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Studio Sound



THE INTERNATIONAL TECHNICAL MAGAZINE FOR
PRO AUDIO, POSTPRODUCTION & BROADCAST

PREVIEWS

Tascam digital and
Yamaha 03D
desks

MADONNA'S EVITA

Sound for screen and CD

EXCLUSIVES

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The
**Al
Schmitt**
Interview



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564

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SCHMITT INTERVIEW

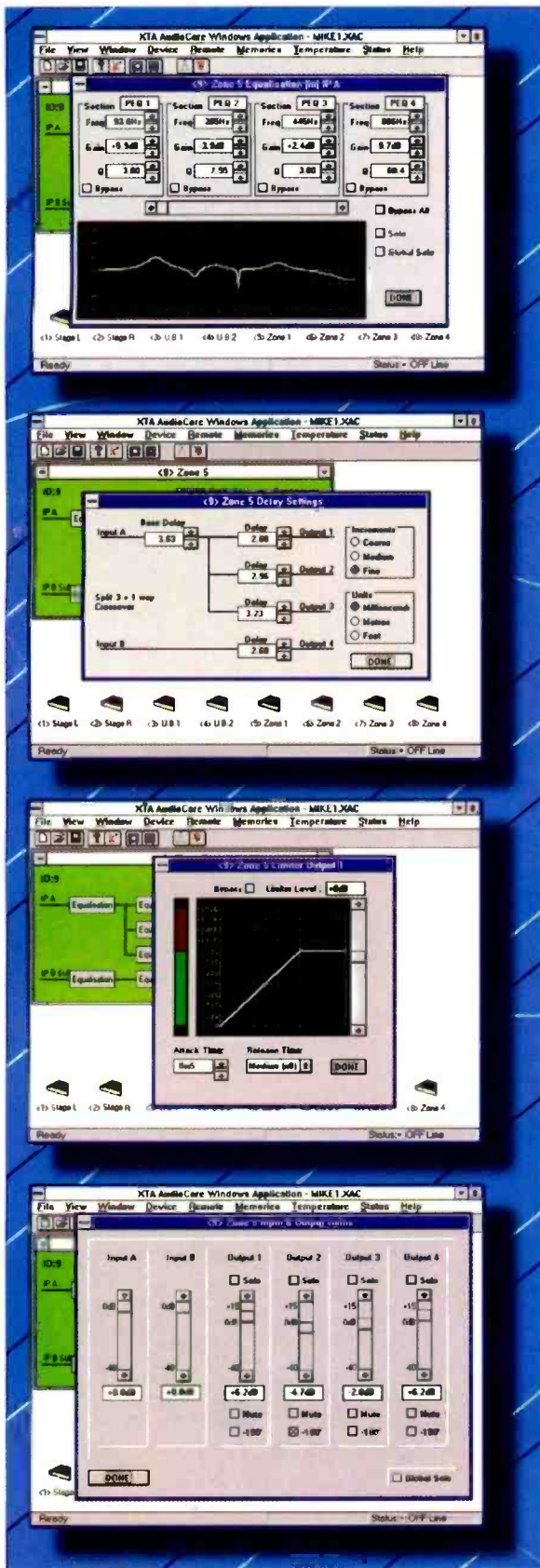
Al Schmitt's discography reads like a definitive history of popular music. From Duke Ellington to Michael Jackson, he thumbs through the pages exclusively for **Studio Sound**

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RICHARD BUSKIN was born in London, but lives in LA, and has been writing for 12 years for the likes of the *New York Post*, *Stdney Morning Herald* and *The Observer*. He's authored books on John Lennon, Elvis, The Beatles, Marilyn Munro and Princess Diana.



ROB JAMES is occasionally a postproduction consultant after almost a quarter century at BBC TV where he was managing Post Production Sound. A dubbing mixer by profession he is a BAFTA award winner.

Craving new blood

FLUSHED WITH THE ACHIEVEMENT of completing another AES a realisation swept across me as I perused the gathering. Given that the American show is traditionally the largest and most well attended, and that California is likely to generate more small, esoteric, and downright odd-ball audio companies than New York, or any European venue could ever rouse, we have a problem. Looking at the year's largest dedicated audio fest all in one hall, it is apparent that the number of manufacturing participants is not really getting any bigger. The turnover is clearly improving for those that have a piece of the action, and demand is stronger than it has been for a long time, but what we are not seeing is significant infiltration by any sort of new blood. There were probably more channels of valve mic preamp at the show than there were digital, which is great for customer choice and diversity, but increasingly it seems that the technological future is in the hands of the large conglomerates. Where are the companies that will come from nowhere and turn the business on its head—tomorrow's SSLs, Alesis and Digidesigns? Will we see their like again?

Zenon Schoepe **EXECUTIVE EDITOR**



Schrödinger's copycat



IT WAS A SMALL, HOT, SMOKY PLACE crammed to absurdity with people spilling drinks over each other in their attempts to get a sight of the band. The band were hotter and smokier than the venue, and well worth the effort, and the discomfort. In short it was a jazz gig.

Caught beer in hand, I found myself acknowledging the completion of a piano solo that blatantly pushed the limits of modality with the kind of casual applause derived from slapping a thigh (my own) with my free hand. And it was then that the revelation struck me —I, possibly alone among reasoning beings, had come to terms with the Zen conundrum, 'What is the sound of one hand clapping?' It was, I must confess, a disappointing moment; neither philosophical revelation nor audio exhilaration, the sound of one hand clapping was simply a

lacklustre physical experience borne of physical necessity. Nevertheless, it was a revelation of sorts. (More jazz. More beer.)

On the basis of the music, the beer and my earlier great insight, I was convinced that the world of philosophical reason was now open to me. What other long-standing problems were there to solve? Perhaps that of the sound of the tree falling unseen in the forest... Did the religious sermon I'd heard some weeks previously—that had declared beauty an attribute that required a human witness to attain it—extend to the audio world and render the event silent? Could it not, therefore, also be invisible? Alternatively, what if it were to be witnessed by a deaf person? Time for a jazz parallel. I could certainly hear the blind trumpeter's solo being performed in front of me, but what of a solo practised without an audience—could it be heard? (More Jazz. More beer. More philosophy.)

The solution had to lie outside of this bar spilling smoke, sound and people out of its windows. Perhaps I should be considering an unattended facility working late into the night—like a tape duplication shop. What really happens in the early hours of the morning when cassettes should be soaking up audio like a forest floor welcoming falling tree boughs? If the trees fall silently, shouldn't there be blank cassettes awaiting the staff in the morning? Let's say there are, let's say that these failures are later put down to dry joints or jammed cassette mechanisms, but when do they occur? Okay, so the tapes are blank on listening, but were they blank before that point? (More beer. More philosophy.)

What if Erwin Schrödinger had a tape duplication system as well as a cat? If the cat had the option of being alive or dead up until the point at which somebody checked on it, surely his duplication setup performed the same way: the condition of the cassette remains indeterminate until somebody listens to it. Maybe then, the falling tree makes no sound until someone declares it fallen. (More beer.)

Tim Goodyer **EDITOR**

Sound in

LA show stopper

AS THE SCIENTIFIC world has devoted years to the patient search for conclusive evidence of life on Mars or beyond, audio engineers have cruised the world's trade shows in the hope of rediscovering vital signs in professional audio. Both parties have suffered their share of frustration. But after a succession of unconfirmed sightings—and a good number of dashed hopes—the recent AES Convention finally delivered the goods for pro audio.

Los Angeles could have been the site of another archeological dig—a further chance to rake over the ruins of a once vibrant industry. But in place of previous shows' bravado and bullshit was an event that delivered on just about every level. It should not be forgotten that this show marked the return of the West Coast venue to LA—with its pre-eminence in feature films and absurdly high recording studio density, but even allowing for this general enthusiasm was tangibly high, and new equipment covered every aspect of operation,



UK: Formerly the famed Trident Studios, more recently The Sound Studio, London's St Anne's Court address is active again. The live room that once hosted seminal sessions from The Beatles, David Bowie and Lou Reed now houses a Dawn hard-disk/Beta SP system and provides audio postproduction services to a range of clients including TV, radio, corporate and talking book work. The Sound Studio. Tel: +44 171 734 6198

and was to be found on the majority of the stands. As an indication, Yamaha's 03D low-cost digital desk is guaranteed to put the cat further among the pigeons, but was far from being the only console causing a stir—witness SSL's G Plus SE analogue desk,

Euphonix' digitally controlled analogue CS3000, AMS Neve's analogue VX, VXS and Digital Film Console. Add to this the introduction of beyerdynamic's MCD100 'digital condenser microphone'; a selection of speakers from the likes of Genelec, ATC

and DynaudioAcoustics; a host of new TDM plug-ins and outboard from almost everybody, and you're beginning to get the overall picture.

The issue of 96kHz sampling systems was relatively high on the demonstration agenda, with dCS hosting a convincing demo of its worth, and dB Technologies joining the fray with a brand new high sampling D-A convertor. Sonic Solutions' demonstration of working DVD video and audio was another portent of the likely future.

Venturing outside the confines of the exhibition centre and into a sample of LA's studios gave a good insight into the state of the West Coast recording business. Like many studios around the world, those in LA suffered through the recent world recession not least in terms of the rates they have been able to command. Now, however, the tide appears to be turning, allowing not only a return of financial confidence, but the ability to invest in new technologies. The great hope, then, is that this is an early indication of world fortunes. **TIM GOODYER**



US: Strutting with Alanis Morissette on her current world tour was the Audix OM-5 mic. On the advice of FOH mixer Renato Petruzzello, Morissette first adopted in-ear monitoring, and then the OM-5 after testing 'every single mic currently on the market'.

WEB: In line with its plans to build 'the record company of the future',

EMI International New Media has announced the 'completion of phase one'. Operating from its UK HQ, this initiative is set to coordinate 'new media' activity across EMI International and its associated Virgin labels through the Internet. This involves EMI's renowned Abbey Road and EMI Classics studios as well as various administrative centres, and will be hosted by the Cambridge-based PSINet. The company's existing web sites are set up to represent both the international aspects of the labels and specific articles, and presently cover a variety of areas ranging from the general (EMI Classics) to the specific (Queen)—all of whose management and monitoring will be conducted via the PSINet system.

US: Adapting Dolby digital compression to its own ends, a new American company called Liquid Audio has taken the cause

of audio distribution via the Web to heart. Liquid's Liquifier software facilitates 'near CD-quality' streaming and uploading of audio for Internet distribution and incorporates waveform editing, sample-rate conversion and format conversion in versions for Windows 95 and a TDM environment. Downloading is via Liquid Music Player which also handles art and text. Liquid's collaboration with EDnet—which includes customisation of Liquifier and Music Player—is intended to bring the system into use with recording artists, audio engineers and ad agencies under the manifesto of 'providing a means for music commerce on the Internet'.

Relevant Internet sites can be accessed at: www.liquidaudio.com and www.musicblvd.com



WEB: Capitol Records' New Media division joined forces with comms experts Telos and software specialists Macromedia to put the Godfather of Funk into the cyber ether. The November Web broadcast of George Clinton Live from the Mothership employed Macromedia's Shockwave plug-in to deliver Clinton's audio, animation and text—the option to buy the new album online from Capitol. Shockwave can be downloaded gratis from www.macromedia.com

◆ Nashville's Ocean Way Recording Studios has become one of the first two sites to opt for Sony's prestige OXF-R3 'Oxford' digital console. Also making inroads into the Nashville scene is Euphonix with the installation of a 96-input CS2000 at the new Curb Studios on Music Row. The second OXF-R3 installation will be at Ocean Way's LA operation, and is set for early 1997. Curb Studios, US. Tel: +1 615 255 6141. Sony, US. Tel: 201 930 1000.

◆ Euphonix, US. Tel: +1 415 855 0400.

◆ Danish television broadcaster, TV2, has recently installed a Neotek Esprit console. The 48-channel desk will be used for production work in news work. Elsewhere in Scandinavia, Swedish broadcasting company P3 is taking on two Fairlight FAME systems for a new radio drama and feature production complex. The facility will also handle music mixdown duties. Martinsound, US. Tel: +1 818 281 3555.

Fairlight-STV Video Data, Sweden. Tel: +46 8 714 0020.

◆ The Santa Monica facility owned by Hans Zimmer & Jay Rifkin, Media Ventures, is to be the first taker for Euphonix' new CS3000 console. The 96-fader desk will be equipped with Euphonix' Hyper-surround multichannel busing along with motorised faders and dynamic EQ automation, and will be installed in Studio A. Other American West Coast audio-for-video news comes from Warner Brothers Studios in Burbank, where an Otari PicMlx monitoring and panning system has been installed for use in preparing sitcom soundtracks. Euphonix, US. Tel: +1 415 855 0400.

Otari, US. Tel: +1 415 341 5900.

◆ London's famed Shepperton Film Studios has ordered a second Harrison MPC motion-picture console for its Theatre One. This 136-input MPC order accompanies the delivery of a 56-input MPC to FR3 TV in France where it will be used for programming post. Shepperton Studios, UK.

Tel: +44 1932 562611.

Harrison, UK. Tel: +44 1442 875 900.

◆ New York has seen two SSL 9000J consoles ordered by two prestige music recording studios. The first order has been placed by the Manhattan Room With a View studio which intends to use it for music mixing duties; the second is for a purple 80-input console and comes from Electric Lady for Studio B.

SSL, US. Tel: +1 212 315 1111.

Room With a View, US. Tel: +1 212 545 9258.

Electric Lady, US. Tel: +1 212 677 4700.

◆ New York scored a first this month with Right Track's order for the new AMS Neve VX analogue console. The 96-input desk will be installed in Studio A as part of a complete refurbishment set to open in January 1997. AMS Neve, UK. Tel: +44 1282 417282.

◆ Germany's dance studio community has taken to Amek's Rembrandt desk in a big way with further installations taking place at Space Park in Winterbac, Beat Disaster in Darmstadt, Logic Records in Offenbach, Metrix Tonstudio

in the former East Germany, Musikproduktion Mike Staab in Aschaffenburg, Music Works in Dusseldorf, Starbase Studio in Hamburg and Syndicate Musik-production in Munich. Amek, UK. Tel: +44 161 6747.

◆ Hollywood's Todd-AO/Glen Glenn Studios has taken a third Bag End ELF monitoring system for its postpro work. The installation brings the studio's use of the ELF system to six. American Bag End Installations now number in excess of 100, and include ABC Television Network's TV1 production facility, New York's Axis Recording Studios, and Nevada's Camrac film and video post studios. Bag End, US. Tel: +1 847 524 6231.

◆ Japanese facilities confirming their commitment to AMS Neve include Tokyo's Fuji Television and Omnibus Japan. The Capricorn console ordered by Fuji Television is to be installed at the company's new location, and will serve in the audio-sweetening DAV-A studio. The AudioFile Spectra ordered by Omnibus is the dubbing studio's seventh, and will be used primarily for English-language dubbing of foreign films.

General Traders, Japan. Tel: +81 3 3291 2761.

◆ British producer Pete Bellotte has made the move to digital in his private studio with a Soundtracs Virtua console. Bellotte's commitment to Virtua accompanies other British Soundtracs activity including a 48-channel Jade console installed in DMC's fourth studio along with DynaudioAcoustics M2 monitoring, and outboard including Focusrite Red 2, TL Audio mic pre-compressor, tc electronic M5000, Drawmer DS201 gates and a selection of high-end mics.

DMC Records, UK. Tel: +44 1628 667276.

Soundtracs, UK. Tel: +44 181 388 5000.

◆ LA producer Rhett Lawrence has taken two Pro Tools III v4 systems complete with P&G DC16 digital controllers. The systems are already in use on music recording projects such as the forthcoming US album for Jennifer Brown.

Digidesign, US. Tel: +1 415 688 0600.

Penny & Giles, US. Tel: +1 310 393 0014.

◆ The Netherlands' Sun Studio has taken delivery of four Rorke Data VMOD-100 optical disc-based video recorders with 2.6Gb drives. The VMODs are to complement the studio's four new SSL Screensound systems, and are being evaluated with Sun's Danish and Norwegian operations in mind.

Rorke Data, The Netherlands. Tel: +31 591 651165.

◆ California's Edge Studios mastering facility has adopted Genelec 1039A monitoring for its Carl Yancher-designed, Sonic Solutions-equipped room. Further American Genelec installation include a flood of Atlanta-based post facilities such as Peachtree Post, Doppler and Crosstown. The new 20th Century Fox audio post facility in LA has also adopted 1035B and 1038A as part of its surround monitoring system.

Genelec, US. Tel: +1 508 440 7520.

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Visions of the Invisible

The phrase 'I'll believe it when I see it' has curious resonances in pro-audio — particularly when compared to other areas of hi-tech business. So what happens when lack of vision affects sound?

One of the more obvious attributes of sound is that you cannot see it. Often we convert sound into an electrical signal for convenience. Unfortunately, such electrical signals are also invisible. It is, or should be, a source of discomfort to recall that the emperor's new clothes were also invisible. Of all human endeavours, not many deal in the permanently invisible. Imagine how much more difficult it would be to sell bricks if they were invisible. Stock and quality control would be a nightmare.

Of those industries which deal with the invisible, most have found ways of handling the problem by a combination of rigour and visualisation to produce quantifiable performance. In comparison, the audio industry appears to have fared quite poorly, making slow progress and supplying goods that often owe more to empiricism than understanding. Considering the pseudoscience that often accompanies the product, perhaps we should change the title of the story to *The Empiricist's New Clothes*.

Pure mathematicians deal with the invisible, but they have evolved rigorous ways of avoiding error based on the use of the proof, which is an arcane extension of philosophical reasoning. Pure mathematics may not appear to very relevant to everyday life, but without it the error correction processes in all digital audio recorders would not exist. Aerodynamicists also deal with the invisible. In fact there is a great deal of similarity between acoustics, and aerodynamics and a fuzzy area where they crossfade. Consequently, true experts in either discipline tend to know quite a bit about the other. I occasionally joke that aerodynamics is the DC component of acoustics. An aircraft is just a transducer which converts power into lift, and is not fundamentally different from a loudspeaker. Bumble bees and helicopters are both AC flying machines and obtain some of their lift from the Newtonian reaction to radiating sound. This is known as dynamic lift and conventional theories of steady flow aerodynamics

cannot explain it.

Aircraft and helicopter design has made enormous progress in the last few decades, evolving products which are quieter, more comfortable and use less fuel. These products work because their designers have found ways to visualise and understand airflow and have employed new materials.

RADIO ENGINEERING also deals with the invisible, yet radio engineers, and particularly antenna designers, have found ways of visualising radio waves. The directional properties of an antenna are extremely important, and antenna design has evolved to deliver the goods. The development of the phased-array antenna that can be steered without mechanical motion, and whose polar diagram is variable, was carried out by designers who could visualise the process. In contrast, audio equipment seems not to have progressed very far. Despite the obvious application of the phased-array technique to precision loudspeakers, only Peter Walker had the vision to employ it. No further phased-array products emerged after he retired.

I suspect that the main reason why audio engineering has remained so empirical and undisciplined in comparison to other endeavours is that the results of getting it wrong are quite mild. People don't die if a mix is unbalanced. Insurance companies don't have to part with millions if a loudspeaker fails to reproduce the input waveform. It is possible to make claims for a product which contradict the laws of physics without fear of instant derision. In other words audio is not an example of putting your money where your mouth is.

Not so with aviation where the consequences of getting it wrong are obvious and dramatic, and where hyperbole is so readily exposed. As aviation is perceived as dangerous, then steps are taken which ensure that it isn't.

AS AUDIO IS PERCEIVED as safe, little is done to ensure that it's done properly. Very few technological industries have the same undisciplined approach to training as the Western audio industry. To any educationalist, the concept of starting off a career in a

technological environment by making tea causes hysterics. Educationalists call it 'sitting by Nellie' and it's fine for learning how to operate a bread-wrapping machine. That anyone can learn the principles of modern audio equipment just by watching someone using it is obvious nonsense. Yet this approach seems to be acceptable in the audio industry. Sitting by Nellie also teaches that learning theory and book reading are unnecessary.

Unfortunately, this approach results in people who simply don't understand fundamental principles. Their ability to make value judgements, to select new equipment or identify problems in existing equipment is far below what it could be. Only by understanding basics is it possible to judge if equipment falls short of what is theoretically possible. This state of affairs often goes unnoticed because the employer's skills were picked up in the same way. Where this is the case lack of profitability and lack of vision are often found together. Learning by copying is fine until the technology changes. Recall the chaos that followed the introduction of digital audio where the concepts of signal level are quite different, and the behaviour of error-correcting systems is alien to analogue experience.

Aviation has been through far more technological disjunctures than this: the changeover from propeller to turbojet, from conventional instruments to the glass cockpit, from metal to composite, from pushrods to fly-by-wire. Yet, there was no chaos because those involved were properly trained and the equipment was designed, tested and accepted using well understood and measurable principles.

Now, I'm not proposing that audio should be regulated as closely as aviation, because that would be just as nonsensical as the current casual approach. However, there is little doubt that standards need to rise and we can all help. When did you last compare what you do with what theory allows?

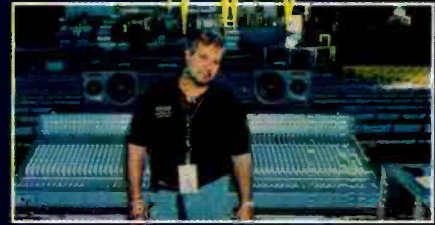
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The Next Generation



The elders of pro audio are about to be left behind. Although technology continues its steady advance, something radical has changed: how the young think has evolved. **DAN DALEY** tries to get his head around it

In William Manchester's brilliant opus of the transition from medieval times to the Renaissance, *A World Lit Only by Fire*, he notes of the return of Magellan's circumnavigational sortie after three years at sea that the meticulous logs kept by the flotilla's main pilot were off by a day, compared with their day of arrival in Spain. The logs, which prove them to return on a Saturday, were recalculated several times, but could not be reconciled to the fact that it was Sunday in Spain. But the first circumnavigation of the world had yet to account for what would eventually become the International Date Line. As Manchester eloquently puts it: 'They had just proved the world was a sphere, but they were not yet thinking spherically.'

Within the professional audio industry there are some modes of thinking apparent that separate one generation from another. It once seemed that there were only two true generations in this business—the classical veterans of rock's seminal days that trade magazines have seen fit to canonise on a regular basis, if only because they made such cool records with what, from a later perspective, seemed like spit and chicken wire—and then there was everyone else. The paradigm seemed to be one of B C and A D—Before Clapton and After David (Letterman). But a closer inspection reveals that we've already passed through a few lesser stages over the years: such technological milestones as synthesisers; the transition from analogue to digital; and the schismatic rift that developed (and never quite healed) between acoustical ideology and direct recording via an ever-proliferating world of stomp boxes and cabinet simulators. The technology has allowed—and in many cases engendered—the formation of ideological camps of recording. It looks from above like an Italian political landscape, with a dozen or so parties, each faction fractious and abrasive with the others, but actually coexisting quite peacefully as they put forth their various musical tracts.

But there has been one change in the recent history of pro audio that could function as clearly as a dividing line as Clapton and Dave, and that is the shift from linear to nonlinear recording.

Now, we have to establish a few ground rules first. The 'linear versus nonlinear' issue in film postproduction was resolved a long time ago in favour of hard-disk recording and editing. But audio-for-picture doesn't have the same force of impact upon culture as music does, in that the audio of a film or a television programme is not the immediate focus of attention. It is in music recording that the generation gap is clearly defined and an area in which the effects of that issue are most pronounced. Music is universal: countries and cultures that have no significant film, broadcast or multimedia industries do have music businesses. And the boom box is one bit of plebeian technology that cuts across all boundaries.

SO WHAT HAVE WE HERE? Since digital has proven it can not only exist, but thrive in a linear environment, thanks to the modular digital multitrack revolution of the 1990s, the issue is not one of digital versus analogue. No, this is larger than that. It's a matter of the way individuals *think*—linearity versus nonlinearity. Those who were brought up with the computer as an integral part of their lives from an early age tend to think in the same way that computers operate: in a random-

access fashion. This notion is neither a slam on an older generation's mental processes, nor an acclamation of the present one's. It is, however, a useful distinction to note since the way people think and the tools with which they do their thinking will affect the industry itself.

This notion is a universally human one. So why is it grist for the American mill that appears in this space monthly? Because—and forgive a Yank his hubris—this is where the technology develops on a practical basis. Japan has become more adept at the invention of audio technology, rather than simply the technological mimicry that it practised so well for so long. And European manufacturers still turn out what is probably, on average, the highest level of overall quality of design and manufacture. But it is in America where, as the old Firestone tyre advertisement used to say, 'the rubber meets the road'. Where the level and intensity of implementation is the highest, and thus where the impact on thinking is greatest. Partly a function of being the world's largest and most affluent marketplace, where technology gets absorbed into the pedestrian aspects of life the quickest, America is where the major trends of the pro-audio business have developed in recent years, with the proliferation of project studios being, perhaps, the most noticeable. So America plays host to what will be the passing of the torch from one clearly delineated generation of engineers, producers and musicians to the next.

The nonlinear generation of music producers have been most active in multimedia, a catch-all rubric that gets redefined with each new issue of *Wired* magazine. I've seen numerous examples of audio engineers who have shifted into this domain. What's not immediately recognisable is that these people are not simply grafting video and ROM technologies onto audio; they are approaching multimedia from the single domain of computers, in which everything is based on random access. Those above, say, the age of 30, who have made this move as a transition from more traditional audio environments likely had other things that helped their thinking transition as well from linear to nonlinear. Most of the successful people in this and other businesses that place a premium on creativity have a predilection towards nonlinearity. At a certain age and level of prior accomplishment, one also has better access to the wherewithal—financially and characteristically—to be noticed in the industry. But the anonymous bulk of this new generation is indeed another new generation, chronologically speaking, the same 18-year-olds who dazzle and bedevil us in computer stores, rattling off the initialisation strings of ISDN modems the same way some of us can recite the specs of a U87.

What will a new generation mean to professional audio and to music? Much, and much more than it already has. It will accelerate the pace at which the technology itself changes, which will likely mean even more subformats and platforms that are already giving lie to the notion of a unified universe in the digital domain. It will mean a need for ever-higher levels of education, meaning more reliance on formal schooling, something that's already been a bone of contention between this generation and the previous one. It could also mean new ways in which to create and perceive sound that are even more sophisticated than the revolution that came with synthesisers, as a generation born into a world of presets rebels against packaged audio.

But whatever the final forms these changes take, there will be changes. Because, as an attorney friend of mine said just a moment ago, pendulums are meant to swing. **S**

Network deception



European manufacturers of the hardware needed to interface audio and video with an ISDN line are now trying hard to drive down the price, but it is an uphill job writes **BARRY FOX**. Plus those flat-panel speakers on tour

The cost of ISDN calls is usually the same as for ordinary analogue calls, but in some countries, notably the UK, the price of connecting the line and the monthly rental is absurdly high. In Germany and France the startup price and line rental is much lower. But this looks likely to rise sharply as the government-run telephone companies privatise their networks. They have been subsidising the cost of installation, to win customers for the future.

Conventional copper telephone lines are designed to carry analogue speech, with bandwidth of around 3.5kHz. A modem in a PC or fax machine converts the digital code into warble tones that lie within this range. The fastest modems work at around 30,000 bits per second and this is close to the theoretical limit predicted 50 years ago by Claude Shannon of Bell Labs. ISDN (Integrated Services Digital Network) uses copper wire

only for the last short leg of connection and carries digital code as pulses at 64,000 bits per second, and higher multiples.

Until recently the cheapest way to sign up for ISDN in the UK was to pay British Telecommunications £400 (plus VAT) for an ISDN-2 connection and then pay £336 a year for line rental. In June Oftel, the watchdog body which was set up to oversee the UK phone companies after privatisation, told BT to be more 'imaginative' in its marketing. BT responded with a 'flexible approach'.

