University *of*
Hertfordshire

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Facing the digital future

3rd Edition October 2007

Digital Technology and the Film Industry

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A Film Industry Research Group (FIRG) Report

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Contents

1. Foreword

Catching the digital Cheetah

Technology is moving fast. When we started to work on the third edition of our film industry report, our first thoughts were that we needed to change the title from "Facing the Digital Future" to "Facing the Digital Present". Digital technology is everywhere today. In fact we are so used to digital technology that "digital" itself is becoming an obsolete prefix – new technology is expected to be digital, no need to mention it anymore. In this respect, "new digital technology" almost sounds like a threat, a paraphrase for "buy new equipment, the one you bought last year is outdated". This is why we have written this report, to remind you that digital technology is all about making your work easier and reaching new audiences, thus creating more free time to concentrate on what we are all in this business for: being creative and making money.

Whilst writing and editing this report, we have sometimes felt like a documentary filmmaker trying to capture a running cheetah at full speed. As the most important thing for documentary filmmakers and report editors alike is that you, the audience, see the big picture, we have decided to use a very "wide lens" for this report. We have tried to cover a range of important issues, from digital cinema to podcasting, from VoD to new 3D post-production techniques. We have done this not from an evangelist point of view, but with the aim of providing a solid starting ground for you to explore some of these issues further.

In a change from earlier editions, we invited the filmmaker Richard Jobson to share with us his view of the future (see Appendix 1). Richard was formerly lead singer with the art-punk rock group, The Skids. In the 1990s he began a career as a film director, producer and screenwriter. Jobson has directed three feature films: Sixteen Years of Alcohol (2003), which was based on his novel The Purifiers (2004), and A Woman in Winter (2005).

This report is a snapshot of the film industry at one particular moment in time. It aims to raise awareness of issues related to areas of your business that might affect you in the future, and contribute to a better understanding of your own position in the film industry value chain. As digital technology is changing the business environment in general, it also observes changes in areas that transcend the core business of the film industry, thus anticipating forthcoming challenges.

Our business is to turn these challenges into chances by replacing uncertainty with information. We hope that after you have read this report, you will have a clearer understanding of what is going on out there, and that you will become part of it. In this respect, we are looking forward to writing about you and your company in our next edition!

So long,

Nigel Culkin & Norbert Morawetz, October 2007

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PS: The Roadmap opposite sums up some of the impacts of digital technology on the film industry value chain that have occurred in the last few years, and provides an outlook for forthcoming change. The areas covered by our report are highlighted with a blue box, showing the appropriate page number in the report.

Digital Technology & Film Industry Roadmap

"Digital Slices between Analogue Bread" **TRADITIONAL** Traditional Business Models	"Digital Workflow" **EVOLUTION** "Organic" Development of Business Models	"DigitAll" **REVOLUTION** New Models and Business Strategies

TV

Capture on Film for High Budget Production	Digital Capture for Low Budget/TV
Digital Postproduction/ Digital Intermediate	
Transfer to film	

Tapeless Workflow

Digital & Analogue Capture
Digital Postproduction/ Digital Intermediate
* Transfer to film	Digital Master **1**

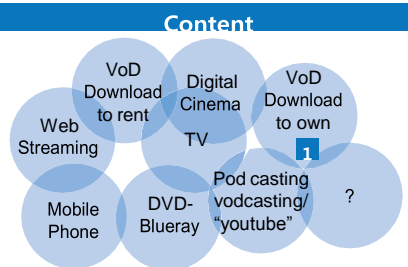| Full Digital Production Palette |
|---|
| Producer | User Generated Content **3** |

Distribution

Sequential Release/Exploiting windows Marketing Blitz/Wide Release or Platform Strategy Market dominated by US Studios

Day and Date Release to curb Piracy, Timelags between windows are shortened D-Cinema lowers barrier to entry to theatrical distribution, Potential leverage for independents **2**

Simultaneous Release/Hybrid Release/ Multiplatform/Viral & Open source Marketing/User Self-Distribution by Producers and Users, New Content Aggregators **5**

Exhibition/Windows

Film
Cinema 35mm
VHS/DVD Rental and Sale
Pay -TV
TV

Film	
* Cinema 35mm	**2**
* Digital Cinema	
DVD: Online Rental and Sale	**4**
DVD: Online Rental and Sale	**4**
VoD	

Content

VoD Download to rent — Digital Cinema — VoD Download to own **1** — Web Streaming — TV — Mobile Phone — DVD-Blueray — Pod casting vodcasting/ "youtube" — ?

Environment

Barriers to Production eradicated	Barriers to Production eradicated	Low or no barriers to production and distribution

Yesterday	**Areas covered in Report**	**Tomorrow**
Sequential Distribution Orientated Economies of Scale Mass Market Closed controlled System	**1** Digital Production p.1 **2** Digital Cinema p.7 **3** User Generated Content p.2 **4** The Growth of Home Cinema p.2 Video on Demand 4 **5** Covered in Reports	Simultaneous Consumer Long Tail Mass Customization Open System

Created by Norbert Morawetz 2006

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2. Executive Summary

Introduction

After transforming content production, the digital frontier has now moved on to distribution, an area that has previously been under the control of major and specialised distributors, broadcasters and home entertainment retailers. However, this previously stable world is in a state of flux: cinema distribution has been utterly transformed by the introduction of digital projectors to cinemas. Business models have been turned upside down by experimenting with release strategies. Established and understood channels of distribution such as television, pay-per-view, or DVD are either complemented or partly substituted by new emerging delivery channels. Moreover, distribution increasingly is less about delivering content as about providing content and letting (or making) consumers find it themselves.

Digital distribution thereby reduces the distance between consumers and producers. It speeds up consumer response to product, and makes demand more immediate. In cinemas, digital distribution means that films can be exchanged easier between one another. On YouTube the next clip is quickly selected and played, if the present fails to entertain. Those who can not supply their product instantly (on multiple platforms) miss out on a growing business in the best case, or find themselves out of business in the worst.

Even though it is not always clear how revenues will be generated and, more importantly, shared from the new distribution windows, a healthy amount of experimentation can be recommended for any business. While it certainly would be a waste of time to try to ride the bandwagon of every new hype, smaller players especially need to keep a watchful eye on developments in the distribution area – as it is here where revenue is ultimately generated. The lesson to be learned from this report is, therefore, not so much about technology, but that distribution cannot be ignored. Big companies are already staking out their digital claims, especially when it comes to building technical infrastructure. But in a cost-efficient online environment, smaller players now have plenty of opportunities to circumvent costly middlemen.

With regard to strategy, the capability of companies to "stretch" their resources and their core business across the new distribution platforms will become a key factor of success. Packaging and re-packaging an existing product for new audiences in order to achieve economies of scale will, therefore, become equally as important in the audiovisual industry as creating new, exciting products. The monitoring of developments and competitors is here, but this is only the first step of adapting to change. In order to stay ahead of the game, companies need to develop scenarios that will help them to direct their operative plans and commit resources efficiently in advance. Although the digital world has promises us that we can learn everything quickly and, if necessary, even on the spot, the timely development of professional skills and expertise will remain vital.

Digital Cinema (Theatrical Distribution)

The number of digital screens has grown exponentially on an industrial scale over the last twelve months, with the United States clearly ahead. A new business model based on virtual print fees (VPFs) is promising to solve the "who will pay for the digital transition" dilemma. In the UK, the Film Council's 240-screen Digital Screen Network (DSN) has been completed and has already made an impact on the distribution sector. To combat piracy and to re-juvenate the cinema experience, high profile Hollywood directors are promoting copic (3D) cinema, empowered by digital projectors. A new post-production technique can convert any 2D film into 3D, which is going to make an impact in the industry with back catalogue releases of cult-classics.

User Generated Content

User generated content (UGC) is booming on the net, bypassing both traditional production and distribution. Podcasting is a new form of distributing content using a mixture of push and subscription. As audiences become familiar with different kinds of media, consumer habits will therefore change rapidly. Existing advertising models need to adapt to smaller niche audiences, as so will producers. New content aggregators on the web, such as youtube.com, attract large audiences and are windows to showcase talent whilst developing online audiences. Short clips are becoming the dominant format of content.

The Home Cinema Market

Growth in the DVD market is slowing down due to limited shelf space, oversupply and an increasingly fragmented audience. High definition (HD) is heavily promoted by the consumer electronics (CE) industry. A standards war between Blue Ray Disc (BD) and HD-DVD will result in the next generation disc for HD delivery. Online DVD rental is growing fast, but is already challenged by Video on Demand (VoD) and download-to-own over Internet.

Video On Demand

Video-on-Demand (VoD) over the Internet, that is online distribution, promises to empower independent producers through Long Tail economics (see appendix). Innovative release strategies are questioning the traditional film industry business model. While the US leads the way, producers in Europe follow a wait-and-see policy until there is more certainty regarding online rights.

3. Digital Cinema

3.1 Business Models for D-cinema

Digital cinema (the digital projection of content as opposed to 35mm analogue film projection) has been heralded as the biggest change in cinema exhibition since the introduction of sound. But making the transition to digital (replacing analogue projectors) has turned out to be a far more complicated and lengthy process than early enthusiasts had initially proclaimed. With most of the technical issues (resolution, reliability, encoding and encryption) resolved through the DCI specifications (Digital Cinema Initiatives, LLC – a joint venture by Warner Bros, Sony Pictures, 20th Century Fox, Disney, Paramount, Universal and MGM) published in June 2005, the focus of the debate has now shifted to creating a viable business model.

While costs have come down, the price for a DCI compliant d-cinema projector is still in the $70,000 price range – far exceeding what small cinema operators can afford. Exhibitors have clearly argued their position that those who benefit the most from the transition, namely film distributors and the big studios, should pay for the new equipment. It has been estimated that the Hollywood Majors could save up to $1 billion a year through digital distribution[1], through savings on prints, post-production and logistics, once their operations are completely digitised.

The studios, on the other hand, have been hesitant about funding transition costs so far[2]. A reason for their reluctance might be their fear of losing control over distribution and what gets shown in cinemas when the cost barrier of 35mm prints is eliminated. Right from the start, digital cinema has been advocated by policy makers, vendors and industry professionals to empower independent producers and distributors. Hence, studios have little incentive to pay for a costly transition if free-riders can reap the benefits.[3]

Commercial roll-out, led by a third Party – Virtual Print Fees

Bolstered by recent successes in the US, the business model based on the mechanism of "virtual print fees" (VPF) proposed by third party players such as Technicolor or Christie/AIX has recently come to be seen as the "way forward" by many international players.

Under this model, a third party player funds the upfront equipment costs for the exhibitor. Distributors then pay a "virtual print fee" to exhibitors for every film booked. These virtual print fees and additional revenues through showing alternative content are then used to repay the third party financier over a period of 8-10 years, who is also guaranteed a steady supply of titles in digital from the studios, with exhibitors gaining ownership of the equipment after the lease period.

VPF in Action

A sample model of VPF assumes for instance that a digital screen will show around 16 different films a year, with a turn over rate of 3.25 weeks. Given a utilisation rate of 80% and a VPF of $700 dollars per booking of a film, the distributor makes a contribution of nearly $9,000 a year towards funding equipment costs. Adding a further $2500 approximately as contribution from the exhibitor and revenue from alternative content, the VPF scheme needs to be operated for nine years to repay projector costs (assumed to be $80,000 plus $5,000 financing costs).

Third party players have built their businesses on access to finance, expertise in digital cinema mastering, distribution and installation, as well as a certain market clout/linkage with manufacturers.

The most successful venture to date based on the VPF mechanism is a partnership between projector manufacturer Christie Digital and cinema software and service provider AccessIT (AIX). The Christie/AccessIT partnership has backing from Warner Bros, Twentieth Century Fox, Dreamworks, Universal, Sony Pictures, Paramount, MGM, New Line, Lions Gate and Disney to supply content, and plans to deploy 4,000 digital systems in the US within the next two years. The biggest contractor of the partnership is the third largest cinema chain in the US, Carmike Cinemas, which plans to convert up to 2,300 screens to digital.[4][5]

The system of virtual print fees is also central to Technicolor Digital Cinema (TDC)[6] (owned by Thomson), which has recently struck a deal with international cinema chain National Amusements to install digital cinema systems in more than 1,500 screens in the US, the UK, Latin America, and Russia. TDC is currently field testing digital cinema in the US and plans to roll out on a larger scale in late 2007 or early 2008.

Exploring

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[1] *See also Culkin, N., Randle, K. R. & von Schowski, P. (2003). Facing the Digital Future: The Implications of Digital technology for the Film Industry. FiRG Report, November.*

[2] *Although Disney has converted some 80 screens to digital in the US for Chicken Little.*

[3] *For a detailed discussion of the problem see Culkin, Morawetz and Randle (2006). Digital Cinema as Disruptive Technology:*

New Business Models in the Age of Digital
Distribution. In van der Graaf, Shenja ed) Information
Communication Technologies and Emerging Business
Strategies. (2006) Idea Group Inc.

4 http://www.christiedigital.com/

5 http://www.accessitx.com/christieaix.html

6 http://www.technicolor.com/Cultures/En-
Us/Locations/ North+America/USA/CABurbank/
BurbankDigitalCinema.htm

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Although no third party player is involved, virtual print fees will also be integral to the d-cinema strategy of US cinema chain National CineMedia (NMC), which is owned by three of the largest US cinema circuits (Regal, AMC and Cinemark) and jointly operates some 14,000 screens in 1,100 cinemas across the US.[7][8] After the stock market floatation of NCM, the three parent exhibitors set up Digital Cinema Implementation Partners (DCIP) together with Warner Bros. and Universal [9] (more studios could not join due to anti-trust regulation in the US), which will raise a $1bn investment fund and select technologies, distribution platforms and build open systems that will allow the three exhibitors to migrate most of their screens to digital between 2008 and 2010.

In addition to the above formal third party integrators, a 'virtual' third party integrator has appeared in North America through the formation of Cinema Buying Group (CBG), which is an association of small and independent cinema owners in the US and Canada. By working together, they hope to have leverage in negotiating prices and terms with equipment manufacturers and distributors.[10] With a total of 4,000 screens the CBG, it is effectively North America's third-largest exhibitor by size and serves as an example of the digital strength that exists in numbers for even the smallest cinemas.

VPFs and Europe

At the moment the VPF model works well in the US, which is a large, homogeneous market dominated by Hollywood products, has a very high multiplex penetration and a very low number of single screens. Europe, on the other hand, is a highly fragmented market, with strong independent distributors, a high number of single screens, a higher turnover of titles and a varying market share of US product. In order to make the VPF model work in Europe, it therefore needs to be adapted to the requirements of each individual country and its exhibition/distribution infrastructure. The virtual print fee will thus vary from country to country and payback periods will also vary.

