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# 05/06

## FEATURES

**28 12 YEARS OF RECORDING DWIGHT YOAKAM**  
MOJAVE AUDIO'S own DUSTY WAKEMAN waxes sentimental on his years in the trenches with country superstar DWIGHT YOAKAM; from JUST LOOKIN' FOR A HIT to actually producing them. The man behind the board bares all in this honky tonkin' EQ exclusive of the times, the trials, and the tribulations.

**46 HEIL TO THE CHIEF**  
BOB HEIL—inventor, innovator, and soldier of sound—sits down with EQ to talk about his experiences amplifying the likes of THE WHO and THE GRATEFUL DEAD, the developments for PETER FRAMPTON and JOE WALSH, and gives the industry much needed lessons on everything from phasing to using modern technology.

## MAY MEGA MONITOR MAYHEM

**34 THE GENIUS CORNER**  
Speakers meet mastering . . . and mastering loses. CRAIG ANDERTON shows us the ways to even the score.

**36 'N SEARCH OF THE PERFECT SPEAKER**  
COOKIE MARENCO takes you on a journey for the best possible speaker to suit your needs. And you love her for it.

**43 IN PRAISE OF THE ADAM S3A**  
A look into J.J. BLAIR and the ADAM S3A's torrid love affair; toned down for young ears, of course. Parental Discretion Strongly Advised.

**54 THE FINAL FRONTIER**  
The Monitor vs. The Room, as VIVEK MADDALA drops the scientific knowledge about matching rooms and monitors.

**57 BASSO PROFUNDO**  
RICH TOZZOLI on bass management and mixing in 5.1 surround.

# CONTENTS

## DEPARTMENTS

- 4** Talk Box
- 6** Session File: Mike Varney on Eric Gales
- 8** Success Story: Daron Jones
- 10** Tech Bench: Chicken Soup For The Tidy Soul
- 12** Pinch In: PRINCE PAUL, TAL HAZBERG, SERBAN GHENEA, THE ATOMIC SWINDLERS, J DILLA, LETTERS, RANTS, NEWS + REVIEWS

- 26** Tool Box
- 96** Room With A Vu: Backstage Studios, Beiper, UK

## GEARHEAD

- 62** Separation Mastering Tools
- 64** Rhumba Line: Yamaha's Powered Monitor Line
- 68** Mix-N-Shootin' Match: VLX5, Reveal 5A, SLS PS8R, ATC SCM20
- 69** M-Audio Firewire 410 + Focusrite Saffire

- 73** Quick and Not-So-Quick Picks: Klein + Hummel 0300 D, JDV Mark 3 Direct Box, Wunder Audio PEQ1R, Sequis Motherload, Dynaudio Acoustics BM5A, Rupert Neve Designs Portico Series 5012
- 80** MMM-Audio Action: EX66 + Studio Pro 3


## POWER APP ALLEY

- 88** Cakewalk Sonar 4
- 90** Microsoft Windows XP



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## LOUD, PROUD, & UNCOWED

A horrible lassitude has settled over us, and the uncommon exchange between winter and spring is here. South by Southwest is done. Over. Finished. Messe is in the air (so is NAB), the fallout from the inevitable "what about's?" connected to last month's SOFTWARE PARADE and who should have been in the ambitious and arguably incomplete issue [Gerhard Lengeling didn't call us back, Gilad Keren we didn't call back . . . *mea maximum culpas*] still reverberate in our heads as we dig in to May to consider: the speaker.

Mine?

A pair of genius Genelec 8050As: 8" 2-Way Active Nearfield Studio Monitors.

Love these things. Love them. I'd have dedicated the whole issue to them but outside of being insane, it's only the tip of a much more gooned-out iceberg that has me falling deeply and lastingly in love with what is inarguably the terminus of each and every one of our recording, producing efforts.

Again: the speaker.

You see, the speaker/monitor sits at the end of every single one of our roads that began with a song, a line of dialogue, or a single beat. And so we honor it here with COOKIE MARENCO's extended treatise on her search for the perfect speakers, VIVEK MADDALA's scientific screed on why it's not the monitor, it's the room, stupid, ANDERTON's take on his hatred of speakers, and TOZZOLI on managing your bass.

Add to this our cover story on the inimitable inventor genius BOB HEIL and an expanded Gearhead that runs reviews around speakers, speakers, and even more speakers and you have what's sizing on up as a keeper of a meditation on the last place in space for sound on its journey from machine to man.

You can't get anymore complete than this without talking to an ear doctor.

Enjoy. We are.



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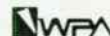
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## MIKE VARNEY ON RECORDING ERIC GALES

**PROJECT:** Mike Varney producing Eric Gales

**DATES OF RECORDING:** November 2005

**STUDIO:** Prairie Sun

**LOCATION:** Cotati, California

**ALBUM TITLE:** *Crystal Vision*

**PRODUCERS:** Mike Varney and Eric Gales

**ENGINEER:** Jason D'Ottavio

"Eric Gales showed up, cold from Memphis, Tennessee, and we assembled an entire rhythm section for him," Mike Varney says as he reflects on the sessions for Eric Gales' latest release, *Crystal Vision*. "The process was basically that Eric Gales and I, as well as two musicians that Eric had never met — Steve Evans (who is known for his work with blues artists like Roy Rogers and Coco Montoya) and a young Bay Area drummer named Thomas Pridgen (a student of Tony

Williams) — came together for a couple of weeks and put the whole album together in the studio. They rehearsed for about five days, and that included writing almost all of the material *in the studio*."

"As a producer, I just worked with Eric to arrange songs, recorded them as instrumentals, and then returned to place lyrics and vocals. I was Eric's co-writer on just about every track," Varney states. "For the creative process, it was pretty great. Coming up with a good blues/rock album; writing and recording it on spot in just a couple weeks. He literally came in with just a handful of riffs and one complete song. But from the second they started off, it was just smiles all around the room, as the players were just so solid. When Thomas first came into the studio, the first thing he said to me was, 'I'm the last guy you have to worry about.' He was just that confident and, playing with a click, he was a total one-take drummer."

"Eric came out, throwing caution to the wind, and just trusted that I would have good equipment waiting on him," Varney says with a slight chuckle, "so I brought a whole compliment of guitars for him to check out. He ended up using a rather standard Strat and a decked out EMG SuperStrat. Most of the album was done using a Fender Bassman for the clean sounds, and a Marshall for the distorted tones. For effects we used a variety of Jim Dunlop products like the Univibe — as well as the Hendrix Octave Fuzz. This, through these unique EMG pickups, was used for most of the leads, which ended up being pretty much the holy grail of the Texas blues guitar tones."

The guys jumped between two of the three rooms at Prairie Sun, depending on which part of the process they were involved in. Tracking was done using a modified Neve console — a Custom 80 Series 32/8/24 mixing desk with Flying Faders automation (it was originally commissioned for Pete Townsend's Eel Pie studios), while employing a wealth of Prairie Sun's high-end and vintage gear; everything from Tracy Korby Cm-1s to U47s to Schoeps M-221s were available for their audile palette. While the album was tracked in Studio A, the mixing was done in Studio B using an SSL



Photo: Steve Jennings

4080 G/E, G+/TR mixing desk with VCA automations and Total Recall.

The album was, at first, recorded down to 2" on a Studer A827 24-track 2" analog tape machine, and then put down to Pro Tools HD3 for the overdubs using the Neve 8026 32 input, 8 bus console with 24 monitor returns.

The end result is an electrifying conglomerate of rock and blues; progressive in scope but restrained enough as to ensure that the songs don't fall outside of the necessary blues parameters — the guidelines that allow the blues to continue being the blues. Technical prowess matched with solid groove and copious soul, *Crystal Visions* is damned impressive, even more so when one takes into account the rather unorthodox manner in which it was recorded.

Concerning the collaboration, Mike states, "I had seen Eric when he was 15 or 16 at NAMM and I had always wanted to work with him, so when the opportunity arose I was just thrilled. As Eric is a really high-level performer, everything that comes out of his guitar or mouth just tends to work. It was really easy to work with him and the rest of the band, who are all practically virtuosos. We were only in there for a few weeks, and we didn't even have an album to start working on when we started."

"It was, honestly, one of the most miraculous sessions that I've ever been involved in." **EQ**



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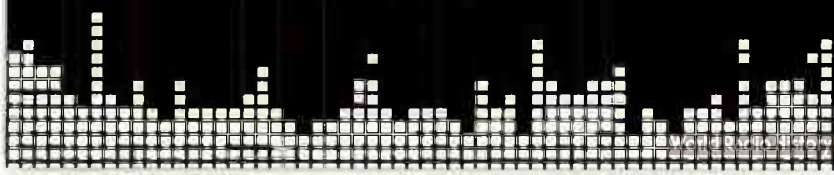
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## IN THE SOUL SHOP: DARON JONES

**COMPANY:** DJ Music Studio  
**CONTACT:** [daronjonesmusic.com](http://daronjonesmusic.com)  
**LOCATION:** Atlanta, GA  
**KEY CREW:** Daron Jones

Daron Jones, member of R&B collective 112, is much more than your standard musician-turned-hobbyist producer.

With several Grammy, Billboard, MTV, Soul Train, BET, and AMA awards and nominations under his belt, as well as over 15 million worldwide album sales, Jones is a man with his fingers in a legion of proverbial pies. Being in one of the more celebrated modern R&B quartets, Daron Jones has also lent his talents, creatively, from everyone to the Isley Bros. to Usher, Pink to the Notorious B.I.G., R.Kelly to Jamie Foxx. Given Jones' quick rise to the top of the hip-hop/R&B production world, it's only appropriate that his chronicle fly under the flag of "Success Story," as what follows is a near-textbook definition of such.

### ONCE UPON A TIME IN ATLANTA

Jones back story regarding his formative years in the production field? Starting off as a musician primarily, learning both the guitar and piano by ear, Daron used the opportunities allotted to him by being a recording artist to foster his career as a producer. Literally sleeping on the floors of studios used by Bad Boy Records, Jones made the contacts necessary to facilitate his newfound interests in music production. "I was running around and learning a lot from people like Stevie J at Bad Boy and Tim (Kelly) and Bob (Robinson) . . . really learning the production side," Jones relays with a hint of sentimentality in his voice. "Those are the guys that brought me up."

Every time Jones got a free moment in the studio at Bad Boy, he was throwing down tracks on the DAT, honing his craft. Under the eye of studio guru Stevie J, Jones spent many a late night session honing his skill. A track ultimately left at Daddy's House studios, simply labeled "DJ," ended up in the hands of the Notorious B.I.G. and R. Kelly, a fateful move that propelled Jones from musician to creative collaborator and producer, and started what has proven to be quite an illustrious career that was heralded in by the construction of Jones' own Atlanta-based studio, DJ Music Studio, which he built in his mother's basement.

### ST-ST-STUDIO

"It's still there, and it's still where I work," Jones shares. "When Keyshia Cole came in to record 'I Should've Cheated,' the first thing she commented on was how it felt like being at home, and that's probably because it was in my home."



Jones likes to keep his studio sparse, running a modest set-up based off of Pro Tools and using a MPC3000, Proteus 2000, Motif keyboard sound module, and a piano (as well as his trusty Triton) to primarily build his tracks. Breaking the studio standard norm, Jones informs us, "I like to keep it simple and not clutter up the space with too much gear. I think it's important to keep [the room] open enough to get a certain vibe."

Jones, however, spends a good portion of his time in the studio working alone, enjoying his space. "Nine times out of ten when I'm in the studio, I'm working by myself. A lot of my music and the songs I write are based on concepts, and then the artist I'm working with brings their own style to that concept."

Concerning Jones proactive approach to the artists he works with, serving as both engineer, producer, and conceptual creative collaborator; it's much to the benefit of his clients that he has such a strong background as a recording musician. "As a singer myself," Jones says, "when I'm creating a track, or writing a song, I consider the style and sound of the artist. It's like being a fashion stylist, you have to know your client and be able to select songs that will fit their style."

### FUTUREWORKS

Jones shows no signs of slowing down now either. Fresh out of his sessions with Keyshia Cole's latest platinum single, a session that he described as "gritty, natural, and passionate," Jones is gearing up to begin working with Mya, finishing his solo release, and cranking out a new 112 album. This time around, he's going to continue taking cues from his peers that he most admires. "Today, I admire Dre and Timbaland — Dre for his ability to make great albums, and Timbaland for his sound banks. Those are guys that are doing it."

"A lot of producers are known for their hit singles, but when I think of Dre, I think of great albums. I really respect him as a producer for his ability to put together full, great albums, and that's what I'm going to do."

And we, as well as the rest of the R&B/hip-hop community, will be anxiously awaiting just that. 

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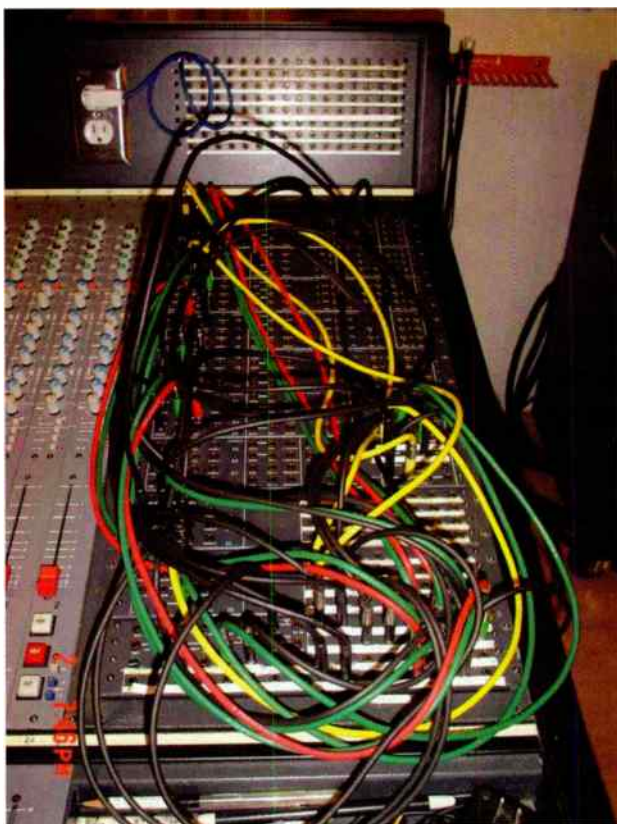
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## ORGANIZING YOUR STUDIO WITH A PATCH BAY

It's only logical that every cable in your control room go to one central point, hence the patch bay — a nifty invention that allows you to physically route every input and output in your studio without having to get tangled in the web of cables from one end of the room to the other, or causing inevitable wear and tear by moving your equipment around.

Used for rerouting input and output signals, as well as splitting them, patch bays are an indispensable recording tool once properly installed and properly used. Being truly one of the greatest, simplest, and most effective solutions for studios, installing patch bays will save you incredible amounts of time, ward off potential migraines, lower tech costs, and give your studio a sleeker, more professional look.

Patch bays come in many different sizes and makes — with most large format consoles having tiny telephone (tt) bays built into them. Other studios opt for rocking the trusty quarter-inch bays, but this is mainly an issue of preference (though keep pipe cleaners handy if you go this route). Some of the larger studios with multiple forms of recording mediums have ELCO patch bays for switching entire tape decks or DAW rigs. In addition, there are also digital and MIDI bays available for formats other than analog



audio so, regardless of what your needs may be, there is surely a patch bay out there that can meet them.

Patch bays usually hold 48 jacks each, in two rows, offering 96 points in a single 19" rackmount space. If you're handy with a soldering iron you can save a ton of money and solder the wiring onto them yourself. If not, you can purchase bays that allow you to plug your cables directly into the back of each bay. The end result is largely the same, with the former being more cost efficient, but the latter being more convenient.

Bays come in all sorts of configurations. The most common are normalled and non-normalled. When a patch bay is normalled, the top row will automatically send its signal to the bottom row. Once a patch cable is inserted into the jack, it will break the connection. This is ideal for many instances. Take for example this hypothetical situation: You need to run your wall jacks in your studio to the inputs of your pre amps, or the output of your tape or DAE to the tape return of your mixing console. Under regular circumstances, you would just want the signal to pass through and, because your patch bay is normalled, it would. However, if you wanted to use an external piece of outboard gear to compress or EQ your signal to tape, you would use a patch cable and insert it into the top row of your patch bay (mic from studio) to the input of your compressor. Afterward, you would run another cable from the output of your compressor to the bottom row (preamp input).

You want to spend a solid amount of time when you initially set up your patch bays, thinking strategically and mapping out exactly what interaction you desire from the various pieces. The object, ultimately, is to have the most amount of things normalled so that you don't have to use that many patch cords — as well as preserving your sanity and not wasting precious time in sessions — though the space behind your console may get a bit more dusty after you install a patch bay. The rule of thumb is that effects inputs and sends should be grouped together, with outputs and returns occupying another space, and mix outputs and recorders following suit . . . for convenience, if nothing else. It's also a good idea to make sure that your connectors are color coded (many are) as this will help ease confusion in the heat of the tracking moment; and make sure your snake box has the proper amount of inputs to coincide with your console (it's a good idea to have both 1/4" and XLR ins available on your box also).

Quarter-inch bays with 48 points are available for around \$30-\$50 a piece, and the cables range from \$2-\$10 a piece. The expense comes in from doubling up on your snakes and cabling, though it is clearly worth it, especially if you can save yourself some money by wielding Ye Olde Trusty Soldering Iron — so consider going the DIY route if you feel confident in your abilities to do so. EQ



# Punch In

TUNE IN, TURN ON, PUNCH OUT BY  
THE EQ STAFF

Say What?!

## PRINCE PAUL

by Max Sidman

Despite the old school pedigree of seminal hip-hop producer Prince Paul Huston (Stetsasonic, De La Soul, Gravediggaz, Handsome Boy Modeling School, 3rd Bass, Chris Rock, Big Daddy Kane, etc., etc.), his solo albums — like the abstractly groovy *Psychoanalysis* and the hilariously hot *Politics of the Business* — have either flown under the mainstream radar or were flat out panned by critics (suckers). Still, Paul continues to make the music that he likes, despite the exclusionary myopia of the MTV set. His last, most recent venture, the comfortably funky and mid-fi *Instrumental*, is mostly an instrumental record, but features goofy vocal contributions from the likes of Mr. Dead and Steineki, as well as an all-live instrument track, on which Paul played all the instruments himself.

**You played all the instruments on the song "Live At 5." You're a musician now, as well as a producer?**

No, not at all. I can play a lot of things, but not well. Thank God for technology, though, because I can arrange it all. With that song, I wanted to challenge myself because I find that a lot of producers and artists stay in one zone and they get comfortable in that zone

because it works. I like to challenge myself with everything, and when you challenge yourself like that you risk losing fans and losing people around you, but you know, making the same record over and over is boring. So with "Live at 5" I was like, lemme just try to play something, and let's see what happens when I pick up a bass guitar or electric guitar, a keyboard. Lemme just play the drums, the tambourine, and whatever else, and then go chop 'em up, and see what happens. And that's what came out. Simple.

**What's the difference between how you make an instrumental track and putting something together for a vocalist to rap or sing over?**

When I approach a track for a vocalist — even though I don't rhyme — I see if I can rhyme on it, and I see what kind of rhyme style I hear on it. If I can't rhyme to it or if I can't hear a flow to it, I put it to the side. But I've been shocked. "I Am I Be" on De La Soul's *Bulhoone Mindstate* is a good example of me making a record for myself — that beat was something I had going on the side — and Pos was like, "Yo! That's crazy, I like that!" I said, "Man, you can't rhyme on that. That's for me, not for y'all. I can't give that to you." But they made a brilliant song, so I've been fooled. You know, as a producer, you can't hear everything, and I've learned that.

**Weapon of choice in the studio?**

For stuff like this record, I still use tape because I want a certain texture to it. I don't want to articulate it so much. Especially nowadays because everything is so digital, so articulate and right in your face and you know exactly where it is. But when you listen to older hip-hop, things mesh together, it warms it all up and everything kinda complements each other a little more. That's the kind of feeling I wanted for this record. I still wanted it clear, but I wanted it warm and full-bodied, and I know that I can only get that from tape, so I recorded a lot of stuff to tape, and a lot of it is really old tracks from the '80s up through 2000. So for this particular album, there is no one weapon of choice. It's all over the place. In general, it depends on the vibe I'm going for. In my studio I can pick up a real 808 and program 808, or a 909 — the *real* machine. I'm into vintage stuff. Even though they make programs that sound like the real thing, *nothing* beats the real thing. So I'll pull out an ASR when I wanna get rugged, sorta Wu-Tang-y. If I wanna chop it up, like Premier or Pete Rock, I'll SP12 it or MPC2000 it. Whatever the vibe is, I have the equipment to match it. It's weird — Hank Shocklee did this seminar thing that I went to, and people there asked me stuff like, "What piece of equipment couldn't you live without?" And I was just like, "Doesn't make a difference to me, I can use it all." See man, all I need is the motivation.



## LISTEN HEAR



### HALOU

**Wholeness and Separation (Vertebrae)**

**Produced by: Halou, Mixed by: Count**

Halou (pronounced "huh-loo") have, on their third offering, managed to turn out one of the most luxurious sounding albums I've heard in a good long while. At times eerie, at others soaring, and always sexy; *Wholeness and Separation* meshes the organic and the electronic with ease — sporting a production that's beyond suitable and encroaching on perfection. Smooth, lush, and wide — Halou's sound is what so

many bands of this ilk strive for but fall short of. Fans of Portishead, Sigur Rós, and the like, take note: This is the stuff.



by Mr. Bonzai

# THREE ON A TREE

But I love my SSL AWS900 console, which is the centerpiece of my private studio (at the Henson Studios complex in Hollywood). It's a dual function board — the first layer is a super high quality analog front end to the Pro Tools rig (preamps, EQs, compressors, monitoring and switching, all based on their K series flagship analog console), and the second layer is a Pro Tools DAW controller (based on the HUI protocol). It sounds incredibly good, and turns any record-

ing and mixing process into a more streamlined experience than just working in-the-box. The console's small footprint keeps you in the "sweet spot" all of the time, which helps in building a great sounding, wide image mix, very fast. Another amazing tool I have discovered recently is Waves' GTR, which is a series of plug-ins and a DI box, geared toward direct recording of electric guitars into a DAW. You must hear it to believe it. The modeled sounds of the amps and cabinets, combined with a great selection of stomp-box styled effects, made me rethink the conventional way of recording electric guitars, and for the first time choosing the direct path upon it.

### 2. Who were your engineering heroes when you were getting started?

TH: As a musician growing up, I noticed how good Beatles' albums sounded, and I've been idolizing George Martin since then, especially considering what little and primitive means he had to work with. In 1991, when I was 21, I bought Jellyfish's *Bellybutton* CD, which was produced, recorded, and mixed by Jack Joseph Puig, and it changed my life. This album sounded so good, that it made me decide to branch into sound production. I still consider this to be one of the best sounding albums I've ever heard.

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

TH: Since Frank Zappa is no longer with us, I will settle for Jack Johnson, Ray LaMontagne, and John Mayer.

**TAL HERZBERG?** Engineering credits include The Black Eyed Peas, Christina Aguilera, David Bowie, Green Day, Herbie Hancock, Missy Elliot, Pink, Rod Stewart, Sum 41, and many more?

Oh yes.

We asked him THREE questions picked at random from our random question machine. Read on.

### 1. What is your main recording medium these days?

Tal Herzberg: I have been recording exclusively on Digidesign's Pro Tools systems since 1994. My current setup is Pro Tools HD ACCEL3, 5 x 192 I/O interfaces, SYNC I/O master clock, MIDI I/O interface, and a plethora of software plug-ins. I use analog tape for stereo mix down, mostly 1-inch, sometimes 1/2-inch. I find analog tape saturation and compression in the bottleneck stage of the mixing process to be some sort of "magic glue" — it smoothes the top end, and tightens the bottom.

## LISTEN HEAR

### OSBOW

**Love That's Last (Hydrahead)**

**Produced by: (various), Mixed by: (various)**

A career retrospective that doesn't reek of "greatest hits" attitude, *Love That's Last* is a collection of b-sides and previously unreleased material chronicling Osbow's rather illustrious existence as one of the most highly regarded post-rock/noise/indie/blues



acts. This two-disc set also includes a re-release of Christian Anthony's acclaimed documentary *Music For Adults* as well as bonus live footage and a Bernie Becker/Joel Jaffe 5.1 remix of two tracks from their previous album, *An Evil Heat*; created for, as the liner notes list, "intense joy"; which is probably the one emotion that is

not touched upon herein. A very even-sounding release by a very unstable sounding band that comes with more of a warning than a recommendation.

[Total disclosure: It's Editor-In-Chief Eugene Robinson's band.]

## LOVE LETTERS FROM FIGHT FANS

### PICTURE IMPERFECT

You got it wrong! "Ever wonder what kind of mic they use to pick up the guys talking in the middle of a battle scene...? Answer: They don't... They get what they can..." and post dub it later." ("We Don't Need No Stinkin' Timecode," March 2006)

NOT!!!

I'm a motion picture sound mixer. I wouldn't last two days with that attitude. We go to great lengths to get it live. Nobody likes looping. It's expensive, time consuming and hurts the performance. Check out the film *North Country*. All that dialog in the mines was live and was recorded in locations that were so noisy you couldn't even hear the person next to you yelling in your ear. So how did we do it? Sanken and Countryman lavs hidden in the headbands of the actor's hardhats. The hardest part was convincing the extraordinary cast to let us put the entire rig, transmitter and all, in their hardhats. Fortunately, they were all troopers and it worked. Just another day on set doing location sound.

Billy Sarokin  
Mount Kisco, NY

### STEVE WYTAS WHO?

In response to Steve Wytas's snide letter in the March 2006 issue: Steve Wytas is being either disingenuous or ignorant, when he chides Eddie Kramer for "hating MP3 audio files when he loves DVD audio." Wytas offers this misleading reason: "DVD audio is a 320kbs MP3 file."

In fact, when Eddie says he loves DVD audio, I'm certain he actually means that he loves DVD-Audio. The simple use of a hyphen and an uppercase letter makes all the difference. Wytas is obviously confusing this with the audio portion of a DVD movie, an entirely different spec and not what Kramer was referring to. DVD movies use either Dolby AC-3, DTS, or MPEG2 for surround, and MPEG1 for stereo. DVD-Audio uses the Meridian Lossless CODEC, a much higher quality system than any MP3. DVD-Audio's extremely comprehensive spec includes bit depths up to 24 and sample rates all the way to 192k. It offers 5.1 Surround, as well as stereo, and sounds vastly superior to any MP3 I've ever heard.

If this kind of sloppy thinking is the way Wytas operates, I'm not sure I'd ever hire Audio911 to be a consultant on anything: What have you done lately, Steve?

Best Regards,  
John Boylan

### LOU JUDSON WHA'?

Just got the new issue, very good. What's up with that dude slamming Neal and EQ? Prick. How many Grammys does Lou Judson have?

Micah Warren

### THE EQ FIRESIDE CHATS

Pete Prown is a contributing editor at *Vintage Guitar* magazine, writes for Back Beat Books, is lead guitarist in Guitar Garden ([guitargarden.net](http://guitargarden.net)), and is an American tax payer.

PETE PROWN: Hello. I'm a subscriber to EQ and am having deep problems with your new look and style. . . .

*You say nothing of substance here. The issues have been jam packed from front to back with non-duplicative content. That is: content that you won't find anywhere else. Real producers talking honestly, and dishing heavily on what they do and how. So for us, the hardcore, the look and style both improve our newstand positioning and appeal to an increasingly selective readership that, yes, also reads Rolling Stone, Spin, The Source, URB, and the list goes on and on but I'm getting ahead of you here.*

PP: Well, here are a few of my concerns: The magazine now seems to be GQ rather than EQ.

*Once again the proof of the pudding is in the tasting. Eddie Kramer didn't talk about suits and Kunkel didn't talk cravats, but I understand your use of the word "seems." So, point taken.*

PP: Well, what's the point of the style shot of Jermaine Dupri on the cover? It doesn't tell the reader anything.

*Well there's a journalistic maxim of not apologizing and not explaining, but I'll gladly yank the curtain back and have you see what we see and how and why: To attract top-flight production talent to the magazine, there has to be an immediate value add. For them. Rick Rubin does not appear on the cover of EQ if it's going to be ANOTHER shot of him sitting in front of a board. A shot that's been used and done to death. Jack White doesn't return our calls if he gets an insert box on a cover featuring a mic pre. Moreover, readers can't buy our magazines if they're located in the hobbyist section of the newsstand versus up with GEAR, BLENDER, and SPIN (where we most*

*recently found it at Borders), and finally JD doesn't even talk to us if he can't have some buy in on the cover concept and conception. So that might fill in the blanks for you as to why... but to service the long standing readers, emblazoned over his chest is THE reason the issue exists: 200+ tips from Grammy winners, guys in the trenches, young turks and the whole rogues' gallery of people who might have something to say. And for an 84-page issue it's jammed to the gills with (and this is ON the cover) producers and engineers that appeal to a wide variety of our readership demographic. For this we don't begrudge JD a beauty shot.*

PP: But within the Dupri article, we're only shown three shots of the artist sitting on a variety of objects in a photo studio, instead of showing us the gear he uses or anything about his work. Furthermore, a chunk of the interview is about his MPC 62 sampler. So why not SHOW it to us?

*Because every magazine study in the world indicates that the ruling truism is that people want to look at people. So we could have photographed him IN a studio, like every single other magazine. But we opted for compelling photos and compelling interview instead.*

PP: The Doc Rodriguez interview features three (3) identical photos of the artist. Couldn't you find any others?

*Well we shouldn't be as honest with you here as we are, but we agree with you. In this instance, though, the repeated use of the photo was more a design device that also was causally connected to the fact that we only had \$200 to spend on his photo and this doesn't pay for "others."*

PP: Did you think we wouldn't notice?

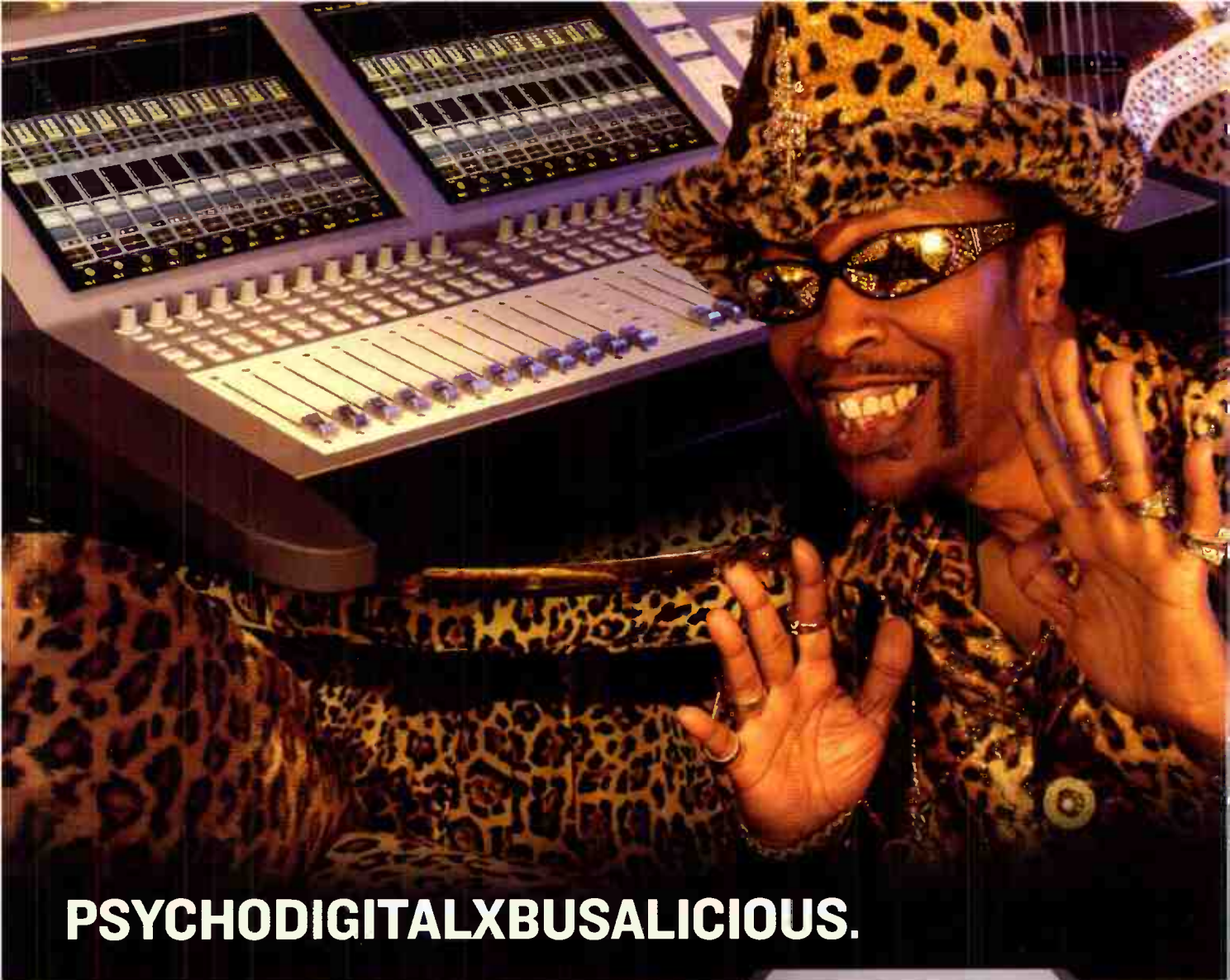
*Well we thought you'd be more amazed at the incisive article on him, as well as the one he WROTE himself.*

PP: Again, SHOW us the artist's studio or gear. You need to better illustrate the points in the article.