The rental on existing lines went up by £16 a year, and new users faced a

Oftel, the watchdog body set up to oversee the UK phone companies, told BT to be more 'imaginative' in its marketing. BT responded with a 'flexible approach'. The rental on existing lines went up by £16 a year, and new users faced a bewildering range of options, which bundle a 'free' call allowance with rental and installation costs

bewildering range of options, which bundle a 'free' call allowance with rental and installation costs. There is no refund on free calls not used which is tough on ISDN users who receive mainly incoming calls, for example news reporters who use codecs and rely on the radio station to call them.

June Campbell, BT's Marketing Manager of ISDN services, said it was: 'good news for small businesses'. When I queried the twisted logic of this puff, Jo Baxter, BT's Pricing Manager, replied on Ms Campbell's behalf, claiming that the new tariffs make ISDN: 'more affordable'.

Oftel gave BT 'a few days' in which to come up with a better deal, or face a legal order to reduce costs. BT has now altered the tariffs again, and Oftel has accepted them. Director General Don Cruickshank says that BT's revised tariffs include 'worthwhile price cuts'. The Telecommunications Users Association is 'very disappointed' at Oftel's capitulation. As an ISDN user, so am I.

'All BT has done is move the figures around and introduce complex tariffs' says TUA Chairman Bill Mieran. 'ISDN is still too expensive. We thought Oftel wanted to do something about it, but it hasn't'.

Out of three new options, the cheapest connection charge is

now £199 (plus VAT), with free calls worth £105 a year, but users must pay £535 a year rental for a minimum of two years, with no refund on unused free calls. Another option leaves connection at £400 and increases the rental to £352.

BT will not say how many people are connected to its ISDN-2 service, but Racal-Datacom, which makes ISDN interfaces, estimates 0.2 million by the end of 1997. In Germany, Deutsche Telekom has connected nearly 2m people. This is not surprising.

Deutsche Telekom will connect a new subscriber for 200DM (around £85), with the cost halved if the subscriber fits the wires instead of calling out an engineer. Line rental is then 138DM (£60) a quarter. Special offers bundle over £100 worth of free calls with the purchase of ISDN hardware.

Critics of the UK pricing structure warn that it is counter-productive to compare the UK with Germany, or France where prices are similarly low. The monopoly networks are using government money, or profits made from analogue lines, to subsidise ISDN. It cannot last after privatisation. A fair rate would be half way between BT's extortion and the Franco-German giveaway.

VERITY, the British electronics group, caused a stir recently by announcing its NXT flat panel loudspeaker system. Even the picky hi-fi press liked the sound of Verity's prototypes. The panel can be hung on a wall, used as a ceiling tile, or stood free in a room. Verity is now on a world tour offering the technology under licence.

The company has written a White Paper, which is available either on paper or by email or on CD-ROM. The WP is knee-deep in mathematical formula, but thin on nitty gritty fact, a bit like a briefing with someone who is either bluffing or does not want to give much away. Anyone interested can do far better by buying a copy of the patent on which Verity's work is based. Surprisingly this patent (international application WO 92/3024) was filed six years ago by Britain's Ministry of Defence.

Kenneth Heron was working for the UK Government's Defence Research Agency, in Farnborough, using damping panels to reduce background noise in the cockpits of fighter aircraft. He found they sometimes amplified the sound. So he experimented with a panel that worked as a speaker.

The secret, Heron's patent reveals, is to get just the right ratio between the stiffness of the panel and its mass. Honeycomb panelling is just right. This is a sandwich of two thin sheets of aluminium over a core of cells. The material is very light, but very rigid and strong. It has for years been used to make aircraft floors. Ten years ago Panasonic-Technics and Sony used it in flat panel drivers for loudspeakers. But whereas they pumped their panels as damped pistons, the DRA used an electro-mechanical drive to set up undamped vibrations.

The wavefront from the rear is not a mirror-cancelling image of the wavefront from the front. So no baffle is needed. Conversion efficiency approaches 100%. Heron sketched two speaker designs, one a 1m² panel hanging free from a stand, like a clothes rack, and the other a ceiling tile suspended from roof girders.

The DRA saw the invention as ideal for use in a public address system. Verity took a licence, made it work over a wider band and filed more patents.

Now Verity is offering sublicences. The big question is whether Sony and Panasonic-Technics will take a licence or claim they had the idea first and fight the patents. **S**

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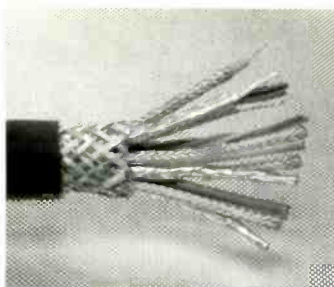
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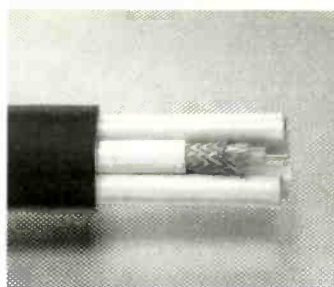
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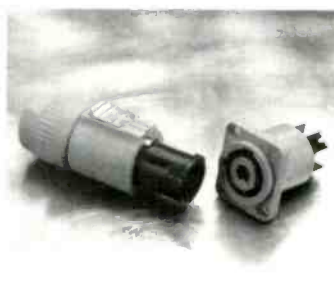
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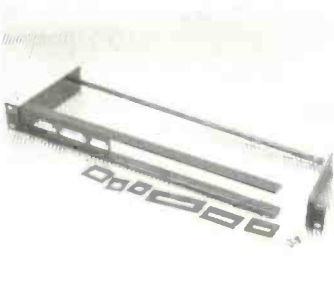
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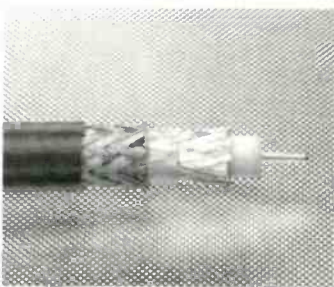
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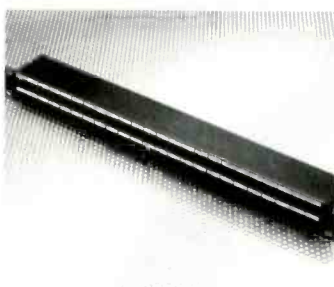
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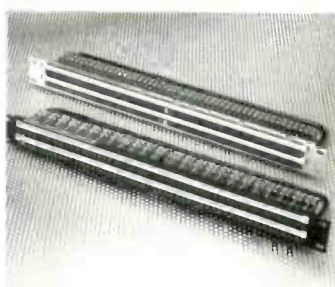
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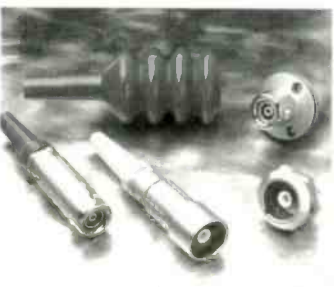
Van Damme triaxial cable



Rean 'A' gauge patch bay



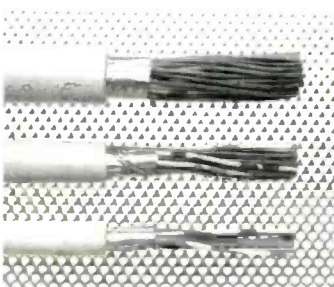
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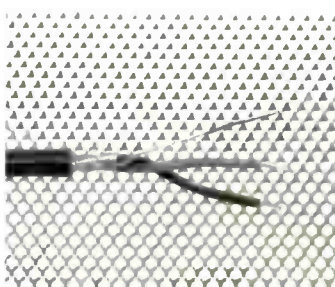
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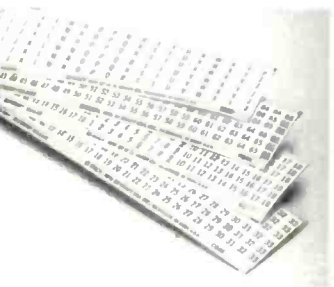
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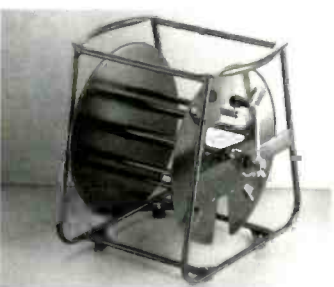
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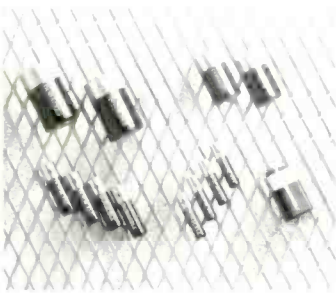


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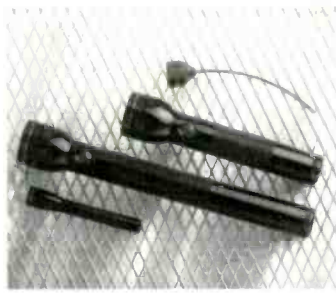
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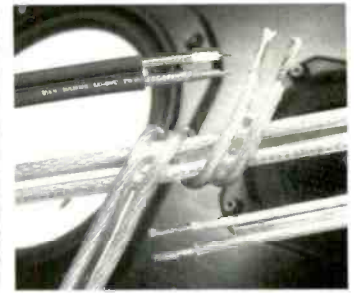
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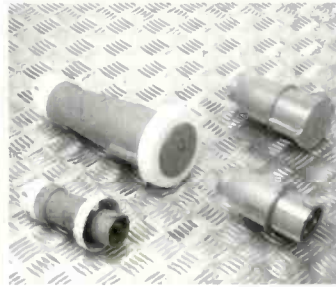
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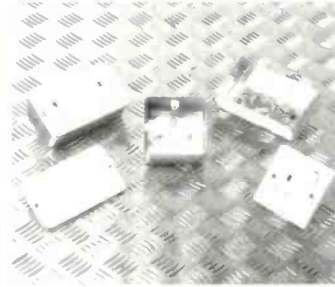
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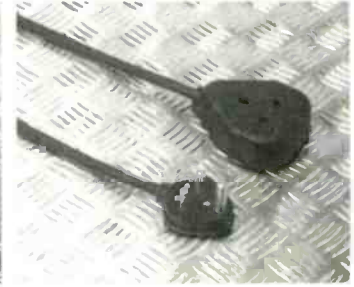
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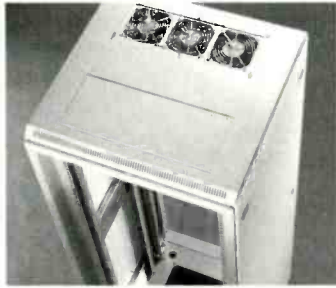
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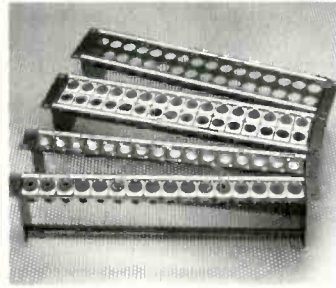
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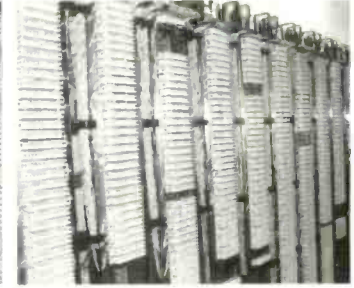
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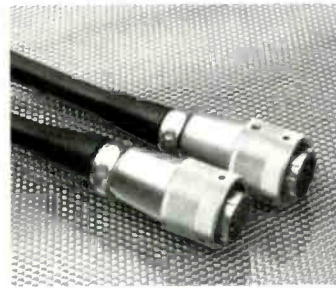
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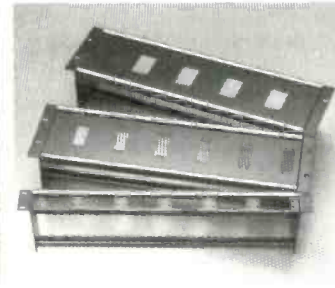
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Genex GX8000

Recognised as a stop-gap in the evolution of digital recording, tape-based systems can ultimately expect to be displaced by nonlinear digital recorders. Bidding for pole position in the replacement race is British company Genex with its 8-track magneto-optical disc recorder. **DAVE FOISTER** drops the starting flag

THE BATTLE IS ON to establish a tapeless format to replace modular digital multitrack systems—with particular emphasis on the arena of the film-sound market. Already in the fray are heavyweights like Dolby, Fairlight and Akai, but even they may have to pay attention to a new contender, the GX8000 8-track magneto-optical disc recorder from British company Genex Research. The fact that it has features with special appeal to film work is all the more remarkable given its origins in a concept developed for the specialised niche application of classical music recording.

With suitable outboard convertors it will handle 96kHz sampling, joining the exclusive but growing band of 24-bit, 96kHz equipment hoping to insure against future developments. It is currently the only machine of its kind able to work in this format, and this ability coupled with the longevity of the medium itself has already found it being used for high-spec archiving

For this is the next development in the line begun by the GX2000, a twin-channel magneto-optical disc recorder originally born as a Decca in-house R&D project, and completed by the original staff after they had left Decca. I looked at an early example of the GX2000 (see *Studio Sound*, October 1995) and was immediately struck by the attention to the detail of classical session procedure and its dedicated features to support this kind of work. The GX2000 also introduced the radical yet perfectly logical concept of

lossless data packing, reducing the storage requirements of a given amount of audio with a process analogous to packing computer files. Though this was greeted with understandable scepticism, the idea was adopted by most GX2000 users when they came to accept that it made no difference whatever to the sound. Intuitively there is no reason why this should not be the case; we take it for granted that a packed computer file will be reconstituted exactly on unpacking, with no extra spelling mistakes or new bugs, so the same principles should apply to audio data.

Both these trademarks have been retained in the GX8000, which has completely replaced the GX2000 since a remarkable price cut made this 8-track machine cheaper than its 2-track forerunner. The concept remains almost identical, but with many new features, none of which has been paid for with a sacrifice in the original design.

THE HUB of the GX8000 is an M-O drive using 2.6Gb double-sided discs. Genex is understandably keen to emphasise the robustness of the medium as compared with tape, claiming a capability of 10 million read-write cycles and an archive life of 100 years using the discs from Genex' distributor HHB. We have already seen the data capacity of this disc format increase by a factor of four in the last few years, and it seems unlikely that no further expansion is planned. The current drive is a Tahiti as used in the GX2000, but this is shortly to be replaced with a Sony drive giving even faster implementation of some operations. The GX8000 allows up to eight tracks to be recorded to this disc simultaneously and all played at once. Like the GX2000, the GX8000 has been designed to emulate as closely as possible the operation of a tape recorder, so it has a full set of transport controls on large illuminated buttons and track arming for the eight tracks. All the standard 8-track operations are available such as overdubbing and drop-ins, including automated punch-in and punch-out points.

The obvious trade-off for the multitrack facility is reduced running time per disc, but a surprising flexibility makes this less of a drawback than it might be. Discs require no formatting before use, and at this stage it must be decided how many

tracks will be needed for the job in hand, from one up to the full eight. If 2-track operation is chosen the running times are identical to the GX2000, and they reduce pro rata as the number of tracks is increased, giving 25 minutes of 20-bit 44.1kHz linear recording per side at the full eight tracks—more than adequate for anything but classical performance recording. An external drive can be added to extend the running time seamlessly and to provide backup facilities, and the other way of increasing capacity is, of course, to use Genex' lossless packing. There are only two slight drawbacks to this: first, although the running time can be extended by about 40%, the actual space saving depends on the nature of the audio material and therefore the machine cannot accurately tell the user how much time is available; second, drop-ins and overdubs are impossible in packed mode, making it suitable only for straightforward recording with new takes appended to the old. For many jobs neither of these factors will present a problem, and it is good to see that the facilities are retained, giving the GX8000 modes of operation that are identical to those of the GX2000. It also





gives more users the chance to try lossless packing for themselves—perhaps the only way of persuading yourself that it actually works—thus opening up further avenues for the technology.

It might have been tempting for Genex to put all its eggs in the 8-track basket and ditch those features that were less relevant to full multitrack work; it is good to see that this hasn't happened and that the GX2000's most idiosyncratic and remarkably useful feature has been retained, namely the Cue labelling system. Rather than simply putting ID marks against the recording at the starts of takes, the Genex system allows various types of labelled markers to be dropped on to the disc. Standard labels include Take, Note and End, and the cleverest is F/S for False Start, which marks the false start of a take accordingly and transfers the take number to the correct starting point. Four further cue buttons are provided for user-programmable labels, and like many DAT machines the GX8000 can be set to increment cue numbers after periods of silence, the actual threshold being selectable from a wide range. Take numbers do not have to be unique, but can be restarted from 1 for a new title, and any type

of cue can be accessed either directly or by means of skip buttons by the transport.

The cue writing buttons form a row of eight below the meters, and they have six other functions all relating to individual track status and selected from a further row of buttons immediately beneath them. From here it is possible to arm individual tracks for recording, to select the input-playback monitoring condition, to mute individual tracks, and to control the onboard mixer, of which more anon. Input selection is also carried out from here, switching between four stereo AES-EBU inputs and optional internal A-D converters. These A-Ds, not fitted to the machine I tried, are 20-bit converters supplied as a package of eight, and are complemented by similarly optional 20-bit D-As. A feature of the converters that has attracted attention is a frequency response down to 1Hz, making the machine suitable for measurement and vibration analysis work as well as straightforward audio recording. Although some early DAT machines were capable, sometimes with modification, of performing down to these frequencies, Genex reckons there is currently nothing

The nature of the GX8000 means it can provide significantly more features than a tape-based machine, but they are handled well and intuitively by a front panel that owes more to ergonomics than aesthetics

digital on the market that will do it.

When used with its standard digital inputs, the GX8000 will operate with anything from 8 to 24 bits, and can dither both inputs and outputs with noise-shaping as required. With suitable outboard converters it will also handle 96kHz sampling, joining the exclusive, but growing band of 24-bit, 96kHz equipment hoping to insure against future developments. It is currently the only machine of its kind able to work in this format, and this ability coupled with the longevity of the medium itself has already found it being used for high-spec archiving.

The onboard 8:2 digital mixer is, perhaps, primarily for monitoring purposes, but has its own AES-EBU output allowing all the mixing to be carried out on board where appropriate. Each track has a level control, phase inversion and a 7-position pan parameter, regardless of whether it originally formed half a stereo input. There is also a track-slip function allowing individual tracks to be delayed by up to about 60,000 samples, more than enough for time-aligning spot mic tracks. For some classical work I can see this simple mixer as being the ideal way to produce a 24-bit stereo master for

editing on a more specialised system.

At present, editing is supported by a direct SADiE interface, allowing material to be transferred into a SADiE system via SCSI at over 4x normal speed. Genex is currently talking to Sonic Solutions, Digidesign and other DAW manufacturers regarding compatibility with their respective workstations.

Transport control follows tape tradition in having a numeric keypad for access to particular points in the recording, with the, now familiar, difference that access is virtually instant. There are 100 locate memories, and access is also possible by entering absolute and relative times. The main variation from convention is the function of the fast wind controls, which jump in increments of 10 seconds, there being no need for a normal fast wind function on a disc recorder.

Scrubbing the audio in order to find punch points and other locations is one of the functions of the big data-wheel in the middle of the panel. The scrub quality is yet another reminder of how far we have come in the last few years, being virtually indistinguishable from analogue tape-reel rocking. The wheel can also be used for fast shuttling, with a more than acceptable quality of audio output, and acts as a general-purpose data-entry wheel. Various functions are controlled with this, including most of the parameters on the internal mixer and the machine's varispeed, a smooth adjustment with a remarkable range.

In varispeed mode the dual alphanumeric display shows the speed in terms of sampling rate, and is to have a percentage read-out added. It also shows all the timing information (soon to be in feet and frames as well as hours minutes and seconds) about current position, time-code offsets, locator contents, remaining time and so on. The display, the wheel and dedicated buttons steer a path through a large selection of menu options covering sample rates, word lengths, pre- and post-roll and a host of other status settings. Also accessed through the menus are the comprehensive time-code capabilities.

Like most disc-based systems, the GX8000 will read and generate time code, and chase to incoming code with a variable offset. This is all transparent, but it also has an extra time-code track for recording incoming time code accompanying audio from an existing source. Thus sections of audio recorded elsewhere with non-contiguous time-of-day code can be transferred to the GX8000 for further work while keeping their relation with the code intact.

Straightforward chase synchronisation is only one of several control possibilities on the GX8000. This machine is designed to fit effortlessly into any existing working environment, and supports full Sony P2 control protocol. Used like this, it is uniquely able to support reverse play with varispeed, a feature bound to appeal to the film mixers with their extraordinary liking for adjusting EQ while playing things backwards. Further support for the film industry comes in the form of an optional biphasic input.

Additional rear-panel multiway connectors betray other interface possibilities. The Link connector allows up to eight GX8000s to be ganged together in true modular digital multitrack fashion, giving up to 64 simultaneous tracks with sample-accurate synchronisation across the whole system. There is also an RS232 interface, and unlike so much equipment

that allows for external control, but never implements it, the GX8000 already has comprehensive Windows control software supplied with it as standard.

The GXR Remote software provides control over several independent machines simultaneously, identifying them automatically by interrogating their serial numbers. It duplicates every function on the front panel, but is able to separate functions which on the machine share common buttons. Full real-time metering is displayed, along with large time displays and clickable transport buttons. The big bonus with the software control is the ability to keep a session log with all the cue points generated by the machine. This allows copious text notes to be entered, and also reads the current machine configuration, and stores it as text for future reference. The entire file is stored on the M-O disc with the audio.

I have already mentioned a couple of functions that are to come later, and upgrades like these can be downloaded from Genex' Web site and transferred into the machine via the GXR Remote software. Genex plans to make all such upgrades free to all users.

A final optional extra is an onboard sample rate convertor, that can be placed on either the input or the output from a menu page and deals with sample rates from 24 to 54kHz.

I HAD TO FAMILIARISE myself with the GX8000 pretty quickly, and even allowing for my previous experience with the GX2000 it is a credit to the machine that it all fell into place so easily. The nature of the recorder means it can provide significantly more features than a tape-based machine, but they are handled well and intuitively by a front panel that owes more to ergonomics than aesthetics. It is not unattractive; indeed, its multitude of LEDs, illuminated controls and bright displays have their own appeal. It is, however, clearly built to be used, and once its capabilities are appreciated and understood none of its functions is very far away. All this becomes less relevant, of course, when the GX8000 is slotted into a multi-machine setup, where it should perform invisibly and keep up with anything else in the system.

This combination of practicality, functionality, sheer leading-edge audio quality, and the flexibility to provide the necessary support for such a wide range of specialist applications is quite remarkable, and deserves to get Genex Research much more recognition than it currently has. The response to the machine at the Los Angeles AES, particularly from the film dubbing world, seems to have taken even Genex by surprise, and suggests that the company has produced a winner without even appearing to have to try. **\$**

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TL Audio CRIMSON SERIES

The launch of an economy range with uncompromising performance. A compressor, preamp and two equalisers all intended as solid-state alternatives to TL Audio's valve Indigo series. **ROB JAMES** changes colour from indigo to crimson

FROM THE COMPANY that brought you two ranges of competent—nay excellent—British made valve kit comes a third range of outboard. This time it is all housed in solid state 1U-high boxes in a rather fetching shade—Crimson, less garish than the Focusrite Red series, but better looking in the metal than the photographs may suggest.

Crimsons weigh in at under £400 a box, making them £200 less than their equivalents in the Indigo series. This makes the range a very reasonable proposition for those who require the functionality that these boxes provide, but do not need or want the valves.

The range currently comprises four units: two equalisers, a compressor, and a mic preamplifier. The equalisers are: a 2-channel, 4-band, device with shelving top and bottom, and two peaking mid bands; and a 2-channel, 2-band, parametric with a trick up its sleeve, the two EQ sections can be cascaded to provide a 4-band mono equaliser that should considerably enhance the unit's utility.

The other two units are: a 4-channel mic amplifier; and a 2-channel compressor. These will be joined by a mono voice processor, and a 2-channel power amplifier at the same price point as the other units; and a more expensive 2-channel, 4-band parametric equaliser.

THE FOUR UNITS under the microscope here have almost identical (apart from colour) front and rear panels to the Indigo range. They also offer near identical facilities. The only notable differences are on the equalisers. The degree of boost and cut is greater on Crimson and the Q value is higher on the EQ-3011. As with the Indigo series the price has been kept low, not by compromising performance, or the use of poor quality components, but by providing a reduced feature-set compared to the

company's Classic series. Perhaps the most notable omission is that of mic amplifiers from the equalisers and compressor. This is catered for by the PA-3001 4-channel mic preamp for those who require pukka mic-level inputs with phantom powering. Those of us who do not need this facility on every unit are saving the not inconsiderable cost of mic amps where they are not needed.

The EQ-3011 and EQ3012 equalisers, and C-3021 compressor are provided with 'instrument' inputs on the front panel with a high-level and low-level gain switch, together with unbalanced jack and balanced XLR inputs on the rear panel. All the units have unbalanced jack and

The C-3021: on some sustained organ bass notes which pumped like mad on the initial setting a quick button push to slow release produced an instant cure

balanced XLR outputs on the rear panel. One bonus provided by all three processing units is that in bypass they may be used as unbalanced to balanced converters (or vice versa). This function also converts levels from the nominal +4dBu to -10dBu—very useful when operating in the mixed economy of pro and semipro kit.

My only real complaint, common to all the units except the compressor, is the wretched little 'peak' LED. This glows fitfully at levels above +6dBu and illuminates fully at +16dBu when there is still 10dB of headroom remaining. Maybe I'm getting

old, but give me a signal present LED, and a 'you're about to overcook it' LED, or a bar graph, every time.

One other minor grouch is the switches which are of the non-latching variety, and do not make it sufficiently obvious which state they are in when viewed from anything other than approaching square on to the unit. This is mitigated by LEDs on the more important functions; for example on processing in-out.

I had expected the units to run cooler than their valve counterparts, but in my rather chilly studio they seemed positively frigid. I am sure they generate some heat when rack mounted, but certainly not enough to make you worry too much about where you mount them, unlike certain other solid-state, 1U-high boxes which have me reaching for the fire insurance policy.

The construction appears excellent, and all the units are commendably quiet. The instructions, when you get around to reading them, are comprehensive and clear.

THE PA-3001 4-channel Microphone Preamplifier provides four identical channels of simple, few frills, mic preamplification. All the essentials are there—switchable 48V phantom powering, input gain is variable from -60dB to -10dB, phase reverse, and a 12dB/octave, 90Hz, high-pass filter. The output level control acts as a continuously variable attenuator from the maximum output level of +26dBu. This generous output level makes the unit suitable for direct recording.

THE C-3021 Compressor is a true dual-channel or linked-for-stereo device. It is a pure compressor with a maximum of 1:30 ratio giving a reasonable approximation to limiting. Attack and release are both switchable. Attack offers 0.5ms, or 20ms, release 40ms, or 2s; although these time constants are signal

The omission of mic preamps from the EQs and compressors is allowed for with the PA-3001 mic preamp



The PA-3001 4-channel preamp



The C-3021 2-channel compressor



The EQ-3011 2-channel, 4-band equaliser



The EQ-3012 2-channel parametric equaliser

dependant and interactive so are best thought of as 'fast' and 'slow'. Input gain is on a pot with centre detent at unity gain with no compression applied. Gain make-up is available on a pot, providing up to 20dB of boost to restore subjective loudness of the signal.

The unit is equipped with twin LED bar-graph meters which are switchable between monitoring output level or gain reduction (as supplied 0dB on the scale corresponds with +4dBu on the balanced output, -10dBu on the unbalanced output and this reference point is dealer adjustable). Side-chain insertion points are provided to facilitate de-essing, however the side-chain inserts are only available on unbalanced

most importantly for many applications—speed. If you are using two single channels for stereo you only have to worry about matching the degree of boost or cut.

