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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Editorial  The secret of silent audio; and craving new blood

Soundings  In the wake of the buzz created by the 101st AES Convention, much of this month’s audio activity took place in the host country

International Columns  Studio Sound’s international columnists file their reports from Europe and America

World Events  Studio Sound’s regular and comprehensive events listing prepares for the imminent onslaught of the 1997 show season

FEATURES

Madonna’s Evita/Recording  Building Alan Parker’s film biography of Eva Peron on the Evita musical made Madonna’s soundtrack a key element. The sound crew deliver the inside story

SegaSoft Studio/Facility  Computer games master Sega has challenged the record companies with a studio for breaking new recording artists as well as raising the games audio standard

MTV Awards/Broadcast  Everyone’s a winner, and everyone wants to sound as if they are. The equipment, excitement, entertainment, and egotism reaches an all-time high in London

Soundtracks/Facility  Spanish gold in the form of a post house

Stereo mics/ Roundup  The what’s what of stereo microphones

COMMENT

John Watkinson  Audio’s invisibility has encouraged us to treat it as an imprecise science—with flexible standards

Broadcast  The shadow of the broadcaster assumes a familiar shape. How much power should one man have?

Open Mic  With trade shows growing in number, and fading in appeal, the time is right to consider all the alternatives to pressing flesh in an aircraft hanger. Let’s make a date with the virtual exhibition
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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 bouhgs? 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 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
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, 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’s digitally controlled analogue CS3000, AMS Neve’s analogue VX, VXS and Digital Film Console. Add to this the introduction of beyerdynamic’s mC100 ‘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.

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’.

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

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 facilitates 'near CD-quality' streaming and uploading of audio for Internet distribution and incorpo-rates 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 Mother ship 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

Contracts

- 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: +1 615 555 0141, Sony, US: Tel: 201 930 1000.
- Euphonix, US: Tel: +1 415 855 0400.
- Danish television broadcaster, TV2, has recently installed a Neotek Ethos 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 mixing duties.
- Martinsound, US: Tel: +1 818 281 3555.
- Fairlight-STV Video Data, Sweden. Tel: +46 71 470 003.
- The Santa Monica facility owned by Hans Zimmer & Jay Rifkin, Media Ventures, is to be the first for Euphonix's new CS3000 console. The 56-channel 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 newcomers come from Warner Brothers Studios in Burbank, where an Otari PicMix 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 MFC motion-picture console for its Theatre One. This 136-input MFC order accompanies the delivery of a 56-input MFC to FR4 TV in France where it will be used for programming post.
- Shepperton Studios, UK. Tel: +44 1932 562611.
- Harrison, UK: Tel: +44 1422 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 for music mixing duties; the second is for a purple 86-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 56-input console will be installed in Studio A as part of a complete refurbishment set to open in January 1997.
- AMS Neve, UK: Tel: +44 1292 472292.
- Germany's dance studio community has taken to Ameik's PentaMack desk in a big way with further installations taking place at Space Park in Winterbach, Beat Disaster in Darmstadt, Logic Records in Darmstadt, Metrix Tonstudio in the former East Germany, Musik-production Mike Staab in Aschaffenburg, Music Works in Dusseldorf, Starbase Studio in Hamburg and Syndicate Music-production in Munich.
- Amek, UK, Tel: +44 651 5747.
- Hollywood's Todd-AO/Glen Glenn Studios has taken a third Bag End ELF monitoring system for its postwork room. The installation brings the studio's use of the LE system in Asia, American Bag End installations now in excess of 100, and include ABC Television Network's TV1 production facility, New York's Ariz Recording Studios, and the Tokyo TV's Camrec film and video post studio.
- 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 DAW-audio. The Audio Solutions Ordered by Omnibus is the dubbing studio's seventh, and will be used primarily for English-language dubbing of foreign films.
- General, Japan, Tokyo. Tel: +81 3 3291 1761.
- British producer Pete Bellotte has moved the digital to his private studio with a Soundtrack Virtua console. Bellotte's studio supplies the USA along with others British Soundtracks activity including a 48-channel Jade console installed in MDC's fourth studio along with DynaAudio/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.
- MDC Records, UK. Tel: +44 1628 667253.
- Soundtracks, UK. Tel: +44 181 338 5000.
- A LA producer Rhet Lawrence has taken two Pro Tools v1 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 0000.
- Penny & Giles, US: Tel: +1 310 393 0014.
- The Netherlands' Sun Studio has taken delivery of four Rorka Data VMCD-100 optical disc-based video recorders with 2.5GB drives. The VMCDs are to complement the studio's four new SSL Screen systems, and are being evaluated with Sun's Danish and Norwegian operations in mind.
- Rorka Data, The Netherlands. Tel: +31 591 65165.
- California's Edge Studios mastering facility has adopted Genelec 1039A.
- The company's newly-designed, Sonic Solutions-equipped room. Further American Genelec installation include a flood of Atlanta-based post facilities such as Peachtree Post, Doppler and the 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 hysteries. 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 fails 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?
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**