*Gear listings are cool and usually occur appended to almost every article. The Gearhead section of the mag SHOWS what you're looking for, however.*

PP: Also, running this article onto the last page is lame. That page is typically reserved





# PSYCHODIGITALXBUSALICIOUS.

Bootsy Collins knows "the one" when he hears it. As the master of space bass, he has more funk in his left hand than half of the western world. Which is exactly why he relies on the Mackie Digital X Bus production console to capture his complex funkosity.

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World Radio History

# Punch In



for a short, stand-alone article, not spill-over. Lame.

*Hahaha . . . thank you, sir.*

PP: Your readers would love you forever if you started putting in simple schematic diagrams showing them "how various pieces of gear connect to each other." No other recording mags do that. Nice, simple diagrams would do wonders.

*This is actually a cool idea . . . might be a tad too entry level for many but I like it . . . of course we'd have to secure an illustrator. And they'd want to be paid, and budgets are tight, but I'd be glad to steal this idea for sure.*

PP: Your body typeface is hard to read. It's not a true "black" color. It looks like dark gray on a white page, which is murder on the eyes (and I'm 43).

*Well some of us are 43 too and we can read it just fine. . . .*

PP: Anyway, thanks for listening.

*Listening?!?! I won't stop there . . . I'm running it in the Letters column if you don't mind.*

PP: Look, I don't know if you're intentionally

trying to be a hybrid gear/style magazine to bring in more hip-hop readers. . . .

*Has nothing to do with hip-hop readers . . . in the last 12 months we've put waaaayyy more than TOP 10 hip-hop producers on the cover. . . We've put legacy cats on (Joe Chiccarelli, Ken Scott, Kramer, Swedien, Kunkel, Puig, Barresi, BT), we've put tattooed Grammy winning women on (Linda Perry) . . . we've put musician producers (Moby, Will I Am) and we've put relative no names whose work we really dig (TV on the Radio, Thievery Corp), and yeah . . . hip-hop producers as well . . . but the idea is to do a magazine that graphically is appealing . . . make that APPEALING, as well as informative, AND representative of the entire production community.*

PP: It's not flying with me and, I'd guess, other readers.

*Well check the letters in the March issue. They overwhelming disagree with you. And I guess probably because as you've identified them they are first and foremost READERS . . . and our content is non-pareil. . . . We mean the guys we have writing for us from Anderton, Ciletti, the producers themselves and so on? Top flight. Yes, the design is a work in progress and your input is more than welcome on it, but there's the forest, and there are the trees,*

*and if someone out there is putting out more compelling content, well, we'd like to see it.*

## ALL HAIL THE CHIEF

I just wanted to send you a quick note to let you know how impressed I am with the February issue of *EQ* magazine. I know that it had to take a huge amount of time and talent to put all of that together but it is SO beneficial to all in the recording industry. We need more precise information from the "masters" and especially with the down-to-earth rhetoric they used to present all of their information. You don't have to be a highly degree'd engineer to understand how to check phasing, mic a drum, or equalize an acoustic 12-string. Don't stop here — keep up the great work.

Thanks for all  
Bob Heil

## OH, YOU FLATTERER, YOU

I've always kind of liked *EQ*, but I've grown increasingly satisfied with the magazine over the past year or so. I've noticed many people, like me, are writing to express thanks and congratulations, but I wish to thank you specifically for bringing back the "Room With a VU" feature (or article, or column, or whatever the proper term is). You must be a musician at heart, truly, or incredibly clever (or both), to sense, as well as you have, the common pulse of musicians, young, younger and, er, seasoned, we'll say.

# FKK THE FCC

Friends of freedom of sound — The FCC — have levied a \$1 million fine against Behringer for supposedly marketing almost 50 models of "unauthorized radio frequency devices" — namely Class B digital audio music devices, *i.e.* mic pres, mixing consoles, and dynamic processors.

The agency had acted upon a complaint received in 2004 that alleged Behringer was marketing digital audio equipment that didn't have a certification label; which resulted in some serious finger wagging on the side of the FCC.

According to the FCC, "in order to promote efficient use of the radio spectrum the FCC has developed technical standards for devices that are capable of emitting radiofrequency energy when in use." This requires that radio frequency equipment is tested for compliance with applicable technical requirements

in accordance with one of three authorization procedures: Declaration of Conformity, Verification, and Certification. This is enacted to ensure that radio transmitters and assorted electronic devices meet certain guidelines that limit interference before they hit the streets.



Long story short — they've been bugging the hell out of Behringer for years about 66 models of digital devices and their lack of verified compliance with FCC technical standards. Though Behringer claims that "a range" of its products have been tested and passed "CE" directives, offering lab results to substantiate these claims.

"S'Not Okay, Mang," the FCC's exclaimed, claiming that Behringer has "imported 93,620 units and sold 100,304 units of digital devices that had not yet been tested for compliance with the FCC's rules" — proposing base forfeitures of \$7,000 for each and every one of the 50 models of "unauthorized" digital devices Behringer has marketed in the United States within the past year.

The FCC has admitted that they are screwing Behringer by fining them in a manner substantially harsh in contrast to how the commission has dealt with similar past manners, but justified it by calling them "egregious" and "able to pay the fine," as well as being "terrible, horrible, no-good, very bad people." Yes. That's what we call a joke, son.

Thanks so very much, and please keep up the good work!

Best Regards,  
Axel

### AND THE HITS KEEP COMING

I have to say I couldn't stop laughing while I was reading Jurmaine [sic] Dupree's [sic] interview in EQ: I love the MPC 62!! I mean come on. You're a technology magazine. Don't you have anybody there to fact check and know that it's an MPC 60 MkII. I mean it doesn't take to [sic] much time to find out the facts. I know it's small, but still when I was at several studios and was just talking with friends this came up and was good for a good laugh. You are one of the only music technology magazines left. I think you should make sure you get it right.

Peace,  
Jason Miles  
[jasonmilesmusic.com](http://jasonmilesmusic.com)

*Editor's Note: Ahhh, you got us. OK. Now run along and come back again when you can spell his name right, haha.*

### AND COMING...

Eugene,  
It would be utterly remiss of me not to acknowledge, indeed celebrate, your phrase "I'll just sit like a dog in the dark eating wet cigarettes" (Talkbox, March 2006). This is not only

a combination of words previously unimagined by this reader, but certainly something never otherwise found in an audio publication. Just wonderful.

And, geez Louise, were you really in a movie?!

Best,  
David

*Editor's Note: Thank you sir. And indeed I was. The worst movie of 1987. Leonard Part 6. CATCH it.*

### GOOD CATCH, SEZ CRIME DOG MC GRUFF

As a home studio owner, I was pleased to see the article entitled, "Studio, Safe, Studio," on the [eqmag.com](http://eqmag.com) site. I found the information to be useful and reassuring, but one passage of the article troubled me greatly. Anthony Collins advises marking one's equipment with personal information to make theft more obvious to buyers on the other end. That's a good idea. But he recommends that a piece of that personal information could be a Social Security Number, which is absolutely absurd. If a theft-minded person ends up with your SSN essentially as a bonus gift, the hurt for the studio owner is not only an isolated financial loss. Identity theft is far worse than losing a Neumann or two! A better idea would be to make up some arbitrary alpha-numeric and record it yourself somewhere, like in a certified letter or with your

insurance company, so that you can verify it later. But your own SSN?!?! Please.

Wise readers will know not to go engraving their SSNs on all their equipment. But for many, the suggestion that their SSNs can be advertised on their gear to keep them safe will unfortunately make sense to them. I hope that the editorial staff can catch this type of error in the future, and that the author be notified of his lapse in consciousness so that his own gear may be re-etched.

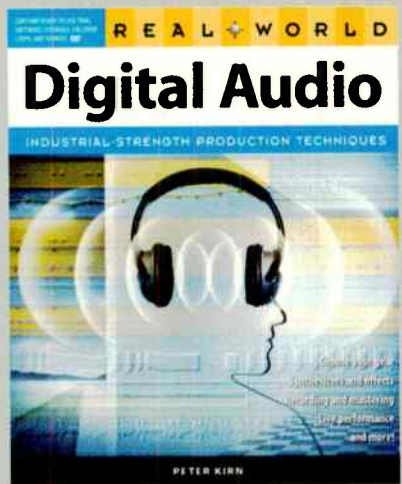
Thanks for your time,  
Max Cowan

### CLASS WARFARE

Re: March 2006 issue, interview with Don Was and Gary Gold.

On page 54 (1st paragraph), I suspect Don was referring to a "I-IV-V" progression, not "one 4/5 progression." In music theory, Arabic numerals are used to describe notes of a scale, and Roman numerals are used to describe chords built on those scale tones. For example, the notes of a C major scale are: C, D, E, F, G, A, B, and C. They're assigned Arabic numerals 1, 2, 3, 4, 5, 6, 7, and 8 (or 1 again). The Roman numeral "I" refers to a chord built on the first note of that scale: a C major chord. The "IV" chord is built on the 4th note of the scale: an F major chord; and the "V" chord is built on G, the fifth note of the scale, and so on. Otherwise, great interview.

Bob Karty  
Oakland, CA



## LOOK SEE REAL WORLD DIGITAL AUDIO

Peter Kirn has managed to pen what may soon be known as the virtual bible for those wishing to use the most modern of modern technologies to musical end. Comprehensive and all encompassing, *Real World Digital Audio* starts from the very beginning and follows the subject through to the bitter end (assuming you are a staunch card-carrying member of the audio Old Guard, in which case bless your heart and your tape reels); allowing the reader, no matter their level of expertise, to hop right in on the action and start taking it all to the next level.

Perfect for the musician or the engineer, the novice or the adept; this book covers subjects from setting your computer up to record audio to tracking to using synthesis software to mastering to printing scores to taking it all out into the live setting — all in a step-by-step, linear manner, making this palatable for even the most non-technologically savvy while managing to avoid trudging solely in beginner territory.

Also included in this grimoire is an instructional DVD chock full of trial software, corresponding tutorials, and a barrage of ready-to-use sound banks and demo loops; material that will certainly aid you in your quest to conquer the ever-expanding realm of modern recording.

So take all the other books off of your coffee table and replace them with *Real World Digital Audio*, for then, and only then, will your next date be truly impressed by your vast knowledge and impeccable taste in all things of the literary nature. The *Republic* it is not, but unless you wish to merely philosophize about your place in the modern recording universe then you would probably do good to pick this up.

## HOW TO MIX A HIT IN 2000 EASY STEPS

by Dan Daley

Given Serban Ghenea's discography, it's surprising that the two cities looming largest in his career aren't New York and Los Angeles, but rather Montreal and Virginia Beach. While beginning in his hometown of Quebec at Concordia University — where he studied music while playing with some local bands — Ghenea (mixer for Usher, N.E.R.D., Justin Timberlake, Janet Jackson, R Kelly, Limp Bizkit, 'NSYNC, Liz Phair and Jewel, and 2004 Grammy winner for Best Pop Vocal Album for The Neptunes' production of Justin Timberlake's *Justified*) most recently has built his own studio in Virginia Beach, Virginia — a place that looks to be the new home base for much of the *Billboard* Top 100 these days.

### TEDDY'S PLACE

Introduced through a mutual friend to R&B producer/artist Teddy Riley (who had built Future Recording in Virginia Beach several years earlier) on a visit to the area, Ghenea noticed that the once-sleepy city was suddenly infused with activity. Riley had just finished up work on Michael Jackson's *Dangerous* album and was solidifying his position as the so-called "King of New Jack Swing"; producing artists such as Keith Sweat and Mary J. Blige. His own band, Blackstreet, would soon record two platinum-selling albums at Future Recording, which became a Mecca for pop artists such as Bobby Brown and New Kids on the Block, as well as many of the crossover hardcore rappers that would dominate 1990s radio, including Will Smith, Heavy D & the Boyz, and Jay-Z.

It was in this highly active and eclectic musical landscape that Ghenea honed his skills. "It was an amazing time," he recalls. "My very first session was with New Kids on the Block." Future Recording had two main studios equipped with an 80-input SSL 4000E and a CAD for consoles. The facility was designed around Riley's manic work schedule, often writing in the B studio while the previous day's music was being recorded in Studio A. "There were always projects backed up and waiting to get in," Ghenea says. "What Teddy was doing was bridging the gap between traditional R&B and hi-hop. I had been working with analog tape up till that point. We had tape at Future, too, but that's where I started getting into digital recording. We had Sound Designer, which was the precursor to Pro Tools. You had to go in AES or SPDIF. It had no analog inputs, and we used it for track editing and sequencing only in the early days. Then it evolved into Sound Tools, a four-track system. The hard drives at the time couldn't handle much more than that."

Ghenea recalls that Riley liked to add live instruments during what became extended mixes. "He would add live keyboards to the track as the mix went down," he says. "We were using a Logic Audio sequencer locked to tape with SMPTE and playing along. When the TASCAM DA-88s came out, we would use them to record the new parts and slave them to the two 24-track decks.



We were always running more tracks into a mix than we actually had on tape, so the console was always maxed out in terms of channels. Teddy was a programmer at heart, and I got into that as a result. He was always trying out new stuff — new equipment and new ways of using it. So it was an education for me because I had to try to figure out how to make it work. Teddy was always coming up with things to do that the technology didn't exist for yet. The solution was usually pretty unconventional, but as long as it sounded good,

that was all that mattered. For instance, most people would only use Dolby SR on the two-track tape for mixing at 15 ips. We actually tracked to the two-inch deck using SR. It gave us a result that was as quiet as digital but still retained the warmth and sonic characteristics of analog tape."

In those pre-AutoTune days, Ghenea used a laborious but effective way to correct vocal pitch. "I'd always look for a vocal performance that had feel over pitch perfection," he says. "Once you found the takes that you liked, I would comp them to a single track and then do pitch correction using an Eventide H3000 Harmonizer. I would bus six tracks of vocals into it from the console and out to one channel, sometimes just going for half a word that needed pitch correction, punching it tight in real time. You'd have to keep doing it over and over again until you hit the spot and the pitch just right. But it was worth it because you got to keep the takes that had the best feel, and the best vibe."

### IS IT LIVE OR IS IT...

The notion of the extended mixing process that he experienced with Riley set a template for his own transition to mixing, and it's one that meshes well with the fact that R&B and hip-hop is moving toward the use of more live instrumental elements (in conjunction with programmed elements). In many cases, the live and programmed elements will be recorded in unpredictable sequences, such as The Neptunes adding live drums halfway through their N.E.R.D. album. This newly animated urban music poses some interesting mix challenges. "The 'sloppiness' of live musicians playing together is what gives a record character," says Ghenea. "But at the same time, when live elements are being mixed with machine elements, you have to make sure everything is very synced up. Otherwise things like phase incoherence between live and machine tracks can drastically change the sound when you put them together in the mix." He uses sync programs like Beat Detective, often fine-tuning timing relationships by slipping tracks against each other. "It doesn't defeat the purpose, though," he stresses. "What you do first is over-mix or overcorrect it, then deconstruct the mix, letting the live elements take the lead in certain parts of the mix. It's not like the music is going all one way or the other, toward machine or live, dry or ambient; it's using more techniques from both more often

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## HOW TO MIX A HIT IN 2000 EASY STEPS

now. Even when drum tracks get sampled and looped, the loops tend to be longer, which lets the feel of the live drummer come through. You can still hear the little imperfections that make it human."

On N.E.R.D.'s *In Search of...*, Ghenea's drum miking setup was rudimentary; keeping with the raw, classic rock feel that live hip-hop tracks are moving toward. He used either a single Neumann U-67 or U-87, placed in front of the kit about toms level and approximately five feet in front of the kit. He also placed a pair of AKG 451 microphones as overheads variously using omni and cardioid capsules. "I tried using some B&K microphones on the overheads but they were too clean sounding," he comments, underscoring the desire for sonic asperity on the drum tracks. "I was looking for a raw, almost ugly sound for the drums." Depending upon the needs of the track, he would augment the mic setup with spot mikes — a Shure 57 on top of the snare, a Sennheiser 414 below it, for instance, but those applications are relatively rare, he adds. "It's mostly all room sound," he says. "We want to hear the kit for what it is."

When Ghenea moved out as an independent mixer in 1998, several of Riley's previous production clients followed him for their mixes, and Ghenea would travel frequently to Philadelphia to do work with Jazzy Jeff and his production company A Touch of Jazz. He was one of the first engineers in the region to get his own Pro Tools system.

Another technique Ghenea developed during his stint at Future Recording works well in a mixing environment in which constant revisions are required for a variety of reasons. "I started out doing 'stem' mixes — mix passes that had instrumentals or vocals separated — so that I didn't have to recall a mix every time someone wanted a revision because they wanted a specific change for a vocal level or because a sample didn't clear," he explains. "At first I would record an instrumental, background vocal, and lead vocal passes to a TASCAM DA-60 timecode DAT machine and then dump them into Pro Tools and make the adjustments there. Eventually I would record stems straight into Pro Tools through an Apogee AD8000 and the stems got more and more elaborate. Typical separate stem passes would include drums only, bass, keys, guitars,

strings, sample loops, background vocals, lead vocals, and so on. This allowed me to make changes to complex mixes without having to go back to the studio and recall them on the console. Finally, I decided it made more sense to mix entirely within ProTools."

Ghenea says he often uses the Digidesign Lo-Fi plug-in, which has distortion and saturation parameter controls, which he'll combine with a very light touch on each to get the tape effect. Other techniques to dial in some analog effect include reducing the sample rate or the bit rate. "What that does is create some contrast between that track and the rest of the song," he says. "You don't need much of it, but it can make a world of difference."

**"The more you can use plug-ins to approximate how the analog equipment would process the sounds, the less you have to go outside the digital environment and encounter issues like latency."**

Working on Britney Spears' vocals, Ghenea wanted to emphasize the breathiness that gives her voice its trademark sexiness. He uses a McDSP Compressor Bank plug-in, which includes models of a Universal Audio LA-2A and UREI 1176 analog compressors. Understanding how the original analog gear performs is the key to getting the

desired effect, he stresses. "There are certain things you expect out of those compressors. The LA-2A adds to the breathiness of a vocal because it has a soft knee; it also has a slower attack because it's an optical compressor. The 1176, on the other hand, is very fast but it's not always a first choice on a vocal. But understanding the characteristics of each allows you to combine and emulate them as though they were being used together as outboard gear." He suggests starting with the 1176 and slowly dialing in the LA-2A until the effect is achieved. "Again, it's all program-dependent," he says. "But it sounds amazing on vocals." He also likes the Metric Halo Channel Strip plug-in as an emulation of an SSL console strip. "You can use the dynamics on the plug-in in the same way you can the actual channel strip, so it's a good starting point when mixing in Pro Tools," he explains. "The more you can use plug-ins to approximate how the analog equipment would process the sounds, the less you have to go outside the digital environment and encounter issues like latency."

Tracks for R Kelly, despite being aimed squarely at a pop market, are mostly programmed. Mechanical tracks seem to put that much more of a premium on vocals, he believes. "One thing I try to do is to help the artists achieve a unique sonic signature that's all theirs, one that transcends the production of the record," he says. "When it comes to this, I look up to what Mutt Lange has done on such a wide variety of artists: AC/DC, Billy Ocean, Def Leppard, Bryan Adams, Foreigner, Backstreet Boys, and Shania Twain. None of these artists has anything in common musically, yet each one has a very distinct sound, one that is unique to each of them. There's no mixer's or producer's 'stamp' on them other than the fact that they all sounded amazing and were all incredibly successful."

At Ghenea's own studio, MixStar, in Virginia Beach, he's busier than ever, but having his own place allows him to control the pace.

"It's relaxing having your own place — it gives me the break I need to get some perspective on what I'm doing," he says. "Perspective is a very, very good thing."

## LISTEN HEAR

### DIRE STRAITS

**Brothers In Arms/20th Century Edition (Warner Bros.)**

**Produced by: Chuck and Mark Knopfler, Mastered by: Bob Ludwig**

One of the more solid popular rock releases of the early to mid-'80s is presented again with superior sound quality as a double sided disc, playing in both ARS, DDS, and SR CD. Chuck Ainlay has employed



AMD's 64 bit Opteron chip technology to record Mark Knopfler, thus securing him a Grammy nomination for Best Surround Sound Album. The short of it is: this release sounds phenomenal—using modern technology to enhance what was already a very good album. If you are even a fairweather Dire Straits friend, you probably need to work on getting this.

# OVERRATED? TECHNOLOGY

During an interview on the occasion of his 80th birthday, writer Norman Mailer suggested modern technology has made a bargain with us: "I'll give you more power . . . and less freedom." Dropping this observation (or in my case, "anecdote") on one's acquaintances is a revealing exercise and the irony is not easily avoided — for in few other areas of our contemporary culture has this become more pertinent and compelling than in the creation and production of music.

With more generations having grown up with a proficiency in the techniques of rock, it's become quite easy to forge a belief in great music being largely about all the cutting-edge gear and the slick chops. A hot tune, therefore, becomes defined by its display of technical prowess on both sides of the studio glass. The truth is, however, that great music has little to do, inherently, with style points and everything to do with essential human feeling. Does it truly touch the listener? Does it fill them with a greater sense of the gift of love or the malady of loss? Does it reflect the truth? Will this even be worth hearing again 20 years down the road?

Such are precisely the criteria by which we can now recognize the classics of the genre — works that have proven themselves

against the litmus test of time. Listen, if you will, to the first minute of "I Am the Walrus" and then try dismissing the Beatles/ George Martin collaboration as just music from the '60s. All of this was done sans the spoils and crutches of modern musical technology, and perhaps that need not be forgotten.

What is sought is a process, or as Howard Bilerman stated, "organic growth": the right phrasing, the integrity of unadulterated vocalization, the obligato which, even deceptively simple, enhances the emotional experience, a lyrical passage that speaks of enduring issues. It's about prudent, even inspired, creative judgment(s) and avoiding what Chet Baker described as "the danger of having a lot of technique and no soul," right?

Assuming agreement, the above is clearly not an argument for sloppiness — a suggestion that primitiveness is somehow preferable to refinement. The unschooled musician, engineer, or producer runs great risks if ignorant of all the options or in accepting the resultant ossification in both thought and presentation; yet an over-reliance on plug-ins and digital manipulation can be equally catastrophic when the correct answer to a creative question may be to take the simple approach.

The need, ultimately, is for balance between the ineffably human and the imaginatively mechanical. This kind of integrated quality is evident in the subtle audio artistry of equilibrists like Bob Ludwig, Bruce Swedien, or a host of others whose insistence on musicality is uncompromised; and for whom technology is always a means and never an end.

Writer Rick Bass said, "Two things — any two things — with any difference between them, whether small or great, will always be carving at one another until some change that is satisfactory and pleasing to the universe occurs." Hopefully this creative interplay can become more of a prominent characterization in the making of modern music; very "human" beings poised with sophisticated and efficient tools all for the sake of creating and capturing great art. For, as Charles Rosen pointed out, music is a "basic human need," and thus there is an aesthetic, if not moral, obligation to address the delicate issue of artistic balance; as the necessary result of the creative endeavor is to effect on a profound level. —David Flitner



James Yancey (aka J Dilla) passed away Friday February 10th, at the age of 32, from complications stemming from lupus. Excelling as both creative collaborator and producer for a slew of artists

## J Dilla (1974–2006)

ranging from Janet Jackson to Macy Gray, De La Soul to Busta Rhymes, Poe to Mos Def; Yancey was both prolific and versatile — lending his skill for churning out serious beats to musicians from the likes of A Tribe Called Quest and the Roots, as well as sitting behind the board for major release after major release, without ever abandoning the independent base of the hip-hop/R&B genre from which he arose.

Just before his unfortunate passing, J Dilla released an instrumental album entitled *Donuts* and had finished up the *Welcome to Detroit, Vol. 2* compilation which, according to Watts Records, will be released shortly.

Likewise, two other projects, *The Shining* and *Jay Love Japan*, had been completed, as well as production work for Madlib,



Busta Rhymes, Ghostface Killah, A.G., Visionaries, Truth Hurts, Phat Kat, MF DOOM, Skillz, and Frank N Dank.

Born and bred in Detroit, J Dilla started off producing musicians and collectives that he admired during the mid-'90s before adopting the pseudonym Jay Dee and joining Slum Village, leaving after one album to pursue a solo career and refocus on the production end of the industry.

Dilla was diagnosed with Lupus nearly three years back and, despite his rapid physical degeneration, gained some of his greatest accomplishments in those years leading up to his death — working extensively with Common, as well as teaming up with fellow producer/tapper Madlib to collaborate on 2003's critically acclaimed *Champion Sound*; an exchange that had the two respective artists switching duties off and on from producer to MC.

His loss has greatly affected the recording community and he will be mourned for some time to come. We at EQ offer our condolences to his family, friends, and colleagues.



by Roy Stein

## DON QUIXOTE ON MARS RECORDING AND MIXING THE ATOMIC SWINDLERS



Scores of recent press have raved about the Atomic Swindlers' new CD, *Coming Out Electric*. Touted as "a lesbian-fronted sextet combining David Bowie's glamour, Barbarella's sci-fi camp, Pink Floyd's sonic extravagance, and Goldfrapp's gauzy vocal drama," the Rochester-based collective have surely made an impression as being a bit "eclectic"; but the real question we have is this: Who in their right mind would work with such a group of admitted weirdos? Themselves? Christopher Hooker? Who else?

### BACK TO THE FUTURE

The space cadets behind the console are an odd collection. The drummer, with little studio experience, serves to do the bulk of the recording. Much of it is to be done in a

basement on an old Korg D16 v. 2, whose shelf life has long since past. To keep in the spirit of things, the guitarist gleefully donates his Vestax HDR-8, gear that even the Soyuz cosmonauts would label as antiquated. The flight captain, an engineer in his mid-20s who really doesn't listen to a whole lot of music in his free time, is in charge of the mix down. Fortunately, the band will mix the basement tracks at the well equipped GFI Productions; which has an A Room (complete with the vintage MCI JH-636 Metallica used to record *Kill 'Em All*), a B Room (out-fitted with a Mackie D8B console clocked to a Lucid Gen-X word clock generator via an Apogee Low Jitter Clock I/O), and its own resident "Yoda." The young engineer tells the band, "hey, forget the analog board with the pedigree rock 'n' roll history, we're gonna mix on the little Mackie," even though the band wants a lush sounding 23rd Century concept CD modeled after the multi-layered, high-fidelity sounds of Tony Visconti's recent work with David Bowie — on a \$5,000 budget of course. Major Tom to ground control: count down, 4,3,2,1, disaster?

### BLAST OFF

Step one: Get a decent drum sound. The cellar is carpeted, the walls paneled and the ceiling is soft acoustic tiling. So far so good; but it's one decent size room with no way to separate the instruments. The solution: Make sure the drummer can play to a click track sans band. Don't forget new heads, nicely tuned drums, and a good kick drum mic; in this case a Shure Beta 52. Throw SM-57s on the snare, on the rack tom, on the floor tom, and two as overheads. NO mic on the hi-hat (it bleeds through everything anyway). Play it safe with the EQ on the D-16, make sure the recording levels are reasonable, and deal with the fine-tuning while mixing down.

Bass? Just go direct with a newly restrung Fender P-bass, of course. Guitars? Well, recording in the basement is actually very

cool-no mojo and you go home without a bill. Plus, casual often equals creative. At heart, this is a guitar-based band, so capturing a great guitar sound is crucial. Chris Yockel is an electronic technician who at one time worked for the signal processing company MXR. Staying close to his roots, he uses the MXR Dyna Comp, MXR Noise Gate, the MXR Delay System II, and a MXR Analog Delay combined with a Fender Super Reverb Tremolo for the "outer-space" sounds. The amp is a vintage reissue, miked front and back (just as Jimmy Page did) with, once again, SM-57s. Guitars include the Fender Showmaster with a Floyd Rose tail piece, and a Fender Strat. The ultimate in cool: a Jerry Jones sitar is brought in to cascade the effort back to the hey-day of psychedelia.

Scott Ostrowski, guitarist #2, who has plenty of studio chops, prefers to take the D16 home and record at his own time. His gear: a Stratocaster with a Seymour Duncan pick-up, a Hughes and Kettner pre-amp and 120 watt power amp, and a Marshall 4x12 1960 Vintage cabinet, all miked with the trusty SM-57.

Acoustic guitars are where the D16 really comes in handy. As most guitarists tend to be good buddies with music store owners, it follows that the folks from House of Guitars freely grant the band access to the best Martins and Taylors in their store. The strategy is thus: an AKG C-3000 a foot away from the 12th fret, and an SM-57 about two feet away from the sound hole as a back-up and/or to layer into the mix.

Keys? Rent top of the line Kurzweils for the string sounds. Use Korgs and Rolands for the spacey sounds and organ. When you need a good grand piano there's nothing like the real thing. D16 will travel. April, the lead singer, works at the International Museum of Photography (the George Eastman House). Their elegant Steinway located in George's huge wood-floored living room sounds amazing. You just gotta ignore the huge stuffed elephant head to get into the proper vibe. Two SM-57s perched 18" above the lower and higher strings seem to do the trick.

Violin? It helps when your neighbor, Howard Weiss, is the retired concert master of the Rochester Philharmonic Orchestra. Record him in the best-sounding room of the house, *i.e.* the hardwood-clad kitchen. Howard agrees that the natural reverb in the room is perfect for recording; just remember to turn the refrigerator off. Two SM-57s, one about a foot and a half off his shoulder, the other three to four feet out front, are set up while Howard, who has spent decades recording in various analog studios around the world, falls in love with the quick rewind and auto-locate capabilities of the digital world.

### ET PHONE HOME

Getting the tracks transferred from the old Korg D16 into the computer at the studio for mixdown is no easy feat. There is no available software for the version 2 to dump the tracks *en masse*. But, fortunately enough, both the D16 and one of the computers at the studio are equipped with Toslink optical I/Os; so the transfers can be kept in the digital domain with no degradation to the recordings. Note, however, that I said Toslink (two channel) not ADAT lightpipe (eight channel), which means we have to transfer one track at a time, in real time, and some of the songs have over 100 tracks! The good part? The studio owner doesn't charge the band for the transfer time and you get to hear every crackle and pop on each track for future fixing in the mix. The bad part? The physics of bouncing a quick two-track mix back to the 2GB D16 so you can erase tracks to make room for more overdubs. Initially there are some time-drifting problems. Since drift can be caused by using separate and independent clock sources, the fact that there is drift means



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that the D16 didn't slave to the clock coming through the Toslink connection. There are no settings for master/slave on the D16 v2. This dominatrix of a deck must always be the dictator of temporal dealings. Thankfully the solution to the drift dilemma is rather simple — connect another optical cable from the D16 back to the computer so that you can set the computer to slave to the D16 on transfers both to and from the deck. A quick re-recording of a transferred rough mix compared to the original file verifies that synchronization has been achieved.

### TURNING OVER THE HELM; KIRK TO SPOCK

Since most of the recording work is done, it's time to turn the controls over to the engineer. He and other band members will spend hundreds of hours together producing the record — but let's give Chris a chance to tell his story in the first person: "After mixing a few songs for the 'Swindlers before starting this album, I had an idea of the pace the band liked to work at, and the fine-tooth comb production style that they approach their music with. Combine this with the fact that the band members have odd schedules, and the A Room at GFI (the room with the analog board) is in use a lot, I weighed the options and decided that using the digital board in the B Room was a wiser decision. There, we could work on a mix for however long we had time for on one day, hit save, and then be able to come back to it three days later, and with the push of a button, have it exactly as it we left it. Try doing that on your old purely analog gear. No more wasted 45 minutes of session time to write down mixer settings, another 45 to manually recall them, patch back in all your outboard gear, set it up exactly as you left it, only to have it still sound different because, well, it's analog."

"The other option would have been to mix everything entirely in the box, and use the board merely for monitoring and recording additional tracks. Alas, though the music we were dealing with may have been of the future, our computers weren't. At an average of around 100 utilized tracks per song, it just would have been too much. As it was, being limited to 24 channels of output from the computer (the same number in either room), required me to submix instrument groups together, and therefore do any needed processing on those tracks within the computer, driving its CPU into the red."

"Logistics aside, it was time to launch the process. The first step in bringing in the prerecorded tracks for each song was to set up the tempo of the project file. Once the tracks were brought in, this would allow us to pick and choose between various takes of different performances and drop the best lines into every section of the song where it should be repeated — a process that would help whittle down the track count . . . a little. Each track had a snippet of the click track at the beginning for easy lineup. All I had to do was match the click at the beginning of every track, and thanks to our Toslink word clock sync, we were in business."

"For a few of the tracks, we actually did record the basics in GFI's A Room; with its big open hardwood floors, non-parallel walls, and cathedral-style vaulted ceiling, it makes drums sound great. Mics for this included an EV RE20 for kick, an SM-57 on snare, 421s on toms, and Beyerdynamic MC740s for overheads. Some scratch guitars, bass, and vocal were cut, as well, but most were later replaced with more thought-out and perfected takes. On one song ("Float") we even started by constructing a drum loop from various one-shot samples pulled from an assortment of sample libraries, ACID loops, our own recordings, and some handcrafted 808s tuned to the song. There was so much stuff going on in just the drum loop itself that we had to create its own project file just to process it, then create a mixdown of that to import into the full song's project."