THE EQ-3012 Parametric Equaliser is a horse of a different colour, you might say, (though still Crimson). The similarities to the EQ-3011 end with the input-gain controls, peak LEDs, and bypass switches. The unit has two channels of 2-band parametric equalisation, each with ± 15 dB of boost and cut, and Q variable between 0.5 and 5. Centre frequencies are swept between 30Hz to 1.2kHz and 1kHz to 18kHz. The clever bit is the ability to cascade the two channels to provide a 4-band mono parametric. To increase versatility when used in this way bands 3 and 4 are equipped with divide by 10, and multiply by 10, switches, respectively, which then give mid-frequency ranges of 100Hz to 1.8kHz and 300Hz to 12kHz. In view of the relatively modest maximum Q of 5, the frequency bands are well chosen to enable you to undertake some pretty drastic treatment.

EACH UNIT PERFORMS its function without fuss, and without drawing attention to itself. They all work well together, as you would expect, but I think single units will find a home in a wide variety of studios to fulfill specific needs. None of the boxes would disgrace themselves in the most august company, just don't tell anyone what you paid for them.

The PA-3001 preamplifier does what it says. It does not impose a pronounced character of its own on the sound, it provides a decent amount of gain and reasonable headroom. Unless you want a preamp that stamps the sound with a definite character, or one that offers the extra facilities you really need, then look no further.

The C-3021 compressor is easy to operate with a minimum of fiddling. It is perfectly possible to squash an unruly signal into submission without serious audible artefacts and without taking half an hour to set the box up. I had to keep using the BYPASS switch to remind myself just how much treatment I was using. As with any dynamics device it is possible to catch it out, but the solution is quickly found with a quick prod of a button, or tweak of a pot, not, as is so often the case, juggling five parameters looking for the best compromise.

A good example was on some sustained organ bass notes which pumped like mad on the initial setting (previously used for voice) a quick button push to slow release produced an instant cure. This is one case where less is definitely more. I actually prefer the reduction of choice with the simple 'fast or slow' attack and release. In practise, when these functions are on pots I spend time experimenting to find the optimum

positions for my purposes and end up marking the front panel with a Chinagraph pencil, or a bit of surgical tape. The side-chain functions as you would expect, but I usually prefer to de-ess with 'manual compression' using an equaliser of which more anon. This is a no-nonsense dynamics box that does not try to do too much. What it does do—compress—it does well.

The equalisers, the EQ-3011 and EQ-3012 have some characteristics in common, but are more notable for their differences. Both units sound sweet and musical. These are not the vicious tools required to perform major surgery on, say, dialogue tracks for a movie. The EQ-3011 is, perhaps, most like a pair of mixing desk equalisers in a box. The surprise is that it is perfectly possible to use all or most of the ± 15 dB on offer in each band without the usual side effects. All in all a pleasant sounding equaliser with no nasty surprises.

The pick of the pair is the EQ-3012 parametric. I played around with this for hours in 2-band, 2-channel mode, and 4-band mono having great fun pulling inaudible vocals out of mixes, making wimps sound decidedly tough, and generally completely altering the character of a wide variety of material, all without much effort and without producing too many unwanted side effects. I was able to lift female vocals without producing excessive sibilance, or to reduce sibilance without the sound becoming muddy, both without the artefacts dynamic de-essing always seems to produce. Once a suitable frequency and Q is established a quick twiddle of the CUT knob on the more egregious bits was all that was required to stifle some pretty unpleasant 'psstts'. On occasions I had to look twice at the BYPASS switch to convince myself this equaliser was actually in circuit. A true stereo version would be ideal for final mastering tweaks, or gentle treatment of old mixes that seem to have lost something.

If you need the functions the TLA Crimson Series offers then they are well worth auditioning before you spend considerably more money on other units. Barring the odd little niggle such as the peak LEDs they all offer a lot for the price, and I think the EQ-3012 is a real find.

The EQ-3011 and EQ-3012 equalisers are not the vicious tools required to perform major surgery on, say, dialogue tracks for a movie. Both units sound sweet and musical

stereo jacks following the 'tip send—ring return' convention. The compression ratio is adjustable from 1:1.5 to 1:30, and is of the 'soft knee' variety.

The unit can be used to provide two independent channels of compression, or linked for stereo on a button to cause the control voltages and parameters of Channel A to apply to both channels. Input gain and gain make-up are not linked, so if you get an unexplained image offset when you insert the device in stereo check the gain and gain make-up settings.

THE EQ-3011 Equaliser is a simple 4-band device with shelving bass and treble switchable at 80/120Hz and 8/12kHz, respectively, with two peaking mid bands with swept frequency ranges of 50Hz to 2kHz and 500Hz to 18kHz, with a fixed Q of 1. All bands offer 15dB of boost or cut. Each channel has an input gain control with a range of ± 20 dB and a centre detent for unity gain, a peak LED, and a BYPASS switch. It is a pity the mid bands do not have switched frequencies like the equivalent unit in the Indigo series rather than sweep pots, but at this price point I guess something had to go.

As a general aside, I have always preferred switched frequencies on equalisers other than those used for very tight, surgical, notching. Switched frequencies bring ease of use, and

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Tascam DIGITAL CONSOLE

At a Los Angeles AES show rich with new equipment, Tascam's mysterious digital console fared well in the attention stakes.

ZENON SCHOEPE opens a file after an early sighting of the great white prototype and logs the company plans



THE SURPRISE of the LA AES Convention was Tascam's unveiling of a digital desk. However, it wasn't as great a shock for those who have watched the Japanese company's progress in associated areas, and its near release of a combined digital desk and hard-disk recorder-editor some five years ago. That product was rumoured to have been shelved because of the company's dissatisfaction with the nature of its interface, and a bad attack of the 'right product, wrong time'.

Tascam has been quietly, but consistently, active in desk technology, having carved itself a reputation for producing over-engineered quality products and, lest we forget, it was the first to come out with an affordable automated console in the VCA M3700.

The desk shown in Los Angeles still has no name, and—strictly speaking—is a development prototype. But knowing Tascam's track record on such early sightings, it is unlikely to be much more than half a year away from production. Price has not been announced, but the official line is that will be competitive in the market that Tascam perceives will exist in six months time. The folk behind Yamaha's 02R and Soundtracs' Virtua should pay attention...

The origins of the new desk go back to the aforementioned workstation project with much recent progress emerging from the technology developed for the DA-38—which is understood to have made the new desk commercially possible.

Internally it has twin RISC processors, 24-bit DSPs and custom LSIs developed as part of the DA-38. It's clear that the company now considers the time right for

its first digital desk and again its track record would suggest that it has a way of making things work—witnessed the later, yet still successful, launch of the DA-88 against the ADAT.

'This desk is designed as a partner to DA-88s and DA-38s. The postproduction market is therefore a primary target as it was with the DA-88,' explains Tascam UK Sales and Marketing Director Bob Thomas who will not rule out the beginnings of a new range of associated products, and gives the, now popular, stock answer: 'We have developed a digital engine that we can use in other market areas'.

THE CONSOLE offers a total of 48 faders in addition to dedicated and assignable function switches. A 24-channel strip section is fed from 16 balanced XLR mic-line inputs with phantom power running through 18-bit A-D converters. There are three TDIF interfaces for 24-track handling while the 16 mic-line inputs can also be switched to work in TDIF for 40-channel digital remixing with eight of these also switchable for AES-EBU and SPDIF operation. Additionally, there are six stereo effects returns one of which can be digital.

The layout is effectively in-line with long and short-throw faders and channel flip functions. All of these signal paths benefit from 4-band parametric EQ, aux access, pan, solo and cut. The desk comes with four matrix inserts, and eight channels of onboard dynamics can be assigned as required. There are six auxes, two of which can be assigned to digital outputs. All channels also have direct outputs.

In terms of external control the desk

has Tascam sync I-O, Sony 9-pin, MMC, GPI, transport keys, a jog-shuttle wheel and ten locate points.

Operation centres around a large LCD with graphic representations of desk parameters in a variety of methods which are adjusted by 20 rotary encoders and function keys. 'We've ended up with something that will give people access to technology at price points that make the technology work for them,' says Thomas.

The desk with no name—aimed at the sound for postproduction market

However, unlike the 02R Tascam has no internal effects ('Other people do that a lot better,' he says. 'The sort of people this is aimed at have Lexicons') and the prototype uses VCA-style rather than moving-fader automation.

'There is a lot that has been said about moving faders,' says Thomas, 'and they're a great marketing tool, but it is not something we would want to implement as a budget feature on a console of this nature.' Thomas adds that Tascam's own moving fader package from the M700 desk could be applied to the new console if the demand was strong enough.

The prototype features snapshot automation of all functions with future dynamic automation requiring an external computer, although he stresses that there are aspects of the desk that are still to be finalised.

However, he agrees that 1997 will be an interesting year for affordable digital desks. 'The whole point about digital consoles is that anyone can make a cheapish engine, the real trick is in the design of the console and the user-interface and we think we've got it just about right.'



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Yamaha 03D

That unpredictable innovator Yamaha has translated 02R technology into a compact package directed at video post and sound reinforcement applications. **ZENON SCOEPE** takes a peek at the beautifully formed 03D digital desk

MOST PEOPLE suspected that Yamaha would follow up the 02R console with something else. Given that it was preceded by the super cheap 01 the good money was on the next product being a more elaborate, and higher end offering, yet the company body-swerved its observers and launched the under \$4,000 03D at the recent LA AES.

Now, of course, it all makes sense—Yamaha has translated the 02R technology into a smaller and more frugal package while also rebiasing the new digital desk slightly towards video post and small sound reinforcement applications, and continuing to serve its established market of project and audio post applications.

When I say smaller I mean much smaller as the 03D is closer to the 01 in size than it is to the 02R, yet internally it is very definitely an 02R. What Yamaha has done is strip back most obviously on the assignable master channel-strip controls, the knobs and buttons, and replaced them with a cursor and parameter dial approach working with the same LCD found on the 02R. You get around the screen via a cursor, and enter parameters on the dial, but matters are helped considerably by simply plugging in a mouse into the back of the desk for positioning the cursor that much faster.

The faders are motorised, but short throw, and are banked to reflect the two layers of inputs and outputs that the desk has. What you're presented with is 16 mono inputs the first eight of these are also available as mic inputs with phantom on XLRs.

These are supplemented by a stereo input and eight more inputs accommodated on a single 02R rear panel card for TDIF, ADAT or AES-EBU, and Yamaha is exploring ways of getting an extra eight analogue inputs into the system via this port. Alternatively the card slot can be fitted with a cascade card complete with wordclock in and out for connecting the 03D digitally to an 02R.

As far as analogue outputs are concerned the desk is 4-bus with six auxes (two are routed to internal effect processors), a main stereo and direct outs: how these are employed needs some explanation.

An output assignment screen for each of the eight outputs from the card slot can assign one of five different sources to it. For example, output 1 can receive bus 1, channel 1 or 9 as direct outs, an aux send or main stereo left or right. The assignability of the auxes also means that the desk can in effect run to 8-bus operation still with two internal effects

sends for tracking purposes.

Like the 02R, aux send adjustments can be performed from the channel faders, and it is worth mentioning that the 03D effects benefit from the DSP chip used in the ProR3 processor rather than the circa-SPX1000 generation used in the 02R.

As already mentioned there are two layers of control to the faders with layer 1 handling inputs 1 to 16, the stereo input, and two effects returns while layer 2 flips to inputs 17 to 24, the four bus masters and the four auxes.

The EQ is exactly the same as that on the 02R complete with the EQ library and is available on every input, the stereo input, the two effects returns, the stereo output, and all the aux and bus outputs. The last two of these are likely to make the desk appeal to the live sound fraternity. 02R-style dynamics are available on all the above with the slight improvement of permitting external keying from any channel.

Delay is available on all the inputs and the outputs, which will again appeal to the live sounders.

Panning is arguably the area in which the 03D as a stand-alone outperforms the 02R because the facilities it provides are built in. Anyone who has seen the add-on surround panning options for the 02R will get the point about this implementation and it was very slick even on the prototype desk.

It can operate in quad, LCRS, and 5.1, with the main stereo contributing the left and right portions with the four buses taking care of the other channels. A series of pages include preset pan trajectories that can then be moved through with the dial, and there is a choice of neat representations of pan position within the aforementioned sound fields.

These moves can, of course, be automated dynamically along with everything else bar the analogue front ends, and scores over the 02R's omission of channel isolate. There's fader and channel pairing, four fader groups and four mute groups. This automation is bolstered by 50 scene memories which include a Recall Safe function for auditioning scenes.

MIDI control has not been neglected, and the 03D is smart enough to act as a controller data generator running off MIDI templates to external devices such as effects boxes or DAWs. There are also four user-defined buttons on the desk top that can be freely assigned to perform functions within MMC, remote machine start, or internal functions like stepping to the next scene, or accessing a particular



Yamaha 03D: stripped back controls are replaced with a cursor and parameter dial approach working with the same LCD found on the larger 02R

LCD page, for example.

The video-editing suite connection comes about by the 03D's support of ESAM II protocol which was not finalised at the time of viewing. No SMPTE reader will be available though as the desk syncs to the outside world via MTC and MIDI clock.

IT'S ALL INCREDIBLY

impressive, and there is no hiding the 03D's 02R origins. In fact it betters the original in some respects and it's interesting to note that many of the ideas incorporated in the new desk resulted from 02R feedback. Yamaha is currently working on Version 2 software for the 02R and many of these new features will be incorporated.

The single trade-off in the 03D is a reduced amount of hard control, but how much more can we realistically ask for this sort of money?

Damn it all, they've done it again! 

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Symetrix 551E EQ

An all-rounder beautifully built even abuse proof, yet the 551E 5-band parametric EQ requires a disciplined hand. **ZENON SCHOEPE** takes five



The 551E 5-band EQ sounds very sweet, yet is vicious enough to suppress feedback

APPLYING well-established equalisation principles in a slightly different manner at an affordable price is what the 551E is all about. With a respectable reputation in equalisation, Symetrix recently launched two new graphics (531E and 532E), this might mark the beginnings of a new series of products from the American company.

The 551E is a single-channel, 5-band, fully parametric equaliser with sweepable high-cut and low-cut filters. There are no mic amps or frills, this is a unit, with paralleled balanced XLR-jack inputs and outputs, that is beautifully well built, feels rugged, abuse-proof, and well up to the brand's quality name.

Describing it is very straightforward, there's a centre detented $\pm 15\text{dB}$ input gain pot, a relay bypass switch for the entire EQ, a power LED and a clip indicator followed by 12dB/octave high-cut and low-cut filters sweeping over 3kHz–65kHz, and 6Hz–260Hz, respectively. Then we're into the five bands, each of which is identical in offering 12dB boost or 20dB of cut depending on the setting of the bandwidth control which sweeps from the notch of 0.05 to the broadish peak of 2 octaves. Frequencies are tuned on a pot that sweeps 100Hz to 2kHz and works in conjunction with a three-position multiplier switch that multiplies the range by 1, 10 and 0.1.

I'll say right now that I'm not especially keen on the multiple identical band approach that is prevalent particularly in digital desks. Because each band can effectively perform as LF, mid or HF it can add up to an ergonomic mess if you don't exert the discipline of arranging the frequency spans in a manner that falls comfortably and logically under your hand. We are, after all, steeped in a 4-band LF, twin mid, and HF culture, and this is baggage that is hard to discard.

To an extent this is less of a problem on the 551E because you can force yourself to leave the multiplier switches preset across the bands to begin with until you really have to flick one. I found I defaulted to the first two bands set at x0.1, the next two on x1 and the fifth multiplier switch set to x10. This pans out quite nicely and overcomes the change in approach required when presented with the luxury of five bands and two filters—there aren't that many of those around in whatever form.

Once you've conquered this, from here on in it's a pleasant experience. The feel is good with

a predictable relationship between pot turn and audible result. As it happens the frequency ranges transfer well on the multiplier switches with the two lowest ranges being the most universally useful. Marvellous low and mid control is available with any amount of overlaying and interaction.

Despite its non fixed nature the 551E is actually a very sweet sounding EQ that permits stacks of boost to be applied without undue harshness, plus subtle shifts either side of top dead centre and the dip character is nicely incisive and unobtrusive. Indeed, it's odd that the two extremes of operation should both sound so fine on a unit of this type—it's kind enough to lift and enhance as well as vicious enough to pull out resonance or suppress feedback. In fact it's a good all-rounder, and consequently, versatile enough to complement desk EQ or existing outboard units by virtue of offering something different and being a little broader in scope. Five bands and two filters are not to be sniffed at.

On the downside you can't see the position of the bypass switch, and a LED would help matters. A nice touch would be to have individual band bypass switches because having this many broad ranges tempts you to grab a spare band just to try something out, but you'll have to flatten the other bands first. Separate bypasses would also allow a single band to be injected for a bit of spot processing and with five to play with you easily could. An output level pot would also help.

It all adds up to a very decent sounding single channel of powerful EQ with excellent filters. The very arrangement and configuration of the 551E makes it highly unlikely that it will clash or overlap with your other equalisation devices. A box to buy in pairs for stereo work as a good all-rounder fix-all that will supplement your existing outboard. **S**

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DW Fearn VT-1

As the revival of The Valve continues to heat up, Douglas Fearn has set out to make a valve design mic preamp that has the edge over modern circuits in terms of musicality. **DAVE FOISTER** beholds a startlingly simple, yet very big, red box



I SUSPECT that by now there are more valve outboard mic preamps on the market than there are solid-state ones. It's boom time as never before for the tube, and the difficulty for the user lies in determining which boxes have been designed by people who believe in them, and which by people who believe that's where the money is.

Douglas W Fearn is an engineer whose career goes back to a time when valves were all there was. Reminded by a trip down memory lane how, even in the most primitive of setups, his old RCA valve mic preamps had something about them which was missing from modern kit (apart from hum, crackle and buzz), he decided to explore how a modern design approach could reproduce the sound without the aggravation. The result is the DW Fearn VT-1 preamplifier, which uses the best modern passive components—some, including all the Jensen transformers, are custom made for Fearn—along with computer-circuit analysis to provide the optimum circuitry around the valves.

Fearn doesn't pretend to know exactly what it is about a valve preamp that sets it apart. He discusses various ideas in the manual, pointing out the familiar differences between valve and solid-state distortion, and the onset thereof, but resists any attempt to define the advantages which so many people now acknowledge to be inherent in the technology. All he knows for sure, along with most of the business, is that a good valve design can have the edge over modern circuits in terms of musicality and

pleasing sound, and he has set out to put that edge into his preamp.

The result is a startlingly simple preamp that occupies an inordinate amount of rack space, with great big controls and a huge retro vu meter dotted around a massive, thick, red, front panel that could almost put a Focusrite box in the shade. Its facilities are pretty basic, underlining the fact that the sound of the unit is of primary importance rather than bells and whistles.

THE CONTROLS comprise three big black rotary knobs and three big silver toggle switches—there's nothing fiddly about this box—giving the bare bones of what is needed in a preamp and not much more. An input selector switch offers a 20dB pad and a special network for low impedance microphones such as the newer transformerless designs, besides the basic straight-through mic input. The signal then passes to the attenuator circuit, a smooth high-quality conductive plastic pot completely devoid of calibration markings, and its resulting output level is shown on the meter. Phase reversal is carried out on the line level signal with the final rotary switch. Both this and the input switch produce quite violent clicks on the output, presumably on the basis that suppressing this would compromise the quality of the signal. Phantom power is switchable with one of the toggles, and another disconnects the meter. This is not, as might be thought, in order to reduce the risk of distortion bleeding back from the meter, but to allow the preamp to be overdriven without bending the meter

The Fearn VT-1 has some -thing extra, however, with an immediacy and a transparency surpassing most of the preamps

needle. It might have been more helpful to put a switchable attenuator on the meter circuit so that some level monitoring was still possible, but valve overdrive is an 'ear thing' rather than a 'measuring thing' so perhaps complete disconnection is better. The remaining switch is the mains on-off, with a good old-fashioned orange neon indicator being the only light on the unit.

There is no attempt to show the valves off like some such boxes do; indeed, even the top panel has few ventilation slots in it, and the preamp runs remarkably cool, generating less heat than many modern digital processors. The rear panel is very simple, with unlabelled XLR in and out connectors and an IEC mains input.

It is clear that the VT-1 expects to be judged on its sound above all else, and it is perhaps fair to suggest that this should be the case more often than it is. It is also fair to suggest that this is a world-class preamp, bringing all the depth and detail to a microphone signal that one could hope for. A straight comparison with my console preamps was almost embarrassing, revealing aspects of the sound the desk circuits missed completely. This is not necessarily unusual; there would be little point making outboard preamps if they couldn't beat the performance of simple desk inputs. The Fearn has something extra, however, with an immediacy and a transparency surpassing most of the preamps I have heard. On its own it is, perhaps, an ideal preamp for single overdubs direct to a multitrack, and for purist straight stereo recordings its big brother, the twin-channel VT-2, would surely take some beating. This occupies the same size case as the single-channel version, and includes exactly the same facilities on both channels, prompting a thought as to whether the VT-1 really needs to be quite so bulky. Perhaps it is fitting that its size should be as imposing as its performance. **S**

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Summit Audio MPC-100A

The all-American MPC-100A is a prestige valve mic unit that functions as preamplifier, compressor and limiter, and its powerful enough to make your eyes water, **TERRY NELSON** shuns the bargepole to discover its true virtues



THE MPC-100A Mic Processor is the latest in a prestige line of valve outboard from the American Summit Audio, being a combined valve preamplifier, compressor, and limiter. The unit follows the standard Summit presentation of a 2U-high rack chassis with a stylish, retro, brushed-silver front panel.

The MPC-100A's functions divide into comprehensive preamplifier and limiter-compressor, with a vu meter showing either final output level or gain reduction. I say comprehensive preamplifier as it features separate microphone (with switchable 48V phantom) and line inputs on XLRs, plus a front panel hi-Z jack for DI use. The mic-line inputs are switchable, and this allows you to have both plugged up simultaneously. In addition, there are phase reverse and -20dB pad switches.

In a departure from the vintage-style black knobs, the stepped-gain attenuation control uses a large red one, with a smaller version for the LOADING control for the DI input. The 12 gain positions provided more than adequate range for both condenser and dynamic microphones, and preamplifier noise was noticeable by its absence. The sound can best be described as 'forward' with background signals remaining unobtrusive. I mention this because in a recent comparison made between some very high quality preamps using the same microphone and position, it was surprising how much the sound image around the microphone varied. If you think this is going too much into the esoteric world, you might be surprised.

Valve mic preamps are almost invariably expected to deliver a warm sound, but I would suggest that achieving the stereotypical valve 'warmth' is equally dependent on the choice of microphone. The soft clipping characteristics of valves can often be very desirable compared to the crunch of most solid-state circuitry however, and with the overload LED blinking on peaks, the 100A remains very natural with, perhaps, a bit of warmth.

The hi-Z DI input makes the 100A useful as a DI box. Plugging into the front panel jack bypasses the input transformer

and sends the signal straight to the preamp input, overriding the mic and line inputs. The gain attenuator features a blue shaded region covering seven steps and this refers to the hi-Z input. The 100A also offers fine-tuning of tone via the LOADING control. This varies the input impedance from 10K Ω to 1M Ω , and while it will not make your Strat into a Les Paul—or vice versa—it does provide a lot of versatility. Increasing the loading widens the frequency range.

THE COMP-LIMITER section features traditional black knobs for input gain together with an overload LED, threshold (what Summit calls AC Threshold), Slope (or ratio, variable from 1:1 to 1:10) and output level. In addition, there are 3-position switches for setting attack and release.

In the simplest mode, setting a high threshold and 1:1 ratio will give no compression, but offer a lot of flexibility with the input and output gain controls. For instance, if you want a saturated sound—either with the preamp or the compressor section or both—juggling these controls may well elicit the characteristic that you want.

Turning the AC THRESHOLD control counterclockwise lowers the threshold and increasing the SLOPE control will cause the compressor to kick in. When I tried the prototype MPC-100A at the AES Convention in Copenhagen, the range of these controls was immediately apparent. Since then Summit has refined things, and though the range is still there, the effect has become somewhat smoother. Given the probable uses of the unit, this is probably the right move, but I did like the 'bite' offered in the earlier version.

In use, the 100A is a forgiving compressor—a property that seems to be a Summit trademark. You can see on the meter that it is compressing quite heavily, but there is none of the associated 'squashing' or flattening of the sound. The attack and release settings have also been very well chosen: flipping between, fast, medium, and slow, giving very

If Summit Audio was looking to make a handy 'audio toolbox' they have succeeded with the MPC-100A

noticeable changes.


Apart from the mains toggle switch, there are switches for output-gain reduction for the meter, and a 3-position switch for putting the compressor in or out of circuit and stereo link. This switch allows you to use just the preamp section by itself if required. Again, a handy feature.

With the exception of the hi-Z input, all connectors are on the back of the chassis and, apart from the mic and line XLRs, also include a balanced jack input to the side chain for external control signals, a mono jack input for stereo linking, a 10dB output on unbalanced jack and a +4dB output on XLR.

I tried the MPC-100A with a variety of microphones (EV RE2000, Calrec condenser, EV N-D757 dynamic), and a selection of instruments (Fender Strat, Ibanez JEM Steve Vai Fender VI bass), plus a wide selection of recorded material. In all cases, the range of processing and/or effects was remarkable. If Summit was looking to make a handy 'audio toolbox' they have certainly succeeded.

On the downside, I must confess I don't quite understand Pin 3 being hot, considering all the fuss made over recent years for Pin 2. Maybe this could be changed internally on links. I would also have liked to see a side-chain send-return function rather than just side chain in—this would make things like de-essing easier by being able to plug in an EQ easily without Y-ing the signal.

Summit obviously assumes that you are either going to use the MPC-100A with or without the compressor section as switching the latter in or out could change the output level (you may not be able to A-B in or out with the same level). The input gain to the compressor can be adjusted to give this, but it may not necessarily be the amount of drive that you wanted.

I must admit that I did have some fun at the end by putting both sections into total saturation with heavy compression, and if you want to get some raunchy guitar sounds onto tape that don't sound too much like a DI, then this is the box for you. However, this should not overshadow the subtleties of the unit and I thoroughly recommend the MPC-100A for a variety of applications. 

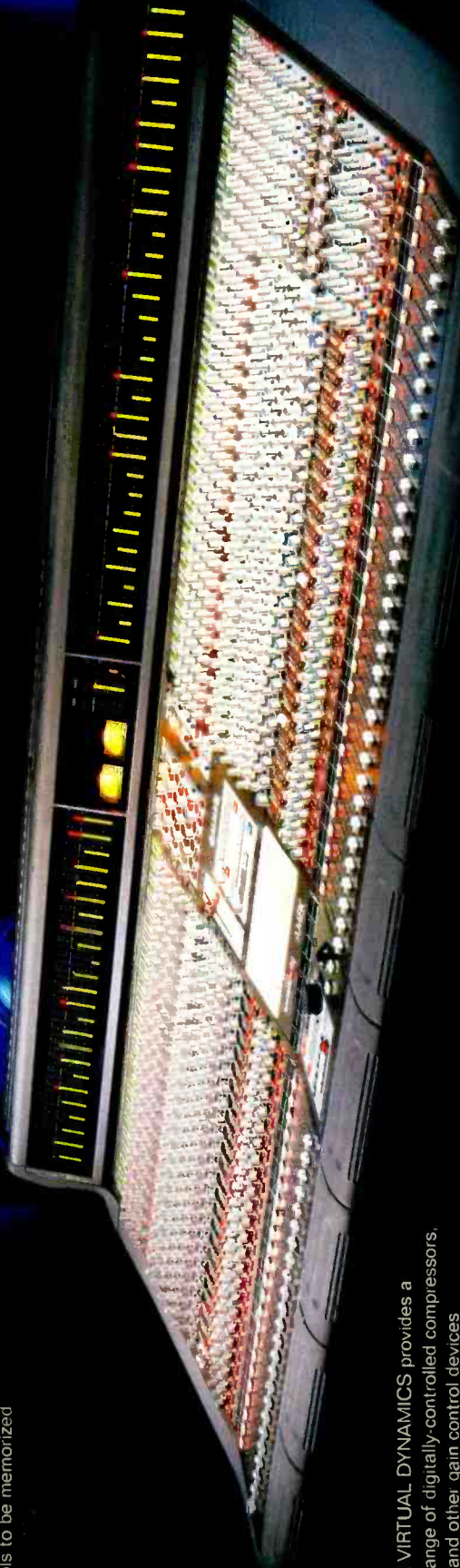
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Höf Audio DYNAMIC MASTER

The usual way of working goes out the window with the Dynamic Master, in fact a symbiotic group of leveller, limiter, compressor and expander intelligently linked, but without the expected controls. **DAVE FOISTER** views its transparency



THE GERMAN FIRM of Höf Audio is getting wider representation, bringing its unusual range of signal processors to markets wholly unfamiliar with them. Their reputation is well established in continental Europe and in the US, and the trademark combination of high quality and an idiosyncratic approach is well demonstrated in the Höf Dynamic Master.