One of the major flaws of the VPF mechanism so far is its lack of integration of independent producers and small cinema operators. An independent film distributor, whose film gets booked into a cinema for two days a week (and not the 3.25 weeks assumed for a Hollywood film), will

simply not be able to afford to pay a VPF per booking, and certainly not the same amount as a Hollywood studio. Likewise, as even art house cinemas rely on Hollywood fare, small exhibitors might find themselves raising their percentage of US films in order to meet their payback requirements.

The VPF model also cancels out second-run cinemas, as it does not yet include an alternative to the well established business model of used film prints. It is also worth noting that even a large percentage of first-run releases of US movies in UK and Europe uses so-called 're-juvenated' prints from the earlier US release. Because these have already been paid for once and the shipping and cleaning cost of them is relatively small, there is little, if any, money to be saved or had in terms of a VPF for such prints. Other important issues regarding VPFs are the uncertainty of how long the scheme will be operated, and how the system will work if they are discontinued.

All these problems were highlighted in the announcement of Europe's first VPF deal, when Arts Alliance Media announced in June 2007 that they had agreed a non-exclusive VPF deal after a marathon 18 months of negotiation with two Hollywood studios (20th Century Fox and Universal) for a 7,000 digital screen deployment across Europe.[11] Yet, before the deal was announced, the details unnerved smaller cinema owners, as reported by the Hollywood Reporter from the RAAM conference.[12]

Deans, however, admitted that the VPF agreement currently in place will be "less suitable for second-run cinemas because the VPF changes over time".

This surprised independent exhibitor Gerald Parkes of Parkway Entertainment, who said he was under the impression that one of the main reasons for moving to digital was to level the release date playing field. There was now no fiscal excuse not to supply a film at the same time to all exhibitors, he added.

"That is the fundamental point; there is no point in spending money on digital if you are not able to trade on a level playing field," he said.

8   [7]   http://www.ncm.com/

[8]

http://www.digitalcinemareport.com/thebigpicture_80.

html

[9] *http://www.variety.com/article/VR1117960499.html?categor yid=1 009&cs=1*

[10] *http://www.cbgpurchasing.com/*

[11] *http://www.artsalliancemedia.com/pressrelease/PressRelease_ Fox-Universal.html*

[12] *http://www.hollywoodreporter.com/hr/content_display/inter na- tional/news/ e3i15aa0e6c16d78786e69e107e125a74f1*

The deal was also criticised by John Fithian, the head of the National Association of Theatre Owners (NATO), for trying to rush cinemas into making the digital switch early or risk missing out on generous VPF terms.[13]

The problems of a European VPF solution are also highlighted in the fact that, in the 12 months since Technicolor Digital Cinema announced a plan to roll out digital cinema with Belgian cinema major Kinepolis,[14] it has not been able to close or announce any VPF deals for its first and to-date only European deployment. Contrary to initially announced plans to expand internationally before the end of 2006, Christie/AIX has also not announced a single deal for installations outside of North America as of mid-2007.[15]

3.2   The DCI – Specifications – A technical Lock-in?

The early years of digital cinema (see previous reports) were characterised by a search for an industry standard, that came to an end with the publication of the DCI specifications in June 2005. The DCI (Digital Cinema Initiatives, LLC) was created in March 2002 as a joint venture of Disney, Fox, MGM, Paramount, Sony Pictures Entertainment, Universal and Warner Bros. to establish and document voluntary specifications for digital cinema.

Circumventing the discussion of projector technology (Texas Instrument 2K technology versus Sony 4K), the DCI has opted for a 2K-4K scalable resolution (referring to the lines of resolution of a projector), JPEG2000 compression (as opposed to MPEG2) and, most importantly for studios, a watermarking and security procedure ensuring that there is no leak for piracy.

Without an existing certification process, "DCI compliance" has been claimed by any d-cinema system using JPEG2000 compression and 2K projection. The DCI therefore contracted the Fraunhofer Institute for Integrated Circuits in February 2006 to develop a standardised compliance test, with test procedures scheduled to be completed in November 2006. Fraunhofer will then offer training to third parties interested in conducting ongoing compliance testing. The first such entity to implement the Fraunhofer test plan for certification compliance is the US company CineCert, as announced in May 2007.[16]

However, with the availability of a standardised compliance procedure, cinema operators might soon find that compliance is anything but a "voluntary" option. Cinemas who do not comply with the specifications will simply have no access to studio content and face losing a major source of their income.

While there is little doubt that most cinema operators would gladly comply with the DCI specifications on security issues (as it is harming their business as much as it harms the distributors), the specifications do not necessarily make business sense in other areas, especially with regard to resolution. The requirement for at least 2K projection was developed to match the image quality of 35mm in a large multiplex screening

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13   http://mydigitalcinema.blogspot.com/2007/06/fithian-slams-arts- alliances-vpf-plan.html

14   http://www.technicolor.com/Cultures/En-Us/About/Press/Press-Release2004/ThomsonReachesDigitalCinemaEquipmentDeploy-mentAgreementInEuropewithKinepolisGroupBarcoandDolby.htm

15   http://www.accessitx.com/christieaix.html

http://www.dcimovies.com/press/DCI_Press_Release_3May2007.pdf

room. As a consequence, 2K projectors are often too bulky to fit into the exhibition booth in a small cinema. The lamps designed to illuminate an 82 foot screen in a large auditorium are too bright for projection in a cinema with a screen size of 10 foot. For these cinemas it makes perfect sense to operate, for example, 1.3K or 1.9K (1,920 x 1,080) HD projectors which are considerably cheaper and suit their screen size.

Pioneers at Tipping Off Point?

At the moment DCI compliancy is operated on an "all or nothing" basis, meaning that smaller cinemas are effectively locked out from access to content. The very pioneer of digital cinema in Europe, Sweden's Folkets Hus, is struggling to book content and attract audiences because of this problem. Folkets Hus operates mainly single screen cinemas in remote and rural areas. With the distributors unwilling to provide either day-and-date 35mm prints or first run digital mainstream fare because of DCI non-compliance, the local audience increasingly turns to pirated content over broadband, destroying both the exhibitors' and the distributors' market. While Folket's Hus is very committed to anti-piracy measures, the economic realities under which it operates simply rule out the possibility of purchasing full DCI-compliant equipment for its chain without state assistance.

It remains to be seen whether the DCI will resolve this important issue with an update on its specifications to allow for lower-cost solutions, although this seems highly unlikely. While a government scheme to support small screens is desirable, the solution should ideally not come from government intervention but from the big players who created the market failure in the first place.

Additionally, projector manufacturers could take up the problem and bring a product to the market that is also suitable for smaller screens and cinemas. There is also the additional problem for European producers that the DCI specifications and digital cinema equipment currently do not include the option for playing content at other frame rates than 24fps or 48 fps. This means that European film productions, which are often shot in 25fps to allow for easier conversion to PAL broadcast standard (50Hz) or archive material (silent cinema shot in 16fps or 18fps), have to be converted before they can be screened on DCI-oriented equipment. Moves are underway by IMAGO (the European association of cinematographers) and the European Digital Cinema Forum (EDCF) to lobby the SMPTE to include multiple frame rates in its future standards documents.[17]

3.3 Digital Cinema happens while you are busy making other plans – The 2007 update

Digital cinema continues its strong and steady growth. There are currently 4,283 d-cinema installations in 1,263 sites worldwide (DCI 2K/4k resolution as of 1 July 2007).[18] Year-on-year growth 2005-2006 was 253 per cent going from 848 at the end of 2005, to 2,996 at the end of 2006.[19] While 2005 looked like there would be the equivalent of a "space race" for digital cinema between the US and China, the North American region has taken a clear lead now with a total of 2,014 screens (2K) operating in a commercial cinema environment since the start of 2007.

The Asia-Pacific region has also almost doubled its digital screen count from 2005 (272), with 430 installations. However, out of these screens some are 1.3K and there is a growing push to install a parallel e-cinema circuit in the Chinese countryside that is not DCI compliant. China is also using digital cinema as a way of increasing overall attendance through the introduction of cheaper cinema prices.

Providing a clear indication that Asia is adapting in its own way to the digital cinema movement, an Indian company has installed 650 of its digital cinema systems across the country since 2005. UFO Moviez claims to have produced a three to four-fold increase in revenues based on a return to the theatres by the local audiences and, in some cases, a double digit percentage increase in ticket prices (see Case Study below).

[17] *http://www.imago.org/main/public_html/image/news/PDF/Ima* *go_ proposal_EDCF_march-2006.pdf*

[18]   *http://www.dcinematoday.com/*

[19]   *Screen Digest, 'Digital Cinema Up and Running', April 2007*

Case Study – A DCI Free Zone?

Raaja Kanwar is an Indian entrepreneur and one of the leading figures behind the country's d-cinema movement. Over recent years, UFO Moviez has released more than 300 movies in 10 different languages throughout India.

The culture of digital cinema-going in the country is changing gradually, based on the cinema-goer's growing desire to see a film first day-first show, irrespective of whether the film is digital or analogue. "Because of print costs and logistical difficulties, the viewer in the interiors could not watch a movie day and date of release. Digital cinema has been a great leveller and all centres and theatres are now 'A' grade release centres," Kanwar explained in a recent interview.[20]

The company has installed 650 of its digital cinema systems across the country producing a three to four-fold increase in revenues based on a return to the theatres by the local audiences and, in some cases, a marginal increment in ticket prices (12%-15% extra).

In 2007 Apollo received a $22m cash injection from private equity firm 3i, and Kanwar is planning to float Apollo on the Indian stock exchange in 2010. Kanwar went on to say that UFO Moviez is a cheaper alternative to digital cinema complying with the single standard developed by the US studio-backed Digital Cinema Initiatives (DCI). His other revelation is that the US majors are supporting an unnecessarily expensive format based on a 2k digital projector. "(The DCI) standard and system would cost the cinema owner $125,000 plus (to install), but UFO Moviez has found a technology where the complete digital cinema solution is provided at $5 per show," Kanwar explains. "Our solution compresses a file to a very portable size without losing quality.

"Scientific studies conducted by the International Telecommunication Union have proved the human eye

The number of d-cinema screens in Latin America has remained constant with 18 screens. It is, however, one of the most interesting areas when it comes to digital distribution, with Brazil's Rain Network currently transmitting films via its Kinocast system (encoded in Windows Media 9, Mpeg2 or MPEG4) to over 100 screens.[21]

Thanks to major initiatives (UK, Ireland), d-cinema in Europe has grown from 211 installations in 2005 to 522 digital projector installations in 2006, with an additional 100-odd 1.3K e-cinema quality.

The UK currently has over 250 installations, most of them as a result of the UKFC's DSN, but with all-digital multiplex test beds by the likes of Odeon and Empire. There are over a dozen screens used in the UK for postproduction (in places such as Arri Media, Bell Theatre Services, Capital FX, Midnight Transfer, Pinewood Studios, Soho Images, Cinesite London and Technicolor) and several special venue screening rooms (Bafta, Dolby Laboratories, NFT Digital Test Bed, Bell Screening room, the Hospital, National Film and Television School).

To put these figures into perspective, the UK has a total of about 3,350 screens, which means that digital screens account for no more than 7.5% of all screens in the country. In the US, where there are about 30,000 screens, the percentage is slightly higher (close to ten per cent). Yet there are statistical distortions in both markets. In the UK, the high number is artificially inflated by government intervention (the UKFC's DSN), while in the US one exhibitor client of Christie/AIX (Carmike) accounts for the majority of the digital cinema installations.

Despite the tremendous growth, industry expert Michael Karagosian[22] has argued that the d-cinema market has not yet transgressed from early adopters to early mainstream. This is in line with John Fithian, president of NATO,[23] who has estimated that the whole transition in the US might well take over a decade. Given the even slower level of adoption in Europe, the implications are that the transition could take much longer in Europe.

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[20] http://www.screendaily.com/ScreenDailyArticle,aspx?intStoryID=3 2071&strSearch=Raaja%20Kanwar&strCallingPage=ScreenDail yS earchSite.aspx

[21] http://www.rain.com.br/english/

[22] http://www.mkpe.com/

[23] The National Association of Theatre Owners (NATO) is the trade group for motion picture theatres in the US

3.4   The UK Film Council's Digital Screen Network

The UK is one of the world's leaders in digital cinema. The UK Film Council contracted Arts Alliance Media (AAM)[24] to install and operate a network of 240 digital screens across the UK. The Digital Screen Network (DSN)[25] is a core element of the UK Film Council's strategy to broaden the range of films available to audiences across the UK and to support specialised films (see Case Study below). The network operates in conjunction with other UK Film Council distribution and exhibition initiatives, such as the Print and Advertising Fund, for specialised films, and the Audience Development Scheme.

The DSN was conceived by the UK Film Council as a 'virtual network' of 240 screens, located in approximately 200 cinemas across the UK. Screens are installed at multiplexes, independent cinemas and single screen venues.[26] AAM completed the first round of installations (about 50 cinemas) in February 2006, with the rest of the screens installed in May 2007.

Halfway through the roll-out the decision was made to switch the servers from Quvis to Doremi servers. Quvis had used the proprietary QPE wavelet-based compression format, while Doremi's servers were based on DCI's chosen compression technology, JPEG2000. The switch was a costly move for Arts Alliance, which was not given any additional funds from the UKFC to comply with its contractual obligation of providing a 'DCI compliant' system. It also caused some upset amongst exhibitors who had to pay extra for larger storage space and were not always to keep all the repertory titles they had sitting on their original server, all of which had to be re-mastered from QPE to JPEG2000 format. The switch-out of servers was due to be completed by early autumn 2007.

Depending on the dimensions of the projection room, the DSN uses two types of 2K DLP Cinema projectors: the Christie CP2000 and the NEC IS8. The projectors can also be used to screen alternative content, from DVD, Digibeta and PC. Significantly, the first film to play in the DSN was a DigBeta screening of the Danish film The King at the Curzon in Soho, and Vue screened a live concert of Genesis from Germany in June 2007 on over 40 screens, most of them equipped as part of the DSN.

In return for the UK Film Council's financial contribution towards the equipment, network cinemas are contractually obliged to devote a (self-imposed) set percentage of playing time to specialised programming. In addition, the UK Film Council also plans to book programming slots for educational orientated content, archive material and short films in each cinema. Outside of these required slots, exhibitors can operate their digital projectors independently, and the existing business model of film acquisition through distributors will be the same. The DSN will also enable local filmmakers to show their films on a regional basis within their own communities.

