



HAPPY FEET

It was a big-time, jaffa-munching, Christmas smash hit that was almost entirely produced in Australia. Including the audio. Regular AT contributor, Simon Leadley, offers this personal and behind-the-scenes account.

Text: Simon Leadley

► Two years ago I was approached to work on the music aspects of a new film. Actually, it was an animated feature. Actually, it was an animated *musical* feature... with tap dancing... set in the Antarctic. 'Hmm, sounds different,' I thought. I was then told George Miller would be directing – an Australian giant of the film industry and a genius, as far as I'm concerned. Suffice it to say, I was *very* interested. A meeting with the Sound Supervisor, Wayne Pashley from Big Bang Sound, was organised and within minutes it became clear that this was going to be a project like no other – I was *in*.

SOMETHING AFOOT

I'd worked on another big-budget musical before – Baz Luhrmann's *Moulin Rouge* – and felt confident the sorts of tasks required by the production could all be comfortably handled. Whether that be the on-set playback, the editing of vocals, or the final scoring sessions and final film mix. But there were many aspects of the film that were unique to the way that George Miller was proposing to work.

One thing I've learnt from working on animation for many years is that the workflow is generally predictable and straightforward, but with *Happy Feet* George and his team would be re-writing the rules of animation on many fronts. The big difference lay in George's

intention to approach the making of *Happy Feet* as if it were a live-action movie. For starters, real people were going to be performing the actions of the penguins using a sophisticated motion capture system – and not after the fact but actually in sync with the performers. The way it works is for some sophisticated software to follow and produce a low-res version of the penguins' movements on screen *while* the performers danced, walked and moved during the scenes. In this way it was exactly like a real shoot, with the ability to change virtually anything in post-production. It was actually quite similar in concept to *Midi*, where a performance is captured then manipulated and/or refined later in the production process.

So, from the onset, I knew *Happy Feet* was going to be ambitious, unique and challenging. It also became evident that George Miller was gunning for *Happy Feet* to be a truly home-grown project – there was a very significant Australian presence in all the heads of departments, and the film was completely produced in Australia, including the post production audio and the orchestral underscore. The score was recorded at my studio, Trackdown, with the final mix performed at Atlab. Furthermore, other mixing facilities like Philmsound and Audio Loc provided pre-mix services for dialogue effects and atmospheres to cope with the enormous

workload. For such a big-budget ‘Hollywood’ feature, this depth of Australian involvement was unprecedented.

DIALOGUE – ALL TALK

All animation starts with dialogue and *Happy Feet* was no exception. But, as well as starting with dialogue it also continued and all-but ended with dialogue – actors were being recorded right throughout the production as scenes were edited and new ones written. The upshot of this approach was that for a period of over two years the principal cast was required to record and re-record – as I mentioned, almost up to the point of the final mix. Obviously you can’t have actors of the fame and expense of Robin Williams, Nicole Kidman, Hugh Jackman and Elijah Wood hanging around the studio playing Nintendo for two years, so we had to use state-of-the-art technologies to monitor sessions remotely, wherever the actors might be (more on this later).

The initial dialogue recordings were conducted in the US (Todd AO studios in Hollywood) where George Miller and Wayne Pashley worked with veteran recordists Bob Deshaine and Tammi Treadwell. It was at this stage that the sonic blueprint of the vocal recordings was set – all subsequent recordings had to match these in quality and character. Wayne elected to record using a combination of a Neumann KMR-81 shotgun mic and a Neumann U87. This mic combo provided the characteristic sound you only get from a shotgun mic (that’s normally associated with live ‘on-set’ dialogue recording) along with the warm, intimate tones of the U87.

George likes to record his actors in ‘ensemble’ mode, so that they can feed off each other, much like a radio play. You can only imagine what it was like to have Robin Williams (Ramon), Johnny A. Sanchez (Lombardo), Carlos Alazraqui (Néstor), Lombardo Boyar (Raul) and Jeff Garcia (Rinaldo) – who play the Adelies – trying to outdo each other during breaks in recording with their off-the-cuff routines – very funny to listen to. Nicole and Hugh were often recorded together to get their interactions, as well as Elijah and Brittany Murphy.

Over the course of the production there was an enormous amount of data recorded and Wayne’s crew, headed by Dialogue Editor Sonal Joshi, created a database for every single line of recorded dialogue with cross references to each file so everything recorded over the two years of production was available for George to review and use in the edit. There were over fifty 250GB drives for the production sound by the end of the mix, for a total of 12.5 Terabytes of data.