This is a dedicated stereo unit; apart from level adjustment all parameters are under common control, one metering display shows both channels, and the two channels' dynamic operation is permanently linked. As its name suggests, the Dynamic Master is intended for overall stereo processing of complete programme, whether for mixing, mastering, broadcast or PA.

To this end it combines several related processes, and what makes it so unusual is the way these are linked and the method used to control them. The small number of controls would never suggest that within the slim package is a leveller, limiter, compressor and expander, and the realisation prompts the question: how am I to make this do what I want?

The answer is that the Dynamic Master is clever enough to provide a wide range of dynamic control possibilities without the usual sets of controls for each stage. It still takes a moment or two to work out how to set it up, and more importantly to learn to trust it to do what is needed without the familiar tweaking. But it is all there, and it can be made to do most things from brutal squashing to gentle transparent control with the manipulation of two controls plus the input levels.

Input levels are central to the unit's operation as the limiter's threshold is fixed. How hard it works therefore depends on how hard it is driven, and the output level controls then match its limited signal to the requirements of whatever follows it. This means that the usual way of working—

assuming the processor has unity gain, adjusting thresholds relative to the signal and then recovering the lost level afterwards—goes out of the window. It also means that the level controls should really be ganged stereo pots as they are constantly being adjusted with the consequent loss of a precisely calibrated centre image. Höf acknowledges the different setup requirements by including a remarkable line-up procedure; the touch of a button makes the unit detect a test tone on its input and then bypass everything except the limiter, allowing precise adjustments to be made. This same button switches the limiter between soft limiting and hard clipping as required by the application.


The compressor is immutably linked to the limiter. Its threshold is adjustable relative to that of the limiter, and its soft knee characteristic ensures that it soon begins to take over control from the limiter. Its time constants are not directly adjustable, but are under the control of the DENSITY knob, which is at once the most unfamiliar and the most influential control on the unit. For want of a better means of calibration, this has 'Classic' and 'Pop' marked at its opposite ends, and although these are by no means dictatorial labels they convey the nature of the changes in processing the control brings about. The Classic end clearly introduces longer attack and release times for more subtle gain control while the Pop end makes them short enough for heavy-duty squashing. The trick is that neither compromises the tonal quality significantly, with bright percussive sounds such as hi-hat surviving intact whatever the setting; the chief difference is in the thickness and in-your-face-ness of the resulting sound. Another aspect controlled by the Density function is the action of the leveller, which for transparent processing can be set to provide overall long-term gain reduction when the limiter and compressor are

The Dynamic Master is capable of making the thinnest mix sound big, thick, and up front

working particularly hard. This has a built-in hold function that prevents it restoring the gain in silences, only assessing its necessity again when the signal level clearly indicates the presence of wanted material.

All this is shown on a neat gain reduction meter, that comprises a row of three-colour LEDs; orange shows the action of the leveller, green the compressor, and red the limiter, making it very easy to assess the effects of the control settings. In extreme circumstances a x2 switch halves the range of the display to show particularly heavy gain reduction.

There is also a simple expander, with controls only for Threshold and Range and its own gain reduction meter. As this is intelligently linked to the compressor action, no more is required; it makes the job of reducing unwanted programme noise during silences very straightforward.

In fact the whole unit is deceptively straightforward once its off-the-wall mode of operation has been mastered. The degree of control its sparse front panel affords is surprising, and the transparency with which it can effect large amounts of gain control is remarkable. At the same time it seems capable of making the thinnest mix sound big, thick, and up front. This is a surprisingly versatile and simple tool which could add the finishing touches to almost any job. 

CONTACT

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New Technologies

The teeming 101st AES Convention in sunny Los Angeles, was a gold mine of gadgetry and a treasure trove of new equipment. **DAVE FOISTER** stakes his claim and sifts through the mud to present a panful of shiny nuggets and gems



Euphonix CS3000

After several years of progressive upgrades and additions to the established CS2000, Euphonix has launched the next generation, the CS3000. The new console continues the Euphonix principle of digital control of an analogue signal path, and adds new features and enhancements. The control surface is improved with a new look, feel, and moving faders, recently introduced as a CS2000 option, fitted as standard. The automation software has been upgraded, and metering and machine control have been improved. Once again, multiple configurations are offered for a variety of applications from straight music recording to TV broadcast and film, with full surround monitoring and panning facilities available.

Euphonix, US. Tel: +1 415 855 0400.

Euphonix, Europe. Tel: +44 171 602 4575.

Studer launches

Studer launched several major products at AES, including the MkII version of the D827-MCH DASH multitrack. New

features include a more intelligent autolocator, a tape-guide system, and 20-bit convertors as standard.

The D19 range received two new additions in the form of the MultiDAC, an 8-channel D-A with Studer's unique MixMonitor feature, and the GateWAY, a multiformat digital interface and routing system allowing transfer between DASH, MDM and analogue recording systems.

The D424-2 is a stereo M-O recorder designed as a direct replacement for the A820 1/2-inch analogue machine, and has optional lossless real-time compression, while the D741 is a second-generation CD recorder with direct audio inputs and a SCSI-2 interface.

New consoles include two digital systems, the D940 Series designed primarily for production and postproduction studios, and the On-Air 2000 for broadcast applications.

Studer Revox, Switzerland.

Tel: +41 1 870 75 11.

Studer, US. Tel: +1 615 848 5321.

The new D940 desk was just one of a series of significant launches from Studer

dB Technologies convertors

dB Technologies has joined the trend towards 96kHz, 24-bit recording by introducing A-D and D-A convertors compatible with the format. The AD122-96 A-D incorporates true 24-bit conversion, Acoustic Bit Correction redithering to lower bit rates, and a switchable digital soft-knee limiter. The complementary DA924 claims to eliminate jitter by using a DSP controlled pullable crystal oscillator, and a short buffer memory for temporary storage of the incoming data. Both quote 0.00009% THD+N, with noise floors of -122dB for the A-D and -120dB for the D-A.

dB Technologies, US.

Tel: +1 213 845 1155.

GML Digital Noise Filter and mastering EQ

George Massenburg Labs has produced a mastering version of the acclaimed GML 8200 equaliser. The GML 9500 shares the all-discrete design, and the two channels of 5-band parametric EQ, but all its controls are fully detented, with frequencies accurate to 0.5% and levels to ± 0.1 dB. Its 3U-high design holds separate power supplies for the left and right channels.


Also new from GML is the 9550 Digital Noise Filter, a rackmount processor unit and remote controller for the selective removal of low-to-medium level noise artefacts. The unit was developed jointly with the Walt Disney Company for enhancing motion-picture sound, particularly with archival sources, and features 8 linear controls adjusting the thresholds of eight bands from -96dB to 0dB with LED indication of operation.

GML, US. Tel: +1 818 781 1022.

Otari Elite and RADAR

Otari came to the AES with three significant developments. The Elite is a large format, 24-bus, digitally controlled analogue console with Otari's Image Recall system, allowing all input settings to be stored and recalled using an LED guided nulling system.

It also incorporates Otari's new automation system, also now standard on the Status. The Eagle system provides greater resolution than its DiskMix predecessor, and runs in Windows 95 to provide a full colour graphic interface. Eagle is available to existing Status and Elite owners.

Finally, the new v1.4 software for the RADAR digital multitrack disk recorder was released, based on feedback from users around the world, and free to existing users. It allows multiple RADAR units to be linked with sample accuracy, adds Sony P2 extended protocol, improves the jog and shuttle modes and slaves to MIDI time code. 



The full Westlake BB system—BBSM-10 cabinets with the new BB-10SWP subwoofers

Otari, US. Tel: +415 341 5900.
Stirling Audio Systems, UK.
Tel: +44 171 372 6370.

CEDAR, UK. Tel: +44 1223 414117.
HHB Communications, US. Tel: +1 207 773 2424.

Digidesign AudioSuite

With the variety of TDM plug-ins increasing all the time, Digidesign has launched a new host-based, file-based, Plug-In specification for Pro Tools systems called AudioSuite. The feature will be supplied free with every product in the Pro Tools family.

Several AudioSuite plug-ins from Digidesign, and its development partners, were on show at the AES. Of particular interest is Digidesign's choice of audio compression solution for Pro Tools. QDesign's i-Media Audio MPEG Layer 1 and 2 technology was introduced as a 32-bit Windows application, and will be available as an AudioSuite plug-in next year.

Digidesign's own TDM offerings include a new package called LoFi/SciFi, a pair of plug-ins providing down-processing and analogue synthesiser effects for those musical genres that use specifically retro effects. Possibilities for creative degradation of the signal include bit-rate reduction, wave rectification, and the addition of subharmonics and distortion.

Digidesign, US. Tel: +1 415 688 0600.
Digidesign UK. Tel: +44 1753 653322.

CEDAR for Pro Tools

Hot on the heels of CEDAR for Windows comes the first CEDAR module for a Macintosh system. Designed to work with Pro Tools TDM systems, the new Declick software is not a true TDM plug-in, in that it runs on CEDAR's own board within the computer. The MacDSP/C board is a dedicated dual-DSP card with 40-bit floating-point processing, 24-bit, I-O, 25MFlops for each audio channel, and like the PC equivalent will eventually support the whole range of CEDAR processes. For now the Declick module offers removal of up to 2,500 clicks and ticks per channel per second, and is intended for the restoration of 78s, vinyl discs, and for cleaning up film and TV soundtracks. Its screen representation is graphic and simple in the style of CEDAR for Windows, with four rotary controls, three buttons, and a rocker switch to adjust the process.

Mackie-Digidesign Interface

A new hardware DAW controller has been previewed jointly by Mackie and Digidesign. The Human User Interface (HUI) will be initially for use with Pro Tools 4, and will eventually be compatible with other Digidesign DAE compatible software from MotU, Opcode and Steinberg.

The control surface features touch-sensitive motorised faders, LCD scribble strips and controls for pan, sends, routing, automation and transport functions. An analogue control-room section will handle talkback and three stereo I-O pairs, and a dedicated Plug-in section allows editing and automation of TDM plug-in modules.

Mackie, US. Tel: +1206 402 6148.
Digidesign, US. Tel: +1 415 688 0600.

tc electronic DBMAX

tc electronic showed the new Digital Broadcast Maximizer, DBMAX, a multipurpose broadcast tool for use either in the transmission chain or during production. It can operate as a transmission processor for a loudner, more consistent signal and improved coverage, and is equally at home in OB situations with features like dynamic equalisation. It also has uses as a mastering tool during broadcast production, intended to make the production punchier and louder, and to make it possible to monitor how the audience will hear the transmitted signal.

tc electronic also introduced DK Audio's new MSD200 Master Stereo Display, a compact combination of phase metering, audio vector oscilloscope and level metering. It uses a new electroluminescent display that gives a 160° viewing angle and sufficient brightness to be seen in broad daylight.

tc electronic, Denmark. Tel: +45 86 26 28 00.

QSC PowerLights

The biggest yet in QSC's PowerLight amplifier range was unveiled at AES. The PowerLight 8.0 PFC can deliver over 4000W per channel into 2Ω, 8000W bridged into 4Ω. This amount of power, claimed to be the highest available anywhere, has been made possible by the

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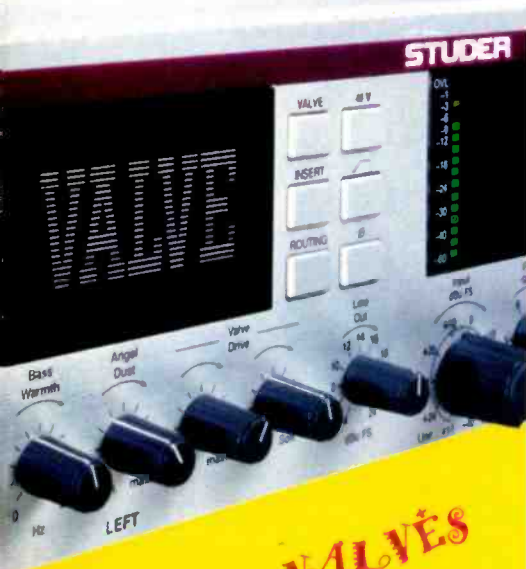
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PRODUCT PREVIEW



Based on Ampex' 406-407 formulation, Quantegy's 408 is aimed at Nagra users

First use of Power Factor Correction (PFC) in an audio amplifier power supply, which lowers peak AC supply requirements by as much as 40%, and by innovative output stage design. The amplifier features the PowerLight Series' data port for monitoring, and is joined by two other new models, the 3400W 3.4 and the 2.0HV optimised for use in biamping applications where light loads on one channel allow larger outputs on the other.

QSC Audio, US. Tel: +1 714 754 6175.

HW International, UK. Tel: +1 181 808 2222.

Power Technology FX Pack

A new outboard modular DSP unit has been launched by Power Technology, manufacturers of the DSP FX system, with the novel approach of being controllable by either a PC or a Mac via serial or ethernet links. It uses no internal slots, but is completely self-contained, and its controlling software can run simultaneously with existing hard-disk recording, and sequencing systems. Up to four 32-bit DSP FX cards can be installed, giving access to a choice of plug-in software including reverbs, stereo pitch shifting, chorus, flanging and multitap delay.

Power Technology, US. Tel: +1 415 467 7886.

Studio Monitors

A new studio control room monitor from the British Coastal Acoustics attracted some serious attention in LA. The G3 is an active 3-way free-standing design aimed at exacting listening situations. The American Westlake group added the BB-10SWP subwoofer to its range, which is designed for use with Westlake's BBSM-10 monitor system. The BB-10SWP employs an 18-inch driver and is claimed to offer a 30Hz-17Hz frequency response at 93dB sensitivity. Also from the US was the Tria tri-amped workstation monitor system. Aimed at workstation-multimedia setups, the Tria features to desktop speakers and a sepa-

rate subwoofer to offer a 45Hz-20kHz performance. Genelec's 1029A active close-field monitor system also serves desktop monitoring with a separate 1019A sub system and offers 68Hz-20kHz response.

Discrete Research, UK. Tel: +44 1753 631022.

Westlake Audio, US. Tel: +1 805 499 3683.

Event Electronics, US. Tel: +1 805 962 6926.

Genelec, Finland. Tel: +358 77 133 11.

Whirlwind MD-1 and Snakeskin

Whirlwind was at AES with a new battery powered combined microphone preamplifier and headphone amp designated the MD-1. This was joined by a new sheathing for the pairs on a snake flail called Snakeskin, designed to withstand fire, water, solvent, UV and stress. It is colour coded and braided from high temperature polyethylene terphthalate.

Whirlwind, US. Tel: +1 510 284 8417.

DeMaria Labs ADL 300+G

Anthony DeMaria has added to the range of valve products with a dual channel direct box, the ADL 300+G. Rack mountable or free standing, the unit contains two independent all-valve DI channels, featuring three valves and separate gain and output control. Impressive frequency response figures are quoted, and as expected the tube characteristic is intended as a complement to digital systems such as ADAT.

Anthony DeMaria Labs, US.

Tel: +1 818 340 0228.

Quantegy 408

Quantegy has launched a new analogue tape formulation based on the successful Ampex 406-407 family. 408 is designed specifically for Nagra portable analogue machines and has improved packing and tensioning characteristics together with a wide dynamic range and low distortion. Quantegy expects it to replace 3M 908 following Quantegy's acquisition of the 3M tape lines in September.

Quantegy, US. Tel: +1 415 903 1100.

dbx DC66 TDM plug-in

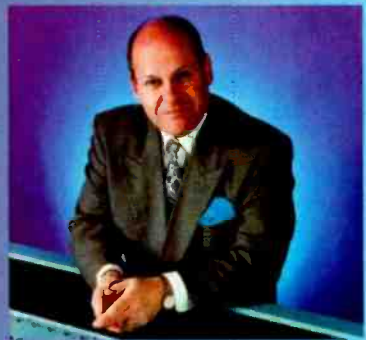
A newcomer to the Digidesign TDM pool is dbx, developing a stereo compressor, limiter and gate TDM plug-in based on the 1066. Comprehensive on-screen metering, multiple control methods and proprietary OverEasy characteristics set out to provide the expected dbx behaviour and quality from the new software, to be known as the DC66.

dbx, US. Tel: +1 801 568 7660.



Whirlwind's MD-1 mic and headphone amp package

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BEQ Series 24



There is something special about Oram EQ, its control ranges and response shapes have been so well chosen that corrective and creative adjustments appear effortlessly out of it. It also seems to add gloss and smoothness to everything, apparently drawing comparisons with valve designs. It, too, is extremely quiet and clean, it's very difficult to make it do anything unpleasant at all. Dave Foister, voted technical journalist of the year 1995.

The board is so well laid out, easy to use, impossible to distort and the sound, well, the sound is phenomenal! The EQ is smooth and very musical. It sounds like the BIG guys and it's dead quiet. In a word: gorgeous! Abby Straus and Carl Casella, TRI-MUSIC CORP. New York. BEQ 24.

The High Definition EQ really came into its own on live recording in Europe and the US. I recently used it for recording a performance with the Hudson Valley Philharmonic. At this moment I'm recording my new album using my BEQ Series 8 board, and it's so quiet. John Cale, 'Velvet Underground' Project Studio, New York. HD EQ-2, MWS and BEQ Series 8.

I've been working as a tech for 30 years and in all that time I have never heard a quieter desk. Gaston Nichols Pro Audio Installation.
The Pre-amps sound like a huge Neve, I've never had a better bass drum sound. Jason Elgin, Synchronesh Studios. BEQ 24.

This is the quietest, most inspiring console I've ever used. I've changed my Trident for this board and the Oram Sonics are all there. The EQ magic™ of John Oram is musically most satisfying, it's simply the best. I've ordered a second unit for my new studio. Uli Jon Roth, 'Scorpions' and Symphonic Musical Director. BEQ 24 Owner.
BEQ 24-56 ordered.

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'What we were dealing with in those days was a performance and a feel, and I have to tell you, as much as sound is important to me as an engineer, it is the performance and the feel that sell the record'



Keeping the Music Alive

Rooms that seem to stretch in the night; recording without shoes; and monitoring without listening, are just some of the things that are discussed when **RICHARD BUSKIN** talks to Al Schmitt, the legendary producer and engineer, including his work with such artists as Duke Ellington, Connie Francis, and The Jefferson Airplane

'HAVING BEEN TAUGHT to do everything mono and directly to disc before the advent of tape machines, I learned all about miking techniques and how to balance quickly,' says Al Schmitt. 'It all had to sound right at the same time because you couldn't fix it in the mix, and I still prefer to work that way. My idea of a good time is to be in the studio with 65 musicians or more.'

The winner of six Grammy Awards as Best Engineer for Steely Dan's *Aja* and *FM*; George Benson's *Breezin'*; Toto's *Toto IV*; Henry Mancini's *Hatari!*; and Natalie Cole's *Unforgettable*, Al Schmitt has recorded and mixed over 140 gold and platinum albums

during a career that stretches back to the early 1950s.

'One of the nice things about being successful in this business is that you get to work with successful people,' he says, and he has: Elvis Presley, Frank Sinatra, Michael Jackson, Madonna, Quincy Jones, George Benson, Tony Bennett, Sam Cooke and The Jefferson Airplane are just a few of the big names who have benefited from his skills. 'Successful people have the finances to hire the best musicians and work in the best studios with the best equipment,' he adds, 'and so after that you've got to be stupid not get the best sound. At the same time there are kids starting out working with a guy who doesn't know how to tune his drums, they're using this little schlocko board and a bunch of cheap microphones, and then they wonder why their stuff doesn't sound as good as Al Schmitt's. Well, there's an obvious reason; I've got all of the benefits.'

Maybe, but that is only part of the story. For, like most people, Schmitt still had to serve his apprenticeship in the time-honoured fashion, running and assisting, before scaling the aforementioned heights. Still, it also has to be said that he did get off to a flying start, visiting his uncle's New York studio, Harry Smith Recording, at the age of seven to see big bands being captured with just one microphone. HSR was the first independent facility on the East Coast, and Schmitt would look and learn as the musicians would be moved around for the best results.

'Soloists got up, came down and played their solos in front of the mic, and then went back and sat down,' he recalls with a smile. 'I can also remember looking out there and seeing all of the guys with no shoes on so

that they wouldn't make a noise when they were stomping... Back in the early 1940s the studio was recording onto acetate with a glass base. They couldn't use aluminium because all of the aluminium was going towards the war effort.'

By the age of eight Schmitt was spending entire days at the studio, cleaning patch cords, watching Art Tatum rehearse at the piano, and meeting anyone from Duke Ellington to Orson Welles. After returning from the forces in the early 1950s he then worked full-time at Apex Studios, recording Atlantic acts with his mentor Tommy Dowd through a 6-input Raytheon mono board, enhanced by a single Cinema equaliser.

'When I was first there we would record direct to 16-inch transcription disc,' Schmitt

Steely Dan's *Aja* is yet one more Grammy award-winning album for Al Schmitt as Best Engineer



recalls. 'We had two turntables to play things back, and I can remember Tommy and I trying to do edits. We'd have a couple of takes and we'd cue them up on each of the turntables. Then, at a certain point, we would do these cross fades, going from the two 16-inch discs to another disc. It would take maybe five, six, seven attempts, and so, as you can imagine, it was great when tape came in. The first tape machine at Apex was called a Brush Sound Mirror. Then we got an Ampex 300.'

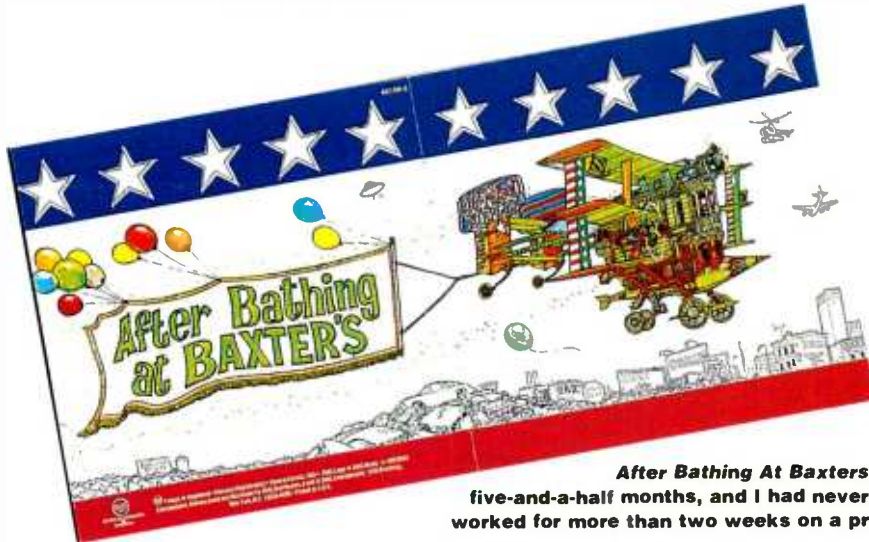
One Saturday, about three months after he had joined Apex, Schmitt was alone at the studio to attend to the 'voice and piano demos' that the facility offered to the general public. The last booking, made under the name of 'Mercer', was scheduled for 2pm, at which point a procession of musicians walked through the door with their instruments. One of them was Duke Ellington. Schmitt thought there had to be a mistake. There wasn't. Mercer Records had booked the session. In a panic he reached for a notebook in which he had written down every microphone and setup that had been used when he was in the studio, and there he came upon a session

**'Duke Ellington sat next to me,'
Schmitt remembers more than
40 years later. 'I kept saying to him,
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that had taken place with a big band. The painting-by-numbers approach would have to do.

'Duke Ellington sat next to me,' Schmitt remembers more than 40 years later. 'I kept saying to him, "Look, I'm not qualified to do this. Someone made a mistake here, but I can't get hold of anybody," but he just patted me on the back and said, "Don't worry son, we're gonna get through this. Just relax." Now, if somebody had told me the night before, "Yeah, at two o'clock tomorrow you're going to record Duke Ellington," I think I would have freaked, but as it was thrown at me at the last minute I didn't have a chance to collapse. I had to do what I had to do or run away and never show my face in this business again. So I did it and it came out fine.'

After Apex folded Al Schmitt and Tommy Dowd both went to work at Coastal Recording Studios. Although there were still only a handful of facilities in New York and Los Angeles, they were nevertheless equipped with what is now regarded as classic valve equipment. What is more, they were also peopled with seasoned musicians who knew how to attain a good sound in the studio.



After Bathing At Baxters took five-and-a-half months, and I had never ever worked for more than two weeks on a project

'Today if you just do the tracks on two songs in three hours it's unbelievable, whereas back in the 1950s and 1960s we would complete four songs in three hours,' says Schmitt. 'One of the advantages of those days was that we guys went from one date to the next, dealing with all different kinds of music. I mean, I can remember a specific day when I did Ike & Tina Turner from 9 to 12 in the morning, Henry Mancini in the afternoon and then Sam Cooke at night. I would do three dates every day practically, and the work was always varied.'

'Singers had to do their vocals live, so they had to learn microphone technique. As a result I was often able to set the fader and not even worry about the vocalist. We didn't use limiters or equalisers. I had one limiter on the board and I had one equaliser, and when you equalised one thing you equalised everything. You couldn't just patch it into one track, so my whole thing was deciding how to set up the musicians in the studio and where to place the mics. There was a great choice of mics back then; the 44 ribbon mic, the 77 DX, the Western Electric 639 cardioid, Telefunken and Neumanns.

'WHEN I FIRST CAME to California they weren't using the Neumann microphones much, and I was one of the first guys out here to put the Neumann on the [upright] bass. I also used to tape a little Altec microphone under the fingerboard—it would hang down—and together with the other mic outside it would capture all of the finger work. That's a little technique that used to sound great then, I haven't used it in years, and I don't know why! I've got to find one of those mics and start using it again. Some of those things sounded fabulous. Not only that, but you also got some better isolation on the mic. It was similar to what is done today with a direct, only it sounded better!

'Recording in those days was a lot of fun. I can recall making records at Coastal with Bobby Shad. We'd finish, make these masters, send them off to the plant, make acetates and then we'd drive up to a radio station in Harlem.

'We'd give them the record, get in the car, be driving back down and we could hear the record on the air. This was two-and-a-half, three hours after we'd finished!'

A be-bop fan as a kid, Schmitt moved more into the jazz field during the mid-to-late 1950s, working with such luminaries as Chet Baker, Jerry Mulligan and Thelonius Monk. Then, in 1958, he made the move to California, where he worked on a combination of jazz and pop at Radio Recorders in Hollywood, picking up techniques from legendary men-behind-the-board, Thorne

Nogar and Bones Howe.

Then, when RCA Records built its own LA studio, Schmitt, who had already worked on a number of the company's projects, was hired as one of the in-house engineers. This in turn led to assignments with Ray Charles—for whom one 12-song album took an entire seven hours to complete—and Sam Cooke, all of whose classic hits were engineered by Al Schmitt, who then also went on to produce his last records... Not that Schmitt has always received all of the due credit.

