

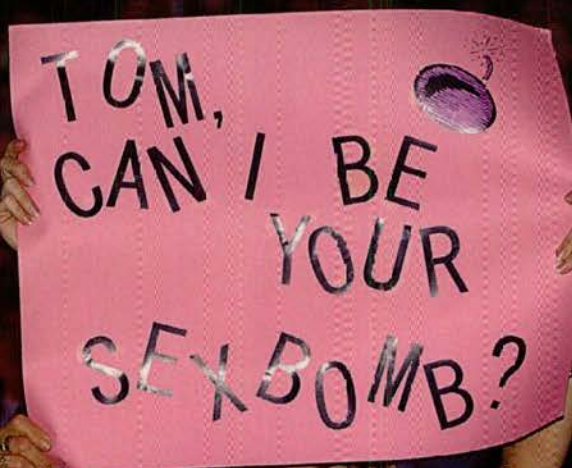
With the best from



# Legacy tours rule in 2005

## Tom, John, Bryan, Rod.... they keep on coming!

*PLEASE lock up your mother*



Pic by Bob King



The lighting challenge: avoid those Macro looks!

ISSN 1320-5595

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06

In the tradition of  
**Connections**

Reviewed: Cubase SX3,  
Vari\*Lite 3000, Mackie Onyx  
1640, Coemar i-wash, TC  
Powercore, Sony Acid 5,  
Cakewalk Sonar 4, and more!

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The companion CAB 4n breakout box gives the designer an easy way to add I/O. Four configurable bays support multiple combinations of I/O, including 16x0, 0x16, 12x4, 4x12 or 8x8. Seamless integration on a CobraNet network eliminates the need for proprietary interconnects or clunky audio "hubs." Like the NION, the CAB 4n is an Ethernet product and supports SNMP.

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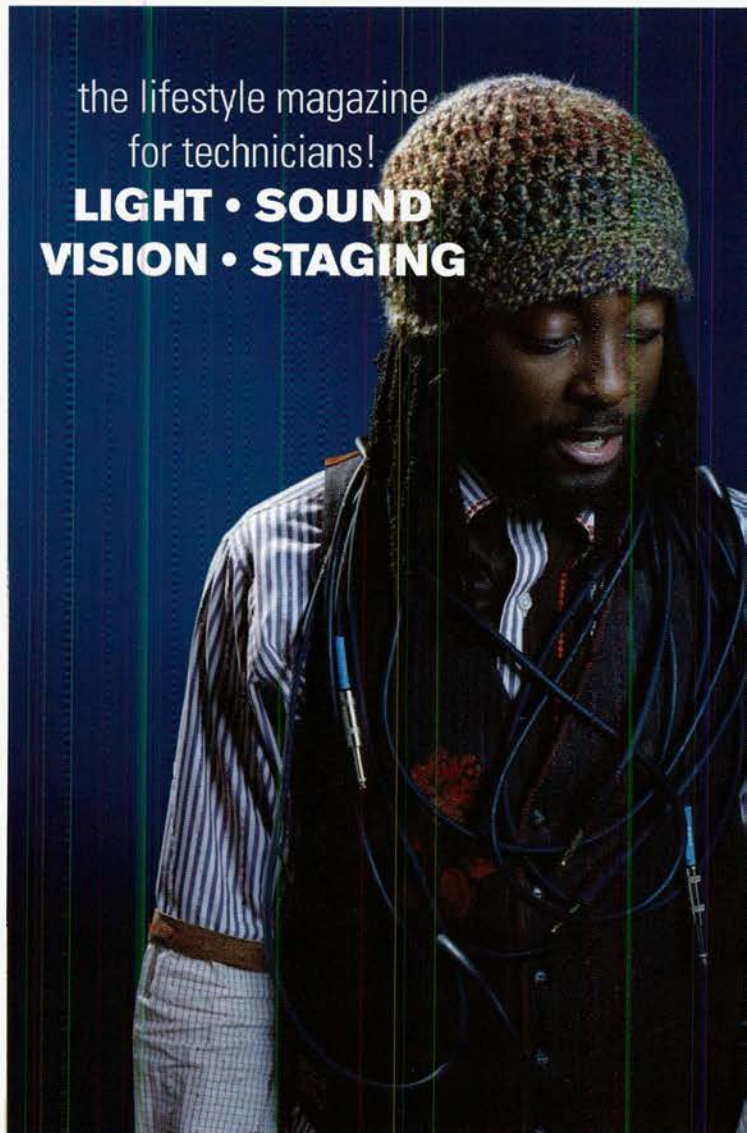


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**PHILIPS**  
sense and simplicity

# CX

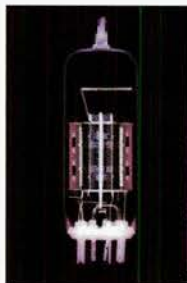
EQ LX



the lifestyle magazine  
for technicians!  
**LIGHT • SOUND  
VISION • STAGING**



Rock photographer (legend) Bob King took our cover photo in Sydney. He took another one too, which is of the same girl at the Tom Jones concert..... guess what happens next!



## FEATURES:

A cavalcade of material truly befitting our mantle as the trade journal for the entertainment technology industry! **Rude Letters** to the editor return in style!

Read about **the technology** behind these cool and funky people: Will I Am, Tom Jones, Bryan Adams, Gypsyboy, John (retired) Farnham, and Rod Stewart.

Go inside **the technology** behind the Tube, in Myths Revealed. Learn TIPS on EQ, and recording guitar. Our resource guide this issue tells all about the Grand Piano. We go dancing too.

Adopt **the good, the bad** and some of the other ideas in the 100 TIPS to doin' it better in the studio.

Read **the reviews** of Cakewalk Sonar 4.0, Sony Acid Pro 5.0, Cubase SX3, Mackie's Onyx 1640 and more.

Get some **Worship Technology** and then be afflicted by Fry's Plastic Jesus.

The **lighties** go into space as the two Richard's test new lights and ponder gravity and the pig button.

All this and way, way, way more, inside!

### Winner!

**Sharon Staton** from Nairn Theatre in Brisbane has subscribed and wins a training course worth \$2,625. To subscribe, log on to [www.jul.usmedia.com](http://www.jul.usmedia.com) or call 1-800-635-514

FROM THE PEOPLE WHO  
ONCE PUBLISHED  
CONNECT IONS MAGAZINE

• CX #13 MAR/APRIL 2005

The problem with the contents page is that it is always produced last and late at night or early in the dawn hours, when absolute fatigue and technical failures have sapped the ability of the editor to make it interesting. Which is a shame, since it often helps sell the mag to those not certain.

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## Autumn, fall. Call it what you will

All hail the Richards. Our lighting dept now has two of them, Cadena and Neville. Richard Cadena is from Austin Texas, I met him when he worked at High End and I went there to talk about running a magazine in the USA. Richard Neville is from Sydney, and he is one of those impossibly bright young people with enthusiasm and intelligence oozing.

The two of them are building a head of steam catering to the demands of the small but vocal lighting community in these pages.

Enter Eugene Robinson, who has put his stamp all over EQ Magazine in the short time he has been in the chair. It is getting more upbeat by the minute. His collaborators, Mitch Gallagher, Craig Anderton and John Krogh are all pictured, so you can put a face to the name.

Also new is Allan Mourant from Adelaide, a sound engineer who is taking us on a musical voyage with his handy guide to how various acoustic instruments actually work and sound.

Duncan Fry is our foundation contributor, and the single most popular writer we have, according to our polling. Which is why he writes what he likes, even if it annoys people!

Also pictured is contributor Selina Carter, and this leads to the topic of contributions in general. Where are you? What do we need to do to get you to send us your story or better still, some photos? Just email whatever you have to mail@juliusmedia.com and sit back and wait for the money if we run it!

## Road Trip

We are now blessed with a bunch of bright young people enrolled at Juliusmedia college here in Sydney doing their Advanced Diploma of Technical Production. Half of them are from outside Sydney, they moved here to join us. Having a full time class of inquisitive minds on the premises is a tonic, and some of their spin has already influenced the direction of your magazine.

My vision is that this class, and the additional one we start in July, will become more and more involved in CX, even if it is by way of them just being here to bounce concepts off.

I'll give you an indication of how they influence me.

During orientation I put them in a bus and took them to 13 places that typify our industry, chosen at random from a list of about 120 in Sydney. We went to Rivers de Theatres, Norwest, Jands, Austereo, Lion King, Chameleon, Zytecraft, ABC TV, Superdome, Total Concept Projects, Hillsong, Ensemble Theatre and TDC. If your place wasn't visited, we will try to catch up.

Afterwards they did a project where they collated information gathered regarding each place. Their feedback was a real eye opener for me. It forced me to think a little differently.

Having these people here and being able to plug into their perceptions is like pure oxygen for me. The students are well cared for, former CX writer and one time Connections editor John Grimshaw is in charge of them. They will be out and about seeking workplace experience, looking for internships and for paid gigs as part of their Advanced Diploma.

Watch out for them. - **Julius Grafton**



Gallagher



Robinson



Neville



Fry



Carter



Grafton



Grafton



Anderton



Mourant



Krogh

# Feedback

Dear Julius,

I take exception to your some of your comments on page 9 of the most recent issue of CX magazine. (Jan/Feb, 2005)

Whilst I agree with everything written about the plight of Leko Novakovic, I consider your attached commentary ill considered.

With specific regard to your point 9:

Our venue maintains a policy of forcing hirers to have a member of staff to "look after the venue", for valid and justifiable reasons.

a) Occupational Health & Safety. If you consider it reasonable to allow a visiting company to do whatever they like within a space which contains potentially dangerous, perhaps fatal, flying equipment hanging overhead, you are negligent in the extreme. Fortunately we are not, and recognise our duty of care. It is not the hirer who gets sued if an accident occurs, but the venue.

b) Fire. In the event a fire was to occur, our duty technician is the designated Fire Warden. Do any of the visiting crew know how to lower the fire curtain? Are they aware of the correct operating procedures for the safe evacuation of the building? Do you care?

c) The Venue. It is important the venue is looked after. You're not the only one who has to use the space. Everyone will expect a venue to be in good, clean, functional condition when they arrive, but may not feel they are required to leave it as they found it.

All of which also explains why we won't allow access earlier than the scheduled time (your point 4) when we have a staff member rostered for duty.

I make no apologies for our adherence to these abhorrent practices.

**Rob Bassett, Head Mechanist  
Canberra Theatre Centre**

Hi Big Julius,

I thought you would get a canning over the number of training promo pages v's mag content.

Poor readers don't have much to look forward too! That's why your mag is so important. Better fatten it up, before something else comes along!

**Colin Baldwin, Managing Director  
The Showcorp Group**

Dear Julius,

Don't listen to the anti training road warrior dinosaurs spouting the "I learnt on the job carrying a 45-60 in one hand and a slab in the other" etc etc.

As far as I am concerned you can stick in as many training pages as you think appropriate.

The new entrants into the industry have to learn somewhere and on the job training just means that the few overworked and stressed operators with the experience, are even more burdened co-coordinating and coaching the neophytes. Surrounded by willing onlookers, the valiant few end up doing it all them selves anyway.

I can understand where the complainants are coming from though. Gig history is strewn with the new guy "who did a course" and was next to useless. All the more reason to establish and codify a professional training

industry. At least it is a possible career path for the back impaired warriors with all the experience, who are over dealing with the procession of punters demanding "more sustain on the acoustic guitar!" or "I'm a friend of the organiser and I wish to make a complaint!"

This bit is the on the job experience.

**Frank Andrewartha  
Group Technologies**

Hi all,

It's not often that I write a mass email, but this has been a rather strange phenomenon.

I have been on an overseas trip. My last stop was Kuala Lumpur in Malaysia. Whilst there I managed to purchase a new digital SLR camera.

After being back in OZ for 2 week, I finally found the time to take it out on a test drive. I went to Bondi Beach and took some random shots of people and items and returned home several hour later.

As I walked from my car I saw a little girl, who lives across the road from us, on her balcony where she always plays.

She is a friendly 6 or so year old and whenever someone passes that she know she will give them a wave and a smile.

Today was no different, she called out and I turned and waved and smiled. Realizing I had my camera in my hand I decided to take some shots of her. I took 3 quick shots and thought nothing of it.

I decided that my golf swing needed some work (ok a little more then some) and so I grabbed my clubs and of the the range I went.

I returned home and there was a barrage of loud knocks on my door.

I put on my robe, looked through the peep hole and saw 2 gentleman standing out on the porch. They were 2 detectives who proceeded to tell me that there have been some complains about someone taking photos of people in the street.

A bit surprised by this, I invited the Dicks to come in and said that the only photos that I have taken where done today and the only person I took photos of where the little lady living across the ways.

I immediately caught on to what was being said and was furious for two reasons.

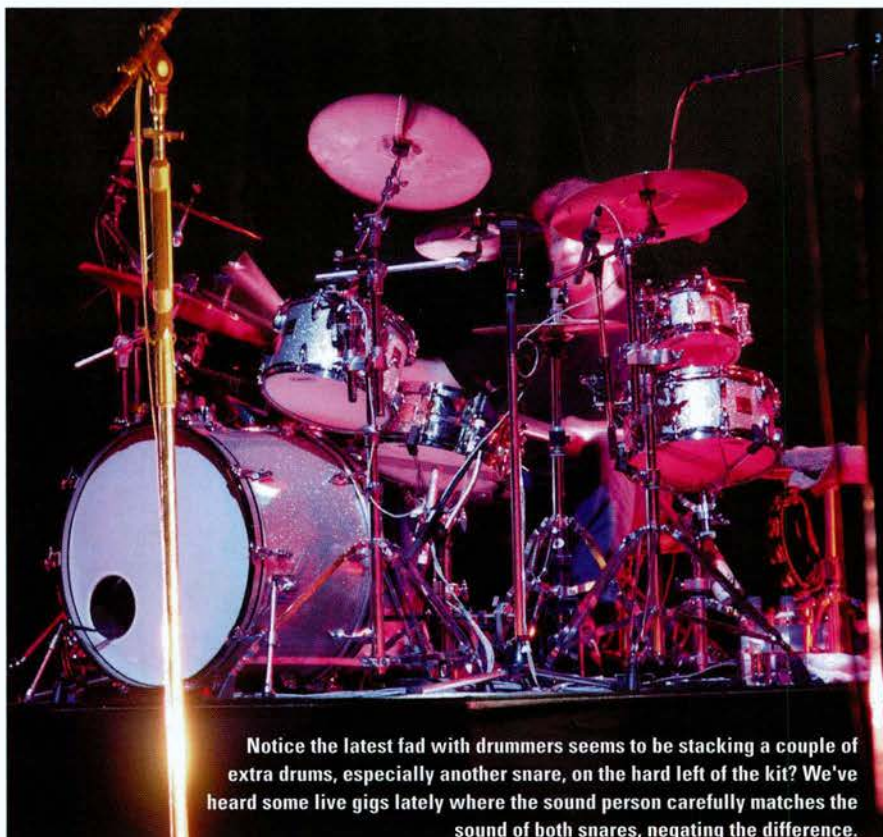
One is that I should have thought about the fact that I was taking photos of a young girl without parent consent, but what really got me going is that I am know probably on a list as a possible child molesters.

This really has got me thinking about the state of the world we live in.

Has it turned so bad that you actually really have to watch out which way your lens is pointing, or is all this because there are just so many sick people out there the rest of the people are just becoming a little paranoid?

Watch your back.

**Randy Fransz  
Day 2 Night**



Dear Julius and CX

Many thanks for the article on Jack Singe (Jan/Feb CX). A pleasant recognition of an industry pioneer.

Perhaps we could have more, particularly as our industry ages.

Lets value the contributions that our industry pioneers have made whilst they are still amongst us.

The Contributions made by [for example] the Paine, Pearse, Robbins families here in Australia and the Conroys, and Hoys in New Zealand continue to enable our industry to have a vibrant culture.

**Ray Calcutt, Tim Pike, Ben Bloomfield, Harry Westnidge, Tim Day, Matt Bulmer**

Hi

Im the Co-ordinating Technician for the City of Playford in South Australia and am responsible for all our theatre venues.

Im looking for some information on hanging speakers from a lighting bridge.

The lighting bridge is above the audience and im trying to find out if it is legal to hang speakers from this position.

It would mean that the speakers would actually be under the bridge suspended over peoples heads.

I personally find this to be an unsafe act and have already said no to this happening but I am now under pressure from my boss to prove why it is unsafe on paper. I have looked on the internet for anything on safety for hanging audio equipment but haven't found anything of relevance as yet.

If you can be of any help I would be very grateful.

**Tracy Gulliford**  
**Co-ordinating Theatre Technician**

P.S. Love your magazine!

Julius,

You are a first class idiot, my boy. The Novatech Locked Out story (Jan/Feb) is a total beatup, and you know it. The ACCC will not censure Adelaide Convention Centre, and you'll never get any magazine sales or training contracts with any convention centre anywhere when you write crap like that. Are you crazy? Or just dumb?

You know as well as anyone that a venue can restrict anyone bringing anything through the doors, provided they bury their rights to do so within the venue hire contract.

How do you think Staging Connections got to be an \$80 million company? They sure DO understand their rights at law, and they sure DO make certain that within their venues, they are the ONLY production supplier.

But I still love you.  
**(Name withheld by request)**

## Panasonic Toughbook

Australian company Howard and Sons, a leader in the field of pyrotechnics, is using Panasonic's Toughbooks (below) to meet the extreme demands of live firework displays

The Toughbooks are specialised notebooks, with a design that can withstand the extreme field conditions experienced in pyrotechnic events. The fully ruggedised Toughbook CF-18 convertible notebook/Tablet PCs purchased by Howard and Sons provide protection against vibration and shock; are specially sealed to resist damage from liquid, dirt and dust; and are used tablet-style to provide touchscreen operation to drive the shows.

The Toughbook's features are vital to the success of outdoor fireworks events where the notebook is subject to extremes of temperature, powerful vibration, corrosive falling debris, moisture from sea water or rain, or dirt in stadium or trackside environments. They also have the ruggedised durability needed to stand up to the constant transportation from show to show.

Andrew Howard, Director, Howard and Sons, said: "We could be holding an event anywhere, from the desert, to a ski resort in the snow, a rusty barge in the harbour, or a speedway environment. Our solution had to withstand heat, cold, dust and rain, all the elements we work in. Toughbook was the only product on the market that would handle this stuff."

Each fireworks display is programmed using a program called 'FireOne' software, which precisely synchronises the detonation of the fireworks to live music.

The program is downloaded to the Toughbook, which is connected to the 'FireOne' controller, which in turn fires the circuits for detonating the fireworks. The system is operated via radio link.

## Audio Visual and Broadcast boost for ENTECH 2006

The new owners of ENTECH are PBL - which is the largest Australian media group. It shows, with the 2006 seminar and conference planning now reflecting ownership that includes the Nine TV network.

In addition, the InfoComm Academy has confirmed support of the show and will be hosting 'InfoComm Academy at ENTECH'.

For the broadcast market the 'ENTECH Broadcast Conference presented by Broadcastpapers Content + Technology' will be held to cover topical issues, technology and trends.

The well attended OH&S course will again return to the show taking place on Sunday the 12th February. Juliusmedia College will present this one day industry OH&S certificate course.

Other conferences planned for ENTECH 2006 include a full day Pro Audio program, half day business laws and half day lighting conference.

Conference details, speakers and more information will be available closer to the show.

For current updated information please visit [www.entech-tradeshows.com](http://www.entech-tradeshows.com)

## AMA host roadshow

The Australian Music Association have hosted a national roadshow of meetings to talk about the opportunity of the National Review of School Music Education and the \$700 million fund for 'capital projects' for schools.

The meeting outlined the fund, how schools can apply for it and what products can be applied for - including music products.

The AMA is the peak industry body for musical equipment manufacturers and importers. [www.australianmusic.asn.au](http://www.australianmusic.asn.au)





# Strictly Dancing

ABC TV has a big hit with *Strictly Dancing*, a weekly eye-candy display which has three couples strutting their hardware in front of a hot band. We went backstage to smell the tension and detail the process of shooting the show.

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# Dance!



**Lighties in Studio 22.**  
**Darryl Brook with Mark Hammer**

The show is shot two episodes at a time at the new ABC TV facility in Sydney. This is where all the facilities once spread out at Gore Hill are now compressed into one vertical building in Jolimbo, right next to the Radio centre. It is a sign of the times and a greatly more efficient use of space. Plus they have managed to build the largest TV studio in the southworld – studio 22.

It is a round the clock exercise, with the studio used at least five days a week. To shoot Dancing, the studio is turned around from Enough Rope, the talk show on Monday nights. As soon as the talking and roping stops, the studio is stripped. Then Dance comes in.

If you haven't seen the show, it is in its third year. It boasts a great set, and a lighting design originally by Rohan Thornton. A live band made up of guitar, bass, keys, kit, percussion, trumpet and two singers supply a quirky music accompaniment. V.D. Jamie Rigg has reworked things like The Simpsons theme song, Deep Purple's Smoke on the Water, and even Nirvana's Smells Like Teen Spirit. Music is what the talent dance to. Host Paul McDermott overlays the humour, and the three couples dance off to make a half hour show each week.

It is shot in front of about 250 people, some of whom are featured on the set, provided they have dressed up outrageously enough. All good fun, and highly successful TV.

The build up has the lighties working into the night (as they do) setting some of the 150 or so motorized battens in the studios. They get the right mix of conventional lights and movers, with 14 Robe 1200w fixtures flown. The lighties also position the swag of EV SXA 100

powered speakers, which hang off the motorized battens.

Staging and rigging happens Tuesday morning, as the set is rolled in from the store. The Ultimo centre has a BBL, otherwise known as a bloody big lift, which is totally essential in a vertical studio. If it stops, so does the schedule. The set has huge rotating mirrored cones, each of which appears to represent a lot of careful work in setland. The floor is an extremely expensive timber floating thing, the feel of which means a lot to the dancers. It looked like an Ikea floor to me, but I was assured it was to dancers what some kind of cricket pitches are to test players.

On Wednesday, show day, the lighties have done their thing and the set is ready for the block through at midday. This is where the director runs each segment without talent and looks at the camera shots and lighting. Sound is checked. Floor crew stand in for the humans, but sensibly they refuse to actually dance.

After two hours, the thing is ready and the cast start their wardrobe call. Each show features three couples, plus band, plus compare and judges. Rehearsals start at 3pm.

At 4.45pm the band do a soundcheck. Until now, the dancers have rehearsed with the tracks that the band recorded in the studio some weeks ago. The tracks were then cut on a CD and sent to the dancers, who presumably practiced until they went insane.

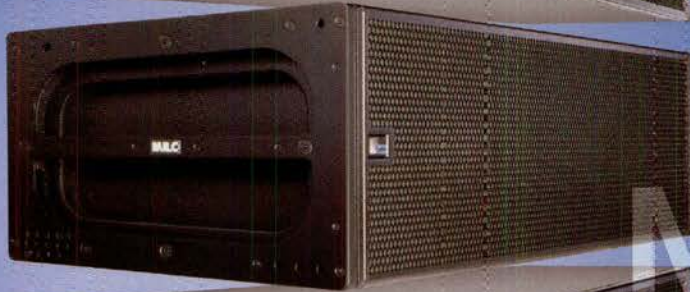
There are 80 people plus the on-screen talent attached to this show. They cover things like the 11 cameras, make-up (6 staff and a consultant), lighting (7 crew and a director), and sound (4 crew and a director). There were designers involved at the onset, lighting designer



MILO 60



MILO



MILO 120

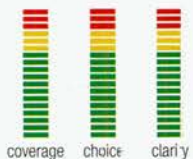


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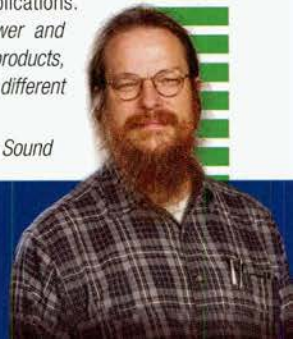
# a little sibling rivalry can be a good thing

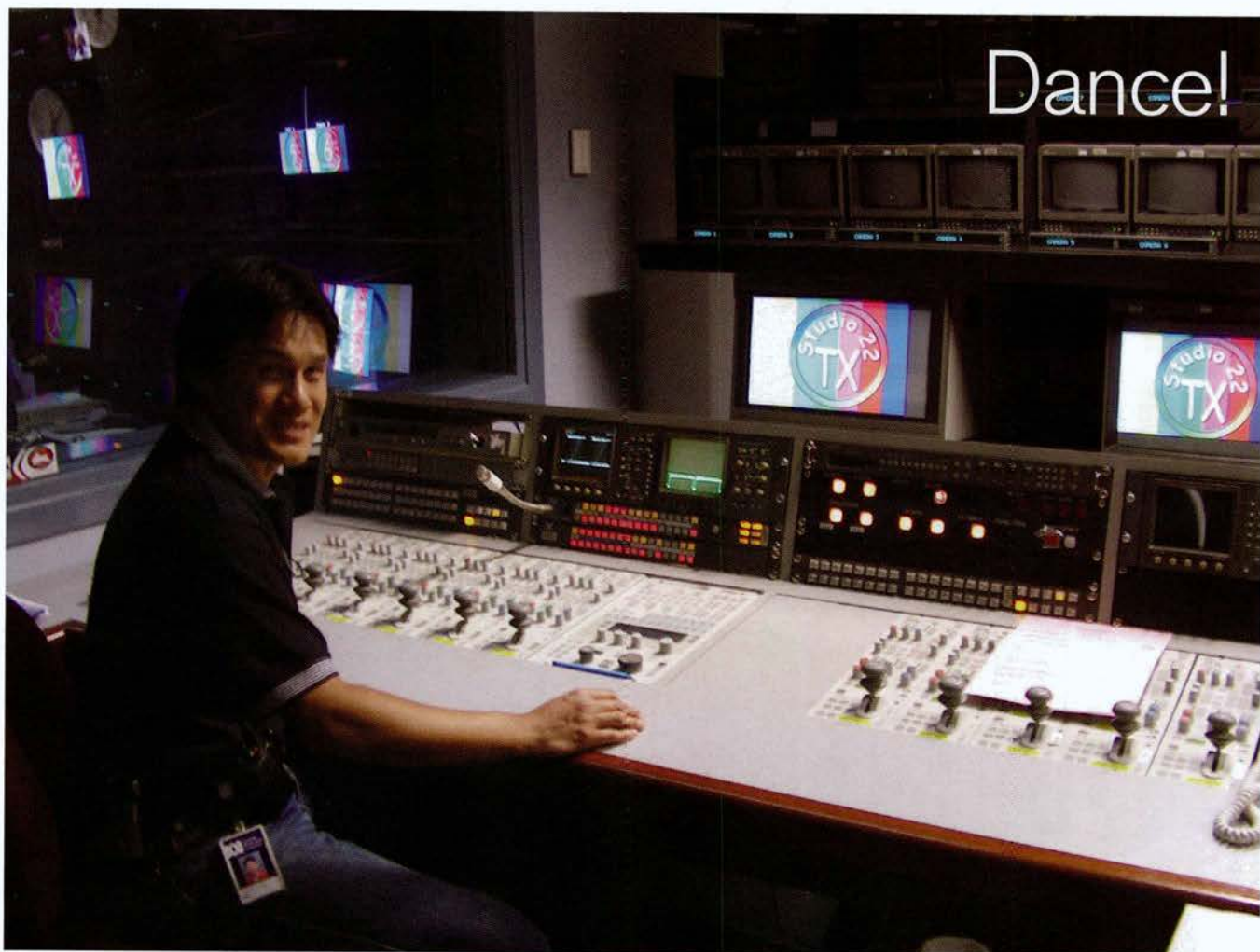
Competition can be healthy. And with two new additions to the MILO family of loudspeakers, they will all be vying for your attention.



Out on tour with such artists as Rod Stewart, Avril Lavigne, Bob Dylan and Norah Jones, MILC is the first choice for many of today's top touring artists and sound system designers. The MILO family of products all feature patented REM ribbon emulation manifold technology. With the addition of the MILO 120 expanded coverage and MILO 60 narrow coverage high-power curvilinear array loudspeakers, the MILO family now provides more flexible coverage and greater output for all installation and touring applications. "MILO was conceived as a perfect combination of clarity, power and convenience. With the additions of the MILO 120 and MILO 60 products, we've delivered to customers the additional coverage options that different shows and various room configurations demand."

John Meyer – Founder, Meyer Sound





Wayne Chee at vision control - balancing 12 camera images.  
Gavin Bruce at the monitor position (right).

Rohan Thornton came on board in series one at the behest of consulting producer Peter Faiman.

Up (many) stairs the control room is divided into separate areas with glass walls between. The vision control guys sit next to the lighting operator, since they work together. Vision control is the black art of balancing each camera for colour, hue, balance, contrast and brightness as it sees each scene. If the lighting guy is within kicking distance, all the better!

Next room is where the director and the vision mixer sit, along with the technical manager. The tech manager can whistle up resources at the drop of a hat, and do things like change the air conditioning – which is not a fast response thing at Ultimo. He also drives the comms, which is a very essential system in TV land.

The far end is where the Euphonix System 5 console lives. The audio team are beamingly proud of this device, of which the ABC own at least eleven. It enables anything in Studio 22 to be patched, so all 180+ lines appear at the patch room, and are connected to the system. The desk enables soft patching, so if you need 40 particular lines from the studio, those lines are already in the system. You just need to allocate them to a fader in the control room.

Audio chief Dave Dundas told me the console cost over \$900k, and that the ATC SCM20 main monitors plus the TC 6000 Finaliser push the kit bill to around a megabuck. The Finaliser is a 4 engine stereo effector, that has compression and EQ algorithms which sweeten the desk output mixes.

There are three pairs of outputs from the audio room – mix minus, which is everything but the audience; then the audience; then the music. This enables the post production people to fiddle, and overhang the laughter. As they do. Plus there is a 24 track Pro Tools system, which gets direct outputs.

Dave Dundas paused to promote the Euphnox distributor, in an



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# Dance!

unsolicited moment. He asserts that the ABC bought the product, but wouldn't have done so without the company. He went on to praise (in order), TAG Broadcast and Studio manager Alistair Dewar, Technical Manager Silvio Miconi, and the waffles they serve at Entech. The commercial break is now over, resume reading.....

I watched Mark Hammer programming a Jands Hog down on the floor, he was driving some new Robe 1200 fixtures which Roger Hind (Theatricks Production) had supplied to the ABC on rental. Mark had 6 spot and 8 wash fixtures up on battens. "They are the quietest fixture by far", he commented, "and output awesome colours". I don't know why, but notice how these industry professions wax lyrical about their kit, unsolicited, when I walk up? It's like, 'how are you', and 'how are the kids/wife' and then 'Julius, these XYZ are just soooo good, .....' yada yada. I think it is because most of us are actually enthusiastic about good equipment.

Likewise sound guy Gavin Bruce, also down on the floor but behind a drape. Gavin does foldback, which normally means sending mixes to a band (he does) but in the live TV show mode, it also means sending sound to the audience. They get sound from a bunch of EV SX1A powered speakers, also flown from some of the 140+ powered battens in the studio.

As a side comment, the powered battens were engineered by Q, and I don't mean James (shaken, not stirred) Bond's Q. The Sydney firm Q Engineering won a tender to supply the motorised battens, and then also effected a variation to install 2 x XLR connectors and 2 audio lines, into each. They used (as is their right) an inexpensive XLR connector which may have had the brand 'Yum Cha' moulded on. Whatever the brand, the connectors are falling apart, and the ABC have implemented a new procedure called 'specify exactly WHICH component you require when ordering a variation!'

Back to Gavin, he is a monitor engineer by way of speciality, and once again, I found myself hearing about how terrific something in his firmament was. In this case, the Mackie TT24 console, which Gavin owns and which was doing sterling service sending six mixes to the band and the audience.

So that's TV, and like I said, there are more than 80 bodies working on this show. Which means I can't credit them all.

Colour, movement, tension, great bodies, hair, costumes. Watch it and see what I mean!

- Julius



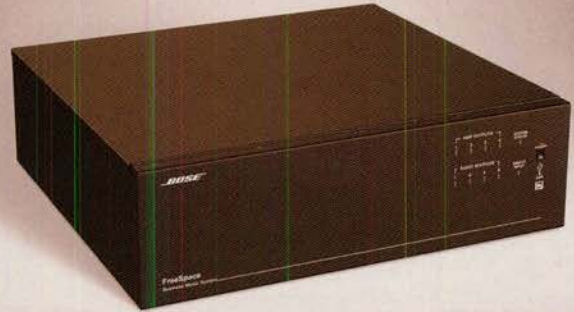
Peter Hanrahan at Vision control (left), John Segal and Dave Dundas in the sound room (below).



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Picture by Bob King

# John Farnham & Tom Jones

**Once upon a time there was a local legacy act who put on a world class show for less ticket cost than an international act. Then he retired, but he didn't really. Before that, he had always wanted to do a double with Tom Jones. So they did, but the retirement factor overhung what should have been a triumph.**

by Julius Grafton

**W**as it fun? Was it musical? Was it good value? Was it a good night out? YES!

Two large and tight bands of equal dimension, with two singers who have been around since the 1960's. That's the attraction, and the combined concert ran across the summer scene for eight shows in February. It presented some production challenges - with two sound engineers, two lighting designers, indeed two of almost everything.

Putting the show together, John Farnham's people must have been worried about arena concerts. They had argued last year that the arena concert was the very medium that John F was retiring from. He would continue to work, they said, just not in the barn.

Which was why 4,000 people shuffled into Sydney's Domain for the first of two outdoor concerts. Half sat on plastic chairs in the Gold and Silver area. The rest did the grass thing down the back.

Down in Melbourne, which is John Farnham's home town, the concerts were not selling outdoors, so they were moved into familiar territory at the Rod Laver Arena. Had the same thinking occurred in Sydney, the shows would have been in the Superdome -

otherwise dark at the time - and staged at a considerable cost saving. Probably more people would have come.

