A DAY AT THE OPERA

Patrick Stapley follows a live recording session: a faithful performance of Mozart's The Magic Flute is digitally recorded for release by Telarc

"Can you hear it?" Jack Renner asks engineer Joseph Magee during recording. The Ramsa is installed in the temporary control room with Abffusor treatment

Edinburgh, Scotland, on a wet Saturday afternoon. Jack Renner turns from the console towards Joseph Magee with a concerned frown.

"Can you hear it?"

Magee cups his hands over the headphones, head bowed listening hard.

"Yes... it's there all right, but I think the music should cover it — we're going to notice it on dialogue though."

From the producer's desk, James Mallinson casts a cursory glance in the direction of the engineers, a signal that he wants to press on. Jack Renner responds with a grave nod to Magee. There is the familiar clicking as the U-matic laces up and all the machines go into record. Magee checks the machines are properly engaged.

"OK James... this will be take... 241."

"Two four one," repeats Mallinson into the slave mic, his English accent contrasting the American voices. With a well practised flick of the finger, he switches on the red light.

The burble from the hall quickly dies down. On the small colour monitor Sir Charles Mackerras can be seen hands poised, orchestra, soloists and chorus at the ready. The hands suddenly jerk into action and music fills the Edwardian room... only to peter out a few seconds later leaving the reverberant voice of Sir Charles hanging in the air.

"Mark that one a false start," says Mallinson scribbling a note with his pencil.

The second attempt results in an excellent take; as Mallinson sends congratulations down the talkback, Jack Renner fixes Joseph Magee with a long, questioning look over the top of his glasses.

"I couldn't hear it," says Magee shaking his head.

"No, neither could I, but make a note on the box anyhow."

In bold letters next to take 241, Magee writes: 'RAIN'.

The anecdote below is typical of the attention Telarc pay to detail: every constituent in a recording from the choice of musicians to the type of *XLR* connector is treated with the same exacting care. Jack Renner co-founded the company in 1977 with producer Robert Woods; the following year they made America's first commercial digital classical recording. From the beginning Telarc's philosophy has been 'less is more' and their approach to recording is both minimalist and purist, without being narrow or stuffy. As the company has grown, so too has its reputation for producing high quality recordings, for capturing great performances and for bringing the listener a remarkable sense of realism. This is borne out by the 24 Grammy awards Telarc has received since 1980 — five of these have gone to Renner for 'Best Engineered Classical Recording', which he has won for the last four consecutive years — creating a record of a rather different kind. Joseph Magee is an engineer based in Los Angeles, he specialises in classical and acoustic jazz recordings, and regularly works for Telarc.