"For recording final vocal takes, as per usual, we tested several mics on lead vocalist April to see which sounded the best with her voice. The Rode Classic, the Neumann TLM 103, and a few other medium-to-high-end mics were auditioned, but we eventually settled on an MXL V67 through an ART Digital MPA pre-amp. While the V67 was the least expensive mic of the bunch, it seemed to complement April's vocal in just the right way — enough warmth to fill out the tone without being too dark, and enough top end to keep things clear without adding too much zing or harshness."

### THE INTERGALACTIC BLUEJAY(HIGH)WAY

Continues Chris, "The band brought in a recording of the Beatles tune 'Blue Jay Way' and asked me to get that vocal sound for some of the lines in their songs 'Drag' and 'Underground Love,' as well as a couple string parts and keyboard lines. The Beatles obviously had a vocal sent through a Leslie cabinet. There is a Leslie in the studio, but with its proprietary multi-pin cable, I had no way to connect anything but the Hammond to it (unless I wanted to gut the Hammond in an attempt to figure it out, an idea which I didn't think the studio owner would be too fond of). Trying to duplicate the sound digitally just didn't give us the right tone. I considered suggesting to April that we use John Lennon's idea of tying a rope around her legs, suspending her from the ceiling, and swinging her around the microphone while she sang; but luckily enough for her, another client, who often plays his guitar through a Leslie, was recording in the A room and offered us his Trek II Leslie interface. We were able to use this interface to reamp the prerecorded tracks through the Leslie, resulting in 'Blue Jay Way' perfection."

"Other effects on the album were a bit easier to pull off (as well as being less of a potential health risk to the artists). We used a combination of Waves plug-ins inside Sonar for various effects such as flanging snare drums and vocals, piano tremolos, octave vocal layers, automated delays and reverb swells, as well as standard stuff like EQ and compression for anything that needed to be submixed; some static delays from the D8B; and rounded it all out with some external reverb gear including a Lexicon PCM60 for percussion plates and room verbs, a TC M-One XL for main vocal and lead line verb, and an ART Quadra/FX for strings and distant tones."

### THE FINAL FRONTIER

"Since attention to detail has been the spirit of the project, Tony highly recommends seeking the right mastering house and engineer, in this case Dr. Toby Mountain at Northeastern Digital in Boston — whose résumé includes relevant artists to this project such as Bowie, Zappa, and Alison Krauss. A couple of the band members and I loaded into the car and spent 12 hours at Toby's studio, where he did a fantastic job of mastering the audio portion of the 'Swindlers disc.'"

### THE EAGLE HAS LANDED

The results? The Atomic Swindlers have since played on over 350 radio stations, made the Top 20 on XM Satellite Radio, and are receiving acclaim from a vast array of sources. A.L. Sirois of Sci-Fi channel's SciFi.com says, "It's probably no exaggeration to say that almost any of the songs on this CD could be a hit with proper airplay and marketing push." From Ron Netsky of *City Newspaper*: "Coming Out Electric is a throwback to a bygone era when the music industry cherished poetic lyrics and albums that were works of art." Gannett Newspaper's Jeff Spevak proclaimed it "a sonic boom — grand Beatles pop as told by Barbarella." Perfect.

[atomicswindlers.com](http://atomicswindlers.com)

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# 12 YEARS OF RECORDING DWIGHT YOKAM

The hats, the cadillacs, and everything in between.



by Dave Karger

In 1985, I had the honor of being asked to record tracks for Dwight Yoakam's first album *Guitars, Cadillacs, Etc., Etc.* by Pete Anderson, Dwight's producer, guitar slinger, and general partner in crime. By way of background, I first met Pete when we worked together on a record called *A Town South of Bakersfield Vol. 1*, which he was producing for Enigma Records. We were working at my studio — Mad Dog — which was in Venice, CA, from 1980 until we moved to Burbank in 1995. The studio had been booked out every Monday through Friday by Enigma, and I had been recording a lot of punk and metal with an Enigma staff producer/A&R guy named Ron Grudie. We recorded everything from TSO and Channel 3 to Stryper. The "cowpunk" scene was flourishing in L.A. at that time, with bands like Lone Justice, Rank & File, the Screaming Sirens, and the Long Ryders.

Ron told me of plans to record a country and cow-punk compilation and asked if I wanted to be the engineer, which, being Texas born-n-bred, I jumped on. Pete Anderson walked in the door and we really hit it off. Dwight was in the process of getting signed and had already released the EP version of *Guitars* — which was creating quite a buzz. They were opening for bands like X, Los Lobos, and The Blasters, and really connecting with those crowds. The plan was to go in and cut four more tracks to complete the album. There was some controversy with the label — Warner Nashville — who wanted Dwight to go to Nashville and work with "the establishment" there.



There have been scores of great records recorded there that we all love, but this was the tail end of the Urban Cowboy era, and most everything coming out of Nashville at that moment was pretty wimpy and formulaic. Pete liked me because I was coming from a rock background but knew and loved classic country. He had Dwight drop by Mad Dog to meet me while working on *Town South of Bakersfield*. I remember Dwight and Pete looking at the 2-track and being impressed with how hot the recording levels were.

## GUITARS, CADILLACS, ETC., ETC

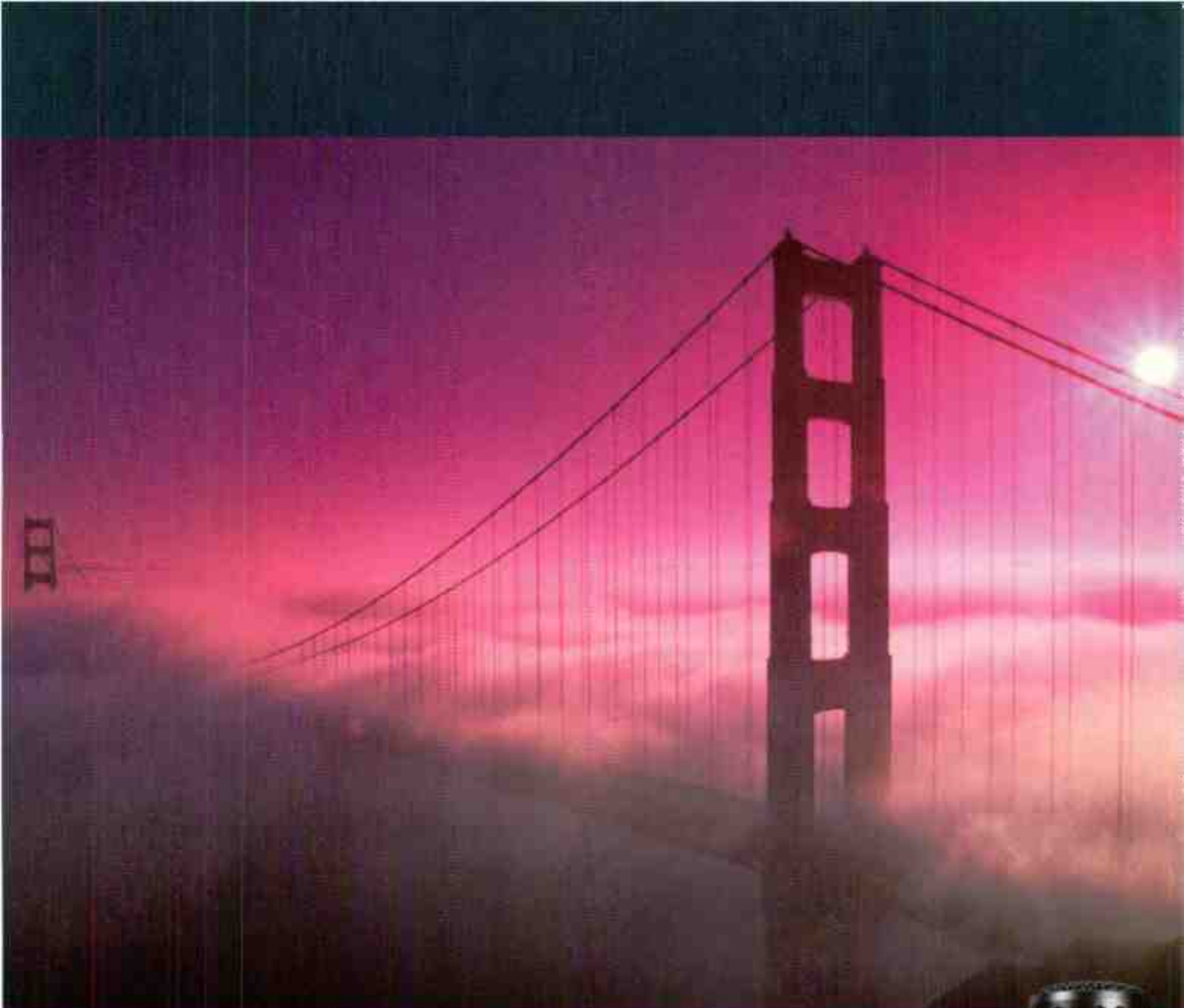
We were booked into Capitol Studio B for something like three days, as I recall, to cut four tracks: "Honky-Tonk Man," "Guitars, Cadillacs," "Bury Me" (a duet with Maria McKee), and "Heartaches by the Number." We were like kids in a candy store — we kept waiting for some adult to come and stop the fun. Dwight and Pete had spent



a lot of time thinking about what they wanted to sound like, listening to records and really analyzing what they heard. This is what got us to Studio B at Capitol — many of the great California country artists had recorded there — Buck Owens, Merle Haggard, and so on. Capitol has eight live echo chambers under the parking lot that were poured when they built the studios and that were a distinctive part of the sound we were going for. Capitol was, and is, a true world-class studio complex, and Studio B remains my ideal of what a great room should be. When we built Mad Dog in Burbank, our Studio A was modeled after Capitol Studio B, which featured a Neve 8068, Studer AR00s, a great sounding large room the size of a basketball court (it actually has a hoop in it), and two large iso booths stacked on top of each other.

I'd come up outside of the "studio system" and had learned things largely by trial and error (making shit up), so I was both elated and terrified when I sat at the console and the assistant, Steve Hingulbarb, asked me what microphones I wanted to use. I think I replied that I was open to anything he called to recommend. I did know, though, that we had to have one of Capri's great U47s on Dwight's voice, which I had coming through the 8068s 31102 modules into an LA-2A, and then straight to tape.

We built a little "hut" in the center of the room — with the U47 facing toward it — in order to control the amount of room getting into the vocal, giving us a more focused sound. The band was totally well-prepared, every overdub was planned, and Dwight never did more than a couple of takes in those days. We moved across the hall to Studio C to mix on the Neve 8108 with Neve's 1 automation, taking advantage of the echo chambers and EMT plate — still the best live ever heard. Studio C had a rack of Pultec EQP1A3 EQs, one of which ended up on Dwight's vocal, along with a dbx 160 compressor. The 8108, though a maintenance nightmare, was a nice sounding mix board — great EQs! We spent a lot of time referring to albums and A/B'ing our mixes for overall sonic with some classic country albums, really trying to achieve that classic sound for our record, yet still having it have the dynamic impact of a rock record.



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## HILLBILLY DELUXE

We recorded and mixed *Hillbilly Deluxe* in late 1985, with pretty much the same setup as on *Guitars . . .*, the big difference being that we were coming off a hit record. They had toured in an RV non-stop for about ten months, and by the time they came home, Dwight was a star, part of the "New Traditionalists" movement in country, along with Steve Earle and Randy Travis. Once again Pete had everything completely planned out. The band was well rehearsed, and Dwight would walk out and give us one to three great takes.

I think we may have done some very light comping, but big sections, not words. The signal path for Dwight's vocals stayed the same. One great change on this album was the addition of Charlie Paakkari to the team. Charlie was officially my second engineer, which was kind of a joke to me, because he was so much more knowledgeable than I was. He was a staff engineer at Capitol — one day an assistant, the next day a first — working with a lot of the great masters. It was an amazing education. The one smart thing I did was to let him really contribute to the project and share his knowledge of that studio with me. Again we mixed across the hall in Studio C. I was really proud of my tom sound on "Little Ways," which I had running through a Pultec and the Fairchild 670, with a lot of live chamber on it.

## BUENAS NOCHES FROM A LONELY ROOM

Enter the technology: Once again we were firmly ensconced in Studio B, this time with another hit record under our belts and a bigger budget to work with. Unlike the first two albums, which we raced through, we actually had some time to stretch out and try some things. We cut the basic tracks on the Studer A800 with 16-track heads and then bounced to Mitsubishi 32-track digital machine for all the overdubs. Charlie Paakkari was once again working with us and we had some fun. We spent half a day figuring out a way to sync the tremolo in one of Pete's Fender Twin Reverbs to our drum track. Pete's two Twins had been modded to allow one tremolo to drive the other, so we figured there must be some way to control it from an external source. We listened to the sound that was coming from the "master" tremolo — it was basically a low frequency pulse. We hooked up a signal generator with an audio trigger input to an oscillator and filtered the sound to match the control that the Twin generated, then fed a mix of the drums into it, and plugged that into the slave tremolo. Amazingly, it worked.

The track is "What I Don't Know." I was amazed by how many people actually noticed that the tremolo was locked to the drums and asked how we did it, which had been a secret until now. One of the great things about Capitol, besides the great rooms, is the amazing level of support available from the staff, especially the tech staff — very handy when you're in experimental mode.

By now, we had gotten into full-on vocal comp mode and I had purchased an Emulator III, which we used for tweaking and flying. It was a great machine for pitch correction in those pre ProTools days, although you had to take it apart and reset the cards every time you moved it. Dwight had been touring non-stop since the last album and was barraged by promotional duties, so getting the vocals took a little longer. Dwight's voice is so clear when he's in good shape, that it would be obvious right away if there was any hoarseness present. Thankfully, we had the time to spend to get the great takes.

This album also features Buck Owens on "Streets of Bakersfield,"



which went on to become DY's first number one single. We were just putting together Dwight's vocal comp when Buck showed up to sing and it wasn't sounding right. I discovered that somehow the console tapes' take numbers didn't line up with the actual take numbers, so I discreetly pulled Pete aside and told him what happened. He said "fix it — I'll stall for time." He went out and kept those guys busy while Charlie and I frantically rebuilt the comp. That song also features Flaco Jimenez on accordion, which was recorded in the iso booth in Studio C using the same U47 and a Focusrite mic pre we'd been using for some overdubs. Once again we mixed in Studio C.

## JUST LOOKIN' FOR A HIT

[1989] — This was DY's first greatest hits package, but we recorded two new cuts for it — a duet with k.d. lang on the Chris Hillman/Gram Parsons classic "Sin City," and a cover of Dave Alvin's "Long White Cadillac," featuring one of Pete's most blistering solos. As a side note, I had the pleasure of recording kd lang twice — with DY and with Roy Orbison. When she sings in the studio, she might as well be on stage in front of thousands — she gives a total performance and it's a real thrill to be on the other side of the glass experiencing it in real time. She does have an incredible dynamic range, though, so you have to be on your toes with the mic pre gain.



## IF THERE WAS A WAY

[1990] — I consider the first three albums to be part of the "phase I" of DY's recording career — most of those songs were written and performed live before *Guitars . . .*, was recorded. *If There Was a Way* marked the beginning of "phase II." All of the material was new, some of it co-written with other writers, and we had lots of time to make the records. We used more outside musicians for overdubs — to his and Pete's credit, Dwight's band always played on the records, even venturing into strings and background singers. The parameters that had been set on the first three records were definitely being pushed.

Another big change for me was the change from Charlie Paakkari to Pete Doell as my "assistant engineer." I consider both these guys to be two of the finest engineers anywhere and I learned so much from working with both of them. Charlie was unavailable and we knew and respected Pete Doell from working across the hall from him at Capitol for years.

Now, Dwight is an amazing singer who on any given day is capable of walking out and giving you a couple of perfect or near-perfect takes, but getting his vocals got more difficult in this era for several reasons — he hadn't been performing these songs live for years and, on many days, by the time he'd get to the studio (usually early evening), he'd have been on the phone all day taking care of business. Aside from his music career, he was starting to get active in film, which requires lots of Hollywood lunches, meetings, and long phone conversations. The upside was the string of beautiful actresses and models that would drop by for a visit. In fact, sometimes the presence of a couple of babes would be the catalyst for that great performance we were looking for. But by now, we were deep into vocal comping and tweaking, which Pete Doell brought a lot to — he has perfect pitch. Although I had good relative pitch, I really learned to hear pitch from working with him, especially sharpness. The slightest bit of "pitchy-ness" would provoke a physical reaction in Pete Doell. This also was the first record to be mixed by David Leonard, who is a brilliant mixer best known for his



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work with Prince and John Mellencamp. At first I wasn't thrilled with the idea of someone else making "my records." But he totally blew my mind — another great engineer that I learned volumes from.

## THIS TIME

[1993] — *Fun anyway*, *This Time* was a career peak for DY. It's been his biggest selling album to date and yielded a Grammy award for Best Country Vocal Performance for the song "Ain't That Lonely Yet." Pete's guitar solo on "A Thousand Miles From Nowhere" was another blazing classic. We'd usually do Pete's solos at night after DY would sing — lights down low, monitors cranked. Those were some magical moments, sometimes after a day of routine "work" — the kind of moments that keep you coming back. DY, too, would give



you those moments as well, when he was rested and not distracted by all the BS he had to deal with. We were experimenting with Pro Tools by now — we had Scott Humphreys and Paul O'Carroll there helping us — two of the pioneers of the medium. We really had fun with it on the track "This Time" — we were more interested in using it to make things greasier

as opposed to tighter. We were back to analog, cutting basics on the A800 with 16-track heads and doing overdubs on a second 24-track A800. When we used Pro Tools, we would bounce it from the 16-track and back to a new spot on the tape, building the track from there. Once again, the U47 was employed, either through the Neve 6061 or through my John Hardy M1 pres, which I still use. Pete Doell had found a Fairchild 660 compressor in a storage room at Capitol, rebuffed it, and we used it on everything — Dwight's vocals, Pete's guitar, Tara's bass — everything.

## GONE

[1995] — *Gone* was an interesting, artistic album to make. *This Time* had been a huge record for Dwight, with the never-ending touring a success like this requires. It was recorded in much the same way as the previous two, with even more experimentation with Pro Tools, and musically the walls were pretty much blown out. The writing was eclectic, very much a statement of Dwight's influences. Stylistically, it ranged from straight-up country to British Invasion power pop to the huge orchestral "Nothing," with the gospel background vocals. I loved it, but I think it might have left some of his core audience behind. We used the same vocal setup as on *This Time*.



## C'MON CHRISTMAS UNDER THE COVERS

[1997] — These albums mark the transition into what I think of as Phase III. By now, Mad Dog had turned in to a three-room, 6,000 sq. ft. facility in Burbank, and we started working there. My partner in Mad Dog at that time was Michael Dumas, who co-engineered these records. Michael had been Dwight's house mixer for many years (and still is) and we were used to tag-teaming on many projects. Often times, I would be in Studio A recording while Michael would be editing in Studio B. The studio was right down the street from the offices of Little Dog Records, the label that Pete, Michael, and I founded around that time, which meant that Pete could work in the office until there was something for him to hear or if we needed some direction. This team, including the

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musicians had worked together so much that much of the work was pretty effortless — everyone knew what their role was.

Mad Dog had a Neve 8108 console, Studer A800, and a big selection of outboard gear, including my very own U47, which we used for Dwight's vocals, of course. It was run through the Hardy M1 pre into a Summit TLA-100 compressor and straight to tape. The 8108 sounded good, but was a maintenance nightmare — really bad switches that would vibrate from low frequencies and make these little buzzes during tracking that would drive me crazy, so we'd collected a big pile of outboard mic pres — Hardy, API, Focusrite, Demeter, and occasionally a rental rack of 1073s. Once again, we would build a little wall of baffles to keep the room out of the U47 when Dwight did his lead vocals. Dwight would usually show up late afternoon/early evening on vocal days — we would know he was there by the rumble of his customized El Camino in the parking lot. He had the habit of pulling up in the parking lot while on his cell phone, and sitting there revving the engine while talking, which could go on for quite a while. The truck did generate a great low end. Both of these albums were really fun — by their nature they were not quite as serious as making a new original album. We recorded some great horn sections for both records and did our first big string date at Mad Dog.

#### A LONG WAY HOME

[1995] — *Long Way Home* turned out to be the last album that was made with this team and in some ways, it's one of my favorites. The writing is really good, especially the song "A Long Way Home," which seemed somehow to sum up where Dwight — and by extension, all of us — were at that time in our collective and individual journeys. Dwight's relationship with his label had somewhat



souled by this time and he was doing very well in the movie biz, but he was more focused on this record than had been in a long time and was very creatively engaged in the making of it. This time, it was Pete's turn to be distracted — being a label head can be time consuming. I think he was comfortable knowing that

the team he had assembled over the years was quite capable. Once again, Michael Dumas co-engineered and I'd been credited as engineer and associate producer (whatever that means) for quite a few records by this time, which meant I was doing more musically than just recording. A lot of these labels tend to blur when you've worked with the same people for a long time. For me, I enjoyed working so closely with Dwight on *A Long Way Home*. Technically, we were using the same combination of analog and Pro Tools that we'd been using for quite awhile. Michael quickly became a Pro Tools whiz and we were bouncing tracks back and forth between us. *A Long Way Home* wasn't well promoted and didn't sell like some of his bigger records, but a lot of the more astute critics realized what a gem it was and I still enjoy revisiting it.

Nine albums over 13 years — quite a run. It represents a good chunk of my professional life. Dwight and Pete broke a lot of barriers and created music history, and I'll always be proud of my contribution.

*Dusty Wakeman is the master of ceremonies at LA's Mojave Audio (mojaveaudio.com) as well as still playing dirty, dirty rock 'n' roll whenever the mood strikes. EQ*



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## SPEAKERS MEET MASTERING

...and mastering loses. But there are ways to even the score.

by Craig Anderton

You know why I don't review speakers? Because I don't really like 'em. Even the ones that cost about the same as the budget of a small third world country don't hold a candle to the Real Thing.

Don't believe me? Then try this: Have a really good acoustic guitarist play in a room. Then play back a *recording* of the same guitarist, playing the same guitar. Doesn't sound the same, does it?

Granted, not all the blame falls on the speaker: The rest falls on the microphone. And I don't really like microphones, either, because they too are transducers that have the unenviable and extremely difficult job of transforming moving air into electrical waves.

What is amazing about speakers (and mics, for that matter) is that they sound as good as they do, given that they're based on technology that dates back almost a century. Of course, there have been lots of improvements along the way — better materials, more accurate crossovers, computer-tuned enclosures, and the like. But the concept of using a magnetic field to push a material (paper or plastic) that in turn pushes air seems about as resistant to revolutionary change as, well, the average major record label.

### FOCUS ON MASTERING

I haven't forgotten that this is supposed to relate back to mastering, so here's the deal: One of the main functions of mastering is to make a mix *transportable*. In other words, it will sound good over any playback system.

What works against this is that playback systems vary wildly. Although we no longer have to worry about all the violence that happens to a signal courtesy of analog playback media (cassettes and vinyl, which offered a nearly infinite number of possibilities to screw up sound), speakers and their associated enclosures are like very mischievous equalizers. For a mix to be truly transportable, it needs to play over:

- Great audiophile systems with flat response, superb definition, and state-of-the-art speakers.
- Boomboxes that have the "MegaGigaSuperBassBoost" button pushed in, which hypes the speaker's low end to an absurd degree.
- Boomboxes that *don't* have the "MegaGigaSuperBassBoost"

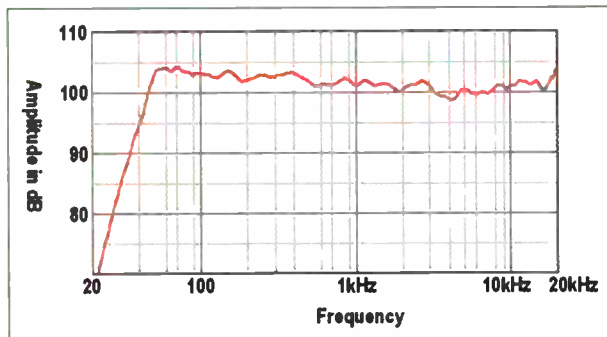


Fig. 1. Here's a typical frequency response curve for a high-quality, pro audio-oriented two-way speaker with active crossover. Although it's anything but flat, this is actually better than average — yes, this is what you're up against.

button pushed in, so the low end is thinner than Kate Moss on a hunger strike.

- Earbuds on portable music devices, whose response is basically luck of the draw.
- Car radios. Let's not even go there, even though we have to.
- Tabletop radios, which have the same type of issues as boomboxes.

What do all these different systems have in common? *Speakers* (even if they're miniature versions that fit into ear buds). How do we compensate for differences among speakers during the mastering (and for that matter, mixing) process?

### WELCOME TO FLATLAND

Edwin Abbott's *Flatland* is one of the greatest mathematical fantasy books of all time, albeit in an admittedly un-crowded field. But when it comes to speakers, "flatland" is just that: a fantasy. Look at the response curve for even the finest speakers that money can buy, and you'll see something that approximates a relief map of the Alps (the part on the Swiss/Italian border, with the *really* wicked peaks). This response (see Figure 1) undergoes further degradation when interacting with the listener's room, which is seldom acoustically treated; but let's pretend that's not an issue, as it multiplies the variables into the world of Really, Really Big Numbers.

Differences among speakers exist in the lows, mids, and highs (did I leave anything out?). So, over the years, mastering engineers have recognized that the only way to deal with this madness is to

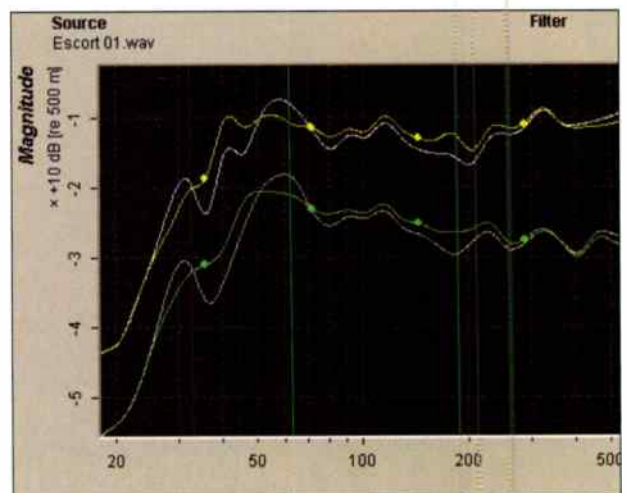


Fig. 2. Here, the Har-Bal program has been used to smooth out a song's bass response; for clarity, the window has been trimmed to show only the region below about 500Hz. The upper gray line indicates the original peak response, and the lower gray line, the average response. The yellow line indicates the peak response after "drawing" a smoother bass response, while the green line indicates the average response after smoothing.

To hear the results before and after smoothing, go to [www.eqmag.com](http://www.eqmag.com). What's interesting about the online examples is that the version with the smoother bass actually has less average bass level than the original, yet sounds stronger and more substantial.



**Fig. 3. The Multiband Dynamics Processor in iZotope's Ozone has been set up to add some mild compression in the low end; this smooths out the bass response a bit, which helps make the mastered recording more "transportable."**

create a recording with the flattest, most "average" response possible. That way, it will sound only a little bit "wrong" over every system, rather than okay on some systems and way wrong on others. (The exception is that of the audiophile with the really flat system — who after putting the requisite time, expense, and effort into assembling a great system, *should* be entitled to the best possible sound.)

It's difficult to create a truly average midrange response, because that's just one of the places where speakers exhibit significant differences. (An aside: I always get a kick out of speaker reviewers who breathlessly exclaim that a particular speaker "revealed things I'd never heard before in my favorite recordings!" This isn't surprising, because *any* speaker will reveal things you've never heard before, as it's basically EQing the recording differently.)

High frequencies are a different matter. The energy in real music tends to drop off fairly rapidly above 5kHz, so really, what we want is a "sensation" of brightness. You're not going to get the huge peaks caused by notes piling on one another, because there just isn't that much energy up there. A little bit of a boost in the "air" range above 10kHz will do wonders for making a mix transportable, as the tweeters open up a bit more. As a bonus, most playback systems have a treble control that can be trimmed or boosted according to the listener's preferences, based on their acoustics and how shot their hearing is from going to too many concerts without hearing protection.

## BASS IS THE PLACE

Perhaps the most crucial frequency range for making a mix transportable is the bass range; there are several reasons for this

Speakers tend to have the hardest time maintaining a flat response below about 80Hz. Here we're up against the laws of physics, as bass frequencies

have really long wavelengths and to re-create them, you need to push a *lot* of air. Speakers that fit in the average living room, or boombox for that matter, simply can't push enough air at really low frequencies. This is one element that separates the big bucks speakers from the pretenders: How low they can go without giving up. This is also why many devices have bass boost switches, although that's not quite the same as having "real" bass. An analogy: A woman puts on great eye makeup that makes her eyes look bigger, but really, they aren't any bigger.

To make matters worse, we have two other bass range issues. For one, the bass response of our ears falls off at lower volumes (the infamous Fletcher-Munson curve), so our ears' deficient frequency response interacts with the speakers' deficient frequency response. The second is in the recording itself. Unless the studio has really great acoustics, or all instruments were taken direct, there will likely be frequency response anomalies due to room acoustics that cause peaks and dips in the bass range.

So in a worse-case scenario, the bass peak in the recording process doesn't get caught while mastering, and plays back through a speaker system that has a resonance at that frequency, which interacts with the room resonance in which the speaker lives. Ugh.

## THAT SOUNDS HOPELESS & DEPRESSING. WHAT'S THE SOLUTION?

There is no solution, so you're correct in feeling hopeless and depressed. *But* you can try to come as close as possible to the ideal. If during mastering you can smooth out the bass response to have no significant peaks and dips (except where you actually want them, like a big peak on a techno kick drum), you'll have gone a long way toward making a transportable master. It's even better if you can take care of some of these issues in the mix (see sidebar).

Because our ears' response gets iffy in the bass range, it can really help to have some visual feedback as to what's going on in the bass range. No matter how good an engineer you are, it's really hard to quantify a 1.5dB peak at 72Hz solely by listening. I find a good spectrum analyzer that can display an average response is

**WORKING TRANSPORTABILITY INTO THE MIX**

Ideally, your mixes should already be pretty close to perfect before they get to the mastering engineer; and there are some steps you can take while recording and mixing to make the master more transportable.

Instruments with lots of low frequency content, like kick drum and bass, will not translate well over systems with poor low frequency response. To allow them to be heard on bass-shy systems, use midrange EQ to bring out pick noise in the case of bass, or the "thwack" of a beater with acoustic kick. With electronic kicks, there are a variety of ways to accentuate a "click" at the beginning of a note. Psycho-acoustically, your brain will tend to "fill in" the sub-harmonics.

Speaking of sub-harmonics, some sub-harmonic, sinewave-type basses (as often used in drum 'n' bass) will never make it through small speakers. Try using a waveform with more harmonics, and close down a lowpass filter to get a bassier tone — but that still has some harmonics present.

Finally, although it's been said a million times before, let me be number 1,000,001: acoustical treatment. You can neither record nor mix sounds properly in a room where the acoustics are adding the equivalent of a random EQ with insanely steep peaks and notches. Although a mastering engineer will try to deal with this, it ain't easy.

## SPEAKERS MEET MASTERING

extremely helpful. Why average? Because there will always be natural response peaks and dips. What we're looking for is a pattern of build-ups and anomalies that, if played back through a system with a peak or dip at that same frequency, will exaggerate the problem even more.

My favorite tool these days for fixing this type of problem is the Har-Bal EQ/mastering program. It provides a very unambiguous look at the bass end, and you can use a simple "pencil" tool to draw out peaks and dips, thus smoothing out the low end (Figure 2). Since doing this, my mastering clients have all — without any prompting — commented that the mixes are more transportable. Granted there are more factors than just bass response that contribute to making a mix transportable, but bass is an important factor.

### OTHER TOOLS

Another great mastering tool that helps compensate for speaker anomalies is a good multiband compressor (Figure 3). Some subtle midrange compression can bring down peaks and raise valleys that

might otherwise be emphasized or de-emphasized by a speaker. In the high end, you can add no significant compression, but just boost the overall level a bit. Meanwhile, in the 300–400Hz range, you can lower the level a bit (without compression) to "tighten up" the sound a bit, as that's often where you'll find a bit of "mud." Meanwhile, adding compression in the bass range helps even out the response.

Eventually, through proper use of equalization and dynamics control, it's possible to create a master that keeps unwanted peaks and dips under control. And when you've accomplished that, you're in good shape.

As a final reality check, it is worth playing your master over varying systems just to make sure you've come as close as possible to the ideal. If your mix sounds a little fatter than usual on systems that normally sound a bit on the thin side, thinner than usual on systems that normally sound annoyingly muddy, and perfect on really good systems, great. No matter what speakers the recording plays back over, you've probably done about as good a job as you can do.

**IN SEARCH OF...**

## ... THE PERFECT SPEAKER

Cookie Marengo digs down and dirty into a search for a sound [and a speaker] that makes perfect sonic sense.

