

Digital Virgin

Perception being everything, you're only as good as your last movie. Trouble is, what happens when you can't get your first movie made? This was the situation I found myself in after 15 years in the business and despite having a bankable enough CV - network TV credits, music videos, countless screenplays - I couldn't raise a dime for a short, let alone a feature.

It seems I am not alone, because for most aspiring filmmakers in the UK, rejection is the majority experience by funders, production companies and agents. Not that there's ever been any logic to the process. As career paths go, film-making is not the safest of bets; strictly speaking, you don't need qualifications and there's no two ways of getting into it. There's also little point bemoaning the fact your talent is over-looked and undervalued, because in the end it comes down to this you either choose to be a filmmaker or you don't. No-one was ever forced into a career in film. On the long and rocky road to becoming a filmmaker, most people cut their teeth making shorts. For me, making shorts was not an option in my view, shorts can be great calling cards, but apart from supplying broadcasters and internet film distributors with cheap product, their commercial value is negligible. Besides, there comes a time when a filmmaker has to prove their ability on a feature project. Easier said than done, when the industry wisdom believes that even with a string of shorts, a director is still regarded as a risk, untried, mistrusted and an obstacle to finance. Unless you have that all-important feature experience.

Your credibility can only stretch so far if you persist in calling yourself a film-maker without having made a film. Personally I didn't particularly want to squander my shot at a debut feature by making a camcorder movie, but in the absence of options, I had no choice. Now, having been through the process and having enjoyed the rave reviews and awards my movie received, the most important outcome for me is the psychological benefit that comes from the experience and the knowledge that, even with the limitations of budget and support, I was able to demonstrate my ability and to prove, through sheer determination and pragmatism, it is possible.

The digital camcorder - start-up or up-start?

Over the last five years the global film industry has become increasingly aware of the growing viability of digital as a means of acquisition, post production and exhibition for cinema. While the jury's still out on both its commercial and aesthetic merits, the rise of the digital movie looks set to continue. Yet in spite of massive investment in new forms of hard and software and with the first digitally-acquired features competing in the marketplace, conventional film industry wisdom remains sceptical in the face of the most radical shift in film-making to occur since the advent of sound. The term 'digital' has lately become debased, covering such a broad range of applications and items; cheap watches, computers, TVs, telephone systems, the internet, video, music formats, etc. The adjective 'digital' is simply used to describe a means of representing data as a series of numerical values. In electronics, a digital circuit is no more than one in which discrete input voltages control discrete output voltages. It may seem like more information than any filmmaker needs, but for anyone embarking on the digital filmmaking route, even a basic knowledge of how digital works is useful. In the new realm of digital cinema, what is interesting is that digital video developed out of broadcast technology. And while the emergence of the television medium was once regarded as a contributing factor in the demise of cinema in the late 40s/early 50s, television is now providing the technological solutions to the cinema of the twenty-first century. This convergence of media occurred in an unforeseen way when, in 1995, the Sony Corporation launched a new camera aimed at the consumer market. This was the DCR-VX1000, the first affordable, three-chip, digital camcorder. The result has transformed the medium, spawning an entire new industry.

The science part

Digital video has been around since the early 1980s, with huge, unwieldy apparatus requiring massive and

dedicated hard drive space to cope with the amount of high quality uncompressed data. Companies such as Sony, Quantel and Snell & Wilcox first developed industry standards to replace analogue (composite) video. The first industry protocol standard was ITU-R BT.601 - the professional standard to which all hardware had to conform. The advantage of digital over analogue was that the processing capability of the former provided a more accurate result which was theoretically repeatable - ie. with no loss over generations. Digital also had the advantage over analogue in the use of magnetic media, with less drop-out and alignment problems.

One of the most radical developments came with the first NLE systems, such as AVID. But the AVID system, operating on a Mac platform, required data compression at high rates and was therefore only suitable for off-line editing. With the development of faster processors and smaller, more capacious hard drives, accessibility became possible.

Sony, with other companies then developed the DV format from the bottom up, starting with tape formats. DV (as opposed to Digital) was invented as a completely new system intended as a consumer/domestic format. This resulted in a new, high density tape called ME - evaporated metal - and the creation of new recording/playback head technology - tiny heads mounted on a small drum rotating at 9000 rpm allowed what is known as segmented scan recording. The result was a tape format more compact than DAT which allowed for 60 minutes recording time. This became known as miniDV and proved better quality than existing analogue consumer formats.

Naturally this reduced tape size influenced the design of camcorders. But this development needed two changes to the existing systems - first, PAL video had to be remapped (Raster Transformed) to 4:2:0 components (or 4:1:1 for NTSC). Second, the data was compressed to about 5:1 using a DCT (Discreet Cosine Transform) based algorithm. By doing this, the manufacturers believed they had arrived at a system that would not compete with professional formats (eg. Beta SP). But as history shows, this was not the case, with the success of the VX1000, which was to become Sony's biggest seller of all time, selling in bulk to large companies such as the BBC, as well as to cash-strapped independent production companies - all looking to cut costs.