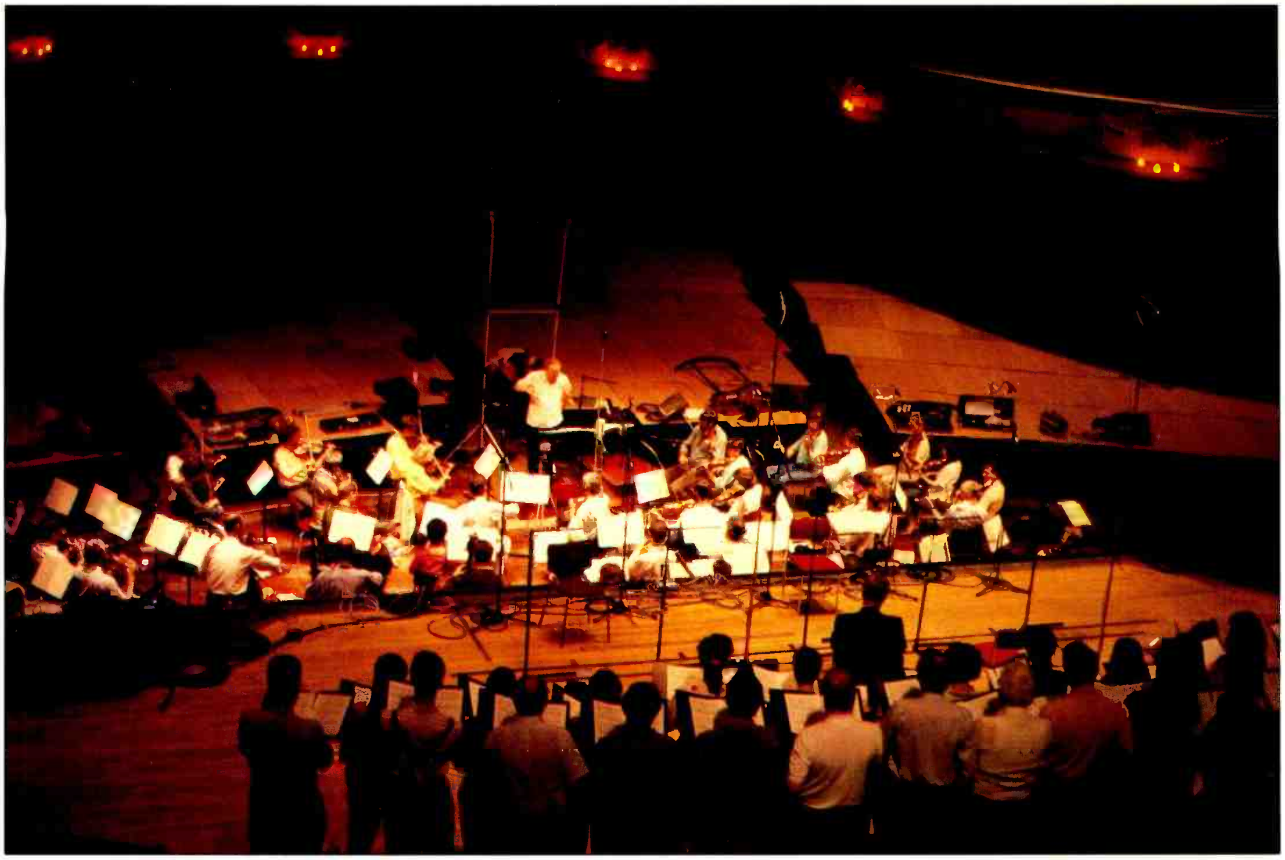
The Magic Flute is the first full length opera that Telarc have recorded; it's also the first time Mackerras has recorded the work, although he's conducted it on numerous occasions. We asked James Mallinson what would make this recording stand out from other versions?

"First of all Mackerras; he is probably the most experienced, but more to the point most knowledgable, Mozart conductor around — he's put a great deal of research into the opera in particular to the tempi and their inter-relationships, and a lot of the tempi will be a little different to those people are used to, although more faithful to what Mozart intended. The cast is the best anybody could have hoped for — they were chosen very carefully as people who could fit together in the overall conception of the piece. Not only are they all excellent singers but they also really understand the characters and impart a real sense of drama to the work. Add to that a first class chamber orchestra and the excellence of the Telarc sound, and I think you will have a very special recording."

Venue

It seems appropriate, then, that the release date will be very close to the bicentenary of the opera's first performance on September 30th, 1791 — two months before the composer's death. This scheduling is in fact accidental — the recording was originally meant to have taken place a year and a half earlier in a Southern Bohemian castle, but "since democracy broke out", as Renner puts it, the castle closed to be renovated as a tourist attraction. Having already recorded the Scottish Chamber Orchestra at Edinburgh's Usher Hall with great success, the decision to relocate to Scotland was not a difficult one.

The three tiered Usher Hall with its domed roof, seats just over 2,200 people with room for a further 333 in the organ gallery behind the stage. Considering its central location, the hall is normally surprisingly immune to external noise, however, on this occasion, because of extensive building work next door, the sessions during the week had to take place in the evening. The hall was booked from July 12th to 22nd: the first day was devoted to rehearsing the orchestra and the following 10 to recording the entire opera. The average day comprised of a three hour music session starting at 6.00pm, with dialogue recording afterwards. On the previous occasion



The choir on stage look out over the 'orchestra pit' towards covered stalls

Renner recorded here, he had set the orchestra out on stage; for *The Magic Flute* he removed the first five rows of the stalls and placed the orchestra off stage, to mimic the effect of an opera house pit. The soloists were arranged on stage singing out over the orchestra, with the chorus behind them in the first rows of the organ gallery. How did the hall's acoustic suit this arrangement?