When I first thought of writing this article, the plan was to compare, contrast, and evaluate the differences between a whole gang load of speakers. I found this to be nearly impossible, though, without having endless hours to record basics, or mix, or master, or casually listen and use *each* set in *each* application. I mean I've been doing that for more than 15 years and find it an ever-evolving process, at best.

But speakers deserve a solid treatment sitting, as they do, at the end of a long journey that starts with a mic. They let us move through history, raising folks from the dead so we can hear them as they were: Speakers bring a moment in time to life and reduce global distance to a breath.

Flash forward to now.

My world is a control room where I spend my time looking for the "perfect" mix: some chimera that rests on our ability to control the listening environment. After unmentionable years in my own studio, mixing in hundreds of rooms, from the top facilities to the



worst garage, you'd think it would be easy . . . but you have good days. And bad months.

And traveling from control room to control room as an independent engineer, you might be carrying your speakers, amps, and cable to minimize the unknown factor of unknown rooms. Or, you've got a back pocket full of CDs that let you learn something about the speakers you're provided; and you spend time moving them around (to the endless dismay of your client), testing left is really left and making sure tweeters

aren't blown, etc.

You learn how to make your environment as consistent as possible while dealing with the inexperience most artists have toward critical listening. Without meaning harm, an artist will ask for things that might not be what they really want in three months. A career as a producer or mix engineer is going to be built around how the musical content is received *outside* the control room. It's your promotional tool without the benefit of your anecdotal tales of the

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## ...THE PERFECT SPEAKER

studio and how horrible the environment was to work in. So getting it right the first time has everything to do with *getting it right the first time* . . . something you'll never do with substandard speakers.

I never really thought of myself as a speaker whore, but apparently I have so many pairs it's now officially embarrassing. So, I'm going to focus on the how, when, and what of speakers, big and small, in my own control room at OTR Studios [and a few of my other listening environments].

### THE OFFRANDES, JEAN MARIE REYNAUD SPEAKER DESIGN

For many years, I only listened in the control room and checked mixes where and when I could, mostly because there wasn't enough time



for casual listening. I used to joke about friends playing my "audiophile" CDs on their \$40,000 speakers knowing they were mixed on NS10s. During my days in A&R at Windham Hill, the speakers I had never worked on the right side. And, yes, the irony was lost on no one. It seemed my car speakers never worked on the right in those days, either, curiously enough.

But in 2002, I met Jean Claude Reynaud, an engineer/producer from France whose father, Jean Marie Reynaud, built audiophile

speakers for more than 35 years. As my production partner, Jean Claude taught me about speaker characteristics in ways I never considered, as well as listening from the consumer's point of view. He brought a pair of Offrandes with him, which we paired with Nelson Pass amps.

Jean Claude's style was that of listening to one kind of speaker both in the studio and in the home. I was an NS10 with 300 watts kinda girl. It took me awhile to get used to the audiophile speakers, but the incredible life-like clarity of the Offrandes was amazing, and shocking as well. The mid range provided reality where most speakers fell short. It was the first time the power of mid-range hit me, and it's not something to be gotten rid of: a great mid-range is the beauty of sound.

But as I started listening to all my previous productions on the Offrandes, I heard every nuance of reverbs tails, imaging issues, and the slightest bit of over compression. At first, I was horrified by every mix I had made, when in actuality, they hadn't changed and were as good as ever. I had never heard them like this before. Listening to popular CDs on this system showed their faults as well. However, listening to a great recording was an awesome experience that you wanted more of . . . like a kid with candy.

Re-listening to recorded music over these speakers also made me appreciate the audiophile listener in a new way. They loved sound and music, and this needed to be honored and addressed. Those were the people buying my recordings. After 20 years of engineering records, I became an audiophile.

For the first time, I attended CES and checked out all the new speaker designs and thought it was curious that more engineers didn't attend. After all, this is where our music ends up getting played. These were the people most appreciating our work. It seemed irresponsible to not pay attention to consumer electronic equipment. We ought to know how they're building these things, whether in cars, AV, home theatres, or iPods.

So, at the moment, my home system is a 5.1 set of Offrandes where I listen casually and critically to CDs, surround and vinyl. My iPod is on continual shuffle of all my albums for when the need for miscellaneous sound outweighs the desire to locate the CD in the case.

## WHAT IS FLAT RESPONSE?

"A hypothetical speaker response where all frequencies come out at exactly the same level from every angle. Phase accuracy should be included, I suppose. Flat response is theoretically AND practically impossible. However, we have more speakers today that approach a flat response than ever before."

—Dave Derr, Empirical Labs

"This has become an oxymoron. Flat response is an even frequency response . . . period. So many manufacturers claim flat response. I also honestly believe most strive for flat response as well, however. I also know there are popular speaker brands that tune by ear, no real science. Flat response also changes with listening position given room issues, and air absorption at very high frequencies (with distance)."

—John Johnson, NHT and NHT Pro Audio

"What is a 'flat response'? Answer: A very silly term! Loudspeaker measurements look at the frequency response of a loudspeaker; however, what we hear is the response of the loudspeaker in the room. A 'linear

response' includes the interaction of the loudspeaker with other loudspeakers and the acoustical environment. The idea is that there are no notes either missing or jumping out! The response of the speaker is LINEAR."

—Sam Berkow, SIA Acoustics

"Flat response is 'no surprises.' Speakers that will yield a result that translates well to other environments, and are fun to listen to and non-fatiguing."

—David Glasser, Airshow Mastering

"It doesn't matter. It's never flat once it leaves the speaker."

—Leslie Ann Jones, Skywalker Sound

"Flat response: get the jack out and change the tire."

Flat audio playback response is something achieved via a total-system approach, with room acoustics being the most important element in this system. Build or modify the listening room for minimal modes and optimal RT60. Looking at the frequency response chart of a loudspeaker is OK, but really tells you nothing about how the speaker sounds. I've heard 'flat measuring' speakers

that sound just awful. When shopping for loudspeakers, use reference music that you know intimately — then select the loudspeakers that give you the most realistic presentation of your reference program. Don't forget to audition spatial imaging. Match the loudspeakers to a fine amplifier and line-signal path. Don't rush this decision. We spent three years searching for full-range listening room speakers."

—John La Grou, Millennia Music & Media Systems

"'Flat' to me means that mixes will transfer to other audio reproduction systems without adding anomalies from the original mixing environment. I say this (and walk around the controversy) because it is very hard to gain consensus on what 'flat' actually means."

I find this topic really fascinating because you hear from people that constantly compare high end, low end, crossover frequencies, SPL, mid-range reproduction, phase coherency, etc., etc., and rarely do they discuss how their mixes translate to other environments!"

—Mike Newman, Cerwin Vega



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## ...THE PERFECT SPEAKER

### TANNOY LITTLE REDS

At this point, I've adopted the habit of using the Tannoy Little Reds to cut basic tracks and listen on when I do overdubs in my control room. I really don't like them that much, but they're good enough and the artists seem to enjoy them. The Tanroys are big enough to not sit in a near-field position and aim slightly over my head when I'm at the console. I can play them louder than the other speakers and my ears aren't in the direct line of fire.



When cutting basics, the band is often listening to music in headphones at loud volumes. When they enter the control room, there isn't time for the ears to relax. The artist often requests volume levels that might kill a cow. Along those lines, overdubbing guitar or bass in the control room can have the same consequence. These folks are used to playing on stage in front of huge speakers . . . outside of setting up that situation (which sometimes happens), I'll put them in front of the Tannoys and run for cover, taking the remote with me.

These speakers have long been discontinued. I have been offered three times their retail price several times. Apparently, these were the choice monitors of many heavy metal engineers in the '80s. In my second control room, which was four times larger than the first, they have become tolerable to cut tracks on, though still they're not my favorites.

### AURATONES, NS10s, MEYER 833s, & RESISTING PUBLIC PRESSURE TO DIS THEM ALL

Typically, I start a mix on the HorrorTones (Auratones) for a number of reasons.

**Reason 1:** It's hard to get the artist out of the room and you run the risk of tiring their ears if you start on the higher end systems. Eventually, they get bored while you're on the Auratones and leave while you're working. That's the good news.

**Reason 2:** In the beginning of the mix, I prefer to be the one setting up the patches and cross patches on the board. While I might be patching a series of compressors and eq, I'm listening to the general balance of the instruments and making casual adjustments. I don't really want to be listening critically at this point and prefer to save my ears. The Auratones are pretty perfect for this.

**Reason 3:** When I go under the headphones (Beyerdynamics DT250) to fine tune the placement for the stereo image, the Auratones are less likely to interfere with my judgment and the artist can enter the control room, listen, and I don't worry they are ruining their ears. I could, and do, turn off the speakers, but it can be deadly boring in the control room for the others.

At low volumes, the Auratones show off distortion and intonation issues better than most of the high-end speakers. While you can't really judge bass response, the theory that "if it sounds good on the small speakers, it'll translate better in the final mix" still holds up for me. I will spend 50% of the time on the small speakers. It's probably the best \$60 I've ever spent.

Now's the time for adjusting the reverbs and creating the environment for the song to live in. I go first to the NS10s and reference at as low a volume as I can so that the room has no effect in the mix.

I know NS10s get a bad rap. I also know that I have three pairs of them. The popularity of NS10s cries for spending some time on them, if only to cart with you to some remote location you don't want to bring your \$6,000 speakers. It's a *myth* that they sound the

## THE DIFFERENCE BETWEEN MONITORS AND SPEAKERS?

"The spelling? There is no difference. It's like the government giving the name IED (improvised explosive device) for home-made bombs. Maybe it seems more legitimate or technical, but it's the same friggin' thing! I hate creating and using fancy terms."

—Dave Derr, Empirical Labs

"None except in application. We consider monitors as speakers for active or attentive listeners in the near field."

—John Johnson, NHT and NHT Pro Audio

"Monitors are designed to accurately present the signal driving them (over their operational frequency range). General-purpose loudspeakers (for playback systems) can add a color to the sound — via frequency response

or distortion components that alter or color the sound. This may or may not be desirable, but monitors should strive for accuracy rather than added tonal balance."

—Sam Berkow, SIA Acoustics

"Aren't monitors what you hook up to your computer and mouse around on?"

For me, the room and ancillary equipment (console, amps) are part of the monitor system. For the speakers to sound right, the room has to be right: the right amount of bass trapping, diffusion, absorption, equipment placement."

—David Glasser, Airshow Mastering

"I think of monitors as being more of a reference. Speakers are just, well, speakers."

—Leslie Ann Jones, Skywalker Sound

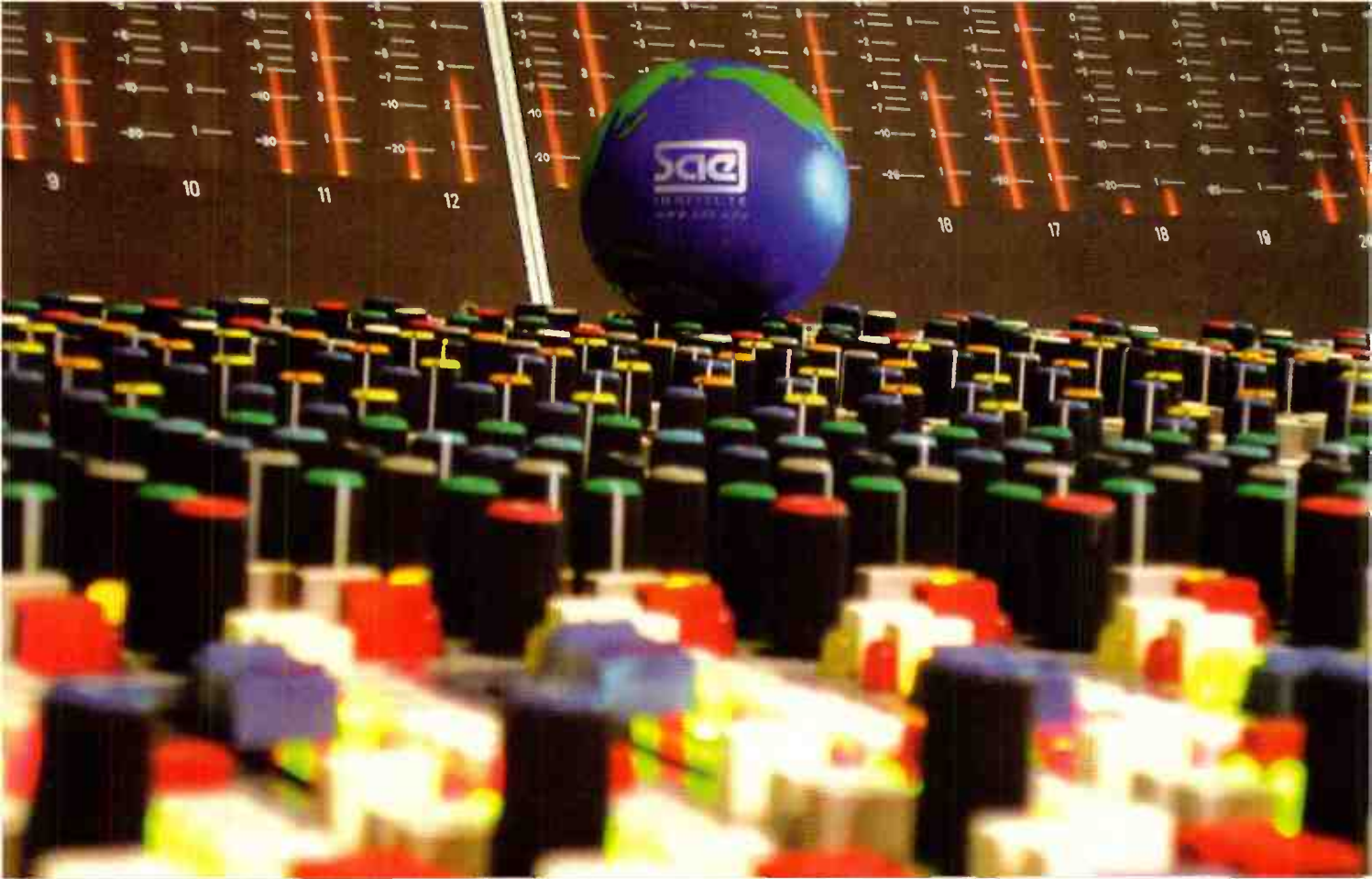
"One works for the CIA and reads my email. The other passes sound."

—John La Grou, Millennia Music & Media Systems

"A good monitor should allow for accurate transfers of audio reproduction to other systems. This often means that a bad mix is going to sound harsh on a good pair of monitors that strives for accuracy."

On the other hand, many home-speaker manufacturers strive to 'sweeten' the sound a bit so that even harshly mixed songs will sound a little better than on recording monitors. I believe the majority of people want excellent detail but a slightly sweeter sound in their home systems."

—Mike Newman, Cerwin Vega



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## ... THE PERFECT SPEAKER

same everywhere, though. My experience is the NS10s sound particularly different when powered with different amps, in various rooms, distance to walls, how they're placed and what they sit on, more so than most speakers. You still need to reference known recordings. And they won't sound as terrible if you make sure you have more than 300 watts of power.

At this point, I'm working quickly before my ears burn out, but I do start allowing the artist to make decisions about certain parts standing out more or less. I will reference to the Tannoys, then revert, and then reference to the Offrandes (which always sound so good, you don't want to leave them).

One trick that seems to save my ears? Using a second set of speakers while I'm working on the NS10s. Far in the back of my control room, I have Meyers 833s that seem to act as a kind of stereo subwoofer/tweeter aspect so that I can take the volume down on the NS10s, which are probably killing my ears at this point. Note: The Meyers alone sound really terrible unless they can achieve a high volume.

Now, there's a point, once or twice during a mix, when I give the mix some high volume. Kinda depends on my mood, but if I reference loudly too many times, I'll be shot for the rest of the day. I try to control myself no matter how pleasurable it might seem at the time. I'll turn up the volume, run quickly out of the control room,

## WHAT DO YOU LISTEN TO IN THE CONTROL ROOM? AT HOME?

"I have Mackie 2408s for relative flatness, UREI 809s for clarity, NS10s for familiarity, Tannoys, JBLs etc. ALL SPEAKERS TELL THEIR OWN LIES, BUT ONCE YOU KNOW HOW THEY LIE AND GET USED TO IT, IT DOESN'T MATTER. I have these little Pioneer speakers I like, too. Many times I will get the mix balances on a 2" mono speaker. It's great for a whole other LIE, but a stripped-down picture of the balances.

**FINAL COMMENT:** Ultimately, it doesn't matter what you mix on, as long as you are used to them and know how they will translate to many other speakers. This is why we add and still have NS10s. They were a standard. Headphones are a must for hearing subsonic problems, thumps, etc.

I think engineers will always do better in the long run if they mix in different places on different monitors, but nowadays, everyone has a home rig, and I think it's a damned shame. Music suffers too, because the urgency and pressure of having your stuff together before you start playing with buttons and recorders, is all but gone. People start writing the awful crap in the studio, without a raw song that stands on its own. More music than ever is just production dribble, without the guts of a 'good song' that people will listen to four years from now, let alone 30 years from now."

—**Dave Derr, Empirical Labs**

"In the control room, I use NHT Pro Audio A-20, M-60Xd, and M-00. I also occasionally flip on the NS-10s but shut them off almost immediately. At home I have a constantly rotating lineup of speakers connected to two or three

## TIPBITS

### WHAT? WHERE?

"We record and edit classical music: all post-production is done in the big room on full-range loudspeakers. The room (23' x 29') was designed by George Newburn to exacting acoustic standards. The worst mode is about 4dB at 24Hz. Room RT60 is around 300ms, and spectrally consistent. Power amplifiers are Pass X350.5. Loudspeakers are Dunlavy SC5.

On location, we'll typically use Paradigm 3se minis, Sony active sub, and Pass Aleph amplifier. Headphones are Sennheiser 600 driven by a Millennia headphone amplifier."

—**John La Grou**

artifacts and discrepancies on the 2-track.

At this point, I'll let the artists go to whatever speaker they want, though I'll usually try to advise them to bring the levels down as they start to increase and lose their judgment. When the mixes are acceptable, I'll go back to listening on the Auratones as we make copies to test for distortion, and listen on the headphones to make sure the stereo image is still intact.

### WHAT SPEAKER MAGIC CAN DO

Over the years, I have tried the Mackies, 8" Tannoys, bought the Genelec 1031s (which are still in the box... I bring them out for parties), and

and listen to the mix in the adjacent room, where I've found it's the best place to test balances of bass to vocals to drums, etc. I'll take another 15 minutes of silence after this event.

Now we're just about ready for the final approaches... that's when I go to the Offrandes and hear every little %^\*&^#% problem there is, and fix them. I turn down the volume and gradually increase to a comfortable level and do a mix. I might invite the artist in to check it out and ask for comments at this point, though I make sure the playback volume is the same so I can check for

systems. For casual listening, I use NHT Pro Audio M-00s, both on my desktop and in a couple of rooms via Apple's AirPort Express and iTunes. This is as close as I can get to a 'wireless' system. I also use this setup outside on the patio. My laptop is the source and resides in the area I am in at the time. My 'serious system' is a Stello pre amplifier and CD spinner, up sampled to 24/192 through NHT's Xd system which, for all practical and realistic reasons, the most accurate speaker system I have ever heard.

**My disclaimer:** I work for NHT. I help conceive many of the products I use so I must be disqualified as biased. While acknowledging that, I would use any other brand if I felt it offered me some level of performance beyond what I have available to me from NHT. The only exception would be some gigantic credible speaker system with giant credible mono block amplifiers with close attention paid to every part of the signal transmission chain. It's really fun to listen to a really big speaker, the effortless dynamics, impact and low distortion they offer. The problem with this is availability of room, cost, and the fact that they tend to be one-trick ponies. That is, they do the big music really well but tend to exaggerate the size of things beyond reality. Sort of like Shaq playing a 6' acoustic guitar."

—**John Johnsen, NHT and NHT Pro Audio**

"In our mix room at the office we primarily use Genelec 1032, JBL LSR6328P, and occasionally TC Air-06s — my living room has Meyer HD-1s with a Sunfire sub.

Cookie's use of 833s behind Yamaha NS10s is the result of excessive drug use!! (really)!"

—**Sam Berkow, SIA Acoustics**

*Cookie comments... on everything BUT the drug use allegations: Sam has the best subwoofer a girl can get. It was love at first sitting. And better than a puppy, you don't have to paper train it!*

"In the studio: Dunlavy SC-V left & right, SC-IV center and surrounds with Ayre amplifiers and dual Paradigm Servo-15 subs. Room designed by Sam Berkow.

At home: a modest system with Kef 103.2 speakers and a Bryston 2B-LP amp."

—**David Glasser, Airshow Mastering**

"Well, 85 percent of my studio work is done on a B&W Nautilus 802 system with chord amplification and MIT cable. For pop and some of my jazz work, I also use my self-powered Tannoy 8 Limpets. This is also true of any 5.1 work I do... same proportion. When I travel or change rooms at Skywalker for 5.1, I use my Tannoys.

At home my main speakers are a 5.1 of B&W Nautilus 703s with MIT cables. I also have another stereo with JBL 4011s and a stereo with NS10s."

—**Leslie Ann Jones, Skywalker Sound**

"I think recording engineers gravitate to more of an accurate sound in their home listening environments. I use a pair of Celestion DL 8s for my home stereo. They have been used as recording monitors in the past because of their reproduction characteristics.

I like the KRK Expose monitor for my studio monitoring. (Cookie, what else would I say!)"

—**Mike Newman, Cerwin Vega**

used just about everything imaginable in other studios. In the long run, it's mostly about what you are used to. No speaker is going to stop you from getting a bad mix.

Of the new designs coming out, we just got a set of speakers from NHT, the XD series. NHT has only recently put them on the market. They have a wonderful system that seems to jump holographically out of the box and fill the room. While I haven't put them into the control room just yet, the freestanding model has been a great tool

for checking mixes out of the control room. You can walk around and not have the image distort, they sound great, and the artists love them as well. And they look beautiful, which, as we well know, helps the listening process. Yeah. And "gullible" is not in the dictionary either.

My computer system uses a \$100 Altec Lansing surround system. I like to emulate the home environment with it . . . speakers placed aimlessly everywhere. It's great. Recently, I purchased a \$30

## TIPBITS

### BURNING IN A NEW SET OF SPEAKERS

"I used to be a little cavalier about this, but it's true. Like a well-worn pair of tennies, every piece of electronic gear has a breaking in period. It seems the more expensive gear requires more attention to this detail. You can buy disks with specially created noise, that goes through the frequencies. You run it from 24 hours to days on end. Speakers are especially dramatic in their change. Most notably you will hear a 'harshness' disappear, a mid range develop, and the imaging broaden. If you can't get a test tone CD, put on a recording that uses the full range of frequencies for at least 24 hours. Or you can just enjoy the crispy high-end and wonder why your speakers are sounding different." —C.M.

mic/speaker for the iPod, which I love to check my mp3s on. My two cars have all both stereo speakers working now, I'm happy to announce, one a Bose system, one a Harmon. The point? It's impossible to compare. Matching the JMR Offrandes with the Auratones or NS10s or 833s yields subjective results. Yet in a stereo mix, it's nearly impossible to not use the less desirable Auratones and NS10s along with the high-end speakers.

The upshot? In the end, if you get a call from the artist or a fan that hears your work and compliments you on it, you've done your job. If in a year, you can still listen to your work and not cringe, consider yourself a success.

-----  
*Cookie Marenco is a producer, engineer, and sound architect, and can be reached out and touched at [otrstudios.com](http://otrstudios.com).*

## IN PRAISE OF...

## ... THE ADAM S3A!

by J.J. Blair

Few speakers have gathered as much interest as the ADAM S3A. And with taking the unorthodox approach of using a ribbon driver for the tweeter, it's easy to understand why. But what recognition these speakers have gained has little to do with marketing hype, and everything to do with performance. And with a list price of \$5,350 for a pair, the S3A delivers.

The S3A is an active three-way speaker, rated at 360W rms. It has a frequency response of 32Hz to 35kHz ( $\pm 3$ dB). Active crossovers feed three KE250W amps, powering two 7-inch HexaCone® woofers and an A.R.T. (Accelerated Ribbon Technology) folded ribbon tweeter. The first woofer operates in the 32Hz to 150Hz range. The second woofer operates from 32Hz to 1.8kHz. Sitting directly in between the woofers is the A.R.T. driver. There are two bass ports underneath the ribbon driver, and directly above the driver, ADAM was thoughtful enough to put the equalization controls on the front of the speaker, rather than in the rear. This includes a  $\pm 10$ dB input gain control, a  $\pm 4$ dB high gain control for the ribbon driver, and  $\pm 6$ dB EQ shelves for treble and bass at

6kHz and 150Hz, respectively. Also on this front panel is a power standby switch. All of this is housed in an MDF cabinet that has the front face beveled at the edges, revealing an octagonal design. The rear of the speaker has XLR inputs, an AC power input and the main power switch.

At the heart of what sets the S3As apart from other monitors are the patented ADAM A.R.T. tweeters. Using a "lamella like" folded ribbon, sandwiched in between 28 neodyme magnets, the ribbon moves back and forth with the alternating current, in a manner which ADAM claims is four times as efficient as the standard dynamic voice coil. Additionally, the effective frequency response of this driver is between 300Hz and 35kHz, which is extremely impressive.

When I received the pair of S3As, I A/B'd them against my **Genelec 1031s** in my Brett Thoony designed control room at Fox Force Five Recorders. This is a "live front, dead rear" room, which has a reputation for translating very well without any frequency anomalies. What was immediately apparent upon first listen was that the S3As made the crossover range of the Genelecs extremely

## ... THE ADAM S3A!



obtrusive, like a big hole in the 1kHz range. The transparency of the ADAM's crossover was the best I can remember hearing for some time in a midfield monitor.

With the EQ of both speakers set flat, the Genelecs seemed a great deal brighter and the ADAMs seemed to be missing a lot of bottom end. This was surprising to me, as the S3As were reputed to have superior low end. After a visit from ADAM rep Dave Bryce, I discovered that in my studio at least, the ADAMs needed to be removed from the meter bridge and placed on stands behind the console. As soon as we did this, the powerful low end came into bloom. After speaking with some ADAM owners, I was not the only one who found this necessary for getting the desired low end. However, other owners did not encounter this same issue while using the meter bridge.

In tracking and mixing, the S3As imaged extremely well. There is a great deal of phase coherency between the three elements, and a real lack of time smear between the lows and highs. The stereo image was also extremely reliable as I checked phasing of the drums or any other stereo miked instruments I was tracking. The low end was tighter and more focused than my Genelecs, and the highs were definitely smoother. During the week that I tracked and mixed on the ADAMs, I was doing guitar-based rock. The smoothness was tricky for me to get used to, because I was not getting the same texture I was accustomed to in the 3–5kHz range, I believe also partly due to not having that hole just beneath in the 1kHz range of the Genelec's crossovers. For myself, I wound up having to boost the high gain control, as well as add some of the 6kHz shelf on the S3A's EQ controls. My ears have been so trained to the 1031s after 10 years, that I was missing a little bit of that high-end hype. In fact, the mixes I did wound up being a little brittle for my personal taste, as I believe that I overcompensated for the lack of some of the extra highs to which I was accustomed. Everything else about those mixes was spot on, though.

Having to adjust the EQ brings up one complaint I have with the ADAMs: It would be nice if they used stepped attenuators on their EQ panel. Even though there is a center detent, it was hard to match the levels on the left and right side with any level of certainty. Detents on the gain controls would have alleviated my concerns.

One of my other experiences, though not necessarily a complaint,

was that I had been anxious to try the ADAMs based on the claim from some users that they mixed faster and experienced less ear fatigue. The last of these claims interested me, because I have been complaining about feeling beat up at the end of some of the rock mixes I had been doing. As for my findings about these claims, I'm not sure that these speakers changed the pace at which I worked. But what might be one of the S3A's strong points wound up being a problem for me. The rock band that I was tracking kept asking me to turn up the volume, beyond levels that I had previously been using on the Genelecs with them. I believe this might have been because of the lack of hype on the high end. So, with the overall louder volume, I was experiencing ear fatigue anyway!

But overall, I was extremely impressed with the S3As. Aside from having to get used to some of the differences in mixing, I had no problem tracking with confidence. When I remixed on my normal monitoring setup, my tracks were spot on to how I hoped they would have sounded. Even though I was dissatisfied with the timbre of the mixes I did when monitoring on the ADAMs, the levels and balance of all the instruments were exactly where I wanted them. Once accustomed to the S3As, I am certain that given more time, I would have settled my confusion with the high frequency response and would have been able to mix on them without any dissatisfaction.

The bottom line question I think that anybody should be asking with these speakers however is: With the Cadillac price, is it really a Cadillac product you are getting? Well, I have to say, absolutely yes. I was so impressed with the performance of these speakers. And ADAM has a truly great asset in Dave Bryce. After communicating with several ADAM owners and even just potential buyers, I heard stories involving Dave's assistance that went far beyond the customer support of just about any audio product I'd ever been involved with.

Now, I can vouch for their impeccable quality, but if you are wondering if they are the right speaker for you, that's hard to answer. Some people like to hear music a certain way. In fact, one famous mixing engineer is known for using a speaker that most of us find unlistenable. But the ADAMs are far from the wrong speaker. I would suggest to anybody in the market for new midfield monitors that they give the S3As a shot. Their reputation as being one of the best is well deserved.

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# WHAT ABOUT BOB?

by Matt Harper  
photography by John Popplewell

Bob Heil, the one and only, sits down with *EQ* for an exclusive and candid retrospective on his life as inventor and innovator of the most gargantuan of monitors, his experiences with volume monsters like The Who, and his take on the how's and why's behind the science of sound, the importance of phasing, and where [and why] the industry needs to step up to the plate.

**"I love this industry.** It's my passion. It's my life. But it pisses me off when I see people not staying up with the times," exclaims one Bob Heil, a man who's inarguably one of the most, if not the most, prolific and inventive personalities our field has produced in the past 50 years.

You see, since the mid-'60s, Heil's been tinkering with every little (and not so little) sound-emitting gadget he could get his hands on, and the results have often been defining moments in not just the pro audio world, but for the world of music and communications in general.

What you talkin' 'bout Willis?

We're talking about Bob Heil being the man who helped make The Who the loudest live band of their time. We're talking about Bob Heil being the man who developed the talkbox that helped set Joe Walsh and Peter Frampton apart from their arena rocking peers. We're talking about Bob Heil being the man who practically saved the Grateful Dead after the infamous NOLA gig where federal agents confiscated their equipment.

Flash forward to now: Bob Heil is the man behind the world-renowned Heil Sound whose products were in the hands of the rescue teams scouring a devastated South post-Katrina (and in the hands of just about every radio operator currently hitting the airwaves). Super-producer extraordinaire Joe Barresi considers his "enthusiasm to improve technology an inspiration." Even the Rock and Roll Hall of Fame's curator Howard Kramer has recognized Bob's efforts, calling him "an incredibly important innovator." It's true, Bob Heil is the man.

"I learned to listen by playing the organ," Bob tells *EQ* one afternoon. "I had to voice and tune all these crazy Wurlitzer theater organs that I was playing, and I learned to really concentrate and listen from doing that. I found that learning to listen was an art — and it's that which has guided my whole life."

Starting as a musician at the ripe age of 12, plugging away on a Hammond organ, it wasn't long until Bob branched out from budding musician to technophile. "I kinda taught myself to play," Bob says, "and by the time I was 14 I was doing it professionally.

Because of the times and the timing, I soon got into amateur ham radio, and it was the ham radio that got me into building. That was the main thrust — being able to take something and make something else from it."

There was little in the way of peer guidance for a young Heil, mentors from the Fox Theatre at which he performed notwithstanding, leaving Bob with little choice but to follow his own instincts. "I basically just started playing around with stuff. Hell, we didn't even have any schematics or anything like that to use back in those days, because it was we who were designing and building our own transmitters, receivers, and all of that," Bob adds.

And by 1966, Bob had decided to hang up his career as a professional musician in order to concentrate on instruction and to further pursue his audio development endeavors. "I came back to my small town of Marissa, a little town of 2 500 people in Southern Illinois, and started teaching organ and piano — not really knowing what I was going to do. Before long, these kids started coming into my shop with their guitar amps. I had never even seen one before. A Fender? Hell, a fender is something you put on your car, man. I didn't know what a Fender amp was, I was a dyed-in-the-wool Jesse Crawford/George Wright theater organist; and that's all I had previously listened to." But, according to Heil, "the ham radio was in me. The challenge of fixing their amplifiers was really interesting to me. I noticed that when I turned over one of these Fender amps it was just like the transmitters I used to build — 6L6s, 5E4s — all the tubes that were in them. I could open them up and fix them in a heartbeat." News of Heil's talents spread quickly and it didn't take long for the entire St. Louis area to find out that there was this little crazy man in Marissa that could fix your stuff; so they started dragging all their amplifiers in.

