the stage. I've been setting those to hypercardioid. When you add in the rear mics, you can really hear the room open up."

Since Indre was designed as a tracking space, the control room was built with isolation in mind from the

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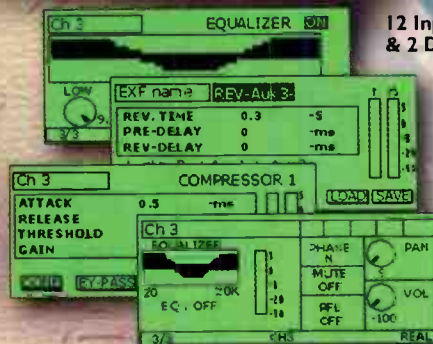
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word go. "It was designed as a room-within-a-room," Michael reveals, "so, for the most part, you close the doors and you're in a different world."

Although load-in and set-up occur early in the day, Indre generally has a window of about 1.5 to 2 hours between when the band walks in and when the audience shows up. Comstock feels that, with the split living in the building, "there aren't many surprises. We know what it does and what the best grounding scheme is. If it's a real tight schedule, we'll set up backline with Bauder Audio, a local rental company. Then the band will bring in amp heads, cymbals, guitars, and such. We'll provide whatever else is needed to make the afternoon go well. If I have a choice, I prefer a band to use their own gear, but it's also a trade-off with the timeline. In the case of Monster Magnet, it was a rental backline."

Monster Magnet's backline included three guitar rigs, one bass rig, and a drum kit. Lead vocalist Dave Wyndorf also plays guitar. He used a Marshall 4 x

12 cabinet powered by a Mesa-Boogie Dual Rectifier head. Guitarist Ed Mundell used two Marshall 4 x 12 cabinets, one powered by his Orange Overdrive amp, the other by a 'Boogie Triple Rectifier head. Phil Caivano used a Marshall 4 x 12 with a 100-watt Marshall JCM 800 head. To some extent, Michael's mic selection was governed by the stage volume: "Since this gig in particular was so loud, I used 57's and miked the cabinets close because you'd have the next guy's rig screaming into the mic. I get the mic right up in on the speaker, a little bit off center, but pointing straight in. When the SPL is not too crazy, I might use different mics — anywhere from a Sennheiser '409 all the way up to an RCA ribbon like a BK5."

Jon Kleiman's kick drum was recorded using a Shure SM91A and a beyer M88. The 91A was laid inside the kick drum on a pillow (gaff-taped in place) and Michael used it for "more of the snap from the kick. It's still a pretty full kick drum sound, and you could probably use either the '91A or

the M88 as the entire sound. But the combination seems to work very well. There's a band on the capsule of the M88 that I kind of line up with the edge of the drum head, so the M88 is not stuck in there very far. In that spot, it gets a lot of the boom and low end stuff. The mixture of the two mics becomes the EQ. I can pretty much bring them both straight up, not have to EQ a whole lot, and the combo sounds great. If I'm recording on DA-88, I'll compress them a bit with a dbx 160A."

In addition to the Neumann KM84's used for overheads (placed about two feet above the cymbals), an AKG C535 was used to spot-mic the ride cymbal. "It's a leftover from my live sound days," Comstock says, "and that mic is not really part of the picture of the way the kit sounds. It's definitely an accent mic, so if a song is ride-heavy or if the ride is not cutting, I know I can bring that up a bit. Otherwise, that mic lives in the mix at a lower lever."

Joe Calandra's bass rig was recorded to two tracks for two completely separate sounds. The DI was patched directly from the bass' output so that the signal was completely effect-free. Michael used this track for about "25 percent of the overall sound. He uses some fuzz effects, which came out of the amp itself — an old, cool overdriven Ampeg SVT. Since Monster Magnet was a DA-88 session, I compressed a bit to tape. I have a Drawmer 1960 that I used on both of those signals — both as a pre and a compressor."

A STICKY SITUATION

With a band that rocks as hard as Monster Magnet, we knew there had to be at least one or two juicy stories about recording their *Rock Sessions* broadcast at Indre Studios. Michael recalls that in the middle of their set, "Dave stopped the band and started yelling at the audience, 'What are you doing here? Is this a TV show? Am I *Melrose Place*? Get off your butt!' Then he sprayed a Coca-Cola all over the audience, which kind of made me cringe up in the control room. There were three cases of Coke provided, and they sprayed it all over the studio. Fortunately, the only gear that got sprayed was the wedges, and they're rock 'n' roll wedges, so you just wipe them off and it's OK. The 414's in the ceiling were safe, although Dave did beat a Shure '58

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to death by the end of the 40-minute set. That was from a combination of being soaked in Coke and being bashed into the floor. On tape, you can hear the signal going downhill in quality by the end."

The "Coke Incident" caused Comstock to work a bit harder at mixdown because, as the set went on, the mic was losing level. He listened and added "what I thought the mic was losing in level and tone. After the first Coke incident, the level dropped about 3 dB. After a couple of poundings, it started to sound like it had been underwater for a while, but Dave finished the show with that mic. In the end, it was OK because it's a loud rock show.

"I limited a bit to tape with an 1176, but, in order to have flexibility in mixing, it was more like the 'oh sh*t' limiter for when Dave really laid in — so that it wouldn't distort the tape. I don't compress the vocal too much because the pumping will bring up the roar of the band behind the vocals. We left the vocal mics open during the entire set, and that's a challenge — especially if a singer doesn't have a strong voice. We did the band Black Lab and their singer had a real nice voice, but it wasn't very strong. I remember building the mix around his vocal because there was a lot of drum kit and guitars in the vocal mic. I couldn't bring the vocal mic down, so I had to bring other instruments up around it. I'm a huge fan of the [Eventide] H3000 for vocals, and I'll use the pitch shift with a slight (5 cents) shift up and down. I use it on a lot of mixes, from the slight to the extreme. It helps lift vocals out of the mix without turning up the faders too much — both in live situations and in the studio."

As far as effects go, Michael tries to corner the band's engineer before they leave "to try and get an opinion of how to mix it to do the band justice. I'm not making a studio album, I'm trying to capture the live show with really good mics and a fair amount of isolation. The engineer might say, 'This is where I use a Roland Space Echo or an old SPX90...' I'll take notes and try to match that. The room mics are good for this because, when he's mixing the live show, his effect cues come through the PA, and I have them on tape. If tracks are open, I'll also record the live engineer's effects by taking them out of two subgroups from the live console and printing them (we have tie lines between the control

room and the FOH position).

"Once Dave got the audience on its feet the afternoon went a bit better — the crowd started throwing stuff, a lot of girls got onstage and took their tops off, and Dave became comfortable. He asked the audience to light the couches on fire, but they didn't comply with that request — thank God."

In addition to the *Rock Sessions*, Indre has also become the production home to WXPN's (Philly) World Cafe se-

ries. Nationally syndicated to 100 public radio stations, shows have included bands such as Wilco, Dave Matthews, and Bruce Hornsby. Michael Comstock continues to keep Coca-Cola off his equipment and marches away from the couches at Indre Studios. He may be reached via e-mail at Mcknife@pond.com. You can visit the Indre Studios Web site at www.indrestudios.com, or call 215-463-3000 for more information. **EQ**

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Included with the microphone is a 25-foot shielded cable with a TA5F input connector and two standard 3-pin XLR output connectors. The price is \$450. For more information, call Audio-Technica at 330-686-2600, fax them at 330-688-3752, or go to www.audio-technica.com. Circle EQ free lit. #115.

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Integrated Light and Sound Company introduces the MPM45.60 multiposition stage monitor speaker. This low-profile, compact design with oak finish is good for churches and formal settings. The 45.60 features a 45-degree bevel on one side and a 60-degree bevel on the other. This nearfield stage monitor has a wide coverage pattern — 70 degrees by 70 degrees through its full frequency range. Two 1/4-inch phone jacks are recessed at each end for easy loop-through from amplifier to monitor. Other features include a 200-watt maximum power capacity, a 96 dB/1-watt efficiency, a 12-inch Eminence low-frequency cone speaker and 2-inch Eminence high-frequency com-



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CIRCLE 89 ON FREE INFO CARD

Nady's Platinum 802 Series Wireless System is a 2-channel, UHF-band receiver/transmitter employing Nady's DigiTRU Diversity™ for reducing RF

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NADY SYSTEMS PLATINUM 802 WIRELESS SYSTEM

Nady sent *EQ* a system with the GT-5 transmitter; after several weeks, we added a second GT-5 transmitter. The Platinum 802/GT-5 combination was used as part of guitarist Donald "Buck Dharma" Roeser's stage rig during a period of national tour dates with Blue Oyster Cult.

Controls for the system's transmitter and receiver are minimal, but complete. The receiver's front panel has an On/Off switch, Channel-Select switch, power and RF indicators, and a 1/4-inch output. The rear panel is home to a microphone-level XLR audio out, as well as a squelch adjustment and audio level pot for the 1/4-inch output. Intended for connection to a mixing console, the XLR output delivers instrument level. The front-panel output delivers instrument level for connection to guitar and bass amps. The small, lightweight beltpack transmitter has an audio Mute switch, low battery LED, and a three-position switch for power off/channel 1 on/channel 2 on. A single Platinum 802 system offers a choice of two RF channels, but the system may be ordered in six differ-

ent RF configurations — allowing up to twelve 802 systems to run concurrently without interference (the systems have specific designations to clarify which one you have). Like many wireless transmitters, the GT-5 uses a 9-volt alkaline battery that delivers approximately 10 to 12 hours of operation.

An optional mounting bracket (the RM-1)

allows the 802 receiver to be mounted in one rack space.

OFF THE WIRE

The Nady Platinum 802 is probably the easiest wireless system to set up we've ever used. After connecting audio and AC lines, you select matching channels on the transmitter and receiver, turn the units on, and go (we didn't even need to adjust the squelch control). Initial-

ly, we raised an eyebrow at the on/off/channel selector on the GT-5 transmitter, thinking it might be too easy to move the switch accidentally during use, but the control is recessed (and stiff) enough that it never unintentionally moved to the wrong position. We did, however, find this switch difficult to see on dark stages.

The GT-5's battery compartment

ROAD Test

MANUFACTURER: Nady Systems, Inc., 6701 Shellmound Street, Emeryville, CA 94608. Tel: 510-652 2411. Web: www.nadywireless.com.

SUMMARY: Two-channel, UHF wireless transmitter/receiver with true diversity reception.

APPLICATIONS: Live sound and stage applications, including guitar and bass systems, handheld vocal, headset vocal, and lavalier pickup.

STRENGTHS: Uncolored sound, excellent RF performance, very easy to use, reasonably priced.

WEAKNESSES: Wall-wart power supply, channel setting on beltpack can be difficult to see on dark stages, limited frequency agility.

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EQ FREE LIT. #: 118



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Additional Features of the SPA1400C

- Built in 24dB /octave 2-way Linkwitz-Riley electronic crossover. Variable from 40Hz to 2.5kHz
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- Parallel Mono Switch (Signal paralleled after crossover out)

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EQ DRIVE!

BY DAVID
MILES HUBER

SPIKES AND SURGES AND NOISE, OH MY!

It really doesn't much matter whether you live in the heart of the city, on a remote island, or in the 'burbs — sooner or later, you're going to be hit by gremlins in the power lines that'll directly affect the performance of your system. Problems like power outages, spikes that make the lights glow brighter, noises that go buzz in the night, and power sags that can make your computer lock up are more common than we'd like to admit. Any of these can range from being a simple nuisance to factors that can shorten the life of your expensive and beloved equipment.

It's definitely not a question of "if" they'll happen, it's one of "when." From an economic standpoint, it's simply a matter of common sense — most of us have too much invested into our computer and music production systems not to protect them from power fluctuations that can potentially do some serious damage.

By using a good surge protector, you can safeguard your equipment and extend its life by allowing only clean,

safe power to pass through the lines. In order to do this, these devices must be able to reduce or suppress harmful excess voltages, as well as squelch any excess line noises that could be induced into the processing and audio pathways. At the extreme, should a high-voltage spike from lightning or other un-

known source appear, a good surge protector should "give its own life" in order to block additional spikes that

outlet that's not correctly wired (e.g., properly grounded), it might not work, and you won't know until it's too late.

3. Does it have thermal or quick-blow fuses that will disconnect your system from the power line in the event of a massive surge (preventing the passage of further surges)?

4. Does it have protected phone/fax and video cable



lines?
It seems that surges (due to lightning, etc.) can travel down these lines just as easily as through power lines.

5. Does it have enough outlets for your needs? They almost never do, and while I use simple power strips as a breakout from my protector, this will almost certainly void any equipment protection warranty. (It seems that only one device of the appropriate rating must be plugged into each outlet.) If this is a major concern, I'd recommend that you plug your computer and related devices into one surge protector and your other toys into another that has breakout strips.

One final rule-of-thumb: Don't trust your system to a cheap surge protector. Do

The EQ
guide
to surge
protection

might otherwise pass through the line. Here's a simple checklist to help you determine which type of protector would be best for your system:

1. Does it have a high enough power rating to support all the equipment that's to be plugged into it?
2. Does it have a wiring fault indicator? If the device is plugged into an

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your homework, use common sense, and go with a company that seems trustworthy. If they offer a "million dollar" replacement policy, look elsewhere! Damage to a \$4000 computer doesn't mean that you've just won a million bucks. The policy only covers replacement costs for any properly connected equipment that was damaged. Don't get sucked in by the hype.

SURGE PROTECTORS WORTH CHECKING OUT

During my research into surge protectors, I ran across a couple of devices that really grabbed my attention. Both of these, which are made by American Power Conversion (1-800-800-4APC; www.apcc.com), seem to be well suited to the needs of the small to mid-sized project studio.

The APC Back-UPS Office (\$109.99) is designed to provide surge protection and battery backup for a single PC workstation. This good-looking, 170-watt device includes six outlets (three of which include battery backup), fax/modem and network protection ports, wiring fault indicator, audible overload, "on-battery" and low-battery alarms, and a master On/Off switch. Basically, the Back-UPS Office offers surge protection for a few of your system's peripherals, plus battery backup for your CPU and monitor at a price that's hard to pass up. For those of you who intend to plug more than just a basic PC into the device, the Back-UPS 400 (\$169) or Back-UPS 500 Pro (\$299) would give you more time to shut down during a power failure by offering longer battery backup runtimes.

For those who want to protect all of their tools and toys, APC also offers the Network SurgeArrest 9. Also known as the NET9RM (\$124.99), this 1U rack-mount surge protector can be used to power nine separate peripheral devices (eight outlets are provided on the rear-panel, while one is conveniently mounted on the front). A guarded front-panel On/Off switch prevents accidental "turn-offs," while "plug pull protection" brackets can be mounted onto the back panel to prevent plugs from being accidentally removed. Both of these are warranted for two years and carry a lifetime equipment protection guarantee of up to \$25,000. **EQ**

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Applying noise reduction during mastering is like cleaning your windows: you don't realize how bad they were until they're clean. Although noise may seem audible only during quiet passages and breaks, remember that it's always in the background and masking

LOSE THE NOISE...

the overall sound. Removing this noise greatly increases transparency and opens up the dynamic range.

Today's powerful, computer-driven noise reduction tools can do amazing tricks, like remove stomp box noise and ground loop hum, even from finished 2-track mixes. This article concentrates on mastering tips for Sonic Foundry's Noise Reduction plug-in for Sound Forge (which I prefer to the DirectX plug-in version).

Noise reduction algorithms use a "noiseprint," which is a clean sample of the sound you want to remove (hiss, hum, etc.). If the beginning of a tune hasn't been trimmed, this noise is usually present before the instruments come in. The noiseprint can be long or short (typically short) — whatever it takes to capture the offending sound. Highlight the section you've chosen for the noiseprint, and play it back in looped mode; the sound should be smooth and regular, with no significant discontinuities.

The program translates the noiseprint into a series of points (a noiseprint envelope), as shown in graphical form. Each point represents a particular frequency band (there can be thousands of bands in a noiseprint). Signals lower than the point's height (level) are considered as noise.

Next, the program looks through a

given selection (which can be the entire tune) for any waveforms that fit this profile. If they do, the corresponding bands are gated with variable attenuation; in other words, the gate goes from "on" to a lower level, not necessarily full off. This is what removes the noise.

Typical attenuation amounts are 15–20 dB, although the optimum amount varies depending on the application.

Here are some tips.

DON'T CUT IT OUT

To help your mastering engineer in the quest for noise reduction, when you submit a tune, leave a few seconds of noise at the beginning and end, and don't fade out or fade in — those functions are better left to the mastering process anyway. Having an example of noise that occurs within a tune is essential for deriving noiseprints. Any excess can always be trimmed later.

THE DC OFFSET ISSUE

Before applying any noise reduction, check for any DC offset (the command is in the Process menu). DSP operations assume that the signal is centered around zero; if it is not, the effect won't be as the designer intended. Sound Forge's automatic offset compensation function works well, but make sure your selection

doesn't include any silence at the end or beginning of the song, as that will be averaged with the amount of offset. Start working with the noise reduction process only after removing any DC offset.

REVERSE NOISE REDUCTION

Many impulses in music have a fast attack and slow release. However, noise gates don't like to open abruptly — they're much

happier tracking a relatively slow curve. So, once you set up the noise reduction parameters, try reversing the file before processing it. The impulses now acquire a slow attack and quick release, which makes the gates happier.

FASTER DELETIONS

Let's assume you're ready to apply one final pass of noise reduction (it's not uncommon to do multiple passes of noise reduction, because removing one noise source often unmask a different one), after which you want to trim the beginning and end. Before reversing the file, trim any unnecessary space at the file's end.

Next, reverse the file, apply the noise reduction, and cut off the end of the file (which was the beginning, but, being reversed, is now at the end). This saves time (sometimes even a minute or more minutes) because Sound Forge has to rewrite a file to disk if you remove material at the beginning, or reverse the file. However, removing the end does not require a rewrite — just the time required to cut.

REMOVING GROUND LOOP HUM

One track in a recent project had hum at 60 Hz, but also prominent harmonics at 120 and 180 Hz (this is relatively common). I first tried to solve the problem with several stages of sharp parametric EQ notches, but that was too radical.

Everything looks better through a clean window

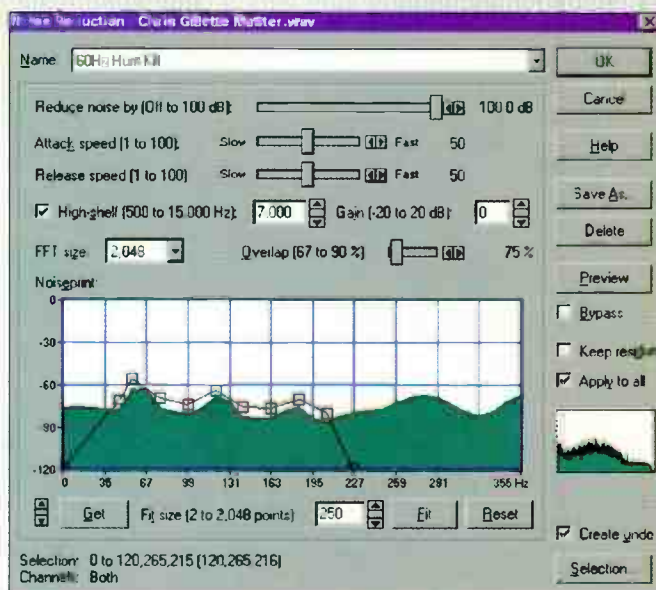


FIGURE 1

BY STEVE TURNIDGE

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Furthermore, the ends had been trimmed, making it impossible to find a clear noiseprint. Luckily, there was a soft passage that exposed the hum, and I selected the entire passage as the noiseprint. Then, zooming in on frequencies below 300 Hz in the noiseprint graph revealed the culprits: three peaks at the three frequencies (fig. 1). The noiseprint showed "humps" drawn around these frequencies.