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 Florentia'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 though 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-disc 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 synthesizers, 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.
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 waveform 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 bewildering range of options, which bundle a 'free' call allowance with rental and installation costs

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. 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 puffy, 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 £35 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 (£68) 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 N2XT 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 paneling 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 electromechanical 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 buffer 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.
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Genex 68000

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 reconstructed 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 Tahi 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 least 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 start 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 of takes, the GX2000's multitrack work; put it hasn't happened and that the GX2000's 8-track basket and ditch digital on the market that will do it.

When used with its standard digital inputs, the GX2000 will operate with anything from 8 to 24 bits, and can dither both inputs and outputs with noise-shaping as required. With suitable outboard convertors 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...
multitrack connector allows betray other interface possibilities. The Link playing things backwards. Further support protocol. Used environmental, one of transferred. Thus keeping their relation with the code accompanying audio from track for transparent, will read options covering sample rates, word lengths, pre discriminate a. It rate, and display shows with the machine's varispeed, most of the parameters come indistinguishable from analogue tape the points and other locations is familiar, as well as quite remarkable, and deserves variable offset. This like this, audio recorded elsewhere is is virtually no come in the middle file is stored on the machine's varispeed, and stores it as text for future reference. The entire file is stored on the machine's varispeed, a smooth adjustment with a remarkable range.

In varispeed mode the dual alphanumeric displays show 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. 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 record 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 Null 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. Furthermore support for the film industry comes in the form of an optional biphase input.

Additional rear-panel multiplexer connectors betray other interface possibilities. The Link connector allows up to eight GX8000s to be ganged together in true modular digital matrix 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 will 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 converter, 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 us all feeling like any easy.

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 further by surprise, and suggests that the company has produced a winner without even appearing to have to try.

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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 preamp. 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 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 gripe 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 PA-3001 4-channel preamp

![The PA-3001 4-channel preamp](image1)

The C-3021 2-channel compressor

![The C-3021 2-channel compressor](image2)
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 to 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 outputs and parameters looking for the ±15dB 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 fulfil 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-302T 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 ‘smooth’ switch in order 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 practice, 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 Chirnograph 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 ±15dB on offer in each band without the usual side effects. All in all a pleasant sounding equaliser with no nasty surprises.

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 wimp sounds 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 ‘pssstids’. On occasions I had to look twice at the ‘smooth’ 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 TL Crimson Series offers then they are well worth auditioning before you spend considerably more money on other units. Barring the odd niggle such as the peak LEDs they all offer a lot for the price, and I think the EQ-3012 is a real find.

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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’s progress.

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. 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.

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 Lexicon’s”) 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 O2R technology into a compact package directed at video post and sound reinforcement applications. ZENON SCHOEPE takes a peek at the beautifully formed 03D digital desk.

MOST PEOPLE suspected that Yamaha would follow up the O2R 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 O2R technology into a smaller and more frugal package while also rebasing the new digital desk slightly towards video post and small scale 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 O2R, yet internally it is very definitely an O2R. 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 O2R. 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 O2R rear panel card for TDFI, 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 O2R.

As far as analogue outputs are concerned the desk's 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 O2R, 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 O2R.

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 O2R 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. O2R-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 O2R because the facilities it provides are built in. Anyone who has seen the add-on surround panning options for the O2R will get the point about this implementation and it was very slick even on the prototype desk.

It can operate in quad, LCFS, 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 O2R'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 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 O2R origins. In fact it better the original in some respects and it's interesting to note that many of the ideas incorporated in the new desk resulted from O2R 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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Sounds like you’ve got to have a demo.
Symetrix 551E EQ

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

The 551E five-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 broadens the brand’s quality name.

XLR-jack inputs and outputs, that frills, this and low-cut filters. Parametric equaliser with sweepable

With an affordable price, Symetrix recently launched two

Sweeps 100Hz from and LF, and low-cut filters.

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 live 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.

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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 control, 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 transparency surpassing most of the preamps. It’s a valve design mic preamp which resists distortion, apart. what around for Fearn has set it is a 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 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.