Outdoor shows suck for older, premium audiences. They are capable of revolt. Ask Bruce Springsteen ("the audience are revolting...") and even some of the older punters at Wave Aid, who were annoyed with the ridiculous sound limits imposed at the same venue that undid Springsteen.

Without stadium buildings in the way, sound at Sydney's Domain is free to reach the audience and not bounce into neighbouring houses. The only noise sensitive building nearby is a hospital, and the V-Dosc line array saw to it that decent sound levels could be achieved.

The show starts with Tom Jones, and moves straight into a very tight groove. This guy is smooth, handsome, stylish, and hip. His band are impossibly funky. They do up to 240 shows a year - the Tom is never not working.

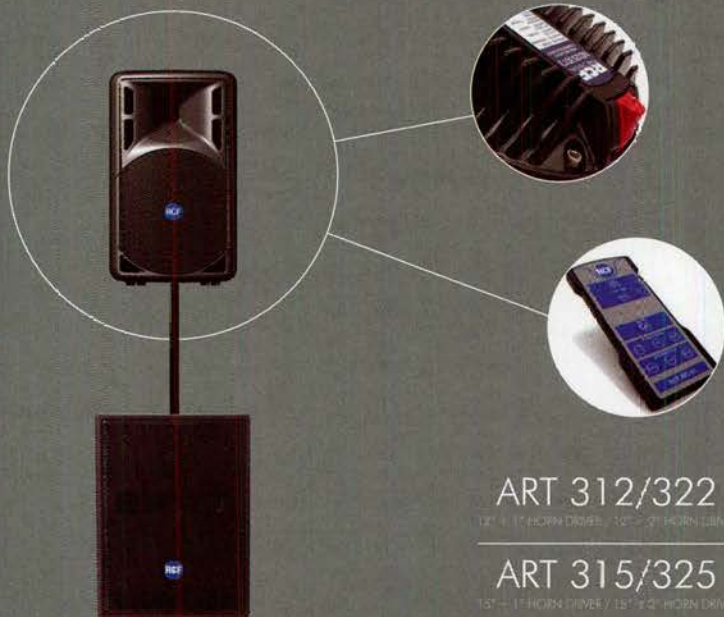
It appears he enjoys live work.

There were some big surprises - one of which was the streamlined crew of just four. Sound, Monitors, Lights and ONE backline guy who must have worked at the speed of light

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Grant 'Tosh' Walsh (left), and Tom Woodcock. One PM5D each.

keeping it up to 11 band members!

Tom's band comprised a guitarist, musical director, keyboards, bass, drums, 4 brass and 3 backup singers.

Also on the road with Tom were his personal assistant, Don Archell, who does the valet / bodyguard / airline and hotel interface thing. Tom's manager Sandy Battaglia has been with the show for more than a decade, and Tom is managed by Mark and Donna Woodward, who were both down under for the tour.

Sound engineer Tom Woodcock was quite vocal and engaging, unlike John Farnham's veteran engineer Grant 'Tosh' Walsh. Tosh is grumpy, and not good to interview. He doesn't seem to have much to share - this is a pattern that I've experienced from him for more than ten years covering John Farnham's shows.

'Hi Tosh, got a minute?' I ask.

'Make it quick, I'm in a hurry' he grunts. 'In one case, years ago at the Farnham tour where the show was done in the round, Tosh had to watch The Simpsons on TV before he would talk to me. Maybe to be in the right frame of mind?'

Sure, Tosh quite rightly points out that the previous picture I took of him in Townsville made him look orange or even like he had jaundice, but anyone with half a brain would know that you can't be orange in colour unless you've painted on too much fake tan. And Tosh would never do that. Clearly my photography skills are crap.

### Back to the story.....

Tom Woodcock mixed 'his' act on a PM5D console, while Tosh did the same thing on his right. Both acts were patched to both consoles, and the main vocals were split both ways.

On stage the same quality was evident with two more FM5D

consoles doing stage monitor duties. Tom Jones' monitor guy was Ed Ehrbar, and once again John Farnham entrusted John Henderson with his foldback. It was the first time I've seen John Farnham use in-ear monitors at one of his concerts, and he needed some extra judicious work from Hendo to localise those many shouted crowd comments he so enjoys responding to.

Jards Production Services provided sound, and it was as always a very neat and well presented package. Aside from the two V-Disc arrays, a line of V-Disc subs ran along the front of the stage, with some Arc boxes atop for front fill. A stereo set of Arc boxes were also situated in the big wing areas on either side of the Domain stage.

Coverage and fidelity were terrific, and both bands were mixed very, very well. It was really interesting to hear two virtually identical bands mixed on exactly the same kit by two different engineers.

### More interesting points of difference:

Tom Jones never does a sound check. John Farnham always, always, always did - until the very day I rolled up in Sydney. Both bands do a sound check, which is always welcomed by sound engineers. It is not necessary to drag the main attraction down into an empty venue.

Tom Jones has a more sophisticated wit. His humour can traverse the double entendre, without ever going blue. John Farnham appeared to note this, and was working a lot closer to decent in his repartee.

Tom Jones had outstanding backup singers. Anthony Reynolds introduced simply as 'that man' is huge, black, muscled, and has a



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simply mighty voice. The pairing of Sharon Hendrix and Darelle Holden completes a great voice section, one of them has an operatic range. John Farnham's backup vocalists were great too, mainly because Danielle Gaha made up an excellent addition to Lisa Edwards and the always good Lindsay Field.

I like the way Tom Jones introduces his band - he doesn't! Just 'the band, ladies and gentlemen'.... and 'that man' in reference to the towering, smiling, mighty male singer.

I'm not so sure Tom Jones has a comfort zone that means he likes to have exactly the same players and crew around him all the time. After all, he is touring with the Tower of Power soon, and always seems to have some new collaboration under way.

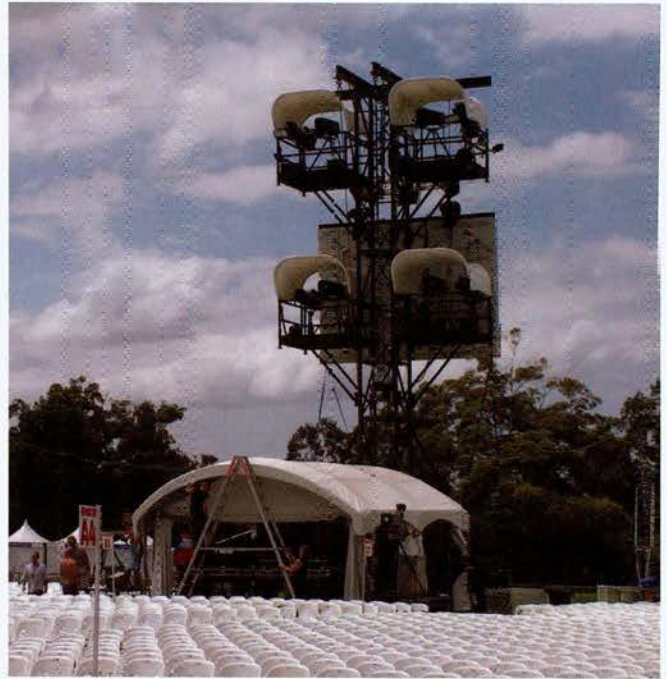
Clearly John Farnham is obsessed with having exactly the same people around him every time he performs. His problem now, having staged a retirement from arena shows, is that he doesn't tour regularly for 12 weeks a year any more. He will have trouble holding together his 11 band members and 12 crew for the occasional corporate gig, winery concert, or smaller show without any real lump of work each year.

## THE BIG VISUAL

Tom Jones LD is Hal Deiter, and John Farnham's is Chris Newman. So who conceived the design?

"It was my design completely" Chris Newman told me. "The two bands are similar, but had a mirrored stage design. They usually have the horns on right." That was changed for Australia.

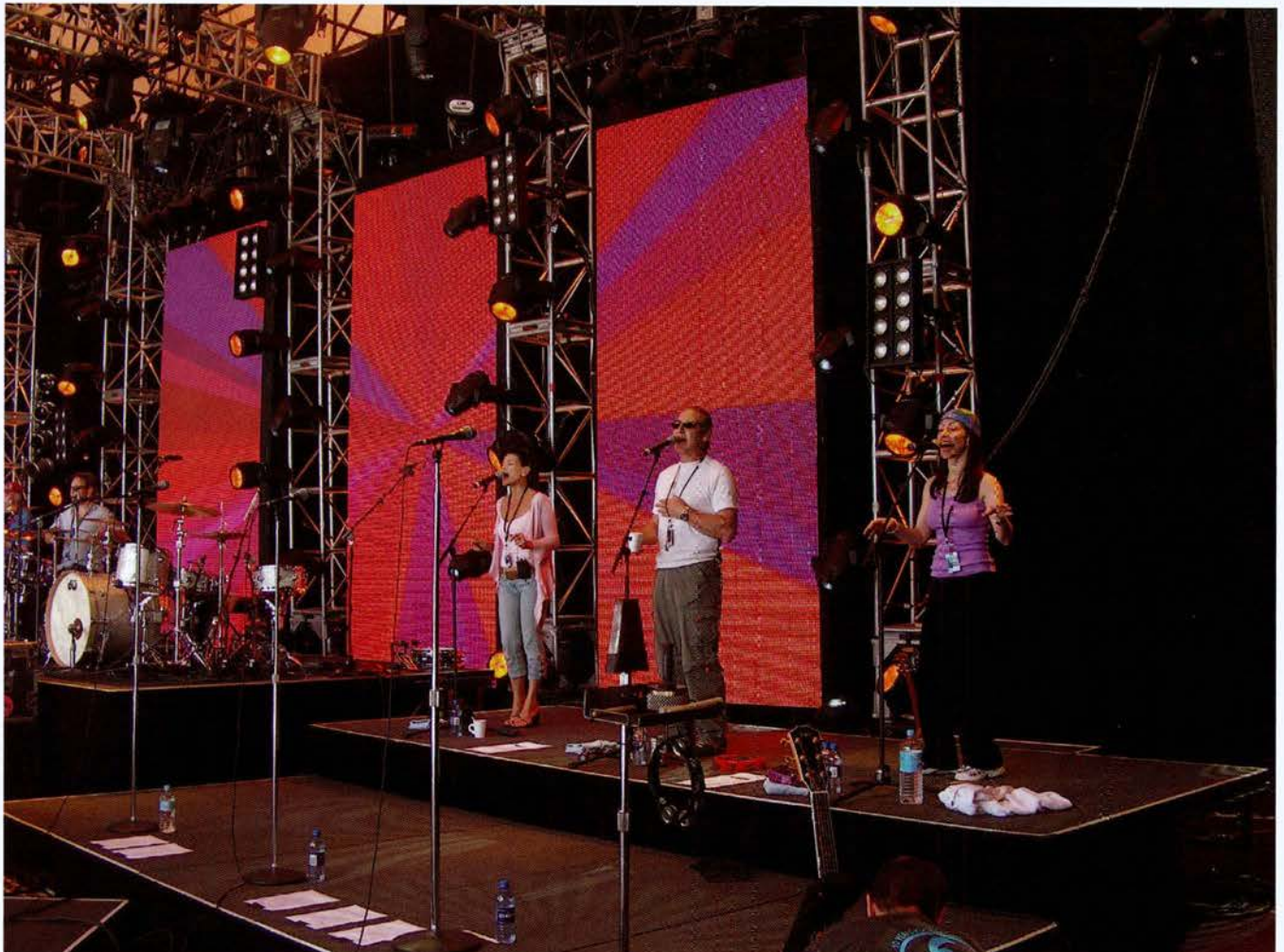
The big news was the visual. Hanging lots and lots of moving lights, and pointing followspots, is a done art form. The lighting rig came from



FOH and the follow spot tower (above).

Chris Newman (right).

LED screens powering away in daylight while Farnham band soundcheck (below).



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The big thing now is the LED screen, and this concert was proof positive just how compelling a medium it really is.

Long time Farnham video supplier Big Picture Australia provided services for this tour. Headed by co-owner Dennis Murphy, acting as vision director, B.P. supplied 3 x LED walls onstage and two out either side. The on stage walls were tall skinny drops of seven pairs of panels. These were made by Lighthouse in the UK, and supplied by B.P. in collaboration with Massteknik. Massteknik are a Scandinavian firm who supply large format image equipment. They opened an Australian office recently and now work alongside Big Picture.

For this show, the three vertical screens occupied five spaces - indeed there were to be five vertical screens, but the budget demon saw to that idea.

Chris Newman worked up a bunch of effects on Catalyst, the effects imagery system that works from an Apple Mac. Catalyst treated the screens as one large one - the imagery from the Cat was sent over to stage right where the B.P. image control world split it into three.

B.P. had ultimate control over what went to the three walls. This is because in some of the ballads they sent camera images to the three vertical walls, as well as to the main left/right walls that many in the audience were relying on to actually see the show. With a narrow vertical screen, a camera image needs certainty that the target isn't going to suddenly move. That's why they were mainly used in the ballads with camera feeds.

The rest of the time, the three screens punched out images and colours and gobos - at times producing so much intensity that we were squinting and contemplating sun glasses. At night.

Chris Newman was very enthusiastic about the LED screens. "It's a

really good picture. The problem now is, how can you work without it?"

He used Catalyst with projectors last time - 3 x 12k units.

"The problem is, when you are not projecting, you've got a white screen still. But an LED screen dissape's to black when you don't use it! A (vacant white screen) can completely blow out the show."

"LED's are getting more affordable than they used to be. Compare it to triple stacking 12k projectors, lining them up, spending a lot of time. Why bother when you can put in a LED wall and get double or quadruple the effect?"

Some pre produced video was loaded into the Catalyst, but nothing requiring time code back to the band form a click track. "Catalyst doesn't run at 25 frames per second, so where if you were trying to lock it into a click track, it couldn't work. So we sent (some material) from IMAG on DVD straight to the screens."

Chris's final word on Catalyst: "It's better to produce your own stuff than rely on all the internal gobos and effects. Just take a photo, stick it into the Mac, and turn it into a Catalyst effect!"

### About the lights

Chris Newman says Hal was pretty easy to get on with. "We lost 16' of trim in Sydney, normally we want 32' to the ground. Sydney was a boxed in stage. But Melbourne looked fantastic."

The lighting rig was made up of 32 Mac 2000 profiles, 24 Mac 2000 washes, 24 VL5's, 18 VL 6C's, 24 Scrollers as truss toners, 60 pars including ACL's, and 20 Mac 600's on the front truss to cover the bands.

There were 12 Profiles, 12 x 8 lite DWE's.

It was all driven from a Hog II console and Wingboard.

Naturally there were two of these, one for each LD.

**B.P.'s big vision world. Discarded KNICKERS used to clean screens?**



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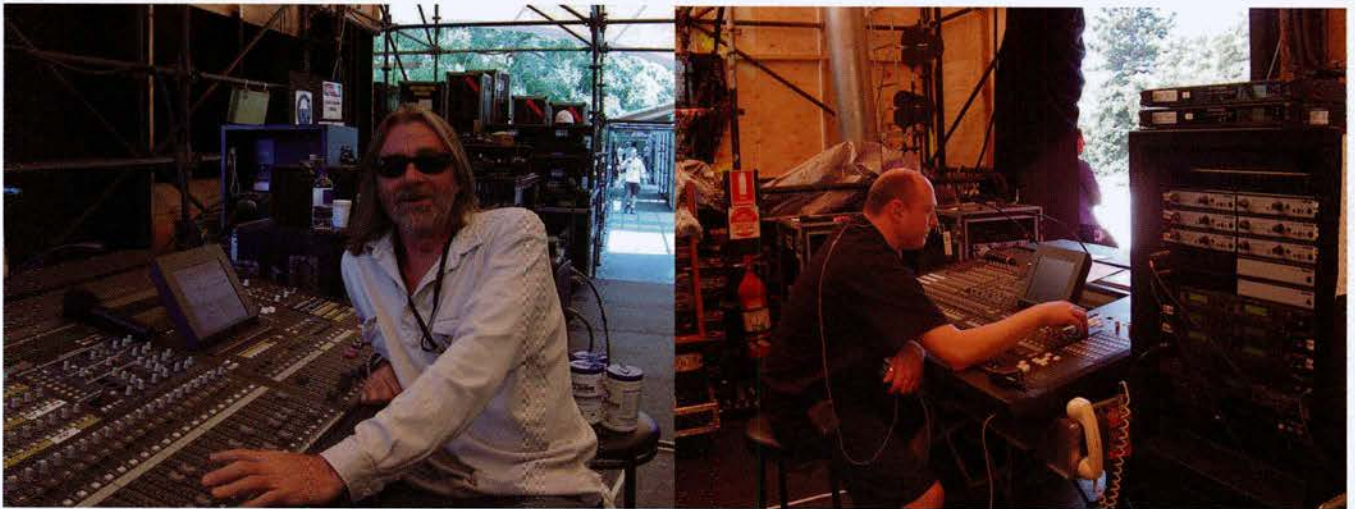
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SXR-D



John Henderson (left) and Ed Ehrbar on monitors (right).

Each Hog was physically plugged into the 5 DMX streams for the relevant operator when their band was on.

"We had a crossover cue from each console for the cutover, so it came up the the same. We just maintained the state, when you unplug the lights stay on."

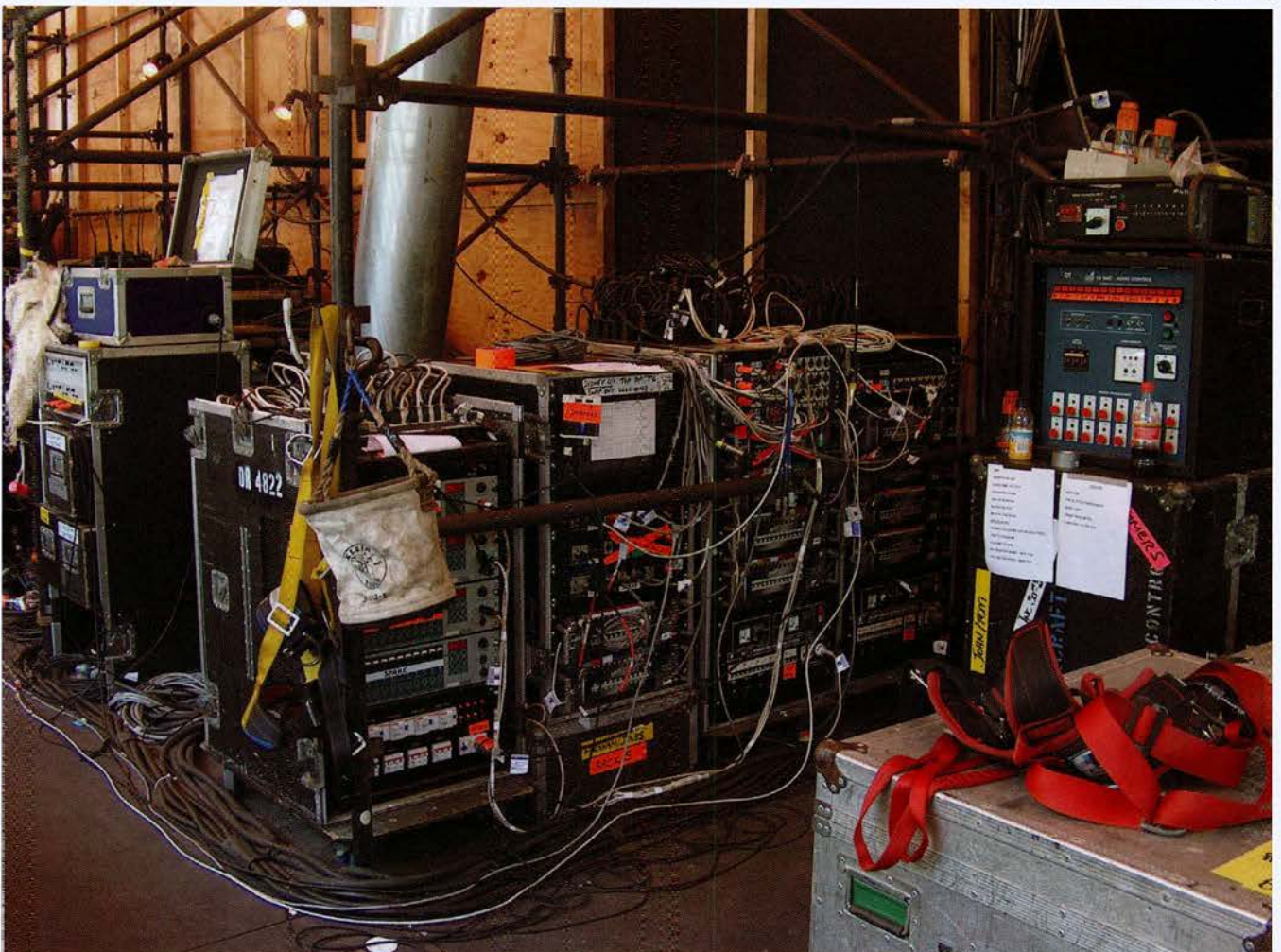
"We stayed with my console for the encores", Chris said. "I'd just jump out of the seat for the encores."

"Working with Hal was fine, the biggest problem was the focus and programming – who'd stay late and who'd go early. But since we loaded in the day before, it wasn't too bad."

Lucky both guys use the Hog II. "I have a pretty decent knowledge of Hog. But Hal had worked with couple of guys in Vegas, doing a lot of things I hadn't seen before. Like with 3 button pushes he had something happening. I got a list of things I never seen before tucked into my brain."

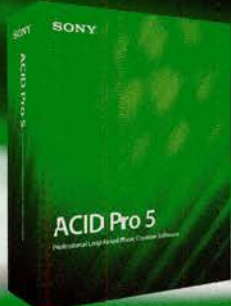
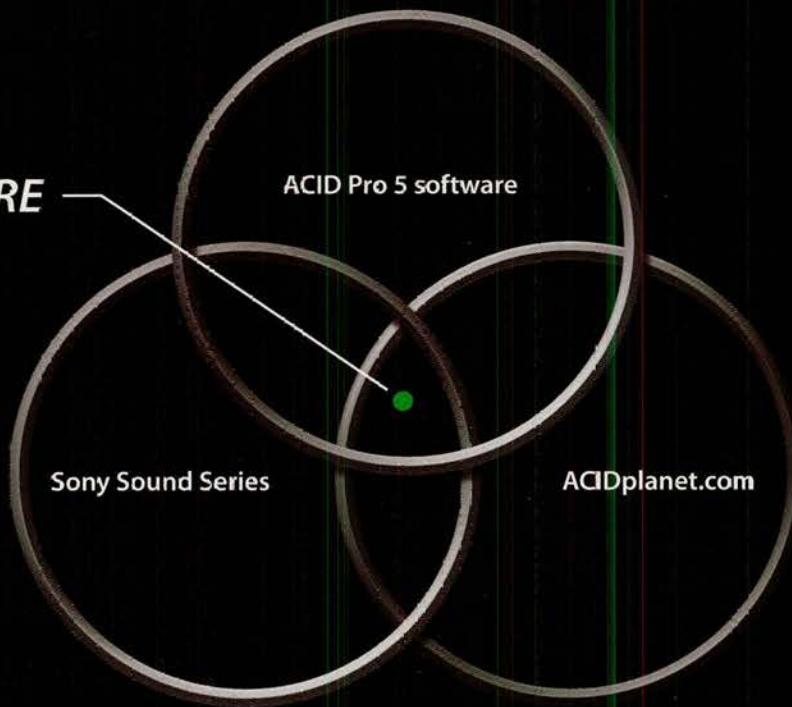
"I'm yet to use a Hog III, I'm not yet confident in the software, so I'm not ready to use one. I really should get head around the GrandMA, because it will handle 8 streams of DMX. It's easy to get over 5 or 6 streams of DMX these days. •

Dimmerworld (below)



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# Rod Stewart



Lars Brogaard is a line array specialist, having appeared in Australia mixing sound for many world class acts on different systems. With Rod Stewart he visited down under driving a new Meyer Milo rig. We were curious how it sounded, and so we heard it at the Sydney Superdome.

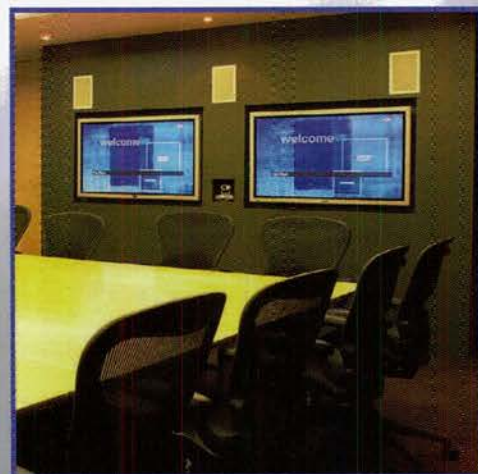
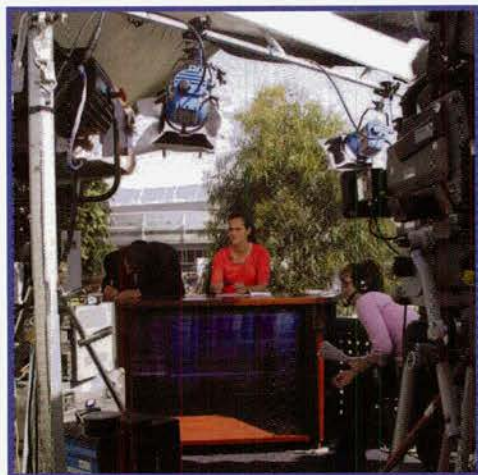
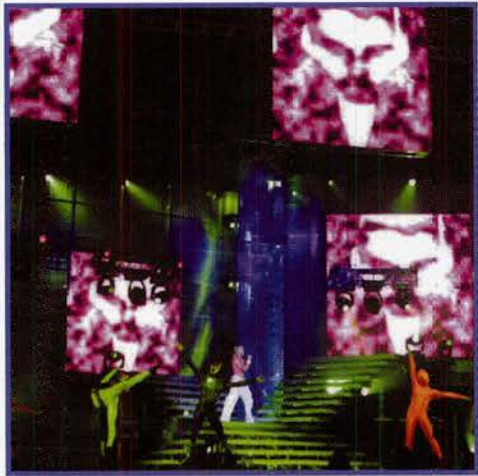
Milo is self powered, like all Meyer loudspeaker products, and we are unaware of any other well known line array which has an amplifier inside each cabinet. The benefits were immediately obvious on walking in to the 'Dome. Instead of a fat loom of speaker cables weighing a half tonne and trimmed with another motor, there was a slim power feed and a few audio lines running up to the array.

Lars says he heard the system in Seville, Spain in late 2002, and then arranged a shoot out for his own appraisal. He wouldn't say against which other line arrays – but he is a partner in a sound company called Major Tom, and owns V-Dosc and X-Array amongst others. Indeed he has used both these types on previous Rod Stewart tours of Australia.

Milo is petite, with the 'Dome system made up of 12 x Milo 90 degree (horizontal dispersion) and 2

Alistair Viles with Lars Brogaard (below). Milo, above.





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Milo 120 degree boxes per side. These slender arrays of 14 cabinets were flown alongside 8 M3D subwoofers. There were 10 Milo's each side – we were seated in the projection area of one of the two side arrays for the show.

This system was owned by Oceania Audio the friendly Auckland and Melbourne based company. In fact, most modern sound companies are now friendly, figuring that a good relationship with everyone helps business. Oceania appear to have enough Milo to stage two tours at once, since K.D. Lang was also on the road with their other Milo system at the same time.

Before inspecting the system I was a little confused how Milo sat in the Meyer constellation. After all, Meyer had released the M3D, then siblings the M2D and the baby mini-rod M1D. After about half a minute, the Milo form factor made sense. M3D is loaded with 15" woofers, while M2D has 10". The dwarf V1C has 2 x 5" drivers. Milo has 2 x 12" drivers – so some kind of sense is happening in the family tree.

But back to Lars. He is from Denmark, where our Mary will one day be queen. Denmark is a terrific place, and the average Dane is a convivial fellow. Lars is a tall, no nonsense kind of guy who appears to take no prisoners. Last time he was here I sobeyed him and photographed his prototype DiGiCo D5 console. I then departed post haste with his displeasure ringing in my ears – and published a scoop about the new console.

Time and the success of the D5 – Lars still uses it – has led to forgiveness and I am not shot to death (or worse) when I appear at the 'Dome. Indeed Lars wants to tell me all about Milo, which he says is the best. "The best" is a phrase which Lars uses several times in ten minutes. Like; 'how have you managed to work for Rod Stewart longer than almost anyone else?'

Answer: 'because I am the best'!

I was going to ask what he saw when he looked in the mirror in the morning, but that might have been disrespectful.

On the mixing floor Lars has about 80 lines coming off the stage. The standard band is made up of 2 Guitars, Bass, Keyboards, Piano, Sax, Percussion, Drums, and three backup singers. There is also one very talented violin player, who doubles on Mandolin and Guitar. She in turn leads eight local string players for the American Songbook segment – which is run after interval.

The big band looked a little strange with 9 strings and just one brass. Albeit a very talented saxophone player.

The other audio topic of note was that there were two monitor engineers each driving a DiGiCo D5 console. One of these engineers was exclusively in charge of The Rod.

As to the show itself, Rod Stewart was in surprisingly good form. His latest blonde did all the things the last one did, including jumping up in her seat at FOH top dance to Hot Legs. Very entertaining.

The first half had a set comprising a wall of fake white painted amplifiers. The second half had a reset with the band in big band format, for at least a while. It scudded terrific.

- Julius Grafton



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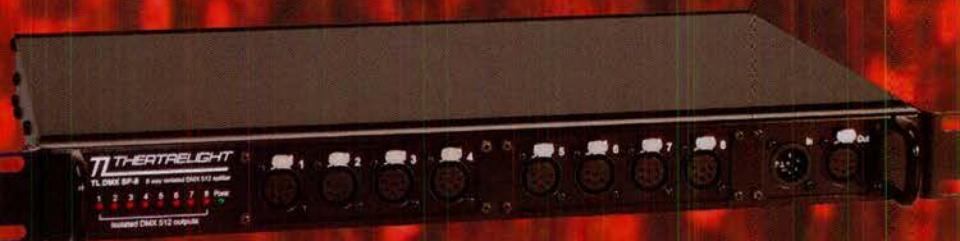
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# Bryan Adams

Selina Carter writes from the Punter's Perspective

**P**ersonable. Professional. Pleasant. Plus a whole lot more. My girlfriend and I had front row seats in Sydney, and it was worth \$120 each. Bryan and I go back, way back, and I was a temporary that Shannon Noll was the support act.

Shannon and his band did the goods, but he was a bit of a dill. In the Aussie ocker did kind of sense. You know, 'G'day, how youze doin'...' that kind of thing. Good band, good singer, but he has no identity of his own. It's all cover songs and blokey blarney and the two girl backup singers locked skank. Time for a makeover, son.

Bryan ran out with his four band members and rocked, hard. His road form is as good as his album form. He has been touring live since 1981, and it shows.

Keith Scott is his lead guitar player, and everyone on stage had the same uniform - denim, black T shirt, and Doc Martin boots. The bass player stayed back most of the time, and the keyboard player was surrounded by keyboards including a Hammond.

I really enjoyed the show, but the lack of video screens must have been hard for the people up back. There was an over-compensation in the form of a massive lightshow, which had some clever moments.

The mix was really really good, despite the fact I was hearing it from a single front fill speaker. I guess I was in the sweet spot, with on-stage amp levels just right on my side of the bar. Bryan rocks! •

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# Richard Clapton

Legacy Rock? You better believe it. Julius Grafton had a night off in Sydney

Steve from the college and I went to Hornsby RSL club, and we were really impressed with the food arrangements. It has the biggest club servery I've been in for a long time. We had a man meal of red meat, and more than several man beers. The night could have ended right there and we would have been happy. Men need to do these things.

Then we forked over 20 bucks each to see Richard Clapton, encouraged by the fact that the support band hadn't turned up and that there was no DJ. Which mean't Richard would be on stage by 9pm. Great news for us, as we had other things to do later that night. Like sleep. Plus we have a mutual loathing of club DJ's who have you captive. One even had the audacity to play old Racey tunes one time, you know those horrible old things that your mum dances to? Worse than Bucks Fizz, only similar.

Hornsby RSL has built a new auditorium and it is really nice. We wrote about it last year some time, but this was the first time I've heard it in action. The place had about 400 people my age inside, and they were buying premium beer and bottles of Verdillo. Well, I was buying those things too. Steve was disappointed his next girlfriend wasn't there, but she hasn't been anywhere, yet.

A very loud and distorted introduction track heralded the entrance of the band, made up of guitar, bass, drums, keys and a girl backup singer. They in turn started to play on cue, and the mighty PA system went immediately into limit mode. My ears were pinned back. I could not believe how loud it was in there!

The PA, I should mention, is a Martin line array of 6 boxes a side,

with a bunch of subs. It is a loud system, and tonight it was being operated to the max. While I genuinely enjoy it loud, this was really interesting.

Likewise the lighting dude was going off, throwing out every possible look from the club rig like there was no tomorrow, and at times, like there was no band on stage. I thought it was admirable that he/she managed to stop the lightschw almost at the same time as each song ended.

There wasn't really any correlation between the lights and the music just a whole lot of cues getting fired off.

The patter between songs was very classic Gypsyboy. Like, "WHAT?" shouted into the mic, bencing the UU mate's another mil or so. Mr. Clapton is an institution of the Australian music scene, and appears to genuinely enjoy playing live. With sunglasses on.

His band were most excellent, I tried to get their names, plus the names of the crew, for this story, but Gypsyboy is a bit tarcy with his emails. Like, "I'm in Perth this wææ, I'll reply when I get back".

He played most of his classic hits plus some new stuff from the Diamond Mine CD. By the time the encores came up, I had followed the heaving masses and consumed far too many premium drink things. I was in a blurred state ears battered.