While engineering a session for Connie Francis at Radio Recorders he took over the production chores when the producer of choice, one Morty Craft, had to leave after a couple of songs in order to attend to more pressing matters.


'Even during those first two songs he was on the phone most of the time,' Schmitt says. 'Then, after he left, I was there with the arranger, David Rose, and at some point we decided that we'd double Connie's voice on a song called "My Happiness". For that we had to bring in another tape machine, and so we played back what we had done, recorded her voice onto the other machine and when the single came out it was a smash. There again it was also produced by Morty Craft, who had been in a bungalow at the Beverly Hills Hotel when it was being done.'

'On another occasion a very famous musician and a wonderful man named Neil Hefti was producing a session that I was engineering and he totally forgot about it. This was at RCA, Marty Paich was the arranger, Sammy Davis, Jr was the artist, and the song was 'What Kind Of Fool Am I'. Again, when the record came out it was still produced by Neil Hefti. That's how it was in those days.

'I'd often find myself engineering and trying to get the performance while all of these producers were on the phone throughout the sessions. Then there were the times when we'd hit the talkback and say, 'Okay guys, we're on the honour system!' This meant, 'When you make a mistake raise your hand and we'll try to fix it,' because the producer himself couldn't hear it.

'Back then many producers were just guys who decided they wanted to be in the record business. Half of them weren't musicians, but they were getting all of the money, all of the recognition and having all of the fun while we engineers were working our butts off. So, that's when I decided that I also wanted to be a producer.'

This was in 1962. Soon Schmitt was indeed an RCA producer, signing artists, finding material and running the sessions.

The only thing he didn't do was engineer. The union wouldn't allow it. 'I would tell a 

guy what to do, but, by the time I told him and he did it, it was too late,' Schmitt recalls. 'So, I would sometimes reach over and grab the fader myself, but that was a no-no and I would be turned in and read the riot act.'

Still, the times were changing fast and this kind of procedure was soon to be part of a bygone era. Within a few years engineers were wearing kaftans instead of white coats and Schmitt was producing The Jefferson Airplane... as well as crooner Eddie Fisher.

'This was towards the end of my time at RCA and it was crazy,' he now says.

'I'd be doing orchestral overdubs with Eddie from two until five, then I'd go up to my office and meditate a little before working with The Jefferson Airplane until four in the morning. After that I'd grab a little sleep, come back in and do my paperwork, relax a bit and then it was back to Eddie Fisher. It was very weird. I loved Eddie, he was fabulous to me, but he wasn't particularly my cup of tea.'

Schmitt subsequently quit RCA to go

'For three years I hardly did a thing,' he recalls. 'Then, one morning, I went out to get the newspaper and I heard this bird singing. Something about it sounded different and I suddenly realised I could hear again in both ears. Apparently the nerve had healed itself, and it was like putting two wires together'

independent. Meanwhile, the albums that he produced for The Jefferson Airplane were *After Bathing At Baxter's*, *Crown Of Creation*, *Bless Its Pointed Little Head* and *Volunteers*, and he now describes this all as, 'a great experience for me. Janis Joplin; the Mamas & Papas; Crosby, Stills & Nash; all these people would come and hang out. There was very heavy drug use, and a lot of debauchery. It cost me a marriage, but I had a good time. *'After Bathing At Baxter's* took five-and-a-half months, and I had never ever worked for more than two weeks on a project. We'd play stick-ball in the studio, they had tanks of nitrous oxide [laughing gas] in there, somebody would be continually rolling joints, they'd bring their motorbikes into the room, and it was just bizarre. At the same time we did some strange stuff, reversing tapes, multi'ing things together, bouncing down; all things that we'd never done before. We were using a Neve 8048—and we left the tracks on most of the time, so if you're wearing headphones you can hear somebody taking a hit off a joint, people talking, and so on. We left that kind of stuff in for those who really wanted to get into it.'

Getting into it was one thing; getting out of it was another. While working on a live album by Airplane-offshoot, Hot Tuna, at a small club in Berkeley, California one night, Schmitt sipped on a glass of apple juice while setting up the equipment. Then he climbed into the remote truck and sat down beside engineer Alan Zentz.

'The next thing I knew the truck started to expand,' he recalls, but what he was witnessing was not an early version of hydraulics at work. 'My apple juice had been spiked with LSD. I turned to Alan and said, 'You're on your own. I'm outta here!' That's the kind of thing they used to do. I mean, when Tom Donahue got married up at The Jefferson Airplane's house they spiked the wedding cake! Old ladies were walking out into the Golden Gate Park, totally zonked.'

WHILE STILL PRODUCING Al Schmitt enjoyed renewed success as an engineer throughout the 1970s and early 1980s. Then, in 1983, everything ground to a halt when a fall off a ladder caused nerve damage and the loss of hearing in his left ear. 'I worked as the music supervisor on a couple of films, but for three years I hardly did a thing,' he recalls.


'Then, one morning, I went out to get the newspaper and I heard this bird singing. Something about it sounded different and I suddenly realised I could hear again in both ears. Apparently the nerve had healed itself, and it was like putting two wires together.'

Since then Schmitt has grabbed hold of his second chance with both hands, producing contemporary artists, recording large orchestras and working almost every single day of the past five years. Presently a consultant to Village Recorders in Santa Monica, he appreciates the advantages that modern studio technology has to offer, yet he still looks back over his shoulder with more than just a passing fondness for the spur-of-the-moment methods of years gone by.

'Without automation a mix was still basically a performance,' he says. 'I can tell you on some of the Steely Dan records I'd be doing one thing, Gary Katz would be adding echo, Donald Fagin would be moving something else, and we'd all have our little roles to play in putting this stuff together. If somebody wanted to move a guitar a little bit we'd have to do the whole mix over, and then there'd be a problem with something else.'

'What we were dealing with in those days was a performance and a feel, and I have to tell you, as much as sound is important to me as an engineer, it is the performance and the feel that sell the record. I know a lot of bad-sounding records that were huge hits because they moved people emotionally, and some records that sounded perfect, but didn't sell shit. I still feel that people have trouble relating to things that are perfect.'

'I recall a story where Steely Dan walked into the control room and saw me mixing with the monitors off, just using the meters. Then, when I turned the sound up it was perfect and they were going, "Jeez, the guy mixes without even listening!" However, that's just folklore. What really happened was that I'd already done the mix and had turned the monitors off to check what the meters were doing.'

That's how legends are born... 

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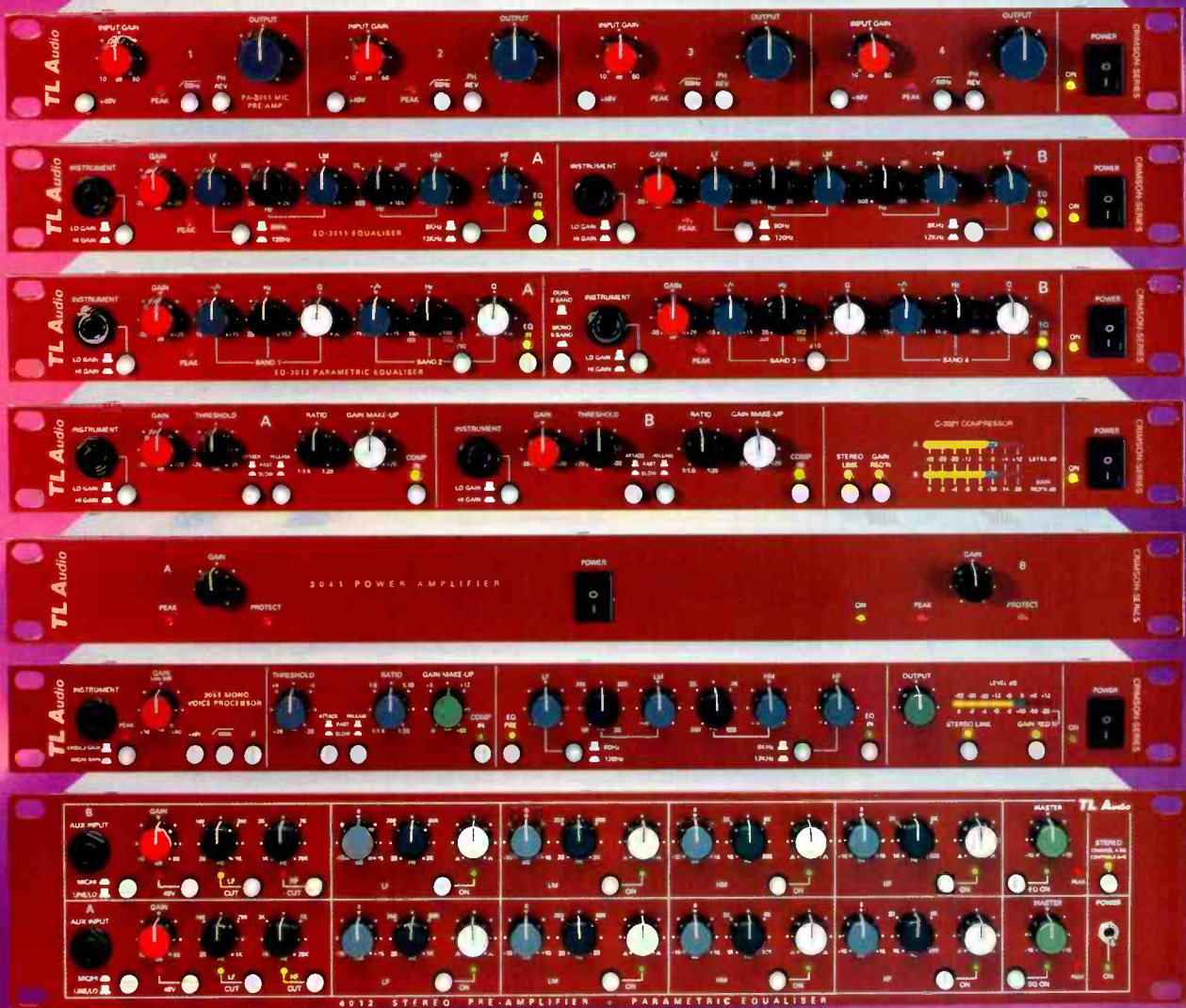
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Viva Evita!



Recording the soundtrack before shooting is the unorthodox backdrop to Alan Parker's *Evita*. With Madonna acting and singing the lead role, producer Nigel Wright, engineer-mixer Dave Reitzas and rerecording mixer Andy Nelson were in for a demanding time as **RICHARD BUSKIN** reveals

ALTHOUGH ALAN PARKER cast according to type when he assigned Madonna the leading role in the multimillion dollar biopic of Argentinean legend Eva Peron, the British-born director broke with tradition in a couple of other respects. Firstly, he went along with Andrew Lloyd-Webber's original musical concept by shooting a film with no spoken dialogue; just the songs—one hour and 50 minutes of them, including 25 different vocal contributions by Madonna herself. Secondly, while make-up and lighting ensures that the erstwhile 'material girl' bears a fair resemblance to the real-life Evita, the final product also has her sounding more like the Webber-Rice protégée Elaine Paige. 'She was taught the role by the musical supervisor, David Caddick, and then she, David and her vocal coach very much found her own style,' says seasoned pop and classical producer Nigel Wright, who, along with Parker, Webber and Caddick, was responsible for overseeing both the movie soundtrack and album. 'This is not a Madonna record but her performing the role of Evita with a very pure voice to fit the film and be commercially viable as an album.'

Initially, Parker provided Wright with the

script while Lloyd-Webber gave him the original music, and Parker described how he envisaged some of the scenes. Wright then went into his own studio with a couple of musicians and produced a pair of tracks, one of which was 'The Lady's Got Potential'. This consisted of Wright's multilayered keyboards together with overdubbed guitars and drums, and the essence of this demo was later retained for the film version. As for Nigel Wright, he, too, was retained for the duration of the movie. About 75% of the prerecording took place between October and December of 1995, at which point Wright did a rough mix of the entire picture onto CD and a hard-disk system. He then remained in London while this system was transported to Argentina, and, over the course of the next four months, used in conjunction with the filming.

'They lip-synced as much as was feasible,' Wright explains, 'and wherever they felt they could get a live vocal they did so, with the musical director playing keyboards into an earpiece if need be. Then, in May and June of this year, that was all handed back to us so that we could piece together the live vocals with everything else and overdub anything else that hadn't been finished.'

Working from the show albums as well as an Alan Parker script that remained fairly true to Andrew Lloyd-Webber's original construction, Wright retained the nucleus of a 6-strong rhythm section while he and Lloyd-Webber came up with more contemporary arrangements. In this respect no sequencers and hardly any synths were used—there was a vow to keep things 99% acoustic—but there was a greater emphasis of themes, lending a rock feel to the rock section; a Latin feel to the Latin section; and so on.

'Alan and I would discuss a scene with the rhythm section, we'd play a couple of different versions that had been recorded before and then the musicians would go down onto the studio floor and start to work,' Wright recalls. 'I always knew when it was going the way that Alan wanted it because there wouldn't be too much said, whereas if he started to pace around the room it was obvious that it wasn't quite as he felt or saw it. We had to do a lot of this kind of experimentation with all of the actual song dialogue in order to visualise what the screen action would be. And quite often we had to bring Madonna in and do everything live with the rhythm section so that we could match the action

with a pace at which she could perform.

'Alan's a very musical person and the script had a very strong sense of this. He stayed by my side the whole way, and as we were recording I would be told, "I'm going to need four more bars there...take two out...add eight bars...we need a longer intro..." because he'd already worked out in his head how many bars he needed to get in and out of each scene.'

'It's just so unusual, working on a full-length motion picture which consists purely of singing all the way through,' adds Grammy Award-winning engineer Dave Reitzas, whose recording of three songs for Madonna's *Something To Remember* album led to his assignment to cut her vocals for *Evita*. This in turn extended to the recording of nearly all of the album's vocals as well as the mix. 'We recorded everything first but then, when they shot the film, our work was constantly being updated,' he says. 'At times it could be manic but it also gave rise to some memorable challenges.'

A specialist at manipulating vocals, Reitzas keeps his own particular methods of punching and comping fairly close to his chest while asserting that, 'it's just a case of taking everything to the highest level possible while ensuring that the end result should have that one-take feeling.' For this purpose Reitzas invariably prefers using Sony 3348 over Pro Tools or Sonic Solutions, citing how it enables him to move things by milliseconds without ever leaving the machine. 'Basically I save the artists from having to fix something, because if it exists somewhere else then they don't have to redo it,' he comments.

'I figure that if you're going to use one line from another take then you can certainly use one word, and if you're going to use one word then you can certainly use one syllable, and if you're going to use one syllable then you can certainly use an "s", and if you can use an "s" then you can certainly use a fraction of the "t" sound... So, it's like how small can you go in order to give it that extra 5%?'

The answer to that question probably lies somewhere between as small as you want



Madonna meets the people as the charismatic Eva Peron. 'They lip-synced as much as was feasible, and wherever they felt they could get a live vocal they did so'

and as far as your ears can hear. Not that there was ever much time to ponder such issues during the course of the *Evita* project.

WHILE MOST of the principal shooting took place in Argentina, some scenes had to be shot in Budapest, Hungary and at Shepperton Studios in London. After all, it may have been a little too risky to stage street riots and Eva Peron's funeral in Buenos Aires, where graffiti on walls contained such homely messages as 'Death to Madonna and Alan Parker.' Nevertheless, it was cost-effectiveness, not to mention Parker's English roots, that inspired the use of a largely English crew as well as a trio of London recording facilities. The first of these, Whitfield Street, houses a couple of Neve VR consoles in a large tracking room and a smaller Studio 2 where Madonna cut most of her vocals. 'She loved doing vocals at Whitfield,' Dave Reitzas reveals. 'It just had a great vibe to it.'

The medium was digital 48-track, and to record the featured performer Reitzas employed a Neumann U47 going through an NTI PreQ3, NTI EQ3, Tube Tech compressor and then straight to tape. Aside from the U47, this chain was also applied to all other vocals.

Madonna recorded her parts in a booth and these went pretty much according to plan until the time came for her to record the big deathbed scene, at which point she encountered that age-old acting problem—how to find the 'right motivation'.

'The most difficult thing about this project was that the film was not shot until the music was completed,' says Reitzas. 'They were shooting to whatever had been sung, and so the vocal performances always had to take the visual aspects into account.'

When Madonna attempted to do this with regard to 'The Lament' she couldn't come up with the right result. Maybe the fact that she was standing upright while wearing headphones had something to do with it—after all, according to most accounts the real-life Eva was prostrate when she met her maker. Dave Reitzas therefore opted for a setup in Whitfield Street's Studio 2 that at least bore some resemblance to this, and which, in turn, might provide just a little more atmosphere for inspiration.

'After everybody left I had the assistants

bring in two big couches,' he recalls. 'We put them together, put blankets down, and I then had the techs bring in oscilloscopes as well as a plastic bag which was hooked up as if it was a morphine drip.'

Clearly, all that was missing was the priest. In his place by the 'bed', however, there was a U47, and this contrived to produce the relaxed ambience that was necessary for the right performance.

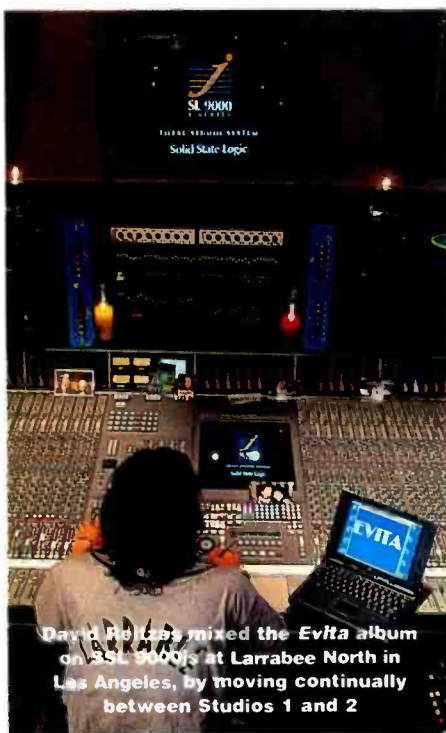
'By singing lying down Madonna sounded perfect for that scene,' says Reitzas. 'That's what you hear on the album, whereas in the movie they used her live on-set performance. It would have been too difficult

'I figure that if you're going to use one line from another take then you can certainly use one word, and if you're going to use one word then you can certainly use one syllable'—David Reitzas

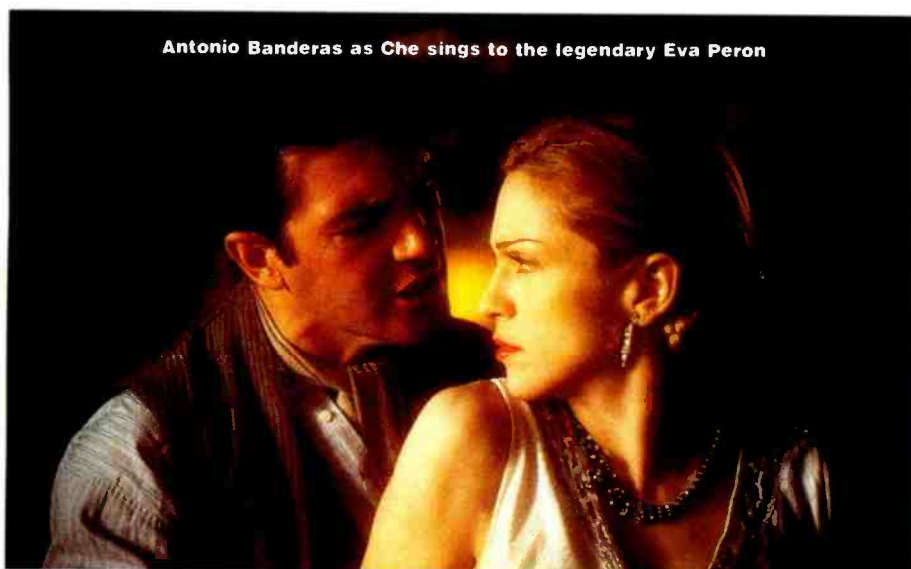
to lie in bed and lip-sync to an emotional scene like that.'

In all about a month was spent recording the vocals. Most of the large choir performances took place in the huge room at London's CTS, consisting of 100 people singing together on the first day followed by several different-sized groups. The largest of these configurations was arranged in a 3-tiered 'winged' formation towards the back of the room, and recorded on eight tracks with four tube 67s mics across the front, a pair of C12s halfway back and a couple of Neumann 49s positioned far and wide.

'I don't have the luxury of experimenting on these kinds of sessions,' asserts Reitzas. 'When you're dealing with 100 session performers you've got to go by your gut instincts to judge what the room is going to be like, and then use your knowledge as to which microphones would be best for the sounds that you wish to capture. Obviously, before the session I'll test the individual mikes'



Dave Reitzas mixed the *Evita* album on SSL 9000s at Larabee North in Los Angeles, by moving continually between Studios 1 and 2



Antonio Banderas as Che sings to the legendary Eva Peron

to make sure that they're all up to calibre, but then it's just a case of balancing as quickly as possible.'

Much the same applied when working with smaller choir setups featuring 4 men, 8 women, or 20 or 30 combined singers—listen to the live sound, position the mikes and go for it.

'I just put up the faders and if it sounds like the room and sounds like the choir then that's good,' Reitzas says. 'However, if I hear something wrong then I make quick adjustments, and that's all based on the gut. In one instance I even had a group of four singers perform in the control room.'

With the men behind the Neve VR being informed at short notice as to the size and nature of the setup that they were going to record next, the choice of configuration was largely that of Alan Parker. After all, he could envisage each scene, whether it featured army generals sitting around a table or a mass of union workers marching down a street.

Dick Lewzey oversaw the orchestral sessions, and on the occasions when brass and vocals were recorded at the same time he took care of the former while Reitzas looked after the latter. For this both engineers were seated at a Neve Capricorn, with Lewzey utilising the internal facets of the console and Reitzas relying on his own gear such as the aforementioned vocal chain and Genelec speakers. Indeed, these provided a consistency of sound from studio to studio—Whitfield Street, CTS and then Metropolis, where

further overdubs took place again using a Neve console.

'We did a little bit of everything at every studio,' says Reitzas. 'Even up to a week before the end of mixing there were still orchestral parts being overdubbed, and a lot of the work last year was being taken care of by engineers such as Robin Sellars while I was working on vocals with Madonna.'

While Nigel Wright encountered the same song structures after the completion of filming as he had provided for the rough mix some four months earlier, there were also quite a few gaps that now had to be filled. As a result, two days were spent viewing the edited picture in California before Wright then returned to London for a fortnight of gap-bridging overdub sessions with both rhythm section and orchestra. Thereafter, Andrew Lloyd-Webber provided at least another 20 minutes of underscore courtesy of old themes and a few new ideas, and, once it had been recorded, this was matched into the film. Little was required for the album, which, due to release schedules (mid-November for the album, Christmas Day in the US for the film), was to be mixed first.

To this end, after most of the recordings had been completed Reitzas returned to Whitfield Street to compile two long master reels from all of the slaves pertaining to lead vocals, choir, brass, rhythm, whatever.

'I didn't know that I was going to mix this record,' he now says. 'So, when I made the long reels, I combined, say, 40 tracks of choir down to six tracks, just so that other people could use them if they were going to do more overdubs without me at any point. As it turned out, there had to be at least a hundred multitrack tapes—there's probably 120 by now—and it just so happened at that time I was the only person to know what was going on. That wasn't because of disorganisation, but when I did get asked to do the mix I was just glad that I had taken the time to leave whoever else may have done the job with some kind of sense of where things were.'

'On each box, alongside the titles, there were several offsets such as the "control offset to vocal slave 1", "control offset to master mix C", and then when I was mixing I was also creating new reels with additional offsets. If you had to go backwards it could be done; you could go through all of these 120 tapes and it would be like putting together a puzzle.'

REITZAS MIXED the songs with the movie soundtrack in mind and then created mix stems consisting of his final mixes split into over 30 tracks. The finishing touches to the album were made at Larrabee North back in Los Angeles, and while he had originally considered using a Neve Capricorn for this purpose, Reitzas was more than happy with Larrabee's SSL 9000s.

'I've never been strictly a Neve or SSL man,' he claims. 'I just make the best of the tools available. However, having said that, when it comes to the 9000 I praise SSL for the steps that they've taken with regard to the sound of the console, while also making it more functional to concentrate on mixing. Before you always had to see things from the perspective of the computer in order to do anything, whereas now it's more a case of touch the fader to achieve what you want. It's a combination between the best of the GML and the best of Flying Faders, although there are still things that they need to focus on, such as GML's Trim function.'

After starting the album mix in one room, Reitzas found that he needed to travel between two rooms to keep up with the workload. 'At some points I was working on a big mix in one room and three little mixes in the other, splitting the console into thirds, and I have to say that it certainly was a lesson in focusing,' he says.

'There were moments when it was slightly overwhelming but, due to deadlines, it had to be done. Most of the logistical problems



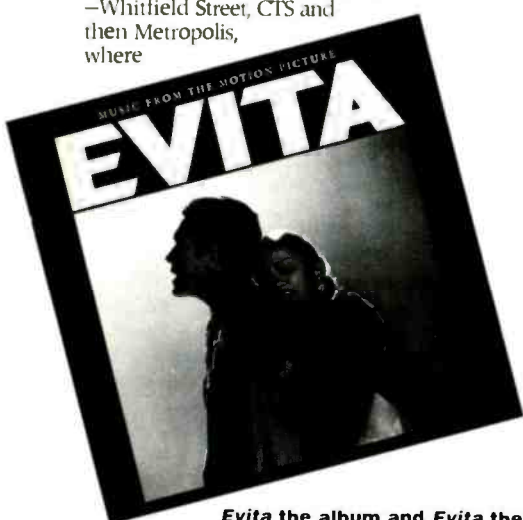
David Reitzas: keeping his methods of vocal manipulation close to his chest

had to do with timing everything so that, when Madonna came in to listen, rather than have her wait around or return, I could play her four things instead of just one. There again, sometimes I would also be in there and almost forget which room I was in—I would say to myself, "I thought I had an effect on the bass", and then I would realise that was in the other room! Fortunately, however, Larrabee was the perfect place to do that because the equipment is identical in each room. I'm pretty good at visualising what's going to be required and so it worked out fine. The mission was accomplished.'

At least insofar as the album was concerned.

AROUND THE START of September that Oscar-nominated rerecording mixer Andy Nelson became involved with the *Evita* soundtrack, and at that point the work that Reitzas had completed on the album was used to good effect by Nigel Wright.

'It would have been pointless, once the album had been mixed, for me to go back to square one,' explains Nelson. 'So, what I was able to do courtesy of Dave and Nigel,



Evita the album and Evita the film are different sound concepts

was to have 48-track digital string-offs that, although they contained the album balance, also gave me total separation on each instrument. I therefore had a starting point from which to perceive how, in musical terms, Madonna liked the sound and quality of her voice to be matched against the tracks. I could start with that as a reference and then do the mix according to the images.'

It was during the postproduction of another Alan Parker film, *The Commitments*, that Nelson learned just how important it is to do the mix on a proper mixing stage, where the environment is roughly the same size as that of the average cinema. To this end Todd-AO West in Santa Monica proved to be the ideal facility.

'When you put the images up on the screen the complete balance of the voices and the instrumentation alters significantly,' he says. 'Your eyes are working in conjunction with your ears and therefore the whole perspective changes.'

'When you put the images up on the screen the complete balance of the voices and the instrumentation alters significantly. Your eyes are working in conjunction with your ears and therefore the whole perspective changes'—Andy Nelson

Nelson spent three weeks going through every number in the film—from entire songs to one-liners—and using an Otari Premier console and three 6-track Magnatech film recorders, mixed each piece from 48-track down to 18 tracks.