Light my FireWire

Improvements in tape and head technology were not the whole story. Further changes in the design and build of DV cameras were to have far-reaching consequences for the broadcast industry. Importantly, it was decided to make the compressed data on DV tape available as an interchangeable signal. This would have implications for the way data could be post-produced, by preparing the ground for low-cost desktop NLE systems, or 'AVID killers' as they have been described. Arguably the most well known and important signal interchange protocol is FireWire, which was invented by Apple to replace SCSI as a means of connecting disk drives, but was soon adapted as a data-carrier. FireWire is also known as IEEE-1394 and, after protracted legal argument, Sony's own version of this interface came to be known as i-Link. Unlike its analogue consumer counterparts, based on composite video, the video in DV utilises component colours. This means that DV is to a large extent compatible with professional video formats, most of which transform RGB (Red, Green, Blue) signals to luminance (Y) and two colour difference signals (Cr, Cb). DV uses identical luminance sample rates as 601, which means in terms of broadcast engineering standards DV is adequate for standard television needs. In other words, on current systems - say an ordinary composite TV screen - the quality of DV is near transparent for normal pictures. The one difference between DV and pro data compression systems is occasional artefacts but, compared to analogue, the absence of noise and drop-out damage is a revelation.

When drop-out occurs, DV takes advantage of the redundant area of television pictures. On a normal television picture, there is more information on screen than our brains can process. So when a lost block of information occurs, DV replaces the block from a similar portion of the frame preceding it, creating an invisible mend.

The data rates of the DV format (25Mbits per second) with the addition of audio and other data create a

signal, which when sent via FireWire (roughly 3.6MBytes per second) equates with the hard disk capability of most modern desktop computers. This enables the signal to be captured and/or printed to tape without the hard disk requirements - and therefore the expense - previously demanded by the 601 system. As a result, the last five years have seen a massive growth in the number of affordable NLE platforms designed for DV, and with the drop in price in hard disk space, this has made the process a matter of a simple file exchange, capable of creating perfect clones of the original DV data, and thus zero generation loss. This development has totally revolutionised the way video can be edited. Even the early AVID systems, because of data compression rates needed to 'squeeze' the information onto the hard disk space, could only perform off-line picture quality. Today, on-line, lossless video and audio quality can now be achieved at a fraction of the cost, with the addition of a huge array of effects, such as 3DVE, titling and Gaussian blurs available as plug-ins. Large corporations, realising they had to protect their interests in the professional market, went on to develop Pro DV systems. Two of these companies, Sony and Panasonic, created two new, competing formats, DVCam and DVCPRO, which were originally devised for ENG and documentary acquisition.

In PAL, whereas DVCam uses 4:2:0 component mapping, DVCPRO uses a 4:1:1 video codec. Basically this means that direct data transfer between DVCPRO and DVCam isn't possible - intermediate decompression is required. The Panasonic system also uses lower density MP (metal particle) tape, an older format than ME. To sustain data density the tape size is increased and the tape speed doubled. Panasonic thereby claim their tape is more robust than ME. DVCam, however, is closer to the original DV base.

Sceptics corner

It could be argued that Sony, by underestimating the impact of DV and the professional uptake of the VX1000 camera, paved the way for digital cinema. In developing a strategy for digital cinematography with CineAlta to create the 24P HD camera, Sony and their competitors are now positioning themselves on the pro digital cinema market and seeking to replace acquisition on film with tape. Whether or not they will succeed remains to be seen; Sony's launch of Digital Betacam in 1996, billed as 'Digital Cinematography' met with resistance and a degree of scepticism from film-makers working in cinema. Digibeta, with very few exceptions, never made it to the big screen, instead succeeding in cornering the market in high-end TV drama and documentary production as a replacement for 16mm.

If you've managed to get this far then you're probably wondering what this has to do with making movies. Marshall McLuhan once suggested that no medium graduates to highbrow status until a newer medium comes along to play the lowbrow role. The context was film versus television but could equally apply to film versus digital.

For all the lip service paid to the idea of digital film-making, there's an assumption that any narrative using the format means a low-budget, low tech aesthetic, usually involving DV camcorders. There's two ways of describing this - first, there's the fresh, raw energy that comes of technological liberation or second, the frantic, 'panning for gold' hand-held style involving long takes in the hope of capturing the 'moment'. It amounts to the same thing - an inherent inferiority as compared to film.

But any such assumption is wrong on several counts.

First, digital is not limited to DV and certainly not limited to camcorders. Second, there is absolutely no reason why digital should not be shot with the same rigour as 35mm. To assume the technology imposes a 'style' is erroneous. The truth is, technology can't make movies, only people can. But what's compelling about what technology can offer is choice and a certain creative freedom. Digital isn't about making movies cheaper yet it can. Talent will always cost, regardless of the format. For me, what digital afforded was the freedom to take what could have been another unloved spec script, getting it off the page and on the screen. That, and having the chance to change the perception of my work as a film-maker.