Dialogue then fed into the Animal Logic pipeline where each character was separated out and sent to the animators dealing with that character. Concurrently, the dialogue was also sent to the motion capture stage. But because the penguins are small creatures, the dialogue was sped up, depending on the action – a running penguin’s speech would be sped up more than a

static penguin, for example. Each take was slated like a normal live action shoot so that after the shots were completed and sent to the Final Cut editing system there was a traceback, rather like a normal drama production. From this point the production was completed in much the same way as a normal live-action film.

MORE DIALOGUE – PASS THE REMOTE

As I mentioned earlier, it was not always possible to get the principal actors together for dialogue or for vocal sessions. So we had to work out the simplest and most cost-effective way of recording the talent in the US (or elsewhere) while George and the rest of the team was in Sydney. Enter Source Connect software. I actually wrote a review of this powerful ProTools plug-in back in Issue 39 and I was confident that it was up to the task (it’s now available in VST format, by the way).

We simply had to find studios that ran ProTools in the overseas city in question, make sure they had a reliable internet connection, get them to download the software, set up an account and then do a test session – which we usually did a few days prior – to get the best possible settings and configure the talkback so that it was simple for George to direct the talent as if he were in the booth next to them. In fact, the delays that we encountered were usually less than those you get on a typical international phone connection. The best part was that (unlike ISDN) we did not have to deal with international ISDN costs and the codec issues that you face when setting up these type of systems. The decreased costs meant that we were able to be ‘live’ for long sessions and to have as many sessions as we needed. George often remarked that it seemed to him that they were in the booth next to him. The sessions were typically recorded at the source end and simply monitored at the Trackdown end. Then, after the session had finished, the files would be ‘Digi-delivered’ (this has now become so ubiquitous that it has

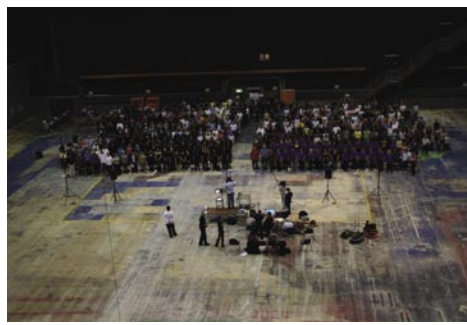


Eh? – Simon Leadley (left) lends an ear, while composer John Powell (rear) and music editor Mark Franken look on.



Scoring Engineer, Shawn Murphy, prefers to record orchestras in sections. Here the strings go through their paces in the Trackdown Scoring Stage.

The Trackdown control room in full swing. Notice the B&W Nautilus monitors – they're all yours for around 100 grand. (Below right) A mass choir belts it out in a cavernous Fox sound stage.



“There were over fifty 250GB drives for the production sound by the end of the mix, for a total of 12.5 Terabytes of data”

become a verb in our profession’s vernacular) to us in Sydney. Typically this happened within hours of the session so that the dialogue editing team could begin the arduous task of cutting and cataloging the session.

One problem Americans have traditionally had with doing work in Australia is the isolation and distances involved. This sort of software turns the Pacific Ocean into a puddle; it’s simply a doddle now to connect and work with any studio in the world.

THE MUSIC RECORDING SESSIONS

The music was divided into three parts. 1: The score, which was mostly orchestral and would be recorded a few weeks before the final mix at Trackdown. 2: The songs that John Powell had been working on and refining over the period of production, which may have needed orchestral overdubs and then mixed. (These also often required the vocals to be edited and synced to the final picture, as well as checking the sync of the taps to the music and to the picture.) 3: The source songs like *Jump ‘n’ Move*, *I Wish*, and The Beach Boys’ *Do It Again*. These all had particular challenges that needed to be addressed when creating the final musical landscape for the film.

THE SCORE

It was decided very early on that all the post production audio would be done in Australia, and the score was no exception. The recording was slated for a two-week period at Trackdown

and a further two weeks to mix at Studios 301. John Powell wanted to work with his normal team that included the Scoring Engineer/Mixer, Shawn Murphy, whose credits include *Star Wars*, *Harry Potter*, and *Jurassic Park*.