I reset the selection, then manually outlined added points around the 60, 120, and 180 bumps (note the line drawn in above them in fig. 1), and added a bit of a slope to prevent any abrupt changes. With this type of signal, when setting the noise reduction amount, go for the maximum possible — 100 dB. The hum magically vanishes.

HAVE YOUR NOISEPRINTS BEEN SAVED?

Save the different noiseprints you find useful, because the same problems often repeat in someone's music (noise from a particular multieffects, amp, mic pre, etc.). You'll eventually learn to recognize these noise sources in other tunes. Also, hum you found on one tune might be present on all tunes in a given project if there's a noise source like a ground loop in the studio.

THE ISSUE OF RESIDUE

It's possible to listen to just the "residue" removed by the noise reduction process (click the Keep Residue option in the Noise Reduction dialog box). Always check this before making the noise reduction final to make sure that you're not taking more out of the signal than you want. Also, always have the Create Undo button checked, just in case

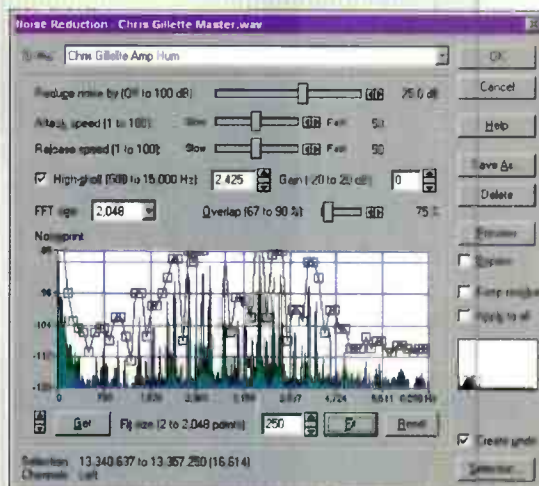


FIGURE 2

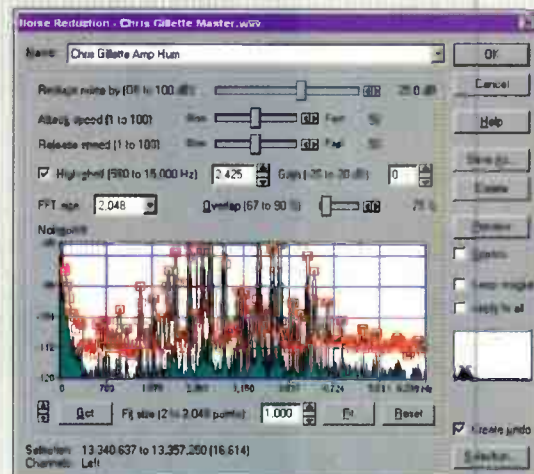


FIGURE 3

you accidentally hit OK instead of Preview someday (you will). If the residue contains significant pieces of the music as well as noise, better take a different noiseprint (try something shorter).

Additionally, if there is a certain band over-represented in the residue, you can manually lower the points in the noiseprint envelope corresponding to what you hear. One way to identify the offending frequencies is to copy the noise to another file, run a Keep Residue noise reduction (and actually hit OK instead of just Preview), and examine a sonogram of the resultant file. A quicker way is to keep lowering the points in the band(s) while the preview is running until you have removed the "overly deep cut." Another way to be less intrusive is to "reduce noise by" a lesser amount.

NOISE HUNTS

If you've been given a premastered, sequenced DAT, or CD-R with the beginning and end already trimmed, see if you can get the original master DATs from the band. Then transfer the DAT to Sound Forge and go hunting for noiseprints. When you find a good noise sample, save it. Later, reload the files you were given to master, and recall pertinent noiseprints to remove noise from the premastered files.

ONE CHANNEL ONLY

If one channel of your noiseprint appears clean while the other is noisy, take a noiseprint of only the noisy channel's noiseprint. The noise will probably be on both channels anyway, since it's likely that whatever is contributing the noise was not panned fully right or fully left, but has some energy in the other channel as well. So, apply the mono noiseprint to reduce noise in both channels.

NASTY NOISEPRINTS

Guitar amps can have nasty, spiky noiseprints with extremely sharp transients. Make the noiseprint long enough to include as much of just the noise as possible.

After analyzing the noiseprint, there will be a lot of "white space" under the noiseprint envelope (fig. 2), as the default value of 250 points isn't precise enough to follow the sharp spikes. Reset the noiseprint, and then increase the fit size from 250 to 1000. This draws a much finer curve that more carefully defines the spikes (fig. 3), but the trade-off is that the noise reduction process takes a lot longer. Unless you're patient, reserve this for special cases.

So there you go, ten tips. And we didn't even get into the high-frequency shelving filter! Well, maybe next time.

Seattle-based mastering engineer Steve Turnidge is a partner in Chuckie-Boy Records (www.chuckieboy.com); he earned his noise reduction chops from remastering noisy re-releases. He's also head of engineering operations at PAVO (www.pavo.com), a digital-audio-oriented design firm.

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GO(LD) NATIVE

Waves LTD has debuted the Gold Native Bundle, a complete collection of plug-ins for native processing on both the Windows and Mac platforms. This is a group of pro audio plug-ins that provides a total solution for all audio professionals with no additional audio hardware. The Native Gold bundle contains the new Pro FX plug-ins plus the Equalizer and Compressor from the famous Renaissance series of audiophile plug-ins. It also includes the L1-Ultramaximizer, full C1 (including compressor, gate, and sidechain), Q10-Paragrophic EQ, S1-Stereo Imager, TrueVerb-virtual space/reverb, TrackPac lite, PAZ (Psycho

Acoustic Analyzer), DeEsser, MaxxBass, and WaveConvert Pro. Each plug-in uses proprietary Waves algorithms with 32-bit floating point precision. The Waves Gold Native is available from Waves dealers for a MSRP of \$1200. For more information, call Waves at 423-689-5395, fax them at 423-688-4260, or visit www.waves.com. Circle EQ free lit. #120.

SPARK IT UP

Spark, a new digital audio mastering editor for MacOS, is available from TC Works. Spark takes a new approach to stereo-based audio editing, real-time processing, and mastering through its unique Browser window, integrating Wave editing, project file management, and playlist all at once. The Browser View is used to edit a file or build a playlist, while the Master View gives you Master Faders with PPM level meters, a phase correlation meter, and built-in Dithering in real time. Up to four stereo streams with five plug-ins each can be routed and processed simultaneously. Spark also includes TC Native CL, a VST-compatible compressor and limiter plug-in designed for mastering applications. A histogram display conveniently visualizes the "level distribution" in your recording. Spark's real-time engine bus works with 32-bit floating-point precision, and supports files up to 24-bit and 96 kHz. AIFF, QuickTime, SoundDesigner (SD2), and WAV files are also supported. For more information, call TC Works at 805-373-1828 or visit www.tcworks.de. Circle EQ free lit. #121.

DRIVE IN THE FAST LANE

Ricoh Disc Media and Systems-Center (DMS-C) has introduced the MediaMas-

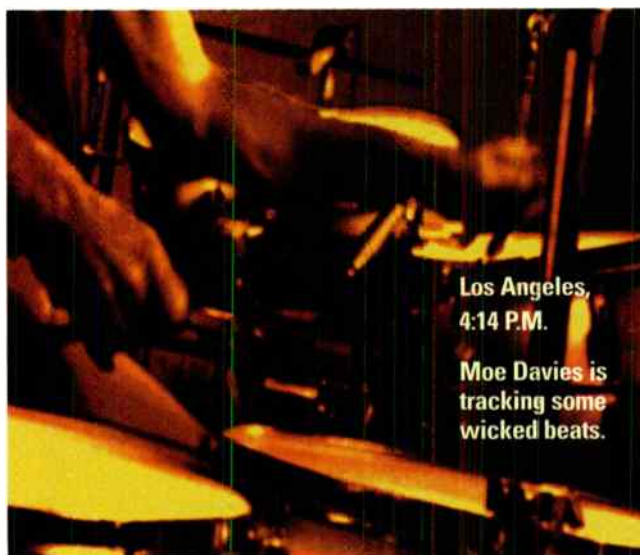


ter 4X CD-R/CD-RW drive package. The 4X CD-R/CD-RW speed combined with 20X

reading speed for all CD-R media make the MediaMaster the fastest drive available on the market. The MediaMaster MP7040A features an internal ATAPI interface for quick and simple PC installation. Priced at \$399, the MP7040A drive includes a 2 MB data buffer to ensure error-free recordings. The full package includes the MP7040A drive, mounting hardware, internal E-IDE cable, audio cable, a manual, a Quick Start Guide, and the following software: CeQuadrat Packet CD packet writing software, CeQuadrat WinOnCD premastering software, CeQuadrat just!audio personal audio software, and Seagate BackupExec scheduling and backup software. For more information, call Ricoh at 714-566-2500 or fax them at 714-566-2683. Circle EQ free lit. #122.

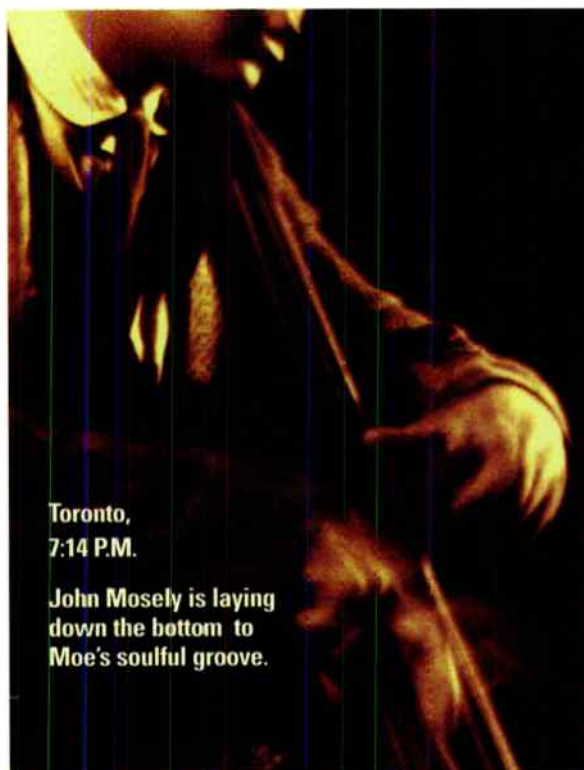
CLICK BE GONE

SEK'D America has introduced a new DirectX plug-in software product called Sampltools Declicker. The Declicker removes clicks and crackles from old vinyl or shellac records, 78's, and impulse-like disturbances from audio files contaminated during recording due to switching, digital crosstalk, or thyristor buzz. The plug-in allows the user to monitor only the noise in order to quickly set the process faders in real time. The Sampltools Declicker consists of two main parts: the declipping filter and the decracking filter. While the declipper filter is normally used to remove heavy clicks from old vinyl records or switching noise in analog and digital audio, the decracking filter removes any remaining clicks and crackles. The suggested retail price is \$199. For more details, call SEK'D America at 800-330-7753, fax them at 707-578-2025, or visit www.sekd.com. Circle EQ free lit. #123.



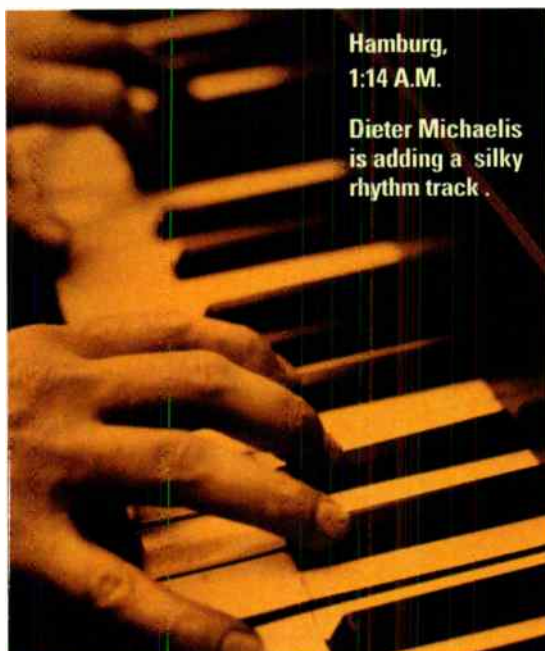
Los Angeles,
4:14 P.M.

Moe Davies is
tracking some
wicked beats.



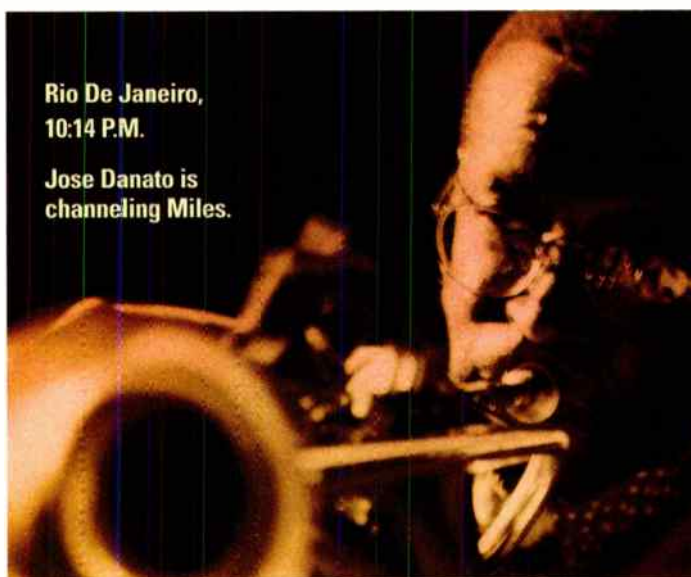
Toronto,
7:14 P.M.

John Mosely is laying
down the bottom to
Moe's soulful groove.



Hamburg,
1:14 A.M.

Dieter Michaelis
is adding a silky
rhythm track.



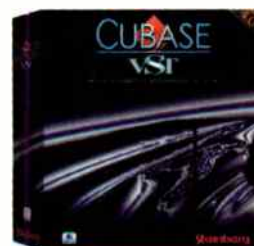
Rio De Janeiro,
10:14 P.M.

Jose Danato is
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CIRCLE 91 ON FREE INFO CARD

MINNETONKA MXTRAX FOR THE YAMAHA DSP FACTORY

Minnetonka Audio Software has the key to the Yamaha DSP Factory. With their MxTrax for the DSP Factory, the doors are open for production. This version of their multichannel recording and mixing software is the first software application

Get the most from your DSP Factory with this comprehensive control interface

to fully implement all of the features of this powerful hardware. The virtual nature of this hard-coded DSP system is unlike generic DSP-based processing. The Yamaha DSP chips are dedicated to specific audio functions, allowing powerful processing, low latency, and excellent sound quality to be very inexpensive. However, they require

third-party software to access this processing, and Minnetonka not only provides the tools, but they have also created a highly versatile user interface.

With MxTrax, the DSP Factory really does become a virtual 02R console. It is both a mixer that helps you work and a multitrack recorder that is easy to use. Both are integrated in a way that defines how drag-and-drop should work. The Yamaha DSP Factory (reviewed in the April '99 issue of *EQ*) supports up to 24 input channels (from external inputs or playback from up to 16 simultaneous audio tracks) and 16 internal busses patchable to up to 28 points (including eight outputs and recording to up to eight simultaneous audio tracks). However, some busses are configured as auxiliaries, some as tracking/output busses, and some as stereo mix/monitor busses. The inter-

nal effects processors use two of the auxiliary busses and all of the inputs include attenuation, polarity (phase), 4-band parametric EQ, dynamics processing, signal delay (except effects returns), panning, and bus assignment.

This vast array of controls has proven to be difficult to manage on all of the other software supporting the DSP Factory that I've tested. A number of applications support most of the features, but all of them fail to give the user comprehensive and flexible control of the mixing/recording/effects hidden in the Yamaha hardware — except MxTrax. It is designed to understand the features and limitations of the Yamaha DS2416 hardware (the PCI card that installs into the computer and contains the DSP chips) and allows the user to access all the features without creating unworkable configurations. In addition, MxTrax offers the user far greater choice in configuring the mixer than any hardware alternative could.

The recent Minnetonka Mx51 review (in the February '99 issue of *EQ*) also discussed many of the features that MxTrax offers. In fact, a version of this 5.1 surround mixing program will be available for the DSP Factory hardware by summer, as presently MxTrax allows only 2-channel panning (but it can be between any two busses, tracks, or hardware outputs!). As David Miles Huber explained so concisely in his Mx51 review, Minnetonka takes a build-your-own approach to mixer layouts that is both flexible and extremely easy to use. With the DSP Factory implementation,

as you drop input faders (or output faders, pan pots, aux sends, EQ modules, dynamics processor, effects returns, etc.) from the button bar to a channel strip, the on-board processing of the DS2416 is accessed without loading down your CPU. The channel output assignments offer access to any bus, track, or output, and can be selected before and after the panner.

Just like an analog mixer, you can expect to have EQ on every channel. Building your own mixer layout doesn't require remembering what can and can't be done. The software offers only the appropriate choices supported by the hardware, without being cranky about it. Automation is not only easy to use, it also is extended to every control and effect parameter (even changing effects types on the fly). While selecting automation modes (read, write, and update) is effortless, you cannot perform offline editing

TEST Drive!

MANUFACTURER: Minnetonka Audio Software, 17113, Minnetonka Blvd., Suite 300, Minnetonka, MN 55345. Tel: 612-449-6481. Web: www.minnetonkaaudio.com

APPLICATIONS: A graphically rich multitrack audio recording and mixing application specifically designed for a Windows PC and the Yamaha DSP Factory hardware.

SUMMARY: The most functional audio workstation control interface yet built for the DSP Factory.

STRENGTHS: Flexible, yet easy-to-use, mixer that can be designed to suit your personal preferences; transparent access to DSP Factory signal processing; an excellent audio-only multitrack workstation; integrates external hardware controllers.

WEAKNESSES: No indication on the mixer panel when channel dynamics are bypassed; knobs must be operated with a computer mouse or external controller.

PRICE: \$499; \$895 for Mx51 for the Yamaha DSP Factory; \$396 to upgrade from MxTrax (DSP Factory version) to Mx51 (DSP Factory version)

EQ FREE LIT. #: 124

of the automation data; you must grab the control and update the move.