I staggered to the merchandise stand and purchased a CD and a T shirt. The next day I found them strewn beside the bed, ears ringing through a head ache. I wondered where they had come from, and how I had gotten home.

We love you, Gypsyboy!

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# The Grand Piano

## (and the sound engineer)



By Alan Mourant

**T**he Grand Piano is an amazing instrument to see and hear. No other instrument is capable of producing its frequencies, tone or dynamics. With strings spread wide across 5 to 6 feet of iron frame, when I first opened the lid I wondered where I should place the microphones to do justice to such a large beautiful instrument. I was guessing the first time, but after learning more about the instrument I approached it wiser thereafter.

It was invented in the early 1700's by Bartolomeo Cristofori di Francesco, an Italian musical instrument and harpsichord maker, who effectively combined the two most popular keyboard instruments of the time, the clavichord and harpsichord.

The piano is an abbreviation of "gravicembalo com piano e forte", roughly translated as loud and soft keyboard instrument, referring to the ability of the piano to play notes at different volumes depending on how hard its keys are pressed. It was first exhibited in Florence in 1709 and the term Grand was first used in 1777.

A family of stringed instruments existed in the 14th century, the earliest of these being the dulcimer which led to the clavichord, followed by the spinet, virginal, clavecin, gravicembalo, and finally, the harpsichord in the 15th century.

A piano with strings horizontal to the ground is referred to as a Grand Piano. They come in different sizes;

- Concert Grand - 8' 11" and larger,
- Half Concert Grand - 7'4"
- Parlour Grand 6'8"
- Drawing Room Grand - 6'4"
- Professional Grand - 6'
- Living Room Grand - 5'10"
- Baby Grand - 5'8"
- Upright - 51" and up
- Vertical - 36" - 51"
- Studio - 44" or taller
- Console to 42"
- Spinet - 36" to 38"

There are a few factors that determine the sound of a piano. They are the scale design, which includes the strings, hammer and bridge, the sound board, the hammers and the frame rim and case.

The grand piano has over 7000 moving parts. The piano key is connected to the hammer by a mechanism called the 'action'. When the key is pressed the hammer accelerates towards the string and at some point the key and action are disconnected, leaving the hammer to travel on to strike the string and then bounce back to an intermediate position away from the string and then finally back to its original position when the key is released. The upward striking action of the Grand is heavier than the upright, but it is

able to repeat notes faster relying on the 'repetition lever', and the down-ward force of gravity to return the key.

Almost every modern piano has 88 keys divided into seven and a third octaves, from 27.5 Hz (A0) to 4186 Hz (C8). Some pianos have 85 keys while some piano makers extend the range of the piano in one or more direction, up to 97 keys ( 8 octaves ). The Grand Piano with 88 keys has each octave with eight white keys for playing the diatonic scale (whole notes) and five raised black keys for playing the chromatic scale (whole notes plus sharps and flats).

Starting from the treble, or right-hand side of the keyboard there are 60 notes with three strings each, then 18 notes with two strings each and finally, in the low bass, 10 notes with only one string each. In all modern pianos the white keys are not tuned exactly to the diatonic scale but rather to the equally tempered scale, the practice of stretching the upper and lower octaves. In which the octave is simply divided into 12 equal intervals with the first note in each octave having twice the frequency of the first note in the octave below it.

### The Sound

The pianos sound is produced by a felt covered hammer striking a taut wire string. The vibrations are transmitted along the string to the wooden bridge then on to the sound board which transmits it to the surrounding air, much like the speakers diaphragm. When the piano string is struck, it creates a fundamental frequency and progressively shorter series of quieter overtones ( 2nd, 3rd, 4th harmonics ) also known as segments or interval.

The first overtone of A440 ( concert pitch A at 440 Hz ) should be exactly 880Hz and the third overtone 1760Hz.

Because the segments get progressively shorter the pitches get progressively sharper. The discrepancy between the theoretical pitches and the actual pitches of the overtones is called inharmonicity. To compensate for this, the octaves are stretched slightly so that the first overtone of a note does not clash with the fundamental, an octave above. Done properly, the piano sounds perfectly in tune with itself but the notes in the high treble and low bass may not match the same notes from an instrument that does not suffer from inharmonicity.

Usually synthesizers or electronic organs in unison with a piano will cause problems. And two pianos may not even sound the same. A large piano will have less inharmonicity than a small one, due to the different string scales adopted.

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scale, the frequency of each note in the chromatic scale is related to the frequency of the notes next to it by a factor of 1.059463 ( or the twelfth root of 2 ) The twelfth root of two, when multiplied by the frequency of a note, gives the frequency of the next note up. After doing this for twelve notes, you end up with twice the frequency, or one octave up from the starting note and in twelve equal intervals. In equal temperament, A-flat and G-sharp are the same black key on the piano. This means that a composition written in one key can be shifted up any number of half steps (transposed) and will still contain exactly the same harmony, although the frequencies themselves will be different.

The Just or "harmonic" scale" however has each note related to the fundamental frequency by rational numbers with the semi-tones not equally spaced. Unfortunately this tuning depends heavily on the scale you are using and it is not possible to transpose from one key to another and produce the same harmony. This tuning is common for ensemble choral and orchestral groups who match pitch by ear.

Both ends of the 'speaking length' ( length of the string allowed to vibrate ) are fixed (by the bridge at one end, and the agraffe or capo d'astro bar at the other). Each time the hammer strikes the string, the string vibrates outwards along the string towards the bridge at one end and the agraffe at the other end. Each time they arrive at the bridge the sound energy is transferred to the soundboard. The vibration travels the back and forth in a sustain of the note until it ceases. The shorter a string is, relative to thickness, the stiffer it is and the faster it vibrates.

Voicing is a term used to describe the adjustment that involves the hardening or softening of the hammer felt and is performed so that the tone of each note is uniform throughout. Voicing is generally done every few years to revitalize worn felts.

### The Construction

The piano has an inner and outer rim, made of multiple layers of solid wood formed by clamping straight thin lengths of these woods around counter moulds.

Glue is applied between the layers to secure them and create the molded shape.

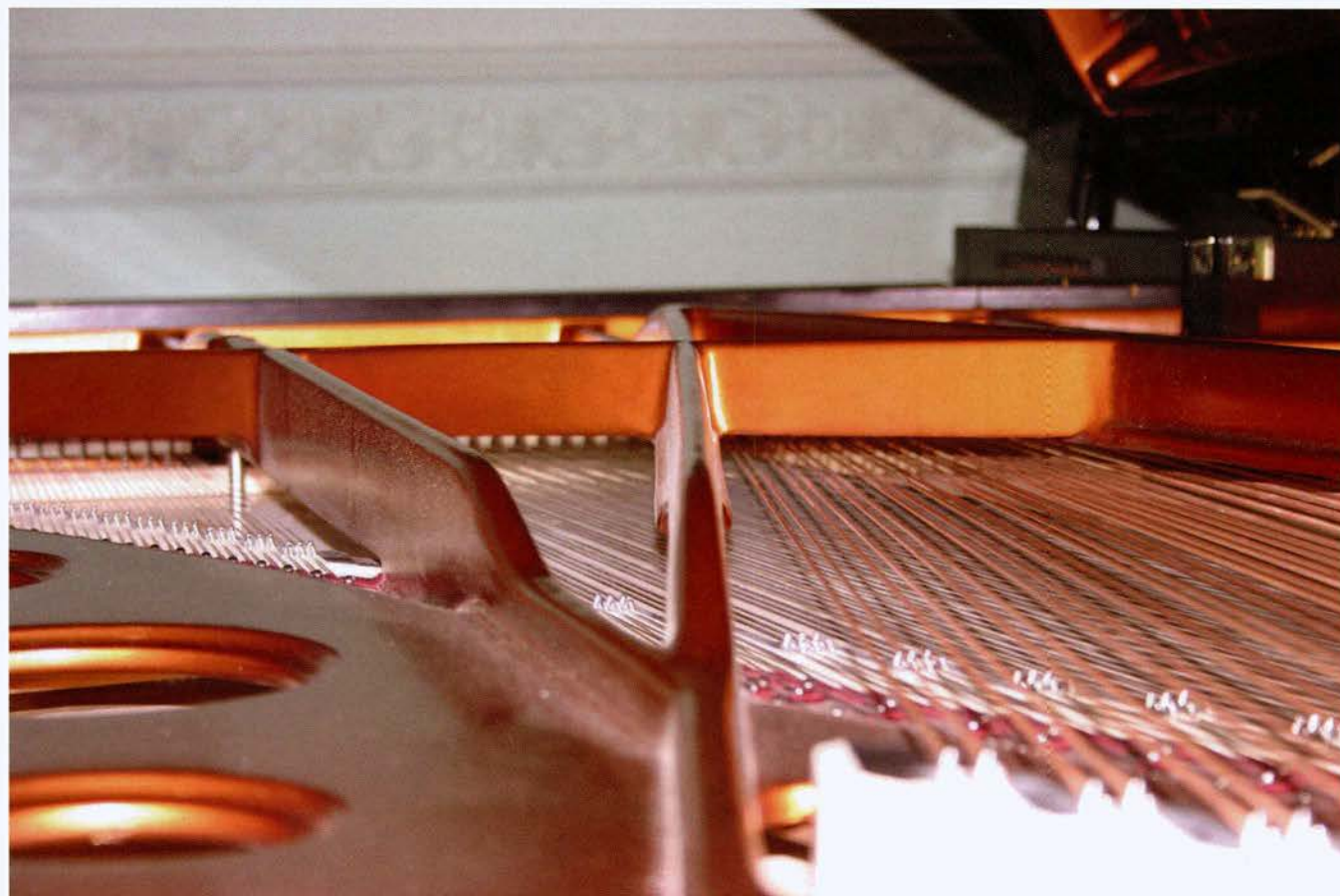
The soundboard is glued to the inner rim before attaching the outer a wooden frame is created to provide the maximum strength possible for all the wooden components. A cast iron frame, usually gold plated and very heavy and fixed to the frame, takes the tension of the strings. The over two hundred strings in a piano are stretched across this frame. The string is attached to a "hitch pin" at one end and wound around the pins on the "pin block" or "wrest plate" which is fitted to the iron frame. This is a multi-layered hardwood that the tuning pins are driven into, accommodating the tuning pins and allows the pins to be turned for tuning. The pins are under enormous pressure and the quality of the pin block will determine the tuning stability of the piano. The pin block is fitted behind the name plate and cannot be visually inspected.

The grand piano has over 7000 moving parts. The piano key is connected to the hammer by a mechanism called the 'action'. When the key is pressed the hammer accelerates towards the string and at some point the key and action are disconnected, leaving the hammer to travel on to strike the string and then bounce back to an intermediate position away from the string and then finally back to its original position when the key is released. The upward striking action of the Grand is heavier than the upright, but it is able to repeat notes faster relying on the 'repetition lever', and the down-ward force of gravity to return the key.

A damper rests on the string to prevent it from vibrating and is raised just prior to the hammer striking the string. Only two-thirds of the strings are dampened as the notes from the high-treble area die off quickly but are free to vibrate sympathetically with the upper harmonics from the lower strings.

### Pedals

The Una Corda pedal is the left pedal on a Grand Piano and occasionally on an upright piano. This shifts the whole action to one side so that the hammer only strikes two out of three strings. Of course having few



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strings struck per note makes the notes quieter. Simply a two string unison sounds different to a three string unison. They are not only quieter but have a distinctly different timbre now that the hammers have moved and are hitting strings with parts of the hammer not normally used being temporarily replaced with softer less used felt. The unstruck string is left to vibrate in sympathy with its neighbour adding a subtle texture to the sound.

The Middle pedal is the sostenuto pedal or sustain pedal. Unlike the damper pedal which lifts all the dampers and holds all the notes, the sostenuto pedal only sustains the notes that are being held when the pedal is pressed. The sustain mechanism catches and holds the dampers that are in the raised position and any notes played after that behave in the usual manner.

The pedal on the far right is the damper pedal. When pressed, the pedal raises all the dampers at once. Any notes played while the pedal is down blend together and ring out naturally or until the pedal is released. Playing a single note with the damper pedal down sounds different to the same note played with the pedal up, because neighbouring strings are free to vibrate sympathetically.

Some grand pianos will also have a fourth pedal that alters the striking distance or the key depth so as to reduce the momentum of the hammers when they strike the strings. It lifts the hammer rail and at the same time lowers the key height.

## The String section

In the lower third of the keyboard range, in the bass section, the strings have a steel core with a copper winding. The first several notes have a single string and the rest in the bass section have double string notes. These are usually mounted diagonally and overlap the other strings. Piano builders vary length, density, and diameter of the strings and keep the tension roughly constant at 150-160 pounds. The typical grand has about 240 strings and a total tension of about 20 tons.

The transition from single string bass notes to double string bass notes is not usually a problem, however, on either side of the "break" (between the bass and tenor sections) the strings here are not parallel to each other, the hammers between sections are at different angles and the double unison strings typically change to triple unison. The string lengths, tensions and wire gauges used in a piano is referred to as its 'scale'. A well designed scale will minimize the transition across the 'break'. Different pianos use different scales and the number of bass strings vary. Therefore the break will occur at different locations and an astute listener will more than likely pick the transition on a good piano. If the transition is too noticeable it is likely the piano has been poorly prepared.

## Live and Recording the Piano

Consider the speed of sound travels at 343 metres per second and the lowest frequency on a Grand Piano is bottom A 27.5 Hz - which is a wavelength about 12 metres long in air. The largest Grand piano in the world is the Challen Grand measuring just over 3 metres long. Predictably the lowest note on the largest Concert Grand will envelope out of the casing even before reaching one full cycle. The 12 metre long 27.5Hz frequency will take only 36 milliseconds to complete a full cycle and is well and truly out of the piano and reflecting back before this happens. Higher frequencies will cycle many times within the piano itself, adding to the tonality and sonic brilliance of the Grand Piano.

Firstly make sure the piano is tuned to A 440 Concert pitch. This

should normally be done by a qualified piano tuner and once it has been tuned the piano should not be moved far. Also wide fluctuations in temperature and humidity should be avoided as this will affect the tune.

When recording, choose high quality condenser large diaphragm microphone with a good frequency response capable of the handling the Grand Piano's dynamic range and extended bass.

Decide whether the lid will be open slightly, half way, or taken off. With the lid closed you are limited to certain microphones that will fit in the space available.

With the lid half open there is sometimes insufficient height to place a microphone above the bass strings to capture the entire bass string section so you may have to remove the lid completely to get the mics placed above the bass strings. Taking the lid off does completely messes up the radiation pattern, with a reduction of energy in the horizontal plane and a substantial increase in the vertical plane. On the other hand keeping the lid closed will dull the piano sound because it

does not allow the sound to radiate out from the sound board, radiating generally more in the horizontal plane than the vertical plane.

Some of the best classical recordings have been made using an A-B stereo pair placed on the side of the piano. Adjusting the distance to the piano and next to the piano, the amount of ambience and the timbre of the instrument can be tuned. Place the pair mid of the piano about 1 to 2 meters away with the microphones spaced 40 to 60 cm apart and adjust the stereo image so the pianist is to the left. The height of the stereo boom is at 1.2 m to 1.5 m above the piano. By pointing the microphones to the open lid of the piano, the sound reflecting on the inner side of the lid will be brightened giving depth to the recording. An incident pair of ambient room microphones can be added.

If the lid has to be closed for separation in a live situation, use one or two PZM microphones fixed to the underside of the lid – one over the bass strings and one over the treble strings. Another option is the C-

ducer, a capacitive tape microphone, about 20cm long, 4 cm wide and 1mm thick, that comes with mounting tape and can be fixed to the underside of the lid, under the piano or on top of the soundboard.

In a live sound scenario, isolation from other instruments can be achieved using the sound holes in the iron frame to pick up the soundboard with the lid closed. Some EQ in the upper midrange and higher would be required to add presence.

A single microphone should be placed centrally or if you are using two microphones place one in the second hole from the top and the other in the second or third hole from the bottom – the bottom being closest to the keys as you are looking at the inside of the piano. Point them into the hole and make sure they are clear of the lid and the cables are out of 'pinch points'.

As you move the microphones closer to the bridge the sound will tend to have less dynamics but will have a brighter, more vibrant, smoother sound. Closer to the hammer action the sound will be percussive with less warmth and sustain. Beware of transients that may clip the microphones or input stage. Somewhere in between the bridge and the hammers is the 'sweet spot'. Always experiment with microphone placement. Close microphone of the Grand is not recommended because you will likely over-emphasize a small part of the instrument's notes and a lot of the piano sound will arrive off-axis. The hammer sound, direct radiations, reflections from the lid, soundboard, floor, ceiling, piano rim and room acoustics are all constituent parts of

## GRAND PIANO FACTS

**The Compass of a piano is the 'length' of the keyboard including both white and black keys.**

**China is the largest producer of Grand Pianos in the world followed by Korea, Japan and the USA.**

**The world's largest piano is a Challen Concert Grand. This piano is 11 feet long, has a total string tension of over 30 tons and weighs over 1000kg.**

**The exact middle of the keyboard is not middle C, is actually the space between E and F above "middle" C.**

**A new piano should be tuned four times the first year, with the change of seasons, and at least twice a year after that.**

## Resource series

the sound. Place the microphone at least 25cm above the strings and make sure it has a good off-axis frequency response with few if any peaks or dips, so as to capture the total 'sum of the parts' - characteristics of the Grand Piano.

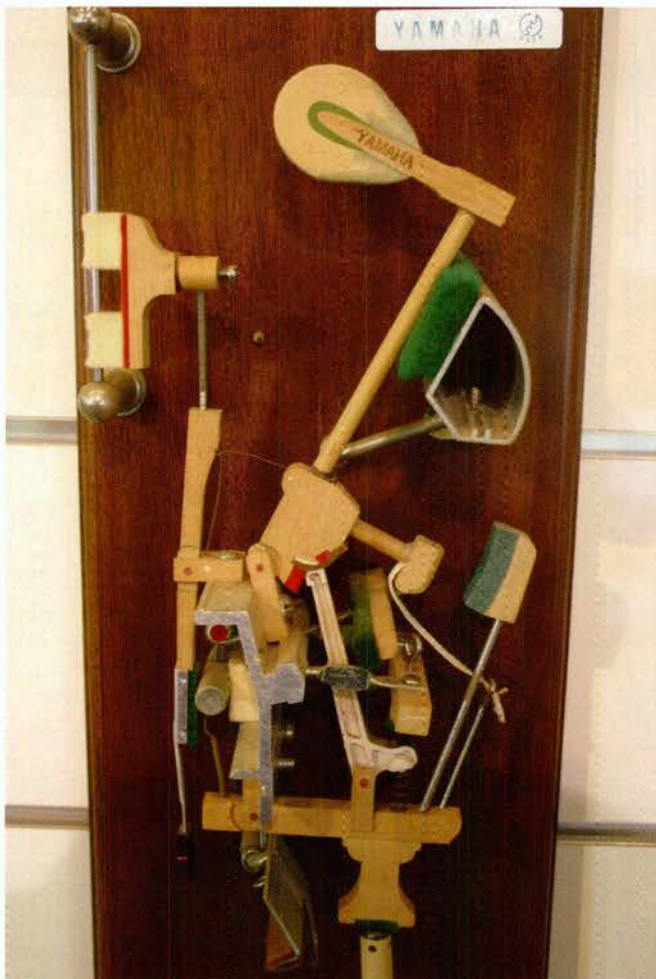
Always be willing to experiment with microphone placement. You could perhaps set up multiple microphone placements and A-B them to see which is the better - time permitting. It is best not to keep the session pianist waiting, but if he is warming up or practicing then take the time. In a live situation, time is never on your side.

Get someone to give the keys a tinkle and have a listen to the characteristics and acoustics of the piano from all angles and positions. You might find you have to move the piano around in the studio to find the best acoustically pleasing location. Avoid facing the open piano side into a wall. However you might have to place the piano near a 'trap' or place baffles around it to reduce unwanted frequencies. On stage the option of moving the piano may not exist, so do the best you can to isolate the microphones and reduce unwanted frequencies, as this will especially help with foldback and the FOH mix.

Some Grand Pianos now have MIDI interfaces incorporated into their design. It is possible to MIDI the piano to a good sound module that is indistinguishable to the real thing and switch between it and the microphones. When the stage volume is excessive this will provide total isolation.

One of the most renowned pianos in the world is the Steinway. Other fine piano makers include Yamaha, Bosendorfer, Kawai, Stuart and Sons ( Australia ) and Fandrich, Fazioli and Young Chang ( Distributed by Steinway ).

- Thanks to Phillip Dunn at Winston Music.



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# Worship Technology



Simon Scouller, Ben Carbone, and Ned Zucco

## We went to Paradise (already)

**P**aradise Community Church is most recently very famous as the home of Guy Sebastian – the most famous Christian on the mainstream album charts just now. Guy was catapulted into the winning seat of 2003 Australian Idol, and secular kids everywhere got the idea there was a parallel music world at places like Paradise.

CX checked out Paradise as part of our quest to explore better churches everywhere which have a youth passion. This means churches that have a band, sound, lights and increasingly vision. Paradise do all these things in great style.

When built around 20 years, Paradise was the largest church in Australia by seat numbers, and only recently has Hillsong adopted that mantle. Adelaide is a beautiful city where you can get to almost any suburb in 20 minutes, so the Paradise catchment is not limited. They do very well.

The church is led by Ashley Evans, and it is part of the Assembly of God, a Pentecostal cluster. Many churches exhibiting growth in their congregations are Pentecostal, and the growth comes from youth who actually think it is cool to go to church and worship Our Father.

Simon Scouller is the production director at Paradise, he took up the posting about a year or so ago, and came from Harry the Hiker in Melbourne. He works alongside Ben Carbone, the Production Manager, and leads a large team of volunteers.

What Paradise do very well is multimedia. It's an interactive church. The TV dept is part of the production dept – meaning there is no delineation. When Ashley Evans gives the word, he can snap up a video roll, and punctuate his message with clips and grabs. At Paradise they

have it sorted, whereas we have observed ourselves that sometimes when Ashley travels, other churches struggle to deliver his clips smoothly. Not that he or Simon would say anything negative, far from it.

Richard Fowler is the Producer of much of the vision. Along with Luke Anderson, he oversees a reasonably hip collection of assets including an old Network 9 Wide World of Sports OB truck from Perth. It is backed up to the church, and does the vision gig perfectly well. The truck takes the camera feeds, (from Sony BVX370 cameras) then does the vision mix, and sends the output to the church screens and to tape.

There are 2 Sony PX40 projectors for the main screens (3,500 lumens each) and 3 x PX35's on stage (3,000 lumens).

At the end of the word, the message is burned on a DVD tower and within 6 minutes is available for sale in the foyer – while the alter call is wrapping up.

There are two edit suites backstage, and the church has generated outstanding DVDs and vision clips. Paradise also have an audio suite, we caught up with Dewald Hartzberg in there. The recording studio doubles as a vision studio.

Out front is a trusty Soundcraft K2 console with most of 40 channels filled; plus an AvoLites Pearl lighting console.

A nice church; well organized, with a good vibe.

-by Abimelech, who was on holidays last issue.

**Opposite page, top: the old Channel 9 Wide World of Sports OB truck at Paradise, and the church itself. It is larger than it looks in this picture.**



### Big big big in the USA!

Church Production Magazine in the USA have endorsed a report entitled "For Dealers - House of Worship Audio/Sound Systems Study 2005". They say that there are over 300,000 houses of worship in the USA.

Strangely the mag also learned that many who are currently selling to the religious market wish to better understand their church customers. They are often frustrated by their customers' long sales cycles, committee-oriented decision-making procedures, proclivity to appoint volunteers as in-house experts, and faith-based language. What's new?

The kicker is that 4.6 billion US dollars are spent on audio equipment for the church market there each year. Something to think about, huh?

### Footpath review of Hillsong DVD recording.....

In Sydney Hillsong's faithful rallied and invited their friends as requested. The 12,000 seats in the Entertainment Centre were filled by 5.30pm, and the rest of us queued nicely outside. Being Christians we chatted politely, and compared SMS messages from head pastor Brian Houston. Some sent replies, like: "Brian, I came as requested, and we are all outside waiting, waiting, waiting." Of course we all knew the SMS came from a server, not the great man himself. Still, images of Brian with a sore thumb made us laugh.

CX eventually grew weary of the Mexican wave and the SMS chatter and wandered off to Chinatown for some tucker at 6.45pm. By this time the album recording had been underway for 40 minutes, and the huge queue reduced by only 50 people who had been admitted into an overflow room to watch things on a TV set. The rest waited and waited.

Some of the random comments of those in the queue - including one who had donated \$100,000 to a Hillsong related ministry: "Run a matinee album recording as well. No extra cost for the venue rental". "Sell tickets instead of sending a roll up all and sundry call". "Tell people in the queue what is happening". "Buy a loud hailer...."

An hour later we walked in, unchallenged, as the Entertainment Centre floor staff were replaced by Hillsong volunteers, who by now were all inside participating. We wandered around the packed Centre, enjoyed the concert, and leaned against a wall watching for a while.

Like all things Hillsong, the live production was most excellent. We will enjoy appraising the DVD.



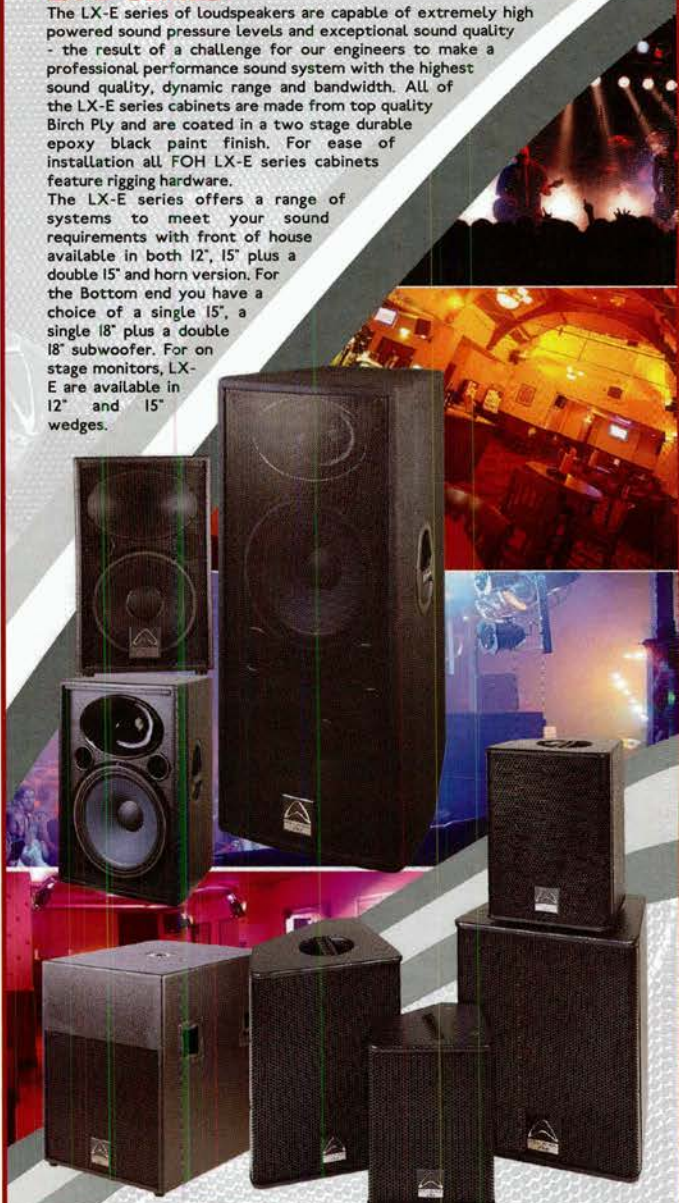
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Whether applied to a reverberant or 'dry' club type acoustic environment the TWIN X integrates successfully with the room for superior sound quality with a minimum of equalization and tuning. Due to the co-axial design the TWIN X also provides excellent stage monitoring in near field situations.

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# Plastic Jesus on My Dashboard

Our hero goes in search of urban folklore. A virtual traveller's tale

by Duncan Fry

I'm always amazed at where you can go and what you can discover on the Internet just by clicking on links at random and following them. The process reminds me of getting into the rental car in Los Angeles and just following the road where it happens to go. Of course, in LA that can drop you into places where a white tourist in a convertible ought not to be, but on the other hand you can end up partying with the glitterati underneath the Hollywood sign.

The other day I was Googling on plastic speaker boxes, but as I had neglected to put quotation marks around my search phrase, I ended up with lists of anything containing the word plastic in it.

And up popped Plastic Jesus.

Websites galore about plastic Jesus dolls, and a recurring song theme.

So I dived in with gusto.

Regular readers may have deduced that I'm not a particularly religious person, but I can't remember anything from my dim Sunday School past saying that the Lord didn't have a sense of humour.

Anyone who has seen the movie Cool Hand Luke knows that Paul Newman sings a catchy little song:

I don't care if it rains or freezes  
Long as I got my plastic Jesus  
Sittin' on the dashboard of my car.  
Comes in colours pink and pleasant  
Shines in the dark 'cos it's iridescent  
Take it with you when you travel far

Written as a fake revival-tent spiritual radio broadcast before WWII, originally it only had two verses. It's now part of country music folklore and has had many extra verses added by other performers. My brief check of a sampling of over a hundred sites led to thirty-two extra verses!

There's humour:

If I weave around at night  
And the po-lice think I'm tight,  
They never find my bottle, though they ask,  
Plastic Jesus shelters me,  
For His head comes off, you see  
He's hollow, and I use Him for a flask

...and piety:

You can buy a Sweet Madonna  
Dressed in rhinestones sitting on a  
Pedestal of abalone shell,  
Goin' ninety, I'm not wary  
'Cause I've got my Virgin Mary,  
Guaranteeing I won't go to Hell.

...Creationism

I don't care if I'm broke or starvin'  
As long as I've got a fish named Darwin  
Glued onto the trunk lid of my car...

...and there's the darker side:

When I'm goin' fornicatin'  
I got my ceramic Satan  
Sinnin' on the dashboard of my Winnebago...

...but all things come to an end:

Plastic Jesus, He'll have to go  
His magnets ruined my radio!

You'd think it might end there, but wait, there's more.

In the land of the free and home of the Whopper some enterprising individual has suggested marketing Plastic Jesus Radar Detectors! Yes, that's right, a hollowed out Plastic Jesus doll with a radar detector inside, especially for use in states where using a radar detector is illegal. Such as every state in Australia except WA, where it is legal to own one but not to use it!!!

Even in places where using one is legal, having it in plain sight on your dashboard risks attracting unwanted attention from the police. As

every driver knows, if they've stopped you then they're going to find something – anything – to meet their quota.

The idea is that with one of these on the dashboard and a fish on the boot lid, any cop who stops you will immediately see that you're a true believer and couldn't possibly be speeding, so they'll just tip their cap and send you on your way.



**DANG - THE TRUE SAVIOR'S BATTERY  
MUST BE FLAT!**

With one of these, the True Savior™ (their name, not mine, honest) can watch over you 'literally and figuratively.'

Not wishing to alienate other huddled masses yearning to be free, the plan is to have it available in other religious icon models, such as Buddha, Krishna, Odin, Star of David and Zeus. (Coming soon: Sonic the Hedgehog and Bobbing-head Chihuahua.)

I've got to say this gadget sounds like just the thing to induce me to part with my Credit card number online, dig into my dwindling bag of mad money and buy.

Others are not so sure. Contributors to the website have questions: "If we can know about this device, can't the police know too?" No answer to that one.

"What if the police have radar detector detectors?"

"Ah, but the True Savior™ has a built-in radar detector detector detector... and so on, to the power of the Lord!"

See, you can't argue with omnipotence.

Personally I'm tempted to invent the Fish Flasher™, a device in the born again fish shape that reflects a superbright flash of light when flashed at by a speed camera, over-exposing the film and preserving your licence. One on the grille and one on the bootlid and you're laughing (or praying).

Finally the links led me to snopes.com, a website full of in-depth analysis to aid in determining the true or falseness of urban legends. You could spend days on this site, but the Plastic Jesus links were something else. For example, a truck carrying blow-up dolls to a party crashes and the dolls escape from under their tarpaulin, floating up towards the sky. Agitated believers screech to a halt, jump out of their cars and start praying, thinking that this is the start of The Rapture, where the faithful are called to heaven prior to the second coming. The verdict - a hoax. Well duh!

My personal favourite was a story about Betty Sue and her boyfriend travelling to her prom night. The car crashes and Betty Sue, wearing no seatbelt, is thrown forwards and impaled on the Plastic Jesus on the dashboard, and killed. An interview with her parents said that although she never got to her prom night, at least "...she died with Jesus in her heart!"

Sadly this one turned out to be a hoax, too.

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**nightlife**  
music video

# The Black Eyed Peas' WILL I. AM, all Grammy-nominated, 5 million-sold-alterna-hiphop cool, twists his technology into the craziest amalgam of monster part production heard this side of Dr. Funkenstein's Castle. Oh yeah? **Yeah!**



Photography by Michael Crook

by Lisa Roy

Standing in line at 6am in a non-descript coffee shop just off Hollywood and Vine, a 30-something businessman in a crisp white shirt with an iPod in his pocket turns to me, "Need to get that coffee huh?" he asks, looking way too happy before sunrise.

"Nah, a chocolate-chip muffin actually," I manage from behind dark shades.

"You heading to work?"

Too many questions this early, "I'm heading out to Vegas."

"Ah. For work or pleasure?" the man asks with a little smirk.

"I'm interviewing Will.i.am," I offer thinking his next question will be, "who?"

"I love the Black Eyed Peas! I have their music on my iPod. Hey can I come with you?"

With a 4-pack of Red Bull, a chocolate-chip muffin and a box of Shermans, I, too, plug in my iPod loaded with BEP music as I head North on the I-15 to meet with the man behind and, in front of, the Black Eyed Peas.