But it was the now-leveled Kiel Auditorium in St. Louis, Missouri, that was to become the staging zone of Bob's changing the face of live sound forever. Commissioned by promoters, Heil soon became the go-to guy for equipment rentals and last-minute priority repairs. Clients ranged from Chuck Berry to an as-of-yet-unnamed REO Speedwagon. "That's what really drew me in;

## BOB'S 30" EV BASS GUITAR SPEAKER

by Bob Heil

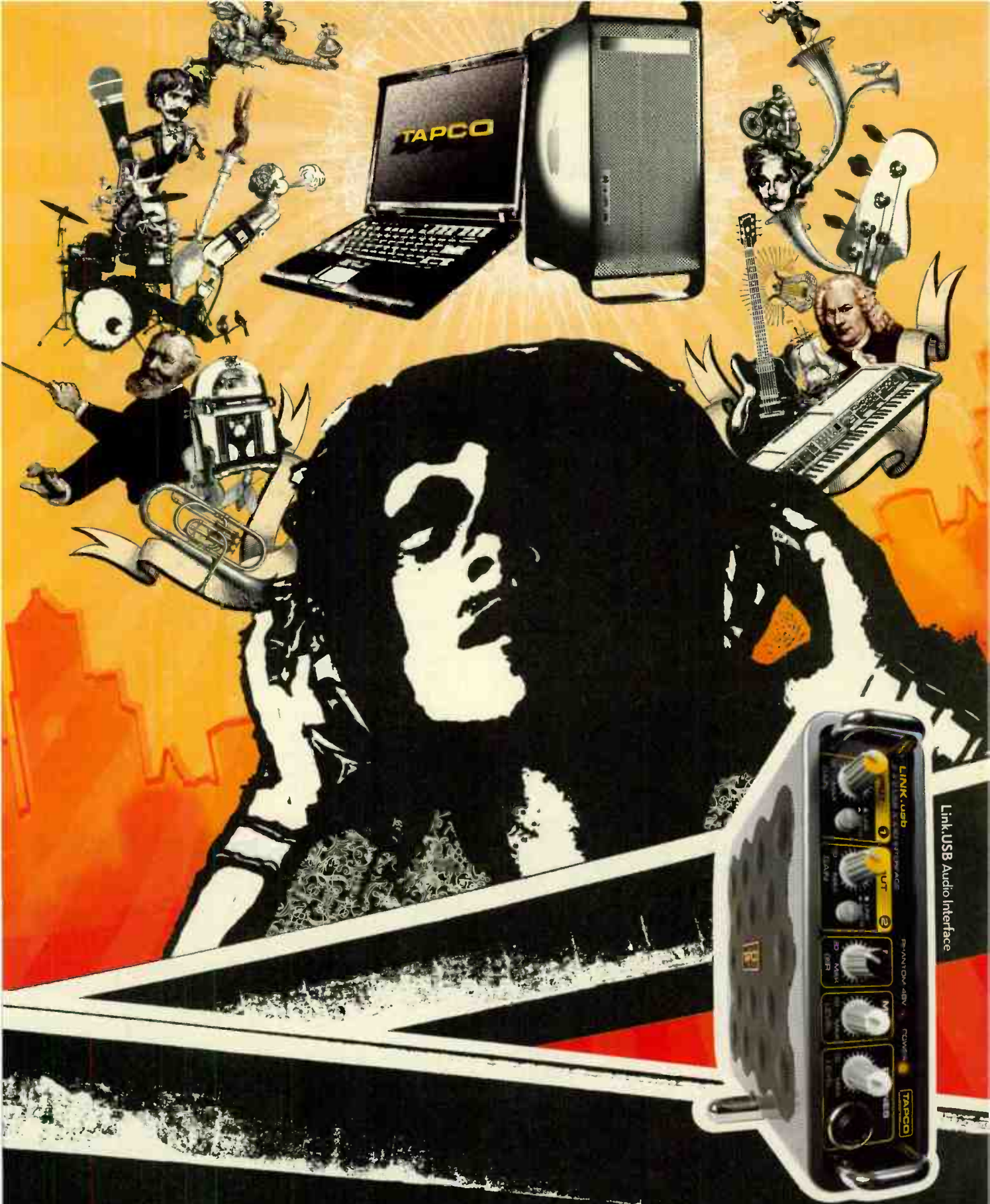
As a Hammond organ dealer in the small Southwestern Illinois town of Marissa, I began getting calls from Midwest concert promoters wanting to rent B3 and Leslie speakers for touring groups that were coming through the St. Louis area. This all sounded like an exciting adventure; after all not many of us were going to be walking onto Janis Joplin, the Grateful Dead, or Jimi Hendrix's stage.

After 15 years as a solo artist on the B3, I was well versed in its operation and so quickly became known as the Hammond B3 expert. But as I was around more and more top touring groups, it became apparent that they certainly needed some help with their instrument amplification and one of the first things I did was to tackle the Bass guitar. It always seemed that trying to get 120dB of clean, punching bass guitar lines through a little 12" or 15" non-baffled speaker/ampli-



fier was impossible, so I set out to solve the situation by building a speaker enclosure using one of the newly introduced Electro Voice 30" speakers.

I ordered 1" solid core plywood from my local lumberyard and had an expert cabinet craftsman build the described enclosure from the EV plans. Depending on the group, I powered it with either a McIntosh amplifier or a Sunn 200S bass guitar amplifier that used KT 88 output tubes. Needless to say, this was THE bass rig of ALL bass rigs for that period. When the biggest thing out there was a Fender Bassman or Ampeg B 25, here came the Hammond organ guy with his 30" EV. With each of our B3 rentals, I would take the 30" EV along just for the ride and you can quickly guess how many bass players would want to plug in and ENJOY!



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# WHAT ABOUT BOB?

working next to all these rock and roll musicians. I was the only one on hand with a soldering iron, and that's what made all hell break loose," Heil says. "The Fox Theatre had these huge Altecs that I got my hands on — 8 foot tall speakers; really big stuff. I was experimenting, at the time, with amps, and so on. It started off as just me having fun, but I soon saw these guys coming in with these little columns under the impression that they were going to fill a 20,000 seat hall with sound. There was nobody else in 1968 doing what I was doing, so I felt that I had to build some kind of monster sound system for them."

A group known as The Guild served as Bob's first real guinea pig(s) in terms of overt and obscene amplification. Playing in a small bowling alley, like clockwork, on Thursday nights, Heil took their rigid schedule as an opportunity to experiment. "I would take in these sound systems that I had been messing around with and I would experiment on them to see what would work and what wouldn't work," Bob says chuckling. "I got these PA systems perfected; they were both loud AND clean, two things you really didn't hear in those days."

Word traveled, as it had done in the past, and not long after the phone rang with an inquiry from the theater where these now-famed speakers had originated. "The Fox called me one day in 1970 and asked 'Do you still have those speakers we gave you a few years ago?' So I said, 'Yeah, I sure do.' They told me, 'There is this group that just came in that doesn't have any equipment; their truck was confiscated last night.' And that was when the phone got handed over to Jerry Garcia. The night before, in New Orleans, the Feds had taken the truck they were touring out of because their sound guy wasn't supposed to be out of the state of California. I told them what I had and Jerry was amazed. 'Wow, you got this stuff? Amps? Get them up here,' he told me — and, that night, I blew those guys right out to Washington Ave."

Heil's babies — big, loud, and clear — were the likes of which the Grateful Dead had not yet been acquainted with. Directly after the show, Bob accepted a contract and went on tour; soon hitting the front page of *Billboard* and becoming the envy of dozens of sound companies that had all been vying for

the Dead's contract. "The next thing you know everybody was calling us, and that's really how it all started. They needed to fill these auditoriums with sound, and we were the only ones who really knew how to do it. From there The Who contacted us. They were out playing through these dinky little columns and they were sounding terrible; so they contacted us and we got in behind *Who's Next*. This started the whole revolution, not just Heil sound, but the ENTIRE sound revolution."

"We got into the monitor thing out of necessity," Bob says. "Pete Townshend and Roger Daltrey really needed all this to happen, so we built them some massive systems. We started putting fiberglass in the speaker cabinets, because it wouldn't resonate like plywood or the other materials people were using. We wanted a really dense material to work with, and that's why we chose fiberglass — it gave us an edge up on the speakers themselves. But we had to do it in a big way. I remember when we did Madison Square Garden with *Quadrophonia*. We had more stuff on just the stage than most people had in their entire PA. It was enormous. I think we had, on each side, 6–8 15 bins, 6–8 radio horns, and probably about a dozen tweeters; we could get about 110–115dB on that stage before feedback. And The Who loved it, of course, because it was LOUD. And they were LOUD, if not the LOUDEST."

The feat of amassing a system of monitors had been overcome years before, but there were problems still plaguing the team, and the entire world of sound in general, as Bob remembers. "The monitor was always the big problem. Nobody had really been able to make the monitor work before. They fed back all the time. You would have a mic about three feet from the monitor while these guys were playing louder and louder; and the next thing you knew it was total feedback city, and it seemed like nobody could get it all happening the way it really needed to happen."

The key, as Bob had learned much earlier on, lay in the realm of phasing. "Back in my ham radio days, around 1960, I had put up a monster antennae; 4 feet by 40 feet and hoisted 50 feet in the air. It was a monster antennae of 128 elements; different elements that all had to be phased. So I learned about phasing

## BOB DOES EQ

"You have to have proper equalization. I always liked parametric EQs because we could go in and change the parameters of each filter besides just bass and treble—we can tell that bass and treble which frequency of bass and

treble we wanted it to be, what we needed it to be. That's why I'm just in love with parametric EQ in regards to monitors in general. It's real simple, but it's such a helpful tool. What I would do is I would always set the microphones up where they needed to be, and bring it up very gently until feedback. Right at the threshold I would let it go ahead AND RING. You know it will get stable; it will actually sit there in a tone — and when it does — you grab a hold of the notch filter of the parametric and, like tuning a radio real slow, as you tune



through the frequency... BINGO... it will find THE frequency and the feedback will go away, and that's exactly where the notch should be. Then you feather it out, and then you are done. Why is this not done so much today? Why are we not hearing people doing that? Did they forget? Hell, THIS IS SCIENCE. You can't forget science. Some people today just don't understand. 'Let's use a graphic EQ.' That's the worst thing that ever hit us, the damned graphic EQ. Well, they draw pictures on it, and I'm serious! I have so many guys that call me for advice and say 'well, I got a smiley face on it.' What? I'm furious at this point. 'I got a sad

face. I think it sounds better with the sad face.' What the hell are you talking about? 'Well my graphic EQ lets me draw a sad face or a happy face. It's so sad, because no one has taught them, no one has showed them what the real tool is. The tool is a parametric, where we can make any filter do anything we want. It can be a boost, it can be a notch, it can be three octaves wide, it can be a half-octave wide. How cool it is when you learn how to do that? And it's really so simple. I feel sorry for the guys who don't know; the guys who don't

understand. You'll ask these guys 'do you know what the cut rate is?' 'Oh yeah, yeah I know...' they'll tell you, because they're embarrassed to tell you what they don't know about EQ."



# BOB DOES HOME STUDIOS

"It could be 500 dollars or 5 million that you're working with — but, when you get your budget set, you have to understand that the weakest link in the chain is going to ultimately determine the best sound that you are going to get in your recording. You can have the best monitors, the best power amps, the best consoles, and if you go out and buy some cheap ass microphone . . . well . . . it's not going to work out well for you. Every link of the chain is dependent on the other links of the chain, so you have to make sure that you match everything evenly. You would be better off having mediocre equipment all around than

you would be going off the deep end on one single piece of equipment just because you saw somebody you admire using it—making the rest of your setup suffer because you dropped all your resources into one fancy-schmancy piece of equipment. Plus, sometimes the cost of the equipment and parts is not always the determining factor in what it's all going to sound like. Paul Klipsch proved this years ago: He took very minimal speakers and drivers and, by making the proper horns and loading them properly, he made them sound better than anything on the planet. So you should really see if everything works together well first. This can

be hard to do because the only way to you can do that is to use it all, and many places won't let you try something out and then return it. When I was in the retail business, one of my biggest secrets of success was in my willingness to let my customers mess with the equipment first; and bring it back if they needed to get something different. This made for good relations between them and me. So try to find a dealer that is going to accommodate you and let you take equipment out and try it before you buy it. Working with your dealers is vital, as is understanding that your chain is only as strong as the weakest link."

monitors through phasing antennae." Little did Bob know that in 1960, playing with radio frequency, that something would occur that would change his, and our, lives not much later down the road.

"I had brought in these monitors and started thinking 'wait a minute I can start playing with phasing' . . . and I DID. We would run the microphones out of phase from the monitors, something that nobody had been doing yet. Since they were out of phase from the mics and the front systems, we could get these things incredibly loud before they would feedback." The key to the golden lock was phasing, as Bob relays to everyone he instructs. "That's one of the things that Jerry Garcia was really in love with. Our monitors were really something, and we got those

guys into doing all kinds of phasing tricks with the monitors and mics. As you know, a lack of phasing equals no sound; so it's all very important — the placement of monitors, the types of microphones, and having it in the right phase or the wrong phase."

Concerning choice of mics in relation to phasing, Bob adds that technological advancements, many of which have been handheld by Heil Sound, are now the key to the world of using phasing to achieve the desired end. "You take this new technology, which comes in the form of better cardioid patterns, and the phase plug of the mic reduces what's coming from behind. If you take two signals out of phase they will cancel; from 180 degrees out you will get no sound. In the studios, guys will put microphone after



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Engineer for Lemmy Kilmister, Rick Springfield, Michael Jackson, Elton John, Jennifer Lopez, Sheryl Crow and Ricky Martin.



# WHAT ABOUT BOB?

microphone up: one 3 feet away, one 2 inches away, one 10 feet away, and so on. Sure, all the mics are picking up sound—but the one closest to the source, of course, gets the sound fastest. They are in different phases, so you experience time delays. The amount of time it takes for the sound to reach the mic changes depending on their placement — and in that case they might have flipped phase three times before it gets there. You have to be real careful where you place all this stuff in the studio, because when you record something you want it to come back through the speakers exactly in the same phase that it was recorded.” Bob concludes, “So many times the signal is going through different chains. Every time you go through a device, if it’s a virgin where nothing has been changed in it, it will change phase.

You have to understand what is going on here — you might have to have phase inversion to get it back to the original phase it was recorded in. It’s more than just important — it’s everything.”

Having built literally thousands of different speaker cabinets; as well the first modular mixer, the first modular power amplifier, the first electronic crossover, the 3-band parametric EQ, and the first audio analyzer — all back in the ‘60s and early ‘70s — Bob is nonetheless somewhat amazed that his products are still out there and actively being employed by those of us today. “Guys will call me talking about how they are still using our power amps and stuff. I suppose we should still be building them?” he says with a touch of sadness in his voice. “We quit all of that in about 1980, I just kinda got tired of it after 15 years, and music seemed to be turning in a different direction. So I just kinda folded up my tent and went away.” But he really didn’t “go away,” as he’s still doing a lot of consulting for other superpowers, such as Jim Dunlop (who he sold the rights to the infamous talkbox to nearly 20 years ago) and Heil Sound is still going strong, developing state-of-the-art mics for the communications and broadcasting fields. In addition, quite a few of his relics are soon to be inducted into the Rock and Roll Hall of Fame — including the Heil talkbox and many of the pieces of sound equipment that he developed for The Who during the *Quadrophenia* tour.

On top of all that, Bob is still designing high-grade, custom home audio setups.

“I’ve been doing it since 1957 — when I set up JBL speakers in each room of my house, as well as a pair of studio monitors for main speakers. It was really hot. Since then we have done thousands of homes. I like to design them from scratch where we can run 5,000 feet of wire all over and put speakers in every single room. I’ve been doing Dolby stuff since its inception; when they first brought out the first decoder for the home — and it’s really gone way beyond where I thought it was going to go. But hell, I’ve been doing Hi-Definition since ‘85, too.”

Always a step ahead of the game, Bob assures us that everything will be all right provided that we learn from the old and apply it to the new; using the spoils of technology with an eye (and an ear) for how it really all works. And education is of penultimate importance, according to Heil. “I try to teach as much as I can today, really show them the science; because it has never and, fundamentally, will never change. A 440 is always A 440, right? It will never vibrate any differently than that. What’s so sad is that we, as an industry, don’t focus more on education. Even with all the ‘digi-wigi’ stuff, which is great, at our disposal — we still have to understand the science of sound in order to apply it. If you manage to do that, then you’ll really have something cooking. But you cannot neglect the science. You must not forget the science.”

Amen, brother. EQ

## Dirty Secrets Revealed

### Million Dollar Mistakes

Moses Avalon  
Author of  
*Confessions of a Record Producer*

Steering your  
Music Career  
Clear of Lies, Cons,  
Catastrophes,  
and Landmines



Moses Avalon, author of the bestselling *Confessions of a Record Producer*, has breached the barrier of the music industry’s best-kept secrets with his new book, *Million Dollar Mistakes: Steering your Music Career Clear of Lies, Cons, Catastrophes, and Landmines*.

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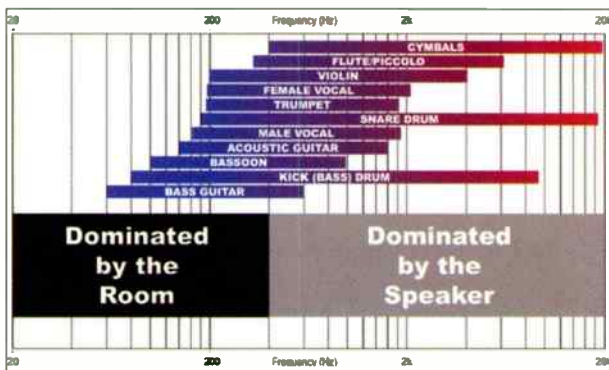
Want to move your monitors into their place in space and still have them sound like something? We thought so.

by Vivek Maddala

Conventional wisdom dictates that the *quality* of our studio loudspeaker monitors is the primary measure of how well we can know what's going on with the music — *i.e.*, how well we can assess the tonal balance in our mixes, how much detail we can hear in order to identify problems, and so on. But we often overlook the huge effect our monitors' interaction with the room can have on their accuracy. A good studio monitor is, by definition, one that converts electrical signals into their exact acoustical equivalents with no coloration. But having "good" studio monitors can't alone ensure that the complex acoustical signals they're creating will arrive at our ears with the same frequency and phase relationships they started with. Indeed, we often think of the loudspeaker as the final link in the audio reproduction chain between the recorded material and our ear-brain mechanisms; but actually, the *room* is the final link.

This is not new information, really: We've witnessed in recent years the rapid proliferation of direct-field\* monitors to address room interaction problems in project and commercial recording studios alike. (Direct-field monitors aim to maximize the ratio of sound that arrives at your ears directly to the sound that reflects off adjacent surfaces before arriving at your ears — ostensibly removing the effects of the room.) But direct-field monitoring isn't a panacea for the effects of a poorly configured room, or poorly placed monitors.

You've probably observed that speakers can sound different in different rooms, and in different positions within the same room. There are two main causes for this variable performance: (1) at low frequencies, the room actually has a lot more to do with the way a speaker sounds than does its inherent design; (2) the spectral output from a speaker varies at different angles and causes reflections off of hard surfaces in the room, degrading the sonic image. There are plenty of well-documented methods for correcting this second issue, and most of us have absorbers and diffusers in our studios to handle echoes and ambience above 300Hz. But solutions for controlling low-frequency problems in listening rooms are more arcane and difficult to implement. So let's address the low-frequency issues to get you thinking about ways to improve them.

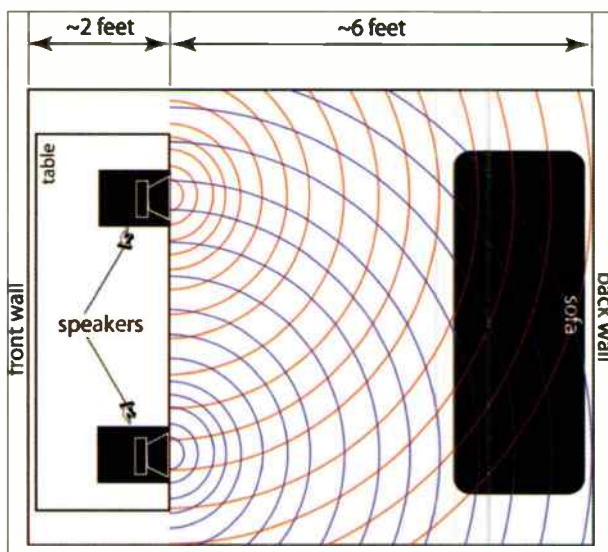


**Fig. 1.** At lower frequencies (<300Hz), the room is the dominant factor in determining how the speaker sounds — even for direct-field monitors; above that, the room becomes less of an issue and the inherent speaker characteristics dominate the response.

### THE CASE OF THE MISSING CELLO

Recently, I had to audition some music for a client at his home, so I lugged my trusty direct-field monitors, laptop, and Firewire audio interface over there to present my music to him using a [relatively] high-quality playback system. I set up the monitors in his den about two feet from the front wall and six feet from the back wall. When listening, my client remarked that there was no low-mid range in the music; he said the cellos were inaudible and the contrabass lacked articulation. I checked the settings on the monitors, in my DAW software, and on the interface. Everything was in order. But he was right — there was no low end. How could this be? The mix I made in my well-calibrated studio with my "very flat" monitors was balanced and even — the cellos and contrabass were clear and defined. While it's no secret that a room can affect the tonal balance of the speakers, is it possible that the room modes of my client's den actually caused the bass frequencies to *disappear*? In a word: YES.

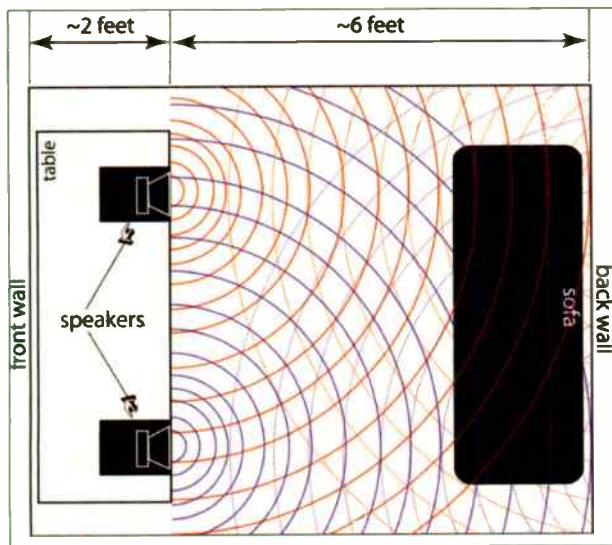
When loudspeakers' low-frequency drivers move back and forth, they modulate the air pressure in front of and behind them. For simplicity, let's concentrate on just the sound waves in front of the speakers.



**Fig. 2.** A simple top-view of my client's room, with approximate layout and dimensions. The concentric red and blue arcs represent direct sound emanating from the speakers at various wavelengths. (For the sake of this discussion, we're ignoring what's happening behind the speakers.)

\* Footnote: We're using the term "direct-field" in lieu of "near-field" or "close-field" as it's more descriptive — and arguably, more correct.





**Fig. 3. Axial reflections off the back wall can amplify or diminish the direct sound from the speakers. (For visual clarity, we're ignoring front-wall reflections, as well as side-wall and ceiling/floor reflections — they can complicate things significantly.) If you think this picture is difficult to look at, just imagine trying to listen to it!**

Sound reflects back and forth between at least two parallel surfaces in a rectangular room like this. At certain frequencies the direct and reflected sounds conspire to form standing waves in which those frequencies become amplified; at other frequencies, the direct and reflected sounds cancel each other out, creating nulls. What we hear at those frequencies depends on where we, and the speakers, are located. So when my client remarked that there was no bass in the music, what he was hearing was the effect of severe cancellation due to the room modes created by the particular dimensions of his room, the location where I had placed the speakers, and our listening position. Furthermore, the peaks created by phase-coherent buildup in the sound waves no doubt exacerbated the audible effects of the cancellations.

The relationship between frequency and wavelength is an inverse function:

$$\lambda = \frac{c}{f}$$

where  $\lambda$  is wavelength,  $f$  is frequency, and  $c$  is the speed of sound (1125 ft/sec at sea level). So a frequency of 80Hz corresponds to a wavelength of about 14 feet; 140Hz is about eight feet and so on. In the case of the missing cello, we can surmise with first-order approximations that the distance between the speakers and the on-axis reflecting walls resulted in severe cancellation for some frequencies of sound in the 55–95Hz band; we heard this as “no bass.” Moreover, we can also estimate that some other frequencies of sound in the 140–190Hz range were amplified — possibly resulting in the “muddy” quality of the contrabass. So much for my “high-quality” playback system.

### SINE LANGUAGE

What we identify as sound is just time-varying pressure changes on our ears. Engineers often use single-frequency sine waves to analyze audio gear, even though nobody actually listens to these

signals for pleasure. Since sine waves are the building blocks of all sound, musical or not (or *any* signal, in fact), let's use them to analyze the problem of room resonances. We can represent a single-frequency tone as follows:

$$x(t) = A \sin(\omega_0 t + \phi) \text{ where } \omega_0 = 2\pi f_0$$

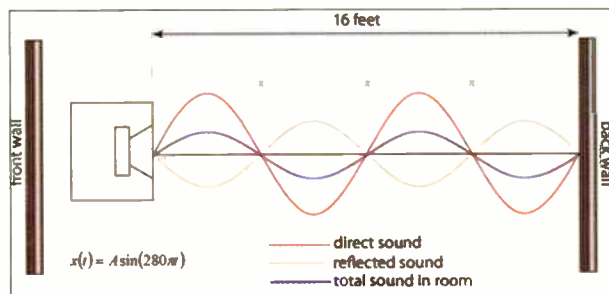
Here,  $A$  is the amplitude ( $>0$ ),  $f_0$  is the frequency (in Hertz), and  $\phi$  is the phase angle (in radians). With this basis, we can express any note from any musical instrument as a sum or integral of sine waves having different amplitudes, different frequencies (multiples of the fundamental frequency  $\omega_0$ , and different phase angles:

$$x(t) = a_1 \sin(\omega_0 t + \phi_1) + a_2 \sin(\omega_0 t + \phi_2) + a_3 \sin(\omega_0 t + \phi_3) + \dots$$

[The pitch of the musical note is related to  $f_0$ , and the harmonics (represented by  $a_2, \phi_2, a_3, \phi_3$ , etc.) affect the timbre. In other words, an  $\omega_0$  of  $880\pi$  radians would correspond to the  $A$  below Middle  $C$ , and the harmonic coefficients account for why that note sounds different on an oboe than on a trumpet.]

### REFLECT ON THIS

We can use simple sine waves with varying frequencies and phase angles to examine what happens when you move your speakers (or change your listening position) in a given room. Here's an example of a speaker facing a wall 16 feet away from its front baffle. Let's represent the variation in air pressure, which is how our ears perceive sound, using the function  $x(t) = A \sin(280\pi t)$ . In other words, it's a sine wave with an arbitrary amplitude, a frequency of 140Hz, and a corresponding wavelength of about 8 feet; note, also, that the wave front leaves the speaker with a 0-radian phase angle.



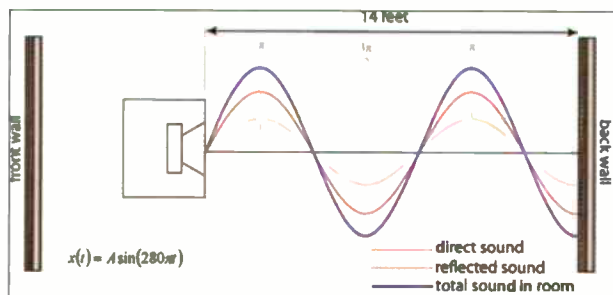
**Fig. 4. Destructive interference from a 140Hz Room Mode. The total sound at this frequency is attenuated considerably and you hear nothing at all if you're listening at the 4-foot, 8-foot, and 12-foot null points. (For simplicity, we're assuming an “infinite baffle” — so the front wall does not factor in.)**

As you can see, the sound wave hits the back wall just as its pressure oscillation crosses the horizontal axis. It reflects off the wall at some lower amplitude (presumably some sound gets absorbed into the wall) and it cancels out the direct sound. This “destructive interference” results in a greatly attenuated sound level at that frequency. No matter where you are in the path of that wave, you'll barely be able to hear it. (Could this be what happened to my cello?)

So what happens when we move the loudspeaker two feet closer to the back wall, so it's now 14 feet away?

Here, the sound wave reaches the back wall on its bottom

## SPEAKERS MEET MASTERING



**Fig. 5. Constructive Interference from a 140Hz room mode.** By moving the speakers two feet closer to the back wall, the total sound at this frequency gets amplified considerably. However, you'll still hear nothing if you're listening in the nulls at two feet, six feet, or ten feet from the back wall. (Again, for simplicity, assume no reflections off the front wall.)

compression peak ( $\pi$  radians into its cycle) and it reverses direction in a way that *combines* with the direct sound — creating "constructive" interference. In this case, the signal will be louder. Note, however, that if your listening position is two feet from the back wall, you'll be right in the dead spot — so your ears won't detect any pressure variation and you won't hear the sound!

It's fascinating to check out what happens when you vary the sine wave's phase angle,  $\phi$ , or when you use more complex signals — the additive outcomes can be surprising. The problem becomes even more interesting when you factor in reflections off other parallel surfaces like sidewalls, ceiling, floor, and the inevitable low-frequency buildup you get from the front wall if your speakers are too close.

### THE MUDDY TRUTH

What's the solution? How do we ensure that low-frequency sound will be balanced — if not throughout the room, at least from our listening position? Judicious use of bass traps in your room can help, but the most important thing is to put serious thought into how your studio monitors' location will influence their interaction with the room and your listening position. Simply relying on the fact that you have inherently flat speakers doesn't mean the sound will arrive at your ears in the same proportions as the signal that you input into the speakers. You can accept the fact that room resonances are inevitable, and try to make the best of it.

The Rayleigh equation can give you a first order prediction of your room resonances:

$$f = \frac{c}{2} \sqrt{\left(\frac{m}{L}\right)^2 + \left(\frac{n}{W}\right)^2 + \left(\frac{o}{H}\right)^2}$$

where  $f$  is a resonant mode (in Hertz) and  $c$  is the speed of sound (1125 ft/sec at sea level);  $L$ ,  $W$ , and  $H$  are the length, width, and height

respectively of your room; and  $m$ ,  $n$ , and  $o$  are all the positive integers (including 0). Remember that there are millions of room modes in a typical small room — and if the length of your room is its largest dimension, the lowest frequency mode occurs for  $m=1$ ,  $n=0$ , and  $o=0$ .

After a little bit of thought and preparation, you can start experimenting with different locations for your studio monitors. There are some general rules of thumb to get you started:

**1)** Try to counteract room resonances by not duplicating distances; in other words, if your left monitor is four feet from the back wall and three feet from the side wall, try to use different distances to adjacent walls for your right monitor.

**2)** By carefully evaluating the negative effects of the various room boundaries, try to position your listening spot where the bass is fairly smooth — keeping in mind that it can never be perfect. The key is to make your *minimal-reflection* area as large as possible. The best way to do this is to use the Rayleigh equation to calculate the theoretical resonance modes in your room and then experiment with moving your listening location using your ears as a guide.

**3)** Be wary of the bass buildup that inevitably occurs when you place a bass-reproducing speaker in a corner of your room, doing this will excite every resonance in the room — which is not necessarily a bad thing, but you need to recognize what you're doing.

**4)** Pay attention to any peculiarities in the harmonic content of the bass clef of the music you're mixing or recording. For example, if you know you've got room modes around 55Hz or 110Hz and the upright bass on your song is frequently hitting the low A: Keep in mind that the instrument's fundamental and natural harmonics (like perfect fifths) can cause it to ring out or die a sudden death. This can be useful information to have while you're trying to balance the levels of the different instruments in your material.

**5)** Some engineers like to use room equalization to correct resonant modes. This tactic can be quite successful — and the aforementioned calculations coupled with trial and error can be the ticket to minimizing an inaccurate low-frequency room response.

The sad truth is that there's no practical way to eradicate completely the low-frequency resonances inherent in any given room. All you can do is be mindful of the physics of sound and how it affects what you're hearing. If you do that, you'll be ahead of the game.

*Vivek Maddala is a national award-winning composer, multi-instrumental performer, and producer. He also develops products for M-Audio in his spare time.*

**While it's no secret that a room can affect the tonal balance of the speakers, is it possible that the room modes of my client's den actually caused the bass frequencies to disappear?**

## HOW TO MANAGE BASS FOR FUN & PROFIT

by Rich Tozzoli

5.1 Surround Sound.

By now, all you savvy *EQ* readers are certainly aware of the term — and the fact that video games, movies, concert DVDs, and Hi-Definition television broadcasts all feature multichannel content. While it certainly can be fun and challenging to mix in surround, there's always that lingering issue of BASS MANAGEMENT.

What exactly is it, why do you need it, and how can you actually do it at home? Let's jump headfirst into the issue and see if we can clear things up for you.

### BASS FISHING

The term "bass management" generally applies to it being a crossover point and/or network, that re-directs bass information from the main monitors into your subwoofer. The actual crossover frequency varies with each system, but typically runs from around 80 to 120Hz. Optimally, it should be set at the lowest point at which your smallest speakers can comfortably handle bass information. For the sake of our article, we can break out this discussion into two distinct but overlapping areas — the production process in

the studio and the reproduction process in home theaters.

Setting up surround in the studio for 5.1 involves, well — five speakers and a subwoofer. Preferably all full range, these studio monitors, along with the companion subwoofer, need to be properly calibrated. For that, I highly recommend checking out the article "Calibrating the 5.1 System" by Bobby Owsinski, available online at [surroundassociates.com](http://surroundassociates.com). Once you've done that, it's important to understand how bass management applies in the mixing/production process.

