Digital cinema essay sample

Leitsinger, Miranda, Digital Technology Turns Artistic, AP Online, June 2, 2001

Digital technology has become part of our lives and most people have yet to reflect on its emotional, psychological or even aesthetic impact. Digital technology has become pervasive across media and has become really a very common technique for artists of all kinds to use in their work. The works — varying from sound to sculpture to video to drawings — display digital technology's wide range of use and expression, its innovative techniques and its bold artistic edge. Some of the most eye-catching works are indeed sculptures, created by using CAD, or computer files that allow for three-dimensional creations. The process is known as rapid prototyping.

The process involves using a laser, following the code outlined in the CAD file, zaps particles of powder — coated with photo emulsification — that bind together to form the sculpture. The excess powder falls to the sides. The artist never has to touch it. It can be printed out in another country in another city on the other side of the world. They can do anything at almost microscopic levels of detail as well that you would never be able to get or be very, very difficult to get with hand carving.

Jensen, Christopher, The more things change, the more they stay the same: copyright, digital technology, and social norms, Stanford Law Review, November 1, 2003 The advent of rapid reprographic technology and the computer have brought near chaos to the interpretation and enforcement of copyright law. The standard of " fair use" has become the subject of bitter debate between authors and publishers … and other users of copyrighted

materials. The copyright law is in the midst of revolutionary change. We are remaking our world as we adjust to networked digital technology.

The borders between legitimate and illegal behaviour are the subject of bitter dispute. What we have come to call the conventional entertainment industries–movie studios, music publishers, record companies–have declared war on the new digital media, and the courtrooms are battlefields. Copyright law, it seems, is particularly susceptible to recurrent episodes of " revolutionary" technological transformation.

As technologies change, the statutory injunction against copying remains the same: not quite " Thou shalt never copy," but rather, " Thou shalt not copy under certain circumstances and certain conditions." But when a new technology arrives on the scene, it rarely comes packaged with a clear-cut definition of what a " copy" is or what these " certain circumstances and conditions" ought to be. It is at the point that the lawyers and lobbyists take over and the engineers fade into history.

Thall, Larry, Standing out from the crowd: people labs rely on digital technology to set them apart, Photo Marketing, December 1, 2003 Prior to the digital revolution, professional school, wedding, and portrait labs competed largely on the basis of price and turnaround time. While still important, new technology is giving lab owners additional ways to differentiate themselves from the competition. Expectations are greater today, not only among photographers, but among their clients, too. In part, this is due to greater knowledge of what digital technology can do, and how long it takes to complete.

With the greater range of products and services now available, the consistency the Frontiers offer is of more importance than ever. So, while engaged in traditional competition with other pro labs, photographers recognizes ways in which new capabilities fragment the client base, thus motivating lab owners to be more creative in their product/service mix that appeals to what, in effect, is a niche-like client base. Each lab is not only trying to differentiate itself from other labs, but also recognizing and responding to the increasingly numerous ways in which the photographers on its own client list are trying to differentiate themselves from one another.

Kennedy, Joseph Out of film: digital technology has made the end of traditional filmmaking a virtual certainty, Print, January 1, 2005 At some point in the next decade or so, film is going to disappear from the scene, abandoned by professionals and amateurs alike in favour of digital technology. When that all-digital future does arrive, people will probably still speak of going to see a " film," and will no doubt still refer to the creators of these works as " filmmakers." But the one essential element–film–will no longer be part of the experience. For more than a century, " motion pictures" have meant exactly that–individual pictures on ribbons of celluloid, moving through the aperture of camera and projector, frame by frame.

Now they are rapidly becoming something different. Streams of data have already replaced reels of film in post-production, and digital cinematography and distribution are moving inexorably toward becoming the new industry standard. Digital technology is faster and more powerful than the mechanical technology it is replacing and is becoming more cost-effective.

While digital media brings its own set of handling and storage issues, it isn't subject to the decay that film preservationists are working so hard to undo. In fact, digital restoration has helped ensure that the surviving films of the 19th and 20th centuries will be available for posterity–in some cases looking crisper and more luminous than when they existed only on celluloid.

Bell, Sally, Entertaining prospects: advances in digital technology will help turn supermarket video departments into entertainment centres, Supermarket News, May 8, 1995 Improvements in, and greater public acceptance of, digital video technology has the potential to transform supermarket video tape rental operations into full home entertainment centres. Supermarkets could find a lucrative niche in renting and selling digital video products, including digital video disks and CD-ROM software.

The supermarket video landscape is changing. On the horizon comes sophisticated digital technology – digital video disks, or DVDs, and CD-ROM (compact disk read-only memory) software – in various formats and platforms. This technology will turn supermarket tape departments into complete home entertainments centres, observers predict.