Because it's Will's vision both technically and creatively that put BEP on the map. This summer BEP was in the living room of every home with a living room during ESPN's promotional campaign for the NBA playoffs (and finals) with their single *Let's Get it Started*. He also, anticipating a new kind of future between gaming and music making, lent his talents to *The Urbz: Sims In The City* game, which includes an iTunes download card for BEP unreleased tracks.

Ron Fair, president of A&M and co-executive producer of BEP's newest, *Elephunk*, is quick to point out how his co-exec producer sets new standards in keeping his music, eyes front. "Will is a guy who started out as a breakdancer and a writer of rhymes for Eazy-E. He came from the streets but along the way he developed an incredible tool box of skills starting with an MPC and making beats and moving from there to sequencing music to mastering Pro Tools and continuing to develop himself as an artist at the same time," says Fair.

"He takes all these different areas puts them all together and operates as kind of a one-man band. He makes records instinctively and on top of it BEP functions with a live band, where other guys use canned beats. He starts with a beat that he makes with gear but then translates it into a live framework, which is really unusual. That's why people like Kanye West and Pharrell Williams look up to him. Because what he's doing with live music-mixing it with the beats is really the forward movement of hip-hop and pop and how they blend. So when you have a guy who's as potent behind the scenes as he is in front... it's a great combination."

After wrapping up a photo shoot that proved as entertaining to watch as BEP's show, Will.i.am joins me poolside at The Palms. We settle into a private cabana with the afternoon Vegas sun splashing in

## ST..ST... STUDIO STUFF

### STUDIO

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and, with recorder on, Will opens up on engineering, producing, the new Black Eyed Peas' CD *Monkey Business* (release date: 2/05) and just how bright the future looks ahead.

**EQ:** Chris Lord-Alge said that when he worked with you he really respected you because as a producer and an engineer, "Will saw the finish line and I helped him get there. He heard in his head the way he wanted it, and all his comments were just, which I respect." How do you feel the role of the producer has changed?

**Will.i.am:** I think the role of the producer's the same as it ever was. There are just different tools to execute your thoughts and ideas. The tools have made it a little bit easier to articulate your thoughts, made it a little bit more user-friendly to those that are aspiring producers to bring forth the things they have in their heads. I remember recording and editing on two-inch tape. But now it's totally different; we can do so many things, it's limitless now.

**How easily did you make the transition from analog into the digital world?**

Dave Pensado said [imitates Pensado], "Hey, Will, you can do really good with this Pro Tools stuff, you should give it a shot. Go meet with Rhett Lawrence, he will teach you all the things you need to know about Pro Tools." So I went to meet Rhett. He showed me a couple of tricks. I would call them to troubleshoot. They were really, really helpful.

**You've got a studio in your house in LA. Dish on the goodies?**

Pro Tools: I've got the Digi 002, the Control 24, the M-box. Then, I have some vintage analog gear like a Clavi, Moog, Hammond organ, drum set.

**And no going back from Pro Tools?**

I don't program on a sequencer anymore. I do it all on Pro Tools. For me, it's the now and the future. I don't know what tomorrow's going to bring; all I know is that right now, the way I produce music, I wouldn't want to change it, because I see it on Pro Tools. I see the way it forms. I see the grid, I sequence on that, it gets played there and edited there and mixed there. I used to use the Akai MPC; I do everything on Pro Tools now. It wasn't designed to be a sequencer, but I sequence on that and program on that. So I get my drums right, or the combination of my stock sounds that I created and a live kit, and I manipulate it to make my program.

**When you go into your studio what comes first?**

The beat. I have a live kit, but instead of playing the whole kit or sampling a hi-hat, I just play hi-hat for three minutes. Then I'll go play the snare for three minutes; then I'll program the kick. That's what makes hip-hop, hip-hop—the focus the drum machine gives each drum without the bleed. So why don't I interpret what a drum machine does live, take out everything else and just play the hi-hat?

Then, I will treat the drums the same way I would treat vocals. The way you would do a vocal and ad-lib a vocal, I have a drummer come in and ad-lib my drum program and put the fills and the crashes in.

Same way with horns. I try not to let the horns play at the same time—saxes go first, trumpets second. So I treat everything like a vocal.

A bass line comes second, or the guitar. It all depends on what the driving force of the beat is. Sometimes I'll just get a hi-hat and a guitar riff and then I'll build around that. Or sometimes just the beat and then the guitar riff, or sometimes when it's just me in the studio it's the beat and the bass line, and then I play the keys or Hammond or Clavinet over it.

I work best with guitarists. I'm fascinated by the guitar. I don't want to learn how to play it because I like the art form of collaboration, somebody else's interpretation of what's in my head and the journey of trying to get there, communicating and dictating to the guitarist

what it is that I'm thinking, or interpreting what's coming from the guitarist.

**What tips would you have for someone in the deep end of Pro Tools possibilities?**

Well, I would like those people to keep this in mind: this equipment is becoming more and more affordable, so you're going to get a lot of young guys that are going to do all these crazy tricks. The one thing that technology can't mimic is that natural raw magic. Capturing that is worth more than any crazy trick and plug-in that you could put on a vocal. You can do all the editing tricks in the world, but natural magic is natural magic, and capturing that is priceless.

**You went from analog tape machines, to your laptop. Now, you're recording on your bus, you're recording on the road...**

Yeah, we recorded on a plane, at the Louvre in France. We recorded on the Bullet Train, the fastest train in the world, in Japan. Pro Tools has made it to where we're like a newlywed couple with music and you're just screwing anywhere: "hey let's go do it in the bushes? Let's do it on the bus?" So it's the same enthusiasm with music. "Why don't we go sneak over there and record in the Notre Dame?" So I got the Pro Tools in my backpack, with a little mic, I got my headphones, and I record. But I think the biggest thing that's going to happen in the future is mobile technology.

**Wireless? Bluetooth?**

It's distribution of music. I could make something on my laptop and straight from my laptop it could get to somebody's phone. You don't even have to go to a freakin' master plant anymore. Straight from the artist, artist to

consumer—no middleman. Any minute now a phone company is going to see that vision and take advantage of it. It's going to be out of the UK, Germany, Japan. It'll probably be, like, Australia, since nine out of ten people have phones in Australia. It isn't going to be a record company.

**It's interesting to think that distribution of music will probably change how it's produced.**

Well, I can't wait until they make speakers that tap into your nerves, to where you could actually feel bass frequencies instead of hearing them. I can't wait until instead of knobs and faders you have three-dimensional objects that you manipulate to get the sound that you wish. If I wanted a big bass sound I'll just move the sphere rounder. [Moves his hands in the air.] If I want it louder I'll move it closer to me, or position it lower until it resonates out. Or if I want a distorted guitar, I'll manipulate the sphere to more of a spike. I wish you could EQ shapes that would represent sound and frequency.

**And outside of this new record, in a philosophical sense, what are you looking forward to?**

Keeping it. First, the inspiration was to get it. "Oh gosh, I can't wait to do this, I can't wait to do that." And now we've done a whole lot of things, some things that we dreamed of and some things we never dreamed of, and now that we've achieved these things, there are other things I want to achieve. But now the motivation and the driving force is keeping it. Momentum and longevity and at the same time being enlightened by other people's process of how they keep it or get it.

Especially now that there are no rules anymore. There are no rules on who sings good, there are no rules on who is the hot producer. All that crap is forced and just bullshit.

But what I do is no different than what somebody reading the magazine could do. I'm no better than nobody else. I'm not the best singer, I'm not the best keyboard player, and I'm definitely not the best producer. But it's all interpretation. I believe my interpretation and that strong belief that somebody else will believe it as well, and appreciate my interpretation of music. That's all it is, perspective and interpretation. **EQ**

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# SRX700

S E R I E S



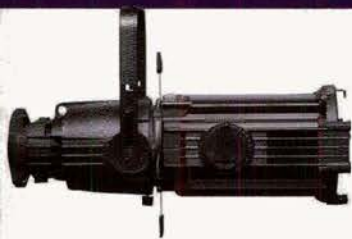
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### 100 TIPS

by everybody who's anybody in modern music to help you dig your way out of the morass of music production ephemera. Everybody complains about the rain. We're just doing something about it.

# DIG IT.

## GETTING IN

YOU CAN. RIGHT AFTER YOU DO WHAT WE TELL YOU. YUP. DO WHAT WE TELL YOU AND NO ONE WILL GET HURT.

ITCHING TO GET YOUR PROJECT STARTED? YEAH. WE BET YOU ARE. AND

### TRIP THE TUNING FANTASTIC

**BOB HODAS** (rhymes with YODA's) knows more about tuning rooms than any one individual has the right to. He's analyzed and corrected studios for everyone from Sony Music Entertainment to Abbey Road Studios and his most recent projects include an acoustic renovation of The Record Plant's SSL-4 and Flea's home studio. He had wanted us to call this "6 Cheap Sirloin Tips" but we decided that while they were free they were in no way cheap.

#### 1. BUILD YOUR ROOM AROUND THE BEST SPEAKER/LISTENER SETUP FOR YOUR SPACE.

Why are you in this business? Audio! A studio should be a listening space, not a gear showcase. Clients will not come back to you if you have the coolest gear but their CD does not translate when they take it home. Many of a room's serious bass problems can be solved just by getting the speakers and listener in the right position. Finding the proper positions can be difficult and time consuming even with good measurement gear, and the process is too long to explain here. An inexpensive alternative (\$100) that can achieve, at a minimum, a 75% solution is RPG Inc.'s Room Optimizer program. It can help calculate the proper speaker placement for rooms with parallel walls (your basic home studio).

**2. SYMMETRY.** If you don't set your speakers up symmetrically in a room, they will wind up with different frequency responses due to speaker/boundary interference. Your speakers are fairly omnidirectional below 200Hz. So a lot of low energy is coming off the back and sides of the speaker. The signals that bounce off the walls and ceiling are going to mix in with the direct speaker signal. This delayed bounce will cause comb filtering. The time delay and thus, frequency of interaction is dependent on the speaker distance from the walls. If the left and right speakers are different distances from the walls, the cancellations will occur at different frequencies. Different frequency responses means that the speakers will sound different and also mess with your imaging. Bass is the foundation of building any mix so it has to be correct, and boundaries significantly affect a speaker's bass response. Symmetry also applies to your equipment setup. Low frequencies are sensitive to gear placement. For example, if all of your gear is piled up on the left side, the left speaker will have a very different bass response than the right. So try to distribute your gear evenly around the room.

#### 4. PUT YOUR SPEAKERS ON STANDS, NOT ON THE CONSOLE.

At this point I want to mention the evils of console reflections. The console and worktable are subject to the same reflections as your walls. Now I realize that you can't do this if you have one of these all-in-one workstation pieces of furniture, but you should be aware of these tight reflections bouncing into your face. If you have the freedom, move the speakers back on stands. Use the mirror again for this. If you sit at the console and can see the tweeters in the mirror, you're in trouble. Move those speakers back so you see no reflection in the mirror (usually about 8" behind the console).

#### 3. FIND AND TREAT YOUR FIRST ORDER REFLECTIONS.

High frequencies will act the same as the bass described in Tip #2. The difference is that they are more directional and above 400Hz will be subject to simple geometry. This means that you can use a mirror to find the reflection points. Invest \$30 in a 2'x2' plastic mirror. Have a buddy sit at the mix position while you place the mirror flat against the walls and ceiling. Move the mirror around until your buddy sees the left and then the right speaker reflected in the mirror. Have your buddy slide side to side across the console to cover the entire mix area when looking in the mirror. Mark these areas so you can treat them. For the side walls and ceiling an inexpensive solution is a 6 lb. density, 2" compressed fiberglass, such as Owens Corning 705. The fiberglass should be covered with a fabric that is acoustically transparent. Go to a fabric store and pick out something with a very open weave. You should see some light pass through and if you hold it over your mouth you should be able to easily blow through it. Only treat the areas where you saw the speakers, or slightly larger, and don't over do it. An over-damped room will sound like the life has been sucked out of it since you will disproportionately damp the high-end reverb time.

#### 5. BASS TRAPS CAN HELP OR HURT YOU.

There is no rule of thumb for bass traps. Many times trapping a corner is just what you need to control a room bump, but I've also seen corner traps put big holes into a room response. Sometimes you would do better to cut the corner off with a hard surface or leave the corner as is. In some cases the trap should be in the ceiling and in some cases on the back wall. I personally believe in measurement and experimentation to get the best results. I don't think you can do it just with tones so I'll recommend renting an RTA and a flat microphone (don't use your favorite vocal mic). Experiment with treatments and do some listening too! The ears are the final judge in all of this.

#### 6. GATHER AS MUCH KNOWLEDGE AS YOU CAN.

This space is too short for any in-depth advice. The NARAS Producers & Engineers wing just published a guideline for setting up 5.1 mix rooms. While not perfect, there is a lot of good information in there. Read the articles on my website at [www.bobhodas.com](http://www.bobhodas.com). I am way behind on getting current articles up there but I'll be putting more up as we get into the new year. Read your trade mags. You may get frustrated by conflicting opinions in the studio design trade the deeper you get into this, but hey, it's not a perfect world.

## 7.

#### GET A LEG UP ON IT.

There are probably certain setup things you do with any sequencer each time you use it. So why do them every single time you start a certain kind of project? Outside of bad home training? Use a program's "template" feature, and if it doesn't have one, then just save certain basic projects according to type.

#### 8. PRE-PATCH.

Nothing kills inspiration like waiting for the engineer to set up the recording chain (or taking time to patch things in yourself, if you're wearing the artist and musician hats). So plan ahead. If you're going to be overdubbing electric guitars, set up any DIs, re-amping boxes, tuners, and so on, ahead of time, so all you have to do is plug in and hit record.



#### 12. POWER UP OLDER GEAR PERIODICALLY.

We all have them: Those pieces of older gear we once loved, don't use, but can't bear to sell.

However, if you want them to continue to exist, power them up from time to time,

work the controls, plug things into the

jacks, you know: do the do. Moving parts like to move, and corrosion can build up in connectors unless they get some exercise.



## 10.

#### SCRATCH OUT A PASSWORD/AUTHORIZATION CODE FILE.

If you lose a password or authorization code for your software, don't expect much sympathy from the manufacturer. Create a file that contains all this crucial information, along with info like passwords to user update areas, then place this file in a folder

that contains any other needed files (like HTML files used to register software). Make this folder "Copy Protection Central" with all the data you need to install and authorize software. Save this to CD, and buy a USB thumb drive that's dedicated to holding this data. Print out the file of passwords as an additional safety measure. You'll be glad you did.

## RUN AND GET BACK UP.

If you have a piece of hardware with an internal fuse, you know that it will go at the worst possible time. Make life a little easier by attaching a replacement fuse inside the case, so that when you open it up to access the fuse, there will already be one there. If the equipment doesn't run too hot, you can just tape the fuse to the side with duct tape. If you're concerned about the fuse coming loose and wreaking havoc, then drill a hole, attach a dummy fuse holder with a screw, and insert the replacement fuse into the holder.



#### 11. DO SOME DRY RUNNING.

During a mix or recording session with the client sitting over your shoulder is not the time to learn how a new piece of gear works. Take time in between sessions to practice with it — run a variety of tracks (drums, guitar, vocals) through that re-issue "vintage" compressor at different settings, feed a guitar cab with a direct "reampable" signal while repositioning a new microphone, or whatever, and be sure to record the results so you have an audio record of how things sound at different settings.

## ALEX OANA'S TRIBUTE TO THE PAINFULLY OBVIOUS

Well when they say "somebody has got to say it," pretty often it goes unsaid. Call it the fear of the obvious, the fear of the redundant, or the fear of the nose on your face. **ALEX OANA** (Mudvayne, SPY MOB), it could be said, is absolutely fearless in this regard. Forthwith his FIVE tips on stuff you probably know (but can't hurt to be reminded of).

**13. KNOW YOUR BANDS.** Not frequency bands either. Get to know the artists as well as you can. Collaboration is about people — the better everyone knows everyone the more honest everyone can be in the process. If you're on an out-of-town session, stay with the band. Share toothpaste.

**14. THE BUCK STOPS HERE.** Going back and forth over decisions can be a huge time-suck. Figure out who the producer is to avoid any power struggles. One person calling the shots can streamline any process. Stiff upper lip, soldiers.

**15. I MIX ALONE.** Mix the song until you love it, without anyone looking over your shoulder. Then email an MP3 to all the band members, A&R, and so on. Have the band elect one member as the liaison to communicate their wishes to you. Tell the A&R to get a real job.

**16. COMPUTERS MAKE MUSIC.** The biggest blessing and curse is the ability to endlessly rework a song. Make sure it's a good song in the first place — that'll save time!

**17. AND TO CYNICALLY SIMPLIFY, REMEMBER TO:** not get creative, develop presets for your recording, mixdown, and mastering phases so you can get through a lame project as quickly as possible, and if the band is no good and you're not looking forward to the session, get someone else to do it. These might make me sound horrible, but they are eminently practical.

## 19. REPLACE BATTERIES.

A battery that's leaked all over your gear will likely ruin it, because the chemicals inside batteries are highly corrosive. If they just attack the battery connectors, that's bad enough; but if a PC-mounted battery (e.g., for backup) leaks over the board, that board will die a premature death and will be almost impossible to fix. When equipment isn't going to be used for extended periods of time, remove the battery. Your gear will thank you for it.

**20. IF YOU'RE NOT GOING TO PAINT THE TOWN, AT LEAST PAINT YOUR PLUGS.** Buy a set of enamel paints with a wide variety of colors at a hobby store, and put a dab of paint on each end of your patch cords. Ideally, each cord would have its own color. This makes it sooooo much easier should you need to troubleshoot which connections are going where.

**21. SO HOW OLD IS THAT BATTERY?** With battery-powered gear (including remotes), write the date you replace a battery on a removable sticker, and affix it to the outside of the gear (preferably somewhere near the battery compartment). This gives you an idea of how often batteries need to be changed, but more importantly lets you know if a battery is really old and should be replaced just to make sure it doesn't leak or cause other problems.

**22. GOT PDF?** A lot of companies post their manuals online as PDF files. Download these and save them to a CD. Not only will this let you get rid of the paper version if you need to save space, but the document will probably be searchable — great when you need to look up a specific term to remind yourself of how it works.

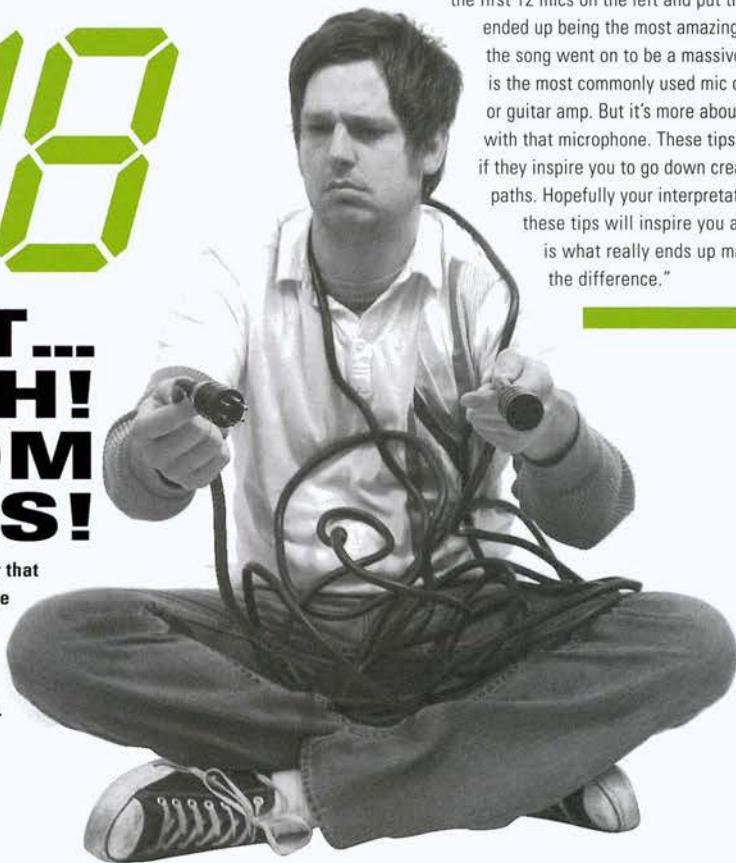
**23. REALIZE THAT NONE OF THESE TIPS WILL HELP YOU. AT ALL.** JACK JOSEPH PUIG (John Mayer, GREEN DAY, Goo Goo Dolls, NO DOUBT) says "none of these tips matter. They matter but they don't matter. There's a balance. A perfect example is I once did a session in a studio I had never worked in before and I wanted to prove to myself that it didn't matter what gear I used, but that the real talent was in being creative, breaking the rules, thinking out of the box and trying something you may have thought would never work. We were tracking drums and I told the assistant to grab

the first 12 mics on the left and put them up . . . it ended up being the most amazing session and the song went on to be a massive hit. The SM57 is the most commonly used mic on a snare drum or guitar amp. But it's more about what you do with that microphone. These tips are important, if they inspire you to go down creative paths. Hopefully your interpretation of these tips will inspire you and that is what really ends up making the difference."

# 10

## GET... OUCH! CUSTOM CABLES!

Do you have a piece of gear that depends on some weird cable that's made by the manufacturer and no one else? Buy a replacement, now, and put it in a safe place.



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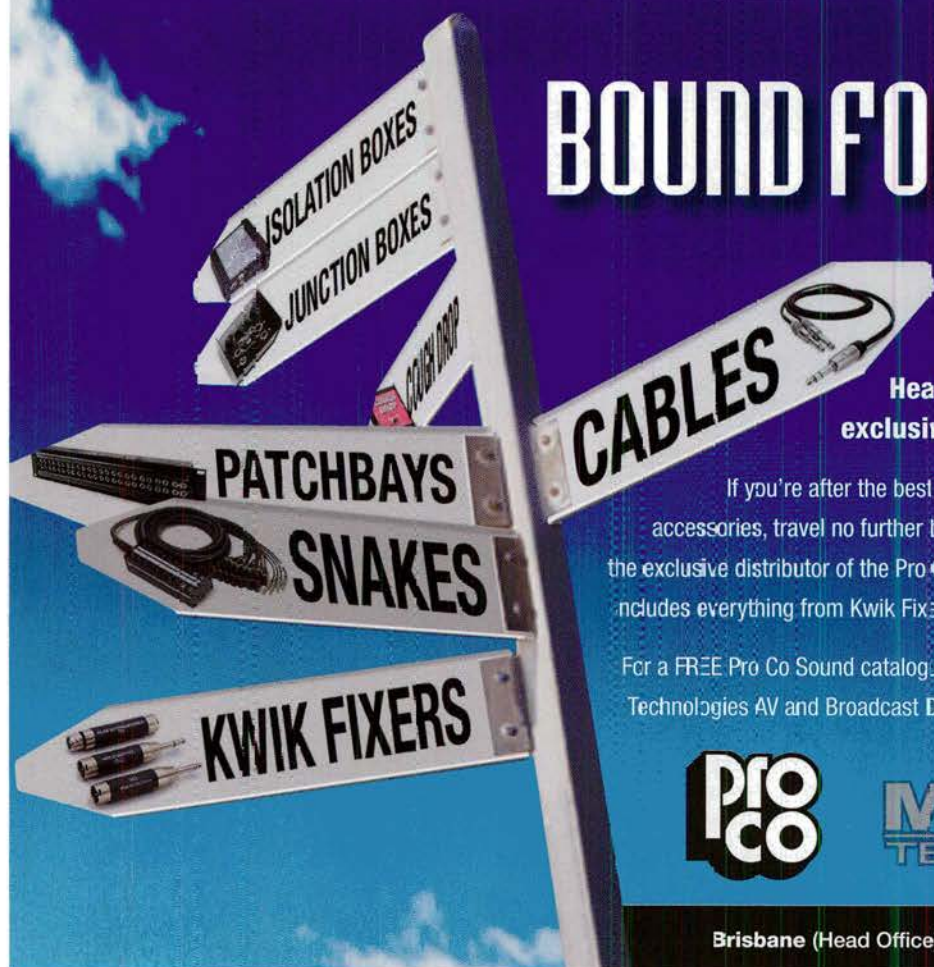
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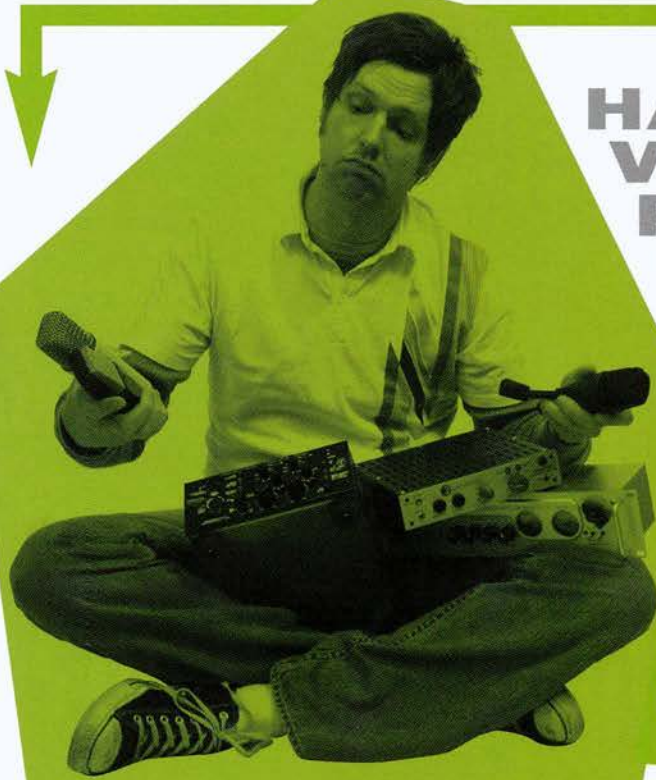


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## GETTING IT UP

YOU'VE GOTTEN ALL OF THE BACK STORY TAKEN CARE. ALL THE HOMEWORK'S BEEN DONE. NOW ON TO THE SETUP.



### HAVE A GOOD VARIETY OF PRE-AMPS AND MICROPHONES ON HAND,

even if they're not all Class A pieces, they'll all add character to your tracks and add dimension to your recording. Having tube gear helps!

# 24



### ROBBY TAKAC'S 7 CENTS

We love saying his last name around here. It's like firing a machine gun. Or singing that Billy Joel song. Anyways Takac, taking some time off from The Goo Goo Dolls and opening his three-room facility called Chameleonwest Studios in downtown Buffalo, NY is going to help us with our Tip Travelogue. He helps with Tips 24 through 30 and all we have to do is mention that his joint has three Pro Tools rooms with a small o.d. studios, and with each featuring NEVE, TRIDENT and a variety of outboard Pres, EQs and compressors. And what of The Goo Goo Dolls? Well, they're going to pitch a tent with a remote system in an old Masonic hall in Downtown Buffalo to record through the Summer of '05. Gotta be nice.

- 25. Drum rooms are simply pleasant-sounding cavernous spaces. These cavernous spaces exist all around us. Don't feel restricted to tracking in a studio room; explore other places for remote recordings. Room microphones on your drum set are your key to a "pro" drum sound. Use your room sounds!!

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- 26. Great guitars, amps, and microphones are a must.

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- 27. Crappy guitars, amps, and microphones are another must.

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- 28. Amp Farm, AmpliTube, and Sansamp are useful on just about everything but guitars.

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- 29. Bass amps are generally a phase-wrestling match reserved for the mix room; a good D.I. is always best to track with.

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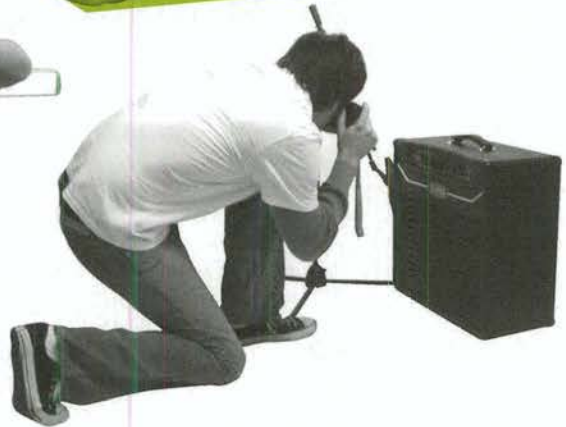
- 30. GET A REAL DRUM TECH !!!!!!!

31.

**IT'S ALL WHERE YOU PUT IT.** Miking a guitar amp? Experiment with where you put the mic in relation to the speaker. Closer to the center gives more bass and a "looser" sound, while miking toward the edge of the speaker sculpts "tighter" and has a bit less low end.

32.

**GET A DIGITAL CAMERA AND USE IT.** They're really handy. Done a great mic setup? Shoot it, and you'll find it much easier to duplicate the setup in the future. Set up a piece of hardware and want to remember the control settings? Sure, you can write down where the dials point — but a few shots of the front panel might be easier. Recording an instrumentalist? Take a picture. Then, when *Guitar Player* interviews you and asks "Hey, what guitar was The Edge playing when you recorded U2?," you'll remember. Digital photos are the best, because you can store them in the same folder as other project data.



**33. AVOID OPTION ANXIETY.** It may feel satisfying to marvel at racks full of gear, but having too many choices — whether it's umpteen varieties of tube compression, duplicate types of plug-in effects, soft synths, sample libraries, microphones, or whatever — can become overwhelming and prevent you from actually getting anything done. If you suffer from option anxiety, limit yourself to a small subset of tools to work with. Do this at the beginning of a project, before things get out of hand. Chances are, you'll find creative ways to get more from less gear.

**35. HUNTING FOR UPDATES.** These days, it's not uncommon to have a bunch of incremental "bug fix" updates for every piece of software in your virtual studio. Hunting these down online after you've already downloaded them can be frustrating and time consuming. So keep all update installers in a single location, and back this up to CD-R. If the computer crashes, or you migrate to a new machine, pop in the disc, run the installers, and get on with your life.

**36. BACKUP FOR THE TERMINALLY LAZY OR PRESSED FOR TIME.** You probably have separate drives for your system and data (if you don't, you should — consider that another tip). And admit it, you probably get a little lax on backing up from time to time. If you don't have the time to burn to a CD or DVD, then at least create a folder (and preferably a partition) on your system disk called "Safeties." Copy the file(s) you want to back up over to this folder. Although this isn't as secure as having your backup in a separate physical location, at least if your data drive fails, you'll be able to pull a copy off the system drive.

**37. DON'T TOUCH . . . OR SHOULD YOU?** Manufacturers tell you never to touch a CD drive's laser lens. So I'll tell you the same thing. But I'll also tell you that wiping the lens with a soft, lint-free cloth has bailed me out a few times when my CD drive said "CD? What CD? I don't see a CD . . ."

## THAT @ # \$ % ^ & COMPUTER

Having problems with mysterious freezes, long bootup times for some programs, and general instability? Better make sure there isn't any cracked software on your hard drive. Aside from the ethical considerations, remember that cracked software by definition leaves out some of the original code. This can come back and bite you in various ways.

34



## PRO TOOLS TIPS THAT COULD SAVE YOUR LIFE

**TAL HERZBERG** (Black Eyed Peas, NELLY, Johnny Lang, CHRISTINA AGUILERA, Counting Crows), the Pro Tools guru of all mankind, between crafting genius and throwing us out of his place, gave us some must-do tips. Ignore at your own peril.

**38. ASSET MANAGEMENT:** When I talk about data management I'm really talking about asset management. This includes track and playlist management, clear labeling of all production elements, disk management, and data backup. Consider this Engineering 101. If your assets are damaged or non-retrievable it doesn't matter if you're the world's greatest sound engineer or mixer, you're failing the very tedious and initial mission of data retrievability.

**39. BASIC PROPER BACKUP PROCEDURES ARE:** Always keep AT LEAST one (preferably TWO). And an additional Running Copy of the main data drive (updated daily using backup software).

**40. THE RIGHT STORAGE MEDIUM?** Acceptable storage mediums include cloned drives, data tape, and CD/DVD.

**41. COMPING:** When we're dealing with comping (creating composite performances from multiple takes), we live and die by our ability to seamlessly crossfade between audio segments that we are cutting between. Pro Tools offers a wide pallet of crossfade forms, and knowing how to choose the right crossfade for a given cut between two takes dictates the seamlessness of the transition. When I'm comping between multiple vocal takes, I'll use one kind of crossfade between vowels and a different kind between consonants. Other examples are: Use wider and longer crossfades when dealing with low frequency instruments such as bass and keyboard pads, versus short crossfades when dealing with percussive instruments such as drums and percussions.

## EASY STREET & HOW TO FIND IT



**JIMMY DOUGLASS**

(Timbaland, THE NEPTUNES, Mary J. Blige, MISSY ELLIOT, Justin Timberlake) gives you highly detailed directions, scribbled on the back of a napkin, to the avenues of ease.

**42. SIMPLE MICS, SIMPLE MIKING TECHNIQUES, MINIMAL EQ, AND COMPRESSION.** And if you must marry the effects you love on something, go back and record it on a separate track because where its ends up being mixed may not have the plug-in or gear you used to get it.

**43. GETTING THE BEST PIANO SOUND IN THE WORLD:** Start with two U87s and go through the Neve pre amps on the board. Put each mic through an 1176 and a Pultec EQP1A. Run back and forth to move the mics around the various holes in the piano to see what kind of sound's coming out of the top and bottom. I get the optimum sound near one of the holes. This is my roll n' roll sound that I really like. I use the 1176s and just do basic compression going in. For the EQ I use something I picked up from the British guys a while ago... on the top mic I add a little bottom, at around 60 to 100 cycles. On the bottom mic I cut the low end and add a little top end... about 7 to 10k. This gives me a psycho acoustic illusion because the low end is now bright and present whereas the high mic is now a little warmer and richer, not brittle, so it smoothes the high lo, left right thing. I play with the compression on both sides to see which one I need. And that's what I do if I have time to really play around with the piano and get an amazing sound. I would also set up two U47s in the room. Place them far away left and right room, and then super compress those as well. When possible put them on separate tracks, and blend them later to taste at the mix.