Graphically, the mixer and track/wave file editor offer a clear view and ease of use (see fig. 1), but the size of on-screen controls is fixed, so a large, high-resolution monitor is recommended. The Tracking window provides tools

BY WADE
MCGREGOR

Perfect Pitch in a Box

(and at \$699,* Perfection's in Reach)

*Estimated street price based on an MSRP of \$849. Your mileage may vary.

"[The ATR-1] is one of those few rare finds that I now find it hard to imagine making a record without."

William Whitman
Recording magazine

"The ATR-1 saves us an unbelievable amount of time. It goes with me wherever I go."

Al Schmitt
Producer

"The ATR-1 is one of those products that can save your butt. In fact, it saved my butt twice... it is indeed magical."

Rob Schrock
Electronic Musician magazine

Here's what some ATR-1 users have to say:



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~MADAME MARIE CURIE*



"Nothing helps your peace of mind on tour like an ATR-1 in the rack."

~FRANZ KAFKA*

*not their real names

for the Mac and PC. In fact, back when we introduced it, *Recording* magazine hailed Auto-Tune as a "Holy Grail of recording."

Now, with our new ATR-1™ Intonation Processor, you can get the power of Auto-Tune in a simple 1U box. Without the need for one of those pesky computers.

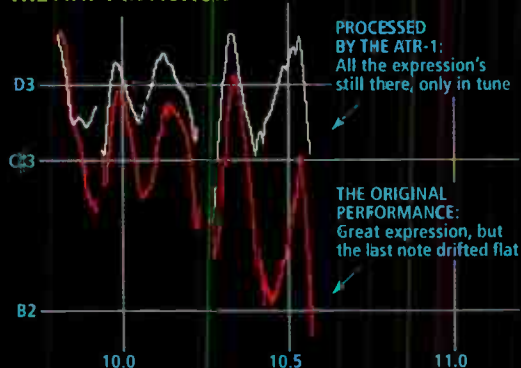
Simply stated, the ATR-1 corrects the pitch of a vocal or solo instrument, in real time, without distortion or artifacts, while preserving all of the expressive nuance of the original performance. Really. All the rest is just details.

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Of course, words are cheap (well, actually, when printed in a magazine ad like this they're fairly expensive). But hearing is believing. Try out the ATR-1 at your local Antares dealer or call us for a free demo CD. Either way, we're confident you'll be convinced. Really.

OK, let's be honest. For most of you, "Perfect Pitch in a Box" is right up there on the credibility scale with Elvis sightings and miracle three-day weightloss. Unless, of course, you happen to be one of the thousands of audio professionals who already depend on Antares's amazing Auto-Tune™ pitch-correcting software

THE ATR-1 IN ACTION



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EQ Drive!

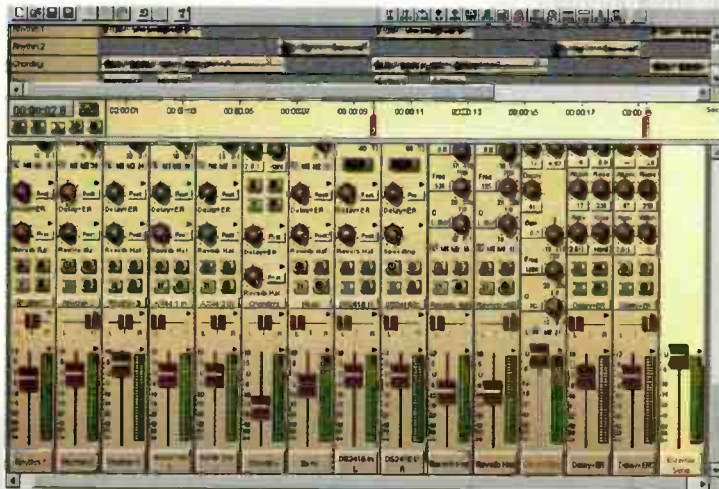


FIGURE 1: The MxTrax display can show both track (upper section of window) and the mixer with immediate access to both. A button bar (top right of screen) provides all the components for building the mixer, such as the one shown here. The user can design an interface for all of the hard-coded processing/routing of the DSP Factory and connect it to tracks and outputs in just a few seconds.

without needing to access a menu (your cursor simply changes depending where you move on the waveform display), making editing extremely quick, and the edit screen and mixing screen are simultaneously active! The mixer makes extensive use of control knobs (a mouse-unfriendly control), but they are con-

strained well (values change as knobs are dragged across or value boxes are dragged up/down). I would like to see some parameters accept numeric values in addition to graphic controls. I also would like to have an indication of which EQ or dynamics are currently bypassed. MxTrax doesn't sequence MIDI data, but it can be controlled via MIDI with external hardware, such as pre-built maps for the Yamaha 01v, CM Automation Motormix, Peavey 1600x, and Mackie HUI. MIDI timecode synchronization and DirectX support will be supported in forthcoming updates.

MxTrax for the Yamaha DSP Factory creates a DAW that is both affordable and feels like a professional audio tool. The features are far too vast to even list in this review, so check out the Minnetonka Web site or your local dealer for a demo. If you own a DS2416 (or two), you won't know how much your factory can produce until you install MxTrax for the Yamaha DSP Factory.

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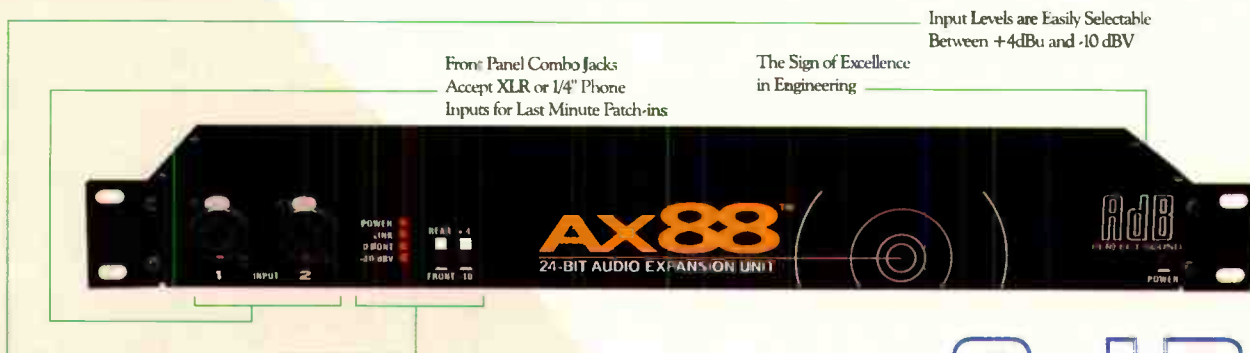
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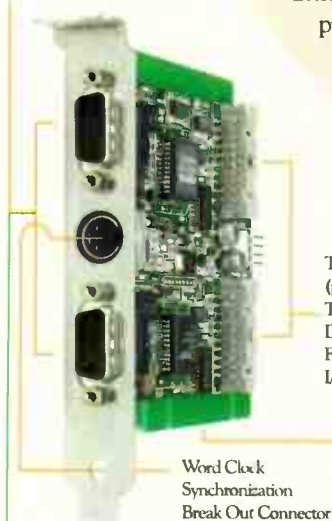
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sounds one track at a time. This results in tracks that may have the musical feel, but lack the blend that only happens when they share an acoustical environment with all of the space between instruments, reflections from walls, and the mixing of sound that happens in a large recording studio. Cakewalk has come to the

However, most studios can't afford to have a big, well-designed soundstage. Often, in fact, many projects stem from the work of a single musician creating the

a studio space for far less money than you could rent one.

SoundStage is a virtual recording studio that allows you to place each Performer (track or series of tracks) in a location and then record the result with a stereo microphone. If you process each track through the Sound-

TEST Drive!

MANUFACTURER: Cakewalk, 5 Cambridge Center, Cambridge, MA 02142. Tel. 617-441-7870. Web: www.cakewalk.com

APPLICATIONS: A DirectX plug-in that creates a recording soundstage of your design complete with stereo microphones.

SUMMARY: An interesting approach to adding reverberation, early reflections, and even leakage between instruments that creates a real live feel to those carefully crafted (but isolated) audio tracks.

STRENGTHS: A unique approach to adding ambience; wide variety of microphone positions and patterns; easy to use; very creative production tool.

WEAKNESSES: Only allows one or two tracks (performers) to be processed at a time, although all of the locations for up to 20 performers can be created and saved in a single preset; results in processing pairs of tracks varied between host applications.

PRICE: \$249 (requires DirectX compatible audio software application).

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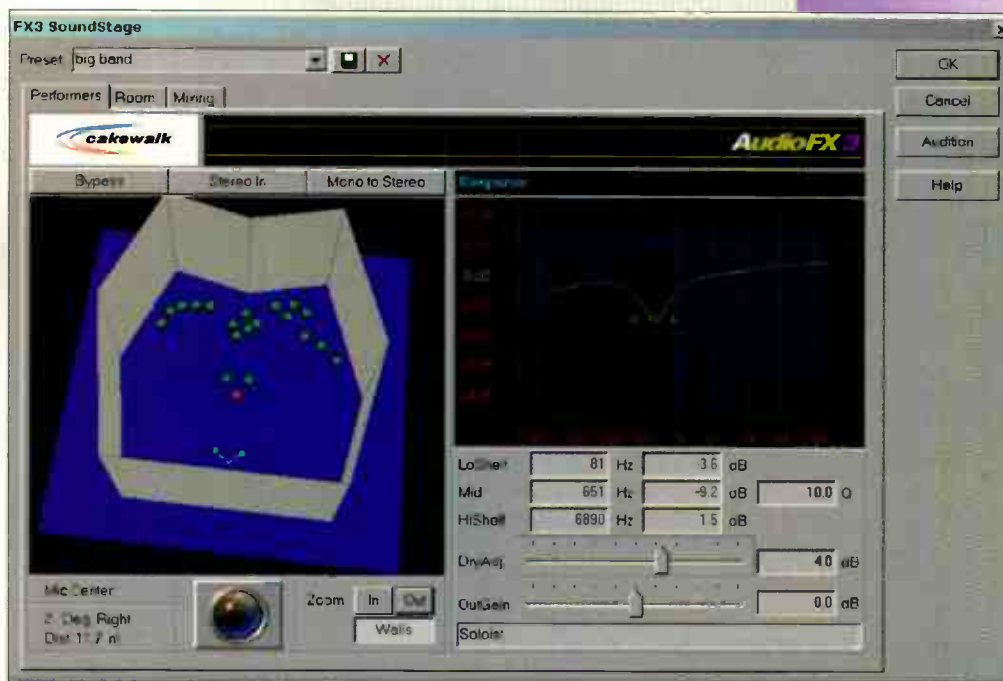


FIGURE 1: The Performers dialog tab for this DirectX plug-in provides graphic placement of the performer's location (red dot is active performer, green dots are inactive performers) and equalization, in addition to the location of the stereo microphones (blue dots) within the tall grey walls while the ceiling is transparent. A shiny trackball beneath the room graphic allows the model view to be rotated in 3D space.

BY WADE
MCGREGOR

rescue with a DirectX plug-in called Audio FX3 SoundStage that provides

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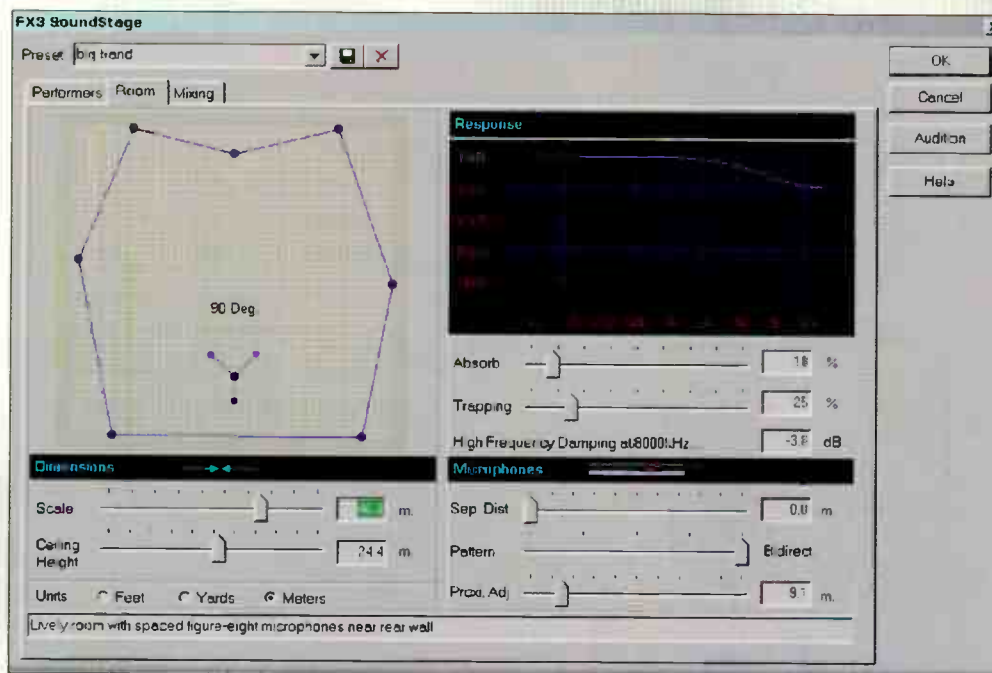


FIGURE 2: The black dots in the right graphic screen are the links between the seven walls, which can be dragged with the mouse to shape the room. The purple dots represent each of the stereo microphones, also movable with the mouse. The acoustical qualities of the room are set using the dimension and response sliders (high-frequency roll-off can be adjusted graphically). The microphone parameters are set with the controls in the lower right.

The software is a DirectX plug-in that works with any DirectX-compatible PC software running on a Pentium 200 or faster machine (P166, if you're patient) and provides the processing to either single-channel or stereo audio. Unlike other reverberation or ambience processing, SoundStage offers the user a virtual room (with a floor, seven connected sidewalls that can be reshaped to suit, and a variable height ceiling) where each Performer (an audio track) is located and stereo microphones are positioned. While the room shape is limited to seven wall surfaces, this provides a very wide range of shapes and qualities without getting into complex room model construction. In fact, shaping the room couldn't be easier. Your mouse moves the connection points between each wall and the overall size of the room is scaled in feet/yards/meters using a slider or numeric entry. The ceiling height is also set using a slider or numeric entry. In a few seconds your room is ready for the gig. The locations for each virtual performer are added with the right-mouse button

and then dragged to a location in the room. Viewing the 3D room is handled by a very well designed "virtual trackball" and quickly allows you to see the relationship of even complex setups.

Unlike typical reverberation processors, SoundStage does not include a reverb time control; instead, this is determined by the room size and room response parameters of the model. These are highly flexible controls that are far more direct and intuitive than you might expect. The room decay is set by an Absorb slider (controlling the early reflection level) and Trapping (strange use of the acoustical term, but it controls the late reverberation level) slider. The High Frequency Damping level is controlled graphically or numerically. The result can vary from the lively early reflections of a small studio — that add ambience and blend to rhythm tracks — to a huge cathedral that embellishes the choral harmonies of the background singers.

The stereo microphone is positioned graphically and picks up the sound from the room along with the direct sound from each instrument.

best "instant demonstration" I have ever heard of the possibilities of using different pickup patterns and microphone spacings. That alone is worth the price of the software.

Each sound source location in the virtual room is called a Performer. You would create and name up to 20 Performers for each track of your recording. Each of these Performers has parametric mid, low-pass, and high-pass filters to adjust its tone within the virtual room. Although this is akin to equalizing a reverb send, it can be far more important if you wish to "mix" through the SoundStage to create a virtual purist (can those words be used together?) stereo recording. There are also controls for the Dry send level and Output level for each performer. This allows you to process instruments, such as a kick drum, with very little reverb while still placing them in the stereo pickup of the SoundStage.

Your multitrack recording (in Cakewalk Pro Audio 8, Emagic Logic Audio, Minnetonka MxTrax, SEK'D Samplitude Studio, Steinberg Cubase

This allows you to create the stereo panning, mix, and blend that are consistent and natural. Pickup patterns can be set for omni, cardioid, supercardioid, hypercardioid, bidirectional (figure-8); stereo microphone spacing can be coincident or up to 100 feet (30.5 m) apart at any angle between 0 and 180 degrees. A Proximity Adjust allows the direct-to-reverberant level to be adjusted as a microphone parameter (or you can use the Dry Adjust slider). The stereo microphone radically affects the quality of the ambience and direct sound from the instruments. Just like a real stereo microphone, the pickup of noncoincident microphones will include comb filters when combined to mono, but will also create the kind of enveloping stereo ambience rarely achieved in reverberation processors. The microphone parameters are the

VST, or any other DirectX-compatible audio software) is processed track-by-track through SoundStage. By selecting an appropriate Performer for each track, you create the panning, mixing, and ambience. The result is returned to stereo tracks, a mono track (although this obviously limits the result), or streaming through the playback mix, depending on the application it is used within. Using SoundStage as a track-by-track process creates amazingly real perspectives and room ambiences that are difficult or impossible to achieve with any other processor. I found that trying to process two mono tracks produced quirky results, and it was more reliable to process mono tracks (returning to stereo tracks) one at a time. Of course, you can also use it to process the final stereo mix, simply to add the early reflections and reverb of the virtual room you've created.

If you have recognized the need for a space to record in a good large recording studio, but don't have the funds to build one, then Cakewalk has just the DirectX plug-in your audio tracks need. An excellent set of interface controls makes the potentially complex task of room simulation very easy, and presets are available to get you started or to save your favorite creations. The methodology of creating a Performer that can be allocated to each track is an excellent way to sidestep the limitation of current multitrack software processing. The result is a tool that can add a purist recording quality to tracks that have never even seen a microphone. Cakewalk's Audio FX3 SoundStage is an exceptional tool for adding the finishing touch to any session.

Wade McGregor is a principal consultant for Mc2 System Design Group, an acoustical consulting firm based in North Vancouver, BC. For more info visit their home page at www.mc-squared.com.