In the supermarket home entertainment centre of the future, video sections will expand substantially to accommodate the new entertainment. Both video disks and video tapes may be merchandised side by side in such a centre. The concept also would integrate interactive multimedia with other related entertainment and information products such as audio books, computer software, CD music, magazines, books and video games.

2. Digital Technologies In Hollywood

Hollywood being a star-making machine above all else, it was not surprising that the buzz on 2000's release of Cast Away was all about the weight Tom Hanks gained and then dropped to give life to his character's years of privation. The real magic behind the film was not revealed until much later-that the island peak over which the hero clambered was a mud pile overlooking a California parking lot, and that much of the tropical environment seen on screen, from breakers to mountaintop, had been fashioned inside a computer.

Any shot that had ocean or sky in it was a special effect. The film's software-generated scenes not only featured action and compositions that would have been impractical and expensive to shoot on location, but also contained elements such as windstorms and enormous waves that are virtually impossible to create in the real world.

That a tropical island could be manufactured so seamlessly out of pixels and algorithms testifies to the ascendancy of digital technology in Hollywood, where it has all but superseded the optical and photochemical manipulations that were state of the art as recently as 10 years ago. It is no secret that 3-D digital processing is responsible for some of the grandest effects of modern blockbusters, beginning with the dinosaurs of Jurassic Park and leading up to the careening space runabouts of Star Wars: Episode II-Attack of the Clones.

But what is more remarkable is how thoroughly digital technology has taken over film editing, color adjustment and other components of the socalled postproduction process-including the subtle alterations, such as the erasure of television antennas from period backgrounds and support cables from

acrobatic stuntmen, that lend verisimilitude to everything from drawing-room pieces to psychological dramas. (Hiltzik 20)

Without most moviegoers' noticing, digital technologies have been slowly supplanting film-based processes that have been used since the 1920s. The movie industry now spends roughly half a billion dollars per year on visual effects-almost all of them digital. At many postproduction houses chemistry labs have given way to programming carrels in which computer science graduates write algorithms that will eventually simulate the wash of waves on a beach or the separation of a Saturn V rocket from its Cape Canaveral gantry-artists working in code rather than pen and ink.

And today there is scarcely a film lab in Hollywood that does not offer digital services-up to and including the restoration of archival films-to its industry clientele along with traditional developing, color timing and print services. One of the fastestgrowing business lines at Technicolor, which pioneered the first two-color photochemical process in 1916, is the digital scanning of film prints in order to insert visual effects.

Kodak, which sells some 80 percent of all the film stock used in U. S. movies, has hedged its bets by opening Cinesite, a Los Angeles– and London-based subsidiary that has become one of the most important and innovative purveyors of digital services-such as digital editing, special effects, and the creation of digital master copies of negatives and prints-to moviemakers. (Halpern 6)

But while large-scale digital modification of images is already rife in Hollywood, it has its limits. Clean digital files and hidden microchips haven't

quite replaced reeking photochemical emulsions and temperamental celluloid stock, and the unalloyed enthusiasm many filmmakers felt for the new technology just a couple of years ago has evolved into a mature assessment of it as one tool among many, both novel and traditional. Directors and cinematographers who have worked in the new medium have generally found that its flexibility, while valuable, also comes at a steep cost.

Roger Deakins, an award-winning cinematographer who used digital technology to great effect in creating the distinctive look of the Joel and Ethan Coen Depression-era film 0 Brother, Where Art Thou? Deakins and the Coen brothers were determined to evoke the Dust Bowl by giving the whole film the faded look of an old-time picture postcard. This involved, among other effects, transforming the lush greens of vegetation into a sere tobacco-yellow in the film's exterior shots.

While the judicious deployment of lighting and lens filters would have had the same effect, it would also have given other colors, especially skin tones, an unnatural tint. Instead, Deakins shot the entire film conventionally and had his negative digitized at Cinesite, where technicians then helped him tint out the greens without affecting the rest of the palette by adjusting the digital values of the pixels in each image-much the way audio engineers can boost the bass of a recording without changing the treble or midrange. (Lessig 297)

Although the process sounds straightforward, it was much more demanding than conventional photography. Among other things, Deakins realized that he should invest his negatives with the most highly saturated colors possible,

to give the technicians the maximum amount of information to work with during the color correction process. At Cinesite, he supervised the alterations like a mother hen watching over her chicks. Because of its very power, digital color correction demands particular watchfulness.