'I wanted to get the material out of the multitrack situation and onto a hard medium that would match the sprockets on the picture,' he explains. 'Up to that point it had always been on 48-tracks or Tascams or analogue; anything but film effectively, apart from the mono playback track that Jerry Hamlin had used as a guide to cut the movie. So the beauty was that, in 6-track mode, we could then fine-tune the balance across the film screen. We had three screen speakers—left, centre, right—stereo surround and a boom channel which I was able to dedicate to certain big-impact sounds, such as heavy orchestral drums, just to give it that extra weight in the larger auditoriums.'

'Having 18 tracks gave me total flexibility with the vocals, the choir, the orchestra and the rhythm percussion all being separate. At the same time, the effects mixer who I've been working with for the past three years—Anna Behlmer—spent two weeks on an adjoining stage preparing the predubbing for the sound effects. Then, after she had done that and I had completed my three weeks of prelaying, we came together and went through a final preparation stage, doing a finer balance of the music and sound effects, before taking the predubs to London to mix the complete and final

track at Twickenham Studios.'

Although Nelson describes the *Evita* movie as 'a huge leap in terms of musical film,' and 'one of the most enjoyable projects I've ever worked on,' Wright admits that running between London and Los Angeles while overseeing the single album, double album and film all at once, caused a 'logistical nightmare.'

'What with everybody's different work schedules and the fact that the deadline kept getting moved back, it ended up being a case of all hands on deck,' he recalls. 'It was the toughest thing that I've ever done in my life but probably the most enjoyable as well. In fact, the thing that kept the whole project together was that they shipped Guinness into Hungary and Argentina, and that enabled us to teach the American crew and French lighting director what Guinness is all about... And that you can drink it out of a can! ☺'



Rerecording mixer Andy Nelson reworked the album for the *Evita* film soundtrack

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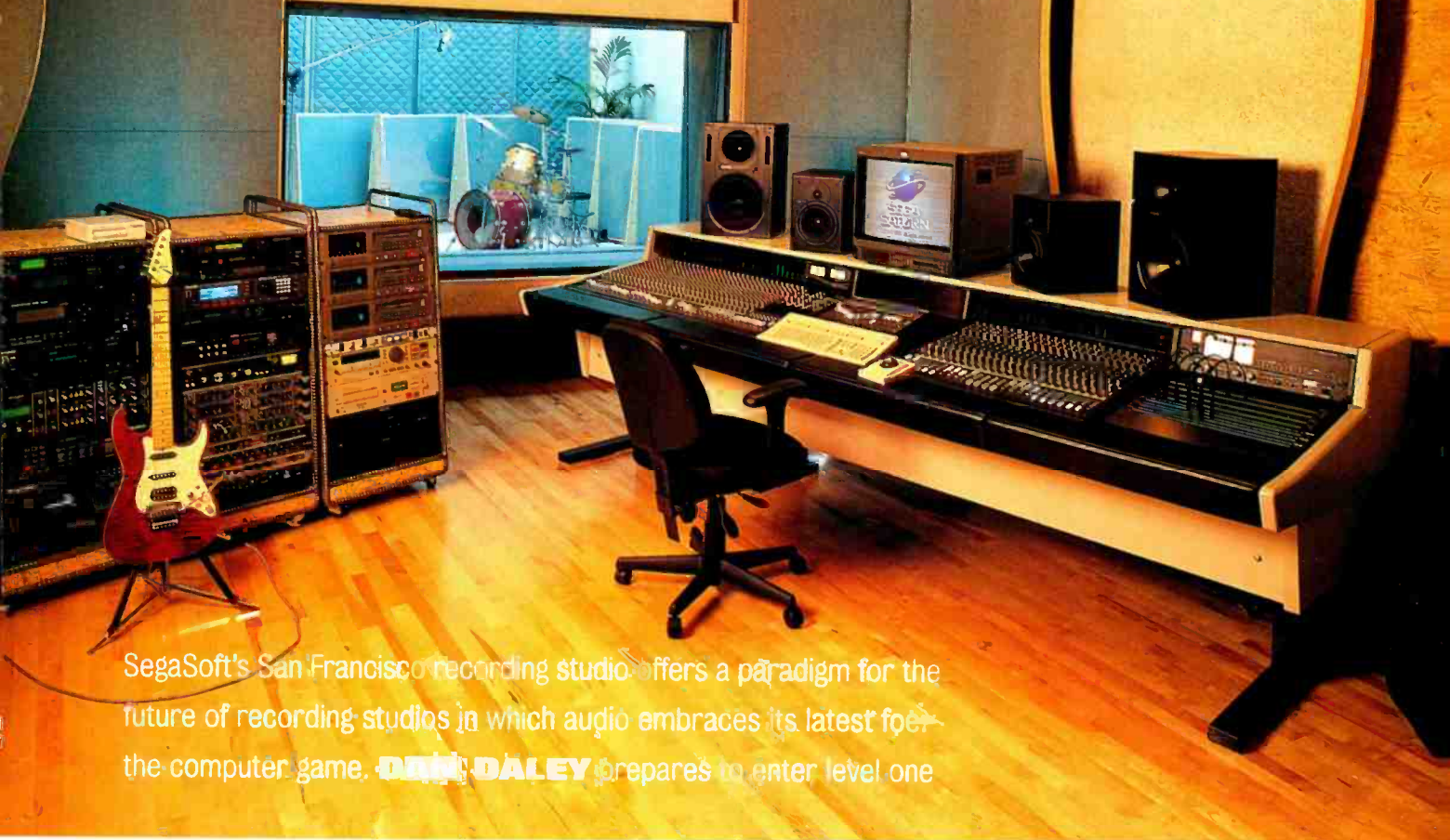
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PROFESSIONAL AUDIO VIDEO

The Name



SegaSoft's San Francisco recording studio offers a paradigm for the future of recording studios in which audio embraces its latest foe—the computer game. **DAVE DALEY** prepares to enter level one

SAN FRANCISCO'S South Of Market Area—known by the acronym SOMA—is an example of what a rehabilitated urban downtown can be. That is to say, it's not too rehabilitated; the warehouses that were the area's stock in trade for a hundred years are still there, although most of them are now trendy clubs and boutiques. Among these sit a few large, but benign, multimedia entities like telco PacBell. Overall, it's not too trendy or too wired; there's still an element of grunge—the real kind, not the Seattle tourist grunge—that invigorates the late-night stroller with an urban frisson, a light touch of danger, if only in the few dark spaces between the neon glow of the lights that mark the front of the clubs. There are no Planet Hollywoods or Hard Rock Cafes here. The place is the sum of its highly individual parts, not of some strategic corporate master plan cooked up after hundreds of rounds of test-marketing.

This is where SegaSoft—a joint venture operation between game manufacturer Sega America and a group of private investors that was launched about two years ago—has made its home. And as of the last year, this home has a new annex: a 2-room, capacious and well-outfitted recording studio that has a

unique mission in life. In addition to bringing the audio production work on game projects in-house for various creative and economic reasons, SegaSoft's studio is also designed to act as the laboratory for an entire new business for the company: becoming a record label and finding, developing, producing and marketing new music acts, as well as releasing archived game audio on compilation CDs. It is, in a sense, a whole new game for Sega.

'We purposefully didn't soffit the speakers. When you're doing game audio, and in our case using the QSound spatial enhancer system a lot, you want a lot of airiness and space around the speakers themselves'
—Gary Cirimelli, Production Director

THE STUDIO, which has no formal name, accomplished the goal of facility manager Jorge Castellanos and SegaSoft Music division manager Spencer Nilsen to create a comfortable, noncorporate working environment for the audio needs of the division (although staffers admit they tend to keep corporate-type hours). Studio A was the first to come on line, in 1995, with a design by California-based architectural design firm Studio bau:ton, and possibly the largest Euphonix CS2000 console on the West Coast. 'It's certainly the biggest in the Bay Area,' says Castellanos, noting the desk's 104 faders, 56 of which are fitted with full dynamic automation.

Studio B, designed by CSI, came on line earlier this year and is outfitted with a 56-input Mackie 8-bus board complete with 24-channel expander module installed inside a customised Argosy 9056 console frame. The arrangement includes a bay for the studio's Digidesign Pro Tools III workstation. Studio A has 32 tracks of Alesis ADAT XT; Studio B has 24 tracks of the same.

'This is the high degree of flexibility we were looking for in a studio space,' explains Gary Cirimelli, one of the 13,000ft² facility's three staff musician-producers (who with

of the Game

Nilsen and two assistants make up half the division's entire staff), and who worked at Sony Music for the previous six years as a programmer on Sony acts like Michael Bolton, Boyz II Men and Kenny G. 'We wanted to combine the hard-disk recording system and the console into a single entity, both for creative and operational reasons—it makes it a lot easier to work with both systems in a single space—and for ergonomic reasons.'

By the latter, Cirimelli is referring to the fact that, in addition to the large recording chamber attached to Studio B, and the spacious iso booth connected to Studio A, the B control room's equipment can also be easily pushed aside in order to use it as an additional recording space.

'That's why all the control rooms are as large as they are,' says Cirimelli. 'We can fit a 60-voice choir into the control room, and we put felt pads on the feet of the Argosy frame so one person can easily slide it out of the way.'

Both studios have Pro Tools III workstations, as well as large complements of outboard gear, and DynaudioAcoustics, and Genelec monitoring. Studio A has M3 monitors in a free-standing configuration, and Genelec 1031A speakers for close-fields. Studio B uses M10s and Genelec 1032s with a 1092 woofer. Crown MacroReference amplifiers are used.

'The thing about the monitoring is that we purposefully didn't soffit the speakers,' says Cirimelli. 'When you're doing game audio, and in our case using the QSound spatial enhancer system a lot, you want a lot of airiness and space around the speakers themselves. It mirrors the fact that a lot of multi-media playback environments also have freestanding speakers, and this kind of speaker arrangement lets you get a better sense of localisation of various elements in

MR MONTROSE, MEET MR BONES

RONNIE MONTROSE, string-slinging mover behind 1980s arena rockers Montrose and Gamma, is not going quietly into that elephants' graveyard of former rock stars past their commercial prime. Rather, he is meeting the future head-on and seems to be relishing it, even if, as he readily concedes, 'At some point, the technology leaves me behind.'

Montrose, a Bay Area native, has transformed his guitar-crunching skills into number-crunching ones, using a combination of his Sony PCM-800 and Mackie 8-bus home studio and Sega's other Northern California audio facility in Redwood City to bring 6-string sensibilities to the digitally dominated world of game audio. Via musician and pioneer game developer-producer Ed Annunziata, Montrose was brought in on forthcoming Sega CD-ROM game *Mr Bones*, a musical allegory in which the blues-playing title character battles evil creatures and boring chord progressions. Montrose was asked to bring a metallic guitar quality to the cinematic interludes that are used as segues between progressive levels of the game. The choice of Montrose, though, was also an attempt by Sega's creative team to infuse the next generation of games with a musical innocence in part to counter the synth-driven scores that have characterised many games.

'I wrote the central themes, which were used in those transitional cinematic sections,' says Montrose. 'Those were then also disassembled and rearranged for the game levels. That's where the technology leaves me a lot of the time;

that kind of number-crunching and data compression.'

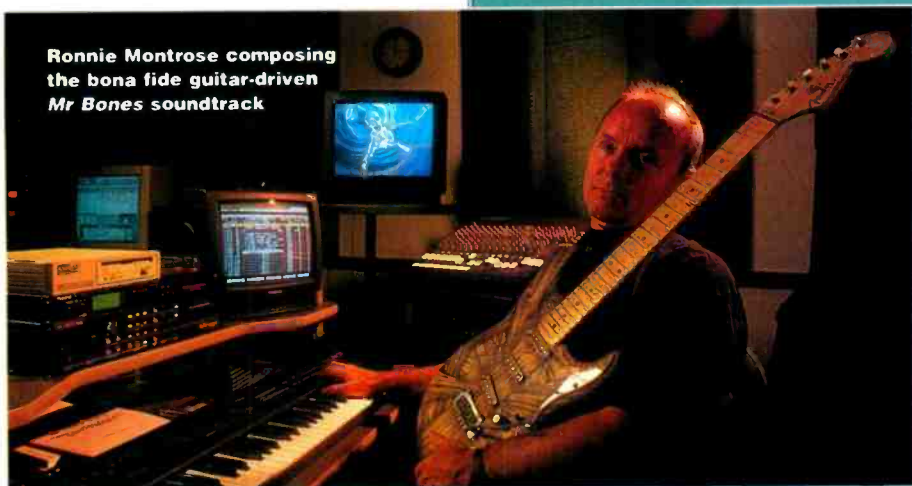
Montrose is hardly a headbanging Luddite when it comes to this stuff, however, despite his Marshall-Les Paul pedigree. He regularly works with Pro Tools, is a raving fan of the PCM-800, and used a Roland MIDI guitar system to access sampled sounds and create MIDI files. The guitar-based score for *Mr Bones* runs the gamut from Montrose's signature volume-swell crunchy electric to bottlenecked National Dobro to finger-picked bluesy acoustics. The acoustical instruments were recorded in stereo using an Audio Technica 4033 mic and a combination of ART pro-MPA tube preamp and a Focusrite Red 2 EQ and then direct to tape. The electric guitar parts were recorded using a Palmer DI box and a load resistor for cabinet simulation.

One pervasive issue that Montrose never had to deal with on records was the never-ending turf struggle between graphics and audio for the limited (650Mb) real estate of the game disc. 'We strived to keep as much as we could at 44.1kHz,' he says. 'But there were times when it made sense to compromise, such as when doing a blues acoustic guitar part alone. It was meant to sound old, so recording at 22kHz kept it in character and saved some precious disk space.'

Montrose worked in a combination of his home studio, where much of the composing and guitar solos were done, and at Sega's Redwood City studios, where he was able to lock to picture and mix (to a Panasonic SV3700 DAT). The game's audio components were a combination of 44.1kHz recordings and Yellow Book 8-to-16-bit audio at various sampling rates buffered in the platform's RAM. The higher bit-rate and sampling frequency sections are used when interactivity is not the main focus. When that kicks in during game play, the more truncated audio formats are employed.

The music from *Mr Bones* is slated to also appear as a stand-alone CD, a notion that Montrose, who played with pre-Wired-Era legends such as Van Morrison and Edgar Winter, finds in sync with the way the music business has been headed.

'I've been going online for a while and watching things like Luma, which was the first, renegade unsigned band demo service on line,' he says. 'So all this seems like a perfectly natural progression. And it was fun.'



Ronnie Montrose composing the bona fide guitar-driven *Mr Bones* soundtrack

the mix for game and multimedia audio? While most mixes will pass through all the main monitoring for reference checking, a pair of JBL Control One speakers are parked atop a Sony 27-inch consumer television set, along with a Sega Saturn game system, a recreation of a typical American game user's setup, lacking only some spilled Coca Cola on the carpet. 'But it sounds as good as any of the world-class rooms I've worked in, like Hit Factory or The Plant,' Cirimelli adds. 'The place is like a project studio on steroids'

THE TAG 'project studio' hardly seems to encompass the ambitions that the parent company has for its facility, though. As mentioned earlier, part of the facility's *raison d'être* is economic—since SegaSoft owns most of the music produced for its game programs via work-for-hire contracts with composers, commonly known as buy-outs, keeping production in-house makes financial sense. But, as Jorge Castellanos points out, the studio also came about as a result of 'the allure of breaking into new markets for the music for games. The music now has a dual function not only supporting the [CD] games, but also for commercial CD music release. Multipurposing the music is an important part of what this studio is all about.'

SegaSoft plans to develop new recording artists using the studio, their records to be released on a yet-to-be-named label owned by the company and distributed by PolyGram's PDG distribution division, the first such indie distribution deal the major label has inked in a long time, and the only one presently active, according to Castellanos. SegaSoft's

'The music now has a dual function not only supporting the [CD] games, but also for commercial CD music release. Multipurposing the music is an important part of what this studio is all about'
—Jorge Castellanos, Facility Director

ace in the hole is that, instead of attempting to funnel new artists into an already crowded radio cosmos, it will use its newly released CD-ROM games as the medium through which the bands build audiences. In addition, the label and studio will work on compilations of music and audio from existing games, building on the very customer base that purchased the games in the first place. The label's first release, *Ecco: Songs Of Time*, a compilation of the first two *Ecco The Dolphin* games for Sega's Saturn game system and produced by division manager Spencer Nilsen, was scheduled for release in September, with other, similar archival releases to follow from such Sega game titles as *Eternal Champions* and *Vectorman*.

The scenario is very similar to that record

labels experienced in the early 1980s when they were able to reissue much of their vast catalogues on CD, thus creating a new market for old music.

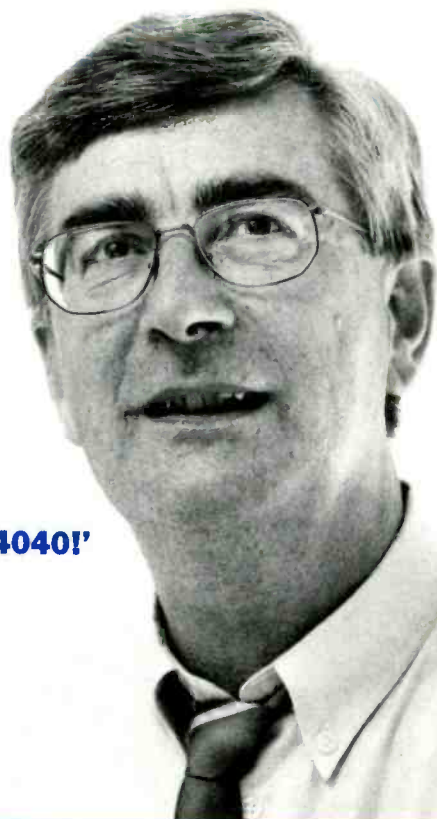
'It's a strategic move,' reveals Castellanos. 'We're well positioned to meet the demand for new music that comes with the games, but also to introduce new products to a market that may have never thought of the music as a stand-alone product before.' The studio is intended to service both of SegaSoft's strategic marketing goals, but will also be available for hire on a select, or as Castellano puts it, 'invitational' basis, in part for partner PolyGram to develop bands and do their demos. It is also being marketed to other game audio developers as a highly evolved place to do their game and multimedia audio.

'Between the way the studios are laid out and what they're supposed to accommodate in terms of business, there's really no typical session here,' says Gary Cirimelli. 'One day it's a live string date with chorus, the next it's an all-synth session with drum loops. Another session could be nothing but voice-overs.'

Still, Cirimelli sees the facility as a dedicated music recording studio, not a post facility in sheep's clothing.

'It's considerably different from authoring, which is where the post analogy might be better suited,' he says. 'Multimedia and computer games need a lot of audio, more and more audio to compete with other forms of entertainment that are also relying more on the way they sound as well as the way they look. So this is going to be an exciting new market for sound!'

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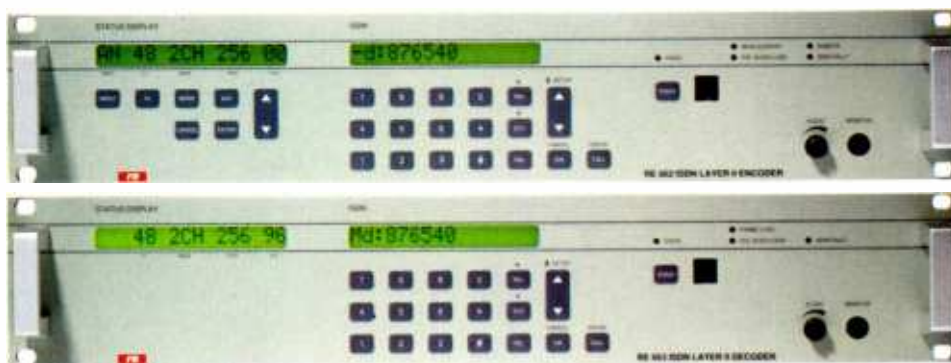
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The car is not the star—George Michael received MTV's Best Male Artist Award

A scintillating cascade of satellite stars shot worldwide during the MTV 1996 European Music Awards; but the acts who make bucks need the guys in the trucks. **SIMON CROFT** shines backstage

MOST OF LONDON could have watched part of this year's MTV Music Awards Europe without a television set. The historical home of the BBC, Alexandra Palace sits high on a hill and for the event its imposing balustrades were bedecked with high-powered searchlights scanning the wintry sky.

Inside, and outside, the venue, a large number of carefully coordinated crews were working to ensure that the prestigious musical event—which went out live on 15th November 1996—proceeded without a hitch. Unlike some of the more bloated attacks of back-slapping that pass for awards ceremonies, MTV's presentation keeps music to the fore.

This means a fast-moving stream of international artists who are there to perform, not just to be seen. Hosted by Robbie Williams, and including artists as diverse as George Michael, Boyzone, and Garbage; the programme was licensed by 12 European radio stations and forms a lynch-pin in MTV's own programming world wide. Looking remarkably composed just before the event, freelance engineer and sound supervisor, Andy Rose explains how the front-of-house crew and three mobiles are coordinated.

'One set of sheets tell you where video, time code and comms go, and another set of sheets show you where the programme sound is going,' says Rose. 'We had a schematic last year, but this is the third year we've done it all, so I just put it on a list.

'I detail who should be talking to who, so all the guys in the trucks know that they will have four-wires incoming from the scanner; four-wires from the stage; and four-wires from us; so everyone knows what's going on,' he says of the comms setup.

The whole system is worked on the principle of two stages. Although it is physically the same stage, electronically, there are A

and B stages.'

As usual, Clair Brothers had the contract for the house sound. Clair Brothers' Brian Ruggles handled the show-production mix, while his colleague Chris Taylor took care of the music mixes. 'Yeh everything's fine, it's going to be a little loud, that's all,' predicted the avuncular Ruggles before show-time. He expands on the A-B setup mentioned by Rose.

'We've got two Yamaha PM4000s desks and then a Midas XL3 in the centre. The PM4000 is fed through the production desk, and then everything is fed through it. It goes on the air as well. We swop between the two desks,' Ruggles explains, 'And then it's all fed through the production console

here, which is like they would have in a TV truck, and then I bring it up through the PA in the house, so that everything that is heard on television is heard in the house.'

The Clair Brothers' rig for the event used 30 S4 enclosures each side on the floor, with a supplement of P2 cabinets along the edge of the stage. Next to the risers on stage were P4s configured as a cluster of four. There were three of these clusters, each comprising four R4 cabinets. Power was provided by Crest amplifiers.

Six separate monitor

AWARDS

Best Dance Act:
THE PRODIGY

MTV Amour Award:
THE FUGEES

Best Rock Act:
SMASHING PUMPKINS

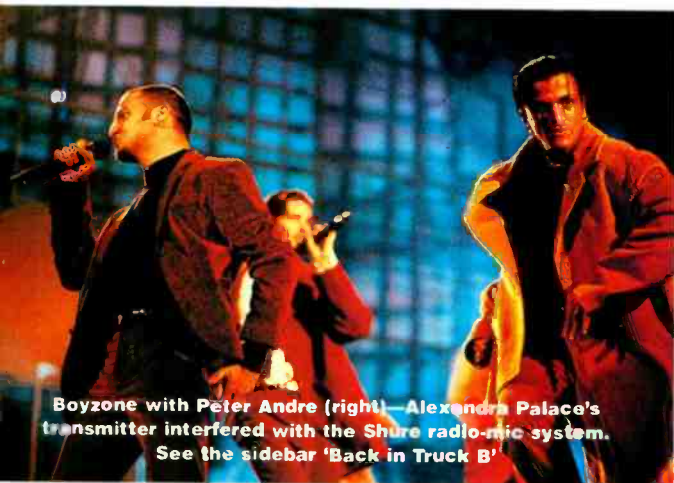
Best Song:
WONDERWALL BY OASIS

Best Female Artist:
ALANIS MORISSETTE

Best Breakthrough Act:
GARBAGE

Best Male Artist:
GEORGE MICHAEL

Best Group:
OASIS



Boyzone with Peter Andre (right)—Alexandra Palace's transmitter interfered with the Shure radio-mic system. See the sidebar 'Back in Truck B'

Music is its own Reward



consoles were used, a mixture of Midas, Ramsa and another Yamaha PM4000. Monitor enclosures included 12Ns, the new 12N2s, and ML18s for drum monitors, chosen for the extra bottom end. Ruggles remains positive about the room acoustic, despite the somewhat cavernous ceiling. 'There's a little bit of a tunnel effect, but it's not bad at all. We've had no trouble so far. We've had the bands sounding pretty good. That fabric goes over the steel ceiling, and it seems to be helping us out.'

The setup was in contrast to MTV's New York event, where an AMS Neve Capricorn handled the music mix.

'In New York all we had out in the house was the PM4000 and the Capricorn,' affirms Ruggles. 'It was an experiment which actually worked pretty good. We're hoping to do that again at other award shows with the Capricorn in the future. For this one we went back to our old way of doing



it. You have to write everything down.'

Andy Rose takes up the story: 'Historically, it has been an American crew that has done the PA system; but I have three guys on stage to run all the radio mics. The idea is that the radio mics go to a splitter, and they are monitored by the guys back stage. They can monitor the radios to see how they are doing, and make sure that they're all working okay. If they feel something is not working well, they will replug it, and we won't necessarily know about it in the truck. It's quite nice that they can handle that because we don't have to worry about it. All we know is that there will be radio mics from channels one to four, and they will be the right people.'

This brings us to the trucks themselves.

The A truck was the BBC's Calrec Assignable equipped MSC3 where Rose mixed the sound, assisted by BBC sound man Simon Scrivener.

The B Truck was the Manor Mobiles' SSL-equipped Mobile 1, that has a 48-channel E-series with G-series computer, and 72 channels of API remote preamp. Sound mixer was Tim Summerhayes, with line-checks by Ian Dyckhoff—both from Fleetwood Mobiles. Also on their team were Manor staffers Dave Porter and Andy Batlin. Music mixes from the A and B trucks went to the Telegenic OB unit where Dave Taylor did the final mix to air. In addition to the incoming mixes, he had feeds from the presenters' radio mics; two lectern mics; and an applause mix. He also mixed in prerecorded applause.


'Essentially, Dave does not have to do anything to the music mixes,' says Rose. 'We do all the limiting in our truck, so it can go out clean. We've got total control over any compression or limiting that goes on. We've got up to plus eight above zero; zero being -4vu. The idea is to get a nice level without it sounding audibly compressed,' Rose considers. 'I use two valve limiters and a Neve peak limiter. I use the Summit TLA100s; they are

not dual channel just single units. It certainly doesn't stop any peaks, but it gives it a nice fat sound, and holds the level down a bit. It's more of a levelling amplifier really. We also add in as much hall ambience as we want to because I feel that the

'We arrange it so that each microphone goes to its own track. Effectively, we mix the band through the tape machine so that the faders we're mixing on are the output of the tape machines'

—Andy Rose, Sound Mixer

ambience is part of your global mix. If Dave wants to add applause, or whatever, he can do that. The majority of the applause was picked up by 14 AKG C416 mics arranged in stereo pairs and hung from a lighting truss about 10m from the stage.

Well, the Awards may have been live, but 





PHOTOGRAPH: SIMON CROFT

Andy Rose, left, and BBC's Simon Scrivener in front of MSC's Calrec assignable console. 'It's an old desk, but it is totally resettable,' says Andy Rose

they certainly were not dangerous, as Rose explains. 'We've a Sony 3348 digital 48-track in each truck, and those two are linked digitally—and analogue as well. For instance, when the Manor truck is recording their act, we're also double-head recording it in our truck and vice versa.

'We prefer to use the analogue link because if one machine fails, you have lost the whole system,' Rose adds.

One of the main advantages to the multi-tracks is that they enable both trucks to have extensive reruns of the mixes after the artists had gone. 'We arrange it so that each microphone goes to its own track. Effectively, we mix the band through the tape machine so that the faders we're mixing on are the output of the tape machines,' says Rose.