In conversations with John and Shawn it was decided that the music should be recorded at 24-bit/96k. Shawn also requested five Schoeps MK2H mics and Genex converters for I/O. He also wanted to use B&W speakers – the high-end audiophile variety that would look more at home on the bridge of the Starship Enterprise than in a studio (see left). These would be driven by three mono block 400W audiophile amps by Classe. Even getting hold of these speakers for the duration of the project would prove a challenge, but thanks to our amazing music supervisor, Christine Woodruff, we were able to hire the system from Covoy Australia. The retail price of the speakers and amps was over \$100,000! Shawn also required the Sony Oxford EQ plug-ins and the Waves Gold Bundle for mixing. The rest of the Trackdown system for recording, including the Yamaha DM2000 and selection of Rode microphones was fine by him.

In order to accommodate the fact that Shawn wanted to have 48 inputs available from the orchestral-recording ProTools rig and 24 from the pre-record tracklay ProTools, we had to upgrade our DM2000 with 5 x 96k-capable AES cards and a new I/O card for the last eight analogue tracks (see diagram).

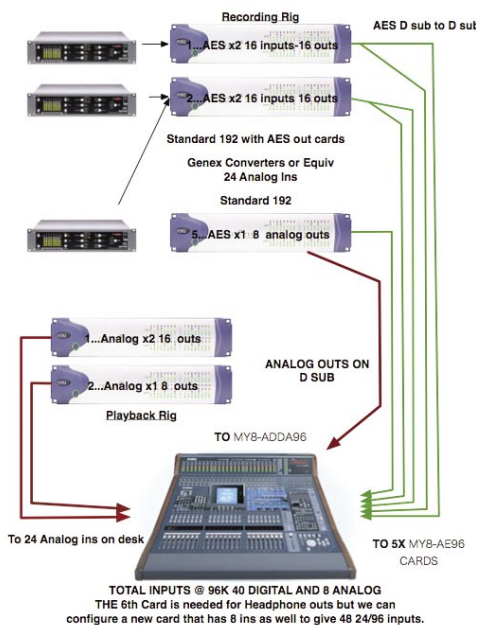
The whole system was sync’ed via an Apogee Big Ben clock, selected for its ability to allow for multiple clock outputs and provide a 48k clock even when running at 96k.

The pictures for the score recording were run from a separate Macintosh G5 with a video card and running Virtual VTR from Gallery software. All three systems were sync’ed with Midi over Ethernet, which allowed for very fast lockup times of the slave systems. Lockup was measured at less than 300ms even with very high track counts and using uncompressed video for picture quality.

Shawn Murphy has a very efficient miking technique, so it was rare for us to record more than 24 tracks at any time, and the orchestra was recorded in sections for increased control at the final mix. Usually we recorded strings and woodwind together, then brass, then percussion and any overdubs. The two-week recording schedule was very tight with three sessions per day, everyday.

A prerequisite for recording was the inclusion of a unique ‘take number’ for each and every take. This is standard practice in the US and requires the use of Quick Keys for OSX to allow the ProTools operator to name each track after each take. This does tend to add a few seconds after each take, but it’s time well spent when it comes to editing.

We had two Music Editors, Tim Ryan and Mark Franken who, after each session, grabbed the recorded files and sessions and, with the aid of Shawn’s notes, were able to edit the music while



the recording process was continuing. If an overdub required an edited version of the strings and woodwind, the edit would be consolidated and sent back to the stage for the brass players, for example, to overdub to. This streamlined process was made possible by using Digidelivery as an internal delivery system to the stage (it also allows you to send only the data you require). The internal network had been upgraded to 1000-base to facilitate fast transfers.

We bought fourteen 150GB, 15,000RPM drives for the recording sessions and fourteen 250GB LaCie D2 drives as transfer and backup drives, and let me tell you they were all high-on full by the time this project was finished. It was almost a full-time job to track the data and make sure that it was fully backed up. On that topic, with the amount of data produced every day (around 60GB per day for recording) it is impossible to keep tape backups of the data. So we were forced to use drives as short term backup, which is never ideal, but unless it exists in three places it does not exist, as far as I'm concerned.

One of the most satisfying aspects of *Happy Feet* was to hear how pleased John was with the sound of Trackdown and the quality of the musicians here in Sydney. The orchestra contractor, Alex Henery, was able to put together a group of musicians that were the equal of (in fact, often better than) the LA counterparts. The score is very complicated and rich, and often has very challenging music set to a regimented click that has to be adhered to because of synth material running alongside.

