

## DVD Diary Part 2

DVD Production Diaries

by Richard Sargent

Part 2: Execution

So there we were, in March of 2007, putting the finishing touches to the DVD of *The Silent Years*, which at that point only existed as a virtual project on a computer software program. It was only now, with all the material finalised and imported into DVD Studio Pro, that we could assess exactly how much data would be going onto the disc. There are several different types of DVD (not counting the various +/-RW combinations of commercial blank discs). The main concern for us is the size, in terms of the gigabytes of information that the disc can hold. The simplest form of DVD is known as a DVD5 'single Layer' disc, and is 4.7GB in size. That translates as approximately 2 hours worth of viewing time (though as we will see later, this is by no means fixed). Standard size for professional movies and general releases is DVD9 'dual-Layer', which as the name implies is basically double; two layers one above the other. This is more often used commercially due to the duration of most movies and because it allows plenty of space on the disc for extra features, as well as making it more difficult to illegally copy.

Our initial intention when we set out at the beginning was to make a single-layer DVD. We guessed that was all we would need to hold the two versions of *The Silent Years*, a making of documentary, and photo galleries. Of course, these contents changed and grew as we worked on the project, and after a while as we kept adding more and more we decided that by using a dual-layer disc we would be free and unrestricted in what we wanted to do. Among other things this meant I could add about ten minutes more into the 'Divine Labour' making-of documentary, and we could edit together a 'Shot by Shot' guide to the film from scratch, rather than simply doing it as a voiceover on the main film.

And so, with everything compiled together, we found that even with all the extra features included we weren't in danger of filling a dual-layer disc. We were actually hovering somewhere around the 6GB mark. Simon took on the challenge of cutting our file sizes down wherever possible, to see if we could drop down to the 4.7GB single-layer size. We discovered almost by accident that the audio files we were using could be compressed quite considerably by putting them through Dolby, with no loss of quality. As for the visuals; by going back to the original video files, then re-exporting into Studio Pro using a lower bitrate, we could save a certain amount of filesize. It still wasn't enough though. After getting quotes from a couple of DVD replication companies we found that if you're dealing with large numbers of copies (over 500) the difference in cost between single-layer and dual-layer becomes less (about 10 percent of the cost per disc). We therefore decided to go with dual-layer even though we wouldn't be making full use of the disc space. And that's where the fun really began!

Having both taken time out of our lives to devote two days a week to *The Silent Years* special edition, it was now coming to the point where - after eighteen months on the project - it was time to step down somewhat. So from April 07 onwards our Hopewell Studios time became just one day a week; the pressure was on to finish this DVD. We had already burned a few discs containing only the Special Edition of *The Silent Years*, just as back up for the work involved (also gave us the chance to watch it through and catch any errors early on). Our first test burn of a disc complete with menus and extra content was on the 8th of May 07, and was purely to make sure all the buttons worked as they should. This was followed by several more, experimenting with various settings on the inbuilt DVD burner in our Mac system. For these early tests we deliberately left off the main documentary, since without it we could burn to a single-layer disc (blank dual-layer discs are much more expensive to buy than blank single-layers, and we knew that we would probably be getting through a lot of discs). There were a few issues with the disc navigation structure, and some alterations had to be made to certain

items. One of the recurring problems was the menu transitions, those brief clips of buildings and sets which act as a bridge between the main menu and the sub menus when the user activates the appropriate button. We would often find an unwelcome picture blackout for a split second before or after the transition, which was usually traced back to a single extra frame on the Final Cut asset itself, although sometimes a setting in Studio Pro was causing a jump upon button activation. Sometimes to our irritation we would find different faults in different transitions on separately made discs, despite them being burned from the same source. We had to remake all the transitions a number of times until we were convinced they all worked as intended, and on more than one occasion we were tempted to just not have them in at all. We would also often find assets inexplicably missing from a test disc, where if you activated the button the DVD would simply stop dead. Again, this would vary from disc to disc for no apparent reason, and made things unnecessarily frustrating for us. Things didn't improve with the use of different makes of blank discs; we experimented with various manufacturers and burn-speed types, as well as +R and -R. In the end we bought a completely new external DVD writer, only to find that this needed the 'Toast' authoring software in order to work, so we had to get that too!

You might think that once all the kinks had been ironed out, and we had some working single-layer DVDs, that we could get on and burn a dual-layer disc with no problems. Unfortunately this proved to be almost as frustrating and difficult! It took five goes just to successfully burn a working dual-layer disc, the first attempts having only managed to burn onto one layer out of the two. Even the discs that seemed to have gone okay would read as unplayable when put in a DVD player.