In order to support the DSN and independent content and distributors, the UK Film Council will support digital compression, mastering and delivery solution for the DSN.[27] The UK Film Council can already point to some significant achievements. The UKFC-supported and digitally released Pan's Labyrinth was named 2006 Film of the Year by UK Regional Film Critics. Had it not been for the digital release strategy, it is questionable whether it would have reached a significant enough number of screens to have had such a strong regional impact.

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[24] http://www.artsalliancemedia.com/

[25] http://www.ukdsn.com/DSN/

[26] A list of participating cinemas can be found here: http://www.ukfilm-council.org.uk/cinemagoing/distributionandexhibition/dsn/dsn

listcin- emas/

27 *http://www.ukfilmcouncil.org.uk/cinemagoing/distributionandexhi-*
bition/dsn/

Case Study -The UK Film Council Digital Screen Network as an example of a publicly funded digital exploitation strategy

The UK Film Council is the Government's strategic arm for film. Its brief is broadly two-fold: first, to build a more sustainable and successful film industry and, secondly, to promote film culture by giving audiences access to a wider range of films. In recognising that the wider distribution of, and hence audience's access to, those films not generally regarded as blockbusters is often restricted by economic factors, most notably the cost of 35mm prints, the UKFC strategy aims to help reduce these barriers via the installation of up to 240 digital cinema screens throughout the UK, and in all types of cinemas – from existing specialised cinemas, independently owned commercial cinemas to major multiplexes in large conurbations.

Digital cinema holds the possibility of significantly reducing the cost of prints and physical distribution and allowing more flexible booking and programming strategies. For example, the cost of a 35mm foreign language film can be over £2000. The equivalent cost of a digital copy is less than £100. This economic advantage thus allows a distributor to widen the release of a particular film without increasing its overall print budget. In other words, more cinemas can play the film at a time when its publicity and word of mouth is greatest and cinema goers have significantly more opportunity and access to see the film.

The strategy is directly influenced by research carried out by UKFC and others that suggests that the current, fairly inflexible, booking and programming models for less mainstream films work against active efforts to develop new audiences by the current restriction in choice. Digital cinema aims to help resolve this issue via the provision of an infrastructure that is more audience friendly, more economically viable for the industry, and allows for more flexible booking strategies than 35mm.

It is estimated that the current market share for less mainstream films is approximately 10 million admissions per annum. Out of a total cinema-going of 175 million per annum, less than 7% of all cinema screens are dedicated to the exhibition of such films. More specialised films are on average released on less than 30 prints and spend less than 10% per release on marketing compared to more mainstream films.

The UKFC total investment in this project is £12 million and involves the provision of state of the art, DCI compliant digital cinema equipment. Whereas the UKFC strategy is focused on more specialised, less mainstream films, and with audience rather than technological drivers, it nevertheless made the decision very early on in the development of its strategy that it would use the highest specification equipment available and ensure that it was upgraded as new technical standards emerged. It was felt that digital cinema needed to provide the same level playing field for all types of films and filmmakers, as currently available with 35mm. It did not wish to encourage or establish a two-tier standard – one for major 'Hollywood' blockbusters and another one for all other films.

Cinemas which applied for and were awarded the equipment have made contractually binding commitments to increase the range of films on offer. Over the 4-5 year period of the contract between UKFC and the cinemas, an additional 100,000+ screenings on less mainstream films will take place and UKFC have publicly stated its target of increasing audiences for such films by 40% over this period.

To date (July 2007) practically all of the planned 240 installations have taken place, with final upgrades planned to be completed by September 2007. Over 124 films have played digitally to date, including: March of the Penguins, Good Night and Good Luck, A Cock and Bull Story, Breakfast on Pluto, Transamerica, The Cave of the Yellow Dog, Caché (Hidden), The World's Fastest Indian, The Proposition, Pedro Almodóvar's Volver, Michel Gondry's The Science of Sleep and Michele Placido's Romanzo Criminale, as well as such classics as Brief Encounter, Casablanca, Black Narcissus and The Wizard of Oz.

The above strategy has been largely funded publicly whereas most of the other large scale deployment currently being carried out around the world, especially in the USA, is commercially funded, either by studios and distributors themselves or, in a small number of cases, by exhibitors. Whether the degree of funding offered in the USA is replicated throughout the rest of the world is as yet unclear, although the evolution of digital cinema is bound continue as new business and funding models unfold.

3.5 Technical Requirements for the DSN

Distributors can take advantage of a set price for encoding and encryption of specialised films for the DSN, if they provide material to a facility such as Arts Alliance, Dolby or Motion Pictures Solutions in one of its accepted formats (see Case Study below). The current preferred deliverable format is a high definition master, in 1080 line progressive format, with the physical delivery format either being Sony HDCam-SR, Panasonic HD-D5, or Sony HDCam. Arts Alliance Digital Cinema (AADC) recommends the use of the Sony HDCam-SR format, as it is capable of recording full bandwidth 4:4:4 colour. For best screening quality, AADC also recommends the use of a 2K DLP projector when grading films and, where budgets allow for it, to grade two masters for cinema viewing and for home cinema. The DSN supports a range of aspect ratios (1.33, 1.38, 1.66, 1.75, 1.77, 1.85, 2.35). It does not support interlaced video material and only accepts films in progressive scan mode.

The DSN system employs an overlay subtitling system, whereby it is possible to choose whether to display subtitles for foreign language content or for the hearing impaired. The DSN can also screen standard definition material where appropriate, although a high definition master is preferable. For standard definition, the only acceptable format is Sony Digital Betacam, in 1.33 and 1.77 anamorphic aspect ratio. Arts Alliance Digital Cinema is considering a file-based deliverable for the DSN, which will accept scanned files from Digital Intermediate post production workflows on removable hard disks, taking full advantage of the digital workflow, something which other post-houses are already using.[28]

Once the digital cinema package (secure compressed digital file, encoded, encrypted and packaged with subtitles, BBFC certificate, distributor logo, etc.) is submitted to the digital distributor, who will then deliver the digital prints to cinemas, where they are uploaded to the cinema server and checked prior to playout. After a film has been uploaded, the hard drive is returned to the digital distributor to be re-used.

Case Study – Scotland the Brave

Tartan Films Distribution (TFD), one of the leading independent distributors in the UK, has signed an exclusive three year digital rights and services deal with Arts Alliance Media, which covers theatrical digital cinema and home distribution via Video On Demand (VoD) and Electronic Sell Through (EST). As part of the contract, Arts Alliance Media will provide digital cinema encoding, encryption, digital cinema prints and security keys, plus digital content storage, mobile and portable device streaming for all Tartan films and trailers.[29][30]

Hamish McAlpine from Tartan Distribution has made a clear case for digital cinema, and how it enables independent distributors to afford a wider release for their films. To illustrate the impact of digital cinema on a distributor's business model, he cites Tartan's release of Ingmar Bergman's latest film, Saraband.

Saraband was made available in digital format from the Svenska Filmindustri (SF). The cost of six digital prints offered by Arts Alliance was just under £1000. With a total box office of £40,000, an income of £12,000 and publicity and advertising costs of £12,000, the film broke even in the UK. In comparison, the price of a 35mm film print is approximately £700 pounds (however, prints of foreign language films can cost up to £1500). A film print release of six would have cost up to £10,000 more, making the distribution of the film uneconomic and unviable.[31]

When following the digital cinema route, these costs become negligible. McAlpine has put the price for encoding the digital print, encryption and encoding of Dolby 5.1 surround sound, plus censor certification and distributor logo, at approximately £3,660. For an eight copy digital release (with a digital print costing £78), the total is £4,290. The cost to release the same film on 35mm is £5,600 (eight copies at £700). The digital

As the case above shows, the break-even point for digital occurs at the equivalent of six film prints, although that is likely to come down to four prints soon. However, it is for the bigger releases when the savings through economies of scale start to mount.

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[28] http://www.ukdsn.com/DSN/about/?section=Producers.Deliverables

[29] http://www.artsalliancemedia.com/PressRelease_Tartan.html

[30] http://www.tartanvideo.com

[31] Patrick O'Donnell:' Tartan ready to join the digital clan',
Cinema Business, Issue 23, April 2006

On a 100 copy launch, 100 film prints would cost £70,000, whereas the total costs of a digital release at £78 per digital copy would be £11,466, a substantial saving for both independents and studios. Digital makes release strategies far more flexible, as distributors can order more copies easily if a film is a success and would not face the same financial risk if the film consequently does not break out into the mainstream market.

The downside of increased flexibility is that this might result in increased pressure on films to perform in their first week – not a desirable situation for distributors. In 2006, the UK had a total of 3,357 screens. In any given week, the vast majority of these screens is already taken up by either new film releases from Hollywood studios, already released Hollywood films or long running independent hits. This leaves only a very small number of screens each week available for independents – resulting in stiff competition for good release dates. Films that do not perform well right from the start are therefore bound to be substituted with new fare.

This competition will intensify, not only with increased products from foreign countries, but also with "alternative content", if exhibitors decide they can earn more money through hosting a TV show, concert, corporate or community event. Money saved through digital is then likely to be spent on larger marketing and advertising. But if smaller distributors can put more money into advertisers, big ones can too.

From a producer's point of view, the question may be raised if distributors will show the same commitment (to push the film and believe in its staying power) towards a £78 digital print, as they do for a £700 film print.

In addition, the distributor has to decide on how long they want the film to play, which will be enforced through the data and play parameters on the KDM (key delivery mechanism) that are sent out with the film, and are tied to particular digital cinema servers on which they decrypt the content. While most Hollywood studios tend to only send out two-week keys, after which they need a renewal key (a so-called 'holdover KDM'), many UK distributors tend to send out open-ended KDM so as not to send out new keys for longer playing or repertory items, thereby avoiding incurring additional fees for generating and distributing fresh KDMs.

3.6 Digital Cinema and 3-D

While digital cinema offers a brilliant picture quality (equal to first run 35mm), excellent repeatability, higher security and lower distribution costs, these factors do not excite audiences as they do not offer any visual differentiator from 35mm film or novelty value for them. The panacea for declining cinema receipts and movie-piracy-hysteria could therefore be digital stereoscopic, a.k.a 3D cinema.

Prominent supporters of 3D digital cinema are directors James Cameron, George Lucas and Robert Rodriguez. Cameron believes that, in the near future, studios will release 4-5 big tentpole pictures a year in 3D, making it the format for must-see films that can only be experienced in a cinema. The first films that will take full advantage of the new technology are 3D animated films, which can easily be adapted for 3D projection.[32] Paramount has predicted that by 2009 there will be enough digital 3D content to keep at least one screen in a multiplex occupied full time. Paramount-distributed Dreamworks Animation has also pledged that all of its animated titles will be in digital 3D as of the same year.

From distributor and exhibitor perspectives, there seems to be a strong financial case for digital 3D cinema. Cameron has cited the example of The Polar Express, which was released in 2D on 3,500 screens in the US in 2004, grossing $121 million during the holiday season. When the film was released in 3D the following year, it earned $40 million on just 68 IMAX screens, greatly outperforming the 2D release. Disney's release of Chicken Little shows a similar picture, with the average gross per screen of the 2D version being $54,000, while the 3D yielded $162,000 per screen and 3D screenings accounting for more than 10% of the total gross (with additional costs of roughly $76,000 per screen for the 3D version).[33][34]

These numbers have held up for subsequent digital releases as well (Monster House, A Nightmare Before Christmas and Meet the Robinsons, as found in research by Screen Digest.[35]

Analysis of box office data from the first four digital 3D releases (Chicken Little, Monster House, Nightmare Before Christmas 3D and Meet the Robinsons) has

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[32] http://www.hollywoodreporter.com/thr/article_display.jsp?vnu_content_id=1002384440

[33] http://www.digitalcinemareport.com/thebigpicture_81.html

[34] http://digitalcinemamatters.blogspot.com/2006_01_01_digitalcinemamatters_archive.html

[35] http://www.screendigest.com/press/releases/press_releases_21_06_2007/view.html

shown that digital 3D screens generate on average three times more revenue, driven by a 2.4 times higher attendance ratio per screen when compared with 2D screenings for the all important first weekend (see Table 1 below). Moreover, the introduction of flexible ticket pricing has opened up a new profit share structure in which exhibitors share the resulting 'surcharge' revenue from higher ticket prices with the Studio, an incentive for both sides of the industry alike.

Table 1: Total 3D box office as % of total revenues in US market

	3D total box office	total box office	3D of
	$m	$m	%
Chicken Little	7.5	135.4	5.5
Monster House	10.3	73.6	13.9
Nightmare Before Christmas	8.7	8.7	100.0
Meet the Robinsons*	29.7	95.6	31.1
Total	**56.2**	**313.3**	**17.9**

Note* First nine weeks of release only
Source: Screen Digest from industry data

James Cameron estimates that a 3D feature film can gross up to 40% more than its 2D counterpart. However, producing 3D content is also associated with higher production costs. While it may be a "no-brainer" (Cameron) for 3D animated films to go 3D, an independent company has yet to prove it can produce a successful 3D feature. The first independent 3D title to be released in digital is set to be Belgian's nWave Pictures computer animated tile Fly Me To The Moon to be released in the second half of 2007.

3D filmmaking requires special treatment of depth of field, and is most exciting when specific filming techniques and camera movement are employed and the film is supported by surround sound. As a consequence, 3D cinema lends itself more to the traditional action packed Hollywood fare than to an independent drama.

Upcoming films testing various 3D methods include Walden Media and New Line Cinema's Journey to the Center of the Earth (already renamed Journey 3D), Robert Zemeckis' Beowulf (employing the performance capture techniques used in The Polar Express) and Dreamwork's Monsters vs. Aliens (currently set to open on the same

day as Cameron's Avatar, potentially creating a clash of the digital 3D giants at the multiplex vying for digital stereoscopic screen space).[36]

Digital projectors can project images at higher frame-rates – a precondition for 3D projection that regular 35mm projectors lack. There are currently three competing technologies for digital 3D projection in development: the "passive" 3D projection system (systems supplied by Real D), the "active" 3D projection system (using glasses by Nu-vision) and the colour-splitting "passive" solution by Dolby (licensed from Germany's Infitech).[37]

In the "passive" 3D system, a polarised image is projected onto a silver screen. This can be achieved with either two projectors (one for the left image, and one for the right), or with one single projector using an active electro-polariser in front of the projection lens. The "passive" method utilises 3D eyewear with polarised lenses, and requires a silver screen in order to reflect and maintain the polarised light to the viewer. The disadvantage of this method is that exhibitors have to retrofit their theatres with silver screens. The advantage is that passive 3D glasses are rather cheap and can
be thrown away or kept by the audience after the performance.