THE SONGS

Many of the songs were pre-recorded in various studios all over the US with a whole variety of performers over the period of time. These were then approved by George (and edited if necessary), and then given to über-engineer Bob Clearmountain to mix. Bob delivered upsampled 5.1 mixes of the tracks in 5.1-format stems for us to use in the final mix. A few of the tracks had

added orchestra that was then mixed into the mix sessions at Studios 301.

For the Beach Boys track, which is an original mono version, it was decided to see if we could add some extra parts so that it would sound good in the 5.1 environment without affecting the original sound of the track. This was then approved for use in the film – I was very happy with the results; it just makes the mix sound more expansive without detracting from the original song. It's interesting that at the end of this song it seamlessly segues into an orchestral cue – a great example of the amazing work composer John Powell has done on the score and song arrangements.

We also received the multitracks for the *Jump 'n' Move* song and were therefore able to do a much better for-cinema edit and mix of the songs. This is the best outcome for the artists and the film, but it is amazing how difficult it can often be to get hold of those multitrack files.

THE MUSIC MIX

The music was mixed at Studios 301 and we had a two-day period to set up the systems. The three ProTools systems and the Gallery Virtual VTR system were taken from Trackdown to 301 and installed with the Genex I/O and 48 outputs of Apogee I/O for a total of 152 inputs to the desk.

There was a 56-output ProTools rig for orchestra, a 48-output ProTools setup for songs and pre-lays, and a system for recording the 5.1 mixes and monitoring the stems as they were recorded. This was a huge undertaking by anyone's measure. With co-operation between the 301 staff and Trackdown, we had the whole system installed and working in one day, underscoring the need to plan ahead to make these things function as smoothly as possible. We purchased Gefen extenders to allow the computers to be left out of earshot in the machine room. (I must say that this should be the norm, too many control rooms now have the



EFFECTS & FOLEY CREATION

LET IT SNOW – They say Eskimos have 40-odd words for 'snow'; well, the *Happy Feet* sound effects editors had a similarly extensive vocabulary – soft snow, sludgy snow, crunchy ice... the list went on and on. And such was the attention to detail that the sounds you hear on the movie were recorded in many real-world environments – from Antarctica (yes, they did send someone down to Antarctica) to Thredbo – all painstakingly recorded and logged for the FX editors (Fabian Sanjurjo, Damian Candusso and Angus Robertson had the task of creating the soundscapes).

TUNED EFFECTS – Because *Happy Feet* is a musical, there were many instances where the

SFX had to be tuned to the music, to avoid tonal clashes. A good example is the beeper attached to Mumble at the end of the film. Not only did this have to match the tuning of the song, it also had to be timed to the song (more or less like a metronome). Then, in the mixing, it was weaved in and out to avoid it becoming annoying.

TAP TAP TAP – The tap dancing presented a particular challenge. Savion Glover, one of the world's greatest exponents of tap was employed as Mumble's feet. This was a terrifying prospect, as in most cases it was going to be a one-off performance that had to be captured on the spot. His 'instrument' is an American Oak floor, which was miked up using Countryman lapels

and a boom mic. The sound of 'tap shoe on wood' was then later transformed to 'flipper on ice' using Drumagog (a drum replacer application from Wavemachine Labs).

CROWDS – Often movie crowds can be generic background noise. Not so in *Happy Feet*. Given the penguins constantly move about *en masse*, the 'crowd' needed to take on a character of its own. For example, when you go to the Latino-like Adelie Land you get the exciting vibey crowds that underscore the party-like atmosphere. So although you may be concentrating on the dialogue, you do react to the crowd sound in a more emotional way. If you remove the crowds, the scene would seem empty

and lack the underlying emotional power. Things also had to evolve with the story – in the beginning the crowds were stuffy and as they join Mumble in his quest they change to reflect this.

FOLEY – John Simpson and Jason Hancock took care of the foley and though you may not notice it (good foley should never really be noticed!), John said that this was the most difficult job they've had. In animation, since everything has to be created from scratch, foley is particularly important. The flipper moves, from the walking on different ice and snow, to the movement of the bodies... it all help place the dialogue into the mouths of the characters.



The ProTools rigs in the Studios 301 machine room – yes, that’s nine Genex converters. (Below) Patching the rig into 301 was a breeze!

computers in the room making noise and, as a result, making it hard to distinguish low-level noise problems.)