# GETTING IT ON

IT'S MARVIN GAYE TIME. THEY'RE LOOKING AT YOU. YOU'RE LOOKING AT THEM. SOMEONE'S GOING TO BREAK FIRST. SINCE IT'S YOUR JOB, WHY NOT MAKE THAT YOU, WISEGUY? YEAH, YEAH: START IT UP.

**44. DELAYING TACTICS FOR THE DIRECT APPROACH.**

Taking a direct and miked signal from the same source? Don't forget that the miked signal will be delayed a bit, because sound had to travel through the air to hit it. Remembering that one-foot delays sound by about 1 millisecond, nudge the direct sound a little bit late to compensate.

**45. REVERB DIFFUSION: GOOD FOR DRUMS.** Percussion sounds get along best with reverb if the diffusion setting is relatively high. Otherwise, you'll hear discrete echoes that can give the dreaded "marbles bouncing on a metal plate" sound.

**46. TIME SURE FLIES WHEN YOU INTERNALIZE.** If your synthesizer or digital keyboard part isn't sitting well in the mix, use the instruments' internal EQ or effects to help shape the sound to suit the other tracks.

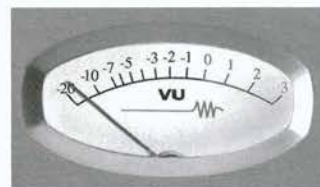
**47. HYPE THAT VOCAL PERFORMANCE.** When you feel a singer is really starting to hit a groove and that the next take might be *the* one, bump up the volume in the singer's headphones a tiny bit — like one dB. This will hype the sound just a tiny bit, and might bring out an even better performance.

**48. WARMING UP THE OLD STUFF.** Run any vintage keyboard or any sampled vintage keyboard through a tube amp such as a Fender Twin or through a tube preamp before going to tape. This will add warmth to digital samples and will make a real vintage keyboard part sound more musical.

## 49.

**THE RIGHT METER FOR THE RIGHT JOB.** If

your metering has a choice between average and peak settings, use peak when recording drums, percussion, acoustic guitar, or anything with strong transients. These instruments have a relatively low average signal level, but high peaks that can distort if you're not careful.





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Edition 34 | January 2005

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# 100 TIPS

**50. CHOOSE METER DYNAMIC RANGE APPROPRIATELY.** If your meters have adjustable dynamic range, use a really high dynamic range for tracks so you can see if there's any low-level noise or crud. Use a lesser dynamic range for your master bus so you can see what's going on in that all-important top 10-20dB of the dynamic range.

**51. THE CHEAPO HARDWARE CONTROLLER.** Haven't checked out the joys of using a hardware controller? Don't forget that a lot of gear in the typical studio can generate MIDI control signals suitable for realtime control over a sequencer, plug-in, and whatever else. For example, a synth usually offers more than just a mod wheel, like foot pedal control, one (or maybe more) assignable data slider, and so on. These will provide at least some degree of realtime control until you move up to a serious hardware controller.

**52. DOUBLE-CLICK TO DEFAULT.** Quite a few software programs have "knobs" that will return to their default positions if you double-click on them.

**53. DON'T DRIVE MORE THAN NECESSARY.** Enabling lots of drivers within a host program for multichannel sound cards wastes a lot of computer resources. If you're recording a stereo instrument and don't need more inputs, turn off the unused ones. Ditto for outputs.

## WHEN TO PUSH "EJECT" WITH DIGITAL TAPE.

If you still use digital tape like ADAT or DAT, always eject a tape at the beginning, the end, or in a space between songs. Should any tape damage occur while threading or unthreading, your song will be spared.

# 54



## JOEL HAMILTON IS NAILS

Working out of Studio G in Brooklyn, with everyone from Sparklehorse, Frank Black, and Ludacris to Swiss strongman Rollie Mossiman, Hugh Masakela and Lubricated Goat, Hamilton takes neither crap, nor prisoners. Forthwith his...



## MALCOLM IN THE MIDDLE

**MALCOLM BURN'S** work with DANIEL LANOIS, EMMYLOU HARRIS and now THE STRING CHEESE INCIDENT has marked him as the

go-to guy for SPARSE. Steph Jorgl corrals Burn for his Tip take on taking it easy.

**55. THINK SMALL.** The current trend is to record a lot of tracks and then when you go to mix, deciding what not to use in the mix. When I first started recording in the late 1980s, I was given the opportunity by a couple of people to work within a very limited format. It was a 1" 8-track Studor machine, with a rack of fine pre amps, a very nice Neve 12-channel broadcast board, and a grab bag of microphones. It really taught me the principle of simplicity.

**56. OLD DOG, OLD TRICKS.** I was recording this band called Crash Vegas in the late 1980s. We'd already filled up seven of the eight tracks and we still wanted to do a vocal and some background vocals. But we only had one track left to work with. I didn't know what to do. Then one of my mentors — who came from the 4-track world — said, "In the old days, we would bounce the bass and the tambourine track together." And I said, "Yeah, but what if you want less tambourine later?" And he said, "Well, that's easy. You just cut the top end out, because that's really not going to effect the bass. And the same goes for if you want more bass." It was this kind of pragmatic minimalist approach.

The experience sort of led me to believe further in this certain mentality that it is a good thing to commit yourself to something and stay with it, rather than come back to it a second or third time. That way, you come up with a real piece of work, rather than a bland kind of mix — which is unfortunately what I've heard a lot of in music. To be honest, I think that things have improved over the last few years, but there was a point in the mid-1990s where every rock record was mixed by like two people. And all of it sounded the same because they were all using the same EQs and the same compressors. That all didn't go down very well with my revolutionary nature.

Even with the band I'm recording now, The String Cheese Incident, their manager was like, "Why are you only using 24 tracks? We have 52 inputs..." And my answer was, "I'll tell you why —

# TOP 10 THINGS TO NEEDLESSLY COMPLICATE YOUR LIFE

**64. PUTTING 2 MILLION MICS ON ANY GIVEN SOURCE.** Nothing makes a simple rock recording really get unmanageable quicker than overprinting every single sound. Use your judgement. Will you really use the CB mic through the distressor and the LA2A on this roots rock band? Was that decision for the band or you?

**65. HAVING CRAPPY WIRING.** I am constantly amazed at what passes for wiring in a "studio." Wiring is easily the most boring thing to buy for the studio,

and yet it makes an ENORMOUS difference in the sound of your room. A good patchbay, well done with decent wire, will get all the sonic goodness you hoped for from your new snazzotron 2000 to the listener! You can always patch up 30 feet of cheap mic cables to the pre-fader insert point on your console if you miss the wheezy, squeezed grain of the old wiring you had....

**66. PRINT WAY TOO HOT TO TAPE.** For some reason, every engineer I know (including me) goes through

a renegade cowboy phase where doing things TO THE EXTREME becomes the norm. If you think that transient information is just for suckers, then by all means keep on rockin' the crap out of the JH24's output electronics. But when you chill a little and hear how punchy the snare gets, and how much oomph the kick drum has when it is not pasted to tape, you go "oh, wow." Tape is an amazing thing, and should be preserved at all cost for many reasons, but use it wisely.

**67. GET REALLY SCARED ABOUT EQ, COMPRESSION, OR REVERB.** Amazing how certain clients come in and you would swear their big brother used to beat them with an 1176 when they were kids. Maybe it was an EQ, or a Lexicon 480 bit them when they were young.... People have all sorts of hang-ups about certain techniques used to make them sound good. Used with good judgment, and good taste, under the right circumstances, these things actually HELP them, and you, get a good mix

happening. Try to be as diplomatic as possible, and show how good it can be. If you make someone look great, they always come back.

**68. USING ADVERTISING AS A GUIDE FOR USAGE.** I see so many people using the mic that is "FOR THE BASS" and it sucks. Listen to what something gives you when it is at the edge of acceptable parameters. That seems to be where "character" really lives. I swear that is what makes something a classic or not, how it reacts to being

because we're only going to 4 tracks for drums. If we have 6 vocals—we're going to comp them together and put them down to one track. And when we go to mix the record, it's gonna sound *done*. That's why." I'm still immersed in that same simplistic mentality that is far more concerned with creative decisions than technical nonsense.

**57. COMPRESS? OR NOT?** I'm a firm advocate of using good, clean analog pre amps and going straight to tape. And I don't use a lot of compression or EQs while recording.

**58. BEST = LEAST.** With SCI we're using the RADAR format. I'm still a huge fan of tape — that's the format I prefer. But the location we're recording at is a beautiful house in the middle of the hills. So it wasn't practical to drag a tape machine all the way up here. The RADAR functions very much like a tape machine. It has a 24-channel transport, you can arm tracks that you're recording. . . . You don't have to stop recording to punch someone in on another track. It doesn't distract me from what I consider the ultimately important thing in the song: the performance.

**59. LEAST = FEWEST.** One thing that I've got an opposition to these days — not just in music, but in the modern world — is this emphasis on having lots of options. My attitude is that I firmly believe I'd rather have one piece of equipment that does its job passionately than 10 things that it does *not* do very well. A computer is a multi-tasking format. And there's this whole corporate push to get people to multi-task. But this multi-tasking is not something I want to be involved in. I want to use *one* machine that does *one* thing and that is: record music *really well*.

A great guitar only does one thing: it's a great guitar. So why have a recording environment that's any different. I don't get it.

**60. FUTURE SHOCK.** I'm fairly worried about the way things are going now because, I mean, *everybody's* got Pro Tools. . . . *everybody's* got an Mbox. My concern is that the aesthetic is getting lost. I find that one of the places where a strong aesthetic still exists is with rap music. It's the one area that I find kind of exciting in that they've gone the other way. They don't try to fill every track that's available. Instead they'll do like five tracks, and a couple with vocals. I mean *that's* where the rock and roll still exists for me.



## MR. MACKAYE'S RULES OF ORDER

**IAN MACKAYE** (Rollins Band, FUGAZI, Minor Threat, THE NECROES), producer, player and founder of DC's seminal DISCHORD Records has been recording with DON ZIENTARA at INNER EAR STUDIOS for the better part of the last 25 years. Notoriously direct, MacKaye's advice on getting the sound that's informed everyone from BLINK 182 to GREEN DAY was not much different.

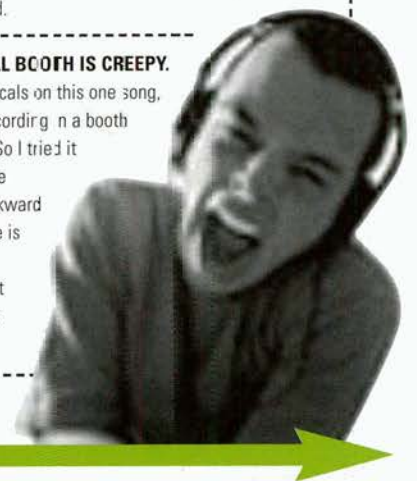
**61. DO NOT LAUGH AT YOUR BANDS.** When we were 17, we started recording with Don because he was the first guy to take us seriously. We were in one other studio before then and the guys at the board were laughing at us WHILE we recorded. Yeah, we weren't great, but we were serious. AND we were paying them.

**62. DO TRY ABSOLUTELY ANYTHING.** When we started recording with Don, all he had was a half-inch 4-track reel-to-reel and a homemade board. The control room was a boiler room. We only had the most basic separation schemes, and would run two snakes up the stairs into the backyard. HR from the BAD BRAINS did all the vocals in the backyard. You could hear neighborhood kids asking him "what are you doing mister?" The fidelity wasn't there but it was PUNK, and good songs and power were there and what mattered.

**63. RECORDING VOCALS IN A VOCAL BOOTH IS CREEPY.**

I was having a real hard time recording vocals on this one song, "the Argument." I started thinking that recording in a booth was not really working for me. So I tried it

just sitting at the board. It's awkward but singing I've is awkward sometimes and it worked. So that's what I do now.



## IN THE STUDIO & HOW TO DO THEM...EVERY SINGLE TIME.

abused or used for something the ad would have never led you to. There is a lot of useful information about your gear that lives just south of "acceptable usage."

**69. LET AN INEXPERIENCED BAND DICTATE YOUR PACE.** This will negate any of the hard-earned lessons you have learned about when and how to do things every time. Stay focused. Try not to let the guitarist standing over your shoulder psychically make you keep pushing the guitar faders up.

**70. TALK ABOUT A FOUR-MINUTE SONG FOR 30 MINUTES.** What a nasty trap to fall into. Forget about getting a great take by analyzing the snare part for 30 minutes solid. Why not hand out brochures about "what rock sounds like" as well? Doing another take of the song with a few little key points in mind takes four minutes (duh). It is easy to get caught up in a very academic discussion disguised as "important" to the session. In my experience, this leads to

boringly dutiful takes.

**71. OVERTHINK THE PROCESS OF RECORDING AT LARGE.** I talk to people all the time about this. People analyze every tiny little aspect of recording, and then play me some sterile, crappy, one-dimensional recording with no character and certainly no life. Have a plan, but don't be afraid of deviating as the situation calls. Let the music dictate your every move, rather than the neurotic pianist or the spastic guitarist or the drunk drummer.

**72. HAVE LOTS OF PRECONCEIVED IDEAS.** If you can't shake what you THOUGHT would work, it is hard to get to what ACTUALLY does work! Be prepared to do things you never thought would be good, because every sing e session is different. Start with your way of doing things, of course, but be ready to backtrack and re-evaluate your position. When you can't do this anymore, get a Zildjian jacket and a fanny pack with gaff tape on it and start blaming "kids these days."

**73. DON'T MAKE A DECISION.** Don't decide anything. Let every one of these "easy-to-go-along-with" things carry you into a world of hell, where the sounds are pretty lame, and the process is no fun for you or the client. Making decisions requires experience and know-how, two things that cannot be purchased at your local retailer. Try and be dutiful to the band or client but be true to your own goals as well. After all, they are paying you to make them sound good.

## ACTION ADVENTURE AUDIO

Movies without music are slideshow curiosities. Pretty pictures minus the sound and the fury. Which is why they invented **JEFF RONA** (Philip Glass, Hans Zimmer, Brian Eno). With fingers in everything from the design of new electronic instruments and music software to his film work (*Traffic*, *Black Hawk Down*, *The Thin Red Line*), Rona, with writer Steph Jorgl, covers the waterfront of making music for the movies.

**74. HOW TO MIX A FILM SCORE...** When you mix a film score, you want the orchestra on a set of tracks, the bass and the percussion on a set of tracks, your synths on a set of tracks, and your high percussion and your low percussion split up on anywhere from 8 to 32 tracks. When I deliver these stems, they should just be able to put their faders in a straight line and hear my mix exactly as I heard it. That way, if a helicopter is drowning out the percussion, they can bump it up. Or if a guitar or other solo instrument is making a line of dialogue hard to hear, they can pull it down a little bit. So I print in stems using an environment I set up in Logic.

**75 ...WELL:** When Hans Zimmer asked me to write some music for *Black Hawk Down*, I made just one limitation for myself for the project: no synths, no samplers, only Logic, no outboard mixers, and no outboard effects. I would write the music

entirely inside of Logic. It was the first time that I had done a virtual studio project. And it was probably the first big movie to have music done entirely without any physical instruments. The music never passed through an external wire. I just mixed it inside of Logic, generated a 24-bit music file, then put it on an iPod and took it over to the music editor's room and off it would go."

**76. WHAT TO USE TO DO WHAT NEEDS TO BE DONE:** For the movie *Traffic*, I wrote a ton of [Cycling '74] Max apps that ended up creating a lot of the textures and rhythms in the film score. I kind of built this DJ system inside of Max using Max and the virtual Virus software instrument. But with a lot of projects, I'll sketch something out in Reason. I can be on my laptop at my dining room table, building some rhythms and bass lines. Then I'll solo each track, bounce it out and import the whole lot into Logic. Then I'll start chopping, flipping, flanging, and stuttering, and then start organizing it. After that, I'll put it up to picture and look at ways to have elements move in and out, or to stop, start, or shift around. Sometimes I'll pitch shift something. You can come up with your own ways of taking one whole system of working — like in Reason — and going in a direction that it couldn't go once it's in there in Logic.

**77. USING SOUNDTRACK AS A SAMPLER:** I've been using Soundtrack a lot. It's so quick, dirty, easy, simple, stupid, great. I'll know the tempo and key that I want and I have one Mac lightpiped to the next, so I'll just put together combo platters. I'll mix a tabla with a guitar and together they'll create this cool thing. And I'll build a little sampler of ideas — two- or four-bar ideas. Then they all port over to Logic and get chopped up into bits. I use it like a live sample library, like a sample library that doesn't exist until I click on a button. I find it very useful.

# GETTING IT DONE

**THIS IS THE LIGHT AT THE END OF THE TUNNEL PLACE. THIS IS THE MAGICAL SPACE WHERE EVERYTHING IS SUPPOSED TO BE FIXED. THIS IS "IN THE MIX."**

**78. THE FREE WINDOWS SPECTRUM ANALYZER.** To analyze how a song's energy is distributed over the audio spectrum, open Windows Media Player and go *View > Visualizations > Bars and Waves* for three spectrum analysis screen options. There's also an oscilloscope view. (Note that to see visualizations, you need to check "Digital Audio" under Playback Settings at *Tools > Options > CD Audio*.) None of this is calibrated; still, it's useful to see how your music compares to commercially available CDs. And if the bars stay at the top a lot, you know there's a ton of compression being used.

**80. SENDS: DON'T JUST SET AND FORGET.** A person commented after hearing a mixes that used a lot of delay on voice, that the delay never seemed to "step on" the vocals or muddy things up. This is because we like to vary the send control in real time to pick up just the end of phrases, so that when the phrase stops, the echoes continue — but just before the vocals return, the send goes back down. This is an ideal application for a control surface, but the patient among you can draw in curves for the send level.

## FIXING DOUBLED VOCALS.

# 79

With doubled vocals, sometimes the overdubbed vocal will "fight" the original vocal on an occasional word or two. Rather than recut the doubled vocal, copy the same section from the *original* (non-doubled) vocal. Paste it into the doubled track, but delay it by about 20-30 ms. Short segments (a few words) will sound fine; longer segments will sound echoed. This may work, but won't sound as much like two individual parts being played.



**81. SPEAKER SWITCHING.** Set up two or more monitor systems so you can easily switch among them during mixdown. That way, you don't have to wait until you *think* you've finished a mix and burned it to a test CD, only to realize it doesn't translate to other systems.

**82. MONO GOOD.** When you start mixing, pan everything to center, and sort out the levels and EQ. Then deal with the stereo placement. You'll find that if the mix works in mono, then it will work even better in stereo. Also check the overall mix in mono to make sure there aren't any phase cancellations going on.

**83. DOUBLE YOUR (METERING) PLEASURE.** Want to monitor peak and average levels at the same time on your master bus? If your metering doesn't allow this option, there's a simple workaround, assuming your host has assignable buses. Assign all the tracks to be mixed down to a bus, set its level to 0, and adjust its metering to average (RMS) response. Now assign that bus to your master bus, and adjust its metering to peak. Arrange your window so the two sets of meters are close together, and you'll be able to see what's happening in peak-land and average-land at the same time.

**84. PARALLEL EFFECTS WITH DAWS.** Even if you don't have an effects matrix like BIAS Vbox, don't worry. Make two copies of the track you want to process, then add one line of effects to one of the copied tracks. If the effects have wet/dry

mix controls, set *all* of them to wet (processed sound) only. Next, add a parallel line of effects to the *other* copied track, again with all effects set to wet only. The original track serves as the dry signal; use the DAW's mixer to set the correct mix of the three tracks.

**85. PRESET MANAGEMENT FOR EFFECTS.** Preset files take up virtually no space at all — typically a couple kilobytes, if that. Because there's no penalty in saving lots of them, any custom preset I use in a song gets saved under the name of the song. I find it's easier to remember a sound that's associated with a song rather than just giving it a name like "BrightTalePreset" or whatever.

**86. WHY TWO MEASURE LOOPS ARE BETTER THAN ONE MEASURE LOOPS.** When you create loops, avoid one-measure loops and do at least two-measure loops. Make the second measure a variation on the first measure. That way, if you want a loop to keep repeating and sound the same, just split the loop in half, and copy the first measure repeatedly. When you want the variation to come in, use the full loop so it plays through the second measure.

**87. LATENCY AS A TOOL.** When it comes time to mix, increase the latency on your computer a bit, say from 5 to 10ms. This will let you use more plug-ins during the mixing process.

## GETTING OUT

END GAME. THIS IS WHERE YOU WAVE YOUR PROJECT GOODBYE IN THE FULL BLOOM OF KNOWING THAT WHEN YOU SEE IT AGAIN IT'LL BE ALL GROWN UP.

**88. WHY MASTERING LOVES PRESETS.** When mastering with a digital audio editor, if possible, save the setup you use (plug-ins, levels, etc.) as a preset. Then if the client wants to make some changes, you can make a few tweaks rather than having to start over from scratch.

## 89. ALWAYS THINK 24 BITS.

Save your final mastered versions in 24-bit resolution, even if the target playback medium is a standard 16-bit CD.

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# 90.

**MAKE A MOCK UP.** A mock-up CD-R of the correct sequence of the finished product will save us time and you money.

## MAKE YOUR MASTERING GUY HAPPY GUIDE

**92. COMPRESSION? NOOO.** People will want to know if they should give us a mix with or without compression. And mixers are under pressure to make the mix sound competitive with a mastered version of something and so they compress. Don't. When we say "compression" we mean bus compression over the whole mix that when once done can never be undone. Give us one without. And one with if you can't help yourself.

**93. LEAVE MIXES UNFADED.** And if needs be, include an example of a fade you do like because if the mixes have the ends faded out when we bring up the volume, the fade is shot and we have to refade.

**95. DON'T SEND IN YOUR MIXES IF YOU KNOW THEY HAVE PROBLEMS.** Avoid the "fix it in the mastering" phase.

**96. LESS IS MORE.** You want more detail out of your mix? Try not having four layers of guitars there.

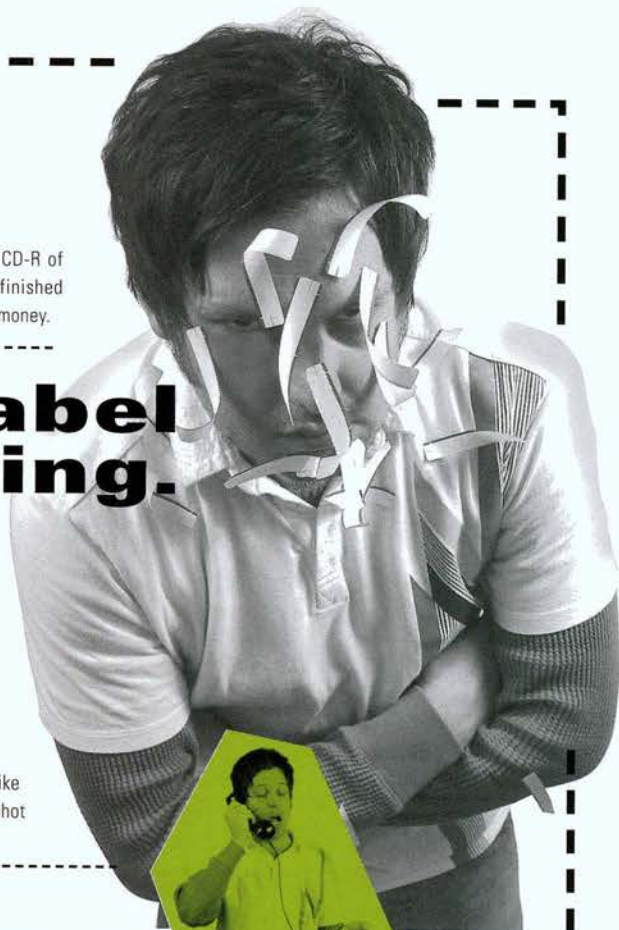
**97. CHOOSE FORMATS. CAREFULLY.** GOD SPEED YOU BLACK EMPEROR mixed to half-inch after they had recorded to analog 24-track. But it had major problems with tape hiss. It was louder than the music. They should have mixed down to digital format or recorded it digitally. We had to use various forms of EQ to get rid of the hiss. If you want that tape saturation sound, well, we have tape machines in the studio and we can do that.

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A minimum of two weeks.

# Label everything.

# 91



# 94

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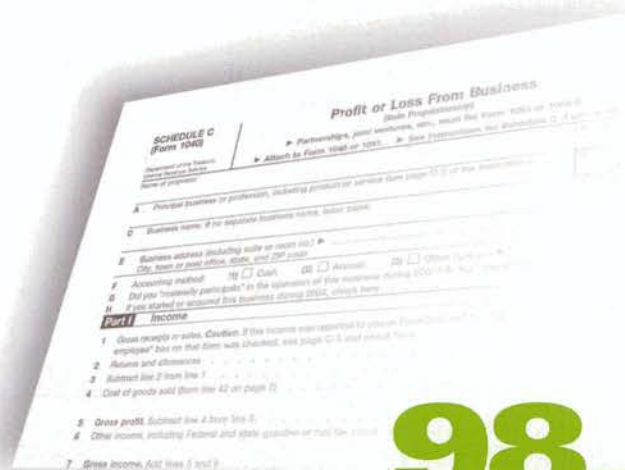
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## Norwest

EXPERTISE - EXPERIENCE - EQUIPMENT

# 100 TIPS



# 98.

**MAXIMIZE YOUR TAX DEDUCTIONS.** If you're running your home studio as a business, file a Schedule C, and have clients come in from time to time, be on the lookout for additional deductions. For example, if your studio has a bathroom and you have to replace the hot water heater in your house, then the percentage you claim for the studio can also apply to the hot water heater. Same with a lawnmowing service if you're trying to keep your house (and studio) looking nice. *Caution: Consult with a qualified accountant or attorney before taking any deductions to ensure that they apply to your situation.*

# 99.

**DISCLAIMERS ARE A GOOD THING.** If you're like many studios, you archive the work of your clients as well as provide them with backups. But make sure you give them a form letter stating that this is done as a convenience, that you don't guarantee your archives will always be accessible, and that it is ultimately the client's responsibility to ensure that all backups are functional and to create additional safety backups.

## "THE KEY TO HOME RECORDING IS MARIJUANA?,"



LES CLAYPOOL states unequivocally, then waffles a bit. "Actually, experimentation is the real key. Of course, you can and will make mistakes, but you learn from 'em. Just go for it!"

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# Myths Revealed

## Warming Trends

### Tube Warmth: Cure? Or Crock?

by Lynn Fuston

When I did blind listening tests for my comparison CDs in 2000, one of the objectives was to pick out which preamps were tube and which were solid-state. Easy, right? We were shocked to find that even with a room jammed to the rafters with experienced engineers, none of us could reliably pick out the tube preamps — a task we all thought would be relatively simple because of the “warm sound” of tubes. It was a real ear-opener.

Since then I’ve pursued the tube versus solid-state argument, seeking to use my ears as the only criteria, instead of looking for the little glowing bottles to assure my conscious mind of a unit’s “tube-iness.” I inquired of tube experts whether my experience was singular or universal. I asked them to comment on some common statements concerning tubes. This marks Part I of the answers they gave. Watch for Part II in a future issue.

Several of the designers simplified their replies in order to conform to our space limitations and broad audience. For expanded info on this topic, go to 3dB: [www.3daudioinc.com/cgi-bin/ultimatebb.cgi](http://www.3daudioinc.com/cgi-bin/ultimatebb.cgi).

**MYTH #1: Everyone knows that tubes are “warmer” sounding. This is important because digital recording is so sterile and we need tube warmth to balance out that sterility and harshness.**

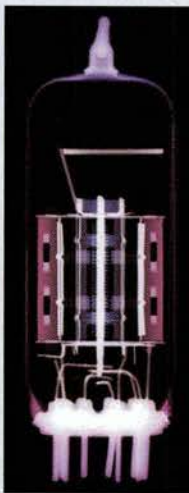
**Oliver Archut:** The warmer tube sound is quite a marketing tale; when pentodes and beam-power tetrodes were first introduced during the 1930s, the hardcore triode users at the time (and still today) brought up the same warmer tone argument. Yes, there are tube designs that do sound horribly sterile and just putting a tube into the signal path won’t change the tone response too much.

But what some people refer to as a “warmer” sound is a sum of components and design philosophy. Some classic audio designs require a certain tube or tube maker and cannot be replaced without the sound being compromised.

**Hutch Hutchison:** There are a ton of misconceptions about tubes including the belief that they sound “warm.” Tube circuits have about as many sounds as there are circuits. It is more about the topologies used and aims of the designer as to how a circuit will sound. In fact, it is usually the transformers that are typically used in tube-based products that create the illusion of “warmth.” There is a lot of vintage solid-state gear that used transformers and is commonly described as “warm.” A typical transformer adds some odd-order distortion at the lowest frequencies and tends to restrict the ultrasonic frequencies, which we subtly perceive because of the phase shift. Part of this effect also seems to smooth transients. Tubes probably tend to offset some of that effect, because a little THD tends to exaggerate transients.

Perhaps the only aspect that is generally true is that tubes rarely sound sterile. Digital converters, and specifically their filters, have completely different problems sound-wise, but it might be over-generous and a holdover from the days when we were told that “digital is perfect” to just use the word “sterile.” It’s a bit more complex than that.

**Aspen Pittman:** There is a common myth that tubes are “warmer” sounding. It certainly can be said that cranking up



a tube amp will make an electric guitar sound “warm, fat, or distorted.” That scenario, however, is one in which distortion is desirable. On the other hand, distortion is the enemy of the engineer who is attempting to record a sound source faithfully and realistically. Here you want accuracy and transparency rather than any coloration that might be described subjectively with a word like “warm.” Fortunately there are many types of tubes and related circuitry that result in a comparatively transparent sound.

As far as tubes “warming up” digital recordings, there seems to be a lingering implication that there’s something inherently deficient in digital recording. While some purists will always make a case for analog over digital, the fact remains that the vast number of pro recordings today are made with digital recorders. Rather than saying that tubes “warm up” digital, it would be more accurate to say that tube mics deliver a truer, more pleasing sound when auditioned against the comparative dynamic improprieties of a solid-state mic.

**Doug Fearn:** Let’s face it: no recording has ever sounded exactly like the live event. No audio professional is likely to be fooled into thinking any recording, no matter how good, is equivalent to listening to a live performance. But that’s okay, because what we do is provide an alternative experience that isn’t precisely the same, but is potentially equivalent in emotional content. ►

In the analog age, equipment evolved that was less precise than digital, but provided a reasonable musical experience. All the old technologies (vinyl disc, analog tape, vacuum tube amplification) emphasized the second harmonic as the primary distortion component. Our notion of a favorable recorded sound was based on that experience. Digital eliminates that, leaving us with a more accurate representation that’s often lacking in the “musicality” that the second-harmonic provided. The second harmonic, to some extent, compensated for the fact that the recording never sounds as good as the live sound.

#### THE FACTS:

1. Using tubes in a circuit does not necessarily result in a “warmer” sound.
2. What many listeners describe as a “warm” sound often results more from transformers than tubes.
3. Older technologies “trained” us to hear second-harmonic distortion as more “musical.”

**MYTH #2: Tube designs are generally slower and mush out the transients and that makes them seem warmer, like tape. Solid-state amps are faster, which makes them less warm.**

**Oliver Archut:** The speed of an electron tube depends on the plate voltage. If designed correctly, a tube is as fast — or faster — than a transistor-based circuit. The slowest part in a tube design is generally the transformer or a combination of coupling capacitor and transformer.

**Doug Fearn:** Vacuum tube amplifiers usually have far fewer active devices than their solid-state equivalents. In reality, tubes are “faster.” However, poor design and lousy components (especially poor transformers) can cause that loss of transient detail.

To many of us, tube sound is “right” and solid-state is harsh.

#### Myth-busters and Truth-seekers

Our cast of experts for this installment of “Myths Revealed” includes:

Oliver Archut  
AMI/Tab-Funkenwerk  
[www.tab-funkenwerk.com](http://www.tab-funkenwerk.com)

Doug Fearn  
D.W. Fearn  
[www.dwfearn.com](http://www.dwfearn.com)

Hutch Hutchison  
Designer, Manley Labs  
[www.manleylabs.com](http://www.manleylabs.com)

Mitch Margolis  
Designer, Groove Tubes  
[www.groovetubes.com](http://www.groovetubes.com)

Aspen Pittman  
President, Groove Tubes  
[www.groovetubes.com](http://www.groovetubes.com)

It's not that tubes fail to reproduce transients, but that solid-state clipping, especially in mic preamps, adds a burst of odd-order harmonic content to the transients, making them "harder" sounding. This could be desirable in some situations, but with long-term listening, many people find tubes less fatiguing.

**Hutch Hutchison:** Tubes are quick enough for radio frequency applications and are commonly used in broadcast transmitters today. Once again, in pro audio it's usually the transformers that limit the frequency response and are to blame (or credit). It's the transformer that tends to sound vaguely like tape — and should — because both rely on magnetism and have hysteresis effects. With solid-state one of the common flaws is the use of Class AB output stages, which can cause a form of distortion that might be described as cold or harsh. Better solid-state gear suffers less from that.

**Mitch Margolis:** There's no doubt that many circuit designs employing vacuum tubes, past and present, are indeed slower than current solid-state amps. By "slower" it is meant that the circuitry's slew-rate and ultimate bandwidth are lower than that found in amplifier systems of strictly modern, conventional cost-sensitive design.

It should be pointed out, however, that the tubes themselves are capable of furnishing enormously high-speed response while maintaining inherently high-linearity and can do so with very little feedback compared to conventional solid-state amp designs. Bringing these desirable characteristics to the end-user depends largely on the circuit designer's skills, and the budget limitations on the particular system being built. Circuit topologies, layout, and component choices have a very strong influence on the ultimate "speed" of the finished system.