'When we record the bands, even if they only play the song twice, we get the proper

BACK IN TRUCK A

SOUND MIXER ANDY ROSE started work in Mobile One when it was built in 1977, and stayed there nine years, leaving in 1984. He was a cofounder of Fleetwood Mobiles; but left in 1992 to go freelance. Simon Scrivener, BBC OB sound supervisor, is keeper of the truck, and estimates: 'I'm in here 150 days a year, and I spend the other working days as a full BBC member, so I keep fairly busy'

Rose specialises in music recording for television, and recent contracts include the popular music series *The White Room*, of which he recalls: 'We mixed all that on the (BBC) MSC3 Calrec Assignable. It's an old desk—about 10 years old now—but it is totally resettable. It's got a lot of channels, and they can all be stereo if you want them to be. It's got dynamics on every channel. When we started *The White Room*, they changed the monitors. It originally had BBC LS5/8s I think, which sounded dreadful so they kindly installed some ATC SCM100s, and they seem to have been there ever since. That was the only weak link in the design; although they didn't have any decent reverbs. I think they now have a Lexicon 480, and some other bits and pieces.'

The majority of the microphones were specified by the acts themselves. 'Everyone uses 57s, and I'm happy to use the 421s or the little Ramsa ones on toms,' says Rose. 'I've never been that great a fan of E-V RE20s on bass drums; although Shure do an SM91, a proper plate mic. That's excellent on bass drum.' Sometimes live events have to be enhanced a little if they are to carry the same kind of impact

to the listener at home. Rose reveals some of his secrets such as the use of samples on snare and kick drum. 'I have a bass-drum sample that has a lovely low end, and I tickle that in with the real one—just to get the roundness you would be struggling to get, in a live situation with all the other low stuff that's around,' he says.

'For the snare drum, I try to retain the balance of the original snare, but get a nice clean echo send. Otherwise you have hi-hat, and a lot of other stuff going down there.'

Rose keeps a bank of Neve compressors to hand for vocals and bass guitar; but for most other applications—typically keyboards he turns to the onboard dynamics of the Calrec Assignable. Scrivener is not short of a few tricks of his own. Where Truck B's Tim Summerhayes opted for a MOTU Unison to automate the effects, Scrivener made do with a Maplin MIDI Commander.

'A colleague of mind bought it for *The Royal Variety Show* a couple of weeks ago—and it did work, so I borrowed it,' Scrivener reveals. 'It costs about £80, whereas the remote meter-bridge for the multitrack is £11,000.'

You get the definite impression Scrivener is rather proud of the MSC3. 'Ten years ago, this vehicle cost £1,000,000 to put together, and the desk was a good proportion of that. We could have covered the whole event with this,' he suggests. '*The White Room*, *The Royal Variety Show*: this truck was designed to do studio-type programmes, but on the road.'

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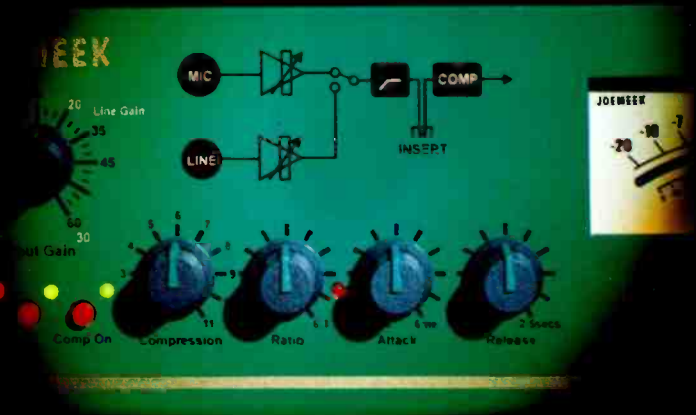
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Fleetwood director Ian Dyckhoff, left, with sound mixer Tim Summerhayes

PHOTOGRAPH: SIMON CROFT

'Every act had their own representative; their front-of-house engineer, their record producer, or their studio engineer, just to oversee our operation and fine-tune the musical balance'
 —Tim Summerhayes, Sound Mixer

show-recording tape' Between these sections was sufficient blank tape to record the act on the night, and also make a safety copy of the preceding artist in case anything went wrong for the A Truck. 'The idea was that once we had done our reset for a particular artist, we could play through the track that we had recorded in the dress run, just to make sure everyone was happy,' Summerhayes explains. 'At that point we would repatch to the other truck's output to record their concert material, then repatch to ours ready for our show. We had the advantage of listening to the rehearsal before we went on air. It worked very well. We had one minor problem with an artist where the bass came in at a lower level than it did in rehearsal, but that was tweaked and I don't think anyone noticed' If they did, several million people neglected to mention it. **S**

level on tape—which only takes half a run through. Once they've gone away, we can sit there an hour or so setting all the EQs and compressors up, and generally rehearsing all our cues. Even if you had four runs through, it would still not be enough to really work on a mix and get some nice things happening' Using the multitracks also provided the ability to repair a recording should a track

be marred by an unforeseen incident such as interference. It would be too late to do anything about the live feed, but at least the track could be cleaned up for any subsequent transmissions. Fortunately, there were no disasters, and everything went as planned—or appeared to. After the show, Tim Summerhayes from the B Truck takes the time to explain a bit more about working from tape. 'We had about 20 minutes between acts to do recalls and turn-arounds,' he notes. 'We segmented the master show-tape into each artist. We looked at the running schedule, and recorded the dress rehearsal on various sections of what was to be our master



Stevie Wonder? Ray Charles? George Michael!

BACK IN TRUCK B

TIM SUMMERHAYES has a similarly long track-record to Andy Rose, having started out with Micky Most's RAK. He has also worked for many years as part of Fleetwood Mobiles, more recently becoming a director. He was joined in the Manor Mobile 1 by fellow Fleetwood director Ian Dyckhoff, plus Manor technical staff Dave Porter and Andy Battlin. After the MTV Awards, Summerhayes gives his recollections of the event. 'Monday was get-in and pre-rig day, so there were technical tests. We hooked up all the outboard gear, interfaced with the TV trucks, and the other mobile. 'We had our first sound-check on the Wednesday, and all sound-checks were in cooperation with the camera crew, because they were doing camera positions, as well as running through the songs three or four times. It was recorded flat to tape, no EQ; although I used a little bit of limiting in places, particularly for vocals and a few keyboards, just to keep them under control. 'Then we had as much time as we liked basically to rehearse the cues and fine tune the mix of each act from the 3348. At that stage, we were joined by someone for the artist. Every act had their own representative; their front-of-house engineer, their record producer, or their studio

engineer, just to oversee our operation and fine-tune the musical balance. All were fairly happy with what we had on tape, and thought it usable. On show day we had a full dress-rehearsal in real time. It was a bit of a shambles, but it got together in the end. We recorded it again onto the 3348. It gave us another chance to fine-tune anything that had changed, which it had on various occasions, particularly with Boyzone's mics. 'The problem with Boyzone was a set of Shure radio mics, which proved a difficulty because it transpired that the BBC's Alexandra Palace transmitter was interfering with the Shure radio-mic system that was operating at a frequency quite close to that of the BBC. The radio guy was Steve Blincoe. He was doing the radio mics for us, and also for all the artists and presentations. It was a massive job. We decided after the original Boyzone rehearsal that we had to change the system, and we got in an AKG, I think it was a UHF system, that was way above the BBC's frequency. They worked perfectly well except that we hadn't heard them with Boyzone—who were using six of these things—until the dress rehearsal. It was a case of trying to get the levels matched as quickly as we could, and onto 3348 so that we could

then rebalance before show-time. We had Phil Harding, he came in, and called the cues as to who was singing what. Although we made cue sheets for every artist, Boyzone was particularly difficult because every one of them was singing the odd line here and there—we just couldn't keep up with it. We got a result with them in the end. That was our biggest line up, with the brass section, backing vocals the whole lot. It was good. 'It was quite hectic, but we had a big crew. There was myself and Ian, who was looking after the technical side for me, and doing the line-checks and sound-checks at the stage end. Because it was a live on-air show, he couldn't make a lot of noise, but he managed. We'd normally use the ad breaks. Dave was looking after the technical side of the Manor truck, and Andy was logging the tapes. They all did an excellent job.' Summerhayes 'toyed' with the idea of triggering a snare sample, but decided it was unnecessary for the acts he was recording. He also mentions being extremely pleased with the MOTU Unison system he used to automate the outboard; the small Genelec monitors from FX Rentals; and Flying Saucers, who did the catering.



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STUDIO SOUND

Spain with Style

Soundtracks is a £2.5 million studio complex recently built in Barcelona, that is eyeing European, and even international clientele. The project has taken four years of detailed planning to get to this stage. **ZENON SCHOEPE** takes the grand tour and prepares to marvel at its qualities

BARCELONA shares the limelight with Madrid as the postproduction centres of Spain, yet both can be seen as serving slightly different types of business. Barcelona is arguably the more international city and also benefits from serving its own local Catalan language work.

Soundtracks in Barcelona burst on to the post scene a couple of years ago with ambitious expansion plans the likes of which have never been seen in the region. By going digital in a multiroomed complex, with the emphasis on each room's flexibility and ability to adapt to work loads and requirements, Soundtracks has set a precedent that is still to be matched in the country.

The facility's story is an interesting one, and something of a case study in equipping for digital post on a large scale, but the source of its logic lies back at the studio's origins.

Studio General Director Josep Ferrer Calderon took the Soundtracks name in 1983 which started as a room in an apartment, and expanded to operate on four floors of a building. Not surprisingly when the plans

Soundtracks has dubbed such international successes as *Peter's Friends*, *Pulp Fiction*, *Nixon*, *Jurassic Park*, *Rainman*, *Babe*, *Forrest Gump* and *Cape Fear* to name just a few

for the new complex were laid out he was keen for it all to operate on one level.

The Spanish market in 1983 had only one television channel and very little film so dubbing in Catalan was virtually nil.

However, television geared up with the launch of the TV3 channel, and Calderon quickly identified a need for his facility to distinguish itself from smaller studios.

Soundtracks moved to its new building some two years ago, and while continuing to serve its core market of video and TV it has moved into film in a big way.

The building has a long history having been a dance hall before the Spanish Civil War and you can still spot part of the balcony area that overlooked the former dance floor below. Many of the original features have been retained, but they're contrasted with some fairly modern visuals. It looks like a place run by people who understand that they're selling more than just technology and know-how. There are even fully equipped private offices provided for the use of clients.

The old studio ran 16-track Studers and 3Ms, low-band U-matics and Audio Kinetics Q Lock synchronisers with Cadac and Soundcraft desks. It had four dubbing rooms—one for music and effects, and two rooms for mixing. Most of the staff have been kept in the move with a few added, and Soundtracks now employs 32 full-time staff supplemented by freelancers. However, the run up to the new complex was not without its setbacks.

In 1993 Madrid and Barcelona was hit by a concerted strike by actors who wanted price-fixing throughout Spain for dubbing work. At the time Barcelona accounted for around 40% of Spanish dubbing, but the kick-on effect of the industrial action was

that it caused the programme makers to look to other Spanish speaking countries which were cheaper and a lot of work was lost.

Soundtracks along with the other facilities in the city suffered badly and lost a lot of money. The upside was that it made the resolve of those involved that much stronger, and with the new complex built during the recession it was therefore ready to go when things improved.

According to Technical Manager Francesco Castillo this has created a team spirit that is uncrackable. 'Everyone who works here understands the situation and works hard,' he says. 'If we have to ask them to work another four hours they will do it because they know it is the only way to grow.'

Soundtracks has dubbed such international successes as *Peter's Friends*, *Pulp Fiction*, *Nixon*, *Jurassic Park*, *Rainman*, *Babe*, *Forrest Gump* and *Cape Fear* to name just a few. It's a major-league player in Spain.

The key to the technical side of

Studio General Director Josep Ferrer Calderon: identifying the need for distinction



the installation is removable drives. A massive machine room contains the racks of 11 AudioFiles, and the associated parts of two Logic 3s and a Logic 2. Soundtracks claims it was instrumental in encouraging AMS Neve to adopt removable drives and has dedicated one AudioFile purely for the purposes of backing up projects from the 1.7Gbyte removables.

'The biggest problem for us was the connection between all the other rooms, and we looked at the solutions of other companies, but they were too complicated, and too expensive,' explains Castillo. 'In the removable hard disk we've got something that is very quick and convenient to change.'

The facility has also adopted S-VHS as picture source, and while acknowledging it as a transitory solution on the road to the random-access picture, says that removable hard drives were enough of a culture shock.

Castillo also draws attention to the fact that when a dubbing session is in progress, actors frequently use the wind-back time to rehearse parts; and if the access was instant they'd still have to wait for the actors. He adds that they were the first studio in Spain to use a high-speed film projector and encountered actors who expected longer rewind times.

The complex has 12 rooms with 7 stand-alone AudioFiles each of which can record dialogue as each of these rooms is intended to be multipurpose. These are supplemented by two Logic 3 mixing rooms, and a Logic 2 mixing room with a Westrex projector. The multipurpose aspect of the rooms is important as it allows flexibility in bookings—work does not have to be turned away just because the specialist room is being used.

The stand-alone AudioFile room setups are interesting for dialogue replacement as the engineer with a desk, and hard-disk system is in the same room with the voice-over talent, the idea being that they are working as a team, and it makes better sense that they're not separated by glass. Overspill noise is not a problem as the machinery is near silent, and the benefits far out weigh any downside.

JBL monitoring is fitted throughout the complex: 'The reason is to have a similar sound in all the rooms, but all our competitors also use JBL so it's important that we fit in and play the game,' says Castillo.

The Logic 2 mixing room is Tom Hidley designed with the seating behind the engineer and the desk, and employs an Audio Kinetics Eclipse to control the projector, the mag machines, DATs, and DA88s.

Castillo says the combination of old and new technologies works well, and unlike some Logic 2 film-mixing rooms that don't use its AudioFile capability, Soundtracks

depends on it as the dialogues, and other parts of the production, have all been prepared on AudioFiles in other rooms in the complex.

Castillo holds much hope out for the Dolby Drive when it finally arrives. 'We already work a lot with different Dolby formats, and the new machine is going to be very interesting, I think it will be the new interchangeable format for films mixed in Dolby,' claims Castillo. 'I think all the film studios ought to get together and discuss formats for things like music and effects because the situation at the moment is crazy with so many different types being used.'

The facility's sound effects are managed and stored on a Spectral Synthesis Audio Engine, the first hard-disk system Soundtracks had, which is now dedicated to this task.

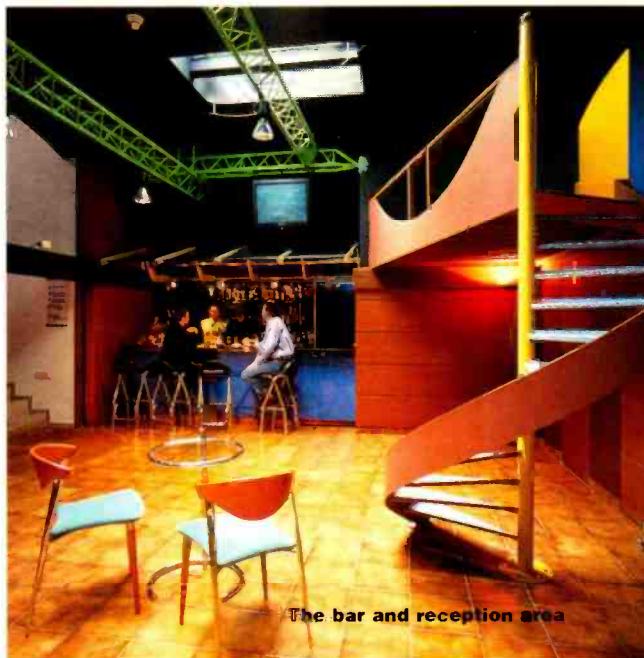
Castillo underlines the fact that once

'The biggest problem for us was the connection between all the other rooms... In the removable hard disk we've got something that is very quick and convenient to change'

—Francesco Castillo, Technical Manager

something goes into digital it stays there. 'It's easier doing it this way as we don't have copies of digital to analogue. From the microphone it goes to digital and afterwards it's mixed in the digital domain. It's a good way to work, and you can hear the difference, and appreciate the difference particularly when there is a need to go back for something.'

However, it can also be an expensive way of working, and it begs the question of whether Soundtracks' clients are prepared to pay for this difference. 'We've educated our clients to expect the benefits of digital,' replies Castillo. 'The problem with analogue-digital combinations is the A-D conversions and while this for many studios is the present there can be no doubt that an all-digital sound chain is the future for postproduction.'



The bar and reception area



The studio complex has 12 rooms, this is one of the two Logic 3 mixing rooms

When we decided to upgrade our old analogue operation we had the choice of going half the way, or all the way. The reason we went all-digital is that our investment has to last us at least 10, perhaps 15, years.

'We looked at powerful analogue consoles, but we came to the conclusion that the best solution was the Logic 2 because it allows us to have a complete system here—the one thing I don't like is having different systems all under one roof. What we chose has been right for us, and works well for us, but to do that we had to change the way we worked,' says Castillo.

At the time of the visit General Director Calderon claimed that the facility's video and TV capability was running flat out—it recently dubbed the 1,000th episode of the BBC soap opera *Eastenders*—with film work running at about 50% capacity. He's also eyeing up the new territories of advertising, national productions, and the European market as

future targets.

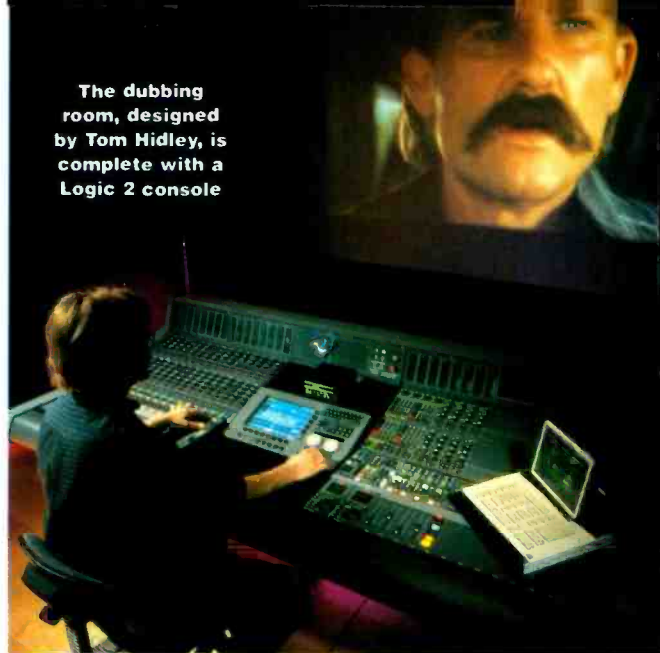
'As far as foreign productions coming to Barcelona we believe we have as good equipment as anyone is going to find in any of the other centres with the benefit that Spain is still cheaper than all these other areas,' says Calderon.

He estimates that Soundtracks is between 30-50% cheaper than a similarly equipped post facility in London's Soho even before you take into account the price of hotels and sustenance.

Improvements in climate and food go without saying.

However, the investment at £2.5 million on the new complex, some £1 million of which was on

The dubbing room, designed by Tom Midley, is complete with a Logic 2 console



AMS Neve gear, is huge by any standards, and Calderon is clear about why they went the route they did.

'You have to leap in with a lot of added value or it's not worth doing at all,' he observes. 'We weren't going to enter the market without making a big splash so you have to take the risk.'

Suggest that it can only be a matter of time before the other post houses in the country gear up in a similar way and he has this to say. 'It's taken us four years of planning to get to this stage, building it up financially, and getting the building, and it would be very hard for anyone else to suddenly decide to do the same.'

'The other thing to remember is that all the time that we were preparing this new studio we were still working in the old one. What you can't do is just decide to go somewhere else, and take off four months of production,' continues Calderon. 'We were able to generate the money in the other building, and spend it here in the new one. Then one day we left the old building, and came to work here the next day and everything was tested and ready.'

The thread is picked up by Castillo. 'One year after being in this new studio we achieved the first important result. Three or four years ago we were one of the most important studios for TV3, now we are the most important. We now handle 19% of its business. The equipment we have gives us a lot of flexibility for times when TV3 needs to broadcast a programme quickly,' he says. 'We can help them with that because we can dub in three different rooms at the same time.'

The pair argue that the common perception of digital technology in which clients do the job quicker and leave earlier is wrong as they believe that clients stay the same amount of time, but walk away with a better product.

'The client doesn't necessarily always realise what has been done but we have had very few complaints and they keep coming back,' says Calderon. ☺

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It's that man again

The shadow of Rupert Murdoch looms further across the globe: is this man a benign liberator of the wonderful digital TV revolution, or is he a grim dictator who holds governments within his sway? Asks **KEVIN HILTON**

The columnist is a strange creature, even in the strange world of journalism. One of the doyens of the art is Keith Waterhouse, who last year wrote an entertaining and illuminating 20-point guide on how to write a column. His advice included selecting a few topics to return to on a regular basis, and having identifiable targets. Safe in the knowledge that I have the full backing of one of the great columnists of all time, I switch on the spotlight and reveal—Keith Rupert Murdoch.

'Oh no, not him again!' people may exclaim—particularly those in the Big Man's own organisation. I sometimes wonder whether I devote too much time and space to Uncle Rupe, whether I have something of a fixation, borne from a conspiracy theory that the world's most famous Australian turned American (but who has such an influence on British life) has made damn sure that he controls a fair amount of the world's technological and media future.

The evidence is there, but I often wondered why others were not voicing similar doubts and concerns. Until recently. *The Guardian* newspaper in the UK ran a front-page story in its feature tabloid headlined 'Murdoch's digital destiny—The keeper of the digital gate'. In this extensive article, Henry Porter rightly pointed out how the boss of News Corporation controls the satellite gateway, not only with BSkyB and Astra in Europe, but in places like the Far East with Star TV and the soon to be launched JSkyB.

Porter also mentioned how the set-top box will be a vital factor, with Murdoch being able to back such manufacture with his commercial might, as opposed to under-funded terrestrial broadcasters. What Porter didn't mention was how Murdoch has successfully insinuated himself into these areas, through the purchase of DMV, which manufacturers technology used not only at the professional end of the chain but also in domestic receivers, through link-ups with Pace and Motorola.

Less than a week later, *The Guardian* allowed BSkyB its reply, publishing a

typically pugilistic essay by Murdoch's hardman, Sam Chisholm, the Chief Executive and Managing Director of the satellite broadcaster. Chisholm set out to show that Murdoch wasn't alone in his entrepreneurial adventurism, citing Berlusconi, Kirch, Canal Plus (which now owns Nethold) and DirecTV.

After this, Chisholm took the extraordinary tack of painting Murdoch as a liberator rather than a dictator, someone who will enable the wonderful digital TV revolution to become a reality. 'If Sky pulled out of digital and concentrated on its very successful analogue satellite service, would ITV or the BBC step in and bring affordable digital TV to the UK? Sadly, the answer is no,' he gushed in defence of the Big Cheese. Not content with that put-down, he then threw down the gauntlet: 'Anyone with courage and vision could have started satellite TV in this country. Rupert Murdoch had a go and his efforts have been rewarded. This is seen as reprehensible... if there is someone out there willing to risk billions, there is capacity available on the Astra satellite. Have a go.'

Such playground bravado doesn't explain away Murdoch's obvious opportunism: the joint ventures, the take-overs. Neither does it explain such blatant abuse of power as holding up the launch of Warner Channel, which was due to launch on Astra on 1st November 1996. This move, which doubtless baffled shareholders, appears to be based on a feud with Ted Turner, the founder of CNN, which is now owned by Warners. This stems from Time-Warner being obliged to carry a competing news service alongside CNN on its New York cable package and selecting Microsoft-NBC over Murdoch's Fox News.

Various law suits have been flying around since then, backed up by anti-Time-Warner copy in *The New York Post*, which is owned by Murdoch. Things grew to ludicrous proportions when a plane carrying an anti-Warners message circled Yankee Stadium just before New York's baseball team was to play the Atlanta Braves, a team owned by Ted Turner. Turner retaliated by likening Murdoch to Hitler.

This is the looney tunes end of the

whole affair, and just underlines that all extremely rich media magnets are as bad as each other. It is true that Silvio Berlusconi became prime minister of his country; it is true that Leo Kirch is as ruthless as Murdoch, but when it comes down to it, Murdoch is the one everyone watches. Nobody, not even Sam Chisholm, can deny the framework that has been put in place to secure Murdoch's part of the digital future and trying to write it off as the actions of a gentle benefactor are insulting.

Seeing Murdoch lurking behind many of today's media moves is not paranoia, it's fact. Look at the proposed merger between British Telecom and MCI. This will form a hugely powerful telecommunications conglomerate, that will be looking towards digital broadcasting as a

'Anyone with courage and vision could have started satellite TV in this country. Rupert Murdoch had a go and his efforts have been rewarded.'—Sam Chisolm

major market. Murdoch already has a joint venture with BT in the form of an on-line service, and if the merger goes through, there will be even stronger links because MCI has a stake in News Corporation. Not only does this give Murdoch a potential in to telecoms in Europe, but don't forget that BT is also among those bidding for the BBC's transmission service.

The UK's telecoms regulator has said that it will take BSkyB on and try to establish an open system, curtailing some of Murdoch's imperial excesses. But this will require governmental backing, and given that both the main UK political parties view Murdoch as a powerful ally, are they really going to upset him over a few set-top boxes? Let's hope so?

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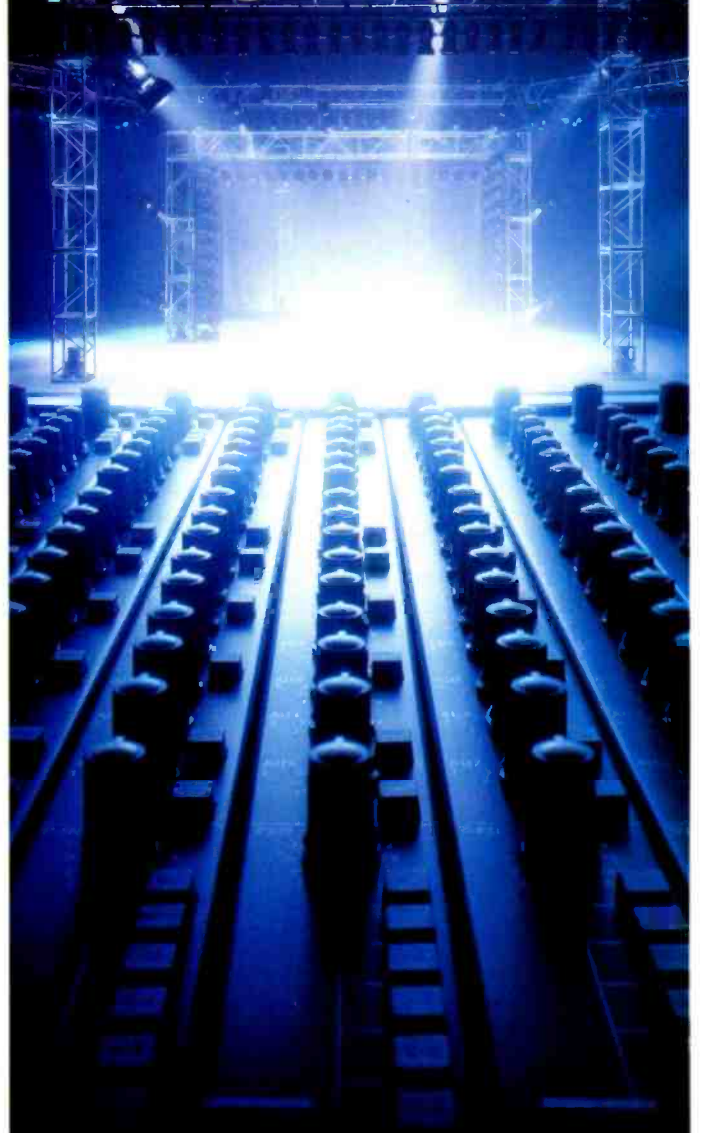
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Stereo Images

As established audio applications look to ever greater numbers of channels, the need for convenient capture of stereo sound grows.