In an "active" 3D projection system, a single projector is used for projection in combination with "active" electronically shuttered glasses that electrically turn on and off (passing or blocking light) in sync with the images that are projected onto the screen. The advantage of this technology is a slightly superior 3D image quality, while no expensive special screen is required. On the downside, active glasses are more expensive and need to be reused after a screening, requiring special cleaning dish washers. Once demanded in higher volumes, prices for active glasses will, however, be considerably lower.

The third solution uses special passive glasses with special colour filters. The colours of the projected image are divided into narrower bands split for right eye and left eye. The colours are then effectively "re-constituted" when viewed through the specialised glasses. The system promises the 'best of both worlds' approach to
digital stereoscopics: there will be no need to re-fit a silver screen, as the existing screens can remain which will not require active glasses. Although costs are expected to come down for the Dolby filter glasses when produced
in bulk, they are currently not as cheap as the circular polarised glasses used by RealD.

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[36] *http://animatedfilms.suite101.com/article.cfm/monsters_vs_al-iens_vs_avatar*

[37] *http://news.zdnet.com/2100-9595_22-6100296.html*

As Disney has shown with Chicken Little, 3D glasses can also become a branding opportunity, with the glasses becoming a collector's item for movie patrons.[38]

Yet digital stereoscopics face several more technical hurdles to clear. SMPTE only agreed on a single DCP file format in June 2007. Current solutions also cut down light levels to as little as three foot lamberts, thus falling well short of the requirements for DCI specifications for screen brightness for the projected digital 2D image of 13 foot lamberts. While some studios have embraced it, notably Disney (though not its Pixar subsidiary), other studios such as Universal have yet to be convinced of its merits, with one un-named technician at the former studio going so far as to call it a "poor man's IMAX".

Whilst the future looks bright for digital 3D cinema, there are potential pitfalls which require further analysis. These can be divided into three categories: the potential or longevity of the 3D genre, business model issues and lack of content or screen base. However, the potential loss of revenues in subsequent release windows, i.e. DVD and VoD (video on demand), particularly for 3D only releases, also needs to be justified on a longer term basis.[39]

3.7 Dimensionalisation

"When I first saw In-Three's dimensionalization process I was truly amazed. The 3D was of a quality better than anything I had previously experienced. Seeing my own Star Wars images in authentic 3D convinced me that it would be a whole new way for audiences to be able to re-live the Star Wars films. Dimensionalisation will significantly enhance the realism of any movie presented in this process." George Lucas [40]

Dimensionalization® is a new process by LA-based company In-Three, in which 2D images are transformed retroactively into 3D images. In this way, any film, regardless of whether it was shot in 3D or when it was created, can be converted into a 3D film.

Dimensionalisation is still very much in its infancy and is time intensive, very expensive and closer to a computer-based special effects technique than to a real-time post-production process. However, already there have been tentative plans announced to re-release classics such as Star Wars and Lord of the Rings from their back catalogues in digital 3D. When the process eventually becomes even cheaper and faster it is also likely to be applied to independent films. The first film to be given this treatment was Tim Burton's A Nightmare Before Christmas for Halloween 2006, though it was re-rendered using technology by Industrial Light and Magic (ILM) and not In-Three.[41]

The advantage of using dimensionalisation instead of shooting with 3D cameras is higher flexibility, as each 2D shot can be choreographed for 3D in post production, adjusting field of depth or removing objects for optimum results.

IMAX has developed a similar process, termed "2D to 3D". In-Three and IMAX are currently involved in an ongoing patent lawsuit over the technology, with IMAX claiming patent infringement. The first court decision was in favour of In-Three. "2D to 3D" also enables almost any 35mm film to be transformed into 3D cinema.

The first film to make extensive use of the IMAX technology is Bryan Singer's Superman Returns, which features about 20 minutes of converted video. During select sequences of the film, a visual cue designed by Singer indicates when audiences should put on and remove their IMAX 3D glasses.[42] A follow-up was the IMAX release of Harry Potter and the Order of the Phoenix, in which the last reel is shown in 3D.

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[38]

http://thedisneyblog.typepad.com/tdb/2005/11/we_come_not_to_
      .html

[39] *The Business Case for Digital 3D Cineam Exhibition, ScreenDigest*

2007

[40] *http://www.in-three.com/*

[41]

   http://www.popularmechanics.com/technology/indus

try/4200796. html

[42] *http://www.imax.com*

3.8 Alternative Programming

Digital projectors in cinemas can be used to screen almost any digital content, allowing for so-called 'alternative programming'. This alternative programming could be an HD transmission of a football game, a popular concert, a musical, a corporate or community event. Alternative programming allows exhibitors to make money out of their screens during 'dark hours', i.e. during the day, when showing films is not feasible. Distributors and producers are, however, anxious that alternative content may not stay confined to dark hours but will become additional competition for their films (e.g. the World Cup).[43]

In the UK, cinema chain Vue has been at the forefront of experimenting with alternative content. Vue has used its cinemas to host product launches from Barbie and Lego, and has also cross-promoted the release of the Disney film Cars with hosting a gaming event of the related X-box game. The experience of using the digital screens for video games has been especially positive. The willingness of gamers (mainly young and male) to come to cinemas, even at late hours, could provide cinemas with an interesting new revenue stream.

Vue has also successfully hosted a number of music events, most recently a live Genesis concert from Dusseldorf in Germany to over 40 screens across the UK in June 2007.[44] Film theatres proved ideally equipped for showcasing concerts with their surround sound systems and optimised acoustics. A satellite link to host live events will provide a competitive edge in this growth area of alternative content.

Another potential use of digital projectors is screening high concept television drama. There is, however, an issue regarding rights clearance for cinema projection related to the issue, which is usually not easily resolved. Unless producers plan ahead to clear rights for TV drama also for cinema projection, development in this area will be slow.

3.9 Country Focus: D-Cinema in Germany

D-cinema is well under way in Germany, with the German Federal Film Board (FFA) promoting a very down to earth and sensitive approach to the digital transition.[45] There are a total of approximately 4,900 screens in Germany, out of which 105 were digital screens at the start of 2007.[46] Exhibitors in Germany are currently being lobbied by US third party providers and equipment manufacturers to make the switch to digital cinema, with Belgian operator of pan-European digital cinema networks XDC having had the largest success to date.

To reduce the uncertainty of nervous exhibitors and prevent investment in premature systems, the FFA is preparing a 'Pflichtenheft', a document that will specify a certification process for d-cinema in Germany. This certification is based on DCI recommendations and will be obligatory. While the FFA will promote the 2K standard, it will ensure that exhibitors can choose their own provider and is working with several companies to ensure the optimal solution on a competitive basis.

The proposed business model for d-cinema in Germany follows the model of virtual print fees. However, the exact fee and other important contractual issues, such as the duration of the contract, have not been determined yet. Peter Dinges, CEO of the FFA, expects the virtual print fee to be significantly lower than the existing print fees. Dinges would prefer to wait for another three years when servers and d-cinema equipment would be much more reliable, less bulky and more cost efficient than today. However, he is well aware that exhibitors are not be prepared to wait, which has given rise to the business model re-think around what is called the 'Solidarity' model, whereby 'the strong carry the weak', so that funding to convert large and rich cinemas is shared with smaller and poorer vulnerable screens.

With forward thinking on the digital cinema front through the Pflichtenheft and the virtual print fee Solidairity model, Germany is set to make a relatively speedy transition to digital cinema once final agreements are in place. It could even become one of Europe's first countries to convert completely to digital without strong state fiscal (as opposed to regulatory) intervention, which is what drives fast transition in territories such as Norway and China. There is a clear understanding that the earlier the transition is addressed, the stronger the bargaining position of exhibitors. Dinges recalls when Buena Vista in Germany switched its prints to a different scan system, forcing exhibitors to upgrade their systems at their own expense or to miss out on screening Buena Vista's films. The FFA will also investigate subsidies to fund the mastering of digital prints and is currently working with different providers to finalise the pricing for its scheme.

[43] *John Fithian, head of NATO (National Association of Theater*   *Owners), refers to alternative programming as "Other*

Digital Stuff", or "ODS" (odious) in short.

44 http://www.filmstalker.co.uk/archives/2007/06/uk_cinemas_
diversify_with_uniq.html

45 http://www.ffa.de/

46 Screen Digest ibid

3.10 "15 Megabytes of Fame" - The Rise of User- Generated Content

Once upon a time there was a thick analogue barrier separating producers and consumers. Equipment was expensive and required specialist training. Distribution was firmly in the hand of the professional. Consumers sat on the receiving end, in front of their radios, television sets or cinema screens. These times are over.

At first, the "means of production" were put into the hands of consumers through digital technology. Now, control over distribution is being handed over to consumers as well, resulting in a democratisation of audiovisual production – the rise of User Generated Content (UGC), empowered by new forms of distribution such as podcasting or online video-sharing.

Created by consumers for consumers – free of charge – user generated content is a direct, often un-moderated form of communication, which competes with traditional media on the grounds of authenticity and originality. User generated content usually comes in the form of clips. These clips can be either downloaded, or are streamed over the Internet to a computer or mobile device. They are short and, as easily as they are clicked on, they are also cancelled for the next one. Many of these clips are rather obscure, ranging from remakes of classic films with Lego people to clashes of plastic dinosaurs with household appliances. Popular formats also include home-movies (especially the ones featuring animals), video-blogs, movie trailers, short TV clips, music videos and short films.

The best known Internet video sharing platform is YouTube.com, set up in 2005 and acquired by Google in October 2006 for $1.65 billion dollars. The growth of UGC is inextricably linked with the rise of YouTube, whose growth has been nothing short of meteoric, with the less-than-three-year old website set to overtake bbc.co.uk in terms of UK visits by July 2007.[47]

YouTube.com allows users to share video-clips they have uploaded for free. Other popular video platforms are iFilm. com, which has "a preshow advertisement" before each clip, GoogleVideo, and Yahoo's video services, though it is worth noting that YouTube's grip on the market is such that it carries more traffic than the next 64 video-sharing sites combined.[48]

The motivation of users to publish content usually does not follow a profit aim. There is, however, a strong appreciation that these platforms offer a tremendous opportunity to showcase talent. This has led to a debate whether the web will be the new Hollywood,[49] with a new generation of filmmakers graduating from the "Lego School of Dramatic Arts".[50][51]

It has also sparked concern amongst copyright holders, particularly major American entertainment corporations, that a lot of the content posted is infringing copyright in some way. This includes outright posting of clips of film or episodes of shows or the more legally complicated area of so-called mash-ups, where audio-visual content is re-mixed to create something arguably new. This has led NBC-Universal to sue YouTube for copyright infringement and forced it to take down thousands of clips, including ones that could be said to be non-infringing original content.[52]

While exposure to a worldwide audience is one thing (the top videos on YouTube.com have more than 25 million viewers), monetising on such success is a different story. As Erik Flannigan, general manager of entertainment programming at AOL, has put it: "It is one thing to be a viral hit for one week, and another thing to be able to say, 'I made $25 million distributing my movie online'". It was only at the 2007 World Economic Forum that YouTube co-founder Chad Hurley announced plans for YouTube to share revenue with its users in the future. This puts YouTube in the same category as video-for-profit websites such as Revver.[53] Performers Grobe and Voltz made $35,000 in split advertising revenue from Revver for their video of creating orchestrated fountains by combining Mentos and Diet Coke.[54]

[47] http://weblogs.hitwise.com/heather-hopkins/2007/06/youtube_to_ overtake_bbc_in_uk_1.html

[48] http://www.searchviews.com/index.php/archives/2007/06/youtube- carries-more-traffic-than-next-64-video-sites-combined.php

[49] http://news.com.com/Is+the+Web+the+new+Hollywood/2100- 1025_3-6068218.html

[50] http://news.com.com/TiVo+and+do-it-yourself+television/2010- 1026_3-6070955.html

[51] This is also encouraged by big media companies such as Yahoo, which has recently launched a "$50 000 Video Talent show" for users creating video content, or BT which is launching its podcast and video site in the UK (btpodshow.com) with an "undition", asking users to "just hit them with their best stuff".

[52] http://techlawadvisor.com/2006/09/16/universal_to_sue_youtube.html

[53] http://lifehacker.com/software/youtube/make-money-on-youtube- coming-soon-232026.php

[54] http://publications.mediapost.com/index.cfm?fuseaction=Articles. showArticle&art_aid=59256&art_type=100

New business models are emerging fast, however. In the US, TiVo has signed contracts with software specialist Brightcove to bring video web content to television, and E! Networks has partnered with YouTube on some shows plus broadband channels.

Most importantly, advertisers are looking for ways to participate in user generated content to become more 'grassroots' and explore viral forms of advertising.[55] Nielsen Media Research announced in June 2006 that it plans to integrate TV and Internet measurement and add ratings for viewing on such portable devices as cell phones and iPods. Nielsen has also developed meters that track viewing on portable devices and established a 400-member iPod user panel at the end of 2006. This could provide a pioneering examination of the impact of iPod downloads or streaming video on television viewing, and will answer industry questions regarding use of download to computer to mobile phone and consumption habits.[56] The first findings of the panel were not encouraging, as it discovered that iPod users spent relatively little time viewing TV or films on their portable device. In its first study in October 2006, Nielson Media Research found that video "represented less than one per cent of content played by the group on either iTunes or the iPod. Among those who owned Video iPods, the percentage rose to 2.2."[57]

3.11 New Content Distribution Forms - Podcasting

Podcasting has become one of the most hyped words in recent history. In 2005, the New Oxford American Dictionary declared 'podcast' to be the word of the year. However, the hype around podcasting should not distract from the fact that it is still yet to break out into the mainstream market, and that most people would struggle to explain what it actually is. Together with blogging and the rise of Wikipedia and social networking sites, it is held up as the most prominent example of user generated content in the Web 2.0 field.[58]

Coined in 2004, the term 'podcasting' is an amalgam of the words broadcasting and iPod.[59] The Wikipedia defines podcasting as "creating content (audio or video) for an audience that wants to listen when they want, where they want, and how they want". In practice, podcasting describes the process of capturing an audio/video event, a speech, lecture, show, etc, and then posting the digital media file to a website or blog in a data structure called Real Simple Syndication[60] (RSS) 2.0. This allows users to subscribe to a podcast and, once they have subscribed, new shows or episodes are automatically delivered to them.