For example, it's an expensive undertaking to have input and output transformers fabricated whose bandwidth can keep up with a decently performing tube audio amplifier. It's these pivotal components that tend to dominate the measured and perceived speed of an otherwise well designed tube amplifier stage. In other words, if the tube can easily handle 30MHz but it is connected to a line-matching transformer capable of 100kHz maximum, the transformer will win the high-frequency response argument.

But there are examples of "warm" sounding high-bandwidth tube production gear on the market, so bandwidth by itself is not the sole characteristic responsible for a given amplifier's relative warmth or lack of warmth. In addition, the relative "slowness" of some of the tube gear helps in lowering the amount of high-frequency signal energy hitting the anti-aliasing filters in the A-D input chain. This can be very helpful in keeping record-channel sibilance under control.

#### THE FACTS:

1. A correctly designed tube can be "faster" than a solid-state component.
2. Well-designed tube circuits have fewer "active" components than solid-state designs.
3. Poor transformers can result in loss of transient detail.
4. The sound of a tube circuit depends on the skill of the designer and the components used.

#### CLOSING THOUGHT

**Doug Fearn:** Although the notion of even- versus odd-harmonics has been well researched over the years (see Russell Hamm's article, "Tubes versus Transistors: Is there an audible difference?" in the *Journal of the Audio Engineering Society*, May 1973), might there be other factors that explain why tubes sound different? For one thing, tube circuits have far fewer active devices than their solid-state equivalent. Do all these silicon junctions each add some as-yet undefined character to the sound? Most engineers have discovered that the simpler the audio path, the better the sound in many circumstances. Tubes provide a very simple audio path.

I often wonder if there are other factors that haven't been fully described that contribute to the difference. Some of my experience as a designer has revealed things that sound different, although measurements show no difference.

It's interesting to speculate what we would have now if tube research hadn't stopped by the 1970s.

EQ

#### Audio Urban Legends

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# The Art of Recording:

## Can you, EQ?

EQ can be your mix's best friend, or it can be an enemy to be feared. Learn to love the difference.

by John Kragh

### Fix it in the mix.

**It's an overused phrase that can mean many, many things, depending on what horrible mistake you're trying to correct. But the hard, cold truth is there's a limit to what can and cannot be fixed.**

#### Lame lyrics?

**Sorry, no amount of compression, distortion, or reverb will fix those. But when it comes to dealing with a muddy or lackluster mix, there are a variety of tools at our disposal. And first on the list is EQ. Equalization can be a powerful ally in your quest for a clean, well-balanced mix.**

#### EQ TYPES

You'll encounter several kinds of EQs in both hardware or software environments so it's important to understand the various EQ types and which is best suited to address whatever miserable mistake you're trying to fix, mix-wise.

**Shelving.** Applies equal gain change for all frequencies above/below a certain frequency. These can be useful for general shaping — adding brightness or beef to a sound.

**Lowpass/highpass.** With lowpass EQ, frequencies above a certain point, commonly referred to as the cutoff frequency, are attenuated while

frequencies below the cutoff pass through unimpeded, hence the name "lowpass." Likewise, highpass EQ attenuates frequencies below the cutoff, allowing frequencies above it to pass through untouched.

The rate at which frequencies are attenuated is called the *slope*, and is represented as a ratio (e.g., 12dB/octave).

**Peak.** The peak EQ boosts frequencies at, and around, the center frequency. This type of EQ allows you to accentuate or emphasize a limited slice of the frequency spectrum without dramatically affecting the general tonal quality. Often, you can control how wide or narrow the "slice" is (called

bandwidth), for broader or more focused changes. (See Figure 1.)

**Notch.** Similarly, notch EQ is used to "notch out" or cut a narrow band of frequencies. Use this to reduce computer noise, ground hum, and so on. It can also help get rid of ringing drum tones, or take the "point" off electric guitars, snares, and other piercing mid-frequency sources.

In most DAWs, peak and notch EQs are often combined as one type, giving you the choice of cutting or boosting from one EQ.

**Parametric.** Parametrics are so called because they offer parameters for adjusting the EQ's frequency, bandwidth, and gain. Most DAWs combine several EQ types into one "multi-band" parametric EQ (e.g., 4-band, 5-band, and so forth), where you can choose the type (lowpass, peak/notch, high-shelf) for each band.

#### Fixing Common Mix Problems

The combination of tracks and the way they interact can cause frequency ranges to build up, resulting in a dull or uneven mix (e.g., too boomy). Additionally, some tracks may "jump out" at certain frequencies.

A well-balanced mix where no single instrument or frequency range consumes too much sonic space may require a fair amount of nipping and tucking. Often, individual tracks need to be massaged to blend better with others, which requires close scrutiny to hear problem areas. To zero-in on these offending frequencies, it helps to use a peak EQ with considerable gain (10dB or more) and sweep this across the frequency spectrum. You won't use this EQ in the final mix, but as you sweep the center frequency, you'll be able to hear which frequencies help define the track's tone, and which ones are problematic.

Experiment with this to find the "center" of various instruments — it's an exercise that will pay off big when you run up against mixes that are:

**Muddy.** *Possible cause:* Build-up of low and low-mid information as a result of the proximity effect from cardioid mics, too many tracks with extended low-frequency material, or poor room acoustics.

*Solution:* Highpass EQ on any track that

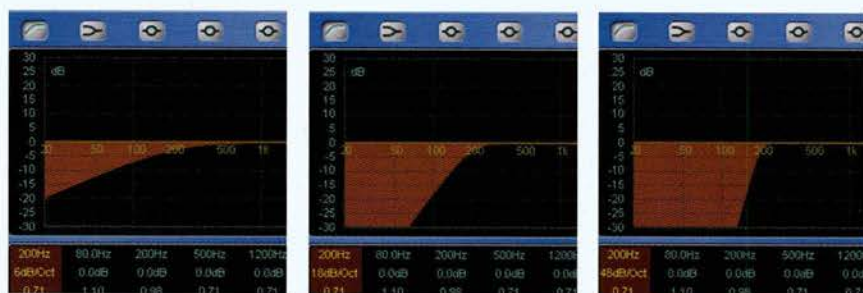
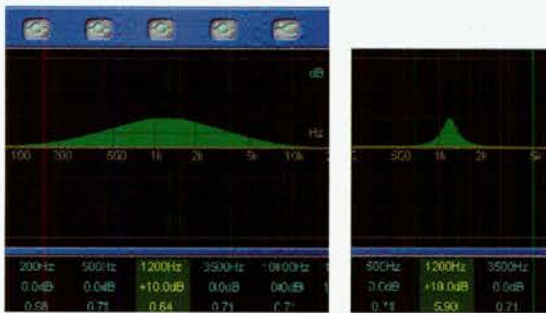


Fig. 1. A highpass EQ with a center frequency of 200Hz, shown with three different slopes.



Peak filter at 1,200Hz with wide and narrow bandwidths (left and right, respectively).

isn't supposed to sit in the low frequency range (percussion, vocals, guitars strings) to make room for bass guitar and kick drum. Start somewhere between 100–200Hz, with a semi-steep slope. You can sometimes get away with a higher center frequency, provided you use a more gentle slope, which will make the EQ less obvious, but still clear out space in the low end.

**Possible cause:** Similar-sounding instruments competing for space in the midrange.

**Solution:** Separate similar tracks by using peak EQs to emphasize different frequencies, while cutting others, so that sounds complement and fill in around each other. Or double-tracked guitars, for example, try boosting one at around 1.5kHz, cutting at 600Hz, and rolling off some of the highs starting at 3kHz. Conversely, reduce the other track by 2–3dB around 1–1.5kHz, and use a high-shelving EQ starting at around 3–4kHz to bring out more of its highs. This will allow both tracks more space, and create a better blend.

**Dull. Possible cause:** Midrange-heavy tracks masking and crowding high-frequency material (strummed, driving acoustic guitars, tambourines and shakers, vocals).

**Solution:** Apply lowpass starting around 5–6kHz on tracks that don't need to "sparkle," making space for high-frequency tracks to shine. Additionally, if mid-frequency tracks are still getting in the way, you can try cutting around 1–2kHz. You can also use shelving EQ (+1–2dB of gain) to brighten similar tracks, such as grouped background vocals and guitars.

**Shrill. Possible cause:** High frequencies being accentuated by one or more tracks.

**Solution:** Apply lowpass with a gentle slope to strident, overly bright tracks. If this isn't enough, try making a slight dip in the 4–5kHz range.

**Piercing Possible cause:** Ringing drum tones; resonant frequencies from room acoustics picked up by the microphone, or from the instruments and vocalists themselves.

**Solution:** Notch EQ with narrow bandwidth to reduce or completely cut unwanted frequencies.

### ZOOMING OUT

During mixdown, EQ shouldn't be limited to track-specific changes — feel free to make more "global" tonal changes, too. I often use EQ sparingly to treat the overall mix. I may use a *little* high-shelving starting at around 7–8kHz to add "air," or cut out some of the low-mids with a gentle dip around 400Hz, which also helps to de-mud.

However, if you make radical EQ changes to an entire mix, it's likely there's something wrong on a micro level. Go back and solo each track, paying close attention to whether anything is adding too much bass or high frequency material, then adjust accordingly.

With practice, you'll reach the point of quickly recognizing EQ-related problems, and how to fix them. Just remember to use your ears, not your eyes, and whenever possible, reference on several systems. This will help uncover any trouble spots, and ensure that your mix translates well to other playback systems. Your listeners will thank you for it.



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# The Art of Recording:

## EQ's Top 10 Guitar Recording Mistakes

Making them once is one thing. Making them again (and again and again) is just plain wrong.

by Craig Anderton

**Whoa! That was some bad note. So naturally, you re-record the part. But are you paying attention to the *other* mistakes — the ones that involve the recording process itself? The following mistakes can tear your tone in two, so a word to the wise: Avoid them.**

### 1. Forgetting to check for mono compatibility.

You love your cherished, vintage AxeBlaster Flanger with its super wide stereo spread. Ah, but the way they get that stereo spread is by flipping the phase 180° on one of the output channels. This may sound great live, but when the signal gets re-combined in mono, portions of it (maybe even all of it) will disappear. Ouch. This can also happen with stereo mics on a single sound source, so always check what a track sounds like in mono before you sign off.

### 2. Stringing along with dead strings.

Yes, change your strings before that important recording session and no, adding compression to increase sustain is not a suitable substitute. With new strings, your axe will sound brighter, notes will sustain longer, and tuning will be more consistent. Don't just boil them — go ahead and splurge, spend the \$2-\$4, and re-string.

### 3. Using "automatic double tracking" instead of playing the part twice.

It's that popular preset in your multieffects: Automatic Double Tracking, where the processor copies your signal, delays it a bit, detunes the copy to "humanize" it, then recombines it with the straight signal. Although ADT is a valid effect in its own right if you want a sort of more focused version of chorusing, nothing substitutes for doubling a part by actually playing it twice. Furthermore, when you record each part on a different channel, you can spread the stereo image — one track more right,

the other more left — for a bigger, more enveloping sound.

### 4. Mixing direct and miked signals without compensating for delay.

Here's the deal: Sound travels at about one foot per millisecond, while electrons move at 186,000 miles per second. So the miked signal arrives at your mixer at the speed of sound, while the direct signal arrives at the

acoustic guitars, and have a favorite dynamic mic for amps. And you've used them forever. But maybe you need to experiment. For example, one of the things that surprised me was just how great a Royer ribbon mic can sound on a guitar amp. And I once got an ultra-fat sound on an acoustic with a dynamic mic. Why be normal? Just don't do anything dumb, like placing a super-sensitive condenser in front of an amp blasting at the levels of a Saturn 5 booster rocket.

### 6. Not orienting an electric guitar for minimum noise.

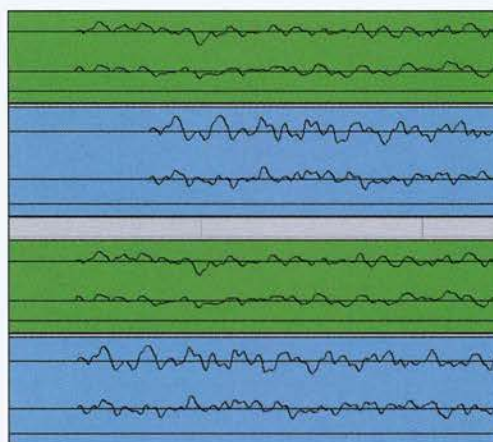
"Pickups" are appropriately named, because they pick up a lot more than strings — like buzzes, electrical hash, dimmer noise, and the like. The good news is that the pickup is directional, and changing the guitar's position can make it less prone to picking up garbage. Don't use your ears; look at the meters, because the levels will be really low. If the noise is hitting at -45dB, it may not be that obvious, but it will be if you start adding effects like compression. Try moving the guitar position, and you may be able to get that noise down to -55 or even -60 dB.

### 7. Turning up your amp too high.

We all know that you need to turn an amp up to a certain point to get a good "tone." But don't go past that point widely known as 11. Why? Aside from the possibility of overloading your mic, things in the room will have more of a tendency to rattle, and poor room acoustics may be over-emphasized. As Johnny Cochran once said, "Once you get your tone, leave it alone."

speed of light. If the mic is one foot away from your speaker, zoom in on the tracks and shift the miked signal ahead in time by about a millisecond until they line up (Fig. 1). You'll hear a much fuller, punchier tone. This is particularly important with bass.

**5. Falling into a "mic rut."** You found a condenser mic that sounds great on



**Fig. 1: The green track is the direct signal, and the blue, the miked signal. The upper view shows their original time relationship. The lower view shows the same tracks after being time-aligned in Cubase SX.**



**Fig. 2: If you're using software that includes a guitar tuner, take advantage of it. This shows the tuner from Native Instruments' Guitar Rig, which is one of the components in the Guitar Rig "virtual rack."**

**8. Forgetting to bring a spare set of tubes.** Tubes fail, tubes go soft, and they sometimes do it at inopportune moments . . . 'nuff said. And remember, if one tube of a matched set fails, you need to replace them both. It's a good idea not to trust the tubes you buy, but to try them out immediately in your amp to make sure they actually work. Once you're satisfied they're okay, pull them out and save them for when they're needed.

**9. Not paying attention to tuning.** This doesn't just mean tuning up before the session; we all know that's a good idea. But have you adjusted bridge intonation lately? Just changing strings can be enough to throw the intonation out of whack. You may not notice that there's any problem until you start recording, and everyone's listening to your guitar under the audio equivalent of a microscope. In my experience, few things can destroy a session faster than having to adjust intonation on a guitar with dead strings (mistake #2), because it will be next to impossible to get it in tune. Tempers will fray, harsh words may be exchanged. And while you're at it, leave a tuner in-line at all times, or use the tuner in a piece of software (e.g., Native Instruments' Guitar Rig and Cakewalk Sonar both have built-in guitar tuners). It's better to take 30 seconds to check tuning before recording a part than having to re-record the part because the tuning was off.

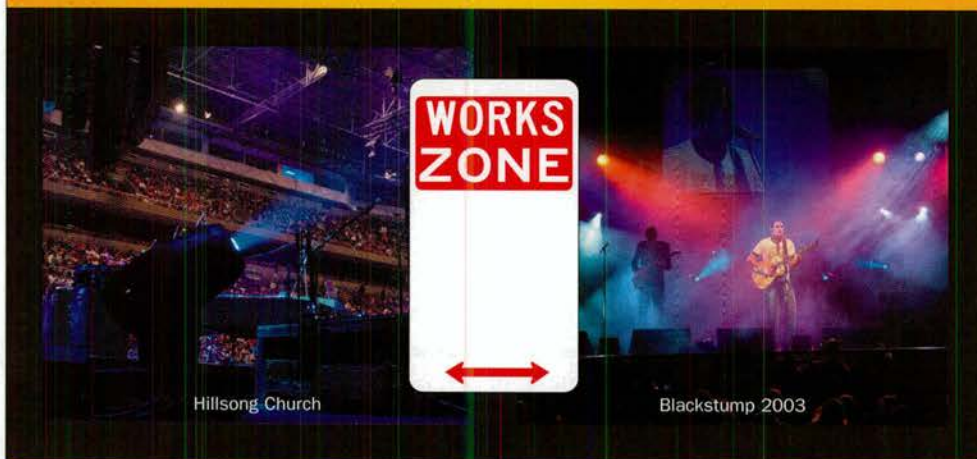
**10. Using a stompbox with an AC adapter. Or for that matter, with batteries.** If you record with a stompbox that can use batteries or AC, try both and see which sounds better. With some old stompboxes, the AC adapter might add some noise or buzz that batteries will eliminate. Conversely, if the batteries aren't super-fresh, the lower voltage may degrade tone. Moral of the story: When you show up at the session, bring both the AC adapter and a fresh set of batteries.

Also, note that rechargeable batteries sometimes peak out at a slightly lower voltage than alkaline types. Normally this shouldn't make any significant difference, but if you use rechargeables (which is indeed a good idea), make sure that the sound is equivalent to what you get with standard alkaline batteries.

Of course, there are plenty of other mistakes that guitar players make in the studio, from snorting cocaine to bringing in annoying people who aren't a part of the band. But if you're working with an engineer, one of the biggest mistakes is not letting the session evolve according to the engineer's working style. Your job is to play a great part; the engineer's is to

record. Don't worry too much about any fine points that should be reserved for the mix (not "fix it in the mix," but "perfect it in the mix"). Give the engineer a lot of space, and don't try to do two jobs at once. If you're really concerned that the recording isn't right, then record a dry part so you can re-amp later if necessary. **EQ**

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by Craig Anderton

# Mackie Onyx 1640

Split personality, or master of disguise?

**Type:** Analog mixer with optional digital FireWire interface  
**Platforms:** Windows XP, Mac OS X.3.5 for digital I/O  
**List price:** A\$3,295 (optional FireWire card A\$895)  
**Contact:** [www.mackie.com](http://www.mackie.com)

**Inputs (all 1/4" phone jacks except as noted; all references to stereo use two mono jacks, one left and one right):** 16 XLR mic ins with phantom power, paralleled by two instrument jacks and 14 balanced line ins; 16 TRS inserts, XLR talkback mic for internal/external talkback system; four stereo aux returns; two RCA tape inputs

**Preamp:** 60dB gain

**Low cut filter:** -18dB/octave rolloff starting at 75Hz

**EQ:** Four bands for all 16 input channels, all with  $\pm 15$ dB boost/cut controls. Low shelf (80Hz), sweepable low mid (100Hz - 2kHz), sweepable high mid (400Hz - 8kHz), high shelf (12kHz)

**Aux buses:** Six mono buses

**Other channel strip controls:**

Phantom power switch, solo button, mute button, panpot, 60mm fader, four signal level indicators, three assignment buttons (submix 1-2, submix 3-4, or main mix)

**Outputs (all 1/4" phone jacks except as noted; all references to stereo use two mono jacks, one left and one right):** XLR main outs (with mic/+4dB output switch and main insert jacks), stereo outs, mono out (with level trim), six mono aux outs, two stereo sub outs, stereo control room outs, RCA tape outs

**Digital connectivity:** Optional FireWire board for mixer

**FireWire board resolution:** 24 bits, 44.1/48/88.2/96kHz

**Supported hosts:** Windows XP (ASIO/WDM) or Mac OS X.3.5 Core Audio hosts

**Bundled software:** Drivers for Windows XP, cross-platform Tracktion DAW software

**Tested with:** Apple dual G5 Mac

The Onyx 1640 is an analog mixer that fulfills traditional mixer functions, whether for studio or live use. No! Wait! It's not really a mixer, but an audio interface for your computer with a whole lot of inputs, EQ, sends, and mic pres. Okay, it's both . . . or is it?

The traditional mixer is at a crossroads. With all the talk about a mixerless studio, it seems that mixers are an endangered species. But for live use, trying doing *anything* without a mixer — and that goes for recording, where if you're, say, miking a drum kit, you need multiple ins and preamps you can send to different channels. And for those who like to record "live in the studio," a mixer is not an option, but a necessity.

In a parallel development, audio interfaces are getting more complex. Initially just seen as card to get a few channels of audio in and out of a computer, today's multichannel audio interfaces often communicate with your computer via USB or FireWire. They've been sprouting lots of I/O, displays, and even controls.

## ENTER THE ONYX

The Onyx lives in the mixer *and* interface worlds, thanks to an optional FireWire card that installs in the mixer and talks to your PC or Mac. With the Mac, you don't need drivers; with the PC, use the drivers supplied on CD-ROM (as compensation, you can run more than one FireWire-equipped Onyx with PCs; Mac users will have to wait for OS X.4). There's no discernible latency, as the drivers go down to 64 samples.

When using the 1640 as a computer front end, FireWire carries direct outs from the 16 channels as well as pre-master fader left/right outs. Mackie thoughtfully provides a hardware gain trim control for the master out, making it independent of your house mix fader. There's also a stereo return to the mixer for monitoring the computer out. Remember that this can be happening while you're mixing in the DAW with minimal latency, which is impressive.

However, you can't route DAW track outputs into the Onyx. As someone who doesn't like mixing with a mouse, I want to be able to

feed DAW tracks into a Real Mixer and move Real Faders. But that's not what Onyx is about; it's a front end for your DAW, not a control surface for mixing tracks.

Where a FireWire-savvy Onyx really shines is for live performance, when teamed with a laptop or stand-alone hard disk recorder. Being able to record a complete performance, separated into individual tracks, into a computer while mixing a band's set is pretty appealing. Take the recorder back to the studio, do some judicious editing, mix it down, and *voilà* — concert CD.

## MIXER BASICS

At this price, you might be expecting some cut corners. But the Onyx line is built in China, which takes advantage of low labor costs *and* an ever-escalating build quality. No, the controls aren't held on with nuts; they protrude through holes in the panel. And the faders are 60 instead of 100mm. But overall, the 1640 feels substantial, and is a serious piece of gear.

One nifty hardware aspect is the "rotopod" construction,



INSTALL THE FIREWIRE OPTION IN THE 1640, AND YOU CAN SEND AUDIO VIA FIREWIRE INTO YOUR MAC OR WINDOWS COMPUTER, AS WELL AS RECEIVE TWO CHANNELS BACK FOR MONITORING.

THE ONYX LINE REPRESENTS A NEW CONCEPT IN MIXERS, AS IT COMBINES AN INTERNAL ALL-ANALOG SIGNAL PATH WITH OPTIONAL FIREWIRE I/O.



which allows you to rotate the section with the I/O. The input and output connections can face the rear, face the bottom (ideal for rack mounting, as the unit takes up only 12 rack spaces), or with an optional-at-extra-cost bracket, face the top of the mixer so you can do your patching without leaning over. *Very clever.*

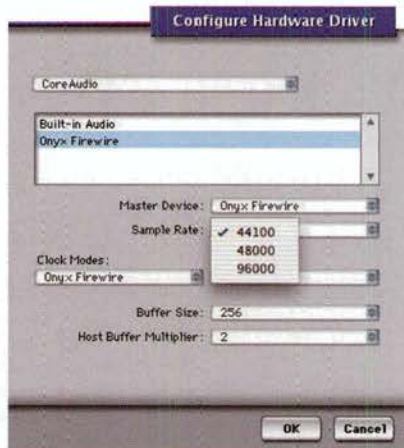
### GOZINDAS AND GOZOUTAS

So how do they fit all those input and output jacks on such a compact rear panel? They don't. The balanced analog direct outs (which parallel the digital FireWire direct outs) terminate in two female DB-25 connectors. Ugh, but there is a mitigating factor: It's easy to patch into a stand-alone hard disk recorder because the pinout is compatible with TASCAM's DB-25 analog connectors for their DTRS recorders, so you don't have to settle in for an evening of soldering — just buy some off-the-shelf cables if FireWire outs aren't your only mode of operation.

All inputs except for the first two have balanced XLR, balanced 1/4", and TRS insert jacks. The others can switch between XLR mic and instrument (1 Meg input impedance).

### MINDING YOUR PRES AND EQS

So the Big Questions are: "Are the mic pres any good?" and "How does the EQ sound?" As far as I'm concerned, there are only four kinds of mic preamps: Cheap ones that sound cheap, affordable ones that sound cheap, affordable ones that sound good, and big-bucks preamps that sound *really* good (assuming the rest of your gear can reveal these differences). The Onyx pres are of the affordable-that-sound-very good persuasion, and carry on the Mackie tradition of providing surprisingly



MOTU'S DIGITAL PERFORMER IS BEING CONFIGURED TO WORK WITH THE ONYX I/O.

good pres in their mixers.

As to the four-band EQ, I was expecting not to like it because I can't imagine midrange EQ without a bandwidth control. But the Onyx EQ is gentle, giving a solid lift or cut without the sound getting "constricted." Although this is more common with EQ designs that don't allow a lot of boost/cut, this design provides  $\pm 15$ dB of boost/cut.

Although the upper midrange control tops out at 8kHz, due to the mid control's gentle bandwidth, anything over 8kHz can pretty much be handled by the high shelf. There's also an additional low cut filter, which rolls off at 18dB per octave below 75Hz. *Bonus feature:* The hardware bypass switch takes the EQ completely out of the circuit.

### IS THIS THE START OF THE NEXT GENERATION . . .

. . . or the end of the old one? Well, I'd say both. As a regular mixer, the Onyx is

cost-effective and functional. Six aux buses is cool (given the price, I expected four), and the four crucial components for sound quality — mic pres, EQs, low noise, and high headroom summing — are well-implemented.

For live recording, the ability to send 16 direct feeds (plus stereo master) to a DAW via FireWire is hot. However, I do think that the master out should have been available on SPDIF or AES/EBU for feeding into something like a MasterLink. Sure, analog works, but it is the digital era.

As the centerpiece of a digital studio, the Onyx is halfway there: It gets inputs to your DAW, but can't mix the DAW tracks. Granted, that didn't seem to be the design goal and would have upped the price big-time, but I'd like the next generation of mixers to double as a control surface/stems mixer for a digital studio and do traditional live performance mixer functions.

So, the bottom line is simple. If you're in the market for an analog mixer but want to go beyond the normal analog world into the world of DAWs, think Onyx. If you fit the target audience, nothing else will address your needs this efficiently — especially at this price point. **EQ**

#### Strengths:

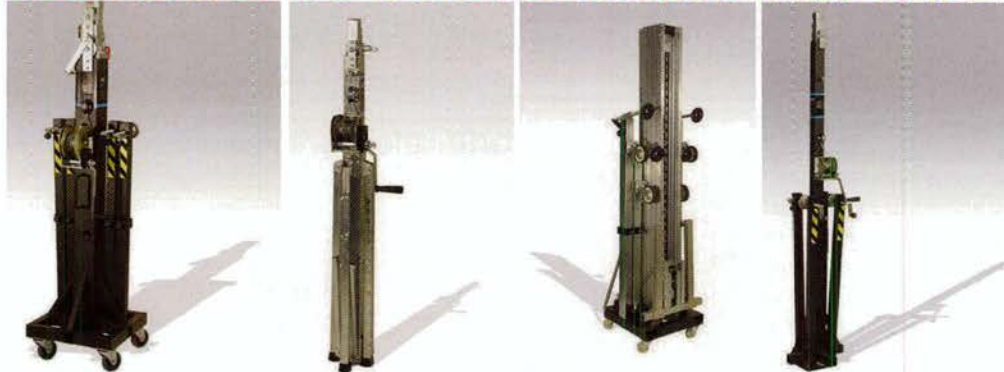
- FireWire connectivity
- Good build quality
- Very smooth-sounding EQ
- Fine mic pres
- Two switchable mic/instrument inputs
- Six aux sends, two dual mono subs

#### Limitations:

- 60mm faders
- DB-25 connector for analog recording outs

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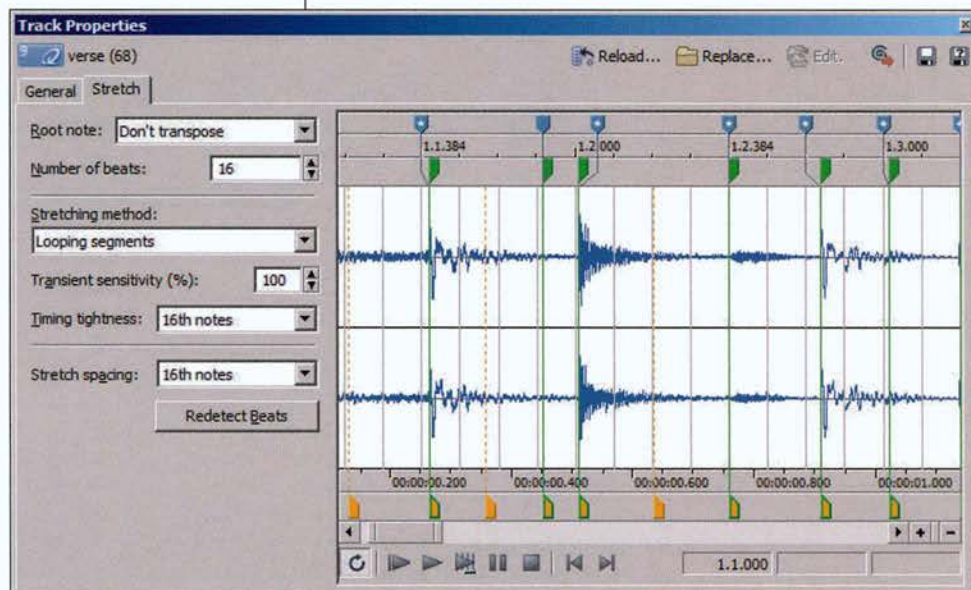
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by Craig Anderton

# Sony Acid Pro 5.0 (Windows)

Lower your PH with some good Acid



Acid was  
miraculous,  
scandalous,  
and the birth  
of serious  
groove  
software.

In 1998, Acid didn't just change the world — it created a new one, where audio went from a rigid bunch of bits to the musical equivalent of Silly Putty. Perhaps more significantly, Acid provided a shortcut to the “look and feel” of musical talent for those without any.

It was miraculous, scandalous, and the birth of serious groove software. It was even the kind of program that made diehard Mac addicts who'd drunk the Cupertino kool-aid hold their noses and get a PC, just so they could run this wild new software that turned the sequencing paradigm inside out.

Acid's claim to fame was that you could bring audio of just about any tempo and key into the program, and like magic, convert it to the current project's tempo and key. Previously, you had to either fit your tune to the available audio, or apply arduous digital signal processing techniques that usually did considerable violence to the audio quality. The program even included a bunch of loops to get you

going, and Acid *aficionados* started to notice them in everything from dance music to TV commercials.

## GIMME (VERSION) FIVE

You'll note there's no Specs sidebar; Sony's web site has all the specs you need — go [www.sony.com/mediasoftware](http://www.sony.com/mediasoftware), click on Products, and then go to the Acid Pro 5 page. We'll concentrate on the main update features, and their impact on the user experience.

Version 5 has three obvious goals:

- Higher quality sound and more flexible looping
- Better project management and workflow
- Improved compatibility with the rest of the world

Acid also has a more efficient audio engine. The engine stops while you're inserting effects, but then picks up where you left off. There's also a blip when you insert a bus, but other than that, it's pretty gapless.

## GETTING STARTED

You insert the CD, install the

program, then the Media Manager (which requires installing the included Microsoft Data Access Components 2.8), then restart. If MDAC is already installed, this step, including restart, is unnecessary. Next up: Install the Native Instruments Xpress Keyboard Instruments, call up the program, enter the serial number, and finally, authorize the program on the Sony web site.

I was pleasantly surprised at the two CDs of loops, one with 439 new loops for Acid (Electronica, Dance, Hip-Hop, Rock, Organ, and Ambient Cinematic). The other is a sampler of 668 loops from Sony's deep library of Acid grooves. Yeah, it's a teaser, but it's license-free — so don't complain.

## TOP 10 NEW FEATURES

Let's take a graphic tour of Acid Pro 5's greatest hits.

Acidization markers tell the software where hits occur so they can maintain the correct rhythm when the tempo changes. But Acid now offers separate beat anchors and beat (stretch) markers. You can force a note that's off beat to hit on a beat anchor, but you can also shift the beat anchor and fool the loop into thinking that's the beat. This lets you lag, lead, swing, or correct beats.

Overall, there's a *lot* more control over stretching characteristics with the new groove tools, including the ability to apply grooves to acidized files. Acid Pro 5 comes with 52 grooves, but you can create and customize your own based on how you've placed stretch markers in an acidized file.

The stretching sounds better, and the beat detection engine seems more accurate, requiring less "tweaking" to get loops to stretch over a wide range. Although Acid hasn't added Rex file-type capabilities to change characteristics of individual slices, it has reclaimed first place as the best environment for creating acidized loops.