Such so-called digital mastering (the conversion of a sequence or an entire film to digital form) is useful only in special circumstances-as when striving for an effect that cannot be reached through conventional means. A digital master was also used in the postproduction of Sony's summer release Stuart Little 2, since almost every frame includes the film's title character-a mouse created entirely in digital form-or one of his digital pals. Today's filmmakers must master not one technology but two-and then be willing to spend long hours bridging their incompatibilities.

The best way to grasp the degree to which digital technology has infiltrated moviemaking is to partition the life cycle of a feature into three phases: image acquisition (known in simpler days as " photography"), postproduction and exhibition. Electronic technologies have made remarkable progress on some of these fronts-but overall, cinema has not changed as much as expected from all the buzz about digital movies.

Most principal photography is still done on film, despite George Lucas's decision to shoot Star Wars: Episode II entirely using digital cameras. Cinematographers agree that digital hardware is getting vastly better, aided by the emergence of the so-called 24p process, which allows highdefinition digital video to be shot at film's 24 frames per second, rather than the roughly 30 of conventional video (thus eliminating the need for complicated

adjustments of frame rates). But even the best digital imagery still does not approach film's resolution and dynamic range in terms of color and contrast. (Frenzel 208)

At the other end of the production process-your neighborhood movie theater-digital technology has barely made any headway. As of this summer only 100 or so of the country's 35, 000 screens were equipped for digital movies-whether downloaded via satellite or spooled off high-density digital discs resembling DVDs. Those that were used a Texas Instruments system based on arrays of microchips, each with about a million microscopic mirrors that pivot toward or away from the screen thousands of times per second.

Digital projection is jiggle free, and unlike film projection, it doesn't degrade the print with every showing. But in part because digital projection does not create as unmistakable an improvement in the viewing experience as, say, the talkies did over silent films, theater chains are unwilling to foot the bill for the new projectors, which cost at least $100, 000 per screen and might have to be upgraded every few years. Conventional film projectors, which last 20 years on average, cost $30, 000. (Elsey & Kelly 171)

Still, almost everyone in Hollywood agrees that in postproduction, digital is well on its way to becoming the state of the art. Film editing today is done almost entirely through virtual cutting and pasting on video screens, which replaces the tiresome manual method of slicing up celluloid film strips and splicing them back together with tape. Special effects-everything from plane crashes to acrobatic stunts to alien life forms-are now customarily computer

generated, thanks to software tools like Pixar's RenderMan, or like Maya, perhaps the most widely used application for 3-D imaging.

The product of Silicon Graphics subsidiary Alias|Wavefront and a direct descendant of the program that produced the dinosaurs of Jurassic Park in 1993, Maya is esteemed by digital-effects teams not only for its comprehensive scope and power, but for its compatibility with the special-purpose " plugins" (mini-programs that interact with and enhance the main software) that special-effects departments often devise to meet particular needs on feature projects. It is not unusual to hear visual-effects artists comparing the merits of, say, the ocean effects plug-in Imageworks devised to generate the breakers and swells in Cast Away and the one developed by Warner Brothers for The Perfect Storm. (Hartwig 192)

Even more remarkable is the extent to which digital artists are using their tools to give life to animated characters. Every year brings improvements in the rendering of movement and organic textures like skin and hair. Software engineers might be deployed to work on the effects for a single film, others on software that the firm will use on dozens of projects. Some of these, such as code writers and database specialists, can be found in any highly computerized organization; others, the more artistic, have expertise that can only be found in a facility like Imageworks.

Radical Technological Change Represents A Challenging To Firms And The Governments

The film industry in the UK is changing rapidly. Deregulation and the introduction of new technology will have serious consequences for the

future. Digital technology in particular will transform film production. This paper analyses the effect of digital technology on small businesses in the UK film industry. The UK is chosen as a case study as it has a vibrant small business sector producing films.

The media industry is seen as one of the fastest growing sectors in the UK economy (Economist, 1998). However, the media industry is still one of the biggest export industries in the UK and provides an environment for fast growth companies (Harrison and Taylor, 1996). Smaller businesses in the film industry are often seen as `lifestyle businesses' and little attention has been paid to small businesses in this sector.

Several studies (Cambridge Small Business Centre, 1992; Westhead and Storey, 1997) have found that there is a relationship between the use of technology and growth in small business and that firms that are innovative and continuously developing new products are the most likely to grow. The flexibility with which small firms can adapt to new technology may provide them with a competitive advantage. DiPiazza (1997) has argued that smaller independent production companies may in fact be relatively better positioned to survive in an increasingly competitive marketplace.

Bill Gates (1999) states that business is going to change more in the next ten years than it has in the last fifty as a result of digital technology. Intense competition to supply digital programs is expected to lead to a price war. This market is increasingly consolidating into a single link into the home that will provide film, telephone and access to the internet via a single supplier.