The vast majority of podcasts are listened to on a standard desktop/laptop computer. The major attraction of the new technology is that it enables consumers to listen and watch their favourite shows on any portable media device. The advantage of podcasting over traditional broadcasting is, therefore, the ability to time-shift (the advantage of a video-recorder) in combination with the ability to 'space-shift' (download to portable devices) based on a subscription model (subscribe once, then automatic delivery to your device).[61]

Podcast audiences have grown exponentially, with listenership doubling every three to four months. In the US, about 27 million Americans have already listened to podcasts, and it is estimated that by 2010 podcasts will reach a regular audience of 60 million in the US.[63][64]

[55] *It remains to be seen how Google will use its experience in capitalising on web advertisements for its online video business.*

[56] *http://www.hollywoodreporter.com/thr/article_display.jsp?vnu_content_id=1002688741*

[57] *http://www.cbc.ca/technology/story/2006/11/21/ipods.html*

[58] *http://oreillynet.com/pub/a/oreilly/tim/news/2005/09/30/what-is- web-20.html*

[59] *Doc Searls, a technology writer, has documented the history of Google hits on the word podcast. On 28 September, 2004 Google found 24 hits on 'podcasts', two days later 526,*

five days later 2750, with the number doubling every few days, reaching

100,000 by 18 October, 2005. As of October 2006, Google found 215,000,000 hits on 'podcast', making it one of the most hyped concepts in Internet history.

[60] *RSS allows the syndication of any file format, thus not only supporting podcasting or vodcasting, but it could e.g. be used for the delivery of a .pdf file.*

[61] *http://en.wikipedia.org/wiki/Podcasting*

[62] *R.L. Rumford "Podcasting White Paper", Info Guru LLC.*

[63] *Pew Internet Group*

[64] *http://www.podcastingnews.com/archives/2006/04/arbitron_27_mil.html*

Podcast audiences show an interesting demographic for advertisers, with more than half of listeners being under 35 and from an upper income household. In a recent survey, the iPod music player surpassed even beer drinking, text messaging and bar hopping as the most 'in thing' amongst undergraduate college students in the US.[65] (The mobile phone successor to the iPod has sparked even greater levels of hype, with the iPhone being dubbed only half-ironically the 'Jesus phone'.[66])

Podcast growth in the future will be dependent on making the technology more accessible for the mainstream market. In 2006, Chrysler was the first car company to announce full iPod integration in its new cars, making listening to MP3s, podcasts and watching videos more convenient.[67] In 2007, BMW sponsored the video podcasts of the TED Conference, which had previously only been available to the handful of those invited and able to pay thousands of dollars to attend the annual talks in person.[68]

The rapid development of mobile phones into transportable media platforms will also impact on consumer habits and propel innovative ways of delivering content through podcasting or similar technologies. While consumer habits are changing, it is unlikely that mainstream audiences will spend considerable time to micro-manage the content for their media consumption, but will still look for content aggregators to help them pre-select.

3.12 Podcasting and business

Podcasting can be seen as an additional communication tool for the marketing mix of a business. As such, a podcast can be either produced by a company itself or outsourced to new media companies/companies in the corporate video production sector helping a business to create a professional podcast.

According to Rodney Rumford (podblaze.com), podcasting creates value for companies because it increases their online visibility, and increases the perception of a company's product, service, brand or value in customer minds. If a consumer has subscribed to a podcast show, he has said, according to Rumford "I want to listen/watch your content on a regular basis". This makes the podcast an un-blockable and direct communication line to a company's target market and therefore a high impact marketing tool.[69]

At the moment, companies are just beginning to understand how they can use the new medium efficiently to communicate with their customers. The earliest adopters of podcasting in the SME sector are consultant businesses, and businesses allied to the education sector, for whom podcasts are an ideal medium to add value to their services.

Podcasts have also been adopted by multinationals such as BMW, which has started an interesting podcast service featuring stories covering the latest BMW models, innovations and new technologies. These podcasts contain interviews with individual BMW experts about innovations and their personal impressions. In addition to these podcasts, they have also commissioned a number of best-selling authors to produce audio-books for their audience. For production companies in the corporate production sector, podcasts can become another service in their portfolio that they can offer to clients.

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[65] *Biannual market research study by Ridgewood, New Jersey-based Student Monitor*

[66] *http://gizmodo.com/gadgets/apple/is-the-cult-of-the-jesus-phone- really-a-cult-272194.php*

[67] *http://www.apple.com/pr/library/2006/jan/08chrysler.html*

[68] *http://www.bmwusa.com/uniquelybmw/CultureOfIdeas/tedtalks*

[69] *R. L. Rumford "Podcasting White Paper", Info Guru LLC.*

Case study: Podcast Business Models

The most popular podcast to date is The Ricky Gervais Show,[70] produced by the Guardian Unlimited and hosted by Positive Internet. The show, which maintains over 250,000 downloads per weekly episode, is priced at £0.95 an episode or at £3.95 for an entire series. American radio host David Lawrence offers a combination of monthly ($7) /annual subscription ($60) for the premium version of his show, the option to buy one hour of his show ($0.25) and a free mini-version. The $0.25 option is powered by micro-payment operator bitpass and Lawrence has stated that even a small amount can add a significant income stream for online content.

Rocketboom, a three minute daily news and Internet culture videoblog from New York, provides proof that with a video camera, a few props and enthusiasm, anybody can be a TV producer.[71] Rocketboom is produced with a consumer-level video camera, a laptop, two lights and a map with no additional overhead or distribution costs. Promotion is generated through word-of-mouth and online, and on-demand distribution gives it a much larger potential audience than a TV broadcast (the show achieves audiences from 250,000 to a million). The show invites its audience to submit a story, making Rocketboom even more engaging. "Media is a conversation, not a lecture", as node101, a media literacy, open source, collaborative project, puts it.[72]

Rocketboom is free of charge and finances itself partly through sponsorship, although it does not play pre-roll advertising in short form, and does not accept product placement. For advertisers, this is an unfamiliar situation. At the moment advertisers do not value downloads as much as they do streaming web-content, as it is not possible to track file playback accurately (although several solutions have been put forward to solve the problem).[73] The impact of Rocketboom was such that when presenter Amanda Congdon left, the event was covered in mainstream media with the seriousness of a television network changing one of the main

3.1.1 Marketing as part of Pre-production: Gorillas, Snakes and the Internet

A few years ago, Hollywood studios still shunned the net, distrusting what they could not control. They were irritated with fan activity, and furious about film fanatics such as Harry Knowles (www.aintitcoolnews.com), who published leaked information such as plot lines and secret test screening reviews of upcoming films on their websites. Nowadays, movie studios invite Harry to movie screenings in exchange for favourable reviews and to create a positive buzz.

Universal Studios were at the vanguard of leveraging publicity through online fan participation in 2005 for King Kong. A weekly production diary endorsed by Peter Jackson was created for kongisking.net, a website run by film fans (who also manage theonering.net, the Lord of the Rings fansite).[75] The website was successful in attracting audiences and involving fans in the film's progress from the early stages of the production. By actively involving the online fan community, Universal was able to avoid both the spread of non-controlled online rumours and accusations of studio 'spin'. The production diaries were so popular that they were released separately on DVD one day in advance of the theatrical release of King Kong.

This views, however, marketing and audience participation still as something that happens at best along the production process, and at worst after the film has been completed. To what extent fan participation can influence the production process, has been shown in 2006 on a new scale with New Line Cinema's thriller/horror B-movie Snakes on a Plane.

The film's title hit the nerve of the online community, and sparked wild reactions after the studio announced it would change it to the more conventional "Pacific Air Flight 121". In an attempt to reclaim the original title, fans created websites, blogs, T-shirts, poems, fiction and songs in support of the original title. Within a short period of time, "SoaP" emerged as Internet-speak for fatalistic sentiments that range from "c'est la vie" to "shit happens". As the online phenomenon grew, New Line reverted to the movie's original title, but fan activity was already beyond control.[76]

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[70] The show was awarded the World Record for most popular pod- cast by the Guinness Book of Records in Feb. 2006.

[71] http://www.rocketboom.com

[72] http://node101.org

[73] http://www.webtalkradio.com/blog/45.shtml

[74] http://news.com.com/8301-10784_3-6135425-7.html

[75] *http://www.kongisking.net*

[76] *"Fan frenzy for 'Snakes' is on a different plane" by Borys Kit, 23*
     March 2006
     http://www.hollywoodreporter.com/thr/film/article_display.
     jsp?vnu_content_id=1002234847

Chris Rohan, a fan of the film, created an elaborate, R-rated audio trailer that had a Samuel L. Jackson (starring in the film) sound-alike shouting, "I want these motherfucking snakes off the motherfucking plane!" Soon, a growing legion of fans demanded online that the phrase should appear in the movie. To exploit the free advertisement, New Line decided to add a five day extra-shooting for new scenes (taking the film from a PG-13 to being R-rated) by adding more gore. Naturally, a scene with Samuel Jackson uttering his "motherfucking" was added as well.

As the phenomenon continued to grow, New Line took the process one step further and hosted a soundtrack contest for fans online. The winning songs Snakes on a Brain, and Here Come The Snakes beat more than 500 entries and feature in the film and on the soundtrack.[77]

The Web has also proven to be a premier source of ideas for film projects. Upcoming film The Darwin Awards takes this relationship even further, by being actually based on a website of the same name (www.darwinawards.com). The Darwin Awards were created by Stanford molecular biologist Wendy Northcutt, and honour "those who accidentally kill themselves in really stupid ways", and therefore "improve the human genome by removing themselves from the gene pool". The website first spun out into a book and has consequently been adapted for cinema into a film that premiered at Sundance on 25 January, 2006 and was later released as a straight-to DVD title.

Whether this is just a single event or will form part of a wider trend of "web-adaptations" (after the graphic novels and computer games boom) remains to be seen.

3.13 User Generated Content - Where it is happening

YouTube.com
Founded in February 2005, YouTube's tagline is "Broadcast yourself". Youtubers watch and share more than 70 million videos a day on the site, free of charge. Bought for $1.65 billion by Google in October 2006.

video.google.com
Googlevideo describes itself as the world's first open online video marketplace. It is un-moderated and allows visitors to search for, watch or purchase TV shows, films, music videos, documentaries, personal productions and more, based on the google search engine. In addition to free content, consumers can purchase and rent premium content at the Google Video Store.

Podzinger.com
A new search engine for podcasts. When the user types a word or term into podzinger, it not only finds the relevant podcasts, but also highlights the segment of the audio in which they occurred. By clicking anywhere on the results, the audio will begin to play where clicked on. Controls enable the user to back up, pause, or forward through the podcast.

Ourmedia.org – "The Global Home for Grassroots Media"
"We want people anywhere in the world to tap into this rich repository of media and create image albums, movie and music jukeboxes and more." Ourmedia's goal is to "expose, advance and preserve digital creativity at a grassroots level…a central gathering spot where professionals and amateurs come together to share works, offer tips and tutorials, and interact in a community space and virtual library that will preserve these works for future generations". Content is stored free of charge in perpetuity. In exchange users agree to share their work with a global audience (see also: http://creativecommons.org).

Feedburner.com
"FeedBurner's contribution to the world of podcasting can best be described as the missing link between your creative contribution (audio or video) and its distribution to your fans at large." Feedburner currently serves 117,798 podcasts (as of 22/06/2007), including feeds with video. The sites says that "Number of subscribers across all FeedBurner feeds: Too many to fit on this page" and urges visitors to "Email us [marketing@feedburner.com] for the most recent stats and pretty graphs". Feedburner too has been acquired by Google.

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[77]   *Both songs can be heard at www.tagworld.com/snakesonaplane*

3.14 Summary

User generated content is reshaping media production and consumption. Reality TV has lowered the expectations of production value, and consumers are accepting new, low cost production methods as a more authentic and edgy form of communication. Podcasts building on the Blog-boom are associated with authenticity and a reputation for straight talk – a fact that has to be taken into account when taking on board advertisers and sponsors.

The podcast phenomenon is part of a wider surge of interest in consumer-generated content. Opportunities exist both in production and enabling of such content, as well as in aggregating and editing content for mainstream consumption. Producers can take advantage of new distribution platforms to develop an audience online and then go mainstream.

The new forms of distribution allow for a much higher degree of audience participation than traditional broadcasting. Content origination becomes more decentralised and international. Sharing video content with others is quickly becoming a means of self-expression for a new generation ("15 Megabytes of Fame"). It also enables new forms of journalism and empowers social media.

The ability to consume media where and when consumers want (space and time shifting) will significantly change media consumption habits over the next few years. This poses a huge challenge for traditional broadcasters relying on 30 seconds advertising spots. If shows are watched two or three days after they are aired, new advertising models will have to be developed.

Podspeak Dictionary

Poditorial: An editorial for podcasts.

Podmercial: An advertisement for podcasts.

Podnography: Pornographic podcast.

Podsafe: Music tracks that are royalty free
                 for podcasts, with low cost or

4. Home Cinema

4.1 Introduction

In the following section we will briefly look at the development of the DVD market, the next generation disc market and the development of the online rental market. These developments form part of a wider trend of consuming filmed entertainment increasingly in the living room rather than in a theatre. Advocates of cinema argue that watching a film in a movie theatre is a unique experience that cannot be replicated by home cinema. The screen is larger than life, the sound is better and then there is the magic of sharing the experience with an audience in the dark. Cinema is a social experience.

Proponents of home cinema, on the other side, underline the convenience and freedom of watching a film at home with the family, without the hassle of travel, noisy seat neighbours and nacho smell.

As prices for HD television sets begin to fall, consuming films at home will become even more attractive, with true growth expected to set in with the arrival of the next generation disk formats HD-DVD and Blue-Ray discs (BD). The growth of this market will also fuel the demand for content available in HD. Besides obvious implications for the television production sector, this also has consequences for the film industry. With consumption shifting to the home (often accompanied with considerable investments in home cinema equipment), production companies will have to adopt their strategies to take advantage of this development.

4.2 DVD – The Digital Veteran Disk

After its highly successful launch in the 1990s and unprecedented growth over the last decade, the DVD is entering the maturity phase of its product life cycle. This is evident in sales figures for both DVD players and DVD titles. While the market for DVD players is close to being saturated (see graph), sales of DVDs fell for the first time in 2006, with consumer retail spending on discs sales down 4.6 per cent from £2,245m in 2005 to £2,141m in 2006 in the UK. Although the volume sale increased 7.5 per cent to 227m units in 2006, the average price reaching £10 for the first time in the formats history drove down overall spending.[78]

The Slowdown of the DVD market

DVD sales have been an important factor in the expansion of the film industry in the past decade. Both studios and independent filmmakers have become dependent on the DVD income stream. Studios rely on DVD revenues to recover ever increasing production costs that cannot be recouped theatrically. Independent companies such as Vertigo Films (who sold more than 800,000 DVD copies of the Football Factory) thrive on DVD sales, and value it as a form of distribution that is suited to specialised/genre content.

There are several factors impacting on the development of the DVD market. Firstly, the market is becoming saturated. Over the last few years consumers have bought large amounts of DVDs, and shelf space in homes is becoming increasingly scarce. In addition, the DVD as a product is entering a stage of maturity in its life cycle. In 2006, DVDs were no longer a status commodity, but a throw-away item. In the first quarter of 2006 alone, about 54 million DVDs were given away free by newspapers and magazines in the UK.[79] As a consequence, consumers are becoming ever more selective.