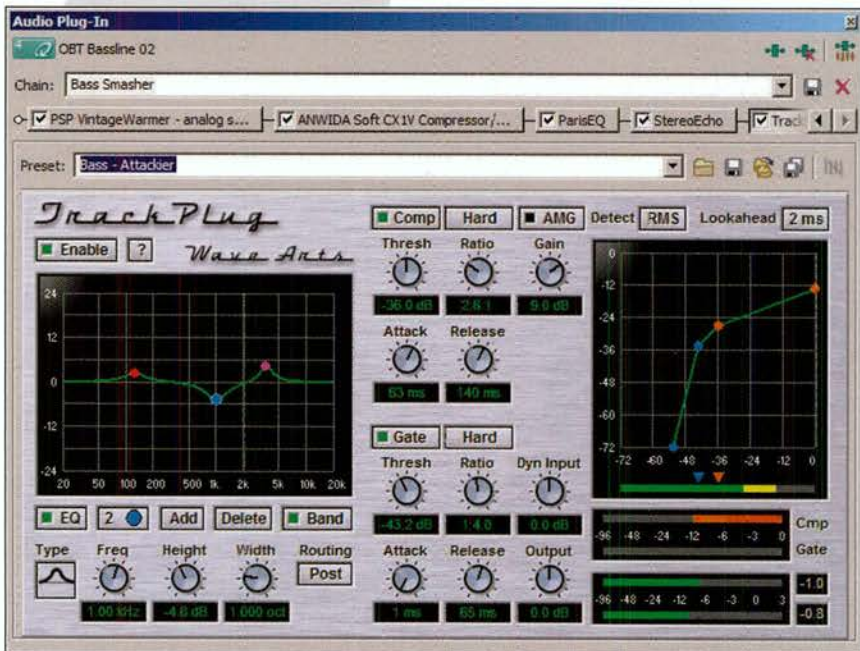
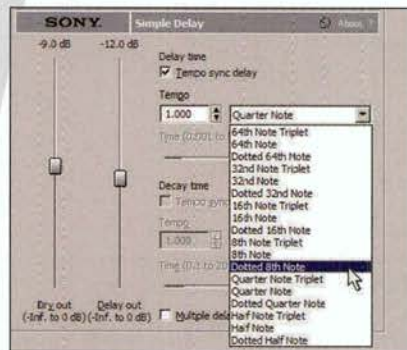
Acid has always had a "one loop, one track" philosophy. This makes it easy to draw loops in a track, because Acid always knows which loop goes in that track. The downside: Variations on a part can chew up a ton of tracks.

Folder tracks group tracks into one track. You can nest folders within folders, and do anything with a track within a folder (change track height, move, split, add envelopes, and so on) that you can do when it's not in a folder — including "cluster edits" on collapsed folder tracks. You can also mute and solo folder tracks, however,

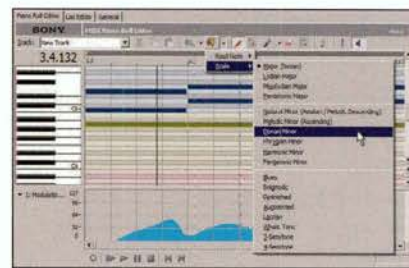
you can't do operations on the folder track itself. Drag parts out of the folder any time, as well as minimize folders to minimize space; this is a fine implementation of a much-needed feature.

Yes, that's a VST effect (out of a chain of five) you're seeing — Acid speaks something other than DirectX, and it still maintains PDC so the sound doesn't get all phasey when it goes through multiple buses. It's also learned how to shut up its effects, thanks to a "bypass all" command, and can do multiport VST instruments.

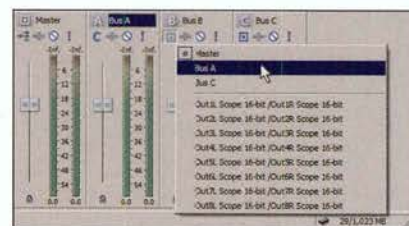
Acid can now tell time, thanks to effects (Amplitude Modulation, Flange/Wah-Wah, Chorus, and Simple Delay) that can sync to tempo. All I can say is — it's about time.



When you're finished with your masterpiece, burn it to CD (disc or track at once). Well, at least you can; my computer refuses to talk to the Sony, Sequoia, or Wavelab CD burning engines ever since I made the mistake of installing Roxio CD burning software that came bundled with a DVD drive. (Guess I'd better hack the registry and get rid of it.)

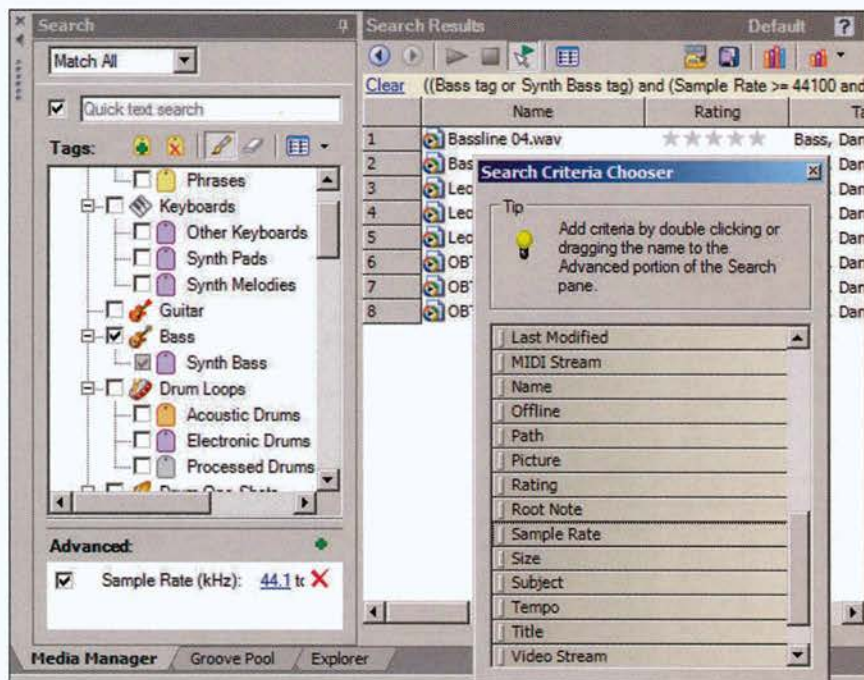


MIDI's been spiffed up a bit with constrain to scale (just noodle on the keyboard, then snap to a specific scale/key to banish bad notes). The MIDI implementation is still kinda low-rent; don't expect a lot of editing goodies, or the ability to plug-in MIDI effects. But it will get you through recording your virtual instrument parts.



I use a lot of bus effects, so I'm happy it's possible to route a bus to another bus (and it won't let you do anything stupid, like set up a feedback loop).

# Sony Acid Pro 5.0 (Windows)



Customizable media folders help organize the files you use in a project, and you can save a project path in a rendered file to edit a rendered file's source project. But the killer feature is Sony's new Media Manager technology for locating different types of files, as well as the ability to tag, search and browse files with metadata that makes specific attributes easier to find — think "database and search"



functions. The program even gives you access to a listing of all 130+ CDs in Sony's Loops & Samples collection, tags the libraries you already have, and provides immediate links on how to purchase a particular collection.

Acid can serve as a ReWire 1.0 client and ReWire 2.0 host. Well, sorta. It

worked perfectly as a client with Adobe Audition, but when I hit stop with Sonar 4 and Live 3, Acid would freeze. It hosted Reason just fine, but audio sync would fall apart with Project5 — unless P5 had the focus. And as a Storm 3 client, the audio was garbled; as a host, it didn't work. Sony had done a lot of testing with a variety of programs (but not some of the ones I used) without problems; maybe the issues are unique to my setup, but in any event they indicated an interest in getting more data so they can do any necessary fixes.



Part of the Pro package is Native Instruments' Xpress instruments (B4,

Pro53, and FM7). These are not keyed to Acid so you can use them with other VST hosts (thank you!).

There are other goodies too, like downmix monitoring for surround projects, easier ways to create loops out of one-shot hits, a chopper window, Macromedia Flash format import, event reverse, and assignable keyboard mappings. And here's a real labor-saver: Changing a loop envelope can affect all selected loops. If you've ever noticed a click on a loop after you'd painted in a zillion instances, then had to go into each effing loop and add a teeny fade to get rid of the click, you'll appreciate this.

## WHAT'S MISSING

The biggies: No one-click "freeze" function to premix a virtual instrument track, then archive it to give the CPU a vacation. Nor can you control the level faders, or any parameters for that matter, using external hardware control boxes. This is a major omission if you're into adding the human element by working with a control surface. Put this on the "must-have" list for Version 6. As to MIDI, editing options remain limited; it's really a record/playback engine.

## CONCLUSION

Acid started as a simple, elegant program. When it added features to compete with more conventional programs, it started to lose its way; MIDI had a tacked-or feel, and little was done to tweak the user interface. Version 5 smooths out Version 4's rough edges, while adding significant features that greatly enhance the experience of making music on Acid. I mean, *with Acid*.

I still wouldn't say Acid competes with hosts like Cubase SX, Samplitude, Sonar, and so on; they're apples and oranges. But I also feel it shouldn't try to — by zeroing in on being the best implementation of Acid it can be, Version 5 shows it's neither willing, nor ready, to cede its long-held turf. And it's *still* the quickest way to put music together on Windows. EQ

# Kjaerhus Audio GCO-1 Compressor

by Craig Anderton

Sometimes it's smaller software companies that produce the real gems — and this is one of them. For a bit over \$100, the GCO-1 ("Golden Compressor") VST plug-in for Windows 2K/XP gives you more than just a kickin' compressor/expander. It's almost a "compressor construction kit" where you can pick the best vintage (or modern) compressor characteristics you like, and create a preset incorporating that particular sound.

For example, there are five envelope types, which emulate the different gain control elements used in various compressors. Each has its use; you even emulate the two-stage release of some opto-based compressors, or make the sound "pump" like compressors did during the psychedelic 60s. Technically, it hits the target too: 64-bit floating point processing, sample rate support up to 192kHz, and a CPU-friendly level of efficiency.

With extra goodies like a subsonic input filter, the ability to adjust curve linearity, variable knee, and 3-band EQ in the detector section for frequency-dependent compression (along with a variable filter to remove ultra-low frequencies), you have a tweaker's dream. In fact, the only possible drawback is that unless you know what you're doing, you'll have a hard time getting the most out of the various options. Fortunately there's good documentation, and the controls are laid out in a

hierarchy — the top ones are the essentials, while the lower controls provide the detailed editing — so neophytes can grow into the feature set over time.

Sound interesting? Don't take my word for it. Go to the web site and download the 14-day demo, but don't do it unless you're prepared to spring for the unlimited registration. The more you use the GCO-1, the more



you'll realize just how versatile it really is.

EQ

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by Craig Anderton

# Steinberg Cubase SX3

Now with more stretching than a yoga class

The company that pioneered the virtual studio has made it far easier to integrate external hardware.

I must admit, sometimes when I check out the Cubase user forums, I want to slap some of those people upside the head. First up: The people who go on about how much Cubase sucks – then you realize they’re using a cracked version. Second: Those who like to debate whether Cubase is a “professional” application.

True, Steinberg painted themselves into that corner when they created Nuendo as a “pro” application. So what did that make Cubase?

But Nuendo is a post-production solution, while Cubase is for making music. Does that make Cubase any less “professional”? I guess only if you make unprofessional music.

Rant off; back to the review. Cubase VST was ahead of its time by pioneering the virtual studio concept, and made decent computer audio a reality with ASIO audio drivers. In fact, Cubase was well on its way to becoming an audio powerhouse when the audio engine’s chief architect, Mark Badger, died of natural

Syncrosoft protection dongle. The biggest two changes: SX3 is *aces* for anything involving time-stretching; and interestingly, the company that pioneered the virtual studio has made it far easier to integrate external hardware.

Like last issue’s reviews on Acid 5 and Sonar 4, we’ll let Steinberg’s web site ([www.steinberg.net](http://www.steinberg.net)) give you the specs and we’ll cover the new stuff.

## THE TOP TEN NEW FEATURES

■ It’s a track . . . it’s a playlist . . . it’s a way to define regions, then try out different orders of these regions. If you like a particular order, “flatten” it to rearrange all the track data to follow the playlist you created. Remixing, anyone? And yes, you can create and audition multiple play order tracks.

■ This is like Ableton Live’s “elastic audio,” and it’s a welcome addition. Use warp markers to bring out-of-time beats into rhythmic correctness, or the reverse — the screen shot shows moving a rhythmically perfect snare hit a bit behind the beat to give it more “feel.” You can now generate warp markers from hitpoints, too.

■ Drag “acidized” files in, and SX3 stretches ‘em to fit tempo (very well) and pitch (about as well as can be expected). But unlike Acid or Sonar, there’s no way to edit slice markers to compensate for poorly acidized loops. You can, however, use warp markers to at least clean things up a bit. The screen shot shows an Acidized file, REX 2 file,



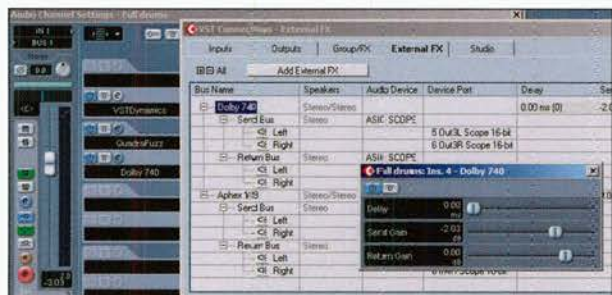
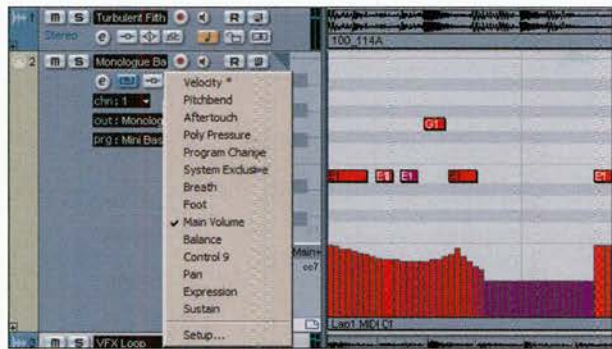
causes at an early age. Not only did the music industry lose a cool guy, but Cubase started lagging in audio just when the industry was transitioning from MIDI to hard disk recording.

Cubase never really caught up until Cubase SX appeared, which was more stable than VST and had a revamped audio engine. SX2 solidified those gains — but still left out some important elements, like acidized file support.

## THEN THERE WAS THREE

Now we have SX3 upgrade from SX2, which remains cross-platform for XP and OS X, and still uses the





and AIFF file time-stretched with SX's "hitpoints" feature — all living together in temporal harmony.

■ You don't have to open up a separate Key Editor screen any more for MIDI — click a MIDI track's Edit In Place button, and the track turns into a mini editor, complete with controller pane and optional toolbar for various MIDI editing functions. Earth-shaking? No. Convenient? Yes, particularly when you're lining up MIDI data with audio.

■ Sure, you could always integrate external hardware processors with software, if you had a multi-channel audio interface — send an output to the effect, then bring the effect out back into an input. SX3 takes things one step further, by having any

external unit show up just like any software plug-in insert effect. There's latency compensation too, although you need to enter the value manually.

■ A small but useful charge, Volume Envelopes, allows altering level without having to resort to automation tracks. These envelopes "travel" with events as well.

■ You can now have politically correct "tracks of color." Track colors are reflected in the clips, as labels in the mixer, and as ▶



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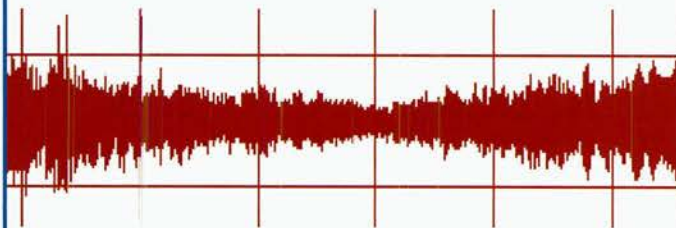


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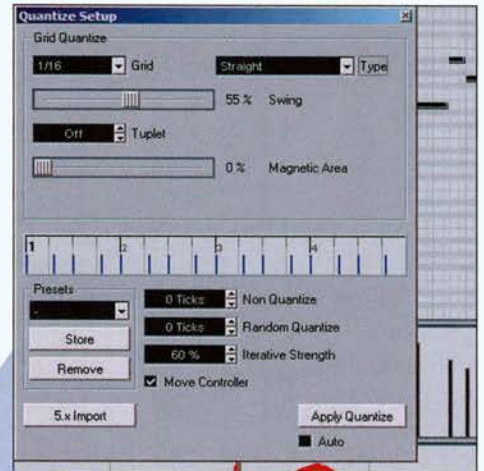


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# Steinberg Cubase SX3



background for track names in the Inspector. You can also “colorize” individual clips; this overrides the track color. Another useful ergonomic tweak: The workspace function now remembers scroll bar and zoom settings.

- “Freeze” instruments with or without pre-fader insert effects — you can save RAM by freezing the instrument, yet still tweak effects during mixdown. Of course, you can still freeze audio tracks too.

- That innocent-looking “Move Controller” button in the Quantize

Setup menu is extremely helpful, as it will move controller data associated with a note along with the note when it’s quantized . . . no more dragging, re-drawing, or swearing is needed to get the controllers and notes to line up.

- If your external gear responds to MIDI continuous controllers or sys ex, you can create “panels” within SX3 that send out messages to control your gear. Better yet, automating the panel controls automates the external gear. Making panels is not intuitive, but with MIDI controllers, the process is fairly simple. The screen shot shows a panel

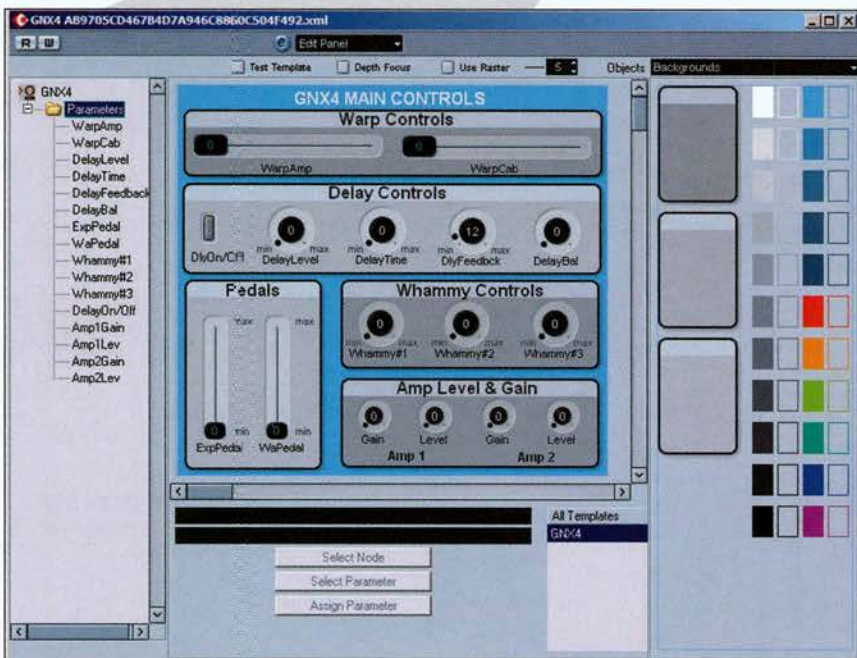
I whipped up in about 15 minutes to control several crucial DigiTech GNX4 parameters.

## SO WHERE DOES THAT LEAVE US?

There are quite a few other additions, one of the most notable being the Studio Connections functionality designed in conjunction with Yamaha. I didn’t have anything to test it with, but I’ll take their word that it works. And SX3 also supposedly works with Windows XP 64-bit Edition so it can access 4GB of RAM . . . not that I have a 64-bit OS for testing, and I bet you don’t either!

There are also two new instruments, one optimized for single-note lines (bass, lead, and so on), the other for pads. Both are very capable, if unspectacular, instruments that add value to the package — as do two new effects. Another useful feature: Dummy plug-ins, so that if you open a project in a different environment that lacks a particular plug, SX3 puts in a “placeholder” (but remembers the original settings for when the proper plug-in is available again).

Cubase SX3 is in large part about exceptional time-stretching options and hardware integration. The time-stretching is indeed impressive, because you can choose so many ways to stretch — as well as just resize a piece of audio to fit the desired length. And, you can do the equivalent of “freezing” a time-stretched piece of audio using the high-quality Prosoniq MPEX2 algorithm. You can’t unfreeze again, nor can you stretch after



# Steinberg Cubase SX3

freezing. But as you start mixdown and the song is set, this is a great way to improve a loop's audio quality. Excellent.

The flexible stretching also gives some serious audio-for-video mojo when you need to line up tempos and hits with picture. If you can't make things fit with SX3, it probably can't be done.

Finally, the hardware integration may not seem that important, until you start bringing outboard processing back into the picture because SX3 makes the process a whole lot easier. It's worth it.

## POWER VS. PATIENCE

Cubase SX3 is one *powerful* mutha, but the price is that it sometimes


seems you have to execute more steps than should be required. Panel construction could have a smoother workflow, as could stretching. Because the stretching options have evolved over several versions, the user interface for them feels unfocused, rather than leading you through the process.

The additional power also demands plenty of pixels. With a standard 1028 x 768 monitor, some windows simply won't fit — I couldn't find one important tool until I realized I had to move the window so it would be visible. 1152 x 864 resolution is better, but the real story here isn't so much about SX3; today's host software just about demands a dual monitor setup.

SX3 has continued along a path that maintains its rep as an app that pretty much does everything you need, as well as some things you didn't realize you needed. Overall, SX3 is without a doubt the most stable and comprehensive version of Cubase yet. I suppose I could get worked up about loose ends in SX2.2 that will never be addressed by an update to that version now that SX3 is here. But when you look at what SX3 delivers, it's hard to begrudge Steinberg the upgrade fee.

In any event, Cubase fans can keep the faith, knowing that their application of choice is pulling together rather than unraveling. For me, the bottom line is that it was a pleasure to do this review. For a complex host program, that's quite a compliment. **EQ**

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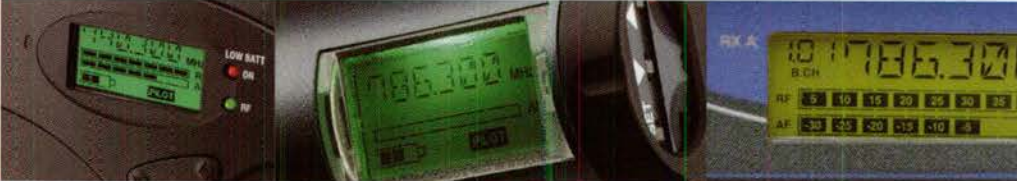
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by Craig Anderton

# Cakewalk Sonar 4.0 Producer Edition (Windows)

It's not just about adding surround anymore.



The biggest new feature doesn't show on a spec sheet: Better workflow.

Watching Sonar evolve is like watching a makeover show on reality TV: "We took Cakewalk Pro Audio, did a CPU tuck, user interface enlargement, and took care of 'time stretch marks.' We then improved the complexion by appropriate use of color, and removed unsightly interface complexities. And now, it's time for... The Big Reveal!"

Well, Cakewalk has converted the ugly duckling called Pro Audio into the swan of Sonar. On the way, they've picked up major market share, created a lively set of user forums, and changed public perception of the company's products from "Don't they make something for [grimace, sneer] Windows?" to "Sonar rocks."

Sonar 4 (A\$1195 list for the Producer Edition, A\$795

for the Studio Edition with a lesser feature set) brings the fourth version in four years. An upgrade from Sonar 3 Producer will set you back A\$299; Sonar 3 Studio, A\$379; Sonar 1 or 2, A\$415; Sonar 4 Studio/Pro Audio/Project 5, A\$499; registered Cakewalk owner, A\$579. Frankly, for a Sonar 1 owner to pay A\$415 and get Sonar 4 Producer Edition is a helluva deal.

As with the Acid Pro 5 update review, we won't get heavy into Sonar's specs as you can find them on the web (<http://www.cakewalk.com/Products/SONAR>). We'll concentrate instead on the Top 10 upgrade features.

#### FORE! WITH FOUR

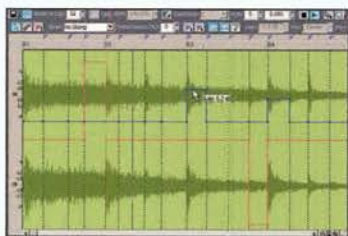
Actually, this review is of Sonar 4.0.1, which lets you turn off real-time plug-in delay compensation calculations (oooh, that

sounds so *scientific!*) to minimize audio engine gapping. But no worries, it recalculates and compensates when you press the transport's Stop button, so PDC doesn't go away. 4.0.1 also fixes a bunch o' bugs and adds some new features.

Sonar still has a benign copy protection scheme; just enter serial number and install from CD. Sonar handily passes the "My computer died, but at least I can re-install my sequencer without exploding" test. A DVD includes additional content, including a Public Enemy song with the original Sonar project used to make it.

The biggest new feature doesn't show on a spec sheet: Better workflow. This results from multiple tweaks and changes, with a cumulative result that projects get done faster. There's something about Sonar that lets you get into a groove and stay there. As to the other features...

SurroundBridge is what makes the surround implementation special. Insert any mono or stereo effect into a surround bus, and Sonar clones it enough times to cover all the channels. You can control all of them from the interface for one of them, or unlink parameters to make adjustments for some channels but not others. Yes, there's a surround version of the Lexicon Pantheon Reverb and Sonitus Compressor, but SurroundBridge means you can use any of your fave effects (including VST) in surround-world.



I always thought Prosoniq had great-sounding time stretch algorithms. Apparently Cakewalk thinks so too, because they've licensed their MPEX3 algorithms. The sound quality is light years ahead of Sonar 3's stretch functions.



It's never been easier to edit acidized files in Sonar, as you can now audition individual slices (is the click in that slice from picking up part of the next transient?), and the Now time marches across the window so you know where you are in the loop. But in a Rex-like flight of fancy, there are also pitch, gain, and pan envelopes for each slice, so the loop construction window is more of a creative tool as well.

Dump tracks into a Track Folder? Sure. But the Track Folder itself creates a clip that you can slip edit, move, cut, copy, normalize, and otherwise process. When you perform operations on a Track Folder, they affect all eligible tracks within the folder (of course, an

audio process won't affect MIDI tracks). However, you can't nest folder tracks.

Because of the new "Show Layers" option, you can loop record into a single track, then "unfold" it into multiple lanes of takes. Next, a Mute tool lets you mute and unmute sections to come up with the perfect composite track. Then "Bounce to Clip," and all the good bits end up in one track and all the other lanes go away. This is fast, efficient, and pain-free.

It's not the synth to end all synths. But as a general purpose GM module, it's a considerable improvement over the older VSC. The Roland-powered TTS-1

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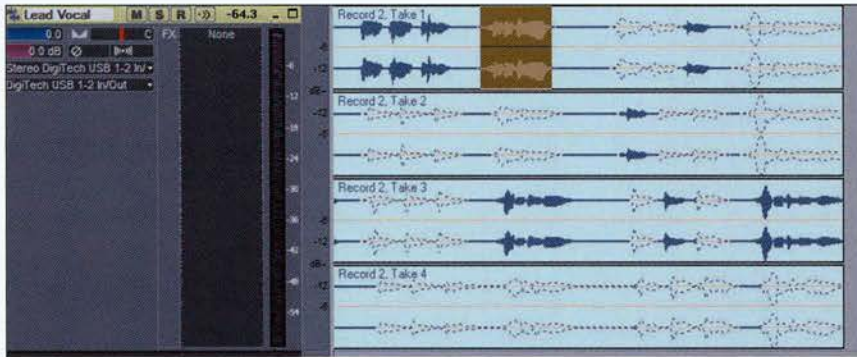
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# Cakewalk Sonar 4.0



has 256 GM2 sounds and 8 drum sets, 32-bit internal processing, supports 96kHz sampling, and doesn't stress your CPU too heavily. The sounds are fairly editable, so you can also store 512 user sounds. Like any 3M module, you'll find some sounds useful, and some not; but given the paucity of bundled instruments, this one is welcome.



Even Sonar V1.0 had a freeze function, but most people didn't know it. So Sonar 4 re-packaged it as a one-click operation, with of course Unfreeze to blow away the frozen data (hey, why don't companies just call it "thaw?"). But there's also a "quick freeze" and

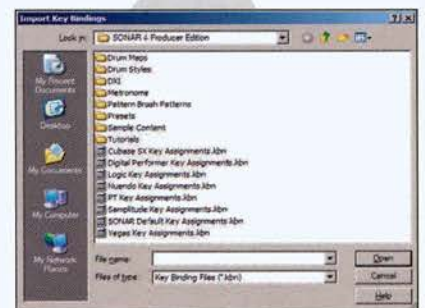
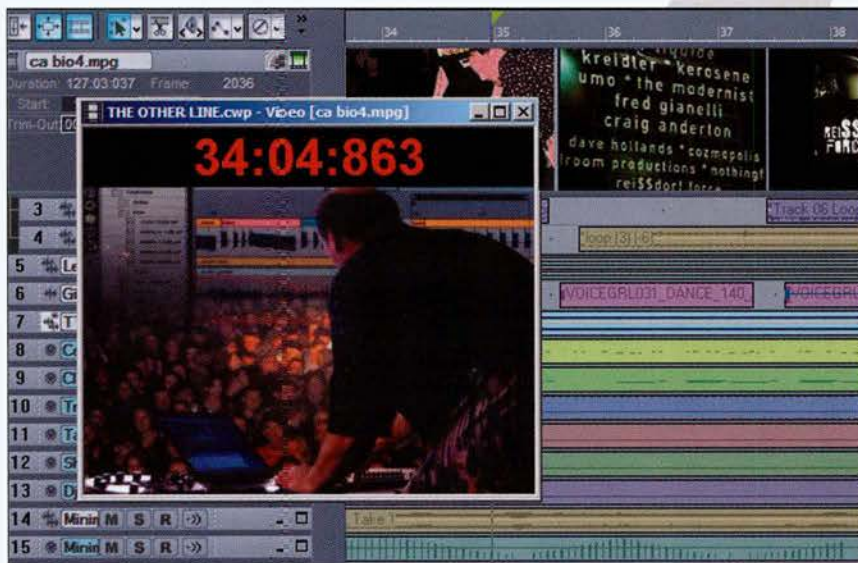
"quick unfreeze" mode, which retains the frozen data so you can diddle with effects or other parameter changes while unfrozen to see if you like them better. If you don't, you can quick freeze again. The bad news: If you do like the changes, you can't just "re-freeze." You have to quick freeze, then unfreeze, then freeze. Not a huge deal, but a re-freeze command would save mouse clicks.

I first got into Cakewalk Pro Audio because it could load just about any video format into a resizable video window without complaining. Sonar 4 adds video thumbnails that can show absolute frame numbers, which simplifies navigating around an audio-for-video project.



And speaking of navigation, there's a project overview with a resizable zoom rectangle. Drag it over the part of the project you want to see in the Clips pane; shrink the rectangle to zoom in, expand to zoom out. This saves much time when you're jumping around in a long project.

Here's the "defector's" feature: Call up keyboard shortcut sets that duplicate those of Cubase SX, Digital Performer, Logic, Nuendo, Pro Tools, Samplitude,



## Cakewalk Sonar 4.0

and Vegas. I used to use Quickeys on the Mac to do this when reviewing different platforms so I could get around with a familiar set of shortcuts, and believe me, it does help a lot when you're making the transition.

That's it for the Top Ten, but also note the horizontal and vertical "nudge" commands to move clips (and notes in the Piano Roll editor) in fixed increments — from as little as 1ms to as many frames, samples, ticks, notes, measures, or seconds as you like. Sonar now has real dither from Pow-R, more export options, and a better audio engine that's not quite as gapless as Ableton Live, but seriously good. And there's much better color customization.

### VERSION 5 WISH LIST

I'd like to see better integration of time-

stretching and loops, like Cubase SX3 has done, where you can convert a stretched loop to a standard audio file using stretch algorithms.

I also like Live's ability to "warp" hard disk audio to arbitrary rhythms. And maybe it's time for Cakewalk to resurrect .CAL files as a well-implemented suite of MIDI effects. They're wonderful, but don't get no respect.


Finally, Apple's Logic 7 has really raised the bar for including loads of cool plug-ins. The Sonitus effects suite rises to the challenge, but the instruments don't. Sonar needs to augment the TTS-1 with a good virtual analog synth (the DreamStation is starting to look pretty tired), a slammin' drum machine, and a basic sampler. Of course, Sonar

veterans have the DR-008 drums, VSampler, and Timeworks effects from previous versions, as well as the outstanding Cyclone DXi. But someone just getting into Sonar will want to factor some decent soft synths into the total price.

### THE SKINNY

I've always appreciated Sonar's ease of use. The latest version takes workflow to a much higher level; this is a truly efficient (and stable, by the way) sequencer that gets out of the way when you're in The Creative Zone. Sonar 4 is a program that rewards the faithful, and just may cause others to wonder if perhaps the grass isn't a bit greener — or at least needs less mowing and weeding — on Sonar's side of the fence. **EQ**

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by Lynn Fuston

# AEA R88

An encore to that old ribbon mic magic

**LType:** Stereo ribbon microphone

**Price:** Est A\$3,600

**Contact:** Audio Engineering Associates, [www.wesdooley.com](http://www.wesdooley.com)

**Capsule:** two Large Ribbon Geometry elements (LRG)

**Polar pattern:** two figure-8 mics fixed at a 90-degree offset

**Frequency response:** 20Hz to 15kHz ( $\pm 3$ dB)

**Output impedance:** 270 ohms

**Maximum SPL:** 165dB at 1kHz or higher



**C**onfession: The AEA R84 has become one of my favorite mics.

It's taught me so much about ribbon mics that after reviewing it, I couldn't bear to send it back. So a pair of R84s became my constant companions in the studio.

For orchestral work, brass, acoustic guitar, group vocals, even lead vocals, they're good at capturing a diversity of sounds.

The R84 (reviewed in the Sept. '03 issue) was AEA's first original mic design after years of restoring/recreating classic RCA 44B ribbon mics. But it's more versatile, lighter, and affordable than the 44B.

## TWO = BETTER?

When I heard that Wes Dooley at AEA was planning a stereo version of the R84 — the R88 — I was interested. I frequently use my R84s for stereo miking, but putting two 12" long mics end-to-end at 90 degrees on a single stand at a height of 8-12' is no small task. The ability to position one mic for stereo was appealing.

The R88 is the same diameter as the R84 (2.5"), but is 13" long — 9" shorter than an R84 pair. With its black "stealth" finish, the R88 is much less

attention grabbing than an R84 pair — a good thing for live and videotaped performances.

The R84 has three layers of protection between the ribbon and the outside world, with another layer on the back. The R88 does away with most of that protection. "The goal was to put as little as possible between the music and the dancing ribbon," according to Dooley. Translation: Greater clarity, less resonance within the mic chamber, and greater susceptibility to outside nuisances like wind.