Again the B&W speakers were brought to 301 for the mix and provided the LCR channels, with 301’s Genelecs taking care of the surrounds and sub. No bass management was used while creating the mixes. The final tracks were mixed to several 5.1 stems (Orchestra, Brass, Percussion, Synth, Choir, Lead Vocal, B Vox, for example) for final inclusion and editing in the sessions that would be used on the dub stage. Shawn used a Lexicon 960L as well as ProTools plugs for various verbs and FX, but for the most part there was little EQ or processing used on the orchestral sessions. George Miller popped in every few days to listen to the pre-mixes, and I have to say that there were almost no changes to any of the mixes, which is very rare.

THE FINAL DUB – FEET OF ENDURANCE

When you turn up to work on the final mix and discover a Winnebago in the studio carpark (hired especially for us to catch the odd 40 winks) you know you’re in for a torrid time. And so it was at Atlab for the final mix. The deadline was looming and the release was scheduled and would not be moved, so it was ‘all hands to the wheel’. The final dub mixers on the film were Phil Heywood, Greg Fitzgerald and Wayne Pashley. Again, many ProTools and Fairlight systems were employed to handle the huge numbers of tracks that fed the console. The film was mixed in Dolby EX – a first, I believe, for Australia. EX uses the older matrixed technology of Dolby Surround to create three tracks at the rear (LCR rear, in effect). This can be very useful in films that want to immerse the viewer with atmospheres. I’d worked on only one other film in EX, which was used to great effect in *Master & Commander: Far Side of the World*.

Converted analogue feeds of the music were fed into Atlab’s Harrison Series 12 console via high-quality D/A converters while all the dialogue, atmos and FX were fed from ProTools systems to the desk. We never did a comprehensive count of the maximum number of tracks but I would imagine it was more than 300. Nearing the end, the studio was being used round the clock creating M&E [Music & Effect] mixes for international releases and mixing the film during the day. Philmsound and Audio Loc were involved in the pre-mixing of the dialogue/FX/atmos.

There was a team of editors at Atlab including myself, Tim Ryan, Sonal Joshi, Nick Breslin, Angus Robertson, Rick Lyle and Jenny Ward who were conforming the material to the latest cut. The cut was continually changing right up to the last few days as the animation was completed and cut in, and last minute changes were made. It was during this period that

ProTools 7.2 became available and without the amazing enhancements that this provided for post with video, it would have been a lot harder to complete the job in the time allotted. Tim Ryan and I were specifically charged with looking after the lip (or beak!) sync and the tap sync. This was an enormous task. There were probably over 80 tracks involved in most tap sequences alone. Making sure the sync was good musically and visually was no mean feat. The same was true for all the FX and dialogue and I think the final result reflects the amazing work done by all departments.

THE END – ON ICE

When the film was finally on a plane winging its way to the various duplication houses in the US and elsewhere for foreign and domestic release, we all breathed a sigh of relief and retired to our various caves for a very well-earned rest. The success of the film is now a matter of record and it may indeed become one of the most successful films ever produced in Australia. This success was due to the unstinting work of many, many people (over 1000 people were credited on the final film roll) over a wide range of departments. I am particularly satisfied that the sound was completed in Australia with a largely Australian crew, illustrating once again that we *can* create work on a par with the best in the world. The fact that the score was done here (and how excellent it sounded) should put the world on notice that, given the resources, we can produce world-class work. Moreover, it takes people of vision such as George Miller who supports his teams ferociously and gives them the requisite freedom and resources to allow them to do their best.

In the last 12 months I’ve been fortunate to work on Phillip Noyce’s film *Catch a Fire* as well as *Happy Feet* and it’s been a very satisfying time both from an artistic and a technical perspective. I’ve travelled to South Africa and been fortunate enough to work with some of the most talented people on the face of the earth, and all I do is listen to music all day long! It’s a tough job but...■

POST SCRIPT: STEVE IRWIN – Wayne Pashley and I had worked on Steve Irwin’s feature film *The Crocodile Hunter: Collision Course* so there was a great rapport and Steve believed in *Happy Feet* because of its environmental message that echoed his beliefs that we must do something to save the planet and all its inhabitants. The last session that we had with Steve was at Trackdown three weeks before his untimely death. Steve really was as you saw him on TV: he was always enthusiastic, polite and worked tirelessly to get his parts right. It was a great blow to everyone in the production when we heard about the tragedy on the Barrier Reef. He will be sorely missed.