Following the 1980 Broadcasting Act, a new production company is established in London to make all foreign-language films on one channel at peak times. By 1985, S4C listed 40 companies who are supplying them with films and facilities. The size of these companies ranged from the small (3-5 staff), medium-sized (5-15 staff) and large (over 15 staff), and S4C estimated that 750 program production related jobs had been created in London (S4C, 1985).

Black (1988) found that independent film production had developed rapidly in the years 1982-88, and that a section that is virtually non-existent in 1980 had grown to sixty companies by 1988. By 1996, more than one hundred companies are producing films in London. The majority of these are supplying S4C and other broadcasters. The London Media Survey (1994) estimated that the handful of people in 1982 had grown to a workforce of between 2, 350 and 2, 600 employees, of whom 1, 900 are employed on a permanent basis and 425-500 as freelancers.

The 1996 Broadcasting Act provided for the setting up of new digital terrestrial film services in the UK, and the eventual discontinuance of existing services in analogue form. The new digital technology will be phased-in, and UK broadcasters including S4C will broadcast a digital service simultaneously with the analogue service until the eventual discontinuation of analogue. S4C has linked up with ITN and Turner Broadcasting System, part of Ted Turner's CNN media empire, in order to capitalize on commercial freedom provided by digitalisation.

The majority of the companies in the survey are very small and 77 per cent employed less than 10 people with 91 per cent employing less than 20 people. 5 per cent employed between 21-30 people and 2. 3 per cent employed 31-40 and over 50 people. The majority of the firms, 68 per cent, had a turnover of less than £2 million. 49 per cent of the companies had a turnover of less than £0. 5 million and 68 per cent had a turnover of less than £1 million. 21 per cent had a turnover of between £1 and £2 million and 10 per cent had a turnover in excess of £2 million.

Although a large proportion of the firms intended to produce programs for digital film, there appeared to be some uncertainty with 59 per cent of the production companies and 35 per cent of the supply companies being unsure or disagreeing with the statement that digitalisation is likely to provide more opportunities for them, although the additional broadcasting hours for digital film means that there will be increased opportunities in the long-term, many of the respondents are uncertain about the short-term. One of the problems is the perception that only the larger firms will be able to achieve the economies of scale required for digital film making.

Fifty two per cent agree or agree strongly with the statement that digitalisation will open up new markets for them. Only 40 per cent of the supply companies express the same level of optimism. It is possible that the supplier companies are less certain of their future as a result of digitalisation as the emphasis on cost may lead companies to vertically integrate and provide the production facilities usually provided by the freelancers and facilities companies themselves in-house. A few companies have already decided on this course of action.

Keeping up-to-date with technological advances in the field of digital film must be a daunting task for a small business owner/manager in the London media industry especially given the fact that they are unlikely to have had a technical education. This lack of training in the technological advances in the field is likely to increase the uncertainty. S4C held seminars in order to inform the independent film producers about digitalisation but 56 per cent agree or strongly agree that more training is needed.

Fifty five per cent of the film production companies are unsure about whether digital film is a good idea indicating that there is a lot of uncertainty concerning digital film. The main problem with digitalisation is that many of the smaller companies do not understand digitalisation. Some of those responses indicate that digital film is not the way forward and other technological advances will overtake digital technology.

One of the problems mentioned is the fact that it is necessary to buy a separate decoder and the fact that geographically remote parts of the country, including large parts of London, will not be able to receive digital programs. These problems have been largely overcome with the supply of free decoders. Nevertheless, these concerns reflect the fact that it is difficult, particularly for smaller firms, to keep up with developments and many of them prefer to wait until something is proven before they make an investment.

There is a certain amount of cynicism on the part of the small business owner-managers and many feel that new technological developments are being used by large customers and suppliers to save costs, usually at their

expense. Large customers and suppliers can require that smaller companies comply with their requirements and this can lead to resentment.

The smaller companies feel especially vulnerable to changes in technology, especially those which are imposed on them. Some are uncertain about their future and feel that cost savings are being introduced under the guise of technological changes. The pressure of digital film may encourage larger companies and may force the smaller companies out of business or to join forces with larger companies.

There is a difference in attitudes towards digital film among the owner-managers. Some are enthusiastic and look, for new opportunities such as the development of new technology including virtual reality, new production opportunities, etc.

The small businesses which embrace the changing technology and adapt their businesses to the requirements of the new technology are more likely to survive and grow. The increasing pace of technological change in the form of digital technology is having a major impact on small businesses in the media industry. Digital technology is likely to provide both a threat and an opportunity for these small businesses and their survival may depend on their ability to adapt to the changes taking place.

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