## THE SOUND

I tried the R88 on a piano I've recorded many times, which is bright and present. I tried R84s on this piano but wasn't impressed. But the R88, compared to even my standard miking setup for this instrument, was the choice of everyone in the control room. The imaging, with the mic just inside the lid, about 18" above the strings, was superb. It had separation of the high and low strings, but made the instrument seem like a cohesive whole. It also tamed the brightness of the instrument and made it wrap around and support the vocalist without drastic EQ.

On voice, it was apparent that the extra acoustic protection was gone — where's that pop filter? At a distance of 8", the R88 has enhanced low frequencies compared to the R84. The R84 seemed more present and forward when up close, while the R88 was flattering on the top and bottom of the voice. With a shaker at 12", differences were also noticeable, mostly in the

presence range.

The R88's stereo imaging is wonderful, but may seem narrow to those accustomed to spaced cardioids. The R88 presents a natural, almost binaural sense with strong center image and very precise imaging.

## OUTPUT

For those concerned about using a low-output ribbon without a high-gain preamp, I tried an experiment using a Digidesign Mbox. Would the output from the R88 be enough using this preamp? Yes: I was able to achieve good levels on a soft voice, although I had to run the gain wide open. This proved that louder sources, such as brass or electric guitar (both favorite ribbon applications), would be fine without a special preamp.

Even though they share near-identical motor designs (the magnetic assembly that surrounds the ribbon) and identical ribbon dimensions, the R84 and R88 are different mics with different strengths. I think either would make a great addition to anyone's mic closet. Are they different enough to own both? Yes, especially considering how versatile they are, their affordable prices, and the sonic qualities each offers. **EQ**

### Strengths:

- Easy setup
- Uniform polar response
- Black-on-black for reduced visibility
- Integral shock mount
- Excellent low end
- Effortless imaging
- Wonderful mic case

### Limitation:

- Large physical size makes it difficult to position



## The Lighting section of CX magazine



## Mac wash 250 announced

Martin has just announced the arrival of the new Mac25C Wash – a long awaited update that is expected to replace the ageing Mac300. The fixture has adopted the same styling as the Mac25C Krypton and Entour, almost completing the remodeling of the entire Mac line.

The Danish manufacturer promises an upgraded optical system similar to that of the Krypton and Entour which should significantly boost light output and a new cooling system to keep operation as quiet as possible. Expect to see the faster, smoother movement of the new 250 series carried through to the new wash light as well.

The fixture will keep existing features such as the colour wheel in addition its CMY system and variable frost. Many will be pleased to hear that the new 250 Wash will have the same beam angle as its predecessor and the option of fitting a diffusion lens.



## Hand-held Lighting Desk

Made in the USA, the Pocket Console DMX is a hand-held, take anywhere lighting desk that fits in your briefcase, powered by a 9V battery or plug-pack adaptor.

The console features 8 soft-patchable faders with flash buttons, each fader being able to be patched to any or all DMX channels from 0 - 512. An LED display tells you which channel you are patching, even in complete darkness, making the Pocket Console simple and easy to set up.

It could act as an inexpensive submaster wing for a moving light console, a DMX source for troubleshooting returned gear, or solving the question – is it the main console or the rack?

[www.balancedtech.com.au](http://www.balancedtech.com.au)

## Jands JLX6 modular lighting bar

Jands have developed a new lighting bar called the JLX6 M (below). It is a modular pre-wired lighting bar system featuring a central load-bearing extrusion with punched steel side panels, providing 2 segregated wiring compartments.

A strut style channel at the top and bottom of the dust allows a variety of fixing methods including fly wires, chain motors, hook clamps or fixed support points.

Multiple JLX6's can be joined and the top mounted cable management system allows cables from adjacent JLX6's to be routed along the top of the adjacent bar.

[www.jands.com.au](http://www.jands.com.au)

## LX Links

### Some links we recommend:

#### [www.lightnetwork.com](http://www.lightnetwork.com)

The definitive meeting place for lighting people all over the world. Includes official support forums for major manufacturers and a very active community with around a thousand members from school students to professional designers. Membership is free.

#### [www.alia.com.au](http://www.alia.com.au)

Australasian lighting association – a website updated daily with all the latest news and views, plus a great forums section. Tune in and read some brickbats and bouquets for CX mag!

#### [www.toolsforstagecraft.com](http://www.toolsforstagecraft.com)

Based in the USA, this company will ship every kind of tool, lighting toy, torch or clothing to anywhere in the world.

#### [www.setwear.com.au](http://www.setwear.com.au)

New Australian distributor for the popular line of gloves and riggers tools. Great site with online ordering and free shipping to anywhere in Australia after you order a certain amount of kit.

#### <http://www.choirnation.com/>

Homepage of international designer Christian Choi, featuring some great articles on moving light programming.



Reviewed

# Vari\*Lite VL 3000

**Richard Neville takes  
this new puppy for a  
test ride in the CX lab**

**T**he VL3000 is the first of Vari-Lite's new 3000 series of 1200w moving heads. The fixtures are enjoying tremendous popularity in the US, so we had to take a look at them after the first batch were welcomed to Australia in late 2004.

Building on the success of its 2000 series of fixtures, Vari-Lite has created a full-featured profile fixture to compete with the likes of the Mac 2000, X-Spot and Robe 1200. We sat the VL 3000 next to its main competitor in Australia, the Mac 2000, to evaluate its performance against what has become an industry standard fixture.

The unit weighs in just a few kilos lighter than a Mac 2000, but has a slightly more bulky design. A small, 2 line LCD illuminated LCD screen provides access to a comprehensive and easy to understand menu system. Users will find lamp adjustment easier on the VL 3000, with three clearly marked adjustment knobs that do not require tools to access. Turn out the lights, and the only visible light leak is from the rear of the head, making it less noticeable than the X-Spot's glowing front, or the Mac 2000's leaks from its side vents.

As the VL 3000 fades up, the first thing noticeable is its incredibly uniform dimming curve. The entire beam remains even throughout the fade, with very little distortion from the dimmer blades. At low levels,



# Reviewed

the quality and uniformity of the VL3000 beam easily outstrips that of the Mac2000, which becomes uneven and distorted as the dimmer blades close in.

The VL3000 has an excellent strobe function, where the shutter blades cross the beam so quickly that they can't be seen by the eye. This creates a stunning strobe effect as the fixture does not appear to 'dim' between strobes. Operators will also find a variable random strobe function onboard.

As most 1200w moving lights now have very similar features, it is often the individual design and thought behind these common features that make certain fixtures stand out. The VL3000 colour system is a prime example of this.

At first glance, the VL3000 has a CMY system and additional colour wheel, just like all the other fixtures. However, when looking at the colours the system produces, it becomes clear that Vari-Lite have produced something a little different. After experimenting with colour values in the CMY system, operators will find that the VL3000 mixes through a range of stunning pastel colours and more subtle hues, as opposed to the more rock-n-roll style brash colours of other fixtures.

When compared to the Mac2000, the VL3000's yellow filter appears to be almost orange in colour. If you go looking for everybody's favourite colour – congo blue – by winding the magenta and cyan wheels to full – you'll get that incredibly rich, deep blue colour that you always wanted from a moving light. The magenta wheel has its differences too – it's much less saturated than other magenta filters, allowing for the creation of softer shades of lavenders, pinks and purples. Oh, and for all those interested, it does mix a very nice red too!. For those of you not following, let me take my designer hat off and put it simply – the VL3000 CMY system provides the user with

access to more 'theatrical' or a softer colour palette than other fixtures. While this may make the fixture less suited to applications which demand harsh, punchy primary colours such as yellows and magentas, it certainly makes it more suited to theatrical applications.

The VL3000's static colour wheel has a good selection of colours including red, a deep amber and an attempt at a congo colour. One interesting thing to note is that colour filters on the wheel can be replaced with gobos, creating a fourth gobo wheel.

Speaking of gobos, the VL3000 features three dedicated rotating wheels. The 14 gobos and effects are all glass, allowing every image to sit perfectly flat which reduces image distortion around the edges of the beam. The standard collection of gobos is arguably one of the most diverse and useful to be found in a moving light. Like the X-Spot, the fixture features a great range of 'organic' style breakouts and textured glass gobos in addition to a number of geometric shapes and patterns. No two gobos look the same, with each one looking as great on the ground as it does in the air. Several gobos are based on designs from

**Two roadcases: The VL came in a tall case (left) where the fixture was bottom up. This means you can mount the truss hooks and fly the fitting out of the case. But if you want to get it out and sit it upright, you need two people and a couple of work platforms (right). The Mac 2000 (middle) came in a single case. Choice of roadcase is an end-user decision, we just thought we would show these two approaches.**



## Reviewed

the older Vari-Lite 300 series which would allow for the newer VL3000 to sit well in a rig of older fixtures, or allow an older operator to sit well in a rig of newer fixtures!

Gobo selection speed is easily the fastest to be found in a 1200w fixture. The VL3000 flicks effortlessly through gobos, with the roll between each gobo barely noticeable. The fact that the three gobo wheels have been positioned so close together allows the operator to create spectacular morphing effects through three layers of gobos too. When the operator isn't having fun with the gobo system, the service team back at the factory will be pleased to hear that replacing gobos is simple, with easy access to wheels and a well-thought out design that allows gobos to be installed in one orientation only, ensuring that all your gobos line up the same way in every fixture.

The zoom of the VL3000 must be seen to be believed – it 10 – 60 degree zoom leaves the Mac2000 (10 – 28 deg) and the X.Spot (12 – 48 deg) for dead. Throughout the zoom range, beam intensity remains at adequate levels, and when playing back a sequence with programmed focus values, the fixture does a substantial job of maintaining focus while zooming.

The VL3000 also features an iris for beam size control, which is one of the few negative aspects of the fixture. When focused as a hard edge, the iris creates a very angular beam when compared with the Mac2000.

As the fixture moves, it becomes clear that it wasn't built for speed. Movement lags noticeably behind the Mac2000, and the fixture was also less responsive to moves, with a slight delay evident as the yoke picked up speed through its movement. On the other hand, the VL3000 is incredibly smooth on slow timed and live movements.

The VL3000 uses a forced cooling system like every other 1200w fixture on the market. What makes the VL system different however is its unique ducting system, where air is sucked in through dust filters in both the base and head, then ducted to fans buried inside the plastic shell, which then duct the air across each side of the fixture. With the mass of filtering foam, noise is reduced, as is the ability for dust to enter the fixture.



**Vari\*Lite hook bar snaps on. Means you can leave it on the truss, so the mover gets rigged in exactly the same place each time.**



As with any large moving light, noise generated by fans and components moving is considerable, and will still remain as an issue in quieter environments. Vari-Lite does offer a more silent version of the production – the VL3000Q – as a new fixture or as a kit form that can be added to existing VL3000 fixtures. Many people have also developed noise control methods, such as the Jerry Springer Opera in London, where specially constructed foam baffles and boxes surround each fixture to absorb excess noise!

All in all, the VL3000 is a highly competitive, fully featured 1200w moving light that offers the designer amazing flexibility, power, choice and difference with features such as the colour mixing and gobo options. It also offers service technicians an easy to maintain, easily accessible fixture, and even offers loaders and general crew a lighter, slightly easier to handle moving light, even if some of the roadcases available for it aren't the most OH&S friendly!

The fixture both compliments and competes with the already established X.Spot and Mac2000, and if you haven't seen it yet, expect to see the VL3000 becoming more prominent on events around Australia and the world in coming months.

• Special thanks to Tony at Chameleon for loaning us these movers.

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[www.chameleon-touring.com.au](http://www.chameleon-touring.com.au)



# Edinburgh Military Tattoo

For only the second time in its history, the Edinburgh Military Tattoo ventured away from its home in Scotland to perform a series of spectacular shows at Sydney's Aussie Stadium. The show featured 1300 performers who played, marched, sang and danced their way around the parade ground set in front of a twenty-five metre high replica of the Edinburgh Castle.

Australian LC Mark Hammer was given the daunting task to create a lighting system that would be just as impressive as the performers and musicians, and could both illuminate the parade ground and the enormous castle at the southern end of the stadium. Mark worked with the Scottish tattoo lighting designer, Colonel Richard Hamblator to reproduce the lighting style of the original Tattoo in the best possible way. The design called for several relatively simple concepts – lighting the field with 'strips' of light to reveal and hide certain sections, and lighting the castle in the traditional colours.

Realising that the size of the Australian installation would be considerably larger than its Scottish counterpart, Mark opted to design a rig based around moving lights as opposed to percents or static wash fixtures for several reasons. Mark noted that a moving light rig would be far less labour and time intensive to focus, as the trusses were not incredibly accessible in their flown positions. Using moving lights also reduced the show's dependence on dimming equipment, saving on the amount of gear needing to be moved onto the catwalks of Aussie Stadium.

For the event, five trusses of fourteen moving lights were hung on each side of the stadium. 8x Mac2000 Wash, 4x Mac2000 Performance and 2x Mac2000 E Profiles were rigged on each truss, and made 'weatherproof' by an interesting concept – a long sheet of clear plastic was stretched across the top of each truss, overhanging each side thanks to a few scaffold pipes. Mark reported that they worked fairly well, until the plastic collected the rainwater and dumped it on unsuspecting punters in the stands below!

While competing with the severe rain storms that lashed the stadium in the days before the show opened, the lighting team also had to deal with the wind, which blew the trusses around continuously. Mark noted that with the long throw distance, any slight movement of the truss would be magnified immensely by the beam on the field which would jump around all over the place! In an effort to counteract this, each truss was tied off to the back wall of the stadium from two points.

With all these rain shields, stabilizing lines and cabling problems, Mark was quick to admit that dropping a truss in for maintenance was not an easy procedure, commenting that it took a couple of hours to lower in just one of the ten trusses.

While the bulk of the lighting rig hung in the air, Mark also used a number of new VL3000 fixtures which were hung under the lower balcony of the stadium to sidelight the parade ground.

At the other end of the field, Mark used a mixture of 5CCWs, MiniCity Colors and 18C0w CityColors to light the castle. 2x 5k Fresnels with scrollers backlit the entrance gate, while waterproof bars lit performers high up on the battlements of the castle.



Control for the event was provided by a Hog III console which ran 3x DP2000 processors around the stadium, with one near the control position, and the remaining two on each side of the venue to feed data to the trusses. The three processors were linked by fiber cable. Three consoles were kept on site at all times, with the spare console making the journey from Singapore!

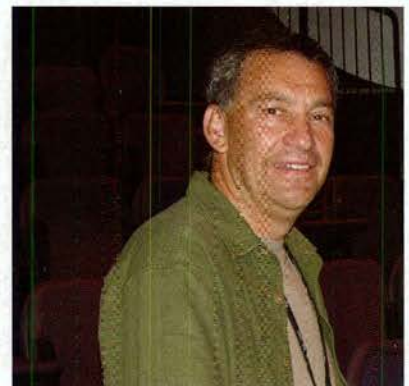
With such a large rig, the only option for the lighting crew was to 'BYO' power. Aggreko supplied four 500kva super silenced generators, paired together at either end of the stadium.

The show went off without a hitch, playing to over 160,000 people during its brief season. Mark Hammer should be proud that an event he was involved with over such a long period of time looked as spectacular and true to its original Scottish production as it did.

- Richard Neville

## Crew:

Production Manager: Janet Eaces  
 Lighting Supervisor: Mark Hammer  
 Lighting Console Operator: Gary Mott  
 Assistant Lighting Supervisor: Jason Frupp  
 Lighting Secondment (NIDA): Matt Tuncheon  
 Lighting supplied by Chameleon Touring Systems  
 Production Coordinator: Brad Gander and Tony Davies  
 Lighting Crew Chief: Hugh Hamilton  
 Senior Tech: Ian "Gooch" Blackburn  
 Setup and Show Crew: L'argen: Wilson, Tiana Salmon, Graham Walker, Adam Crawford, Tim Van Dyke, Steve Pearce  
 Chameleon SWAT crew: Jeff Ward, Greg Yates, Greg Little, Lauchlan Conquer, Steve Richards, Greg Davies  
 Fibre/Data Tech: Nick Eltis  
 Crewing and Follow spot Operation: Australian Crewing Service



LD Mark Hammer



# “Pig + Effect Mate, She’ll Be Right”

Richard Neville challenges lighting directors to resist temptation....

**T**wo people buy their tickets and walk into the arena to see a concert. One is your average punter, and the other is a lighting designer. The house lights go down, and the concert begins. In the first few minutes, our punter has seen the stage lighting all move in pretty patterns and cycle through every colour of the rainbow, and while they’re impressed, it’s nothing they haven’t seen before. For the lighting designer however, the first few minutes have shown him a circle effect with a random colour macro. He’s not impressed – and it’s everything he’s seen before.

In recent years, technological advances in both moving light and console technology have given the lighting designer a whole new set of tools to work with when programming a show. Consoles such as the Hogs, Cases and GrandMAs have powerful inbuilt algorithm based effects libraries with an infinite range of control parameters. At the other end of the data line, almost every automated luminaire on the market today has some kind of macro-style effect – from random strobing to iris pulses and gobo shakes.

By combining even one or two of these console and fixture based effects, it becomes possible for the lighting designer or programmer to create seemingly complicated looks very quickly and easily. It’s simple – put your lights in a position, apply a movement effect, throw in a random colour effect and a shaking gobo, and

there you go – a moving, scrolling lighting look in less than the time it took to you read this last sentence.

Herein lies the problem: programming in this way is so easy, fast and unimaginative that anybody with a basic lighting knowledge can string together a series of these looks to come up with a way to light a show.

As a result, we see the same inbuilt effects in almost every television, concert, theatre or architectural installation both in Australia and overseas. The same movements patterns and random iris, strobing or colour progressions are so instantly recognizable to lighting designers that many can identify the fixture purely by the way it is behaving.

Many designers will question whether this is a problem: “Surely the audience doesn’t know any different, do they?” “What do they care if I just whack some effects together?” “Why should I put in any more effort than the bare minimum to achieve the results for my client?” “The effects do everything I need anyway” – In many cases, these comments are also excuses.

In reality, inbuilt effects and macros only offer the designer access to a tiny fraction of their rig’s capabilities, and it is this tiny fraction that is continually seen by the public, as well as the rest of the lighting industry. By now, the solution to our problem is emerging: if the designer is willing to invest more time and thought into their lighting design, it should be possible to come up with a

**Herein lies the  
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much more intricately designed and programmed rig which interacts more with its surroundings to create an better overall experience. Confused? Let me offer some solutions to some of the most common 'effect offenders':

#### - Effect Offender #1: The random colour

We've all seen this before – an entire rig 'randomly' changing colour. It's a great effect, but does every colour in the sequence relate to your event? For example, the random colours produced by Martin's CMY system are predominantly lighter pastel colours with fewer saturated colours. On the other hand, the random colour function of the Studio Color punches out fantastic saturated colours with fewer pastel shades. If you're lighting a rock show, the subtle colours of a Mac in random colour may not be the ideal effect for the situation.

Sure, it's easy to program and requires no thought, but consider this solution: Instead of just applying a random colour, create a separate cue list of colours that match the rest of the colours you have used in the song. This might be a long list of several colours, or something as simple as a few different shades of amber and red. Then, all you have to do is set a chase rate and direction and trigger the list via a comment macro, for example, to achieve a simple random colour effect that is unique to your design, and your show.

#### - Effect Offender #2: The rainbow colour

This overused effect has similar problems – not all of the colours are always the best for your event. This is easily overcome though by editing the effect in either the console or on an offline program, by simply playing with the default levels of CMY and the rate that they change, you can create a customized rainbow effect that easily outperforms the standard effect.

#### - Effect Offender #3: The circle effect

Creating a continuous movement effect for your lights can be difficult to program, especially if you want something that's smooth. However, applying an offset circle effect to your rig won't turn any heads, and more often than not you'll find at least one of your lights swings around to light a back stage area, video screen or some other element that is best left in the dark. To create something a little different, you don't have to immerse yourself in programming – it could be as simple as experimenting with effects engine values or overlaying different effects at the same time.

Get to know how your console's effects engine works, instead of just fiddling with knobs until it looks nice. To help you do this, HighEnd have two software tools available to create and modify custom effects looks, in addition to the effects editor available on HogPC, HogII and HogIII.

Go to [www.flyingpig.com/support/hog2/downloads/](http://www.flyingpig.com/support/hog2/downloads/) and grab a copy of FPS Effects Editor or Shape Create (the latter is commercial software). This will let you experiment and see visual explanations of how each effect works.

#### - Effect Offender #4: The random strobe

While this effect can create some fantastic looks, they can look even better with a bit of thought. If you have a large moving light rig, you can make a random strobe even more random by spreading different strobe rates or intensities across the rig. Grouping fixtures by trusses or other location can make the effect more dramatic too.

It's also a good idea to jump back to your console's manual now and then – you'll be surprised how well it can jog your memory or suggest a new way of doing something.

These are just a few examples of how you can make ordinary, everyday effects a bit more interesting and original. Your audience might notice a change with more specific lighting and programming that compliments colours and actions on the stage. However, your peers will notice it, and there's always a need for programmers who can do more than just hold down the pig key, push the effect button and call themselves a pro! •



## BigLite. It is...

Large-Format specialists, The Electric Canvas, have been appointed as regional distributor for the BigLite 4.5, the most technologically advanced large format intelligent xenon searchlight / wash-light fixture on the market today. This 4.5kw fixture has been developed and manufactured by ZAP technology and X&Y Systèmes of Paris, a company with many years experience in the rental and operation of large-format robotic fixtures.

The BigLite 4.5 offers lighting designers real-time color mixing and diffusion with electronic strobe effects and energy saving standby modes - improving bulb life, fan noise, and heat output.

The fixture will generate a spot to wash effect 3x per second and they say it moves effortlessly at speeds up to 3x faster than the competition.

The space-age plastic shells are sleek, water resistant, and highly durable.

BigLite is specifically designed for Concert Tours, Film & Television, Arch tainment and Live Events and comes with a universal truss adaptor for top or bottom mounting.

This 120kg searchlight utilizes heavy-duty DC motors and optical encoders ensuring ultra smooth and fast robotics with minimal mechanical stress on the drive mechanisms. Scroller and dimmer modules are hot-swappable and can be bench operated with DMX for maintenance.

Also planned for 2005 are a 7kw version – dubbed "SuperBig" as well as a 2.5k and 1kw Xenon version.

[www.theelectriccanvas.com.au](http://www.theelectriccanvas.com.au)

## New Releases for Event 4

Released onto the JANDS website in February are a range of new releases for Event 4 users.

Version 5.0.1.12 software as well as an expanded version 3.0 of the master library file containing over 220 fixtures are now available as well as the latest version 1.0.3.0 of the Event 4 offline editor.

The Event 4 range's capabilities have continued to expand thanks to the work of JANDS R & D team and the console represents more value now than ever before.

Jands invite users to update their console to the latest version.

• [www.jands.com.au](http://www.jands.com.au)

## Lighting Paper- work System

This is new software to streamline the paperwork and information when designing and implementing entertainment lighting.

The pitch: A functional display significantly speeds up the use of paperwork information during hang, focus and tech rehearsals. Includes many features not found in other programs.

LPS runs on Windows and Macintosh and automatically updates its library files and program enhancements over the internet as they become available ensuring users have the latest information.

Contact Rosco, call (02) 9906 6262 or any visit a Rosco dealer.

# Coemar iWash LED

By Richard Cadena

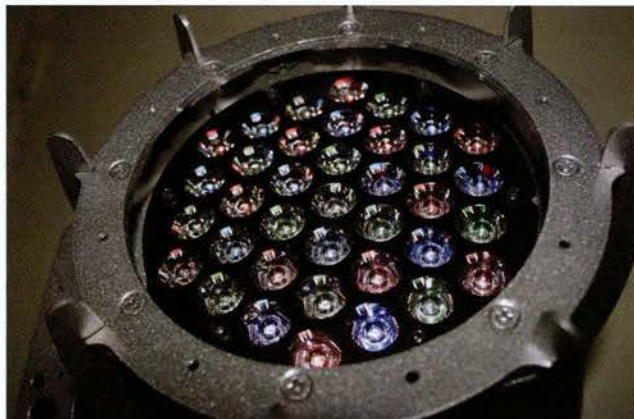
**If** you trace the history of automated lighting, you'll find a marked trend towards smaller, lighter, cheaper and brighter fixtures. But that trend was derailed, at least temporarily, when the convergence of lighting and video led to the use of 250 pounds of DLP projector. The lure of soft gobos and full-color moving projection with pan and tilt capabilities has, in many designers minds, outweighed the trade-offs in size, weight, cost and intensity. Now the proliferation of LED luminaires is giving rise to new hopes of getting back on trend.

One of the new LED offerings appearing on the market last fall comes from a manufacturer known more for pioneering automated lighting than for LEDs. Given that Coemar was one of the first to market with an automated light that you could buy – the Coemar Robot in 1986 – it's fitting that they would be one of the first to offer an automated light with LEDs. Coemar's iWash LED was first introduced at PLASA last fall and it was launched in North America at ET/LDI 2004.

Though the fixture is housed in the same chassis as the Coemar iSpot 150, it uses a little more than a third of the power and puts out a comparable amount of light, not counting its white light. The low power consumption not only saves electricity, it also makes it easy to find available power for it. At about 90 watts, it draws a mere 0.375 amps at 240V and you can actually put more than 40 of these fixtures on a 20A circuit and still have 20% overhead.

The fact that it draws little power also means it's very lightweight. At 11.2 kilos it easily passes the Starbucks test; you can pick up the fixture with one hand and never have to put your coffee cup down. Because the housing is borrowed from the iSpot 150, much of the space in the head and base is empty. Thirty-seven 1-watt LEDs, 12 blue, 12 green, 12 red and one white, are arrayed on the face of the luminaire's head. The white LED is ostensibly for warming up the white light.

We measured the light output using a Minolta T-10 Illuminance Meter. With a 5.8-metre throw, we measured the field angle (10% of the centre beam illumination) to be a little



more than 2 metres in diameter. The uniformity of the beam is remarkable; the centre peak appears in virtually the same spot for every colour combination and the field is very round and smooth. The illumination readings are shown below:

Colour	Illumination (Lux)	
Red		183
Yellow	366	
White	474	
Blue + Red (light purple)	269	
Blue + Green (light aqua)	301	
Green	215	
Blue		97
White + White (color balance)		506

Although the numbers may seem low, they are very comparable to a

150-watt discharge source with dichroic colour mixing except when it comes to white light. In the right environment, the iWash LED provides plenty of punch to light up a 2-metre round surface. It would be ideal for lighting set pieces, architectural elements or for truss warmers. The red and green are very saturated and the blue is on the medium side. There are no aberrations in the field although it does produce some unusual tri-coloured shadows due to the nature of the multiple sources.

The dimming is very good though the last few steps before blackout are a bit steppy. Because of the nature of LEDs, the electronic strobing is very fast and crisp. The yoke movement is very smooth and quick although somewhat noisy. You wouldn't want to have eight or sixteen of these units moving during a quiet scene but I wouldn't want to miss the opportunity to use them because of that. They are as good as any round beam LED offering currently on the market with the added bonus of automated yoke movement and an integral power supply. There is no need for remote connections to a central power supply, which saves space and aggravation. It takes a standard DMX signal on a 3-pin XLR connector and setting the DMX address is very easy with the LED display.

I've specified and used LEDs in projects before and I am aware that there are benefits and compromises offered by LED technology. The benefits, I would venture to say – up to 100,000 hours of lamp life, virtually no maintenance, small, lightweight fixtures that are easy to rig, and very low power consumption – mostly outweigh the compromises. In this case, the iWash LED fixture not only provides the same benefits as other LED fixtures, it is also fun to use and play with.

Years from now, lighting professionals will look back with amazement that we ever used lights that weighed as much as 50 kilograms. As LEDs continue to get brighter and less costly, they will find more applications in our field and eventually raise the benchmark for size, weight, output and cost. Right now, the Coemar iWash is right there at the forefront.



## Swisson DMX Tester

Reviewed by Richard Neville

This great lighting tool has been on display at LDI for the last couple of years, but have only been snapped up by a few Australians with keen eyes.

Swisson is a small company based in Switzerland who manufacture small DMX devices such as splitters, mergers and single channel DMX dimmers. Their small hand-held tester is one of their most popular creations.

The X-MT-100 runs on a 9v battery and functions in three modes, selectable by a dedicated mode switch. In receive mode, the unit can monitor an entire DMX universe for channel flickers or any data abnormalities. When a problem is found, a concise error message or channel number is displayed on the screen. The XMT can also display the level of any channel as a percentage, decimal or in hexadecimal form. On top of all this, the unit can also record a snapshot of the current output of a console and save it.

In send mode, the XMT runs like a remote focus unit where you can select channels individually or by group and control their intensity. The unit also has the ability to save levels in one of 16 scenes that can be recalled later.

Finally, cable test mode allows the use to connect a data cable to the unit for testing. The XMT runs a continuity check on each line and can detect shorts between lines. Cables receive an OK message if they pass, or a summarized error message if they fail.

The XMT also features a red backlit LCD screen and power saving options, making it ideal for prolonged use when hanging around in a lighting grid! For around \$US300, the XMT comes with a protective pouch and a set of 3-5 adaptors for cable testing. This is a fantastic lighting tool that's mobile, simple to use and packed with features... it's a must for any lighting technician!

For product information, log on to [www.swisson.com](http://www.swisson.com)

# Gravity Takes No Vacations



by Richard Cadena

**“Man’s mind, once stretched to a new idea,  
never goes back to its original dimensions.” -  
Oliver Wendell Holmes Jr.**

I want to be the first to light a show in space. Oh yeah, sure, it would be fun to experience multiple g forces on liftoff and to drink Tang in space, blah, blah, blah. But I want to light a show in space for a different reason. I want get a good night’s sleep.

For years I’ve been pondering the solution to one of the biggest challenges in lighting design, and I think I’ve finally hit upon a solution. The two biggest potential safety hazards are electricity and gravity. I’ve all but given up on perfecting my anti-gravity machine and the judge made me swear I’ll never again use the neighborhood kids in any experiments (I still think Tasha’s singed hair look is an improvement). So I think putting a lighting rig in space where it’s free from the constraints of gravity would be ideal. A free-floating rig would be easy to set up, easy to focus and, most importantly, it would set my mind free of those nagging doubts about safety. Then I could sleep soundly at night.

Is it just me, or does it bother you when, in order to do your job effectively you have to hang two tons of metal and glass over people’s heads. And regardless of how many times you’ve done it before and how safe you think it is, you have to second-guess yourself: Is it designed properly? Is it implemented properly? Is it being maintained properly? It’s only natural for a conscientious person to constantly question the safety of their work, isn’t it? As a responsible professional, your most important job is to imagine the worst case scenario and to build in safety features to counter them. You should play “what if” as if people’s lives depend on it, because they do.

One of the situations I continually run into is that many rigging situations involve difficult access to the lighting rig. Darn that gravitational pull! It’s fine if there are professional riggers and lighting professionals on hand who have access to the proper equipment and knowledge of how to use it. What bothers me are the jobs involving inexperienced staff who are operating on shoestring budgets. You find them in nightclubs, churches, educational and regional theatre where the staff is eager but they lack experience. I know I’ve had to use extension ladders before to access dead hung lighting in areas where access is impeded by set pieces or other constraints. It’s no fun climbing 10 metres in the air when the batten is swaying ever so gently. It’s a little better when you have a man lift, but I’ve also been in situations where the lift isn’t quite tall enough to reach comfortably. How many times have you seen a person standing on the rail of a man lift to gain an extra half metre of height? Or how many times have you seen someone put a ladder on top of a riser to gain extra height? Now put an inexperienced person in that situation

and it’s a scary proposition. That’s what I’m talking about.

I’ve often thought a bosun’s chair would be an ideal solution. If the truth be told, I actually thought I had an original idea when I suggested to Harry Donovan that some sort of harness could be attached to a track to roll along the batten to focus and maintain the lighting equipment. He said, “Oh, you mean a bosun’s chair.” Later on when I suggested to Harry that I wanted to write about the “bozeman’s chair,” he suggested that I think twice about writing on a topic that I can’t spell. Little does he know that I have a spell checker and that if I declined to write about things I know nothing about then I would have precious little to write.

Harry went on to explain that a bosun’s chair is a contraction of “boatswain’s chair.” “The boatswain,” he says, “is a person on a ship who is always referred to as the bosun or bosun’s mate, or sometimes familiarly as ‘boats.’ This is a very old position that has carried into modern times because the skills are still useful.”

“The idea,” Harry continues, “is pretty simple. The focus track is a fairly straightforward system involving some sort of track like a curtain track, a carrier or two, and a bosun’s chair or climbing sit harness.”

To be able to sit in a harness and roll along a track has got to be easier than balancing an extension ladder on a riser and leaning it on a dead hung pipe. Apparently many Broadway touring shows used to use this method. Why isn’t this system more popular in permanent installations?

In Donovan’s words, “This is a system for experts only. It isn’t foolproof; it requires careful and knowledgeable attention. The details are important, things like stops on the ends of the track so the carrier can’t roll off the end, sequence of adding/removing counterweights from the arbor and the person’s weight from the pipe (in the case of counterweight pipes). It would be a bad idea for students, amateurs, volunteers, churches, etc.”

But that’s not the worst part. “The difficult thing,” Donovan says, “is also complying with government fall protection regulations at the same time.”

Given the choice between trying to comply with government regulations and strapping myself to a 185-foot bottle rocket with seven million tons of rocket fuel, I’ll take the space flight any day. I think rocket science is easier than navigating the governmental bureaucracy.

Ten, nine, eight...

Thanks to Harry Donovan of Rigging Seminars ([www.riggingseminars.com](http://www.riggingseminars.com) or [www.riggingbooksandprograms.com](http://www.riggingbooksandprograms.com)), whose books, seminars, software and advice are invaluable.

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