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The all-American MPC-100A is a prestige valve mic unit that functions as preamplifier, compressor, and limiter and is 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 line-tuning of tone via the loading control. This varies the input impedance from 10kΩ to 1MΩ, 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 clockwise 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 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 or outboard 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 mono jack and 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, Cairec 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 devan® 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 knob 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 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.

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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 D627-MCH DASH multitrack. New features include a more intelligent autolocator, a tape-guide system, and 20-bit converters 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 AB20 ¼-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.

**dB Technologies converters**

dB Technologies has joined the trend towards 96kHz, 24-bit recording by introducing A-D and D-A converters 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 0.0009% 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 ±0.1dB. 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 shuffle modes and slaves to MIDI time code.

www.americanradiohistory.com
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/PC board is a dedicated dual-DSP card with 40-bit floating-point processing, 24-bit, 1-0, 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.

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

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 louder, 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 MS0200 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 PPC 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 FET
How do you improve on the most successful professional multitrack tape recorder of all time? Listen to your customers. Do some heavy thinking, and...

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

A 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.

HIV International, UK. Tel: +44 1753 876 100.

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 multiband 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-105SWP subwoofer to its range, which is designed for use with Westlake’s BBSTM-10 monitor system. The BB-105SWP employs an 18-inch driver and is claimed to offer a 30Hz-17kHz frequency response at 93dB sensitivity. Also from the US was the Tria tri-amped work-station monitor system. Aimed at workstation-multimedia setups, the Tria features to desktop speakers and a separate subwoofer to offer a 45Hz-20kHz performance. Genelec’s 1039A 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 9926.

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 0417.

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.
Kickin' phat' npunchin' basstastic soundin'
‘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’s the performance and the feel that sell the record.’

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 recording 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’, Toro’s Toro 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 aluminum because all of the aluminum 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 edit. 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 point to record Duke Ellington. ‘Yeah, somebody had got hold of that and joined the studio. “We had been written down every point to record Duke Ellington.”’

‘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.”’

The painting-by-numbers approach would have to do.

‘Duke Ellington sat next to me,’ Schmitt remembers more than 40 years after. ‘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.”’

After a session with 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 people with seasoned musicians who knew how to attain a good sound in the studio.

‘Today 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 you had at least five to six days per session, starting 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 asked 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 cardiod, Telfunkens 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 Arette 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 sounds sounded fabulous. Not only that, but you also get 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 a tape, 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 that night. ‘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 Thelonious 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.

‘When you make mistakes, you can imagine, maybe do recalls. ‘We had been written down every point to record Duke Ellington.”’

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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 was for Monty Alexander’s debut album—Für Elise—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.

When engineering a session for Connie Francis at Radio Recorders he took over the production chores when the producer of choice, one Morris 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 Monty Alexander and it was a huge success 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 and I was engineering and he totally forgot about it. This was at RCA, Monty Alexander 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 F7"
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 Zenzulis.

The next thing I knew the truck started to expand,' he recalls, but what he was witnessing was not an early version of hydraulics on a rock band. '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 Executive Office they had a 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 struck me as important 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 on some of the Steely Dan records I'd be doing one thing, and suddenly adding echo, Donald Fagen 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.'

'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 Alan was 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 mixes without echoes are flat!' 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.'

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C3021  2 Chan compressor ....... £399 ex vat

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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. 'Alain'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. 'It 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 "i" sound... So, it's like how small can you go in order to give it that extra vibe?'

The answer to that question probably lies somewhere between as small as you want and as far as your ears can hear. Not that there was over 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. The 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 everyone left I had the assistants bring in two big couches,' he recalls. 'We put them together, put blankets down, and then had the techs bring in oscilloscopes as well as a plastic bag which was hooked up as if it was a morpyn dise.' Clearly, all that was missing was the priest. In his place by the bed, however, there was a U47, and this contributed to the relaxed ambiance that was necessary for the right performance.

'I imagine 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 to have had 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 micros.'
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 overheard 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 faces 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 overdubs 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 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 reals with additional offsets. If you had to go backwards it could be done, you could go through all of these 120 taps and it would be like putting together a puzzle.’

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 person to do that because the equipment was 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,
was to have 48-track digital string-ofts that, although they contained the album balance, also gave me total separation on each instrument. Therefore, I 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's slit 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 ears are working in conjunction with your eyes 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 Magnatone mixers, 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 Tascam 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 predbutching 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!'
SegaSoft's San Francisco recording studio offers a paradigm for the future of recording studios in which audio embraces its latest focus: the computer game.

Daley prepares to enter level one.