Renner: "The acoustic is generally pretty good and works well; it certainly has great detail. We have made a couple of adjustments though — to add more bloom to the sound we've covered the seats in the stalls with sheets of plywood right the way back to the start of the balcony — not only does this help to open up the acoustic but it also adds greater warmth — it's a technique we've been using for some time now. We've also hung a large curtain in front of the organ chamber, which successfully removes the 'boxy' effect it was having on the stage acoustic."

In addition to this broad treatment some more focused acoustic adjustments were made. An RPG *Diffusor* panel was placed behind the French horns to deal with 'hard' reflexions coming from a side wall; and a vent, directly behind the basses, which was acting as a bass trap, was covered with more plywood to greatly improve the low end balance.

Recording

True to Telarc's minimalist approach, the bulk of the opera was recorded on just seven mics. The orchestra was picked up by a pair of Neumann *M50* valve (tube) mics placed behind the conductor's rostrum and elevated to about 11 ft — these also acted as ambience mics for the ensemble, so their positioning was critical. The soloist's mics were arranged in a line across the front of the stage — each of the five stands was fitted with a T-bar holding a Schoeps *M221B* valve mic with an *MK5* cardioid capsule, and a Sennheiser *MKH40* — the latter acting purely as a backup. This all vacuum tube set-up formed the basis, to which a couple more Schoeps were added for the chorus parts, and a Neumann *TLM50* to provide a little extra definition from some solo flute passages. Magee explains how this arrangement was arrived at.

"We started off the sessions by putting out Neumann *TLM50*s in the same position as the *M50*s and we also put up a central *TLM50* in the traditional position in front of the conductor. We then listened, very critically A/B'ing between the *M50* and the *TLM50* pairs, while introducing the centre *TLM50*. What became obvious very quickly was that the centre mic wasn't needed — the left/right mics produced a very accurate and detailed picture by themselves. Comparing the pairs, the *M50*s sounded sweeter in the high end with a warmer more rounded low end than the *TLM50*s. We also did some comparisons between the *M50*s and the *TLM50*s and found their response to be incredibly close. In fact, if the hall had contained a little more low end boost we would have used the solid-state *50*s instead — their low end tends to be just a little better defined and tighter.

"As for the mics on the deck, we also did A/Bs between the Schoeps and the Sennheisers and found the Schoeps produced a warmer more flattering vocal sound. This simple miking technique is pretty unusual on a major opera like this — most other companies would be using at least double the number of mics. The problem with that kind of multi-miking is that as soon as you start introducing multiple mono sources, the soundstage collapses and you take away the feeling for the consumer of having a live event occurring in their living room in an acoustic space."

Another unusual factor is that the soloist mics remained open the whole time; apart from occasional fader adjustments of a few dB to compensate for singers moving forward or back, the mics were left untouched — they were never faded out, cut, or manually panned. The stereo positioning of the mics was evenly spread across a slightly reduced stereo picture, and the appropriate effect, whether it be panning or distancing, was created by the singers themselves. Telarc feel this approach produces a more natural as well as a more musical result. To aid the singers, the stage was marked out with tape to give distance and on-axis references to the mics.

The purist attitude was also very much in evidence in the control room (an artist's changing room at the back of the building) where 'high performance' cable was omnipresent, 16 bit converters were bypassed and EQ buttons were firmly switched out. High performance cable in particular has attracted a mixed response over the years, from the highly sceptical to the highly ecstatic and Renner has, in the past, belonged to both camps.