As the DVD market is broadening out, consumer spending is diverting into smaller films, titles in the mid-box office range and genre pictures. In addition, there is increasing competition from television DVD releases, as sales for television programmes released through DVD in the UK increased by approximately 25%, making it the strongest growth sector. Consequently, the record number of DVD releases in the market is leading to a wider spread of consumer spending and reduction of the overall profitability of individual titles. Taking into account that overall market growth can largely be attributed to TV DVDs, the DVD window looks even less healthy.

Finally, customers are increasingly adjusting their buying habits to retailer strategies, with strong anecdotal evidence that consumers are now prepared to wait some time for their favourite titles to appear in the bargain box, rather than paying a premium for early consumption.

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[78] *According to Screen Digest research. "UK Video Market Reaches Maturity" Screen Digest April 2007*

[79] *http://www.screendigest.com/press/releases/press_releases_17_*

4.3   DVD Online rental

From online DVD rental to second-hand trade or download-to-own, the Internet has become the preferred medium for film consumers. Online DVD rental is already part of consumers' habits. Over the last year, there has been an explosion in the popularity of renting DVDs via the Internet. According to Screen Digest, online DVD rental will account for almost two-thirds of overall DVD rentals in the UK by 2009.[80]

Most service operators follow a similar model: for a monthly subscription fee, customers can choose from a selection of DVDs online, which are then posted to them with a prepaid return envelope. Besides the obvious convenience of not having to leave the house, and no late fees, the biggest advantage over traditional rental stores is that there is a wider selection of DVDs. The biggest providers carry more than 65,000 titles – a range the local Blockbuster would find hard to compete with. Consequently, Blockbusters has moved into online video rental as well, where it competes with market leader Lovefilm.com (merged with Video Island) and companies such as ScreenSelect.

Case Study - Peerflix

Peerflix was founded in 2004 with the goal of providing people with an easy tool to trade second-hand DVDs across the USA and Canada.

Instead of keeping merchandise in warehouses around the country, Peerflix uses a peer to peer approach. Members trade films directly with each other, build a "Have" list of DVDs that they are looking to trade, and a "Want" list they would like to receive. Peerflix matches users up based on geography and waiting time, supplies a pre-addressed envelope that users print out and fold to send the disc. Peerflix charges 99 cents per trade, with no subscription fee. The Peerflix community uses trading credits called 'Peerbux'. Each DVD has a 'Peerbux' value assigned to it, based on network demand and retail price.[81][82] While transactions over Peerflix are legal, they do not add any value to the DVD market and do not generate any income for film producers and distributors. Critics have pointed out that Peerflix will not be able to take advantage of the Long Tail (see box about the Long Tail) and that the selection of titles offered for trade is limited to mainstream titles. As a matter of fact, people with very rare DVDs might not be willing to trade them to strangers for a mainstream blockbuster and the service could end up with 10,000 people sending the same DVD

[80] "The online DVD rental war" by Will Smale, 22 March 2006 http://news.bbc.co.uk/1/hi/business/4804624.stm

[81] www.Peerflix.com

[82] "Online service helps users trade DVDs" by Elliot Smilowitz, 27 March 2006.
http://tech.monstersandcritics.com/news/article_1150474.php/ Online_service_helps_users_trade_DVDs

[83] "Peerflix: compelling and problematic" by Daniel Terdima, 20 September 2005

4.4 Blu-Ray versus HD-DVD

With the maturing of the DVD market, rising piracy issues and the advent of HD-TV, the industry is looking for a successor to the successful DVD standard. The two major contenders for the golden crown of the disc kingdom are next generation formats HD-DVD (major supporters: Toshiba, NEC, Microsoft), and Blu-Ray (Sony, Samsung, Philips, Matsushita, Dell).[84]

Like the DVD, the next generation discs will be used for films, video games and data storage. A standard HD-DVD is designed to hold a capacity of 15GB, while Blu-ray discs can hold up to 25GB. As a full-length feature film at top quality HD can require up to 50GB, manufacturers are set to produce triple-layer 45GB HD-DVD discs and double layer Blu-ray discs (50GB).[85]

Technically, the Blue-Ray camp claims their product is superior to the HD-DVD. However, producing Blue-Ray discs requires all-new recording machinery, whereas the switch to HD-DVDs only requires an upgrade for the recording industry. The advancement to HD-DVD is therefore seen by the industry as an easy, inexpensive and environmental friendly hardware update, while the switch to Blue-ray would be more complicated and costly.

To ease the transition for consumers, HD-DVD films will initially be released in a two-sided version, with a regular-formatted DVD film on one side and a high-definition format on the other. Blue-ray supporters stress the need to offer more interactive games and add-ons to consumers as an incentive to buy new equipment.[86] Sales of Blue-ray discs are expected to be driven by the Sony PS3, released in 2006.[87] Microsoft, which is competing with Sony in the video games market, therefore supports HD-DVD and has launched an add-on HD-DVD player unit to its Xbox 360 gaming console.

The major Hollywood studios are also split over the standard war. In addition to Sony Pictures, Blue-ray has won the support of 20th Century Fox, Disney and Lionsgate Home Entertainment. Universal is the only major studio to exclusively support HD-DVD, with further exclusive backing from The Weinstein Company and Studio Canal+. As of June 2007, there were 438 released or announced HD-DVD titles in the US, approximately half of which were exclusive to the format.[88]

The Blue-Ray website lists 1,385 titles as of July 2007, an unknown number of which are exclusive to the format.[89]

In addition to the HD-DVD versus Blu-Ray war, there are rivalries within the same camps. While Sony, Panasonic and Samsung are united in promoting Blu-ray technology over HD, they are ultimately each other's competitor as they seek customers for their respective Blue-ray players.[90]

Both formats have been designed to prevent film piracy. However, the content protection of both Blu-ray and HD-DVD has been compromised even before the discs are released on the market. As c't magazine revealed, an entire film can be captured at full resolution by pressing the print screen button once per frame. Once the task is automated, it becomes easy for pirates to duplicate a film.[91]

There is a short window of opportunity for producers to profit from early entry into the Blu-ray and the HD-DVD market. Initially, there were only approximately 150 titles available for both formats, versus more than 100,000 on DVD. Consumers who bought HD-TV sets and a HD player might therefore not be very selective in their buying decisions to enjoy their equipment. A study by Screen Digest comparing the take-up of HD-DVD/BD compared to earlier video formats found that, although they account for less than 0.1 per cent of sales, and while year one UK HD penetration lags behind that of other video devices, "within the constraints of HD-ready-only households hi-def has a very strong adoption rate" and a 1.8 per cent adoption rate of HDTV households can be expected in 2007 for the UK. This puts the format ahead of either the VCR or DVD in comparative growth terms.[92]

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[84] *"Rivals line up for battle" by John Hazelton, Screen International, page 14-15, 17 March 006*

[85] *"Competing DVD formats set for grand clash", 16 March 2006*
http://www.femalefirst.co.uk/business/Competing+DVD+formats+ set+for+grand+clash-312.html

[86] *"Hollywood Faces DVD Standards War", by Ed Sutherland, 13 July 2006*
http://www.newsfactor.com/news/Hollywood-Faces-DVD- Standards-War/story.xhtml?story_id=110007MRLR60

[87] *"Panasonic heats up next-generation DVD war", by Shihoko Goto, 30 March 2006*
http://dvd.monstersandcritics.com/news/article_1151076.php/ Panasonic_heats_up_next-generation_DVD_war

[88] *http://www.satelliteguys.us/hd-dvd-forum/51497-list-hd-dvd-titles. html*

[89] *http://www.blu-ray.com/movies/*

[90] *"Samsung Delays US Blu-ray Player Launch to June", 04 April 2006 http://www.cdrinfo.com/Sections/News/Details. aspx?NewsId=16686*

[91] *http://arstechnica.com/news.ars/post/20060707-7214.html*

[92] *"Putting Hi-Def Into Perspective" Screen Digest June 2007 p. 168- 169*

5. Video on Demand (VoD) – Vanquisher of DVDs?

5.1 Introduction

Video on Demand (VoD) has been on the digital horizon for years. What started as a pay-per-view service offered by TV cable operators is now a fully fledged exhibition window empowered by broadband Internet. VoD over Internet has the potential to profoundly disrupt the complete distribution value chain of the film industry, replacing DVD rentals and sales, and to turn release strategies and financial decisions upside down.
VoD over Internet - Unlimited Selection
As Video on Demand over the Internet becomes more popular, a world where nearly every film (classics, cult films, blockbusters, independent films, special interest, etc) is available either for purchase or for rental online, is not difficult to imagine. In such a world, the customer has a virtually unlimited choice – the market for films is no longer confined to the limited shelf space of a retailer or rental store.

VoD over the Internet also means that rural areas will for the first time have access to the same diversity of films as urban areas. In such a scenario, mainstream audiences are likely to exhibit a higher willingness to experiment with niche or specialist films than they show today. A similar trend has already been observed with DVD online rental, as consumers discover that their tastes may differ from what marketing and restricted choice has led them to believe.

Without doubt, marketing spending power will still be crucial to buy consumer awareness, and the end of the blockbuster is not nigh. However, in a world of unlimited choice through VoD, independent films/specialised films are likely to find their audience more effectively than in the current state of the industry, where distribution is firmly controlled by US media conglomerates.

5.2 The Global-Mass-Niche-Market

What previously was considered a "small film" in a domestic market has the potential to be a bigger film on an international level by taking advantage of the Long Tail (see Appendix). If the niche markets for a film in each territory are aggregated on a global level, even very specialist films can suddenly find a viable audience (see case study on Star Wreck). VoD enables producers to tap into markets they did not have access to before, finding their audiences locally and internationally with low additional costs.

Producers can take further advantage of online distribution by collecting the email addresses from people who have downloaded their film, allowing them to create a database they can use to market their next project.

Case Study - Star Wreck: In the Pirkinning - Where No Distributor Has Gone Before

The Finnish Star Trek spoof comedy, Star Wreck: In the Pirkinning, illustrates the potential of VoD perfectly. The film, in Finnish with English subtitles, was made by students and other amateur filmmakers on a micro budget, using personal computers to create special effects. Despite this, the film has been seen online by 3.5 million people in less than two months. While download was free from their website the film made some revenue on DVD and also landed the filmmakers a contract for their next Science Fiction film Iron Sky. The film can be seen as one of the most successful Finnish films of all time, in terms of reaching a broad, international audience.

To ensure fast download, Star Wreck was made available for the BitTorrent file sharing system and through Google video. The BitTorrent network has a reputation for being extremely fast but also for being a premier source for pirated content on the net. Recently, the network has attempted to combat this by establishing a DRM-wrapped for-pay service and also by removing search functions for pirated material. Warner Bros announced in May 2006 that BitTorrent will distribute video over the Internet, a significant first step of studios partnering file-sharing companies (while at the same time RIAA and MPAA are suing BitTorrent search engines and server owners of P2P networks, which could hamper

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[93] http://www.starwreck.com/download.php

http://www.ironsky.net/

http://arstechnica.com/news.ars/post/20041214-4467.html

5.3 Cutting the Middleman: Self Distribution

Struggling to secure a distribution deal is not an uncommon experience for many independent film producers. The relative ease of distributing a film online is therefore likely to encourage an increase in the self distribution of films. Taking advantage of innovative online marketing techniques (viral marketing in forums and blogs, search engine advertising, user recommendations, etc) film producers can build word of mouth for their product online even without big advertisement budgets.

By bypassing traditional distributors, film producers can receive a bigger cut of their revenues (although they might have to split revenues with telecom providers). While there is no doubt that the professionalism of a traditional distributor will in most cases result in a bigger audience, smaller producers might find that a bigger share of less, amounts in the end to more, than a smaller share of a lot.

In the US, Internet companies such as Buyindies.com, Filmbaby.com and Indieflix.com are supporting self distribution. There is also a range of ventures starting up in the UK, including services such as Worldcinemaonline.com and Itsallelectric.com.[95]

Case Study - Surveillance, Four Eyed Monster and Breakfast – Not Playing At A Cinema Near You

For just one week in June, visitors to YouTube were treated to a feature length film treat. Woody Allen-esque social comedy Four Eyed Monster by New York filmmakers Arin Crumley and Susan Buice was available for anyone to view for free. The film was a typical low-budget $100,000 shoot, financed on credit cards production, something the film makers explained in the YouTube introduction.

As well as YouTube the film was shown in Second Life, but it was at the former that it attracted half a million viewers in just the first four days of its run, more than what an average blockbuster would score in the UK.[96] It may be a calling card film, but it has shown new and innovative ways of building an audience and attracting attention. (An earlier example of a similar phenomenon was the web popularity of 9-11 documentary Loose Change, which had been viewed on YouTube 477,997 times by July 2007, though it could be argued that conspiracy videos are an easier 'sell' on-line than feature length fiction films.)

Yet it is not just works by unknown amateur filmmakers that are finding their way on-line. UK independent distributor Pecadillo hosted the premiere of Surveillance, a UK independent film made for £300,000 and starring Tom Harper, Sean Brosnan, Dawn Steele and Simon Callow, in the summer of 2007. The film could be viewed for a one-off fee of £2.99 or customers can download-to-own it for £9.99. By testing the waters on-line first, the distributors hope to gauge the market for a possible theatrical release in the autumn.

The producers are predicting a future of near-simultaneous cinema and online releases of their films. The film was released through MoviePol, an outfit run 'virtually' between Los Angeles, Toronto, London and founder Mary McGuckian's base in the South of France. "We were all bemoaning the state of the American distribution system," McGuckian was quoted as saying. "Even a film with Colin Farrell and Kate Winslet can't guarantee to get a release. The difficulty for all of us is that unless they perform in the US, it's very difficult to release in other countries. So we thought 'Why not do it online?' [We would have the] same access but much wider reach and we would just have so much more potential to release the many, many films that are really worthy of a wider platform than they get."[97]

Even Hollywood studios are dipping their toes in VoD of titles that bypass the cinemas, with MGM providing an online premier to A Dog's Breakfast through iTunes and Amazon's Unbox on 3 July 2007. The director David Hewlett starred in MGM's television series "Stargate Atlantis", which already had a strong online following.