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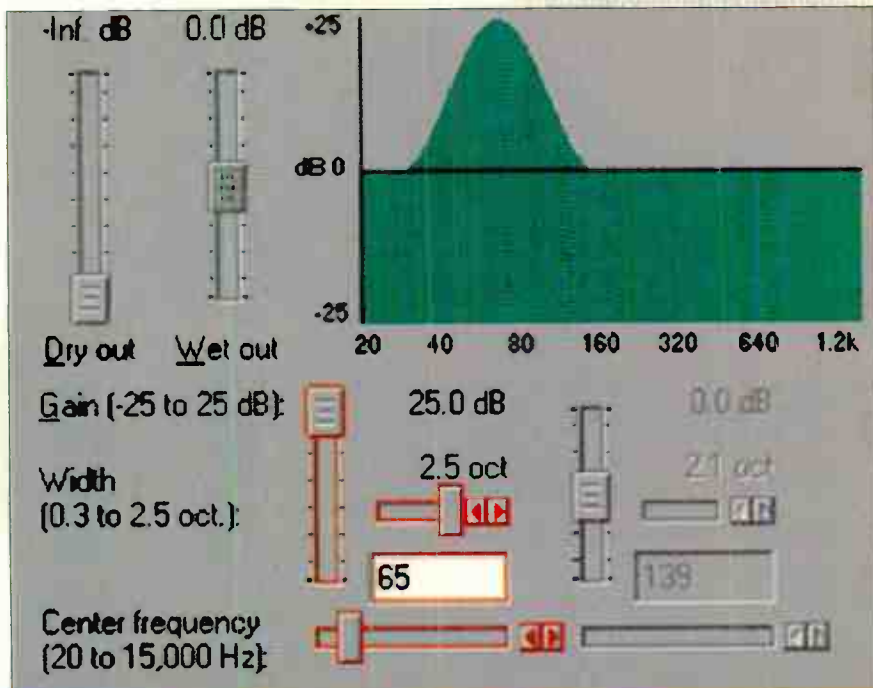


Soundscape Version 2.0

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EQ Groove

EQ GROOVE



GROOVACIOUS AUDIO EDITING

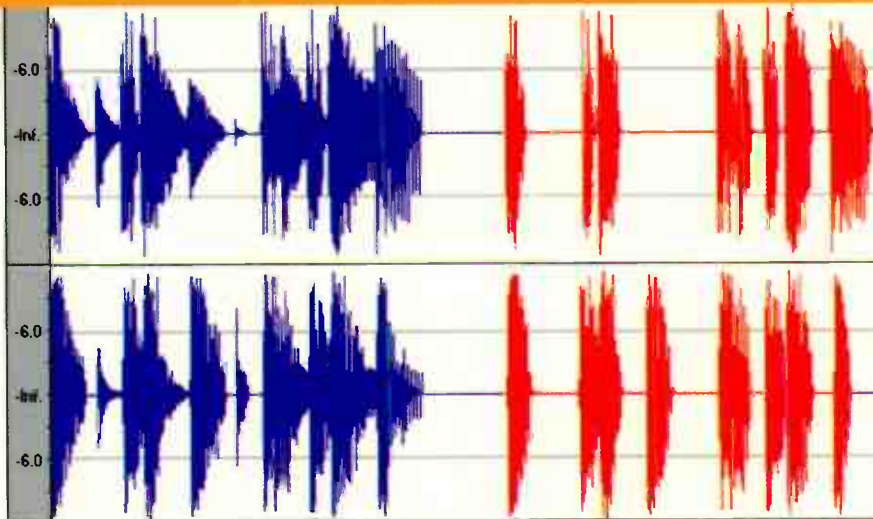


FIGURE 1 (TOP): The parametric stage that boosts the bass is highlighted in red. There's 25 dB of boost, and over a 2.5 octave bandwidth (the maximum possible with this program), centered at 65 Hz. FIGURE 2: The original loop is shown in blue and the "percussivized" loop in red. Note how there is much more "space" between hits in the second part.

BY CRAIG ANDERTON

Rhythmic loops are usually the "building blocks" of groove-oriented music, but when it comes to modifying them, few musicians go beyond changing the loop length using time compression/expansion. Digital audio editing programs such as Cool Edit, Sample Wrench, Sound Forge, Wavelab, and Peak, however, are excellent for "personalizing" loops in a variety of ways. Here are some specific tips.

Beat Emphasis: One loop was almost perfect for a particular tune, but its relatively busy kick drum part was somewhat problematic — I needed more of a slammin', "four-on-the-floor" vibe. The solution turned out to be quite simple: boost the bass region on every beat. Boosting about the first 25 percent of the beat (in other words, the same duration as a 16th note falling on the beat) seemed about right. This emphasized the kick when it fell exactly on the beat, but didn't affect the other kick accents, as they simply receded a bit more into the background.

You can, though, even "synthesize" a kick drum in loops that don't really have one. For example, there's a conga loop in the Ensoniq ASR-X "groove box" that I wanted to use for a break, but it had no kick. Mixing a kick into the loop didn't sound right, as there wasn't enough contrast between the "break" and what had come before. The same solution as above did the job: boost the bass frequencies on each beat. This added a nice bass "thump" that kept the beat going, without actually sounding like a kick.

Most drums have enough bass content that boosting in that region

Some techniques on how to personalize your loops with a digital audio editor

can deliver some serious bass whomp. Sometimes, this requires two passes of the EQ to double the amount of boost if the bass content is particularly thin.

Fig. 1 shows the paragraphic EQ settings used in Sound Forge to boost the conga loop low end; to hear the loop before and after processing, surf on over to www.eqmag.com, where you can download a short, 44.1 kHz/mono/16-bit WAV file example.

A similar technique works really

well when you want to emphasize beats 2 and 4, but this time, boost the upper midrange a bit (at around 1–4 kHz, depending on the application). Again, emphasizing the first 25 percent of the beat seems to work best.

There are a few cautions regarding these boosting techniques. First, don't boost too much — often a little bit of emphasis, like 2 or 3 dB, is all you really need. Second, if you intend to boost by 2 or 3 dB, you will probably need to

drop the overall level by an equivalent amount before boosting. Otherwise, boosting might create distortion.

Click Fixing: With either of the above techniques, make sure the region you boost begins and ends on a zero-crossing (i.e., where the level is neither positive nor negative). If not, then there can be a level discontinuity between the boosted and non-boosted regions that could produce a click or pop. Although it's sometimes possible to zoom way in and "draw out" clicks using a pencil tool or equivalent, a click removal algorithm intended for de-clicking vinyl can often do the job better and faster. It's difficult to give general guidelines owing to the different types of de-clicking algorithms, but the best approach is to experiment (making liberal use of the Undo command!) until the click disappears.

Kick Removal: One typical "groove move" is to take a loop with a prominent kick and remove the kick when you want to chill out the feel somewhat. If you make your own loops, this is easy: simply create two different versions — one with and one without the kick drum. But what if you're using a prerecorded loop where you can't mix out the kick drum?

DJ-mixer designers often choose a corner frequency for the bass tone control that removes most of the kick when you go for a full bass cut. With a digital audio editor, you can cut the bass response using a low-frequency shelf (a corner frequency of 100 Hz seems like a good starting point), but the slope may not be drastic enough to remove the kick entirely. In this case, simply do multiple passes; for example, with a 12 dB/octave slope the second pass will give a 24 dB/octave response, the third pass will give a 36 dB/octave response, and so on. (If you're into analog filters, think of each pass as adding another "pole" to the filter.) Repeat as necessary until you've marginalized the kick.

"Percussivizing" A Loop: Here's a cool trick for making a loop more percussive-sounding: apply noise-gating to remove lower-level sounds, so that

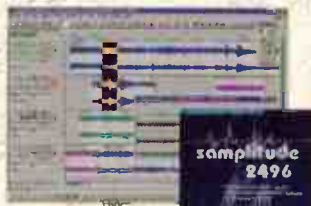
continued on page 123

Klangerzeugung



Calling all Studio Klangerhunde! * Real German rocket scientists from the University in Dresden (SEK'D) have created Samplitude 2496, a program that will record cleaner, edit quicker and burn better sounding CD's than any other system. Just ask the editors of Electronic Musician and EQ.

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CIRCLE 76 ON FREE INFO CARD

World Radio History

Coming soon to your favorite retail establishment is a trio of signal processors specifically designed to

Housed in a 2U, rack-mountable chassis, you can't miss this processor. Its bright red color, combined with a

collection of large, easy-to-grab knobs and buttons, make the WarpFactory a visual standout in any equipment rack. Upon closer visual inspection, you can't help but wonder,

FIRST LOOK: ELECTRIX WARPFACORY VOCODER

meet the needs of the remixer, groove producer, and musician alike. With a focus on real-time, hands-on control and the ability to be "played" like instruments, the Electrix WarpFactory vocoder, MO-FX multieffects unit, and FilterFactory analog filter are likely to find homes in a variety of environments ranging from the dance club to the recording studio.

With the real-time everything WarpFactory, what you see is what you get

Even though you probably haven't heard of Electrix, they're not newcomers to our in-

dustry. Based in Victoria, BC, Canada, the company is

LCD?" Forget about it — it doesn't exist. We're talkin' real-time everything. Grab a knob, rotate it, listen 'til you're happy, and get on with your life. That's the message here. With a full MIDI implementation, the WarpFactory transmits Continuous Controller messages that can be recorded into your favorite sequencer — enabling you to re-create your various sonic effects accurately and consistently.

Making our way from left

to right across the unit's front panel, we see the formant input section, which consists of an XLR mic input, its associated Gain control, and a Select switch. There are also three LEDs for Clipping, Optimum signal, and signal Present. The Select button is for choosing your desired formant (the signal to shape the sound) input. The WarpFactory enables you to superimpose the formant onto the source (the sound to be shaped). Choices include Mic, Line (with Ess On or Off), and Auto. Ess On delivers the vocoder effect, while Ess Off is better suited for modulating music with another music source. Auto mode uses only the

source input to morph, or "warp," your signal. Multiple presses of the Select button enable you to make your choice.

Moving on to the formant warp section, the WarpFactory provides a High/Low band select switch with associated LEDs. The high setting works best for most types of music, while the low position is more effective for drums or bass. The next three rotary pots are Gender, Q, and Order. These tools are used for shaping the "warped" sound — enabling you to take the effect from intelligible to as outrageous as you deem appropriate.

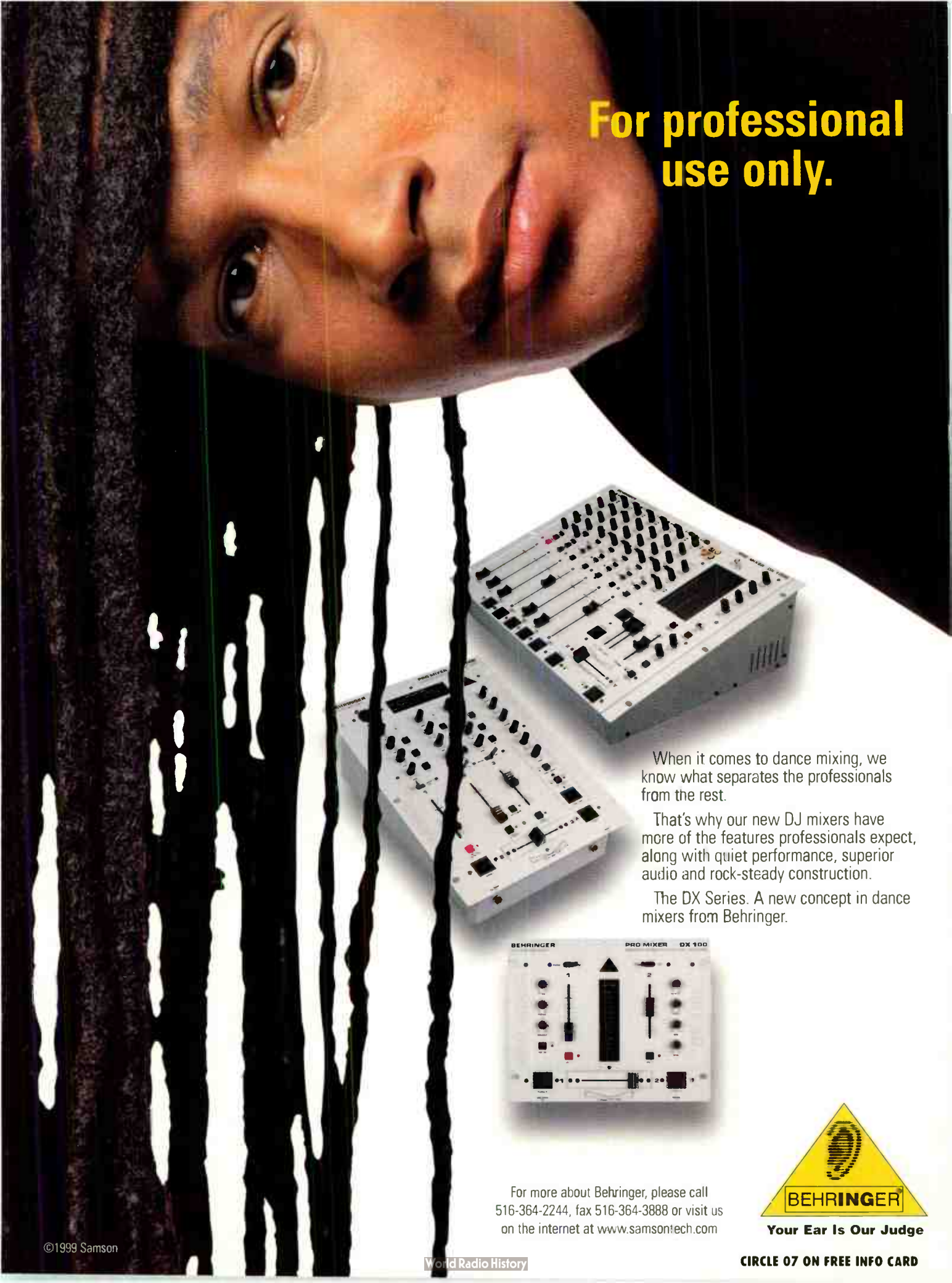
The next two rotary pots (stacked vertically) are the Robot Pitch and Noise Mix controls. Robot Pitch introduces a synth waveform to the source signal. With the Input Select switch set to the Mic position, the Robot Pitch control enables you to achieve the classic

vocoder sound. The Noise Mix control introduces broadband noise to the source signal and is effective for making the vocoder sound more intelligible. Completing the formant warp section is the Formant Freeze button, which enables you to seize and hold a particular formant while tweaking the various parameters.

The WarpFactory's last section contains an Effect Mix control, Source Kill switch, and LEDs for source, output, power and MIDI, plus a Bypass switch. The Effect Mix is the equivalent to the standard wet/dry mix control. The Source Kill switch enables you to mute the source input so that the device can function in an auxiliary send configuration. The LEDs provide visual feedback for their associated functions, while the Bypass switch enables you to temporarily disengage

continued on page 123

BY ROGER MAYCOCK



**For professional
use only.**



When it comes to dance mixing, we know what separates the professionals from the rest.

That's why our new DJ mixers have more of the features professionals expect, along with quiet performance, superior audio and rock-steady construction.

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on the internet at www.samsontech.com



Your Ear Is Our Judge

GROOVE GEAR

TRIPPY CLIPS

Sonic Foundry's ACID DJ is a software program that allows any PC user to create professional-sounding dance music in just minutes. ACID DJ provides PC users with access to a library of more than 600 prerecorded, royalty-free sound clips (dance loops), including synthesizers, bass, guitars, drums, and unusual noises. ACID DJ also includes a wide assortment of dance music styles such as urban, house, techno, industrial, acid jazz, and hip-hop. To create their own dance mixes, users select the loops with the click of a mouse, then they can double-click to incorporate them into the song. Then the user simply clicks "play" to hear the song. With ACID DJ's on-board digital studio, users can even mix and match loops

performing engineers. The program allows the user to perform normalization, time stretching, and pitch changing in real time. The DJPower program comes with a recording studio that allows users to record from a CD-ROM drive or other external sources. Features include the ability to compress, normalize, mix, and edit during recording. The program offers drag and drop operations, including playlist creation and editing, express recording, play, erasing, and copying songs. The control panel includes volume and pitch control, mixer/fader control, and a choice of manual or auto mix. DJPower ships with sound effects and an equalizer. It also offers an optional add-on of 96 hot buttons that allow

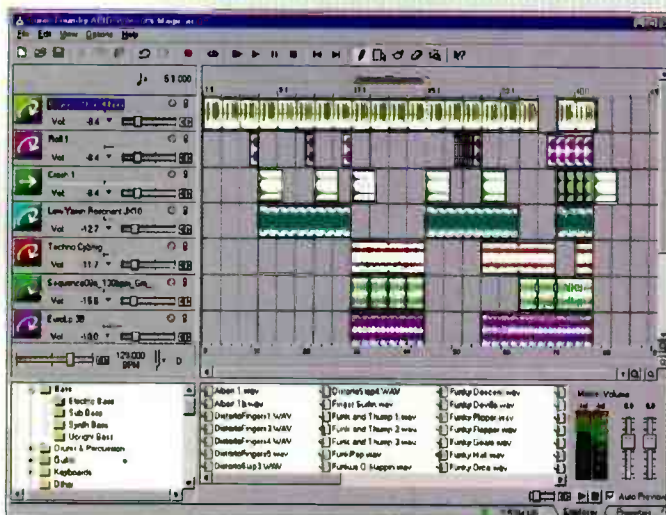


and footswitch control. The suggested retail price is \$1200. For more information, call Sony at 201-930-1000 or visit www.sony.com. Circle EQ free lit. #128.

IN THE LOOP

Yamaha's SU700 Loop is the latest member of its "24/7" line of products for the DJ and dance production market. The SU700 is a multifunction music production center that is a hybrid combination of sampler, sequencer, and drum machine. Features include 4 MB of sampling wave memory, a large assignable ribbon controller, 12 real-time control knobs, 10 trigger/trackpads with four banks, and separate audio-in and Master pads (providing a total of 42 virtual triggers). Options include a SCSI interface or output expansion board featuring six analog outputs and digital I/O. The unit's sequencer features 42 tracks and has an adjustable tempo from 40.0-299.9 BPM and a timing resolution of 1/480 ppq. Its AWM2-based (Advanced Wave Memory 2) sampling engine features 64-note polyphony, adjustable data format (8- or 16-bit linear), and sampling rates ranging from 44.1 kHz 16-bit stereo down to 11.025 kHz 8-bit mono. For easy loading and storing of samples, a 3.5-inch 2HD/2DD disk drive has been included. The suggested price is \$1299. For more information, call Yamaha Corporation at 714-522-9011 or visit www.yamaha.com. Circle EQ free lit. #129.

quick access to sound effects, commercials, or songs. The DJPower software sells for \$750. The software also ships in a variety of computer systems that range in price from \$2770 to \$4870. For more information, call DJPower International at 650-964-5339 or visit www.djpower.com. Circle EQ free lit. #127.



to create multiple track recordings. Users can even add their own vocals by simply plugging a microphone into their PC sound card. For more information, call Sonic Foundry at 608-256-3133 or fax them at 608-256-7300. Circle EQ free lit. #126.

PRODUCING POWER

DJPower International's DJPower software is specifically designed for

ON THE FLY

Sony's MDS-DRE1 is a MiniDisc recorder/player that is designed specifically for performing engineers. It can record, edit, and play tracks "on the fly" from any source while the song is being played, as well as create customized mixes and audio transitions in real time. It also has pitch control, 32 cue memories for locating phrases, real-time looping controls,

SCIENTIFIC BREAKTHROUGH

Phat Goes LOUDER!



IN A BREAKTHROUGH some scientists are ranking alongside Newton's apple antics, Keyfax Hardware has successfully managed to increase the maximum output volume of the Phat.Boy MIDI Performance Controller beyond the number 10.

For decades, ten has been regarded as 'as loud as you're going to get, man.' But after years of research at his BioCroft on the remote Scottish island of Buggarme Keyfax engineer Hamish McDuffGen finally cracked the code.

After he mended that, McDuffGen found the solution, and after he'd drained that the answer, he said, was simply shtaring him in the face.