"I was one of those unbelievers who thought that high performance cable was a cure for a disease that didn't exist. It was during some sessions in London's Walthamstow Hall in 1985 that I thought I had the perfect opportunity to prove once and for all that this cable would make absolutely no difference. We had two B&K *4006*s that were essentially a matched pair — they were put out on the same stand in the wind section, one with the highest quality standard cable and the other with Van Den Hul cable. We first listened to the mic with the standard cable and everyone was

pleased with what they heard, we then switched to the other mic and it was just as if somebody had gone out and taken a cloth away from the front of the microphone — everything changed, the sound opened up and there was far greater detail. Just to make sure we didn't have a mic or desk problem, we swapped over cables between mics — the sound followed the swap. When I got back to the States I ran some more tests using Monster cable, which left me in no doubt that high performance cable really did work. People come up to me all the time and say how can you believe in this stuff look at the maths, look at the physics, it can't possibly work — it does and the proof is in the listening. We use a mixture of Monster cable and MIT [Music Interface Technology] *Proline* cable — the MIT is used for our main mics, connections between the console and machines, and for the loudspeakers where we also incorporate MIT *750 Shotgun* with terminators."

The console, a Ramsa *824* cut down from an *852* had been modified for Telarc to include three main outputs from the stereo bus, a single stereo master fader rather than independent left/right, and professional level on all 2-track returns. The two main criteria for choosing the console were its sonic performance, in particular a short transformerless signal path, and its robust construction. It replaces the Neotek console previously used by Telarc. The console was positioned to the left of the control room facing the side wall, allowing the producer's desk pride of place in the centre of the room. Renner feels that having the console in the middle interferes too much with the direct sound.

For this recording a total of six digital stereo machines were used to provide both direct stereo and a multitrack backup. The main stereo mix output was sent to a Sony *1610/DMR-2000* set-up and a Panasonic *3700* DAT (back-up); both these machines' ADCs and DACs were bypassed being replaced by the DCS 20 bit ADC and the Madrigal DAC. Telarc normally use their own 20 bit ADC unit, which incorporates Ultra Analog chips, but unfortunately the trip over had disagreed with it. An Audio Design *Pro Box 3* was used to convert between SPDIF and AES/EBU.

The remaining four Panasonic *3900* DATs were fed from the console's eight groups: groups 1 and 2 for the orchestral mics, 3 and 4 the chorus, 5 and 6

Mackerras, Mallson and Magee (at console) during playback

Further notes on Telarc's equipment

With so many possible recording and production consoles available it may seem surprising that Telarc opted to use what is, to all intents and purposes, a touring console. Panasonic, however, say that the Ramsa *WRS-852* was designed to offer the ruggedness and flexibility needed for sound reinforcement but not to the detriment of the audio quality.

"I've compared many consoles," explains freelance engineer Joseph Magee (who provided technical assistance on *The Magic Flute* sessions), "and find that the Ramsa *852* offers spectacular performance. In terms of subjective differences I find that mixes through the *852* capture a wider soundstage left to right, greater depth front-to-back, and increased frequency response top to bottom. The result is a much wider, more detailed 'window' into the performance.

"I attribute that transparency in performance to several factors including the electronic design — John Windt had a great deal to do with the component selection and board layout — plus an intelligent grounding scheme. Also, no transformers are used on the mic inputs, and the internal signal path is kept as short as possible — the EQ sections can be hardwire bypasses if appropriate. I've used the *852* on dozens of classical recordings and live performances and find it an excellent choice."

The other innovative aspect of this Telarc session was the use of a quartet of serial controlled *SV-3900* professional DAT machines to record the stereo master mix plus submixes of the orchestral mics, chorus and soloists. All four machines were linked to a *SH-MK390* remote controller, which 'talks' to each *SV-3900* on a network via ESbus protocol commands.