With several of the show's stars also in the film, the trailer of the film quickly attracted a quarter of a million views on YouTube and on its website (AdogsBreakfastMovie.com). Although no theatrical release is planned, the film was set to get a DVD debut on 18 September.[98]

[95]   *MovieMaker Spring 2006*

[96]

http://www.telegraph.co.uk/opinion/main.jhtml?xml=/opinion/2007/06/18/do1804.xml

[97] *http://film.guardian.co.uk/news/story/0,,2117226,00.html*

[98] *http://www.hollywoodreporter.com/hr/content_dis play/film/news/ e3ib1ebc09603fb86d2fb56fdc5fe936f8d*

5.4 Hollywood Rest in Peace – Simultaneous Release

The film industry has traditionally followed the Hollywood business model of releasing a film sequentially across several windows (Cinema, DVD rental and sales, TV). As the film moves through its life cycle down the windows, the distributor maximises sales for each individual exhibition window. This model has never been questioned seriously, until Marc Cuban released Steven Soderbergh's Bubble with his company 2929 entertainment in a simultaneous, cross platform release in theatres, on DVD and on his HD cable network at the start of 2006.

An industry outcry followed, claiming Cuban was destroying the theatrical exhibition window. He, on the other hand, claimed that 'day-and-date' was the only sensible way to match up demand and supply efficiently, and that consumers should be given the freedom to view the films they want to see, when and where they want.

Case Study - Does a shorter theatrical window really damage box office revenues?

In many countries around the world, the theatrical window has been shortening as distributors seek to maximise revenues from DVD sales, minimise the effects of piracy and maximise the impact of theatrical marketing. On the other hand, theatrical exhibitors have maintained that simultaneous or near simultaneous releases would be bad for the consumer.

Against this background, the UK Film Council assessed the evidence to date of the revenue implications of shortening the theatrical window. Their study used a dataset comprising 804 high box office films released between 1999 and 2006. The approach taken was to model the length of the theatrical window as a function of box office, DVD penetration and a number of other relevant variables and seek evidence of statistically significant effects. The findings were:

- The length of the average theatrical window fell from 190 days to 125 days between May 1999 and April 2006.
- The growth of the DVD market was a significant influence on the fall in the length of the window.
- The theatrical windows for different films tend to be tightly bunched around the median, despite the wide differences in the theatrical and DVD potential of different films. This suggests the length of the window is set institutionally rather than by market forces alone.
- To date there has been no detectable cannibalisation of theatrical revenues by the reduction of the window.
- During 2004–2006, other (non-measured) factors were also significant. A prime candidate would be competition from new digital technologies.

Of the above, potentially the most controversial finding is that there has been no detectable cannibalisation of box office revenues to date. This does not mean there may not be a threshold below which cannibalisation will

Hollywood itself broke away from its traditional release strategies several years ago with the introduction of global, single day release date for 'tent-pole' films, including Lord of the Rings, The Matrix and Pirates of the Caribbean, instead of sequential releases by country. Beside reducing piracy, a single, global release date also maximises the marketing impact of advertising spending for a film. This strategy helps to increase the opening weekend box office and also prevents negative word

of mouth affecting audiences. The year 2006 set new standards for global single day release strategies with phenomenal starting box offices for X-Men and DaVinci Code, which were both panned by critics afterwards. If Hollywood studios take advantage of marketing blitz by releasing a film simultaneously across several territories, why not release a film simultaneously across several platforms in one country to maximise marketing spending for a smaller film? While Bubble was not a huge commercial success, the buzz surrounding the film's release gave it a much higher exposure than it could have expected otherwise (the film was shot by Steven Soderbergh on HD without a script and no-name actors).

The rise of VoD will encourage such unconventional release strategies, changing the rules of conventional film industry business models. For smaller films in particular it might make sense to open simultaneously in theatres and on VoD to maximise their marketing efforts; it might even be viable for some films to open directly on VoD and only after the film has developed a strong following and positive word of mouth, to seek theatrical distribution.

The reason for this is that it is Hollywood studio productions who dominate the cinemas and not (European) independent productions. More than 700 feature films are produced each year in Europe alone,[100] yet in most countries cinemas are dominated by American product. In the UK, 467 films were released last year theatrically, an average of nearly nine films a week. Independent producers, who think out of the box, will realise sooner or later that trying to compete with the majors on their game terms can not be an ideal strategy. In a time of increased competition, where even $50 million dollar films struggle to get attention from film critics and have to perform in their first week or they are taken out of a theatre, the nearly obsessive focus on theatrical distribution has to be rethought. Many independent films outperform their theatrical box office on DVD by far and are even more likely to do so with VoD.

Independent and especially European independent producers do not have a big market share to lose in the theatrical exhibition window, but they might well have a new (potentially large) audience to gain if they are willing to experiment with new release strategies and windows. The main challenge that niche films face is a physical one, in that VoD services run by cable and IP television service providers give preferential placing to large blockbuster hits, and that independent VoD services over the Internet tend to be limited to the computer and thus have problems crossing the 'last meter'.

5.5 Rights and Financing

Ultimately, the question of who will benefit most from online distribution boils down to negotiating online rights. Online distribution disrupts traditional finance models because it can potentially collapse sequential windows and transcend territories. Broadcasters argue that VOD rights should belong to them, an opinion naturally opposed by producers. As there is little information at present on how to calculate the value of online rights, the industry is currently cautious and broadly follows a wait-and-see policy. A viable business model that is able to turn an international, online audience potential into an upfront financing source has also yet to be developed.

Especially film support institutions will have to re-evaluate their policies and develop new strategies to help producers to take advantage of new distribution windows. At the moment, film policy is not only not promoting change but hindering development by insisting on a theatrical release for funded films. Assessment criteria for film funding also follows a far too rigid approach, and takes a film's success on DVD let alone VoD into account for funding decisions.

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[100] *http://www.obs.coe.int*

[101] *The Netherlands have also been a pioneer in vodcasting (see article) as over 60% of Dutch people have broadband Internet of 1 Mbit/s and faster.*

5.6 The current situation: US ahead, Europe contemplating

The major distributors see online distribution as a weapon to combat movie piracy by offering a legal alternative to consumers. In April 2006, Warner Bros was the first studio to deliver a download-to-own version of a major film, Harry Potter and the Goblet of Fire, with its DVD release to consumers in the Netherlands.[101]

The film was protected by Microsoft's Windows Digital Rights Management software to prevent users from burning the files to DVD, but the digital copy of the film allowed for unlimited playback on whatever device the film was downloaded to.[102][103]

Universal started its download-to-own service in the UK in April 2006 in partnership with LoveFilm.com. The initial offering comprised 35 titles including King Kong. Arts Alliance Media (the largest shareholder of Lovefilm) has also made deals with Icon Film Distribution, and Sony films to distribute their films online. As of the middle of 2007, LoveFilm.com had 700+ titles to download-to-rent and 500+ downloads-to-own.

LoveFilm.com allows customers to download and keep a copy of the movie on their PC as well as a second one for a portable device carrying Windows Media Player. A third copy is mailed as a standard DVD to the consumer. New releases are priced at £19.99 and older films at £9.99.[104] The company also offers a download-to-rent service, allowing customers to watch a film within a 24 hour expiry period. Download-to-rent comes in two quality options, "high" (small file size) and "super high" (larger file size), with download times varying between under an hour (high) and up to two or more hours (super-high) with a 1 Mbit broadband connection.

The Internet and broadband company Tiscali has forged ahead in the UK with VOD, and collaborated with Revolution Films on Michael Winterbottom film, The Road to Guantanamo. As soon as the film was aired on Channel 4 in March 2006, the film was first made available to download from Tiscali and was then released a week later to DVD and cinemas.[105] Tiscali offers several other titles in its online cinema store in partnership with Californian-based VoD provider CinemaNow, which currently offers more than 4,000 titles on its website.[106]

In the US, Hollywood's top five studios, Paramount Pictures, Universal Pictures, Sony Pictures (including MGM), Warner Bros and Twentieth Century Fox, jointly own the download service Movielink. It proposes the download of new releases with a price range of $20 and $30 per download. Older movies start at $9. Movielink customers can create their own permanent digital film library of films, which can be viewed on up to three personal computers and can be streamed in a home network, in addition to downloading rented films for 24 hours. Movielink also licenses software to customers that allows them to transfer downloaded films to DVDs for playback on standard DVD players.[107][108][109][110][111]

However, building a simple download platform may not be the optimal strategy for distributing films over the Internet. Movielink has been heavily criticised for selling films that take too long to download, are frequently of poor image quality and can cost as much as DVDs. Increasingly, Hollywood studios are striking deals with peer-to-peer file sharing companies like BitTorrent, Guba and Wurld Media (Peer Impact) to distribute films over the Internet (Twentieth Century Fox has a distribution deal with Wurld Media, Sony with Guba, and Warner Bros with BitTorrent, Guba and Wurld Media).

BusinessWeek has reported that five of the studios that bankrolled Movielink are looking for a buyer of the video-on-demand service[112] as it has limited appeal in comparison to services such as BitTorrent, which has already gained almost 80 million users. Distribution over peer-to-peer networks is much faster, more cost efficient but less easy to control.

VoD has been further propelled with Apple, distributing films through its iTunes Music Store. However, the service has not won support form all Hollywood studios. So far it has the backing of Disney (including Pixar, Miramax and Touchstone Pictures), Paramount Pictures catalogue titles (parent company of DreamWorks), Lionsgate, MGM for a total library of 500+ titles. However, the main video content for iTunes Music Store has proven to be television shows from the large broadcasters (Disney's ABC and others). The service started in September 2006, and Disney aims to generate $50 million through iTunes in its first year. Apple has yet to start selling films or television shows for download in other countries other than the United States.

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101 The Netherlands have also been a pioneer in vodcasting (see article) as over 60% of Dutch people have broadband Internet of 1 Mbit/s and faster.

102 "Warner downloads to Netherlands" by Jennifer Netherby, 31 March 2006. http://www.videobusiness.com/article/CA6321191.html?industry id

=43295&industry=VOD

103 "Warner Bros signs Dutch download-to-own deal" by Wendy Mitchell, 31 March 2006. http://www.screendaily.com

104 MEB Journal, "King Kong spearheads global first with new down- load-to-own model in UK" Page 43, April – May 2006

[105] http://videoclub.tiscali.co.uk/

[106] http://www.cinemanow.com

[107] http://www.videobusiness.com/article/CA6321278.html?industryid
=43295&industry=VOD

[108] http://www.cdrinfo.com/Sections/News/Details. aspx?NewsId=16692

[109] http://www.dtg.org.uk/news/news.php?id=1582

[110] http://news.bbc.co.uk/1/hi/entertainment/4871392.stm

[111] http://www.businessweek.com/ap/tech/D8ITUKH00. htm?chan=search

[112] http://www.businessweek.com/technology/content/may2006/
tc20060531_484649.htm?chan=search

5.7   Conclusion

There is a tangible threat that Europe will be left behind in the development of VoD platforms, and a unique opportunity to seize market share in a developing market will be missed as European producers, distributors and broadcasters are paralysed in a rights discussion. While the US majors are embracing the new medium and are partnering with p2p networks, or companies such as Apple or telecommunication operators starting up their own VoD services, the independent community has so far left itself out of the game. If the only VoD platforms started are operated by the Hollywood majors, independent content is likely to be hidden away in the dark corner of a server. Parallel to their efforts to build platforms, the majors are also lobbying governments and policy makers to introduce strict copyright laws and to close down alternative ways of distributing video content online. It is not unlikely that in the foreseeable future all low cost distribution alternatives will have been closed down on the grounds of piracy, and the remaining forms of distribution will be firmly in the hands of established media conglomerates.

Appendix 1:
Film is Dead by Richard Jobson

Film is dead. Digital cinema is the next chapter. It holds the answers for both the studios and the independents. The potential is startling; digital cinema can create a world that surpasses all expectation both aesthetically and economically. We are in the midst of an immense period of change. This transformation will affect all media including music video, animation and graphic design. New pastures beckon. PDAs, cell phone downloads, gaming - all have vast revenue streams, which already surpass all expectation.

Feedback loop

The cinematic imperative of the past 100 years has been the search for realism. That too is finished, just like the devices that brought us a chemical imprint. The magical eye with the mechanical heart that gave birth to what we now call cinema has come full circle. The long slides that contained separate drawings and were pulled through a magical lantern at the end of the 19th century have returned in a new guise, this time as data based technology, taking us back to the world of representation rather than reality. We are back in the world of the graphic rather than the photographic. Marginalised techniques have moved to centre stage. Forgotten, almost neglected, tricks become the currency that lies at the heart of digital cinema. A new narrative scrambled into a world, always fake, never real, a world of pixels and data, a complete rejection of authenticity. If film was 'truth 24 frames per second' then digital cinema is the lie that has become the truth 25 frames per second. Cinema has moved back to its origins, fakery and illusion, the anti-reality of creativity.

The search for authenticity is pointless. The search for originality remains the best possibility. Creating, developing and exercising a new palette, looking beyond Hollywood's super-genre – the commercial film – and the enabling of a wide array of hybrid-born ideas; the choice is endless. How do you want to tell your story? How do you want to see your characters? How do you want to hear the world you have created? The digital layers available make the possibilities limitless, thus the decision-making process becomes even more important. Creative opportunity on the grandest and most elegant democratic scale empowers anyone with a vision who wants to participate. The increasing forms of sophisticated electronic content delivery have sent ripples through the industry that excite some and terrifies others.

The hyenas are in the building

The slow lurching crisis the Film Industry has deftly kept ahead of over the past decade has finally caught up. Digital cinema is not part of the future, it's here in the present and dominates every panel discussion, every budget meeting, and now every strategic decision is made under the shadow of the great unknown entity that is changing everything we ever thought we knew about cinema as a viable multi-billion dollar industry. The chorus of what do we do, which way do we go, how do we make this work, where do we fit in, can be heard coming from those who wanted to keep the status quo. As for the rest, they can do what they always did: feed off the scraps. The Studio system is the one most at danger of imploding. The multi-platform digital world enables the former 'hyenas' of the business to think about their projects from not a position of weakness but of empowerment.

This undoubtedly is the most exciting time to be part of a changing industry, which is in a state of flux, the old guard running for cover, the young Turks making it up as they go along; there's a mini-cultural revolution going on that will change everything we know about how cinema is conceived, produced and delivered. The most important member of the cinematic exchange, the audience, holds the key. Choice is king.

New distribution options

New distribution channels will make it possible for consumers to watch a much wider selection of digital movies – or segments of movies – than are available to them today, on portable devices, PCs, and the trusty old television set. Some of these channels will charge for downloads. Others, like Revver, may be ad-supported while others (YouTube, for example) might simply provide a way for filmmakers to build a reputation, or promote their work through a particular community and by the sheer weight of good word of mouth and hit-ratio. New social behaviours are already emerging around the sharing of short video clips online, with Internet users recommending them to friends via e-mail or blog entries.