McDuffGen's #11 galoshes provided the inspiration for Phat.Boy's Added Volume Level capability.

With Phat you can not only tweak sound and effects parameters for hundreds of front panel-less hardware and software synths, samplers, and effects processors, in real time, you can blow up speakers, annoy the neighbors, get hired as a radical DJ.

"Controllors were always such boring animals," says McDuffGen, speaking from his new post as Section Commander of Thoroughly Crazy Hardware (SCoTCH), the famous Highlands & Islands startup. I wanted Phat•Boy to be loud. And creative. And fun. And is there another wee dram of that..."

McDuffGen is 97. ♦

Downloadable!

The magic word, the Holy Grail, the end of civilization as we know it... no, but you can now download a small selection of Keyfax Twiddly.Bits MIDI Samples direct from keyfax.com.

Currently available are electronica drum beats, jazz grooves, and a smattering of synthetic insanity from the new Modular Madness volume—grooves and lines in the style of analog beasts from yesteryear... sample & hold flashes, arpeggios, swoops, and bends.

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Keyfax International News

A newsletter for MIDI producers around the world

Summer, 1999

Virus found at Keyfax

ARARE STRAIN of the *Companium Humanus* virus, which affects the way a company communicates with its customers, has been detected at Keyfax HQs in both Santa Cruz California, and Henley-on-Thames, England.

The virus, known as *Voicemailora*, manifests itself as an inability to buy Voice Mail, the phone system developed in the 1990s that allows companies to sidestep having to speak to people and therefore slide out from the hassle of dealing with questions, problems, requests, or complaints on the grounds of somehow being too big, too busy, or too important.

"Well that's too bad," says receptionist Ima Realperson, stoically. "We'll just have to continue answering the phones 'Good Morning, Keyfax' and putting callers through to someone who can help.

"We're here 9-6 (PCT in USA, GMT in UK) and if you call outside these times just leave us a simple message."

Keyfax executives are not expecting to find an antidote for the virus anytime soon.

Concerned agents for several top Silicon Valley phone system conglomerates are starting to question whether they're even looking for one.

If you don't mind speaking to someone at Keyfax, call **1-800-752-2780** in USA and **01491-577 147** in UK.



ReBirth Phat-Mod FREE at Keyfax.com

If you love ReBirth V2 but are getting a little frayed around the edges with those sounds, and that mouse, you can download a brand new look and some brand new - and surprising - sounds direct from the KEYFAX website keyfax.com. The Phat.Mod, dressed suitably in Phat.Boy livery of black and yellow, will spice up your laptop a treat. And the new funky samples that go along with it are a real ear-opener: groovy electric pianos, hip hop beats and more.

Used in conjunction with Phat•Boy, ReBirth can become a hands-on purveyor of highly cool custom-sound grooves. And the mod is, at risk of mindless repetition, yes indeed, completely FREE! ♦

You can get a full (and free) copy of this newsletter by calling Ima on: 1-800-752-2780
Fax: 831-460-0173

Twiddly•Bits Top Ten Shakers & Movers in USA/UK 1999

1. MIDI Breakbeats (still #1 for hip hop/drum & bass)
2. Paul Kodish Dangerous Drums
3. Drums & Percussion (standard for rock drums)
4. Jazz Piano Bass Drums
5. The Funk (making a substantial comeback)
6. Modular Madness (new entry)
7. Dale Ockerman's hip hop accordion (bootleg)
8. Programmer's Toolkit
9. General Instruments (re-entry)
10. Guitar Grooves (sleeper)



On Other Pages

PAGE 7. PHAT•BOY FOR A FAT BOY
Fat Boy Slim, currently taking world charts by storm with his Funk Soul Bruvver routine, adds a Phat.Boy to his rig.

PAGE 4. EDUCATION NEWS
We hear from Teeside College how their 20 Phats installed in their MIDI labs are changing the way they teach synthesis.

PAGE 10. PHAT.Boy—THE HARDWARE CONTROLLER FOR SOFTWARE SYNTHS.
How Phat.Boy is becoming the de facto standard controller for software synths like Steinberg ReBirth, BitHeadz Retro AS-1, Vaz, Seer Systems Reality, Native Instruments Generator, and many more.

Yamaha DG80-112 Guitar Amplifier

Use digital modeling
to get tube amp
sounds without tube
amp hassles

BY CRAIG ANDERTON

Tubes are great. Or, at least, they used to be: unfortunately, quality is slipping and supplies are dwindling. While it's still possible to find good tubes, they are getting rarer and more costly.

Early tube emulations were iffy, but digital modeling has changed all that. Not only is the sound quality very tube-like, modeled amps have no microphonics, no aging, produce less heat, and offer greater efficiency.

Now Yamaha has used the technology first introduced in the DG1000 digital guitar preamp in an impressive pair of amplifiers, both with open-back cabinets: the DG100-212 (100 watts, dual 12-inch speakers) and DG80-112 (80 watts, single 12-inch Celestion G12H-100 speaker). Let's see how the DG80 stacks up against the...well, stacks.

UPFRONT

This straight-ahead amp aims for vintage amp tone, ease of use, and basic MIDI control over "bells and whistles" such as multieffects. It uses 20-bit A/D and D/A converters with a 48-kHz sampling rate. Bummed that it's not 24-bit? Don't be: no guitar pickup's dynamic range justifies 24-bit conversion.

The front panel has high- and low-gain 1/4-inch input jacks, input trim control (with green "activity" and red "clip" LED), and output level control. These

are nonprogrammable and provide level-matching. Programmable, motorized controls are gain, master volume, five tone controls (bass, low mid, high mid, presence, and treble), and reverb level.

Front-panel controls also include a double-duty switch bank that selects among the eight amp presets (but also controls MIDI, speaker emulator on/off, and other functions in a special "utility" mode), reverb type select, parameter select, and store/recall buttons. A two-digit 7-segment LED shows presets, program change numbers, MIDI channel, and the like.

BACK DOOR

The rear panel has an XLR line out (with level control) for DI recording, mono effects loop (between preamp and power amp) with effect/dry blend

control, MIDI in/out, and speaker jack for an external speaker. There's no digital output for recording straight into digital recorders or feeding digital signal processors, which is unfortunate because the speaker emulation section is quite effective (fig. 1). As expected, speaker emulation affects only the direct out; but also note that the master volume doesn't affect the direct out. This simplifies blending direct and "speaker" sounds.

USING IT

When you call up a preset, the motorized knobs rotate slowly to their programmed positions (note, however, that *audio* changes from one program to another are instantaneous; the knobs simply lag behind the changes). This has a high coolness factor that looks very sci-fi. Be careful when you crank the output con-



control: this box is loud — you can definitely fill a club.

Like a vintage amp, most tweaks are front-panel-accessible. If, though, you like a particular combination of settings, there are 128-user presets (recallable via front-panel controls or MIDI footswitch). Operation is

straightforward — no menus, no calculator-style keypads, no LCDs — once you get past the non-standard tone control layout (treble on the left, bass on the right, presence on the extreme right).

There are eight amp-preset types, arranged in order of decreasing distortion: two lead, two drive, two crunch, and two clean. These are the points of departure from which you create custom sounds. The names pretty much say it all; I particularly like the clean settings, because they're hard to get right. Also, the crunch settings are superb for chunky R&B-style rhythm guitar playing. The two leads are "sweet" and "brash," and give a smooth, buttery sound. There is a slight high-frequency emphasis (almost a very low-level harmonic "buzz"), which is presumably due to the speaker, as it does not show up in the emulated output. In some cases, this is an asset; when it isn't, pulling back on the

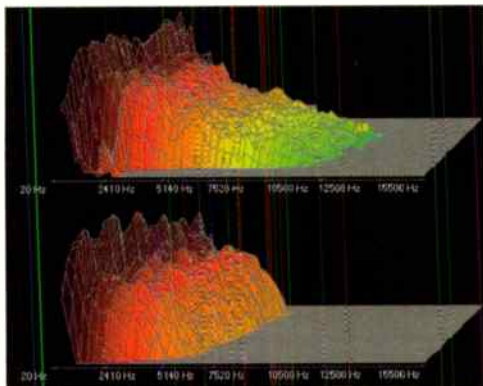


FIGURE 1: The upper 3D graph shows the Crunch1 spectrum without speaker emulation. The lower graph shows the same preset, but with the characteristic high-frequency rolloff from speaker emulation.

presence control eliminates it.

The tone controls are more effective than the passive, "vintage" types, but not as radical as, for example, parametric EQ. This makes it easy to dial in sweet, pleasing tones that resemble vintage sounds, but with more range.

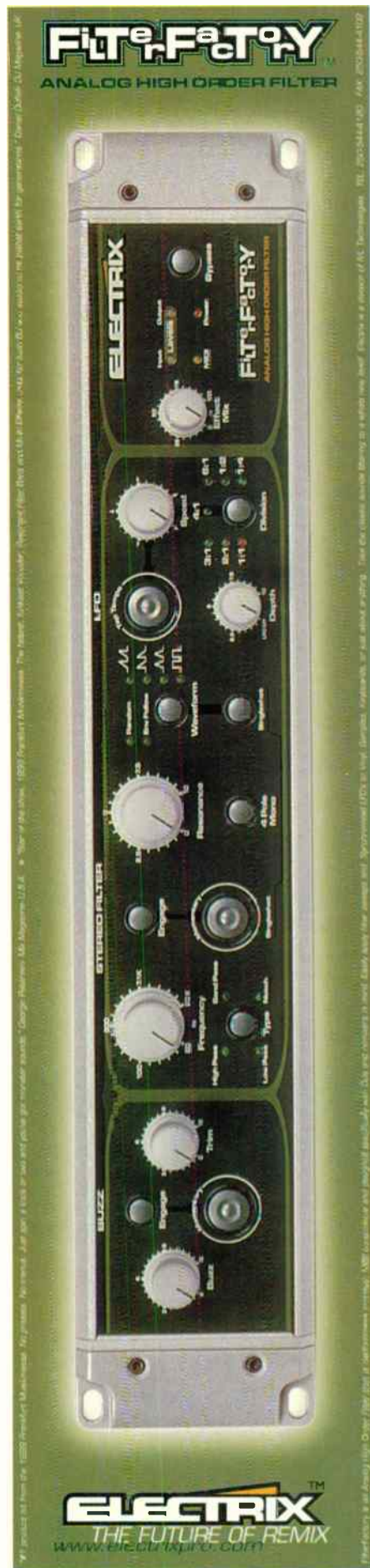
EFFECTIONATELY SPEAKING

The reverbs are fine (the spring emulation is particularly convincing), although you can program only reverb level — all other parameters are fixed. Echo has adjustable delay (up to 2 seconds), feedback and level, and includes a high-frequency rolloff so that successive echoes sound less bright, like real tape echo. This can, however, lead to a muddy "boominess" with long echoes (personally, I also roll off some bass with tape echo simulations). There's no tremolo, which normally I wouldn't consider significant; however, as this is such a "vintage emulation"-oriented amp, I kind of expected to see one.

MIDI-LAND

You can select programs with MIDI program change commands. Note that the program change table does not force a

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CIRCLE 57 ON FREE INFO CARD

EQ LAB REPORT

MANUFACTURER: Yamaha, Box 6600, Buena Park, CA 90622. Tel. 714-522-9011. Web: www.yamaha.com.

APPLICATION: Guitar amplifier for recording or live gigging, with a direct XLR output for direct injection into mixing boards and sound systems.

SUMMARY: It's not high on sex appeal, but guitarists who want high-quality, digitally modeled tube sounds — along with a user-friendly interface — will find much to like here.

STRENGTHS: Motorized controls; solid, clean tone; simple user interface; effective speaker simulator for balanced line out; multiple volume pedal placement options; very well-chosen EQ frequencies.

WEAKNESSES: No digital out; no tremolo; non-adjustable reverb parameters; limited MIDI control.

PRICE: \$999 **EQ FREE LIT. #: 130**

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KLEIN + HUMMEL

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"contributes to clearer and lower bass frequencies."

Each of the O 198's three drivers is powered by its own amplifier, which results in high damping for each driver. Active crossovers control the crossover frequency while minimizing phase shifts and distortion. The crossover network employs 3rd order filters with 18-dB-per-octave slopes. Each crossover is individually aligned at the factory and phase-corrected to pass the company's stringent quality control specifications. There is an integrated protection circuit to prevent damage to the drivers or overheating of the power amplifiers. The O 198's electronic section is accessible via the rear panel.

The O 198's cabinet is constructed from thick, rigid MDF (medium density fiber) wood to eliminate any vibrations. Cabinets can be ordered with a dark gray paint exterior or a durable gray fleck material to protect against scratches. Threaded bushings are provided on each side of the enclosure to fit the optional (LH 25) mounting bracket. There is also an available LH 25 fixture for mounting the speaker on a tripod, as well as an optional metal grille (GO 198).

Each studio monitor is hand-adjusted and trimmed during and after final assembly to rigorous factory standards, assuring that any two monitors will perform within specifications. At \$4000 per pair, the Klein + Hummel O 198 Active Studio Monitors are serious tools for the most serious recording professional.

Price is \$2000 each. For more information, contact Klein + Hummel, distributed by TransAmerica Audio Group, Inc., 2721 Calle Olivo, Thousand Oaks, CA 91360. Tel: 805-241-4443. Circle EQ free lit. #131.

GROOVACIOUS

continued from page 114

just the percussive peaks remain. Fig. 2 shows a file (which is also posted on EQ's Web site) that plays one measure of the original loop, then one measure of the noise-gated loop (gating at about -3 dB, with 1 ms attack and 20 ms de-

lay). The gated loop is much sharper, tighter and more percussive.

One possible enhancement for the gated loop is to add reverb. The space between hits leaves lots of room for the reverb tails and produces a tight, yet spacious, sound. Try adding some 'verb, and you'll hear what I mean.

Okay, that's enough tips for this issue...now fire up that digital audio editor and get looped!

WARPFACORY

continued from page 116

the effect. It should also be noted that the WarpFactory has a rear-panel mic bypass output that enables the mic-input signal to pass through the device whenever the front-panel Bypass switch is activated.

On the unit's rear panel, stereo source inputs include both RCA and 1/4-inch TRS (tip-ring-sleeve) jacks with a switchable line level or phono preamp. Similarly, the outputs include 1/4-inch TRS and RCA jacks. There is also a rear-panel formant input terminated with a 1/4-inch TRS jack that is switchable between +4 dBu and -10 dBV levels. Should you prefer the hands-free approach, the rear panel also provides a momentary 1/4-inch phone jack for a footswitch activated Bypass function. MIDI jacks include the standard In/Out/Thru configuration with a rotary channel select pot for defining your desired MIDI channel. It should also be noted that the unit's internal power supply can easily be switched at the rear panel to accommodate international voltages.

In an age where just about every new piece of equipment that enters our studios requires exploration through various layers of menus, it is quite refreshing to encounter a product that puts all system parameters at the surface. With its real-time everything, the WarpFactory makes a compelling case for a variety of music/production applications. If your work both involves live venues and your studio, the Electrix WarpFactory may very well be the ideal unit to help you traverse these typically distinct worlds.

Price is \$449. For more information, contact Electrix at 250-544-4091. Fax: 250-544-4102. E-mail: electrixinfo@ivl.com. Web: www.electrixpro.com. Circle EQ free lit. #132.

CIRCLE 57 ON FREE INFO CARD

What Is Normal: *Part One*

Deciphering those cryptic error rate messages

BY EDDIE CILETTI



Usually, just before your tape deck coughs up a fur ball, funny things start to happen. For example, DAT machines won't renumber, or digital multitracks will hem and haw, stop dead in their tracks, and then deliver some cryptic er-

ror message. Of the assortment of idiosyncrasies — from the digital fuzzies to any and all forms of intermittent behavior — you may sometimes *wish* a head-clog would be the sole cause of the problem.

In previous columns and on my Web site (www.tangible-technology.com), I have detailed the portions, specified the sacred cloth, and provided maps to the altar of magnetic technology — the rotary head assembly. As important as cleanliness is (next to dog-li-ness, I believe), it is not a panacea. Don't be surprised when your efforts to expunge head funk — via dexterous fingers or self-cleaning tape — don't make a significant improvement. Do be happy if things don't get any worse!

I have long been an advocate for full-time display of the Error Rate (Studer labels this feature "Quality" on their V-8) so that you know *when* to clean the heads. Unfortunately, if an idiot light is the only messenger, it's frequently already way too late.

ALL ASIDES ASIDE

Soft-core preventive maintenance requires that you know how to access the Error Rate Display if, in fact, it is (and should be) a feature. (Manufacturers take note: CD recorders need Error Rate Displays, too!) The procedure for communicating with the ghost in the

machine should be in the operator's manual. (At least one manufacturer considers this "technician-only territory," but a fairly complete list of secret handshakes is available at www.tangible-technology.com.)

The "error rate," or "block error rate" (BER), indicates the number of errors encountered within a given amount of time. Typically, the display will be updated in one-second intervals. For the first time, I want to show you where on the display to look. Once the secret is learned, check Error Rate often so you'll know what is normal and what is not.

YOU OUGHTA BE IN PIXELS

The first stop is the Alesis XT series. Photo 1 is a composite of three display states — labeled in red as 1, 2, and 3. In the Normal state of the display (red #1), Absolute Tape Time is indicated as H:MM:SS:99 (hours:minutes:seconds and hundredths of a second). Two buttons are inset below — SET LOCATE and RECORD ENABLE 3 — they comprise the secret "password" for accessing the Error Rate. Pressing them together momentarily changes the display to the cryptic "dl SP E rr" (red #2), meaning that the Error Rate Display is about to appear.

At the top of photo 1 (red #3), the display now shows an abbreviated tape counter — MM:SS — the other four dig-



PHOTO 2

The RealConference of RealPeople



PHOTO BY STEVE JENNINGS

RealNetworks makes Internet multimedia easier for developers and more accessible for consumers

BY JON LUINI AND ALLEN WHITMAN

"...and it's real, so real, so real, so real, woo!" —Friends Of Distinction

San Francisco, home to more 20-something, tech-stock millionaires than Switzerland has punctual trains, hosted the "Real Conference," at the synchronistically jukebox-shaped Marriott Hotel over May 5th–7th, 1999. The conference was easy to find, housed in the mountain of glass and faux-deco cornices, but much more difficult to know was exactly who it is we're dealing with. Is the host organization RealAudio? Or is it RealNetworks, as it's sometimes introduced? What happened to Progressive Networks? Or maybe it's RealMedia? RealServer? RealPlayer? RealSystem? Microsoft? If that weren't confusing enough, we

found ourselves staring at a sign advertising the Sunday sermon at a nearby church: "Real Forgiveness." Everything was starting to unravel until finally the answer was made clear with giant letters in the halls of the hotel: "RealNetworks."

Denim-shirted RealEmployees skipped hither and yon as your FezGuys boldly strode the hallways in search of pungent datum. In large meeting rooms and on the exhibition floor, 50 companies strategically aligned with the RealPeople displayed their own wares and explained how their stuff dovetails so neatly with Real's own products and services.