Most of today's surround mixes done in the studio are reproduced by home theater systems. Many of these have small satellite speakers that can't handle bass information below 120Hz or so. Any of the frequencies below that will be routed/filtered (within the receiver) from *all five* speakers into the subwoofer — *with* the LFE information from your mix. The basic point I'm making here is that LFE and sub are not the same thing. Sub is the summed information that bass management redirects from those small speakers into the actual physical subwoofer. LFE is any information you've sent from your mix, using the LFE send on panner for example (SCREENSHOT

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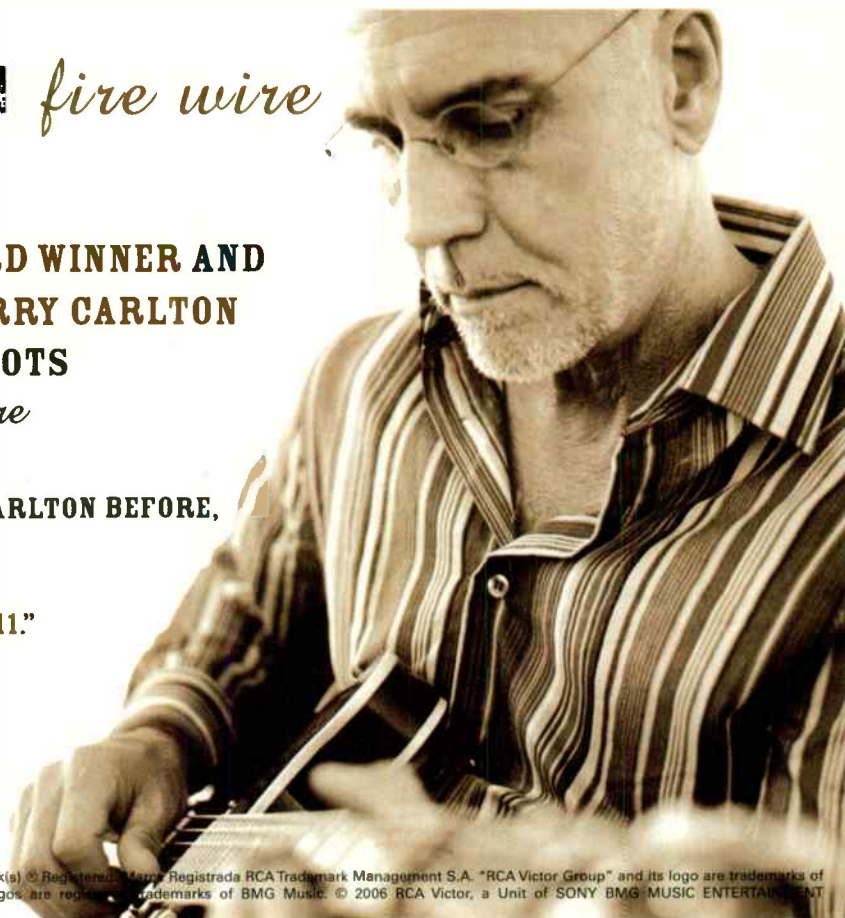
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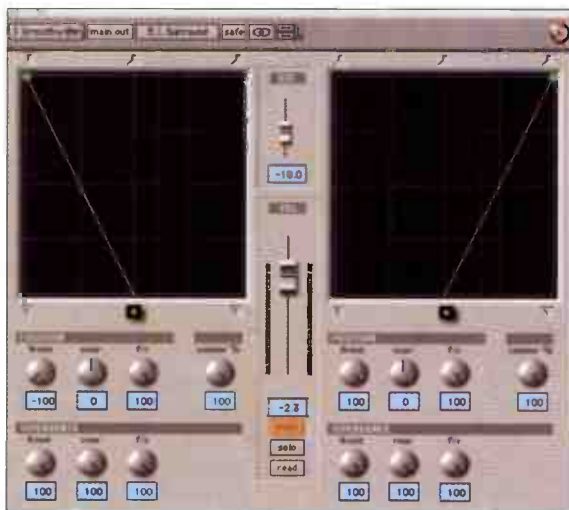
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## BASSO PROFUNDO

1). Just know that the subwoofer itself plays back both the SUB and LFE information.

But if you're mixing in the studio, how can you simulate the sound of a home theater receiver "bass managing" your mix? The first method would be with hardware, which "sits" between the playback system (DAW, tape, and so on) and the speakers. Systems are available such as the MartinSound ManagerMAX, M & K (Miller & Kreisel) LFE-4 and LFE-5 series bass management controllers, the Blue Sky International BMC, and TASCAM's DS-M71 (say that five times fast!). What these typically offer is the ability to not only manage bass reproduction, but provide volume control, solos and mutes, pink noise generation, and delay compensation, etc. While the specific features vary from unit to unit, they allow you to do a decent job of simulating the home theater environment—even if you're mixing on \$10,000 speakers. Yikes.



## SOFT STYLE

The next method of bass managing in the studio is via software, such as Bass Manager VST by Kelly Industries, the Surround Bundle for Steinberg's Nuendo or the Waves—360 Surround Tools. This lets you control bass management functions within the DAW environment.

Since I use the Waves Toolkit, I'll briefly describe the M360, which is the Surround Managing part of the software. It provides bass management and studio monitoring calibration based upon the ITU standard (which basically suggests common surround setups in control rooms). M360 features two plug-in components, the Manager and Mixdown. The

Manager is inserted on a master surround output and handles the all-important monitor calibration and setup. It also allows for software adjustments of speaker angles, as well as per-channel gain and delay for level and phase alignments. Mixdown can be inserted directly after the Manager, allowing for preview of mono, stereo,

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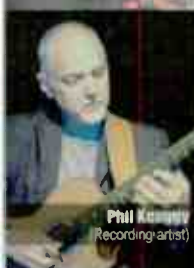
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## BASSO PROFUNDO

LCR (left center right), and LCRS (surround) imaging.

One of the major benefits of software bass management is the lack of extra cables and gear, as well as the total recall of all parameters within each session. I happen to configure my room differently almost each day (from stereo to 5.1), and using software lets me quickly prepare myself for whatever is needed. Whether you use software or hardware for bass management, the point is to check how your pro surround monitors translate like a consumer might hear at home.

Many of the home theaters sold today come packaged as HTIB (home theater in a box), with the aforementioned receiver, small satellite speakers, and powered sub. The limitations of these systems should be taken into consideration when mixing surround in the studio. I have found it useful when mixing music DVDs to add a small amount of LFE information to the mix (typically on kick and bass), so that even with bass management bypassed, there will still be *something* in the subwoofer. If you add too much LFE however, and a consumer hears a bass-managed mix (which most of them will), the summation of both create a muddy low end. Experimentation is key.

The typical consumer receiver handles bass management in any one of several ways. The first, or "fixed" option usually lets you select either large or small speakers. Large speakers reproduce full range around 20–20kHz, and can handle all necessary bass information. Small speakers cannot reproduce full range and need a subwoofer to properly handle bass information. With a "fixed" setting, the receiver



sets a non-adjustable crossover frequency of 80–90Hz (note that the THX standard is 80Hz).

The more common "variable crossover" setting lets you again choose large or small speakers, but then will allow the user to adjust the crossover frequency. This preferred setting lets you create a better bass response for the sat/sub (satellite/subwoofer) setup, providing a smoother low-end response. Some higher-end receivers also offer "multiple variable crossover," which lets you select different crossover frequencies for different speaker combinations.

Another developing method of 5.1 playback at home is on the PC, especially for video

games. There are two basic methods to do this, using hardware- or software-based reproduction. For hardware playback, you would need a soundcard with a S/PDIF digital output, connected to a full home theater system. With a software-based system, it would be with a multichannel soundcard that has six analog channel outputs. Then you would need a software decoder (like WinDVD) to feed those outputs. That would then run to either powered computer speakers or to six channels of input on a receiver. For example, the Sound Blaster Audigy 2 ZS system delivers up to 7.1 channels of surround, supports 24-bit/96kHz 5.1, and can handle THX-Certification and Windows Media 9 multi-channel formats.

As you can gather from all this information, thinking like a consumer when mixing surround is essential. By understanding the basics of bass management, and how it relates to your speakers, your mixes will translate better in the home theater environment.

## ET HEADPHONE HOME?

It's a question home studio owners have asked since they grew two ears: *Can I mix over headphones instead of speakers?* After all, \$100 will buy you a bitchin' pair of headphones, but not much in the way of speakers. Headphones prevent spouses and neighbors from complaining, and they provide an exceptional level of detail. So...

The answer is you should *never* mix on headphones, and you should *always* mix on headphones. Say what? "Never" as in you gotta hear what something sounds like over speakers, because that's how most people will hear the music, and listening through headphones can make things seem "bigger than life" — get the amount of reverb right on phones and it may disappear over speakers.

Ditto for the stereo spread. That panning trick that sounds so great on phones may melt away when played over speakers.

But "always" as mixing through headphones has definite uses. I solo each track and listen to it *all the way through* on headphones before I start mixing. Headphones will let you hear those little ticks, pops, hums, grunts, and noises that you won't catch over speakers (until it's too late, of course). And as an ever-increasing number of people are listening to music through portable music devices with ear buds, you do need to know what *they're* going to hear.

Another issue involves bad room acoustics. If you mix in an untreated room, you have no idea what's really happening with the bass. A

good set of closed-ear phones with a smooth low-end response may actually give you a better idea of what's really happening down in the "Nether Region of Longer Wavelengths." However, if you plan to use phones in this way, be careful; you have to learn the response of the headphones as you would any speakers, or you can actually make things worse.

If you do use headphones to help you mix, here's one more tip: Keep them separate from the headphones used for monitoring by musicians who frequent your studio. The ones for mixing should have the highest fidelity possible, but the ones for monitoring should be built to industrial-grade specs as they will be dropped, stepped on, yanked, and otherwise abused.

—Craig Anderton



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Every engineer has experienced it: The mix sounds really good . . . it's 3:00 AM and the mix has to be done tonight . . . but should the vocal be nudged up a tad, or is it just right? Are the drums loud enough, or are the guitars too loud? Producers, artists, labels and engineers want that "edge" — yet increasing DAW technology doesn't always guarantee a perfect mix. So engineers cut, boost, clone and scramble to achieve their best — and then they leave the final sonic refinements to the mastering facility.

With traditional techniques, an expert mastering engineer can enhance certain elements in your mix — up to a point. A two-track mix has all the musical components embedded together, so too many alterations to one area may cause problems somewhere else. Therefore, the mastering engineer must always be aware of how many alterations work, and when "less is more."

In response to the needs of a more diverse professional market, an expanded mastering process is defined by veteran mastering engineer John Vestman and engineer Don Sundstrom. Calling it "separation mastering," Vestman's claim that it gives better sound, fuller detail and spatiality, while allowing more control over major musical elements of the final product — if even *half* true — could healthily add that extra edge to any project that needs that extra edge. Translation: all of them.



### THE SCOOP

"After mixing a standard 2-Track master, the mix engineer simply records stereo tracks of groups of separated instruments and vocals," says Vestman. "A common set of stereo separations would include (1) all drums (2) bass (3) all remaining instruments and (4) all vocals. The Separations are brought in and recombined in the mastering room's source DAW, along with the stereo mix for reference. This makes for a dramatic increase in sonic control because the mastering engineer can process certain frequencies on one separation without imposing on the sound of the other musical elements.

This is ideal when a vocal needs to be treated differently than the drums, or the guitars need to be enhanced in ways that wouldn't benefit the vocals, etc. The mastering engineer's hands are no longer tied

by traditional compromises. Plus the very nature of the mastering studio's tailored, acoustic environment and the engineer's 'golden' experience sets up the ideal context for this first-up delivery format. More good news: Most DAW owners are already set up (at no cost) to make separations with almost no learning curve."

### WHICH WAY'S THE MAIN STEM?

"Stems (or subgroups) are used in many different ways, and may or may not have reverbs or effects embedded directly in

them. Separations always contain the reverbs and effects that belong to the respective tracks being grouped. Engineers may also use 10 to 20 sets of stems while mixing, but generally four to eight stereo sets of separations are ideal to deliver for mastering. Many mastering studios currently hesitate to accept stems because they know that there can be time-consuming variables, whereas the Separation Mastering format is a clear, efficient first-up method to achieve superior sound right now.

Like the concept of color separations in the world of print, separation mastering makes total sense to engineers and artists who struggle committing to 2-tracks. Yet the artist's approved stereo mix is a key component of separation mastering. The stereo mix is loaded in and available to A-B compare so that the artist's original intent is always honored. A-B listening is



an important aspect of the mastering process.

Can this process really deliver better sound while making your final mixing process easier? Yeah, particularly since it's non-destructive and recallable, it takes pressure off the mixing engineer who's running out of time (or budget), and it eliminates the need for alternate "up/down" versions. Up until now, why have so many studios stuck to the limitations of 2-track masters? Because that's just the way it's historically been done — for about 50 years."

### BACK IN THE DAY: 2-TRACK TO 2-TRACK DELIVERY

"Starting in the late 1950s, mixes headed for stereo vinyl records were 'mastered' by transferring the signal of the 2-track master tape into a 2-channel electro-mechanical lathe. The lathe physically cut grooves into a lacquer-coated master disc (hence the phrase 'cutting a record'). Through the 1960s and '70s, regardless of the number of tracks available in the studio, a mixdown would occur to a 2-track master tape that would feed a 2-track lathe. CDs replaced lathes in the '80s but the 2-track feed tradition continued. When big studios went to digital formats instead of tape, the 2-track tradition continued on. Why? Because it still worked, and there was no problem to address.

Back then, mixes brought in to mastering were generally consistent and sonically well balanced. But gradually, affordable multitrack equipment started empowering a new generation to record and mix outside the large studios, presenting mastering engineers with new sonic balance challenges. However, these increasing mix variations were manageable with new digital technology processors, so the 2-track final mix lived on. But the sun was setting.

However, the recent DAW revolution completely altered the recording landscape forever, and decentralized where great recordings had to be made. Everyone now is mixing music. But why isn't making a good mix getting easier? Certainly the drive for hotter and hotter CD levels have made it so more sound is getting packed into a smaller dynamic space — so it's common to find many recordists flooding Internet forums to find their answers.

You see, good mixing and good mastering is not just about plug-ins. The aspect of

However, the recent DAW revolution completely altered the recording landscape forever, and decentralized where great recordings had to be made. Everyone now is mixing music. But why isn't making a good mix getting easier?

technology must balance with an accurate monitoring environment and engineering skill/experience. Out of these three aspects, the technology can be strong but the other aspects equally effect the overall sound of the mix. When a mix is locked down to 2-tracks, mastering engineers can correct some mix imbalances with surgical EQ and other high-end signal processing (such as multi-band

## THE MASTERING SUITE

- Sonic Studio mastering digital workstation
- Prism D-A and A-D converters, MEA-2 Mastering EQ
- Digital Performer DAW includes UAD, Waves plug ins
- Nautilus Master Technology Commander summing mixer
- Nautilus Master Technology NEMO monitor controller
- Lavry Engineering 3000s, Waves BCL, dbx Quantum
- Inward Connection TSL-1 tube limiter
- Mirage high-definition monitor system
- Virtual Dynamics and Mapleshade audio and power cables

Visit [vestmanmastering.com](http://vestmanmastering.com) for waaaaay more info than you could possibly handle.

processors that can isolate specific frequency areas). But altering major elements embedded together in a stereo mix can compromise the sound of other overlapping elements (e.g., de-essing a vocal starts dulling the cymbals or snare).

Making separations, though, takes a very small amount of time for the benefit it offers. In the mix room, the engineer simply 'separates' the final mix into a small number of major element or element groups. These are bounced down separately (e.g., vocals, bass, drums, remaining instruments) and the files include every track and track FX in the recording.

While it may seem like just a deceptively simple bounce procedure change, the sonic power this unleashes is significant. Session experience demonstrates that projects mastered with separations have more width and depth, better musical articulation, and more natural transients. The format opens the sound more than the same material

mastered from their conventional 2-track mix. It offers more flexibility when artists and/or label A&R want a competitive sound and last-minute changes. Using separations also lets the mastering engineer restore the relative punch of the drums when louder, squashed-hot CD levels are desired.

### WHAT IT IS, WHAT IT IS NOT

"Separation Mastering is a pretty flexible standardized handshake protocol between the recording studio DAW and the mastering studio's source DAW. It also provides a good base for future remixes, (e.g., film, video game, porta-pod, and so on) and maintaining recallable backups. It eases the creation of mastered TV mixes and instrumental tracks and eliminates the need for alternate mixes.

But separation mastering is NOT remixing anymore than 'surgical' EQ, or fine-tooth multi-band processing would be considered remixing. The separations format is good as the first up, preferred method of submitting a project to mastering, particularly since the approved 2-track stereo mix is included in the format (and can always be used in cases where the producer prefers a more compressed-in stereo sound field)."

Can, however, is different from will, or has.

Multiple Grammy-winning engineer Erik Zobler (George Duke, Anita Baker) concludes with a fitting coda, "Separation mastering makes a lot of sense in today's music scene. Many people are mixing their own music and are not relying on a professional mixing engineer's ears. Separation mastering lets the mastering engineer accurately rebalance aspects of a mix if necessary. Artists and producers shouldn't be afraid of separation mastering, since mastering is a non-destructive process. In the hands of a competent mastering engineer, it delivers much better results than the typical 2-channel mastering process."

And according to Vestman, discussions with DAW software companies about incorporating separation features have centered on adapting existing multi-channel surround mix busses for "dual use" by including a "stereo" configuration for assigning and automatically creating multiple separation files and integrating stereo buss processors.

Well, at least they're talking.

## THE RHUMBA LINE

# HS 80M + HS 50M + HS 10W

Yamaha HS powered monitors? Oh, yes.

by Glenn Bucci

There's been a lot of talk about these monitors, especially the HS 50Ms. They're close in size to Yamaha's famous NS10Ms, and look similar as they also have a white woofer. So are they the same, and do they sound as good?

Let me start off with saying it's not possible for the HS 50s to sound like the NS10Ms. For starters, NS10Ms have a sealed baffle design while the HS 50Ms are rear ported. Sealed boxes have a different distortion profile compared to a vented box. The new HS series also have different cone material and crossovers. Every cone material has its own signature so you'll get a different sound with each material. NS10Ms have fast impulse response and gentle phase shifts with the low frequencies. Though this design can be helpful, generally the bass response in a sealed cabinet is limited. On the other hand, ported speakers have an advantage in loudness, transient response and enhance bass extension. The entire HS series has ported cabinets, so these monitors give you the benefits of the ported design, which has a different character compared to the NS10Ms. And if you're interested in high-quality, sealed designed monitors, one option is to look into the Harbeth 20 monitors that are used with the BBC.

Ok, now that we got that straightened out, let's check out these new monitors.

### HS 50M

The HS 50Ms are 2-way powered monitors that have a class A/B design. The frequency response is 55Hz–20 kHz (–10dB). The crossover frequency is at 3kHz. The dimensions are 165mm x 268mm x 222mm (6-1/2" x 10-9/16" x 8-3/4") and each weighs 5.8 kg. There is a 5" polypropylene-cone bass/mid-range driver, and a 0.75" dome for the high frequencies. The cabinet is made of MDF and is painted black. These speakers are magnetically shielded, which allows them to be near CRT monitors.

On the back of the monitors starting from the top, there is a volume knob that's

smooth and easy to adjust. Below that are the balanced phone jack and XLR connection. The phone jack also accepts unbalanced connection as well. In order to tailor these monitors to your room, there is a mid EQ with a "–2dB," "0" (flat), and "+2dB" setting. Underneath this is a room control switch.

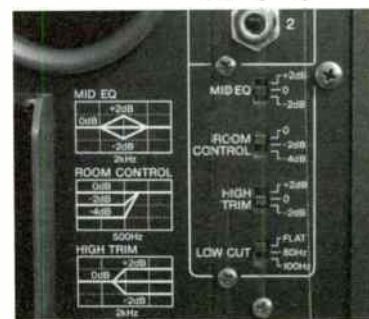


Yamaha states this corrects the low-frequency exaggeration caused by reflecting off ceilings, walls and floors. (Damping material for rooms will be discussed later).

There's a "0" position for a flat frequency response, a –2dB, which decreases the range below 500Hz by 2dB. They also included high- and low-cut switches. The high trim has a "–2dB," "0," and "+2dB" controls, which affect the range above 3kHz. The low cut switch can cut low-frequency range at 80Hz or 100Hz. There's a power switch, which illuminates a white light in the front of the cabinet when turned on. Lastly, there's an IEC socket to connect a power cord to.

### HS 80M

These are also 2-way powered speakers with a class A/B design that have a frequency response of 42Hz–20kHz (+10dB) with a crossover at 2kHz. The dimensions are 250mm x 390mm x 322mm (9-13/16" x 15-3/8" x 13-1/16") and weigh in at 11.3 kg. The speaker has an



8" polypropylene-cone bass/mid-range drive and a 1" dome to handle the high frequencies. Like the HS 50M, they are made out of the same MDF material and has straight lines on the square box. The rear panel has the same controls as the HS 50Ms. These monitors also have magnetic shielding which helps when near CRT monitors.

### HS 10W SUBWOOFER CLASS H

The HS 10W is a powered class H subwoofer that measures 30mm x 350mm x 386mm



# The John Lennon

## SONGWRITING CONTEST



### Categories

- Rock World
- Gospel/Inspirational
- Hip-Hop Children's Electronic
- Pop Folk Rhythm & Blues
- Jazz Country Latin

### Awards and Prizes

- \$20,000 for the Maxell Song of the Year
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- \$120,000 in Project Studio Equipment
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**To ENTER** your original song(s) fill out this application and... *just imagine*

CHECK ONE:  SESSION I  SESSION II

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_ APT. \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

PHONE ( ) \_\_\_\_\_ AGE \_\_\_\_\_

EMAIL \_\_\_\_\_

SONG TITLE \_\_\_\_\_

CHECK ONE:  LYRICS INCLUDED  INSTRUMENTAL COMPOSITION

CIRCLE ONE (IF PAYING BY CREDIT CARD): VISA \_\_\_\_\_ MASTERCARD \_\_\_\_\_

CARD # \_\_\_\_\_

EXP. \_\_\_\_\_ SIGNATURE \_\_\_\_\_

Mail your entry to: **John Lennon Songwriting Contest**  
180 Brighton Road Suite #131  
Clifton, NJ 07012

#### Each entry must consist of:

- Completed and signed entry form (or photocopy). All signatures must be original.
- CD(s) or audio cassette(s) containing one song only, five (5) minutes or less in length.
- Lyric sheet typed or printed legibly (please include English translation if applicable). Sheets not required for instrumental compositions.
- Check or money order for \$30.00 per song (U.S. currency only) payable to John Lennon Songwriting Contest. If paying by credit card, \$30.00 per song will be charged to your account.

Please read all rules carefully, and then sign your name in the space provided. If entrant is under 18 years old, the signature of a parent or guardian is required.

1. Each song submitted must be contestant's original work. Songs may not exceed five (5) minutes in length. Songs may have multiple co-writers, but please designate one name only on the application. Contestant may submit as many songs in as many categories as he/she wishes, but each entry requires a separate cassette, CD, or MP3 file, entry form, lyric sheet, and entrance fee. One check or money order for multiple entries/categories is permitted. (Entrance fee is non-refundable. JLSC is not responsible for late, lost, damaged, misdirected, postage due, stolen, or misappropriated entries. The JLSC is not responsible for faulty file uploads accompanying online entries.)
2. The John Lennon Songwriting Contest is conducting 2 separate Contests during 2006 - Session I and Session II. Twelve (12) Grand Prize winning songs from each Session (one from each category) will receive \$5,000 in project studio equipment from Roland/Edirol, Audio-Technica and Brian Moore Guitars and a \$500 gift certificate from MusiciansFriend.com. The 12 Grand Prize Winners in each Session will go head-to-head in an online voting

competition to become the Lennon Award Winner in their respective category. The 12 Lennon Award Winners will receive a \$5000 EMI Music Publishing Contract, and 1,000 CDs in full color, premium 6-panel Digipaks, worth \$1,990 courtesy of Discmakers. Thirty-six (36) Finalists from each Session will receive \$100 gift certificates from MusiciansFriend.com. One (1) Lennon Award winning song will receive an Apple Power Mac G5, Cinema Display and \$20,000 for the "Song of the Year" courtesy of Maxell.

3. Contest is open to amateur and professional songwriters. Employees of JLSC, their families, subsidiaries, and affiliates are not eligible.
4. Winners will be chosen by a select panel of judges comprised of noted songwriters, producers, and music industry professionals. Songs will be judged based on melody, composition and lyrics (when applicable). The quality of performance and production will not be considered. Prizes will be awarded jointly to all authors of any song; division of prizes is responsibility of winners. Void where prohibited. All federal, state, and local laws and regulations apply.
5. One (1) band will be selected by WARPED TOUR '07 organizers to tour and perform for one week on WARPED TOUR '07. Performance will be considered.
6. Winners will be notified by mail and must sign and return an affidavit of eligibility/recording rights/publicity release within 14 days of notification date. The affidavit will state that winner's song is original work and he/she holds all rights to song. Failure to sign and return such affidavit within 14 days or provision of false/inaccurate information thereon will result in immediate disqualification and an alternate winner will be selected. Affidavits of winners under 18 years of age at time of award must be countersigned by parent or legal guardian. Affidavits subject to verification by JLSC and its agents. Entry constitutes permission to use winner's names, likenesses, and voices for future advertising and publicity purposes without additional compensation.
7. CDs, cassettes, and lyrics will not be returned.
8. **Winner Announcements:** Session I announced on September 1, 2006. Session II announced on March 1, 2007. Announcements will be posted on [jlsc.com](http://jlsc.com).

I have read and understand the rules of the John Lennon Songwriting Contest and I accept the terms and conditions of participation. (If entrant is under 18 years old, the signature of a parent or guardian is required.)

Signature \_\_\_\_\_ Date \_\_\_\_\_

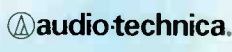
Make your check or money order for \$30.00 per song payable to:  
**John Lennon Songwriting Contest**

#### Check one category only

- rock  world  gospel/inspirational
- children's  electronic  pop  folk
- r&b  jazz  country  latin  hip-hop

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(11-13/16" x 13-3/4" x 15-3/16") and weighs 12.5 kg. With class H, the rail voltage is modulated by the input signal. One advantage of H class is the power supply rail is a bit higher than the output signal, which keeps the voltage across the transistors small and the output transistors cool. The cabinet features a front-facing port and contains a single 8" polypropylene-cone driver powered by a 150-watt amplifier. The frequency response is 30Hz–180Hz (–10dB). This unit also has a combination of jack/XLR inputs. This subwoofer is front ported, and also includes a white light indicator in the front to let you know when it's on.

On the rear of the unit are left and right inputs that have balanced phone and XLR



input connectors. There's an external sub out connector in case you want to add a 2nd subwoofer. (There are those like Bob Katz who use two subwoofers in their studio, which can help you hear if the bass instruments go up or down while you're in mono.) There are left and right output jacks, a low-cut switch that you set on or off. The low-cut control allows you to set from 80Hz to 120Hz. Next to it is a high-cut control to set the cutoff frequency of the output from 80Hz to 10Hz. There's then a level control and a phase switch. Lastly, there's an IEC socket to connect a power cord to. As you can see, Yamaha wanted to make these monitors user friendly in your studio by giving many options to help optimize the monitors for your setup. It's important to make sure that if you hook up the HS 50s along with the HS

100W for example, the HS 50s low cut setting should be in sync with the settings you have with the subwoofer.

## SUBWOOFER GOES WHERE?

Many people with a subwoofer tend to have the volume too loud in their studio. The goal is to have a proper balance between the highs, mids, and lows. It's important to have your studio treated with absorption material since reflections off walls and ceiling become a problem. In regards to bass frequencies, they tend to get into corners and prevent you from hearing a clear representation of your music. Company's such as Auralex and Real Traps have absorption material that you can put in your room to reduce reflections off surfaces. I cannot over emphasize the importance of treating a room. Lower frequencies need separate bass traps, as the mid- and high-frequencies need different treatment compared to the lower frequencies.

Where do you put a subwoofer in your studio?

One problem you need to deal with is standing waves. A common technique is to put the sub in the monitoring position, and then crawl around the floor near the walls. Listen for the place where the bass frequencies sound balanced and even. Generally it's good to put it underneath the wall behind and between the main speakers. This way it has the least negative effect on stereo imaging. I spent about 15 minutes getting the

## QUICK PICK

### E-MU PM5 STUDIO REFERENCE MONITORS

[\$498/pair, [e-mu.com](http://e-mu.com)]

Choosing a new pair of studio monitors for your control room can easily turn into a struggle. I don't think there's any other piece of studio equipment that can generate such a love/hate relationship. While it's possible to track on any speaker system (including headphones), it's mixing (or *balancing*, as they say in the UK) where any speaker deficiencies will come to light.

I tracked and mixed with these small, near field studio monitors from E-mu in my studio for three weeks, recording a wide variety of bands, from punk rock to folk rock, and although they're a wee bit bass-shy, I found mixing on them a real pleasure.

Housed in an attractive, hefty cabinet and sporting a nice, bright blue power light (that flashes red when overloaded),

the PM5s are bi-amped with Class A 40w/40w amplifiers. The relatively small woofer size (5") is helped by the ported cabinets to extend the usable bass range. XLR/TRS balanced and RCA unbalanced inputs are provided.

After some experimentation, these speakers sounded best to me when placed four feet back from my listening position, and six feet apart. I put them on their sides, with the tweeters on the outside, and aimed them a little over my ears.

I left the high/low pass switches set to off. If you're using a subwoofer, try

experimenting with the 2 position (60/80Hz) high pass filter to tighten up the bass.

Listening to a wide variety of CDs that I'm familiar with, I immediately liked the midrange and high-end detail of these speakers. The ported enclosure helps to extend the range of the lows, but I still felt a little unsure of what I was hearing below 80Hz. Switching back and forth between our larger Event 20/20s and the PM5s helped me here.

If you have a small control room and these were going to be your only set of monitors, you might want to look into adding a subwoofer. Without one, try placing yourself farther back from the speakers. This will bring out the bass frequencies



HS 10W to its proper place on my floor. The subwoofer was about one foot away from the wall. By moving the monitor one foot left or right made enough of a difference to capture the sweet spot. In working with the sub with the other monitors, I spent the time to adjust the volume knob to get an even sound with the mids and high frequencies. In my setup, the volume knob worked well around the 11 o'clock position in my studio. Like I said before, the bass should not dominate the mix but blend in with the mids and highs. I found the subwoofer to feel solid, with a good weight.

### LISTEN UP

I set up the HS 50s near field monitors and listened to them through several of my mixes, as well as commercial CDs. I recommend not placing these monitors on a meter bridge, but on stands behind your mixer. I first tried them with the switches set at the "0" (flat response) settings. I found the high end to be crisp, giving good detail with the mids sounding slightly boxy. I preferred the mids in the flat position. The bass was reasonable for a monitor of this size, but there are similar-sized near-field monitors that produce more bass than the Yamahas.

Sam Ash Music was kind enough to let me borrow **M Audio's BX5a's** near-field monitors to compare against the HS 50s. The BX5a's had a stronger bass response, and a more open sound. The highs were a little splashy, but all in all a

a little more, although you're still going to have to be careful with anything under 80Hz: Be aware that the lower octaves may be stronger than what you're hearing.

These speakers are still accurate enough to get a good bass sound. In fact, when I tried re-mixing some older material with these speakers, I was much happier with the way the bass was sitting in the music, and I felt my new mixes were much more musical.

During regular studio sessions, it was a pleasure working with these monitors. Mixing the alt-country quartet Axton-Kincaid, with their intricate three-part harmonies, I was able to quickly come up with a good balance that was musically satisfying. With the Cliftons, a punk band whose biting guitar and lead bass interplay had always been a challenge to separate on our Events, the PM5s made it much easier for me with their clearer midrange definition. Shifting

decent set of monitors. The HS 50s gave a tighter sound, and though it has a lighter bass, I preferred its tweeter, which gave a smoother sound over the M Audio. In comparison with my Tannoy System 800s, the DS 50s allowed me to hear a brighter high end that stood out more in my mixes. The BX5a's do not offer all the adjustable switches that the Yamahas offer. In being able to get active monitors for only \$400, I found the HS 50s to be of good value. However, if these were my only monitors, I would be reluctant in buying them without the subwoofer, as I found the bass is too light. However, in using them as a second pair of monitors in a studio, they could assist in giving a different insight on the mid and high frequencies.

The subwoofer had a very clear solid sound. When using the subwoofer with either the HS 50s or HS 80s, I found in my studio I preferred the low cut switch set at 100Hz, which gave a more solid sound. However, the size of your room and the amount of sound absorption material will affect which settings would be best for your environment. At normal listening volumes, the bass had a solid, full sound. It gives a reasonable extension for a cabinet of this size. With all the settings offered on the sub, I found it to be very flexible as well. With my **Presonus Central Station**, I was able to solo the sub, as well as adding it with other monitors. The HS 50s I found by themselves sounded a little boxy and two-dimensional.

musical gears with the retro pop group Lime, whose members like to triple-track their harmonies, then bounce them all down to a single track, I felt confident that the balance I was hearing and committing to was going to work in the mix later on.