We purposefully didn't sofitt the speakers. When you're doing game audio, and in our case using the Sound spatial enhancer system a lot, you want a lot of airiness and space around the speakers themselves.

-Gary Cimelli, Production Director

**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 entries 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.

**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 staff 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 Hudson, 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 Cimelli, one of the 13,000ft² facility's three staff musican-producers (who with
Nilsen and two assistants make up half the division's engineering staff, and who worked at Sony Music for the previous six years as a programmer on Sony acts like Michael Bolton, Lloyd II Men and Kenny G. 'We wanted to combine the hard-disc 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 left 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 complement 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 1022 center. Crown Macroreference amplifiers are used.

'The thing about the monitoring is that we purposefully didn't slit 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 the mix.'

Ronnie Montrose, string-slinging mover behind 1960s 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 680 home studio and Sega's other Northern California audio facility in Redwood City to bring multi-string sensitivities to the digitally dominated world of game audio. Via musician and pioneer game developer-producer Ed Anunnziata, 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-Paul Jennings. He regularly works with Pro Tools, is a raving fan of the PCM-800, and used a Roland MIDl guitar system to access sampled sounds and create MIDI files. The guitar-based score for Mr Bones runs the gamut from Montrose's electric guitar-like proportions to swell crunchy electric to bottleneck National Dobro to fingerucking bluesy acoustic. The acoustical instruments were recorded in stereo using an Audio Technica 4033 mic and a combination of ART pro-MPA tube preamp and a Fœcursite Red 2 EQ and then direct to tape. The electric guitar parts were recorded using a Palmer D1 box and a road monitor for cabinet simulation.

One pervasive issue that Montrose never had to deal with on records was the ever-ending turf struggle between graphics and audio for the Redwood City (650W) real estate of the game disc. 'We struggled 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 bluesy acoustic guitar part alone. It was meant to sound old, so recording at 22kHz kept it in character and saved some precious disc space.'

Montrose worked in a combination of his home studio, with all the composing and guitar solos were done, and at Sega's Redwood City studios, were he was able to lock to picture and mix to a Panasonic SV700 3AT. The game's audio components were a combination of 44.1kHz recordings and Yellow Book 846-16-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 perfectly natural progression. And it was fun.'

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

Mr Bones Soundtrack

December 96

Studio Sound
I0 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, Earth Songs Of Time, a compilation of the first two Earth The Dolphins 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 video 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 serve both of SegaSoft's studio's marketing goals, but will also be available for hire on a select, or as Castellano puts, '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, SegaSoft's international marketing manager. "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 and 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."

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 PDI 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

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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 backslapping 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 lynx-pin in MTVs'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 year's third year we've done it all, so I put it on a list.'

'This detail who should be talking to who, so all the guys in the trucks know that they will have four-wires from the scanner before the 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. 'Felt 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 PM4000 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 swap 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
consoles were used, a mixture of Midas, Ransa and another Yamaha PN4000. Monitor enclosures included 12Ns, the new 12Ns, and ML18s for drum monitors, chosen for the extra bottom end. Ruggles remains positive about the room acoustics, 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 hands 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 PN4000 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 then 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 replace it, and we don'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 staffs Dave Porter and Andy Raffin. 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 auditory compressed," Rose considers. 'I use two valve limiters and a Neve peak limiter. I use the Summit TLA100s; they are dual channel, but 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 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 C414 mics arranged in stereo pairs and hung from a lighting trucks about 10m from the stage. Well, the Awards may have been live, but...'

'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

Shirley Manson puts out as lead singer of Garbage, winner of the MTV Best Breakthrough Act Award
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 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 multitracks is that they enable both trucks to have extensive return 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 Two 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 the projects include the popular music series The White Room, of which he recalls: ‘We mixed all that on the (BBC) M3C CalrecAssignable. 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 L552s, 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 spares that were sold off to themselves. ‘Everybody uses 57s, and I’m happy to use the 44s or the little Ramaa 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 sound. Otherwise you have hiss, 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 masts up with a Maplin MIDI Commander.

‘A colleague of mine bought it for The Royal Variety Show a couple of weeks ago—and it didn’t work, so I borrowed it,’ Scrivener reveals. ‘It cost about £80, whereas the remote-meter-bridge for the multitrack is £11,000.’

You get the definite impression Scrivener is rather proud of the MSC. 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.'
Joemeek /dʒɔə-ˌmiːk/ noun
The range (Recording) creative production tool, powerful, clean, distinctive, punchy, reliable, compact, good mixer, value for money, musical, quality, mastering aid, lifestyle.
'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

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 transcriptions. Fortunately, there were no disasters, and everything went as planned—or appeared to.