And stuff there was — lots of it. The new RealJukebox (of course it would be

named that!) was unveiled with much fanfare. A digital music system only for the PC (no other platforms will be supported before the dreaded Y2K hits), RealJukebox can be used to rip audio from a CD to your hard drive, sort and manage encrypted and compressed soundfiles on your computer in a variety of formats (MP3, RealAudio, Liquid Audio, a2b Music), encode audio to MP3 or RealAudio formats, and even tie into online purchasing of physical records pretty fast — less than half the time it takes to listen to the music in real time (depending on the speed of your CD-ROM drive) — so you can have Web-ready or portable flash-memory

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THINGS THAT ARE NEW

- Microsoft sees money! MS has formed a Streaming Media Division to make sure they extract their fair share from the growing market in streaming media. The obvious focus here will be music, radio, news, and event applications alongside lucrative online training and corporate communications. At least now MS will actually collaborate with the rest of the industry, all for your benefit of course! The FezGuys figure MS will end up buying the companies that even appear to know what they're doing anyway.

- Got Legacy Content? Don't know what the deuce that means? Alright, say you have a very private collection of Super 8 movies, 700 in fact, all patiently encoded last year by you as QuickTime files. Now, you have no idea how to convert these files into streaming media...or you have no desire to make the time. Well, help is here! mediaUpgrade.com (an offering by encoding.com) at www.mediaUpgrade.com

mediaUpgrade.com will convert your AVI or WAV files into multiple streaming file types including MP3, Windows Media Technologies (including version 4.0), and Real Media (G2 or 5.0) for several bit rates. It's free, but jump quick, maestro, because subscriptions to the site will begin at \$39 for 100 MB of transcoding "later in 1999." Hosting will be sold in packages starting at around \$40 per month. (Prices are determined based on a variety of criteria, such as time, size of files stored, number of views to the file, and the compelling nature of the content. OK, we made that last little bit up, about the content, that is.)

- The Grateful Dead will allow free downloads of live performance MP3s. Apparently, as long as fans do not buy or sell, MP3 files of live material "not taken from commercially available live albums" may be traded freely. The announcement is consistent with the Dead's long-standing agreement to allow recording of their shows.

Officially, any Web site owner can freely download MP3-encoded live Dead material. Site owners, however, cannot receive any revenue from the transaction. That includes not charging for downloads, not soliciting any advertising, not posting any type of banner ads, and not selling e-mail addresses or other data about users.

Details aren't available about the Dead's cover versions of others' songs. The FezGuys assume those won't be free. Sure, following the trail of licensing revenue for covers isn't the Dead's responsibility, but everyone benefits if they educate their fans about the issues.

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CIRCLE 99 ON FREE INFO CARD

files prepped for transfer in a jiffy. The system has some snazzy features to speed up the process, too, like automated artist/album/song searches via CDDb (www.cddb.com), drag-and-drop song menus, automatic software updates, and — get this — it's free.

So is this Jukebox thing really relevant? Yup. It neatly sidesteps all of the hullabaloo in the music business about SDMI-secure-encrypted-digital-what-ever and effectively puts the tools in the hands of the consumer. The Jukebox al-

lows home users to convert all their CDs into soundfiles on their computer. What's happening here is nothing less than a kick start for the next wave of consumer acceptance of music on computers. In order for a product or technology to become accepted, it must be easy to use, relatively cheap, and be everywhere. Think of ATMs. If the desired outcome of the business of music transacted on the Internet is pay-per-listen, then the invisibility of the process is required. The regular consumer

shouldn't have to think, and the process shouldn't require any effort beyond pressing a button or two. Sorry to say, that's the way it is.

For you content providers, a variety of other creation and distribution plugins in the Real family were announced. Features present in RealServer 5.0 that were initially missing from the G2 release have finally been added, including SureStream simulated live encoding (SLTA) and archiving of live SureStream feeds. Various other stability and performance improvements were mentioned.

In taking a step back from the hype in the marketplace, it becomes clear that the RealPlayer is becoming more and more like a browser. RealPlayer G2 now can expand to a larger window with cycling banners and other multimedia content in the manner of Web pages. It makes sense; people linked to your streams and their listeners will get the exact banner information you choose to associate with your content. That same information could be an ad or a link to purchase your CD.

Real hinted at details about a "Janus" project — purported to be a search service in which all RealMedia content producers associate their content with keywords and text. End users will be allowed to search throughout the database for the Real-encoded content of their choice. It sounds like a useful service. The big question is whether RealNetworks should own that kind of data. We'll keep an eye on that.

For anyone folding in video content, RealVideo's export function now supports QuickTime's architecture. This is a sweet little timesaver. Files can now be exported directly to RealVideo from your editing software without having to save as unwieldy AVI or QuickTime files prior to encoding.

Looking around the conference, it's easy to see that RealNetworks is firmly entrenched and viciously defending their territory. It's a huge territory, too, with over 60-million registered RealPlayer users, distribution deals with AOL, Netscape, MSIE, US Robotics, and Creative Labs (to name a few), and an astonishing (if true) statistic claiming over 300,000 hours of live content for RealAudio and Video produced each week. With a stated figure of over 85 percent of all streaming media content on

continued on page 130

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ALESIS

CIRCLE 93 ON FREE INFO CARD

World Radio History

YAMAHA DG80-112

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one-to-one correspondence; for example, different program change numbers can call up the same preset. This is handy when arranging individual footswitch "banks" for particular tunes, as you can call up the same preset from different banks.

The volume control (MIDI controller 7) can go pre-preamp/pre-reverb, post-preamp/pre-reverb or post-preamp/post-reverb. Kudos to Yamaha for recognizing that volume pedal placement makes a big difference in overall sound.

Two other controllers (91 and 94) turn the reverb or echo on and off, but there are no controllers assigned to tone, master volume, gain, reverb or tape effects level, etc. This won't be a problem for the vast majority of guitarists, but may disappoint those who use their MIDI pedals for more than just volume control. (Incidentally, Yamaha makes a foot controller (the MFC-10) preprogrammed to work with the DG-80 "out of the box.")

MIDI is also the way to save and load presets to a MIDI storage device, such as the Yamaha MIDI Data Filer, sequencers that can record MIDI sys ex data (Cubase, Cakewalk, Vision, Performer, etc.), or even some keyboards. A MIDI merge function provides MIDI thru by sending input signals to the MIDI out.

AND THERE IT IS...

The competition for digitally modeled amps continues to intensify, and, interestingly, each manufacturer seems to have a different philosophy. The DG80-112 is sort of the "California cuisine" of amps: a moderate portion (not zillions of models), with an excellent presentation and subtle, yet satisfying, tastes. It's a mature, elegant amp, one that's equally at home for sparkling country leads or crunchy rock stack sounds. Granted, it doesn't have a lot of "extras," nor is it inexpensive, but for guitarists who simply want an easy-to-use device with great basic timbres, the DG80-112 delivers. 

FEZGUYS

continued from page 128

the Internet encoded in Real's formats, their marketshare is pretty solid. Too bad they only see fit to release their product for Windows. It would be useful for Real to recognize that, though Windows is the desktop leader, there is a powerful and growing Macintosh and UNIX (Linux, FreeBSD, Solaris, etc.) userbase out here.


"The record label doesn't screw the artist." —Dreamworks Records exec.

In darkened ballrooms, experts expound and attendees, after ponying up the \$800 entrance fee, furiously take notes. The noisy industrial air-conditioning system agitates pieces of large glass chandeliers. They bonk and chime against each other until the room sounds like the ambient audio in a VR gamescape. All that's missing are Greek columns and enigmatic control interfaces. We entertain a wild fantasy of stealing the RealNetworks denim uniform, and infiltrating the RealHolodeck, where we hack the code to access the RealBorg. A RealNetworks demo using deformed frog pictures snaps us back to Reality.

Upstairs, the exhibitioners explain how they're technologically compliant to RealNetworks' protocol. Everybody wants to ride this camel in the direction it's going. Intel, Oracle, and Sun rub elbows with Macromedia, Avid, and even Liquid Audio. Everybody wants to show you why stuff works great. AT&T's a2b music representative, disdaining mere demonstrations, suggests that attendees are better served if they privately contact the telecommunications giant. We'll leave it to you to decide what makes them so different.

The FezGuys say this: RealNetworks is on the ball with plug-in architecture. Used to be we'd hear about the upgrade, find the download link, wait for the transfer, install the new version, and then try to fit it in with everything else we had running from the previous version. It was a pain in the ass to continuously upgrade RealAudio. Real now makes it easier for partners to design their own plug-ins. Now if they'd only get rid of that annoying pop-up window on their Web site!

"Another year, another codec." — Steve Mack

Perhaps the most entertaining and useful session was headed by Steve Mack (a ranking audio engineer for Real). He spoke passionately and convincingly about optimizing RealMedia audio and video content. Mr. Mack was clear, succinct, and provided useful information. It was a perfect combination of entertainment and raw data. And he didn't wear the RealShirt. 

MONITOR PLACEMENT

continued from page 68

Center speaker. Keep the meter at arm's length to prevent any audio from reflecting against your body. *[If you're doing this on your own, you might also try setting the meter on a boom stand so that you can move about and make changes and avoid reflections. Or (Eddie Ciletti did this for a surround project we did together) try suspend-*

ing the meter from the ceiling at the proper angle via string, cable, etc.—HCL]

Keep the meter aimed at the Center speaker as you take readings for the Left and Right monitors as well. When taking the SPL readings for the Left Surround or Right Surround speakers, keep the meter at the same angle and position as you did for the front speakers, but turn your body 90 degrees from the Center speaker towards the wall closest to the speaker you are measuring.

Remember: You're only measuring one speaker at a time! All the others must be muted.

LET'S CALIBRATE


There are two ways to set the reference level of the main speakers; either by using a real time analyzer or by sound pressure level meter. If you are using an RTA, set all bands to read 70 dB SPL. When all bands are added together, they will total the 85-dB reference level (assuming that's the level you're using). If you're using an SPL meter, make sure that it's set to C weighting and Slow response, then tweak the individual speaker level until the SPL meter reads 85 dB (or whatever reference level you choose).

SUBWOOFER LEVEL

The level of the subwoofer becomes a special case when a bass manager is involved because the sub is now being fed from two sources; the low frequencies from 80 Hz down from each of the five main channels, and input from the LFE source track. This means that you have to take two measurements to compensate for the extra energy that is being directed to the subwoofer from the main system.

Let's calibrate the bass redirection to the subwoofer first. Mute or disconnect the main speakers and play back the pink noise from 20 to 80 Hz in the sub. Set the level of each band on the RTA to read 70 dB SPL, which is the same level that each band of the main system reads (if your main system was calibrated to 85 dB SPL as well). When added together, the level of the subwoofer should read about 79 dB SPL. This is because we're reading fewer frequency bands in the sub than in the main system. If you are using an SPL meter, set the sub to 6 dB less than the main system.

Now set the LFE channel. This reading should be 10 dB hotter than the sub reading since the LFE has an additional 10 dB of gain. Set the level of each band on the RTA to read 80 dB SPL. The overall SPL level of the subwoofer should read about 89 dB SPL, which is what the SPL meter should read.

Calibrating a surround system is really simple after you've done it a couple of times. Just set your main speakers to the reference level, set the sub to 6 dB less, and set the LFE to 4 dB more. Congratulations, you're calibrated! 



wouldn't even fit on this page

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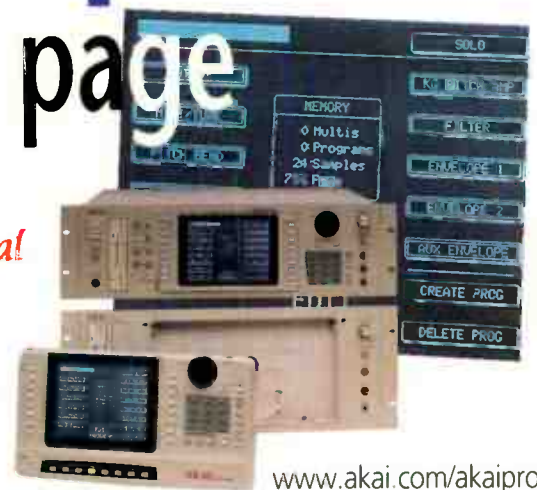
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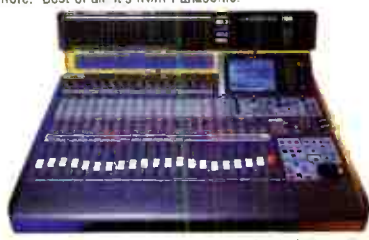
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* master bridge optional



TMD1000 Digital Mixing Console

You want to see what all the digital mixing buzz is about? The NEW TMD1000 from Tascam will have you smiling & automatin' in no time. It features fully automated EQ, levels, muting, panning and more in an attractive digital board with an analog 'feel'. Your digital future never looked, or sounded, so clear.

FEATURES-

- 4 XLR mic inputs, 8 1/4" balanced TRS inputs.
- 20-bit A/D D/A conversion, 64x oversampling on input, 128x on output.
- Store all settings, fully MIDI compatible.
- **Optional IF-TD1000** adds another 8 channels of TDIF and a 2-channel sample rate converter.
- **Optional FX-1000** Fx board adds another 4 dynamic processors and another pair of stereo effects.



DIGITAL RECORDING



Lexicon Studio Recording System

The Lexicon Studio System interfaces with your favorite digital audio software for a complete hard disk recording package. Supporting both PC and Mac, Lexicon Studio can be expanded up to 32 voices from a variety of I/O options. For recording, editing, mixing and DSP, Lexicon Studio is here.

FEATURES-

- The Core 32 System PCI-Card is capable of supporting 32 audio streams simultaneously. It can also be used as a time code or clock master or slave.
- The PC-90 Digital Reverb daughterboard attaches to the Core-32 providing 2 discrete stereo reverbs.
- The LDI-12T delivers up to 12 channels of simultaneous I/O supporting analog (+4 XLR and -10 RCA), S/PDIF, and ADAT.
- Direct support of Steinberg Cubase VST and many other software programs.



OPTIONS-

- The LDI-16S provides 8 channels of +4 XLR balanced analog I/O, and 8 channels digitally through TDIF. 3 option packages are:
 AES-8, 8 channels of AES/EBU digital I/O
 ADT-8, 8 channels of ADAT digital I/O and sync
 STC-1, Pos: option including read and write of LTC, read and generate of VITC, Window-burn, House Sync and a General Purpose Interface for triggering external devices from the system).

EFFECTS PROCESSING



Finalizer Express



The Finalizer Express is a fast and efficient way to turn your mix into a Professional Master! Based upon TC's Multi-Award winning Finalizer Mastering Technology, it delivers the finishing touches of clarity, warmth and punch to your mixes, putting the world of professional mastering within your reach.

FEATURES-

- 24-bit resolution A/D & D/A converters
- 16 & 20 bit dithering
- TC's unique Multiband Comp & Limiter Algorithms
- Boost and cut over three bands with the Spectral Balance Controls
- Soft Clipping and Look Ahead Delay.
- Finalize Matrix for 25 variations in style and rate
- Optimize overall level with the Automatic Make-Up Gain
- Extra compression in each band using Emphasis keys
- Record fades from the built-in Digital Fader or the optional TC Master Fader via MIDI.
- Connections include AES/EBU, S/PDIF, Optical Toslink & MIDI I/O's.
- High Res LED Metering of I/O & multi-band gain reduction

M3000 Professional Reverb



Incorporating TC Electronic's new VSS-3 technology, the M3000 is a great sounding, versatile reverb that is easy to use. Combining ultimate control of early reflections with a transparent reverb tail, the art of reverberation is brought to a new level. Whether it's a phone booth, cave or concert hall, the M3000 delivers high-quality ambience.

FEATURES-

- VSS-3, VSS-3 Gate, C.O.R.E. & REV-3 reverbs as well as Delay, Pitch, EQ, Chorus, Flanger, Tremolo, Phaser, Expander/Gate, Compressor and De-Esser
- 300 high-grade factory presets including Halls, Rooms, Plates, Ambience, Gate Reverbs, and more
- Up to 300 User presets in internal RAM and 360 more using an optional PCMCIA card.
- Dual engine configuration featuring 24-bit A/D/D/A's.
- Connections include AES/EBU, Coaxial S/PDIF, Optical Tos-Link/ADAT & analog XLR I/O's, MIDI IN/OUT/THRU, Clock Sync and External Control.



MPX1 Multi-Effects Processor



The MPX-1 is truly an outstanding multi-effects device. Using Lexicon's Lexchip, it offers outstanding reverb or ambience as well as a separate processor for effects for awesome power in the studio or on the road.

FEATURES-

- Intuitive user interface for easy editing, built-in help.
- Balanced Analog I/O (1/4" & XLR)
- 56 effect algorithms
- Digital Inputs & Outputs (S/PDIF @ 44.1KHz)
- 18 Bit A/D; 20 Bit D/A Conversion, 32-bit processing
- >90dB of Dynamic Range
- Intelligent Sorting by Name, Number, Application, etc.
- Parameter Morphing
- Dynamic MID@ patching & MIDI automation

COMPRESSORS



ACP88 8 Channel Compressor

Stemming from their popular ACP8, the ACP88 comprises eight channels of compression, limiting and noise gating for a variety of studio applications. It features individual side chain for each channel and it's attractive blue anodized finished lets you show your true sonic colors.

FEATURES-

- 8 separate compressors/gates with individual controls.
- Servo balanced or unbalanced inputs & floating balanced or unbalanced outputs.
- Individual side chain jacks: for spectral compression and a separate sidechain jack for gate processing.
- Each channel boasts full gain reduction metering, compression threshold indication & gate open/close.
- Front panel buttons include hard/soft knee compression, peak/auto compression, bypass, gate range and link.
- Link feature uses a unique summing bus for multiple combinations of master/slave link setups.



Model 566 "Silver Series" Compressor

The new Silver Series introduces a 2 vacuum tube circuit design making the 566 no ordinary compressor. Loaded with features including custom designed analog VU meters that monitor tube level, gain reduction, or output levels. Full sidechain functionality, including sidechain monitor, Contour function allows low frequency material to pass through the threshold without triggering un-musical compression effects.

FEATURES-

- Hand selected Premium 12AU7 vacuum tubes
- +4/-10 operation
- Drive control for a wide variety of great tube effects
- PeakPlus limiter on each channel
- Complete sidechain, OverEasy, and Auto function
- Optional TYPE IV Conversion System outputs
- Separate 1/4" sidechain insert send and return



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HARD DISK RECORDERS



VS1680 Digital Production Studio



The new VS-1680 Digital Studio Workstation is a complete 16 track, 24-bit recording, editing, mixing and effects processing system in a compact tabletop workstation. With its advanced features, amazing sound quality and intuitive new user interface, the VS-1680 can satisfy your wanderlust.

FEATURES-

- 16 tracks of hard disk recording, 256 virtual tracks.
- 24-bit MT Pro Recording Mode for massive headroom and dynamic range.
- Large 320 x 240 dot graphic LCD provides simultaneous level meters, playlist, EQ curves, EFX settings, waveforms and more.
- 20-bit A/D D/A converters
- 2 optional 24-bit stereo effects processors (VS8F-2) provide up to 8 channels of independent effects processing.