"All these DAT elements can be loaded into a workstation such as the Lexion *Opus*," says Joseph Magee, "and resynced with one another. Even though we only recorded a sync reference at the head of each take, the inherent speed stability of these *SV-3900s* means that each discrete track will stay in tight sync for a long time. This is obviously very important if we decide to go back and change the timing relationships between the tracks at a later date."

the soloists, and 7 and 8 a mix of everything. This basically produced an 8-track recording spread across four stereo machines; the idea is that if at a later stage the balance on the U-matic needs to be changed, it can be remixed by transferring the DATs to a multitrack hard disk system (Telarc favour the Lexicon *Opus*) where the three stereo sections would be time slipped back into sync and rebalanced as necessary. To provide a sync reference point, a click was recorded on the machines before each take — this was done rather primitively by tapping a specially EQ'ed mic. Panasonic's *MK 390* remote provided simultaneous control for the four machines.

This system can also be used for overdubs, for example if a singer's part had to be put on later, the U-matic tape containing the orchestral backing would be played back through the console, the soloist's performance would be recorded to its own DAT, while the mix of the two would go to the mix DAT (groups 7 and 8) for a control room reference — the soloist's performance on DAT and the orchestral recording on U-matic would then, as before, be married together during post-production. They will be using the *Opus* to add some sound effects — thunder, a lion's roar and the sound of a lock — as well as adding digital reverb to a section of dialogue requiring a cavernous space.

Telarc have their own editing suites back home in Cleveland, Ohio, where the masters will be assembled using a Sony *DAE-3000* editor; another Cleveland studio provides the *Opus*. Wherever possible complete takes are used for editing purposes, Renner feels strongly that piecing together many short segments destroys the natural flow and continuity of the music. The tape used on these particular sessions was Ampex *467* for the U-matic, and TDK *DA-R120* for the DATs.

Monitoring

Monitoring was from a pair of the very latest limited edition, Anniversary model B&W *801 Matrix IIs*, driven by a Threshold *SA 4E* amplifier. Renner uses B&W *801s* whenever he records in Europe, because it's the standard classical monitor that everyone, including himself, has become very familiar with; this is not the case back in the States where Telarc have been using ADS *1530s* for a number of years.

"We're currently looking for a new reference standard. Although I feel comfortable with the B&Ws, we've got six other people to satisfy, and they have trouble with the *801s* — they don't find them detailed enough, and they feel the low end isn't deep or tight enough. Actually I have a little trouble with that, too. However I think the combination we've got here of amp and cable makes these a very, very useful monitor. The version we're using at the moment is also a lot smoother than the earlier *Matrix IIs* which tended to be very aggressive in the upper mid."

Positioned between the speakers, and in the front corners of the room, were RPG *Abfusors* (Absorptive Phase Grating) panels; these were complemented by RPG *Diffusor* panels at the back of the room. "We like to absorb at the front and diffuse in the rear," Renner says with a grin. The panels were stacked in twos, so that the lower has wells running vertically, and the upper horizontally — an arrangement that Telarc have found produces optimum results.

"We were actually among the first people in the States to take RPGs on location, and we worked very closely with Peter D'Antonio, who developed the system, in field testing and researching various uses and results. They can drastically change the acoustics in a room, and in this case they enable us to hear very comfortably from many different positions — actually this room contains a lot of natural diffusion of its own from relief decoration, woodwork, etc. Apart from acoustically treating the control room I often use *Diffusors* in performing spaces — I think they're the most innovative acoustical material that has come along."

Equipment

The equipment for these sessions came from a number of sources. The heart of the set-up — Ramsa console, Sony digital, monitor amp, cabling, mics, etc — came over from Cleveland. Other items came directly from manufacturers. B&W sent in the *801 Matrix II* monitors. RPG Europe supplied their acoustic material, the Neumann *TLM50s* came from Bauch, and Panasonic supplied the *3900* DAT machines and remote controller. Some equipment also came from Tony Faulkner with whom Telarc have a special working relationship, and yet more originated from Audio FX in London. Organising everything to be in the right place at the right time turned out to be quite a logistics exercise — plus getting it all back again.

Renner stated that this is the most expensive classical project undertaken to date by Telarc with only the Liza Minelli project being more costly. He is confident that Telarc can recoup costs in the first one to two years. As *The Magic Flute* begins selling its first copies, he will once again be busy managing a second opera-like project for Telarc, this time *The Mikado*.