

# AMBISONICS

## ROUND AND ROUND

Natural acoustics in the Church of St Silas The Martyr in London provided an ideal environment for Ambisonic recording of contemporary classical music ensemble Electric Phoenix. The four singers 'expanded' to 12 in surround sound with the aid of 'analogue' overdubbing on a Sony *PCM-701ES* recording system. Terry Edwards, bass singer and manager of the co-operative group, produced the sessions with John Whiting of October Sound engineering. John handles all live sound projection in

**Mike Skeet relates the practicalities of recording a classical music ensemble Ambisonically in church and making four voices sound like 12**

their international tours and as such is a full member of the ensemble.

Electric Phoenix could be described as an up-market version of the Swingle Singers specialising in contemporary works, often unaccompanied and usually with close miked sound projection via 'treatment' boxes operated by the performers. These incorporate ring modulators, delay lines, variable bandpass filtering and similar effects. But for these sessions it was back to nature: the four singers were arranged in a semi circle around the UHJ encoded Calrec *Soundfield* microphone and two overdubs were made with the singers in different positions within in the semi circle.

### Equipment

In the church the *Soundfield* was set up some 3.5 m back from the semi circle. Careful measurement made sure that tape markers on the floor were equidistant from the mic and were at equal distances around the circumference. Four sets of Sony *Walkman* headphones were fed the prepared 'click' track from a splitter box. The only other piece of gear out in the church was the talkback loudspeaker mounted in an RS cable drum.

The St Silas control room is large enough to allow full Ambisonic surround sound monitoring and four Spendor *SPI* loudspeakers were set up, well away from walls and corners. These were driven by two Quad *405* amplifiers.

Central to the interconnection were seven channels of a Soundcraft *200* desk. Channels 1 and 2 were fed the *Soundfield* control unit output at line level via a Calrec UHJ encoder; channels 3 and 4 were the Sony *PCM-701ES* playback; channel 5 was the original source (for the first pass) of the 'click' track and this came from a Sony *TC-D5M* cassette deck; channels 6 and 7 had the audio track playback of the two Sony Beta *SLF1* VTRs from whence the click track came when the overdubs were being done. The click track was transferred as needed via mix four output.

Two *SLF1* Beta VTRs and just one PCM processor complete the essential items as far as overdubbing is concerned. The PCM 9-facility switch box was the essential interconnection of the VTRs and the processor. Another two-way switch was employed to direct the 'click' track to the appropriate VTR audio track input.

Monitoring in Ambisonic horizontal surround sound with an alternative stereo check. This is a simple matter through the Minim *AD10* Ambisonic decoder fed from live signals via the mic after UHJ encoding, or from the PCM

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playback of the UHJ recording. Incidentally the phase coherence of digital recording systems allows better decoding of UHJ thus producing better results than are possible with analogue recording and playback.

The overdubs, of course, consisted of overlaid UHJ encoded material and the system can easily cope with this. You do not get, as some might think, 'additional' ambience at each pass but each recording has its own, once and for all ambience with no subsequent build up. The acoustic at St Silas is sought after—it is smooth, not over-emphasising any part of the frequency spectrum and, more importantly, has a smooth exponential die-away without bounce or slapback. The other requirement of location recording is well met there too—external traffic ambience is at a very low average as far as London venues go, and with a low peak to mean ratio.

After the first recording the required click was held on the PCM with the click track on its audio track. It comprised an identifying slate of the title of the piece, 5 s gap for linking ambience, regular tuning tone bursts from a Yamaha synth, along with a bar count and other spoken notation idents. Terry Edwards had recorded this some days earlier using a visual electronic metronome for strict tempo. Essentially this track became the conductor and led to some speculation that perhaps orchestral recordings could be controlled this way.

When the first overdub was required, the PCM playback was mixed with the new *Soundfield* output, the performers having been moved to different positions. This was recorded via the other half of the PCM 701ES on to the second *SLF1* VTR. Also the playback was fed to the performer's headphones along with the replay of the VTR's audio track copy of the click track. This latter is also fed to the second VTR's audio track. It was interesting how this deteriorated at each pass but of course none of this applied to PCM's analogue link overdubbing despite numerous A/D and D/A processes and brick wall filtering.

Operationally John Whiting made use of the return to zero feature on the *SLF1* VTRs. None of the unsatisfactory or aborted takes were kept. It could get very difficult to locate a particular take when one has abandoned the conventional logging in favour of the very useful return to zero. There are of course numerous aborts and improvement takes plus the inevitable intrusion of aircraft noise but not really for technical reasons. After all there was no multimic routing and mixing, just a fixed crossed pair and once levels were set for the feed and for the zero level transfer of earlier passes, all was straightforward. The *PCM-701ES* was an Audio+Design version with the zero level in and out facility.

As the PCM unit's metering is playback connected this couldn't show the overdubbed summed levels. Also the Soundcraft had VUs which were superfluous in this context except for tone line ups. So a Surrey Electronics twin PPM augmented by *The Box* stereo

soundstage analyser was employed in the monitoring chain prior to the UHJ decoding. The latter is particularly useful at showing channel balance, soundstage positioning and stereo width, apart from true peak signal levels.

## Ambisonics/stereo

John Whiting was particularly enthusiastic about the stereo imaging compatibility of the multi-UHJ playback. On the basic sound quality aspects, John has demonstrated many times at his sessions the ease with which the *Soundfield* mic, normally in stereo usage, with the Spondors consistently provides the same sound qualities in the control room as one hears at the mic position. The *SP1s* seem to be much less room dependent than many monitors and this is another vital aspect of location

recording.

The Ambisonic monitoring proved to be first class also with a 'fuller' sound where the images were seemingly clear of the loudspeakers as their sources. Certainly 2-dimensional and with very good image stability with varying listening position. Where the loudspeakers can be set up for Ambisonic playback well away from walls and corners, it is always fascinating to move outside the sound field square. One still hears the main soundstage correctly positioned and one appears to be eavesdropping on the events within the reproduction area.

The sessions described are due for early LP release after the takes are stitched together at Bob Auger's *PCM-1610/DAE1100* editing facility at Henley□.

Mike Skeet



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