- New EZ routing function allows users to create and save various recording, mixing, track bouncing, and other comprehensive mixer templates for instant recall
- 10 audio inputs: 2 balanced XLR type inputs w/ phantom power, 6 balanced 1/4" inputs, and 1 stereo digital input (optical/coaxial)
- 12 audio outs: 8x RCA, 2x stereo digital & phons
- Direct audio CD recording and data backup using optional VS-CDR-16 CD recorder.

DIGITAL MULTI-TRACK RECORDERS



DA-88 Modular Digital Multitrack

The standard digital multitrack for post-production and winner of the Emmy award for technical excellence the DA-88 delivers the best of Tascam's Hi-8 digital format. Its Shuttle/Jog wheel and track delay function allow for precise cueing and synchronization and the modular design allows for easy servicing and performance enhancements with third-party options.

FEATURES-

- 1:48 minutes record time on a single 120 min tape
- Expandable up to 128 Tracks using 16 machines.
- User-definable track delay & crossfade
- Shuttle & Jog capability
- Auto punch with rehearsal



- SMPTE, MIDI and Sony 9-Pin sync capability
- Options include RC-808/848 Remote Controllers, IF-86AE/IF-885D digital interfaces, MU-Series meter bridge, MMC-88 MIDI machine control interface, SY-83 Sync Card

DA-38 Digital Multitrack for Musicians

Designed especially for musicians, the DA-38 is an 8 track digital recorder that puts performance at an affordable price. It features an extremely fast transport, Hi-8 compatibility, rugged construction, ergonomic design and sync compatibility with DA-88s.



ADAT M20 20-bit Digital Audio Recorder

The M20 represents Alesis commitment to meeting the high-standards of world-class audio engineers, producers, studio owners and high-end video and film post production studios. A new professional digital multi-track, the M20 records 20-bit for outstanding sound quality. Combined with a host of production features like SMPTE/EBU, the M20 is a powerful tool.

FEATURES-

- SVHS Recording format - up to 67 minutes recording.
- 18-XLR connections (9 in and 9 out) as well as a 5-pin ELCO connection.



- 24-bit, 64x oversampling recording, 20-bit 128X oversampling playback
- Digital I/O
- Includes LRC remote and a digital cable.

ADAT XT20 Digital Audio Recorder

The new ADAT-XT20 provides a new standard in audio quality for affordable professional recorders while remaining completely compatible with over 100,000 ADATs in use worldwide. The XT20 uses the latest ultra-high fidelity 20-bit oversampling digital converters for sonic excellence, it could change the world.

FEATURES-

- 10-point autolocate system
- Dynamic Braking software lets the transport quickly wind to locate points while gently treating the tape.



- Remote control
- Servo-balanced 56-pin ELCO connector.
- Built-in electronic patchbay
- Copy/paste digital edits between machines.

ADAT LX20 Digital Audio Recorder

The most affordable ADAT ever made, the new LX20 features true 20-bit recording at a price you won't believe. Compatibility with all other ADATs and digital consoles, the LX20 provides the same sync options and digital inputs as the big brother XT20 at a lower price point.

CD RECORDERS



CR200 Professional CD Recorder

The Fostex name is not all this CD Recorder has to offer. The CR200 features S/PDIF I/Os, balanced XLR analog input, 5 record modes as well as a full function remote. A great choice for burning CDs in any studio or home recording environment.

FEATURES-

- Converts any input signal to CD 44.1kHz standard
- Uses both Professional and Consumer CD formats
- S/PDIF Inputs and Outputs for versatile interfacing.
- AES/EBU In, XLR Balanced Ins, Unbalanced Ins & Outs
- 5 Record Modes, Records To Red-Book Standards



- IDs Recorded Automatically
- Durable Platter Mechanism Resists vibrations
- Full-function Remote Included

STUDIO DAT-RECORDERS



DA-45HR Master DAT Recorder

The new DA-45HR master DAT recorder provides true 24-bit resolution plus standard 16-bit recording capability for backward compatibility-making this the most versatile and great sounding DAT recorder available. With support for both major digital I/O protocols plus the ability to integrate the machine into virtually any analog environment, the DA-45HR is the ideal production tool for the audio professional.

FEATURES-

- Word Clock
- 24-bit A/D and 20-bit D/A with dither
- XLR balanced and RCA unbalanced analog I/O
- AES/EBU and S/PDIF digital I/O



- Word Sync In/Thru
- Alphanumeric data entry for naming prog.ams
- Independent input level adjustment capability
- Output trim for XLR balanced analog output
- Optional RC-D45 Remote Controller

Panasonic SV-3800

The SV-3800 & SV-4100 feature highly accurate and reliable transport mechanisms with search speeds of up to 400X normal. Both use 20-bit D/A converters to satisfy even the highest professional expectations. The SV-4100 adds features such as instant start, program & cue assignment, enhanced system diagnostics, multiple digital interfaces and more. Panasonic DATs are found in studios throughout the world and are widely recognized as the most reliable DAT machines available on the market today.

FEATURES-

- 64x Oversampling A/D converter for outstanding phase characteristics
- Search by start ID or program number
- Single program play, handy for post.



- Adjustable analog input attenuation, +4/-10dBu
- L/R independent record levels
- Front panel hour meter display
- 8-pin parallel remote terminal
- 250x normal speed search



D-15 Pro Studio DAT Recorder

The new Fostex D-15 features built in 8Mbit of RAM for instant start and scrubbing as well as a host of new features aimed at audio post production and recording studio environments. Optional expansion boards can be added to include SMPTE and RS-422 compatibility, allowing the D-15 to grow as you do.

FEATURES-

- Hold the peak reading on the digital bargraphs with a choice of 5 different settings
- Set cue levels and cue times
- Supports all frame rates including 30df
- Newly designed, 4-motor transport is faster and more efficient (120 minute tape shuttles in about 60 sec.)
- Parallel interface • Front panel trim pots in addition to the level inputs



D-15TC & D-15TCR

The D-15TC comes with the addition of optional chase and sync capability installed. It also includes timecode reading and output. The D-15TCR comes with the further addition of an optional RS-422 port installed, adding timecode and serial control (Sony protocol except vari-speed)

SONY PCM-R500

Incorporating Sony's legendary high-reliability 4D.D. Mechanism, the PCM-R500 sets a new standard for professional DAT recorders. The Jog/Shuttle wheel offers outstanding operational ease while extensive interface options and multiple menu modes meet a wide range of application needs.

FEATURES-

- Set-up menu for preference selection. Use this menu for setting ID6, level sync threshold, date & more. Also selects error indicator
- Includes 8-pin parallel & wireless remote controls



- SBM recording for improved S/N (Sounds like 20bit)
- Independent L/R recording levels
- Equipped with auto head cleaning for improved sound quality.

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TUBE MICROPHONES



SOLIDTUBE TUBE MICROPHONE

The SOLIDTUBE combines the best of solid state and tube technology to provide a "warm" sounding microphone suitable for professional recording applications.

FEATURES-

- Large diaphragm condenser
- Integrated pop screen surrounds the capsule, reducing excessive pop noise
- FCC 83 (12AX7) vacuum tube which provides perfect transfer characteristics
- Includes elastic shock mount
- Low-cut switch, Ground lift switch



audio-technica. AT4060

Combining premium 40 series engineering and vintage tube technology, the AT4060 delivers a versatile and competent studio microphone. Low-noise and high SPL capabilities make the AT4060 a premier vocal mic as well as strings, guitars and other demanding applications.

FEATURES-

- 20 - 20,000 Hz freq response
- Dual gold-vaporized large diaphragm elements
- Includes the AT8560 power supply, AT8447 shock mount, rack mount adapters and case.



MICROPHONES

SHURE KSM-32

The new KSM32 side-address microphone features an extended frequency response for open, natural sound reproduction. Suitable for critical studio recording and live sound production, Shure steps up to the plate with another classic.

FEATURES-

- Class A, transformerless preamplifier circuitry for improved linearity across the full frequency range.
- Exceptionally low self-noise and increased dynamic range necessary for highly critical studio recording.
- 15 dB attenuation switch for handling high SPLs.
- Switchable low-frequency filter to reduce vibration noise or to counteract proximity effect.
- Great for vocals, acoustic instruments, ensembles and overhead miking of drums and percussion.
- SL model also features an elastic shock mount which greatly reduces external vibrations.



BPM CR10

Hand-crafted in East Berlin, the BPM CR10 Studio Condenser Mic features a full frequency response for competition against the best of the best.

FEATURES-

- 1" Gold diaphragm
- Suitable for most guitar and vocal recording applications
- Includes Custom Aluminum Road Case, XLR-cable, wind screen and elastic suspension.



SAMPLING

AKAI



S5000 & S6000 Studio Samplers

Akai is proud to announce its next generation of samplers with the introduction of the S6000 and the S5000. Building upon Akai's legendary strengths, both machines feature up-to 128-voice polyphony and up-to 256 MB of RAM. They use the DOS disk format and .WAV files as the native sample format allowing standard PC .WAV files to be loaded directly for instant playback - even samples downloaded from the Internet into your PC may be used. And of course, both the S6000 and S5000 will read sounds from the S3000 library.

FEATURES-

- OS runs on easily upgradeable flash ROM.
- 2x MIDI In/Out/Thru ports for 32 MIDI channels
- Stereo digital I/O and up to 16 analog outputs.
- 2x SCSI ports standard
- Wordclock connection
- Optional ADAT interface provides 16 digital outs
- .WAV files as native sample format

S6000 ONLY FEATURES-

- Removable front panel display
- User Keys
- Audio inputs on both the front and rear panel allow you to wire the S6000 directly into a patchbay from the back and override this connection simply by plugging into the front.



E-mu Systems, Inc.

E6400 Professional Sampler

The e-6400 from EMU features an easy interface that makes sampling easy. Automated features like looping, normalizing and more allow you to flexibly create your own sound palettes or access any of the 400 sounds provided on 2 CDs for unlimited sound creation. It is upgradeable to 128MB of RAM (4MB standard) and features 64 voice polyphony, 8 balanced analog outputs, SCSI, stereo phase-locked time compression, digital re-sampling and more. A dream machine.



MIC PREAMPS

Focusrite "Voicebox MKII"



The Voicebox MKII provides a signal path of exceptional clarity and smoothness for mic recording, combining an ultra-high quality mic amp, an all new Focusrite EQ section optimized for voice, and full Focusrite dynamics. The new MKII now includes a line input for recording and mixdown applications.

FEATURES-

- +48V Phantom power, phase reverse, and a 75Hz high-pass filter.
- Mute control and a true-VU response LED bargraph are also provided
- Includes a Mid-Parametric band with controls especially designed to enhance vocal characteristics.
- Single balanced Class A VCA delivers low distortion and a S/N ratio as low as -96dBu
- Dynamics section offers important voice processing functions such as compression and de-essing combined with a noise reducing expander.

dbx 586 Vacuum Tube Mic Pre

The DBX 586 Vacuum Tube Dual Mic Preamp uses hand-selected and matched premium 12AU7 vacuum tubes ensure ideal characteristics for a warm, distortion free signal path. Custom designed analog VU meters monitor tube level insert path or output levels well. Line/Instrument and mic inputs make the 586 versatile enough to use with virtually any input source.

FEATURES-

- Mic or line/instrument inputs on each channel.
- 4/-10 operation.
- Drive control for a wide variety of great tube effects
- 3-Band EQ with sweepable frequency
- Optional TYPE IV Conversion System outputs
- Separate 1/4" insert send/return on each channel



JOE MEEK VC1 Studio Channel

The Joe Meek Studio Channel offers three pieces of studio gear in one. It features a transformer coupled mic pre, compressor and a professional enhancer together in a sleek 2U rackmount design!

FEATURES-

- 48V phantom power, Fully balanced operation
- Mic/Line input switch
- High pass filter for use with large diaphragm mics
- Extra XLR in/out on front makes for easy patching
- Compression In/Out & VU/Compression meter
- Enhancer In/Out switch and enhance indicator
- Internal power supply 115/230V AC



MONITORS



M6000/S Studio Monitors

The KRK M6000/S are designed for close-field monitoring. A smooth frequency response in a compact size make these units portable and efficient.

FEATURES-

- High power handling
- 62Hz - 20kHz, ±3dB
- Compact and portable
- Low distortion
- Smooth frequency response
- Custom Gray finish.



Hafler TRM-8

Powered Studio Monitors

Winner of Pro Audio Reviews PAR Excellence Award in 1997. Hafler's TRMBs provide sonic clarity previously found only in much more expensive speakers. They feature built-in power, an active crossover, and Hafler's patented Trans-nova power amp circuitry.

TRMBs provide sonic clarity previously found only in much more expensive speakers. They feature built-in power, an active crossover, and Hafler's patented Trans-nova power amp circuitry.

FEATURES-

- 45Hz - 21kHz, ±2dB
- 75W HF, 150W LF
- Electronically & Acoustically matched



MACKIE

HR824

These new close-field monitors from Mackie have made a big stir. They sound great, they're affordable, they're internally bi-amped. "What's the catch?" Let us know if you find one.

FEATURES-

- 150W Bass amp, 100W Treble amp
- Full space, half space and quarter space placement compensation
- Frequency Response 39Hz to 22kHz, ±1.5dB



TANNOY Reveal

The latest playback monitor from Tannoy, the Reveal has an extremely detailed, dynamic sound with a wide, flat frequency response.

FEATURES-

- 1" soft dome high frequency unit
- Long throw 6.5" bass driver
- Magnetic shielding for close use to video monitors
- Hard-wired, low-loss crossover
- Wide, flat frequency response
- Gold plated 5-way binding post connectors



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ACROSS THE BOARD

continued from page 154

noise floor and allows you to hear very low level signals near the bottom of the 16-bit boundary. Dithering only works on the lowest one or two bits of the signal. There are different algorithms for dithering; so if you have a choice, listen and decide which version you like best.

Consumer DAT machines will only record at 48 kHz when the analog input is used. Copy protection flags are set so that you can't make digital copies of tapes that were recorded in another consumer machine. Semi-pro DAT machines ignore copy flags when fed a digital source and let you record at 44.1 kHz or 48 kHz when fed with an analog source.

With the introduction of 24-bit technology and 96 kHz sample rates, most DAT machines are left in the dust. Pioneer makes a DAT machine that will record at 96 kHz, but only at 16-bit resolution. TASCAM makes a DAT machine that will record 24 bits, but only at 48 kHz or 44.1 kHz. (I've got it! You could record on both machines at the same time, and then later merge the two files in a computer. You would have a 96 kHz file and every other sample would be 24 bits!)

And, finally, HDCD, a process invented by Pacific Microsonics, is an encode/decode system that will store more than 16 bits worth of information in the 16-bit data. If you have a HDCD equipped CD player, you will hear the high-resolution signal during playback. If you do not have the decoder, then you will hear the 16-bit signal with some additional noise shaping benefits.

In the low-resolution category (16-bit 48 kHz or 44.1 kHz) there are other places to store your mixes. The most common format is audio CD. The resolution is stuck at 44.1 kHz 16 bits, but if the ultimate destination is CD, then you are well on your way. There are numerous stand-alone CD recorders made by Philips and available in the U.S. under the Marantz label.

HIGH-RESOLUTION BIT SPLITTERS

Prism makes a box that will let you convert the analog signal to digital at 96 kHz 24 bits, and then split the signal up to record on multiple tracks of a DA-88 or ADAT machine. It takes six tracks of 16-bit storage to accommodate 96 kHz of 24-bit data. When you play the data back, the box puts the bitstream back to-

gether and spits it out at the original 96 kHz 24 bits.

Apogee uses a similar, but incompatible, method of bit splitting storage for high bit depth audio. Rane has a stand-alone box for bit splitting called the PaqRat. (Apogee uses the Rane format.) The Yamaha 02R digital console has a bit splitting method of storing 24-bit mixes that is not compatible with either the Prism or the PaqRat format.


These methods of splitting up the digital signal will work with any digital multitrack format. You could use a multitrack optical disc recorder, or a digital audio workstation to store the split up digital audio. If a workstation is the preferred vehicle, long-term storage can be on CD-R in CD-ROM format. Just dump it back into the workstation, convert it to whatever format you need, then spit it out as stereo audio.


NOT JUST STEREO ANYMORE

Now I guess we have to talk about multichannel mixes. How about all of those 5.1 remixes you are planning to do in your spare time? You are going to need somewhere to put them when you are done.

Prism makes another box that is designed to take the 5.1-channel 24-bit audio and squeeze it into eight tracks of 16-bit storage. DTS uses this method for storing mixes on DA-88 tapes. The tapes are then sent to DTS where they are encoded into the DTS bitstream. The DTS bitstream is then pressed into an audio CD or a DVD for consumer playback. If your final destination is Dolby Digital, you can mix to six discrete tracks and encode them yourself with SoftEncode. The final results can be stored as a stereo encoded signal for decoding upon playback.

I prefer keeping the original six tracks un-encoded in case I later decide I want to make my mixes available in multiple formats. You think Betamax and VHS made things confusing, wait until you have to sort out all of these new audio formats.

I realize that I have had to cut a few corners here to fit things in (not much room here on the last page), but now you know that deciding on a final mix format is no easy task. If you choose just one format, it will probably be the wrong one, that is why I usually mix to three or four different formats simultaneously. If the DAT tape wrinkles, then I still have the CD. If the CD won't play, then I still have the optical disc. If everything fails, then I don't tell anyone that I was running a cassette. 