DAVE FOISTER examines the situation and presents a summary of currently available stereo microphones

SINCE THE EARLY DAYS of stereo, there has been a strong following for coincident microphone techniques. The various possibilities include 2-directional microphones (cardioid, figure-of-eight or anywhere between) or a mid-side (MS) array, placed as close together as possible at the appropriate angle so as to record amplitude differences between left and right sound sources with, ideally, no time differences at all to compromise mono compatibility. The difficulty of setting up and adjusting such an array, and the Heath Robinson contraptions devised to hold them together in the desired position, made it inevitable that there would be a market for single-point stereo microphones, offering some or all of the possibilities of a discrete array in a much more convenient form.

Stereo TV has been a shot in the arm to this market, because on location the need is even greater for a stereo microphone

Stereo TV has been a shot in the arm to this market, because on location the need is even greater for a stereo microphone setup that retains its carefully set configuration, however, much it is moved about

setup that retains its carefully set configuration, however, much it is moved about. MS techniques are particularly useful in this context as they allow the stereo image to be determined at the postproduction stage rather than guessed at on headphones in the field. As a result of this renewed interest there are probably more stereo microphones available than ever before, in a remarkable variety of shapes and sizes,

and although some old favourites are no longer with us (AKG's classic C24 is now a collector's piece, and Neumann's SM69 is apparently out of favour) there is a healthy mix of survivors and newcomers with almost as many approaches to the technique as there are players in the game. This brief roundup concentrates, with one or two exceptions, on the strictly coincident models, leaving aside the specialised items such as the dummy 



Sony ECM999, left, and Sennheiser MKE44P stereo microphones

The AKG C426 stereo microphone is the veteran of this selection. The sound quality is effectively identical to that of the 414 and has helped make the 426 one of the most familiar stereo workhorses in the business

heads from Neumann and Brüel & Kjær, and the dedicated stereo mounting hardware such as the Jecklin Disc and B&K's calibrated spaced omni mounting bars. Most are adjustable in some way, with a broadly equal division between mechanical movement of the capsules and electronic matrixing to adjust the received stereo image.

THE NEUMANN RSM191S is the replacement for the stereo microphone I most readily associate with Neumann—the SM69. The SM69 contained a pair of capsules mounted in a swivelling housing with independent remote control of their individual polar patterns, and suffered the fate of being 'not in demand'. It is partially replaced by the RSM191S, a short stereo

shotgun finding wide acceptance in location TV work. It is an MS unit, with an approximately hypercardioid mid capsule giving extended reach. Its stereo width is adjustable on its dedicated control box, which can also be switched to give raw MS, and has switchable high-pass filters.

The control box powers the microphone, and can be phantom powered or fitted with batteries as required, making it an ideal location system. This application is also catered for by a substantial windshield.

Not long ago anything remotely resembling a shotgun was immediately marked down as a necessary evil rather than a sonically desirable microphone; many recent models have shattered this impression and the Neumann is no exception. I used it in a theatre to record an opera from the FOH lighting bridges and found it gave me the control I needed to eliminate the unhelpful theatre acoustic and balance the stage with the pit without any sonic compromises whatever. Its moderate shotgun characteristic and high quality make it suitable for far more than its intended application.

THE AKG C426 is the veteran of this selection and should need little introduction. In essence it consists of two 414s in the same housing, their capsules mounted in separate cages that swivel to give the required angle, up to 270°. In addition the whole head can rotate through 45° to allow MS configurations, where the side capsule is set to figure-of-eight and the front-facing one can use any of the available polar patterns. This is an area where the 426 improves on the 414 by having nine pattern settings (as on the C12) individually selectable for each capsule on the dedicated remote control unit, covering omni, cardioid and figure-of-eight with three intermediate positions between each pair.

This provides a usefully large range of adjustment, not only in MS mode, but also in X-Y as well, where polar patterns are even more critical than they are in mono. Checking the physical alignment is helped by switchable LEDs on the capsule fronts which can be seen at a distance when the microphone is suspended. Bass cut and 10dB pads are fitted on the remote box. The sound quality is effectively identical to that of the 414 and has helped make the 426 one of the most familiar stereo workhorses in the business.

SENNHEISER'S MKH 40P is about as simple as a stereo microphone can be. It contains two cardioid capsules permanently fixed at 90°, and consequently has no means of adjustment whatever. Its output is on the increasingly standard 5-pin XLR and an adaptor lead with two 3-pins is supplied, along with a windshield. Not supplied as standard, however, is a stand mount, and since the microphone is actually elliptical in section and needs its own special mount this strikes me as surprising.

It can be powered from a phantom supply or an internal battery, and with

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beyerdynamic MC833 stereo mic

the battery in mind has an on-off switch which does not affect its phantom operation. It also includes two stages of quite brutal high-pass filtering, giving responses of -4dB at 150Hz and -10dB at 250Hz. Its sound quality is excellent, with a good transient response and plenty of LF extension.

BEYERDYNAMIC'S MC833 is without doubt the most elaborate mechanically controlled stereo microphone on the market. Its fan-shaped head contains three cardioid capsules, one fixed facing front and the others on swivelling arms. These arms can be moved simultaneously by means of a large screw cam adjustment, swinging from an angle of 60° to each other to back-to-back at 180°. For X-Y use only part of this sweep is used, moving the outer capsules between just over 60° and about 130°, but another switch selects MS operation in which the full range of movement is used. This mode gives infinitely variable adjustment of the MS configuration—as long as you can get at the microphone's adjustments, there being no remote control. It comes with a short breakout lead giving either X-Y or MS signals as selected.

I used the beyer in various modes for large scale performance recording and also on piano, and its combination of flexibility and impeccable audio performance never failed to impress. Its unusual method of stereo image adjustment takes a little familiarisation, but works well and has the merit of mechanical simplicity.

THE SCHOEPS ICFM1 is literally and figuratively the oddball in this collection. A unique and memorable sight, it uses two omni capsules almost at opposite points on a head-sized sphere, technically disqualifying it from consideration as a coincident array. However, since Schoeps makes no claims

as to its being a binaural microphone but sells it as a straightforward stereo array it warrants inclusion here.

Since there are no adjustments available on the microphone its behaviour is highly dependent on its positioning, which by its very nature must be different from that of a conventional stereo microphone. Its intended front is indicated by an LED within a small tunnel, only visible within a narrow frontal area to assist rigging. Properly placed, it is then able to produce an extremely natural and open stereo sound stage, but this placing is made even more critical than usual by the design. Too close, and it becomes, whatever Schoeps may say, a binaural system, with extraordinary out-of-head localisation on headphones, but an over-wide image on

Sennheiser's MKE 44P stereo microphone is about as simple as a stereo microphone can be. Its sound quality is excellent, with a good transient response and plenty of LF extension



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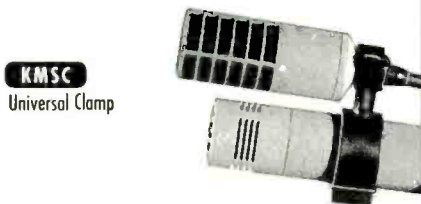
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Audio-Technica AT822 made with a specific job in mind

Loudspeakers with the expected hole in the middle. Moving it further away eliminates this phenomenon, and gives very pleasing results indeed with the hoped-for Schoeps accuracy and neutrality. Worth noting is its unusually high

what gives the microphone its unique versatility, providing an unmatched selection of stereo responses from two simple controls, from familiar crossed pairs to very wide settings (use with caution!), and even going to mono omni at the other extreme. The final output is line level, so the control unit has coarse and fine input gain controls and stereo meters, as well as a headphone monitoring socket. Switches are provided for using the microphone end-fire or inverted, and for an 80Hz filter. Raw MS is also available.

All the Soundfield range—this model, the Soundfield MkV and the ST250 with its special appeal to location recordists—fit legitimately into this survey, but this is specifically targeted at straightforward stereo studio recording and gives the usual superb Soundfield performance and stereo flexibility without what some see as the distractions.

The Schoeps KFM6 stereo microphone is literally and figuratively the oddball in this collection. A unique and memorable sight, it is worth noting its unusually high sensitivity

sensitivity. It comes with mounts for stands and wire suspension, complete with a ball-and-socket swivel.

SOUNDFIELD microphones have polarised opinion throughout their career. Many potential users have been put off by their apparent complexity, thereby missing out on the unique range of control and the near-perfect coincident behaviour they offer, coupled with a world-class audio performance. The most recent addition to the range, the SPS422, attempts to strike a balance by offering the same central technology, in a straightforward manageable stereo form.

The 4-capsule microphone head connects to the control unit via a special multicore that can be broken out into five conventional tie-lines if required. From there the system translates the signals into MS format, with the unusual bonus of fully variable Mid polar pattern. This is

SHURE'S VP88 was launched some time ago and surprised the world in its departure from Shure's familiar markets. Specifically aimed at ENG applications, its MS configuration of two high-quality condenser cartridges makes it equally suitable for other jobs.

Its Mid element is cardioid, giving it a very predictable behaviour as its internal MS matrix is adjusted. Three switched stereo width positions are provided, giving equivalent X-Y patterns varying between 90° cardioid (almost) and 120° hypercardioid—a very wide setting to be used with care. For more delicate adjustment raw MS is also available, and Shure thoughtfully provides diagrams showing how to use a mixer to create your own MS decoder if you don't already have one.

Battery and phantom powering are provided, with a switchable low-cut filter. Accessories include a short breakout cable, a stand clamp, and a sturdy windshield. The audio quality is outstanding, notable

for low noise, extended HF response, and good handling of high SPLs, and the onboard stereo width settings are useful and distinctively different.

For reasons beyond my or Pearl's control, was unavailable for evaluation but still warrants inclusion because of its unique approach to the control of the stereo image. It uses two of the unusual rectangular dual-membrane capsules used by Pearl since the 1960s, mounted at 90° to each other. Perhaps uniquely, it provides separate outputs for all four membranes' cardioid signals, allowing the polar patterns to be decided at the desk or even after recording. Thus the front diaphragms can be used as straight 90° cardioids, or the back pair added in phase for omni or out of phase for figure-of-eight. Obviously any setting in between is achievable, independently for the two capsules, allowing the microphone to be used in both X-Y and MS configurations.

To simplify the procedure, a dedicated matrix amplifier is available from Pearl allowing all these parameters to be adjusted more intuitively. This also adds no less than five high-pass filter settings, with two different slopes, and delivers line level with variable microphone gain, and a headphone monitor socket.

Pearl also produces other dedicated stereo models, offering X-Y and MS operation.

is a little-known (as yet) Californian company specialising in high-spec microphones, and produces an unusual variable-pattern stereo model that for time reasons was not available for hands-on evaluation. The C700S takes yet another approach to electrically combining signals from fixed capsules, and contains an omni pressure element and two figure-of-eights at 45° left and right. All three outputs are available individually and can be mixed, before or after recording, to produce a range of polar patterns and stereo images.

The patterns that can be achieved cover the usual first-order range from omni (no fig-8 component) through cardioid (equal amounts of the two characteristics) to straight figure-of-eight, all of course at

90°. Josephson's twist on how this is achieved allows the literature to make some interesting suggestions for EQ treatment of the two elements before they are combined to exploit the particular characteristics of each. Next year should see the introduction of a dedicated multi-pattern power supply for the microphone, making configuration a more familiar process.

recently introduced microphones have been covered previously in *Studio Sound*, and the range includes the CMC 47 stereo model. This adopts the mechanical approach to adjustment, but in an unusual way; both

SHURE's VP88 stereo microphone surprised the world in its departure from Shure's familiar markets. The audio quality is outstanding, notable for low noise, extended HF response and good handling of high SPLs, and the onboard stereo width settings are useful and distinctively different

its cardioid capsules are contained in the same housing, and are swivelled in opposite directions from a central front-facing setting to a maximum of 90° from each other by means of a thumb wheel on the side. This makes for simple if limited configuration alteration, and the only other control is a pad switch helpfully calibrated in terms of mV per Pascal even if it is in Russian.

A long cable is supplied to break the 5-pin XLR on the microphone to two 3-pins, and a rather basic suspension mount is available. The most remarkable thing about the whole Neve range is its low price, in line with the trend for unknown



A recent addition to the Soundfield range the SPS422 offers straightforward stereo form



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📞 Soviet microphones to compete on virtually equal terms with established Western models at a fraction of the price.

AUDIO-TECHNICS microphones have been attracting more and more attention over the last couple of years, and although they are not in the same bracket as the 4000 series studio microphones there are two related stereo models available. Known as the 800 series, they both incorporate a pair of cardioid cartridges fixed at 90°; the AT822 has a specific job in mind while the AT825 is a more general-purpose model.

The specific application of the AT822 is connection to consumer portable DAT machines, still in wide use for convenient location recording. To this end it is self-powered with an AA battery, and runs unbalanced with both channels carried on a 3-pin XLR. Cables are supplied with 3-pole jack terminations, with adaptors for 3.5mm and 1/4-inch sockets. It has a 3-position LF cut switch and a gun-grip stand clamp with a variety of thread adaptors.

The AT825 on the other hand runs balanced via a 5-pin to dual 3-pin lead,

The most remarkable thing about the whole NevaTon range is its low price, in line with the trend for unknown Soviet microphones to compete on virtually equal terms with established Western models at a fraction of the price

and runs off phantom as well as an internal battery. It has a single LF cut filter but is otherwise effectively identical to the AT822. Both can be seen as companions to the Six-Pack range, and share a similar quality in terms of build and sound –impressive at the price. 📞

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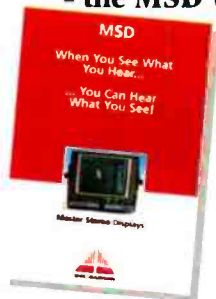
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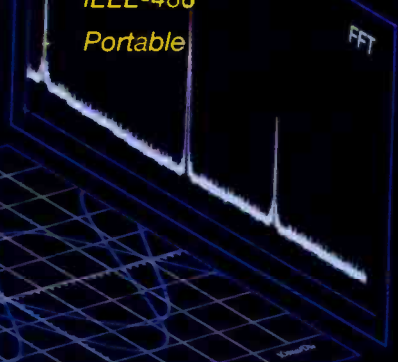
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◆ December 8th-11th Broadcast Cable & Satellite 96 including Pro-Audio India, Lighting India and TV India

Pragati Maidan, New Delhi, India. Tel: +91 11 462 2710.

◆ December 8th-11th Communications India 96 including Networks India and Wireless India

Pragati Maidan, New Delhi, India. Tel: +91 11 462 2710.

January 1997

◆ January 19th-23rd MIDEM 97

Cannes, France.
Jane Garton, Press Manager.
Paris.Tel: +33 01 41 90 44 39.
Email: jane_garton@midem-paris.ccomail.compuserve.com

February 1997

◆ February 4th-6th The ISDN & ATM Show

Olympia 2, London, UK.
Tel: +44 1733 3094304.
Fax: +44 1733 390042.

◆ February 22nd-25th Middle East Broadcast 97

Bahrain International Exhibition Centre. Tel: +973 550033; UK. Tel: +44 171 486 1951.

◆ February 26th -March 2nd Musikmesse Prolight & Sound, Frankfurt.

Tel: +49 69 75 75 6415.
Fax: +49 69 875 75 6950.

March 1997

◆ March 5th-6th 2nd Sound Broadcasting Equipment Show (SBES)

Jurys Hotel & Towers, Ballsbridge, Dublin.
Tel: +44 1491 838575
Email: dmcv@pointproms.co.uk.

◆ March 13th-15th

REPLitech Europe

Barcelona, Spain.
Tel: +44 171 287 2087.

◆ March 22nd-25th 102nd AES Convention

MOC Centre, Munich Germany.
Tel: +49 8142 14167.
Fax: +49 89 32399 351.
Email: 102nd-chairman@aes.org
Web: http://www.aes.org

◆ March 23rd-26th SIB 97

Rimini Trade Fair, Italy.
Tel: +39 51 264003.
Fax: +39 51 238755.
Email: nets@nets.it

April 1997

◆ April Entech 97

Melbourne Exhibition Centre, Australia. Tel: +61 2 876 3530.

◆ April 15th-16th Intranet

Olympia 2, London, UK.
Tel: +44 181 742 2828.
Fax: +44 181 742 3182.

◆ April 21st-23rd Cable & Satellite 1997

Earls Court 2, London, UK.
Tel: +44 181 910 7884. Email: catherine.barrett@reedex.co.uk.
Web: http://www.cabsat.co.uk/

◆ April 23rd-28th The International Electronic Cinema Festival 97

Montreux, Switzerland.
Tel: +41 21 963 32 20.
Fax: +41 21 963 88 51.
Email: crawford@symposia.ch
Web: http://www.montroux.ch/symposia

May 1997

◆ May Pro Audio Light and Music China 97

Beijing Exhibition Centre,

Beijing, China.
Tel: +852 2861 3331.

◆ May Expo Comm Wireless Korea 97

Korea Exhibition Centre, Seoul, Korea. Tel: +82 2 555 7153.
Fax: +82 2 556 9474.

◆ May 2nd-4th Internet Live

Brompton Hall Earls Court, London, UK.
Tel: +44 181 568 8374.
Fax: +44 181 232 8288.

◆ May 2nd-4th Internet World International

Olympia 2, London, UK.
Tel: +44 1865 388000.
Fax: +44 1865 7365 736354.
Email: conferences@leamed.co.uk
Web: http://www.iwuk.com

◆ May 21st-23rd MIDEM ASIE 97

Hong Kong.
Jane Garton, Press Manager.
Paris.Tel: +33 01 41 90 44 39.
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◆ May 23rd-25th Music Instruments Asia 97 and Dance Tech 97

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Email: create@pacific.net.sg

June 1997

◆ June 3rd-5th REPLitech International

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Tel: +1 609 279 1700.
Fax: +1 609 279 1999.

◆ June 4th-7th 4th Annual Latin-American Pro Audio & Music Expo Mexico 97

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Email: chris@ssiexpos.com
Web: http://www.ssiexpos.com

◆ June 7th-10th Nightwave 97

Rimini Exhibition Centre, Italy.
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◆ June 24th-27th Exposhow & Pro-Audio 97

LENEXPO Exhibition Complex, St Petersburg, Russia.
Irina Neduma:
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Fax: +7 812 325 6245.

◆ June 25th-27th AES 8th Regional Convention 97

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Fax: +81 45 939 7091.
Web: http://www.aes.org

July 1997

◆ July 1st-4th SMPTE 97

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Fax: +61 2 9976 3774
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◆ July 3rd-5th PALA 97

Bangkok International Trade Centre, Bangkok, Thailand.
Tel: +65 227 0688.
Fax: +65 227 0913.

September 1997

◆ September 8th-11th MIDEM Latin America & Caribbean Music Market

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Fax: +1 305 573 70 77.

◆ September 12th-16th IBC 97, Amsterdam.

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Fax: +44 171 240 3724.
Email: show@ibc.org.uk
Web: http://www.ibc.org.uk/ibc/

◆ September 26th-29th AES 103rd Convention

Jacob K Javits Convention Centre, New York, US.
Tel: +1 212 661 2355.
Fax: +1 212 682 0477.
Web: http://www.aes.org

October 1997

◆ October 2nd-5th 18th Nordic Sound Symposium

Bolkesjo, Norway.
Seem Audio:
Tel: +47 66 98 27 00.
Fax: +47 66 84 55 40.
Email: soundsymp@nrk.no
Web: http://www.nrk.no/soundsymp/

◆ October 16th-20th International Audio, Video, Broadcasting and Telecommunications Show (IBTS 97)

Milan, Italy.
Tel: +44 1491 838575.
Email: dmcv@pointproms.co.uk

◆ October 29th 22nd Sound Broadcasting Equipment Show (SBES)

Hall 7, National Exhibition Centre, Birmingham, UK.
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Email: dmcv@pointproms.co.uk

November 1997

◆ November 4th-6th Vision & Audio 97

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June 1998

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World Trade Centre, Singapore.
Tel: +65 338 4747.
Fax: +65 339 5651.

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in Miller Freeman
A United News & Media publication

It's a Small World

Show claustrophobia is an emergent hi-tech disease—not that today's shows are small, but they're suffocating us with their numbers. **SIMON TRASK** visits a virtual alternative to the trade show

BILLED as the world's first virtual reality exhibition and offering the prospect of a virtual answer to the crowded world of pro-audio show culture, Virtex 96 takes the drudgery out of trudging halls and provides a convenient way for visitors to gather information without getting swamped with paper. For companies faced with the time consuming and costly business of exhibiting at real-world exhibitions, Virtex 96 also provides an intriguing alternative, or perhaps complement.

Logically enough, Virtex Ltd has started out with an IT exhibition, but any industry could be accommodated. In fact, the company are also working on an on-line fashion exhibition.

Running 24 hours a day, 365 days a year on the World Wide Web, Virtex 96's virtual doors are open to visitors from anywhere in the real world, who can wander round the exhibition's 3-D graphical virtual world without leaving their offices or homes. They can navigate round virtual Halls, visit virtual exhibition stands, and view information on the stand or else click on links to company Web sites for more detailed product and company information. E-mail links within the exhibition allow visitors to e-mail exhibitors directly with any questions.

Virtex 96 consists of five different Halls, each covering a different subject: the Novell Networking and Intranet Hall; Superscape Internet Service and Desktop 2000 Hall; Document Management and Groupware Hall; Data Warehousing and Electronic Commerce Hall; and Security Hall. There will also be an on-line press room provided by NEWSdesk, while Virtex has also implemented a virtual conference centre where visitors can listen to on-line recorded talks of up to 20 minutes delivered in real time over the net using RealAudio audio streaming technology. The initial capability is 100 simultaneous streams, with the option to scale up to meet demand if necessary.

Virtex 96 has been constructed using Superscape VRT, a VR authoring software product from leading virtual reality company Superscape. The

virtual graphical world is accessible on the Web (at <http://www.virtex.co.uk/>) using either Netscape or Internet Explorer browsers and Superscape's Viscage 3-D viewer plug-in. The screen is split into halves, with the VR exhibition on the right and manufacturer's exhibition information or Web pages on the left, so you can browse the Web and wander round the exhibition at the same time.

You'll need a 486 or Pentium PC (there's no Mac support, unfortunately), a 28.8k modem and, of course, an Internet connection. For those interested in figures, Virtex's Web server can comfortably handle 100,000 hits a week—a visitor count that any exhibition would be proud of. At the end of November, Virtex are also releasing a CD-ROM containing the complete exhibition, so visitors will be able to browse off-line, or log on and have the advantage of Web and e-mail links without the need to download VR files whenever entering a new room within a Hall.

For exhibitors, the basic cost of a stand—in effect, virtual real estate—is £1,750 (UK)

per year for the graphical stand plus logo, Web and e-mail links and two pages of company information. For £2,750 per year an exhibitor gets these features plus more graphics files, embedded audio effects and interactive graphic features (Lexmark, for instance, have a virtual printer which spits out virtual paper and makes real printer noises as it does so, while the computer virus detection company Dr Solomon's has a virtual *Dr Who* TARDIS complete with flashing lights and the classic TARDIS sound). For companies that want to take advantage of the Conference Centre, an audio talk of up to 20 minutes costs £750 per month, while companies can also take out poster sites in the Halls for £250 per month.

One of the advantages of a virtual world is that you can jump around to different locations without respect for the laws of show physics. Presently you can't do this in the Virtex world, except to go to different Halls. However, the company will be implementing a company list and search facilities, so you'll be able to jump to a company's stand or find out which companies sell, say, networking routers and then jump to them.

So what's missing from this virtual exhibition? In a word: people. You won't bump into or even see anyone else in the virtual aisles. Human networking is not part of the equation—and no, you can't even prop up a virtual bar at Virtex! Additionally, you can't fiddle with real physical equipment or get a personal demonstration of a piece of kit. Virtex isn't about to replace real-world exhibitions, but for manufacturers looking to provide a convenient global access point for product information—and visitors tired of getting weighed down with reams of product brochures—it might just provide an attractive new option. ☺

Virtual Exhibitions.

Tel+44 1691 67 0543.

Fax: +44 1691 670868.

E-mail: steve@virtex.co.uk

(Steve Martin, Director of Virtual Exhibitions).

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■ **8 submix section bus strips** feature 100mm log-taper faders, "Air" EQ controls, center & L-R assign switches, pan controls, mute & solo switches with LEDs.

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Submix 1-8 assign switches. Assign a channel to any or all of the 1-2, 3-4, 5-6 and 7-8 submixes.

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100mm log-taper channel fader. New logarithmic faders provide consistent fades throughout their travel, and feature a dust-shielded super smooth design.

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■ **Rear panel** includes RS232 data port & MIDI In and Out jacks, as well as an exhaustive list of balanced inputs, outputs, throughputs and shotputs.

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■ **4-pin XLR lamp sockets and dimmer.**

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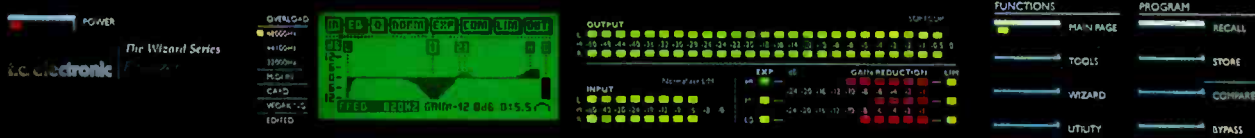
Woodinville • WA • USA ☎ 206/487-4333 ☎ 206/485-1152
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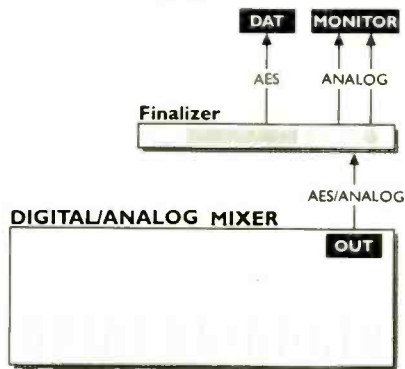
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Punch

Knockout



Want your mixes to deliver the punch and clarity of the industry heavyweights? Now you can... thanks to the Finalizer™. TC's new concept in dynamics signal processing. Inserted between the stereo output of your mixer and your master recording media, the Finalizer dramatically increases the volume without sacrificing fidelity or stereo imaging.



The Finalizer creates that extra energy boost that you otherwise only can get from a professional mastering house. With its powerful multiband processing it will make *your* mixes sound **punchier, louder, crisper, warmer**, spectrally balanced, more "in your face"... it's your choice!

The Finalizer's 'Wizard' function easily finds the optimum setting for your mix: Simply enter the type of music you are mixing and to what extent you want it processed... and you are done! The more experienced user may "tweak" the signal path extensively, with over 75 parameters to choose from. You will also find additional signal analysis tools including a Phase Correlation Meter, Peak-Hold Meter, Level Flow Meters, and a Digital Format Analyzer.

We've even thrown in a Calibration Tone Generator. All of the Finalizer's functions are easily monitored on the graphic LCD and on the seven precision LED meters.

Now even your demos will sound like a CD. You can simultaneously:

- | | |
|---------------|---|
| Convert It: | 20 Bit precision A/D and D/A Convertors |
| Shape It: | Five band 24 Bit Parametric Equalizer |
| Enhance It: | Choose between De-Essing, Stereo Adjust or the Digital Radiance Generator™ |
| Normalize It: | Real-time Gain Maximizer |
| Expand It: | Variable Slope Multiband Expander |
| Squeeze It: | Multi-band Compressor |
| Trim It: | Variable Ceiling Limiter prevents overloads |
| Fade It: | Manual or Auto Fade Tool |
| Dither It: | To maintain the highest resolutions on the digital AES/EBU and S/PDIF outputs |

Naturally, the Finalizer fully lives up to TC's twenty year reputation for sound quality, specifications and construction.

Try it - you'll be knocked out by what the Finalizer will do for your mix. Call 1-800-798-4546 for the location of a TC dealer near you.

Wizard | Finalizer

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