After the show, Tim Summerhayes explains, '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 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.

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

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 multi-tracks also provided the ability to repair a recording should a track

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 studio by Fellow Fleetwood director Ian Dyckhoff, plus Manor technical staff Dave Porter and Andy Batlin.

After the MTY 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 engineers, 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 mic.'

'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 it was operating at a frequency quite close to that of the BBC. The radio guy was Steve Bincom. 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

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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 post-production 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 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.

**Studio General Director Josep Ferrer Calderon:**

**Identifying the need for distinction**

**Studio Sound**

60

December 96
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 removable.

'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.

Over spill noise is a problem as the machinery is near silent, and the benefits far outweigh 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 Hilley designed with the seating behind the engineer and the desk, and employs an Audio Kinetics Eclipse to control the projectors, the mag machines, DATs, and DABs.

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 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 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
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 Calderon.

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 looking 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 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 15% 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, born 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 'Murdock'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 Bursulconi, 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 ridiculous proportions when a plane carrying an anti-Murdoch 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 magnates are as bad as each other. It is true that Silvio Bursulconi 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 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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www.americanradiohistory.com
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, 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 setup that retains its carefully set configuration, however, much it is moved about 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...
The AKG 426 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.

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.

The Neumann KMS101S 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 shot gun 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 windscreen. 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 very 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.

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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 any horizontal plane.

**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.

**PERFORMANCE NOTES**

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 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 beyerd 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 usual method of stereo image adjustment takes a little familiarisation, but works well and has the merit of mechanical simplicity.

**THE SCHOEPS PESW** 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...

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.

Conventional studio microphones use one or sometimes two capsules - the SoundField SPS422 uses four. These are arranged in a precise tetrahedral array, collecting sound from a three-dimensional field at a single point in space.

Reaching far beyond the capabilities of normal microphones, the SPS422 is a complete system in its own right. From the control room - the optimum listening position - all microphone parameters can be adjusted via the LI processor to create 'wide image' effects.

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The new **SoundField SPS422**

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SEE US AT
AES ON
BOOTH 831
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. It comes with mounts for stands and wire suspension, complete with a ball-and-socket swivel.

Schoeps 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 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—from this model, the Soundfield MkV and the ST250 with its special appeal to location recordists—fits 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.

Schoeps was launched some time ago and surprised the world in its departure from Shure's familiar markers. 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.

...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

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.

...DSA-1

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Soviet 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 4030 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 7/8-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, 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.

The most remarkable thing about the whole Neaton 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.
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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 Viscape 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 complete with 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 consumer 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 booth of up to 20 minutes costs £250 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. Hand-wringing 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.
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- UltraMini section has 99 mute groups and 99 snapshots capability, mute select switch + LED indicators, Store/Preview/Snapshot/Clear/Do It switches + LEDs, 10-unit snapshot indicator, group indicator, Mode/Up/Down switches.
- Talkback section includes talkback mic input (phantom powered), assign switches for Matrices A-B-C-D/Aux 1-4/Aux S-8/Ext.-L-R, talkback level control, solo level control, program level control, talk button, recessed phones jack (there's one on the rear panel, too), and 400 Hz/pink noise source with separate level control (uses talkback routing switches).
- All inputs & outputs fully balanced (except RCA tape inputs & outputs).
- Each channel has rear panel XLR mic & TRS line in jacks, insert with separate send & return (balanced), & direct out.

S-8/Ext.-L-R, talkback level control, solo level control, program level control, talk button, recessed phones jack (there's one on the rear panel, too), and 400 Hz/pink noise source with separate level control (uses talkback routing switches).
- All inputs & outputs fully balanced (except RCA tape inputs & outputs).
- Each channel has rear panel XLR mic & TRS line in jacks, insert with separate send & return (balanced), & direct out.

5kHz Lo Shelving EQ, ±15dB of boost/cut.

EQ switch.

Low Cut Filter. Sweepable from 30Hz to 100kHz. 120kHz octave. (Fixed at 150Hz on stereo aux return channels.)

Constant-headroom Pan control. For consistent signal level across the stereo panorama, whether it's cranked hard left, right, or center.

Mute button and LED. Mutes channel and all aux sends. LED lights when channel is muted, as well as when it's being muted or previewed by Ultra Mute.

Submitix L-R assign switches. Assign a channel to any or all of the 1, 3, 4, 5-6 and 7-8 submixes L-R & Center assign switches. Dito for L-R. & Center mixes.

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

Solo button and LED.
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: Multiband 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