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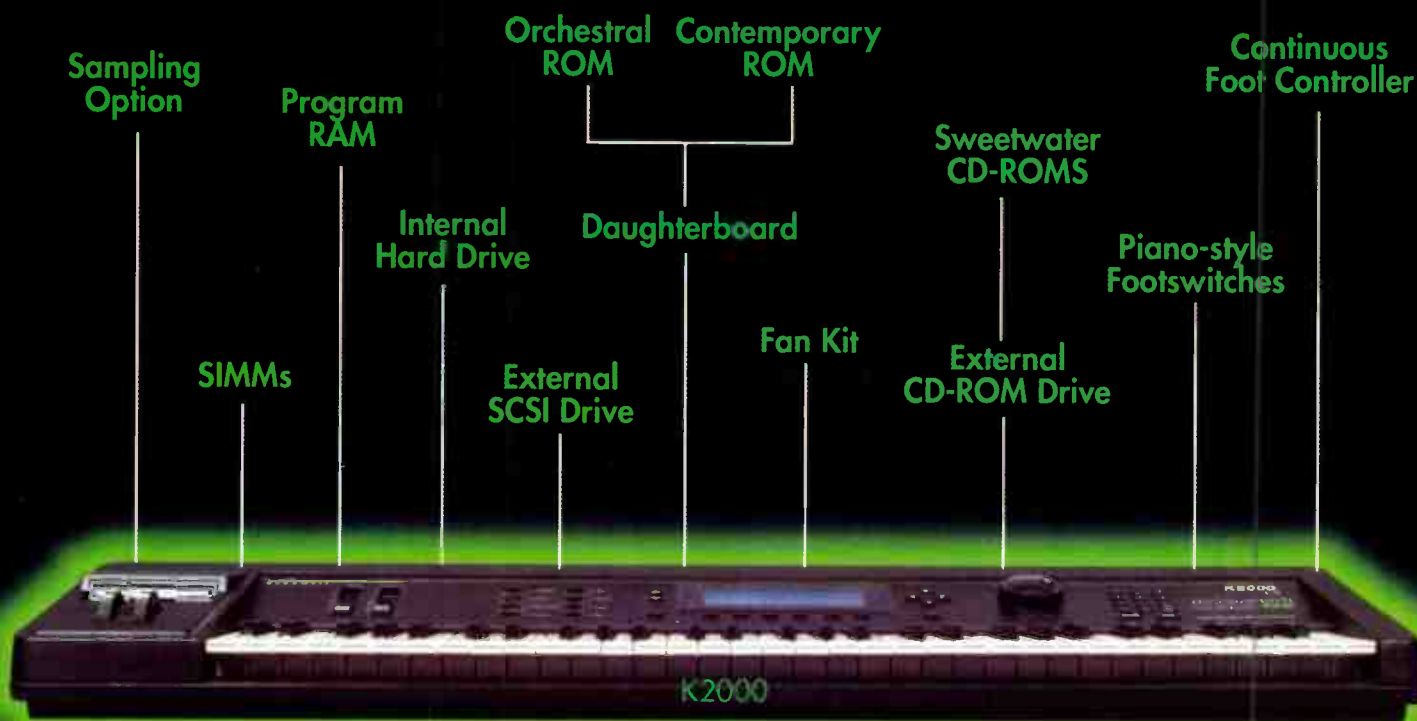
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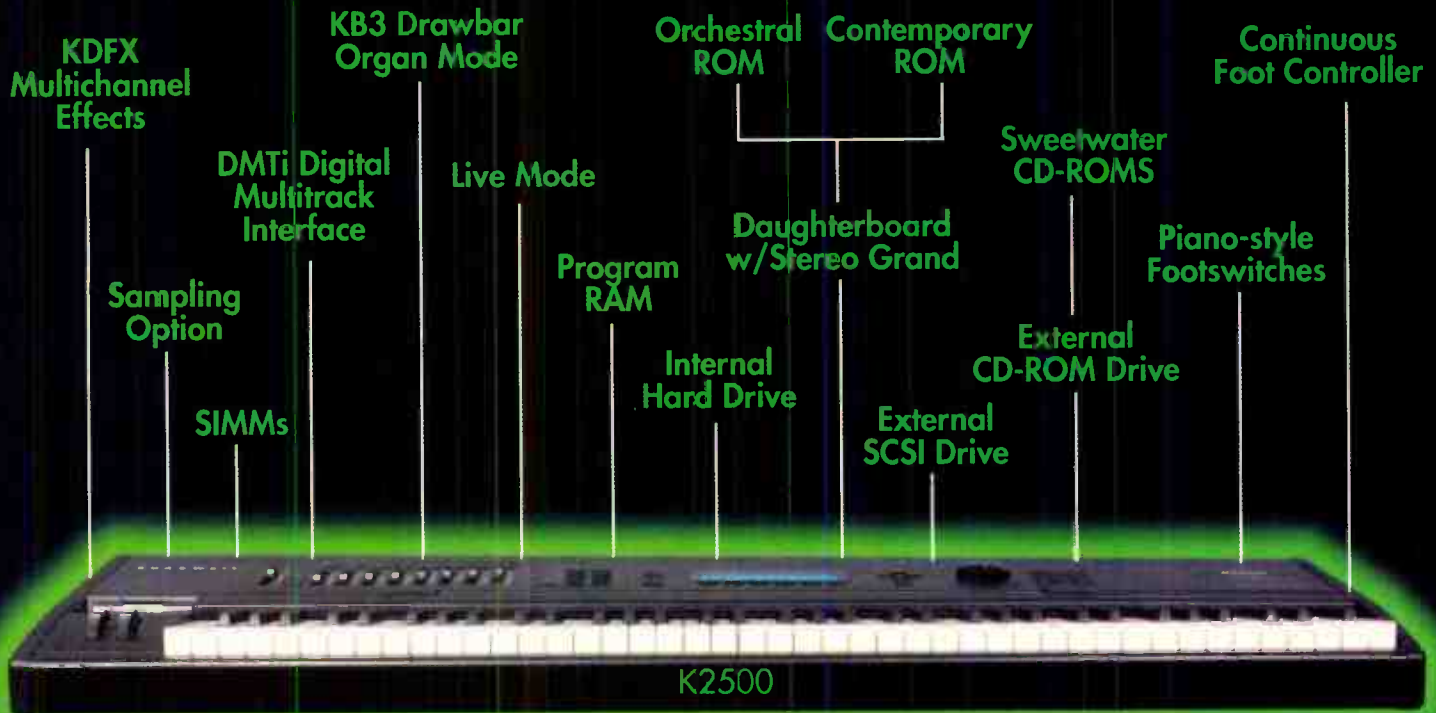
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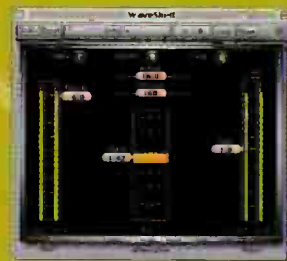
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FreeFilter

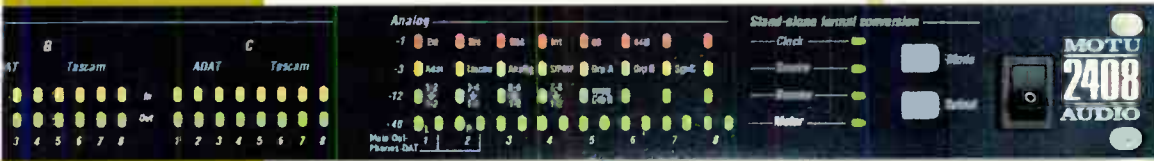
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Auto-Tune Pitch Corrector—Now for Windows!

When Auto-Tune first hit the market as a TDM plug-in just a short while ago, the response was truly amazing. Delivering intelligent intonation correction without robotic side-effects, Auto-Tune was so good, folks were purchasing \$8,000 systems just to run it! Now the full version of Auto-Tune is available as a DirectX plug-in to use with your Windows audio rig. Correct intonation problems in vocals or solo instruments in realtime, without distortion or artifacts, while preserving all of the expressive nuances of the original performance. Auto-Tune gives you both Automatic and Graphic Modes to fine-tune your fine-tuning! And the pros all love Auto-Tune because the only sonic difference between what goes in and what comes out is the intonation.

"Holy Grail of recording"—Recording Magazine



Sonic Foundry Mastering House

While Mastering House is an incredible collection of professional mastering tools, that's just the beginning. It also brings you brilliant creative capabilities you can use at every stage of the recording process. This new bundle saves you a bundle as well! Let's step inside:

Sound Forge 4.5—Your host? The award-winning Sound Forge Audio Editor of course! It slices! It dices! It sets the standard for editing Windows audio. Great with the 2408 or any Windows soundcard. MC Sound Forge also serves up steaming loops and DSP effects.

CD Architect—Who's spinning the tunes? Why it's CD Architect! Design and build your own audio CDs with speed and precision. You'll rave about the drag-and-drop playlists. Exacting control of crossfades, track markers, EQ, compression, and support for both SCSI and ATAPI IDE burners help you perfect your master CD.

XFX 1 & 2—Take your sound out of bounds with the XFX 1 & 2 collections of amazing audio plug-ins. Noise Gate, Multi-band Dynamics, Compression/Expansion, EQ, Reverb, Time Compression, Pitch Shift and Chorus effects — whew! From tracking to mixing to mastering, you'll use these processors day in and day out.

More Sonic Foundry Software & Plug-ins

ACID—"The coolest, easiest way to remix," proclaims acclaimed remixer Doug Beck. "True innovation," says Craig Anderton in EQ magazine. Feeling the fervor even further is Jeff Mac of Audio Media magazine who writes, "ACID is an absolute godsend." But Jeff, how do you really feel? Electronic Musician magazine took the easy way out and simply awarded it a 1999 Editor's Choice Award. No matter how you try to describe it, ACID burns through your preconceptions about creating music with a battery of realtime tools. Seamlessly mix & match tempos and pitch from drastically different loops without dropping a beat!

Noise Reduction—Got 60-cycle nasties, annoying clicks & pops, or horrible hums & rumbles? You could spend the rest of your natural life redrawing waveforms by hand. Or you could simply reach for Noise Reduction. It works wonders restoring "damaged" audio. About the only thing Noise Reduction can't quiet down is our enthusiasm for it!

Acoustic Mirror—Tired of the same old Reverb? Acoustic Mirror adds the acoustical coloration of real environments and sound-altering devices to your recordings with uncanny realism and stereo imaging. Simulate everything from large concert halls to vintage tube mics, or generate new effects. It includes an extensive library of high-quality acoustics "signatures" from a wide variety of environments.





24 I/O, ADAT, TDIF, S/PDIF, Word Clock, and more—under \$1,000!
Sweetwater Sound has installed more 2408 systems than any other company in the world. Want to get the most out of your 2408? Take advantage of our experience with configuring and installing this amazing recorder for maximum performance, whatever platform you choose.



Unity & Retro—Superb Sampler & Software Synth!

BitHeadz is storming the digital module world with unrivaled software sampling and synthesis. Using the power of your Windows computer, Unity and Retro simply blow away hardware approaches when it comes to both features and price performance. These are some of the most exciting products we've ever worked on in a long time. And with the multiple high-quality outputs of the MOTU 2408, you get everything you need to make Unity and Retro really sing!

Unity—The power and convenience of a full-screen software environment combined with awesome 24-bit, phase-locked stereo sampling! Imports 16 or 24-bit WAV, AIF, Aka S, 100, CD Audio, SoundFont 2.0, Sound Designer III, Sample Cell files and more. Cross-stitch up to 128 samples per note. Get four reverb stereo effects processors per patch and 16-channel mixer application. Built-in digital audio editor. A library over 250MB of sounds with instruments, drums & GM bank.

Retro—Transform your computer into perhaps the most powerful analog synthesizer ever devised. You get three oscillators per voice (plus LFOs) with any of 8 continuously variable waveforms. There's simply uncharted territory! Use the 2 filters with 17 filter types in parallel or parallel. Includes Frequency and Qubit (Poly Mod) modulation. You also get two rise and two gate effects, a 16-channel mixer and MIDI Processor with split layers and arpeggiator. Enjoy real-time control of every parameter simultaneously with MIDI. You even get 1,000 classic analog patches to get you going right away.



Native Power Packs

Waves is the most respected name in audio processing plug-ins. Once available only to the fortunate few, they've brought their delightful line of processors to Windows raw audio in two great Native Power Pack bundles. Get both for a comprehensive collection of extreme quality software processors.

Compatible with all the top Windows audio programs including Cubase VST, Sound Forge and WaveLab.

Native Power Pack I—Legendary Waves processors:

- **TruStudio**—what you see is what you get (and distorted) processor
- **EQ1**—Parametric Equalizer—the "Swiss Army knife" EMI
- **Q1**—Compressor/Gate—frequency specific compressor
- **S1**—Stereo Image—stereo stereo imager
- **L1**—Master Limiter—industry standard mastering limiter

Native Power Pack II—acclaimed Renaissance plug-ins:

- **Renaissance Compressor**—with colored and stereo credentials
- **Renaissance Equalizer**—an amazingly musical, transparent EQ
- **Maximizer**—the ultimate class enhancer!
- **De-esser**—dedicated de-esser, high frequency focused!



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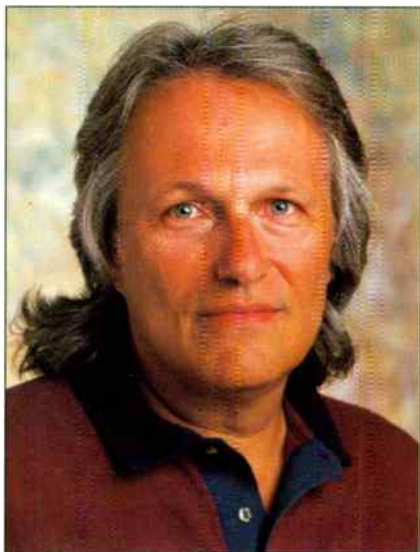
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CIRCLE 62 ON FREE INFO CARD

What Do I *Mix To?*



Picking a final mixdown format is a pretty complicated task these days

BY ROGER NICHOLS

OK, so you just finished your new project, and it's time to mix. What the hell format do I mix to?

In the "Good Ole Days," it was easy. You printed your mixes on 1/4-inch analog tape. You had a few choices to make, but not many. The tape speed for the mixes could be 15 ips or 30 ips. Fifteen ips gave you better low end, while 30 ips gave you a lower noise floor and an extended high-frequency response. You then had the choice between no noise reduction or Dolby A noise reduction. (Dolby SR didn't show up on the scene until after digital machines became available. There were a few people who used DBX noise reduction, but I think they all killed themselves.) Then along came digital.

Now there are about a gazillion (should gazillion be capitalized?) formats to choose from. There are still those who mix to analog, but now they have the additional choices of 1/2-inch and 1-inch tape. There is even some nut

trying to build a 2-inch 2-track analog machine for mixing.

Remember that a 10-1/2-inch reel of tape only records 15 minutes at 30 ips (unless you use thin tape, which increases the print-through). To get 30 minutes on one roll of tape, it has to be on a 14-inch reel.

DIGITAL PRO FORMATS

In the pro arena, Sony built the original 3/4-inch video based PCM-1610 digital audio recorder (and later the PCM-1630) that became the standard for CD mastering. The sample rate was 44.1 kHz, 16 bits. JVC also had a 3/4-inch video system for CD mastering. Sony later introduced the PCM-3402 1/4-inch reel-to-reel machine that recorded 16 bits at 48 kHz and 44.1 kHz. Mitsubishi made the X-80 reel-to-reel machine that recorded 48 kHz only at 16 bits. (George Duke and I had the first two machines. They originally recorded at 50.4 kHz.) Mitsubishi later introduced the X-86 and the X-86-HS. The HS version would record at 44.1 kHz, 48 kHz, 88.2 kHz, and 96 kHz, all at 16 bits. All of these machines have been discontinued, but there are enough of them still around that they still get used for mixes and CD mastering.

DAT'S A CHOICE YOU HAVE TO MAKE

To start with, we will consider DAT machines. There are a plethora of choices when it comes to DAT machines. All DAT machines are not created equal. If you are mixing on an analog console, you have to convert the signal to digital somewhere along the line. Some DAT machines have better built-in converters than other DAT machines. Some en-

gineers use external converters that connect to the digital inputs of the DAT machines. A lot of choices to make just to get your mixes on a piece of DAT tape. DAT tape only records 16 bits of information. If you see a DAT machine that

boasts 18-bit or 20-bit converters, you may end up with a better quality converter, but only 16 of the 20 bits gets stored on tape.

Some Sony DAT machines have built-in Super Bit Mapping software that increases the resolution of the 16 bits on tape. With a 20-bit converter, the Super Bit Mapping makes the 16-bit signal sound like a raw 18-bit signal (about halfway between the quality of 16-bit and 20-bit.) The Super Bit Mapping option only works on the analog signal into the DAT machine, and is bypassed when fed with a digital signal, so you can't use the internal Super Bit Mapping software to crunch a 24-bit signal from an external converter. Sony does sell a stand-alone Super Bit Mapping box that will work with external converters, but it costs more than the DAT machine.

This method of getting more resolution than you have bits is called noise shaping. When I am asked how noise shaping works, my answer is, "Just fine!" That is as much of an answer

as I have room for here. Apogee also has a noise shaping system called UV-22. The UV-22 is built into most of Apogee's converters. You can use a 24-bit Apogee converter, switch on UV-22 processing, and get a very good 16-bit signal to record on DAT.

One step down from noise shaping is dithering. Dithering lowers the

Some DAT machines have better built-in converters than other DAT machines. Some engineers use external converters that connect to the digital inputs. A lot of choices to make just to get your mixes on a piece of DAT tape.

continued on page 145



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The M 147 Tube embodies all that is Neumann. From its time-honored tradition of precision manufacture to its classic sound, only Neumann ensures that your investment today will continue to yield superlative results in the future. Simply put, Neumann mics never become obsolete.



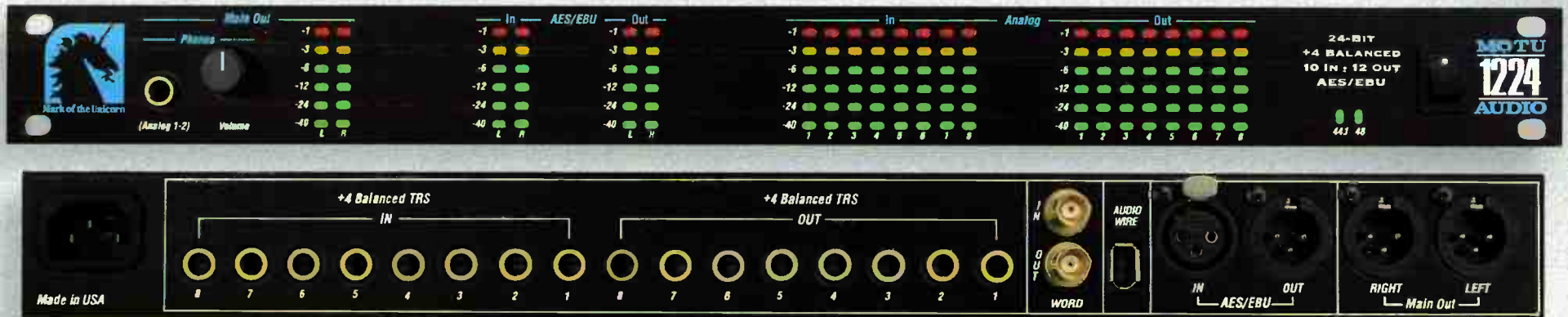
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- 10 independent inputs and 12 independent outputs.
- 24-bit A/D and D/A Converters for 24-bit recording and playback at 44.1 or 48 KHz.
- 116 dB dynamic range (A-weighted) on inputs and main outputs.
- 8 balanced +4 dB TRS analog inputs and outputs.
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- Available as a stand-alone system or as an expander for the 2408 system.
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- Includes AudioDesk™ sample-accurate workstation software for Macintosh with recording, editing, mixing, real-time 32-bit effects processing & sample-accurate sync.
- Compatible with all major Macintosh and Windows audio software applications.

1224 stand-alone core system: \$1295

1224 expansion I/O for the 2408 system: \$995

Everything you need for 12 channels of 24-bit audio, including the 1224 19-inch rack I/O shown above, PCI-324 audio card for Mac & PC, AudioDesk workstation software for Mac with plug-ins, and drivers for today's leading Mac and PC audio software.

The 1224 I/O shown above plugs right into your 2408 system and adds eight 24-bit balanced +4 analog inputs, ten balanced +4 analog outputs and 24-bit stereo AES/EBU digital I/O.



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