Time was marching on. We were now into August of 2007 and we didn't seem to be any closer to a finished DVD. It got to the point where Simon was seriously suggesting we produce a two-disc set (of two single-layer DVDs). But that would mean splitting the content across two discs, which would mean remaking all the menus again from scratch. I really didn't like the idea of two separate discs when all our material would comfortably fit onto one dual-layer, and so we decided to soldier on. After another dozen or so drinks coasters, and plenty of experimenting, we managed to burn a complete dual-layer disc that actually worked. We very carefully and thoroughly went through all the content to make sure that everything was in order on the disc. And, not wanting to delay any further, arranged a meeting with Visionmix Ltd, a DVD replicator in Sheffield. One of the first things we'd done with this master disc was to try it on as many different DVD players as possible, happily finding that it worked on all of them. Of course, the first thing our replicator did was put our disc into a TV/DVD combi in the meeting room, only to find a spectacular NOTHING happening!

With some technical advice from the guys at Visionmix we deduced that the problem was caused by us not putting a valid autostart function on the disc. For most DVD players it's not a problem, as they just look for the 'first play' asset and go from there, but certain low-end players need to be told by the disc to play it rather than just let it sit in the drive until activated. Back to the drawing board. This actually wasn't a total disaster, because it allowed us to make a couple of other minor improvements. For example, the font size of our 'Thousand Year History' text feature was a little too small to be clearly read on a TV monitor (as opposed to a computer screen, where it was created) so the text was redone slightly larger. Also, our PDF 'Notes for Teachers' attachment had been put on as multiple separate PDF files - one for each page. For ease of use we re-listed them all together in a single folder. Then of course we had to successfully burn a dual-layer disc of the revised project, and again go through all the material on it to make sure there were no errors.

On a second visit to the replicators we found that although the new DVD started okay on their TV/DVD combi, it proceeded to pause indefinitely at our copyright info at the beginning. We were advised to remake the copyright info as a track rather than a menu as we had it; again to avoid any complication in cheaper players.

November 2007. During all this time burning discs at Hopewell Studios and learning by trial and error about the creation of DVDs, I had been experimenting on my own PC at home. I was aware that a dual-layer disc can be copied down to single-layer with clever compression techniques using software such as Nero. Obviously the more data there is to compress the worse the resulting quality will be, but it does provide some flexibility of how many minutes of material can be put on the disc. With our master DVD coming in at only just over 5GB, and a single-layer disc being 4.7GB, I figured it was worth a try compressing it. After a few attempts I found that Nero, although fast and effective, was for some reason prone to getting certain buttons wrong; the compressed discs looked fine visually - almost indistinguishable from the master - but activating an alternate audio or subtitle track via menu button would just result in the standard default option being played. So instead I tried a program called 'DVD Shrink', which does a great job of compressing the disc content, and gets all the buttons right, but unfortunately has no option for including extra data files (such as the 'Notes for Teachers' PDF folder). This was getting silly now, but I was determined not to give up; I bought the 'Roxio' software package, and thankfully found that it managed to copy our master, complete with PDFs, down to single-layer with no problems. My only gripe was that unlike DVD Shrink I couldn't fiddle with the compression of each individual element on the disc. We had been sure to encode the main special edition Silent Years film at the highest bit-rate anyway, to preserve the picture quality, so it would be least affected by compression. As it happens, the compression quality for the

whole disc was about 97% of the original, which I thought was an acceptable level. Indeed, you certainly can't see any loss of picture quality on *The Silent Years*, which was the important thing, and you'd really be hard pressed to notice any difference anywhere else on the disc.

This compressed single-layer master was then checked all the way through to ensure the content was all there and everything was as it should be. There was only one minor issue, which was in the 'Shot by Shot' guide; some footage of the ruins at Fountains abbey has a slight vibration effect to it, but this is literally only a few seconds and was deemed not to be worth worrying about. The effect is most noticeable on the freeze-frame of the Gatehouse near the beginning. If you happen to be watching on a PC monitor though the effect isn't visible (it's a field rate issue).

We ordered a batch of 1000 DVDs in December of 2007, and due to the Christmas period had to wait a bit longer than the usual turnaround time. Obviously the more discs you order in one go, the cheaper it works out at per disc. For orders of less than 500 the DVDs are simply 'duplicated', meaning they are all literally copies of the master (and are therefore either +R or -R). Anything over 500 copies makes it worthwhile to use the more expensive 'Glassmaster' process, i.e 'replication' rather than duplication. The cost per disc is much less this way, saving money in the long run. But the major benefit of Glassmaster is that your finished discs are no longer exclusively +R or -R, they are compatible with both and therefore much more universally playable (still not guaranteed to work on every player - we were surprised to learn that complete compatibility is impossible!).

The finished discs were collected on 14th January 2008, and we then had to get our website overhauled in order to be able to sell the copies ourselves online, leading to the ultimate release date of 3rd March 08.

Almost forty test discs were burned during production of our master disc, but it was well worth it just to get that final master, which of course is identical to the many many replicated copies which now exist.