These speakers aren't really big enough to use as the main monitors in a large control room, but they would be a good choice as a smaller second set. In a small studio, with a subwoofer, or very careful placement, they'd be great as your primary speakers. Personally, I prefer working with smaller monitors; I find them much easier to overdub and mix on.

And although sonically they're forward in the upper midrange, they never got tiring to listen to, and I was able to monitor with them at very low levels and still get enough information to make musical decisions. I like them. —Bart Thurber

## Beinhorn Says



"Royer R-121s and R-122s are essential to my guitar sounds. They give me something that no other mic has. I use a lot of microphones when I record, but if I pull the Royers out of the mix I really miss them. To me, that's the sign of a good mic.

"I used to avoid using ribbons on drums, but the SF-24 changed that the first time I used it. It attacks in the perfect place and interacts beautifully with the other mics on the kit. It adds power and richness to the drum tracks and seems to smooth out the other mics. Royers have become an indispensable part of how I record music."

### Michael Beinhorn

(Producer - Soundgarden, Marilyn Manson, Red Hot Chili Peppers, Ozzy Osbourne)



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When I added the sub woofer, I heard a fuller sound that had a three-dimensional sound. The music had more punch and the music sounded more alive. In using it with the HS 80s, it also added additional bass response, giving a deeper tone compared to the HS 80s on their own. However, the HS 80s still gave a decent bass response by themselves.

In comparison with the HS 50s, I found the HS 80s had a very similar sound and character, however the 80Ms had more of an open sound. With a larger cabinet and woofer, it had a deeper bass response. These monitors may be a better option if you don't

have the money to purchase the HS 50s and HS 10 package. The HS 80s high frequencies sounded more even with the mids and bass compared to the HS 50Ms. In looking at the specs, the tweeter on the HS 80s is a little larger than what is offered on their smaller monitors. In order to compensate, I reduced the high end on the 50Ms to -2dB. With this setting, I found the HS 50s to have a closer sound to the 80Ms. I also found myself preferring this setting as they sounded more even with the mids and not overly bright.

All the monitors come with a manual that explains details of the monitors and

specs. They also go into detail about the placement of the monitors and how to use the subwoofer with the other HS series monitors. For the price and value, Yamaha has offered some decent-sounding monitors. For a pair of active monitors with enough bass, the HS 80s are worth considering if you're on a tight budget. For more bass, a tight mid-range, and a nice high-end, you may want to consider looking at the HS 50s, and HS 10 as a full-system package. Of course, if you work with dance music, you may want to add the HS 10W with the HS 80s, as well for any additional bass that may be required.

## MIX-N-SHOOTIN' MATCH

# VL-X5 + REVEAL 5A + SLS PS8R + ATC SCM20

Jeff Anderson puts on a new set of ears and gets out his gun.



To make a great recording, you need great monitors, bottom line. Studio monitors all have their own personalities. Some are ballsy, some are tinny and puny. Some are pristine and accurate, and some are just plain crap. The trick is to find the right combination for you

to ensure your mixes are being portrayed the way that you want them to be to the end consumer *most* of the time, on a crappy boom box, or a 4" TV speaker. The job of a mixing engineer is to have control over the mix. To do this he has to know his ears, the room

that he's working in, and most importantly: know and trust his studio monitors.

Over the past month I've had an opportunity to use four new sets of powered studio monitors. Along side of my standard monitors, I've used them to mix an album and to track around 12 sessions. The three standard monitors that I have used for the past six years are: **Mackie HR824s**, **Tannoy PBM 6.5s** and the jankie speaker in my Otari MTR-10 reel-to-reel mix down deck. Each of these new monitors up for review vary in price from \$300 to the \$4,500 price range. There's a place for each of these monitors. However, some clearly sounded better to me than others.

### TASCAM VL-X5

Retail Price: **\$399.99**

**Amplification:** 90-watt active biamped near-field design, (30-watt HF and 60-watt LF)  
**Driver Sizes:** 1" natural silk high-frequency dome driver, 5.25" low-frequency driver.

**Frequency Response:** 45Hz to 22kHz  $\pm$ 3dB.

**Additional Switching:** HF control 3kHz, 8kHz (+1.5dB) via dip switch LF control 150Hz, 800Hz (+1.5dB) via dip switch, power, volume.

What an incredible value. For the cost of these speakers, they sound amazing. I feel confident comparing them to my Mackie HR-824s or even a pair of **Genelec 1029a's**. The low end is amazing for such a small speaker. The only weird thing that I noticed was that at a lower volume, such as 85dB, the high end seems to roll off (from around 15K) a lot more than it would at 95dB or higher. This could have been the placement in my control room, however, we moved all sets of speakers to the proper mix position as we evaluated them.

## TANNOY REVEAL 5A

Retail Price: **\$798.00**

**Amplification:** LF – 40W, HF – 20W

**Driver Sizes:** 130mm (5") multi-fibre paper pulp cone, 25mm (1") soft dome, neodymium magnet system

**Frequency Response:** 65Hz to 30kHz

**Additional Switching:** Front panel mounted on/mute/volume/led indicator

These have a very "industry standard" sound. However they're not as full as the TASCAM. (Check out the frequency response!) I compare them to Yamaha NS10s (without the piercing notch around 18K) or Tannoy's old school version, PBM 6.5s. Although the low end is not as round as the TASCAMS, there is definitely a practical use for these speakers. Because 98 percent of consumer speakers

will not sound as good as these do, and as we all know, that's the goal: make it sound good in the client's ear. On a very positive note, I do feel that these new Tannoys do project an incredible stereo image. From the same mix position in our control room, the sweet spot was noticeably larger than most of the other monitors that we were using.

## SLS PS8R

Retail Price: **\$1,570 each**

**Amplification:** 125W RMS / 500W Peak

**Driver Sizes:** LF 8" woofer w/integral phase plug HF PRD500 5" ribbon driver

**Frequency Response:** 44Hz–20,000Hz +/-2dB

**Additional Switching and features:** 80Hz high pass filter, low-frequency limiter, db level, line voltage selector.

Unfortunately, I was disappointed with these speakers. With a price tag of over \$3,000, and the cool lights and designs, I was very excited to get them out of the box and hook them up. Once I turned them on, I instantly felt like there was a "gloss" muffling my ears. For all practical studio applications, studio monitors should not be adding a "gloss" of any kind. The low end, as well as the high, seemed to each roll off, leaving just the mids to fill out the spectrum. In my personal opinion, these monitors have the power and the gloss to be best suited for a home theater system.

## ATC SCM20

Retail Price: **\$4,500**

**Amplification:** 250W for bass/mid and 50W for high frequencies

**Driver Sizes:** 150mm mid/bass drive unit employing a super linear magnet plus a 25mm tweeter

**Frequency Response:** 60Hz, 20kHz

**Additional Switching:** rear panel selector provides five different LF boost settings, as well as a flat reference setting.

A 145-lb. flight case arrived at my office door the other day. (You know it's something cool if it's over 100 pounds in a flight case!) After paying for the chiropractor from lifting the monitors up onto our speaker stands, I can say, these are incredible. They project a very pristine and accurate sound. I popped in a Green Day CD and felt a sense of power and prestige. Then I popped in a Waltz for Venus CD that I just mixed in, and, well, two words: "Damn it!" If only I had a pair of these when I was mixing that record! The stereo image is as wide as a house. Amazingly, these monitors make it very easy to focus on what ever you are working on, and yet still hear the mix as a whole. I also noticed after six hours of mixing on them I did not have as much ear fatigue as I normally would. The price tag of around \$4,500 is well worth every cent.

## GET ON YOUR MARKS

# M-AUDIO FIREWIRE 410 + FOCUSRITE SAFFIRE

To make a great recording, you need great monitors. Bottom line.

by Scott Colburn

*The lights go down in the arena and the low rumble of the orchestra indicates impending doom.*

**[cue: low, throaty, generic, high-drama voice talent]**

*"In a world... full of Firewire interfaces... the axis of evil meets for a final battle... The victor will emerge as the leader of the new race of super interfaces... ready to conquer the mix at hand!"*

**[cue: flashpots, sirens and strobe lights]**

And just like pro wrestling, we start the long time periods between drama peaks.

Yeah yeah, but what both of these boxes have in common is the basic function of being Firewire interfaces that allow 2-channel recording into the computer and eight outputs for mixing. So I'm thinking this is a great little box for the home studio/musician that wants to mix

(potentially) in 5.1. Both boxes have two XLR mic inputs (with switchable phantom power) and two line inputs. The M-Audio device has a dual Neutrik XLR with a jack in the center. Very handy, however, these are for mic input and instrument input, respectively. This is cool, except when running line level to these, it tends to overload the mic pre. There is a line input on the back of the unit though, which is good, but somewhat inconvenient. There's a switch on the front that allows you to choose

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between mic/instrument or line level input. There's another switch that puts a -20dB pad in line, but even with the pad, the front input doesn't like a line level signal. An LED on the front will indicate signal present and another LED will indicate clipping.

The Focusrite, on the other hand, has two XLR for mics and two 1/4" jacks with a switch to change the 1/4" from instrument to line input. No pad is available on this model. The 3-LED meter indicates signal at -20, -6 and clipping. Both units have MIDI I/O and S/PDIF I/O. The M-Audio has additional support for light-pipe I/O supporting AC3 and DTS! Both boxes have eight analog outputs for multiple channel monitoring or surround monitoring up to 7.1. The M-Audio device has signal indicators for each of the eight outputs on the front of the unit. The Focusrite has no hardware output metering. Both units have two headphone outputs on the front with individual volume control and overall volume control for the analog outs via one knob. The Focusrite has additional switches for dimming and muting. So basically, with a few minor feature variations, these boxes are essentially the same.

And for recording purposes, both boxes do the job well. The mic pres are professional quality and clean. They do sound different but it's hard to pin down exactly what the difference is. They each have certain characteristics in frequency for various types of input. It's enough to say that they are both great on the input side. There is a BIG difference though: the M-Audio box does 24 bit to 96K where the Focusrite pushes up to 192K for recording. The other big difference is that the M-Audio device is unbalanced on the I/O and the Focusrite is fully balanced.

The physical appearances of these boxes are a bit deceiving. The M-Audio is a bright, shiny, metal, flat box with some weight to it and a chrome finish, while the Focusrite is lighter, stands upright and has a white, plastic front. The output jacks on the Focusrite are nice, solid jacks with a bolt holding them still. The M-Audio jacks are free floating and could potentially fail quicker due to this mounting method.

But let's talk about installation. Both boxes have their own set of quirks on the install side. The M-Audio unit comes with a sticker over the Firewire hole that warns you to install the software first before connecting and not to connect it until you are instructed to do so, otherwise a nun will appear and slap you silly! You're supposed to insert the CD and let it guide you. My problem is that I've got my computer set so that inserted CDs just sit there until I tell it

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Karl Coryat (a.k.a. "Eddie Current") is a consulting editor for *Bass Player* magazine, where he was a staff editor for 14 years and wrote many articles and columns on recording and technology. He has been a prolific creator of original music since the mid 1980s.

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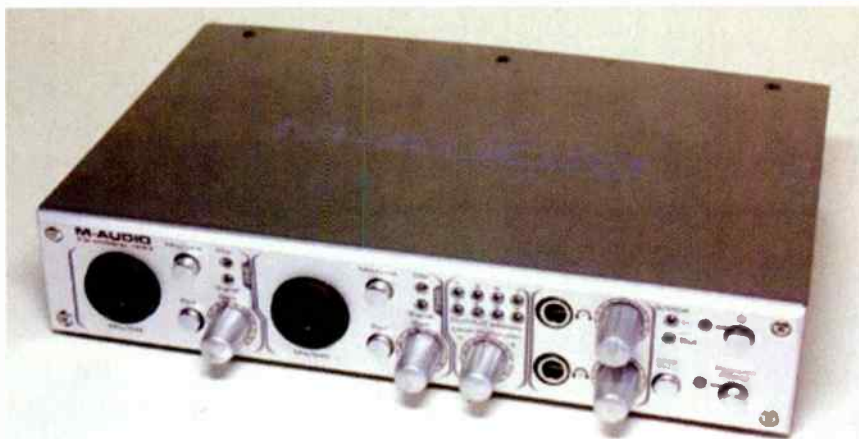


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to do something. Thinking that I just need to install the driver, I skip to the driver subfolder and I don't see the 410 listed. The quick start guide says to look to the user manual for additional instruction. The user manual has me search for a file that doesn't exist on the install CD. So I'm frustrated and just click on the autorun.exe and everything works fine. If only I just operated my computer the way everyone else does, I wouldn't get into these pickles.

The Saffire has two sub folders labeled PC and MAC and within is a single file for install. Now that's more like it! UNTIL . . . you're asked if you want to install the plug-ins. This creates a registration file with no instruction on what to do with it. Of course, if my studio computer were connected to the Internet, I wouldn't get into these muddles. So I look to the manual and find out that I need to register this on the Focusrite website. I go to the website and find out that I need to upload this file. I do. Now I'm asked to download a file. It looks like the same file I just uploaded, but with a slightly different extension. "Now what should I do?" I ask, and there is a button to push to reveal the information on what to do next. However, the pop-up box isn't big enough to show all the FAQs and the info I need to read is at the bottom of the box and there's no way to resize it!

So I search their knowledge base and find out that I need to upload this file to my computer when it asks for it, during the registration process. I look for registration on the software control panel and can't find it anywhere. So I decide to uninstall the software and reinstall. On reinstall I finally figure out that the registration process happens during the installation of the plug-ins. The button that says, "read license" means "push me and I will read the license file that you got from our



website." I can't help but play back the Seinfeld episode where Kramer is trying to manually run the film listing guide via his home phone and a newspaper, but can't tell what button someone pressed, so he just says, "why don't you just TELL me what film you want to see?"

See what happened? The battle with these interfaces started right out of the box (actually right on the box)! I was a little dismayed to see the words "Engineer Built-In" on the cover of the Saffire box. What does this mean exactly? I was afraid to open it in case a little gremlin might pop out and run amok in the studio chewing on wires and loudly proclaiming opinions. When dealing with the Focusrite, the interface is quite

cryptic to this old school engineer type, but it might be just flashy enough for the hip, indie musician. Once I read the manual, I was able to understand it better. The software interface for the M-Audio is straightforward and uses terms and screens that make sense to this seasoned engineer. I got my mixer, my outputs my sync page, my routing, looks like a console. DONE!

The plug-ins that come with the Focusrite are Reverb, Compression, EQ and Amp Simulation. These run natively on the box itself so no additional computer processing is needed. Each plug-in also has presets. The compression has a slider that says vocal, bass, electric guitar, strings, percussion, and so on. The EQ has similar settings. This is what "Engineer Built-In" means! If you don't have any idea how to set a compressor, you just chose the instrument you are recording. You're not set with just these options though, each plug-in can be set to manual mode for precise control over all the parameters.

I was intrigued by the amp simulator, which has the choice of Bass, British, American and Combo settings. They sound pretty good, but have the same downside that any simulator has and that is the lack of air and room that only comes from a mic on a cabinet in a real room. All in all, some useful plug-ins — decent reverb, nice compression, cool parametric EQ, but none of them are 5.1 capable.

So who wins this battle?

I think it's a toss up. Both boxes do basically the same thing. The Focusrite leans toward the quality side in construction and actual recording specs. It comes with Cubase LE and will work with just about any software out there except Pro Tools. You also have the added bonus of VST plug-ins that are useful. The M-Audio interface is less expensive and rightly so in that it doesn't have the plug-in architecture nor the 192K recording (if you really care). It comes with Ableton Live LE but also has the added bonus of working with any other software out there even Pro Tools! It's a special version of Pro Tools that has the moniker "M-Powered" attached to it, but it's fully compatible with other Pro Tools systems.

Do you know that this means? It's like the tunnel that Hogan built to get out of Stalag 13! The world really is starting to come up roses. So the M-Audio device is the first device that is truly world compatible. That means a lot in my book, but I still think this battle ends in a tie. The scale doesn't tip one way or the other for me. [M-Audio Firewire 410 \$399.95, Focusrite Saffire \$499.]

## NOT-SO-QUICK PICK

### KLEIN + HUMMEL O 300 D 3-WAY ACTIVE STUDIO MONITORS [3,395]

Klein + Hummel have been making speakers in Germany for about 60 years. They have a solid reputation for making high quality products and the subject of this review supports and continues to bolster that reputation.

I've had some opportunities over the past few years to work in rooms that had excellent monitors (Genelec 1032AM, Tannoy Eclipse, Dynaudio AIR 15, and so on) but this is my first experience with the Klein + Hummel product line. When I've worked with really great monitors, it's always been on the clock so I've never had the time to fool around using a signal generator or pulling out a huge variety of program material to test them with. The reality is that speakers in this price range have always been a bit beyond my budget, so the chance to get to own them for even a super short time makes me feel pretty lucky.

The O 300 D is a relatively compact 3-way studio monitor — only 10" x 15" x 11.5" and weighing 32 pounds. The 8" polypropylene woofer takes up most of the real estate on the face with a 3" fabric dome midrange speaker and a 1" fabric dome titanium tweeter nestled into the remaining space. The red K + H logo badge lights up when the main power is switched on and acts as an overload light and flashes with any clipping.

Splitting the frequency range across three drivers makes less work for each one thereby freeing each one to only do what it is best at. The low-end driver has no reason to generate mids, for example, so there will be less resonances, harmonics, and standing waves in the cabinet, permitting better accuracy, or so the theory goes. The cabinet uses a new material called Low Resonance Integral Molding (LRIM) that has been shaped into "waveguides" for both the midrange unit and the tweeter to help control dispersion, and allowing the drivers to be mounted in the correct vertical plane for accurate time alignment. The tweeter waveguide disperses wider horizontally rather than vertically to minimize the high frequency reflections from the surface of the console and creates a larger sweet spot.

Each of the drivers is powered by a separate MOSFET amp (with 150 watts for the woofer, and 65 watts each for the mid and tweeter) with built-in protection



limiters. The peak SPL from one meter is quoted as 112.8dB with 3% THD, or at 95dB with less than 5% distortion for all frequencies above 100Hz. The overall frequency response is stated as 40Hz to 20kHz, and by all accounts extremely flat. The points where the frequencies cross over for each are set at 650Hz and 3.3kHz in 24dB/octave slopes with a subsonic filter that rolls off 6dB/octave below 30Hz. With a signal generator issuing a -10dB sine wave, I got to a lovely 28Hz before hearing the roll off and then it rolled off quickly.

The O 300 D has an analog input via a transformer balanced line level into an XLR connector (no TRS input), and digital signals can be connected using the same XLR as the analog in for AES/EBU or via BNC connector in either unbalanced AES3id or S/PDIF. The D/A is a 24-bit converter that takes up to 96kHz sampling rate.

Like many active speakers these days, there is a full range of room correction EQ features. These are really small, screwdriver-adjustable pots. I tried to get my fingernail in one of them, but they are too recessed. These controls will help compensate for near-wall placement, or corner-near-ceiling placement, or in the middle of the room with 3dB attenuated increments to the low's output — plus a broad midrange (50Hz to 1kHz) control to attenuate 0 to 6dB, and finally a high frequency level control that goes from a +1dB to -2dB around 2kHz and up.

One interesting thing on the rear panel is a 7-pin XLR connector that is used to bypass all the crossover, EQ, and protection circuitry so that a K+H controller (the Pro C28) can take care of all those controls digitally. This unit provides much more sophisticated control over all the input signal handling, digital conversion, etcetera. The Pro C28 runs about \$5,000 — we didn't get one to play with for this review.

After putting the speakers through a recommended burn-in period (pink noise @ 85dB for 72 hours), I collected a large collection of mixes from many disparate sessions — from Reason-y blip-hop to string quartets, tweaked out post-rock to Meters-esque funk, willowy folk bliss to angry chaotic skronk — and prepared for my initial day with the monitors.

From the very first note of the very first track, I had to scrape my jaw off the floor. These monitors blew me away immediately. They sound huge for such compact boxes. Every track I played was instantly stripped of its hazy outer layers — every track suddenly became much, much more that it was — either in a really good way or in a flaw-ridden, embarrassing way.

The bass came alive with a tight and natural clarity that was not exaggerated in any way. I guess it feels and sounds "right" or truthful. Wide and clear mids — beautiful full-range mids — and at the same time with some of my mixes: horrendous! . . . but vivid and 3 dimensional. The highs are seamlessly integrated and are not hyped at all. The entire spectrum is ultimately represented and absolutely pleasant to listen to.

Every sound issued from the K + H O 300 D's took on a new life or afforded me a new perspective on that sound. You have to hear them for yourself. They are by far the best near-field monitors I've had the pleasure to use.

It's depressing to have to go back to my normal monitors. It always is depressing to get used to something great and then have to give it back. I wish I could afford these things, then I wouldn't have to give them back, but they go for about the same that I paid for my last car. The price is prohibitive. I understand the old adage, "You get what you pay for" but it's still just unfair. —Monte Vallier

#### Pros:

- Fantastic sounding monitors in every aspect.
- Will help make you be a better mixer.
- Versatile.

#### Cons:

- Unfortunately, the price (for me anyway).
- Don't really need all the digital control stuff in there — maybe taking it out will bring the price down?

## QUICK PICK

### JDV MARK 3 DIRECT BOX [ \$425/pair, [radialeng.com](http://radialeng.com) ]

The JDV Mark 3 Direct Box is packed with studio-friendly features that can usually only be found in more expensive mic preamps. I found this professional and well-built unit easy and fun to use.

Radial refers to their JDV as a "central distribution hub," an apt term for the amount of flexibility that this unit offers. This unit features two selectable inputs, a variable impedance selector (referred to as DRAG and well explained in the excellent manual), auxiliary sends for stereo EFX or for driving two different amplifiers, Lo-cut and Hi-cut Filters, ground switch, phase reverse switch (helps to solve phase problems when recording a DI and amp track simultaneously), re-amping capabilities, a -30dB pad for taking a signal off of a speaker cabinet, and even a dedicated tuner output.

Out of the box it's an easy plug-in and play, thanks to the graphics on the top of the chassis. There's a nice rubber pad on the bottom to keep it from sliding around, and the power cable can be secured to the DI with a clamp that's provided.

In the studio I gave this unit a good workout with some current projects. First of all, I wanted to see how their impedance options worked for DI'd electric and acoustic guitars. I've always found that a DI'd electric guitar sounds dull and boring, mainly from the impedance mismatch that happens with inexpensive direct boxes. Plugging in my Les Paul, running the signal through a **Focusrite Red Preamp/EQ**, and rolling the DRAG control to about 3 o'clock gave me a surprisingly rich and ringing guitar sound, perfect for re-amping later.

When I've DI'd acoustic guitars in the past they've always sounded way too bright and edgy to me, but once again with the JDV's impedance choices I was able to easily get a warmer



and more natural tone that worked well in conjunction with a **Neumann KM140** condenser mic and the **Focusrite Red**.

Electric bass can be tricky with DI's. Some players really like to attack their instrument, and with active pickups the transients can be a real problem. This DI, however, seems to be very hard to overload (the manual claims it's virtually impossible). The JDV gave me a well balanced and clean bass sound with three completely different bass players; however,

when one of the songs needed a Motown thump I found that using a tube DI fit the track better. The JDV has a lot of output gain and there's actually a -15db pad on the output if you need it. With the **Drawmer 1960 preamp** I used, I actually preferred the sound of the DRAG control switched out for all the bass recording I did.

One fun thing to try out is taking a signal off of the parallel input jack on the back of a speaker cabinet. By engaging the -30dB pad on the JDV, you can get a completely different amp-y sound. I tried that option out with an SVT, and got a great crunchy and grainy bass sound that was reminiscent of engineer Jack Endino's early Sub Pop recordings.

The JDV's re-amping capabilities are another bonus. You'll need another direct box of any type, and a female-to-female XLR to connect them, but it's worth exploring, as the signal is quiet and mates perfectly with an amp.

With a street price of around \$375, this DI box is unbeatable, and with its massive headroom it's going to definitely be a problem solver, especially with those bass players who like to really smack their strings. I'm not looking forward to giving it back. —**Bart Thurber**

## SOUNDS

### SONY

## STRUCTURE/CAPTURE: FUTURE RETRO DANCE EXCURSIONS



**Contact:** Sony, [sony.com](http://sony.com)

**Format:** 1 CD-ROM, 16 bit/44.1kHz acidized WAV files

**Price:** \$39.95

Short form: warmer than chill, more organic than electro, more cerebral than house, and not as far out as glitch. It's a niche, yes — but

an interesting one, with elements that work in other genres too.

The 334 loops, which take up about 495MB, include the usual suspects (bass lines, drum patterns, sequences, drones, etc.) Yet these are the bizarre world versions; the drones don't have their edges filed off, the drums squish instead of thud, and the bass lines rumble instead of pound.

The collection also includes folders of harder to classify sounds, and 24MB of one-shots. These aren't necessarily the type of sounds you'd map across a sampler's keyboard (although you certainly could), but serve more as accents for throwing into the mix — and they're a welcome addition. The Acidization exhibits Sony's usual high level of quality control, so it's easy to mix and match the various loops. This is one of those CDs where you can pretty much throw anything together, and it generally works.

*Structure/Capture* is a curious mixture. There's a gentle, downtempo sort of vibe coupled with a hint of Blade Runner-type decadence, wrapped in a totally electronic veneer. But that's admittedly vague, so go to [emag.com](http://emag.com) and check out the audio example I put together. If you like it, you'll love the disc. —**Craig Anderton**

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## NOT-SO-QUICK PICK

### WUNDER AUDIO PEQ1R

(\$2,250 MSRP, power supply \$300)

I'd been wondering (sorry) about these mic pres for a long time. I've read about them on gearhead sites and I've seen them at industry shows and in ads. I've only read a couple reviews though and I've never actually seen one in anyone's rack or in anyone who had used one. I guess I got the first one on my block. I had no preconceived notions.

But according to the lore, the guys were refurbishing a couple of 60 Series Neve consoles and came across some modules that were made for one-of-a-kind desk for John Paul Jones from Led Zeppelin. They thought that these modules sounded amazing and figured out that the beauty of the sound was coming from the transformer. Inspired by these transformers, the Wunder folks spent a lot of time in the lab developing and testing their own custom wound transformers that would end up in the PEQ1 series.

This is a class A discrete 70s style solid state mic pre/EQ. It has XLR mic and line inputs and output and a 1/4" TRS instrument/line in on the front panel. The line input uses a separate transformer so you can actually use the XLR line input on the back as a separate, different sounding mic input by cranking the input gain knob into the -24dB to -42dB "HiZ" zone. On the front panel moving left to right you have the 1/4" instrument input, mic/line, phase reverse, and EQ engage toggle switches. Next to those are three double action knobs for the EQ section. All the controls have an outer ring frequency selector that has multiple steps including an off position and a continuously variable +720dB boost/cut knob in the center. The low frequency has five steps: 40Hz, 60Hz, 100Hz, 160Hz, and 200Hz. The mid has six steps: 36K, 7K, 13K, 24K, 36K, and 58K. The five high frequency bands are 7K, 10K, 12.5K, 15K, and 20K. The boost/cut knob in the center of each control has no 0 detent and the small white pointer on the knob is difficult to see. This makes it hard to recreate an EQ setting. Also having the frequency choice numbers under the knobs makes them hard to see from angles above the panel. I had to keep the unit racked high so I could easily see the numbers. To bypass a specific EQ control you must turn it to the off position so quick A/Bing is difficult to manage.

Continuing down the face, the gain switch is also a double duty control: the left side shows mic input gain and the right side shows line input gain. Of course you've got your 48v phantom power toggle and, lastly, an output level knob next to the power on LED. The PEQ1R's



input gain is impressive — from 18 to 78dB for mic signals and 60dB for line and instrument inputs.

When I deboxed the PEQ1R, I was surprised by how beefy the power supply was. Then I learned that it's capable of powering 24 of these units. Okay, I wonder if there could be an option to buy a smaller supply that would power two units? Maybe then it could be included in the price instead of having to shell out an extra \$300 if you only plan to buy one or two units.

Enough with the boring details — how does it sound?

The very first time I powered it up was for a vocal session for an English band called Capricorns. They asked a gentleman named Eugene Robinson (why does that name sound so familiar?) from the band Oxbow to guest on one of their tracks, and we were going to record the vocals and upload the files to an FTP site in time for their final mixing crunch in London. Perfect opportunity to out the PEQ1R to the test.

Eugene is probably the most dynamic singer I've ever worked with. He goes from barely audible whispers and low growls to bone-splitting howls and lots of heavy stuff in between. I decided to use one of the review mics from *EQ's* Giant Mic Issue [Sept '05] — the **SE Electronics Titan** with a -10dB pad engaged going into the PEQ1R and then into a **Summit DCL200** set with a fast attack and about 4dB of compression. We were doing the vocals on a loft over the control room and sometimes there can be some low end mic stand coupling to the floor rumble, so I engaged the EQ and set the frequency selector to 60Hz and rolled off a low dB. It helped enough to get started.

Getting a good, present level was easy, but when Eugene started performing on the track, I had to be quick with the gain knob on the Summit. I rode his takes all the way through and still missed some heavy peaks. Another challenge with recording Eugene is he likes the headphones level to be very hot. So hot that he wears earplugs under the phones. He really wants to be immersed in the sound. This

usually creates quite a bleed problem during his quieter moments. I had been using the **Sony MDR 7506** headphones and been experiencing some heavy bleeding. It just so happened that Eugene had a pair of **Ultrasonics HF1 550s** to try out for the session. These phones have a tight ear cup that seals a lot better to keep bleed to a minimum and the efficiency of the drivers in the earpieces makes it so they don't need to be cranked as much to get that level of immersion that Eugene likes.

But how did the PEQ1R sound at the end of the day?

Perfect for this type of vocal, it has a quality that is very pleasantly "rock" and musical. It's almost a grittiness or a minute buzziness like a pleasing high end harmonic distortion that made this roiling vocal track sit so well in the midst of heavy instrumentation. You may think that I'm being led by the sound of the Summits. I compared the same Summit settings and the same mic using the **Millennia HV3D** mic pre and did not experience the same feel. While the Millennia HV3D is an amazing, clean, transparent preamp, it was too real — too detailed for a vocal track like this. And, I thought, especially for this type of music. But Capricorns really liked the sound — they even liked the spot where I couldn't ride the level down fast enough and crapped out with some input level saturation. Cool.

While the PEQ1R worked for vocals in the heavy sludge track, it didn't fare so well in the quiet, sensitive, female vocal area. I used it on a quiet, intimate vocal with a **Microtech/Gefell UM92.1S tube mic**. The qualities that I liked with Eugene's vocals I didn't like with the quieter vocals. I tried to cut some 700 Hz or a little 1.3k to get rid of some of the nasal quality that I heard that went away when I switched back to the Millennia mic preamp. It's just not the right tool for some jobs. But that being said, it excelled in many other applications.

I'd also been recording a lot of cues for a marketing campaign where the producers are constantly changing their minds and where deadlines are ultra tight. The PEQ1R was an excellent and faithful, versatile tool in this

arena. The HiZ input on the face got a lot of action. A guitar, bass, or a Rhodes piano was plugged in all the time. The variety of tones that I was able to dial in for electric bass was incredibly useful. I could pretty much find any sound I needed with my old P-bass, yet the sound of the unit was tight, deep, and rich without the EQ engaged. In conjunction with my Summit compressor, it gave me one of the most workable direct bass sounds I've gotten; it was the same with the direct guitar. I tend to work very quickly on these types of cues, and plugging the Tele straight in and then processing it later with **Amp Fam** is what I have to do. But I used the direct sound many times without relying on the virtual amp effect. It's a clean sound that can be carved up with the EQ to get interesting stuff. For mono percussion tracks I used the PEQ1R with an AEA R92 ribbon and got a fantastic amount of gain.

I've tried this pre/EQ with a huge variety of sources, and I have to say that it is truly versatile and works with a big personality. If you are looking

for a transparent pre like the Millennia HV3 or a **John Hardy M-1**, you are looking in the wrong place. The Wunder PEQ1R definitely has a "sound," but it's a sound that is very musical and pleasing to the ears. —*Monte Vallier*

**Pros:**

- Well made with high quality components
- Lots of gain for both mics (ribbons too) and line/instrument inputs
- EQ is solid — a little goes a long way
- Excellent for direct input applications

**Cons:**

- If you ever only plan to buy one or two, the extra expense of the power supply that powers an entire console's worth is a bit much.
- There should be another power option.
- With the way the knobs for the EQ are situated, it's difficult to read the numbers from anywhere but under the box.
- There is no way to quickly A/B EQ settings.

**SOUNDOS**

## BIG FISH AUDIO NEO SOUL 2

Contact: Big Fish Audio, [bigfishaudio.com](http://bigfishaudio.com)

Format: 1 DVD-ROM, 24 bit/44.1kHz WAV, REX, and Apple Loops files

Price: \$99.95



This is the real deal. Shaft, Barry White, the 70s, wah guitars, sax, strings, organ, congas, the occasional Minimoog, Fender Rhodes all presented for your pleasure (and I do mean pleasure, baby) in the form of 55 construction kits.

The WAV and Apple Loops folders contain the same set of files; each construction kit has a full mix for easy auditioning, the kit elements, and a folder of one-shot drum/percussion sounds used in the tune. The REX folder is similar, but doesn't have the full mix or one-shots, and wisely doesn't include files that don't work in the REX format.

The WAV files aren't Acidized, which makes it difficult to "mix and match" files from different kits in WAV-only hosts; however, the REX files are edited very well, and stretch over a wide range of tempos. With more hosts supporting the cross-platform REX format, and with Apple Loops now a standard on the Mac, you're pretty much covered for time-stretching.

The files are well organized; each folder name includes the tempo (which ranges from 51 to 137BPM) and key. Overall, if you're into the vintage soul scene, these samples satisfy. And if blaxploitation movies ever make a comeback, or you get the call for *Undercover Brother II*, you're all set to do the score — check out the demo at [eqmag.com](http://eqmag.com).



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**NOT-SO-QUICK PICK  
SEQUIS —  
THE MOTHERLOAD  
SPEAKER SIMULATION  
SYSTEM**

[\$869, motherloadusa.com]

When I was in engineering school, the late, great Malcolm Chisholm showed us how to mic up a band. When it came to the guitar, he tossed this metal electrical box on the floor that resembled a DI and told the guitar player to plug the *speaker* output of his amp directly into the box. We students were a little worried about connecting SPEAKER OUTPUT directly to our console, but Malcolm was not arrogant enough to do something that stupid.

The clean guitar sounded really good, the distorted guitar sounded like crap. Inside the metal box was a transformer that took any kind of level you threw at it and dumbed it down to mic level. "Brilliant!" I thought and decided I would build one myself.

I never did.

When I opened the box for the Motherload, I was dismayed at finding no power cord and nothing on the back of the unit that resembled a standard power connector. "Dammit," I yelled, as I thumbed through the manual. On the first page of the manual is a huge warning to make sure everything is connected properly before powering up your amplifier. It reminded me of this Chinese tea called "Smoke Quit" that explains very simply that if you drink this tea and then smoke, you WILL get a headache! I suppose it was a good thing that I assumed it needed power (it made me read the manual first).

The manual revealed a couple of diagrams indicating proper connection for various uses, a little explanation about what each dial did and the pearl of wisdom that the unit was passive and needed no power. Excellent! Shall we begin?

I'll take your silence to mean YES.

I've got this old Sound City amp that has a really great distorted sound at full volume. You can't get this tone from anything less. I've always had to rely on foot pedals to give me the distortion I wanted at a volume that was tolerable. So I was very excited to see what this Motherload could do. The connections on the back of this 1RU box are clearly labeled *Balanced Output* both XLR and 1/4" variety, *Send* and *Return* for effects, *Attenuator Out* and *Thru Out* which allows connection to your cab and *Input 8 Ohm*

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that mutes the speakers when using headphones. Another nice feature is the magnetic shielding of the speakers for desktop use.

The Studio Pro 3s project some really nice definition. Even the bass sounds clear. They definitely have more clarity than the Yamahas, yet the M-Audio 3s lack the bottom-end

thump of the NS10s (and NS10s aren't known for their bottom-end thump).

Matt Hyde came in the studio the other day, saw the M-Audio speakers, and asked if I had blown them up yet. I had to confess that I liked these speakers and might have to commute their sentence.

I finally asked Zakk Wylde what we should do to these speakers and he said "Let's put them through a Black Label beating." We have been "beating" them for the last three weeks and they have been working great. Sure we *could* blow them up in about a second, but we haven't because they've been useful by giving us a different perspective from the usual studio speaker fare.

Though these speakers are billed as "professional desktop speakers," I decided to bring them into a professional studio environment to see if they could (as Zakk would say) "hang with the big boys." They did and were quite useful in this situation. I am sure they would work great at your workstation or with your computer. —Barry Conley

## QUICK PICK DYNAUDIO ACOUSTICS BM5A TWO-WAY ACTIVE NEARFIELD MONITORS

[\$500 street, [dynaudioacoustics.com](http://dynaudioacoustics.com)]

Speakers are like tires.

Even a shitty car can gain better handling and speed from a new set, and nice cars demand nice rubber. The same goes for speakers. Sure, a fine set of monitors might just reveal all the flaws in the front end or the board, but at least you find out where the problem is instead of spinning your wheels in frustration. That said, there are at least as many different speakers available as there are tires, making the decision very challenging for home studio folk. Price prohibits cheap bastards like myself from shopping top shelf, and frankly, guys like me usually don't have enough space or patient enough neighbors to justify a set of Pirelli-equivalent megablasters (see: Genelec, Tannoy, and so on). I'm just content to get a nice pair of well-balanced, versatile monitors at a decent price. Dynaudio Acoustics' BM5A's provide just what I need: active, nearfield monitors that work well in a variety of smaller spaces.

Weighing in at 8.7kg (19.7 lbs.) each, these are not flimsy cabinets.

With only 9 liters of volume, however, they don't cramp the room either. The cones are rather exposed from the front, which makes a klutz like me a bit nervous, but the woofers are molded polypro and aluminum, and the tweeter is protected by a funky-looking trident. At only \$612.50 each (<\$500 street), I wouldn't worry about them as much as I would about the aforementioned billionaire-busters, anyway. The rear panel offers a number of tuning options via a trio of three-position switches (low, mid, and high), including a high-pass filter (flat, 60Hz, and 80 Hz) and a level switch (+4dB, 0dB, and -10dB). This makes it easy to remember the setup and keep it consistent side-to-side, rather than twiddling a bunch of knobs. The sound is well worth it, and feels like a lot more than 50 watts each. Response in the bass frequencies is remarkably full, given the size, but there is a low-cut switch to keep the neighbors from



getting too mad (or to keep boomy rooms from going boom). High-end is also quite impressive and speaks to the success the Danish firm has had

with their total rework of the tweeter. The mid-range is a bit muddy on flat settings, but the attenuation switch takes care of most of the problem, depending on the source material and the room. The only other complaint I could possibly have is that the power switch is kind of hard to find amongst all the other stuff on the rear panel, but that's less likely to be a problem in a slightly larger room.

All in all, these speakers have made '06 a much tighter, brighter, all-out rockin' year for me so far. They remind me of a good pair of aggressive, all-season tires: great in the extremes, with good response on clear roads as well. For the budget-minded recordist working in challenging spaces, these monitors will get you where you want to go.

—Sam Wheeler

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## NOT-SO-QUICK PICK

## THE RUPERT NEVE DESIGNS PORTICO SERIES 5012

[\$1,795, [rupertneve.com](http://rupertneve.com)]

The Rupert Neve Designs Portico? Ahhh . . . a new line of half-rack space units with three things in common: custom designed transformers, minimal crossover distortion, and minimal negative feedback. These are some of the most important ingredients in the recipe for a great mic pre amp and consequently the 5012 received minimal negative feedback from this reviewer.

Please save your laughter for the end of the review.

I have to admit my first impression of this pint-size, plastic-looking, dual pre amp left me a little underwhelmed. But what appeared plastic was actually folded steel and there was nothing pint size about the sounds that came out of this thing. Indeed, the small size lends itself to RND's mandate of short signal paths, not to mention the fact that it encourages you to buy a second unit so that it can be properly rack mounted.

The usual amenities are also all there: phantom power, phase switching, and a high quality stepped gain attenuator, as well as a continuously variable trim pot, but you're also treated to a sweepable low-cut filter ranging from 20Hz to 250Hz. I'm a big fan of these types of filters — sometimes I want to start carving into the low mids and sometimes I just wanna eliminate a little rumble. So that won big points with me. In addition to a mute switch for each channel and the ability to buss the channels together to a separate output, there's also the mysterious "silk" switch, which applies to both channels and which I have yet to fully get my head around. There's also an LED meter for each channel, and the 5012 also comes with an external power supply that can power two modules simultaneously.

The first round of testing began during a session with San Francisco's prog kraut rockers, Crime in Choir. In practice this mic pre held up well against the usual mainstays of my studio and in many cases outshone its competitors. While sounding great on snare, I must admit that I still preferred my old, poorly racked UA 1108s. Technically the Portico *sounded* better, but I like the bit of dirt and overdrive the 1108s impart. The 5012 was just a little too good perhaps.

Nevertheless, it sounded splendid with



a pair of Schoeps 221b's as room mics and the sweepable low cut filter was particularly useful. In fact it sounded great on just about everything. Even with Rupert Neve's name on it, it seemed a little too good to be true, so . . . another, more intimate round of testing.

Paired with a Klaus Heyne-modified U87, the 5012 excelled at reproducing the sounds of a beat-up acoustic guitar (unlike a neighboring API 512, which sounded murky and boxy). Again the low-cut filter was an essential tool — sure one big, boomy acoustic guitar sounds great, but try layering six with that much bottom end and see what you get? Nothing I would want to listen to, that's for sure.

But what really stood out in this comparison was the clarity, the sparkle, and the incredibly solid low end — the latter being the most pronounced difference. We'll chalk that one up to the Neve-designed transformers. Speaking of which, I wonder why this thing is getting so damned hot?

This question, as well as some of the curious terminology used on the RND website, such as "Transformer-Like-Amplifier" and "The RND 5012 uses mainly single-sided amplifier circuitry" led me to start wondering what was going on under the hood. So, against my better judgment, I very carefully opened it up. After the magic elves scrambled into their hiding places, I saw that some serious design went into this thing. There's not an inch of wasted real estate around the massive output transformers. All switching is relay enabled for quiet and smooth operation. And although, at first glance, the plethora of 5534 op amps was alarming, a subsequent read of an online interview with Mr. Neve regarding the way in which he runs these op amps was reassuring.

Which brings us to the next interesting design point: The 5012 has a frequency range of roughly 10Hz to 160kHz. Yes, that's right, forget the Nyquist theorem, this is at least eight times the ceiling of average human hearing! I had read an interview with Neve some time ago and tracked it down so I could re-tell the story (or at least give you the gist of it). OK, here goes: The year is 1977, the location is George Mamin's AIR studios, the concerned engineer is Geoff

Emerick, the console is a recently delivered Neve and the problem, which only Emerick's clued in to, is anyone's guess. Ultimately, testing revealed a 3dB peak at 54kHz on three channels due to some mis-wired transformers.

The point of this story is that while humans may not hear much above 20kHz, there is some sort of perception at work. Anyone familiar with Pauline Oliveros' work with tones will know that in addition to this perception, one can also hear the interaction of frequencies above the range of human hearing if combined properly. What I'm getting at is this though: The 5012s stated frequency range not only looks good on paper, but makes for good science and even better listening. RND set out to make an affordable, compact, transparent preamp with a minimum of crossover distortion. They have achieved this and our ears will thank them for it. And if anyone cares to check out the interview with Mr. Neve in which he tells the Geoff Emerick story it can be found in greater detail right around here: [prosoundweb.com/chat\\_psw/transcripts/rupert.php](http://prosoundweb.com/chat_psw/transcripts/rupert.php).

Also, as a footnote, I wrote to RND asking if the silk feature affects second and third order harmonics. I was rewarded with an immediate response from Rupert Neve himself! And here it is . . . "Silk' reduces negative feedback, which naturally allows increase in second and third harmonics. There are no high order harmonics even without feedback, because the design is effectively single-sided. 'Silk' shapes the feedback network to optimize the ratio of second and third to sound musically sweet (for example, too much third would sound muddy at low frequencies)." Genius. — *Tim Green, Louder Studios*



# BOB'S RULES OF ORDER: STAGE MONITOR SYSTEMS

By Bob Heil

One of the largest problems facing many live groups, playing or recording, is that of the monitor system. We have to deal with high level output from the speakers getting back into the sensitive microphones causing feedback headaches. If you apply the science correctly, though, high-level and high-quality monitors CAN be easily maintained for all of your performances.

Here are a few tips that I think can help. . . .

- Refrain from using larger diameter speakers. A pair of high-quality 10" with a 1" midrange driver on a 40 or 60 degree horn works best.
- Choose a dynamic microphone with a tight cardioid pattern.
- Place the monitor in the null of that cardioid pattern . . . directly BEHIND the mic and aimed a bit lower than the mic element.
- For floor monitors, use larger sorbothane shock mount rubber feet to decouple the stage.
- For side fills, it is best to elevate them about ear level and aim a bit BEHIND your head so the path is not directly into the microphone.
- Side fill monitors that are 15' to 20' left and right will give you a bit of a time delay, thus reducing some of your feedback path. The combination of front and side fills is terrific.
- Keep the sensitivity of the microphone as low as possible. The input gain of that first stage in the mixer is vital. If you can keep that -3 to 4dB down from where you normally use it, your feedback path will be reduced and it is easier to tame the monitors.
- Use parametric equalizers. It is so easy to null feedback carriers with a parametric. Run the monitors up to a feedback tone . . . a steady tone. Narrow the bandwidth and slowly turn the null control until that tone is gone. Parametric is a wonderful tool.
- Keep unused microphones closed. Every time you open a microphone channel you have to reduce your system output by -3dB . . . open ONLY the microphones that are in use for a particular passage. VERY important.
- Wire your monitors OUT OF PHASE. Reverse the speaker leads so they are out of phase with the microphones. It is one of the best live sound tool sounds around.

## Look who's invited to the EQ party...

# EQ

# BT

# JOE BARRESI

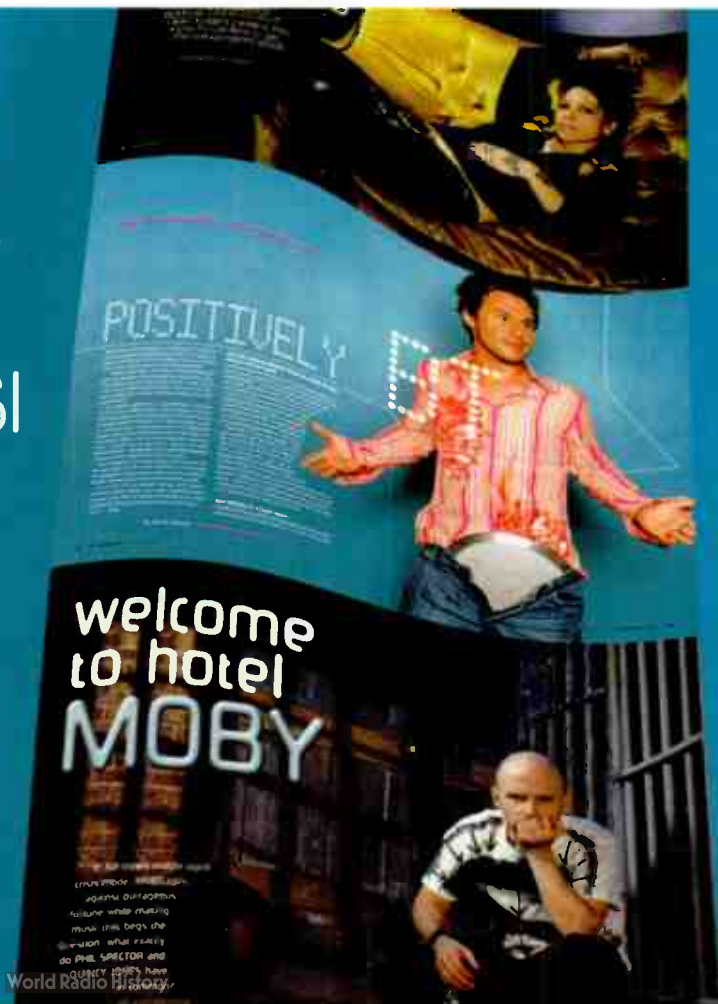
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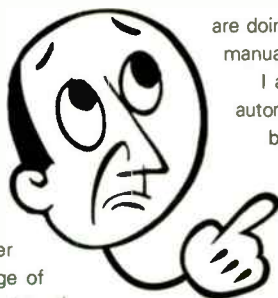
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# END NOTES: A FEW THINGS I DON'T LIKE ABOUT PRO TOOLS

by Scott Colburn

I understand the theory behind the Smart Tool, but I really don't want to have to be in the right place in the waveform to get the tool I want. Why can't the fade tool be just a dot on the corner of the region that you drag to create a fade? Shouldn't the trimmer tool be just a dot on the edge of the waveform that you drag to trim the beginning or end of a region? If you click in the region, then you can drag the whole thing somewhere instead of having to be near the bottom of the region to get the grabber tool. If you click in the timeline or in an empty space, then the cursor could go to that location instead of being near the top of a region to get the selector tool. With these simple graphical modifications it reduces the Smart Tool down to one tool. A pointer that does everything rather than a tool that tries to interpret what you



are doing. This is the difference between manual and automatic transmission.

I also really want to display all my automation at once rather than switching between views.

Moreover, I would like to have the option of bouncing to disk in computer time rather than being stuck with bounce to disk in real time. I just want the option. I've been told that some realtime plugins work better in real time than in computer time, but maybe the difference isn't an issue; or maybe you aren't using any plug-in at all and you just want to make a quick stereo bounce of a 20-minute segment without having to wait 20 minutes.

Hey, why don't the meters actually tell me what level I'm at? Could we at least see some markings? I can't help but hear my engineering teacher saying loudly, "Meters Lie" as he tapes the meters up in the studio, but that was the

analog world and frankly, I like to look at meters with the knowledge that they lie. I also like to figure out how much they lie. I just need to know what the relationship is. dB's please!

OMF imports and exports are available only through additional software (DV toolkit)? Please! How hard is it to just offer this simple, compatible (especially in the AVID family) export option as standard? This is why I liken Digiland to Stalag 13. Once you're in, it's nearly impossible to get out.

Look, I realize that the only way you can maintain reliability and connectivity is to close the gates and lock them, but these are different times when engineers need to move around and may actually want to take advantage of digital functions that other programs do better. I don't know about you, but I don't like being told how to do it and what to do it with. I really like options that will benefit my client and their needs.

'Nuff Said!

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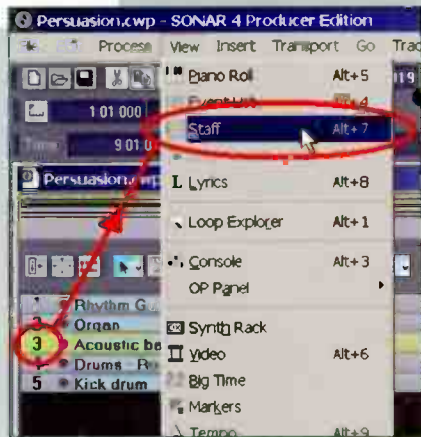
# Power App Alley by Craig Anderton

## CAKEWALK SONAR 4

Create tablature from a score

**OBJECTIVE:** You know the old joke — Question: How do you get a guitarist to shut up? Answer: Put sheet music in front of him.

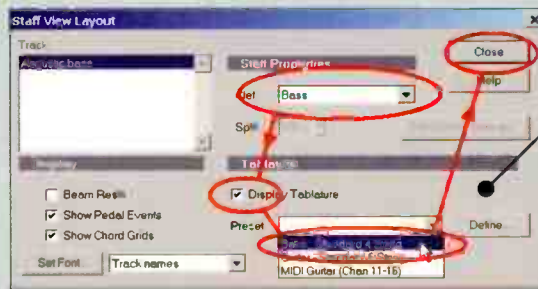
**BACKGROUND:** Which maybe explains why *tablature*, which shows note fingerings on a symbolic guitar neck rather than standard notation, is popular with guitarists. Sonar 4 can generate tablature from MIDI data; here's how.



### steps

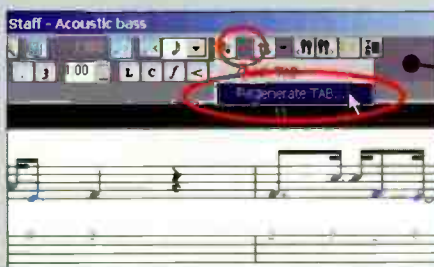
Select a MIDI track (click on its track number), then go View > Staff (Alt-7).

After the notation appears, click on the Layout icon (or type "L").



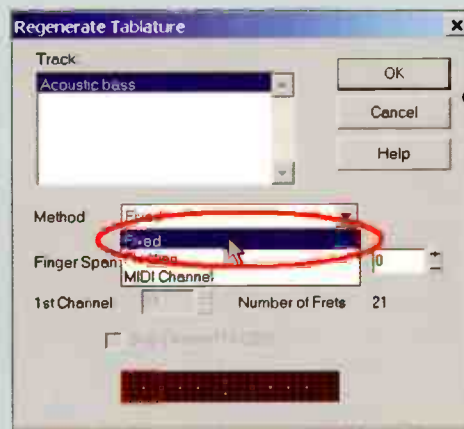
In the Staff View Layout window, choose the clef (Bass or Treble), then check the "Display Tablature" box, and choose a preset. As this is a bass part, we'll choose "Bass — Standard 4-String." When you've entered all the values, click on "Close."

Although tablature appears under the staff notation, the fingering may not work with real-world instruments and players. To fix this, first select (i.e., draw a marquee around) all the notes in the track to select them.



Click on the drop-down menu to the right of the Staff Layout icon, and select "Regenerate Tab."

Choose "Fixed," and specify the "Finger Span" (the total number of frets your fingers may need to stretch) as 4. "Lowest Fret" is 0 if you're playing on the lower part of the neck. A small red outline appears around the section of the neck where the notes will be played. Click on "OK," and the tab should be properly regenerated.



### tips

- Between Step 1 and 2, type "V" if you also want to see a virtual guitar neck.
- To voice notes higher on the neck, set "Lowest Fret" (in Step 6) to a higher number.
- If there are problems in translating to tab, check for doubled notes. Sonar knows a guitar string plays only one note at a time, so it will try to play the same note on two different strings.



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B&H Pro Audio	800-947-5518	<a href="http://www.bhproaudio.com">www.bhproaudio.com</a>	45, 71
Backbeat Books	866-222-5232	<a href="http://www.backbeatbooks.com">www.backbeatbooks.com</a>	52, 58, 70
Broadcast Supply Worldwide (BSW)	800-426-8434	<a href="http://www.bswusa.com">www.bswusa.com</a>	87
Clarion Musical Instruments Insurance	800-Vivaldi	<a href="http://www.ClarionIns.com">www.ClarionIns.com</a>	78
Conservatory Of Recording Arts & Sciences	800-562-6383	<a href="http://www.audiorecordingschool.com/eq.html">www.audiorecordingschool.com/eq.html</a>	33
Digidesign	650-731-6300	<a href="http://www.digidesign.com">www.digidesign.com</a>	9
Focusrite	866-FOCUSRITE	<a href="http://www.focusrite.com">www.focusrite.com</a>	C2
Genelec	508-652-0900	<a href="http://www.genelecusa.com">www.genelecusa.com</a>	75
IK Multimedia		<a href="http://www.ikmultimedia.com">www.ikmultimedia.com</a>	51
Illbruck Acoustic	800-662-0032	<a href="http://www.illbruck-acoustic.com/eq">www.illbruck-acoustic.com/eq</a>	86
International Broadcast Equipment Exhibition		<a href="http://bee.jesa.or.jp/">bee.jesa.or.jp/</a>	39
John Lennon Songwriting Contest		<a href="http://www.jlsc.com">www.jlsc.com</a>	65
Lexicon	801-568-7567	<a href="http://www.lexiconpro.com">www.lexiconpro.com</a>	31
M-Audio	626-633-9050	<a href="http://www.m-audio.com">www.m-audio.com</a>	25
Mackie	800-898-3211	<a href="http://www.mackie.com">www.mackie.com</a>	15
Mark Of The Unicorn	617-576-2760	<a href="http://www.motu.com">www.motu.com</a>	C4
Millennia Music & Media Systems	530-647-0750	<a href="http://www.mil-media.com">www.mil-media.com</a>	11
Musician's Friend	800-436-6981	<a href="http://www.musiciansfriend.com/free">www.musiciansfriend.com/free</a>	79
Native Instruments	866-556-6487	<a href="http://www.native-instruments.com">www.native-instruments.com</a>	5, 7
Oasis CD Manufacturing	888-296-2747	<a href="http://www.oasisCD.com">www.oasisCD.com</a>	53
Omnirax	800-332-3393	<a href="http://www.omnirax.com">www.omnirax.com</a>	78
Radial Engineering	604-942-1001	<a href="http://www.radialeng.com">www.radialeng.com</a>	59
Royer Labs	818-847-0121	<a href="http://www.royerlabs.com">www.royerlabs.com</a>	67
SAE Institute	877-27-AUDIO	<a href="http://www.sae.edu">www.sae.edu</a>	41
Shure	800-25-SHURE	<a href="http://www.shure.com">www.shure.com</a>	3
Sonic Circus	888-SC4-GEAR	<a href="http://www.soniccircus.com">www.soniccircus.com</a>	86
Sony	800-577-6642	<a href="http://www.sony.com/acidpro6">www.sony.com/acidpro6</a>	C3
Sony BMG Music Entertainment		<a href="http://www.sonybmg.com">www.sonybmg.com</a>	57
Sound Engineering	617-623-5581	<a href="http://www.seelectronics.com">www.seelectronics.com</a>	77
Studio Projects	877-563-6335	<a href="http://www.studioprojects.com">www.studioprojects.com</a>	32
Studio Technologies	847-676-9177	<a href="http://www.studio-tech.com">www.studio-tech.com</a>	70
Sweetwater Sound	800-222-4700	<a href="http://www.sweetwater.com">www.sweetwater.com</a>	19
Sweetwater Sound / Mackie		<a href="http://www.sweetwater.com">www.sweetwater.com</a> , <a href="http://www.mackie.com">www.mackie.com</a>	61
Tapco	877-TAPCO69	<a href="http://www.tapcoworld.com">www.tapcoworld.com</a>	49
Tascam		<a href="http://www.tascam.com">www.tascam.com</a>	23
T.C. Electronic Inc.	818-665-4900	<a href="http://www.dynaudioacoustics.com">www.dynaudioacoustics.com</a>	1
THE Audio	860-821-5414	<a href="http://www.theaudio.com">www.theaudio.com</a>	58
Universal Audio	866-UAD-1176	<a href="http://www.uaudio.com">www.uaudio.com</a>	37
USA Songwriting Competiton		<a href="http://www.songwriting.net">www.songwriting.net</a>	83

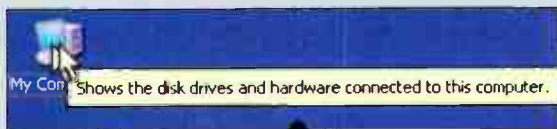
# Power App Alley by Craig Anderton

## MICROSOFT WINDOWS XP

Backup your data to CD-ROM using Windows XP's bundled CD burner

**OBJECTIVE:** Never have to say "Damn! I should have backed up right after that session!" because, thanks to this tip, you remembered to do a quick data backup to CD-ROM.

**BACKGROUND:** Although there are many commercial programs you can buy to back up your data, you can use the free, easy to use CD burner that's bundled with Windows XP.

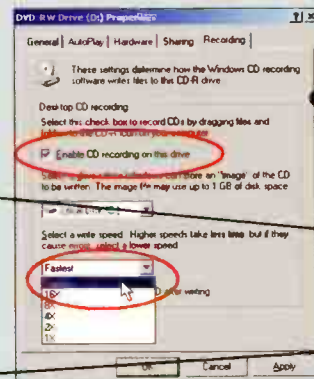
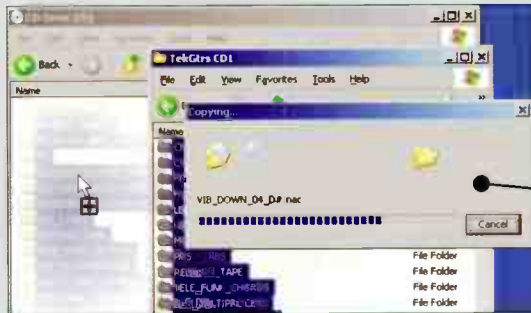


### steps

Insert a blank, recordable CD into your recordable CD drive, then double-click on "My Computer."

Double-click on the CD drive icon.

A blank window opens up, indicating that there's nothing on the CD. Right-click in the blank space, and select Properties.

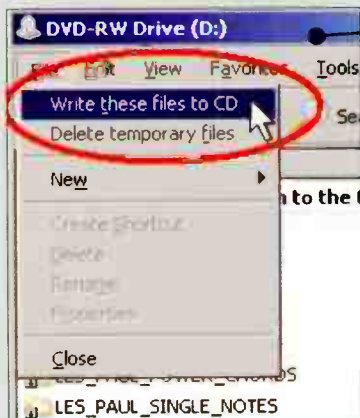


Click on the recording tab, make sure that "Enable CD recording on this drive" is checked, then select the desired write speed.

Select the files you want to back up, and drag them over to the CD-R drive window. Release the mouse button, and a window opens that indicates the copy progress.

Go to the File menu, and select "Write These Files to CD."

Follow the Wizard to complete the process.



### tips

- For Write Speed, "Fastest" usually works. But if you encounter errors or use older media, choose a slower speed.
- In the fourth step, note that you can specify the drive to which the CD image file will be written.

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# Room with a VU

by Roberto Martinelli

**STUDIO NAME:** Backstage Studios

**LOCATION:** Belper, England

**CONTACT:** [www.andysneap.com](http://www.andysneap.com)

**KEY CREW:** Andy Sneap

**CONSOLE AND PRES:** Digidesign Control 24, Colemans TB4 monitoring system, Dangerous 2 Bus 16, SSL G series stereo EQ and pres, Crane Song Spider 8-channel pre, Focusrite Rea Quad pre, Amek 9098 EQ and pre

**MONITORS:** Yamaha NS10s, Genelec 1031s + 1092 sub, Genelec 1030s, Dynaudio M1s, Bryston 2B Pro amp

**OUTBOARD:** SPL Transient Designer (4-way), Alan Smart SSL stereo compressor, Tube Tec LCA2B stereo compressor, Emperial Labs distressor, RNC compressor, dbx 160, D Drum, Alesis D4, Sansamp PSA1, POD XT Pro, dbx 120XP sub unit, TC Electronics M2000, TC Electronics Finalizer Plus, Klark Technics 360 Stereo Graphic

**MICS:** Sennheiser MD 421, 609; Neumann MD149, KM86; Aud x D6, D4, D2, D1, i5; Shure SM58, Beta 98, Beta 91, SM91, Beta 57, SM57, SM7, Beta 52; Audio Technica AT 4033, AT 4050, AT 4030; EV PL10; AKG C451; Beyer M300TG, M20; AKG C414b ul; Yamaha Sub Kick

**COMPUTERS AND HARDWARE/SOFTWARE:** Pro Tools HD Accel + 2 version 6.7 Studio 1, Pro Tools Mix +++ Version 5.1 Studio 2, 2 x Apple G4 Quicksilver, Apple G4 867 Titanium + Magma 2 bay expansion chassis, 23" Cinema Display Studio 1, 21" Cinema Display Studio 2, Apple Mac G3, Logic and Wave Burner Pro, Digi 192 and 96 IO interface linked with Crane Song Spider, 2 x ADAT interface (16 I/O), 3 x RME AD8 interface, Universal Slave Driver

**BACKLINE:** Marshall JCM800 50 Wt Soldano Mod head x 2, JCM800 100 watt w/extra gain stage, JCM800 100 watt split channel; Peavey 5150, Triple XXX; Mesa Boogie Dual Rectifier; Krank Revolution 1 head, Krankenstein head, 4x12 with Eminence V30s, Marshall Classic 4x12 Greenback cab, Standard 4x12, Vintage 4x12, Boogie 4x12 with Celestion V30s, Bass 4x12; Peavey Fire bass head, 8x10; Pearl Export 6-piece, Masters Custom; DW 24x18" kick;

complete set of Zildjian Zs + other misc. Zildjian and Paiste cymbals;

vocal PA consisting of Peavey XR600, Carlsbro 3x12+2 x horns

**STUDIO NOTES:** The next time a guy bursts in and declares, "Trouble at the old mill!" and the next guy asks, "What kind of trouble?" the answer will be, "The kind of trouble we're in because our competitor just recorded his record with Andy Sneap at Backstage Studio and it absolutely kills!"

Nestled in the sticks of the vicinity of (the Sheriff of) Nottingham, England, Backstage Studio is an old farm converted into a recording studio. All rustic architecture, an SSL G-series board, and a heaven of guitar amps for all devotees of crunch and distortion, Backstage has fully redeemed farm living by making godly metal after godly metal album. "The building dates back to 1698, which, you know, is twice as old as America," owner Andy Sneap says with a laugh. "It used to be a dairy farm, but it had not been used in 12 to 13 years. The live rooms used to be pig stables, believe it or not."

It is here that Sneap, Backstage's owner, has become *the* go-to guy in the hard and heavy world, spurring huge successes with bands like Opeth, Kilswitch Engage, Soulfly, Nevermore, Exodus, Kreator, and Caliban, and, considering the price, he wouldn't have it any other way. "It's definitely cheaper here. You go to London and the price of living, and real estate for studios, is extortionate."

So, given it's isolated location, what view should you expect when visiting to record the heaviest metal of your life? Pastoral hills filled with cows, lambs, and sheep (no goats, sadly). Sneap advises against getting too attached to the animals during tracking breaks. "We're renting a neighboring field out to farmers, and two lambs are off to the slaughterhouse on Tuesday. I'm a little sad about it; I've become quite attached to them."

The trick (for all you sensitive metal-types) is not to name them, unless you're going to call them things like "Lunch" and "Dinner." So, assuming you are as hungry as we are, maybe you should go ahead and check them . . . err . . . the studio out at [www.andysneap.com](http://www.andysneap.com).

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