Google Video, for example, allows Indies to set a price for each download and share the revenues with Google. Independent filmmakers like Ben Rekhi ("Waterborne") were among the first to experiment with selling downloadable feature through this format.

The web

The Web's decentralised filtering system isn't quite working for film as well as it might. Many people speculate that no one wants to watch a movie on his or her computer. While that may be a part of the story, the "people won't do X on their computer" explanation has been wrong so often that it cannot be the full answer. The last decade has demonstrated that people are surprisingly willing to put up with lower quality or discomfort to get the content they want or to get stuff for free, whether it's telephones (cell phones and Skype), music (MP3s), and even video (YouTube). We just aren't that picky.

Other Web-film pundits suggest that Internet bandwidth is the problem, and that movies are just too big to download. While that may have been true once, it's becoming less true. The films on Netflix's (www.Netflix.com) preview and watch-it-now service deliver smoothly and quickly. Even the big studios have taken baby steps toward Net downloads with the sprinkling of films now on iTunes. MGM, for example, is now offering titles from its prestigious catalogue of feature films for purchase and download on the iTunes Store. To start the project, iTunes customers were able to purchase legendary films such as Dances With Wolves, Mad Max, The Great Train Robbery and Rocky, with other big titles added in the following weeks and months.

Surprisingly, independent producers today only rarely make their films available online. A mixture of techno-phobia, rights issues, short term business plans, and a feeble conservatism have kept the gate shut on a radical opportunity. There are early exceptions, like the short films collected at The Daily Reel (www.DailyReel.com) or the DVD documentaries at Brave New films (www.bravenewfilms.org). But many independent filmmakers are surprisingly traditional about how they want to reach their audience. The hope of signing the big deal has inhibited a flood of online, feature-length film - so far.

That will change. The more daunting problem may be our attention spans. Studies confirming a 15-minute boredom barrier may be a powerful reason why the Web may have trouble acting as a filter for promising but unknown films. For Web filters to work, they rely on thousands of volunteers willing to watch the product and issue a recommendation. The short run times of pop songs and YouTube videos (maximum length 10 minutes) makes Web filtering work for them. But to sit through a completely unknown 90-minute film to figure out whether it's any good is a big ask, in which case Web filtering breaks down.

Independents at the cinema

The emerging network of digital cinemas could and should make it easier, and potentially cheaper, for independent filmmakers to get their work seen in theatres. Distributing a movie on a hard drive, a set of DVDs, or as a satellite download is more efficient than striking celluloid prints. The big question will be who owns the cinemas and how flexible will they be. Currently, there is a crisis in available theatre space. Former Art House cinemas are now adopting the work of the mini-majors such as Fox searchlight and Warner Independent, meaning that more specialised World cinema is finding it hard to not be bullied out of the theatrical market.

Emerging film-clubs have sprung up all over the UK, inviting Indie film makers to show their works in new licensed venues such as town halls, clubs etc, enabling an artist to tour with their film. This pattern has provided a successful awareness campaign for directors of reputation such as David Lynch, who took to the road rock and roll style with Inland Empire. I did the same with my movie, A Woman In Winter. Projecting from HD input Projector from HD DVD with surround sound system. The tour was a sell-out and offered the opportunity of merchandising various products from DVDs to posters. I was genuinely surprised by the response. There is clearly a hunger for these more specialist films to have an event-based presence. To compete with studios wielding multi-million dollar marketing budgets, Indies and outsiders will have to be inventive. Will it be an independent filmmaker who starts sending advance screeners of a new movie to influential bloggers, hoping for a review or mention? Or who offers tickets to a festival screening to the artist who designs the best ad or movie poster?

Cultivating a fan base

In the past, the relationship between a filmmaker and the audience has been mediated by the distributor; they've handled the marketing, letting fans know that "the latest movie from acclaimed director so-and-so will be in theatres this fall."

Successful directors will increasingly take over the responsibility for that relationship, building up a database of fans and communicating with them in between projects. Directors like Robert Rodriguez and Kevin Smith have been pioneers in this regard, but other filmmakers may take it further, circulating scenes from their shooting script among fans, or posting selected dailies from the set. The fan community will be considered an important asset, helping to build buzz for upcoming projects (and perhaps financing them, too), whether that community is organised using MySpace or another tool.

The audience in control

Letting the audience tinker with the finished product is anathema to most Hollywood executives and directors. Indie filmmakers will likely be more comfortable with the idea that their finished product may only be one of many versions. Movies may be evolving into a collection of "assets" that can be endlessly rearranged; a teenager in Taiwan may produce a tighter, more compelling 80-minute edit of your 120-minute magnum opus, and systems will emerge to make sure that both parties get rewarded for their work if that abridged version is consumed widely.

Already, directors like Richard Linklater (A Scanner Darkly) have invited Internet users to cut together different versions of a movie trailer, acknowledging the best ones with prizes. British filmmaker Michela Ledwidge has been exploring the concept of posting all of her raw footage on the Web for a feature called "Sanctuary" and allowing anyone to produce his own derivative work.

The big cinema experience

For THE MAJORS to survive and commercial cinema to succeed as a collective experience, it must find the route back into the event movie: the world of fantasy, the epic historical drama, science fiction, the graphic novel, animation. Recent successes such as 300, Sunshine, Apocalypto have all engaged huge box office takings but delivered productions at much lower budgets. The possibilities have only been touched upon, there is so much more at so many different levels.

3-D

Entrepreneur and filmmaker Steve Schkair has been developing a digital 3-D camera, called the Cobalt 3Ality System. Director James Cameron and camera-maker Vince Pace have been collaborating with Sony Electronics on a competing 3-D camera rig. All of them hope to make digital 3-D cinematography more accessible for low and moderate-budget projects.

Consumers have once again been gravitating to the 3-D experience, which now offers crisper images and fewer headaches than it did in the 1950s; the 3-D releases of Disney's Chicken Little and Sony's Monster House both performed better than the 2-D versions.

Theatrical 3-D releases, as well as 3-D projects intended for home or mobile viewing, will open new creative possibilities for filmmakers.

Feedback loop: The future

That same dynamic will likely to continue into cinema's second century, even as the pace of change quickens, with new tools becoming available to filmmakers and consumers watching movies on new devices, from cell phones to 3-D television sets to video displays integrated into eyeglasses (currently being made by several companies). Already, Indies and outsiders are experimenting with some of the concepts that will catapult movie-making and movie consumption into new directions.

Cheaper hardware and software

Cheap cameras and editing software have already made it more affordable to make a live-action feature or a documentary. Cheaper software for pre-visualisation will make it easier for Indie filmmakers to pitch more complicated projects. Genre filmmakers, making low-budget horror movies, are using FrameForge to storyboard every scene as part of trying to get funding. Showing it to the potential investors takes a big part of their risk aversion away.

I am currently working on the first Manga anime to come out of the UK, The Only Ones. The finance plan is simple, to create a three minute pilot showing the characters, the action, the style, music, actors doing the voices then take it to the market, not only as a Mange feature but also as a game (PSP, X-BOX, PS-3), cell phone franchise, V-ipod serial. The delivery possibilities for this kind of work is truly exciting, aimed at an audience looking for something fresh and part of their multi-platform world. The idea is to use the money from the various sub layers and tributaries to retain the bulk of the rights and expand the business model. To create and control a library of material will play a big part in determining a serious place in the busy digital market place.

Companies such as I-Thentic based in New York are already developing relationships with cool content providers to supply material to cell phone companies who are anxious to give their expansive, young client base a new hook.

Cheaper software for animation and visual effects, from companies like Adobe, Avid, Apple, and Autodesk, will also make it easier to produce high-quality computer animation and effects sequences without spending millions. This is an area I have investigated and experimented with over the past three feature films: 16 years of Alcohol, The Purifiers and the most recent and advanced, A woman in Winter. I have broken that feature down to show how a combination of ambition, preparation and a relatively small amount of money makes all of the ideas discussed in this document realisable.

A Woman in Winter: Case Study

Director/writer: Richard Jobson

Producer: Richard Jobson

Distributor: Tartan Films

Sales Company: Hanway

Budget: 500k

Shot: Hi-Definition Sony 750 Panasonic Varicam

Stills: Canon D1

Script development: UKFC 6 Month period

Pre-production: 5 weeks

Production shoot: 3 weeks

Post production: 6 months

Shooting ratio: Average 50 set ups per day.
Two cameras running.
Shooting varied frame rates.
60p slow motion. 7/8 frames night shooting

Edited: Avid Express/ Final Cut Pro/ Adobe Premiere

C.G.I: Adobe After Effects/ Photoshop

Post Production: S2S Post

Computers: (5) Apple Mac G5 Towers

Length of edit: 6 Months

Film premiered at London Film Festival

Screened:
Edinburgh Cameo
Glasgow GFT
Aberdeen City screen
Inverness Vue
Belfast Queens Film theatre
London National Film Theatre

Synopsis
An Astrophysicist, Michael Seraph, is studying the strange behaviour of a distant star hoping that it might at last be proof of the existence of black holes.

He meets and falls in love with a mysterious French photographer, Caroline. They embark on a sensual relationship.

In the Observatory where he works, a tension grows as a member of the research team questions the credibility of his theory.

Caroline starts to behave oddly. He thinks she's ill. His work at the Observatory deteriorates. He finds a doctor's card in her bag. He arranges to meet him.

He visits the doctor who tells him that the Caroline he has been treating cannot be the same, as she is older and has a child.

Caroline wants to talk to Michael, she has something important to tell him but he wants to know more about her. Why is she so mysterious and secretive? They argue. She runs off without telling him anything.

The doctor gives him the address of the Caroline he was treating. He visits her apartment. There is no one home but the door is open. He enters looking for a clue. She comes back with her child. The child sees him in the apartment but doesn't tell her mother. He can't see the face of the woman. On the bedside table is his framed portrait. He doesn't see it.

Caroline returns and tells him that she's pregnant. He thinks this explains why she had changed. They enjoy Christmas together rekindling the warmth of their relationship.

The star he's been monitoring is burning out and he predicts it will disappear into a black hole on New Years Eve. The team prepare and then witness the event. His theory might be correct.

He races back to his apartment to tell Caroline. People have gathered on the main bridge to celebrate New Year and watch the firework display. He can see Caroline standing on the bridge. As he makes his way to her, a taxi quickly turns a corner and is coming fast down the street. The young girl he saw in the apartment is standing on the bridge with her mother. The balloon she is holding is blown out of her hand, she runs after it.

She is about to run in front of the taxi when Michael pushes her out of the way. The taxi hits him. He at last gets a glimpse of the young girl's mother. She doesn't see him.

Caroline runs from her place on the bridge to the scene of the accident. Michael is dying. The woman and child are no longer there.

He watches the balloon fly into the night sky against a backdrop of exploding fireworks.

Enhancing the Storytelling Process

A Woman in Winter was a story written with an elaborate style with a heightened sense of audio and visual storytelling in mind. The main theme, the nature of obsessive love, centres around a man's journey deep into his own madness. Using elaborate digital effects – both in the visual and audio domain – were key to imparting the confusion, bewilderment and above all the beauty of Michael's journey to the audience. It would have been impossible to convey - for example – a man slipping though a quantum wormhole into another time dimension using traditional film storytelling techniques! However, using a blend of sophisticated image manipulation and enhancement, multi-layering advanced grading techniques we were able to build dazzling visual effects.

The back story plays with the curious and odd world of quantum mechanics and there was a subtle but constant shift of visual perception throughout the story using various techniques, with the intention of unnerving and subconsciously unsettling the audience. A Woman in Winter is fundamentally a ghost story, so using visual trickery and ambiguity is all part and parcel of the genre – except we did it using the latest in cutting edge digital software.

The story also used digital photography as a key aesthetic component. Using Adobe Photoshop, the director and photographer took the still images and created fully formed scenes. As we started the digital enhancement process on the set, the creative team were constantly reworking these still image sequences throughout the shoot and into the post production, which means the overall "look" of the project pushed the grading and visual aesthetic to a new area at this kind of budget.

The project also used a full digital score, where sound design and music blended into a seamless soundscape which pulled the audience into this unique world of hyper reality. The final mix in Dolby Digital 5.1 was perfect for creating a three-dimensional space for the audience to become part of Michael and Caroline's world.

Production

Three weeks to shoot an ambitious Sci-Fi thriller during a busy period in a city's calendar was always going to be a hard task. Imagining a world which involved quantum computers, the cosmos, state of the art observatories on our micro-budget was even harder. Standing in a makeshift studio surrounded by green screens, digital projectors and live digital feeds from various giant telescopes was quite a sight: impressive but terrifying. The average cost of a UK film is still around £2-3 million, and that's for basic non-visual Social Realism. We were trying to push the boundaries, open up the possibility of

what could we achieved with limited resources. A high

concept movie made with a small team needs to be rigorous, if not meticulous, during the pre-production period: from story boarding to working out how the CGI images will be created in time to be fed directly into the action. The list of CGI was extensive. A Soho facilities house quoted me the grand sum of £1.5 million to do the CGI work, three times the actual budget.

In the end I settled for two young game programming animators looking for a break into film, who did incredible work over a six-month period with a tiny budget of 60k. They created a digital workflow system that fed straight into the movie during production and editing.

Example of CGI list:

SC1:   A distant star in empty galaxy. The star dissolves into shot from nowhere but stays in the distance.

SC3:   The star becomes bigger as it moves to the centre of the screen.

SC5:   The star moves though the galaxy. The galaxy is now full of other stars and planets.

SC20:   The star fades into the distance of a busy galaxy.

SC21:   Comets appear violently from the darkness of an empty galaxy.

SC22:   Light disappears into darkness.

SC26:   Computer screen analyse data – green screen in quantum computer room.

SC27:   Le Samourai on big screen.

SC32:   The star reappears in the distance and slowly moves through the galaxy.

SC35:   The computer moves faster through a series of numbers and equations. Full screen.

SC49:   Snowflake freezes outside window of apartment. It dissolves into distant star in empty galaxy. The galaxy becomes busier. The star moves closer.

SC50:   The computer moves through numbers at high speed. It suddenly stops.

SC51:   Numbers freeze on the computer. This should be transferred from main screen to green screen in quantum computer room.

SC54:   The computer moves one digit.

SC55:   An aurora creates light patterns.

SC57:   The star is seen coming out of gas clouds.

SC59:   Numbers move fast on computer screen. They slow down and speed up. This should be seen

SC69: Quantum Computer screen and full screen numbers are frozen.

SC70: The cosmos looks like a still photograph.

SC72: Comets flash across the sky.

SC73: The comets move towards the satellite – they disappear. Green screen computer screens in main room of Observatory as well as full screen.

SC79: The star moves closer.

SC103: The computer moves one digit.

SC105: The computer moves another digit. Then another and another. This happens 10 times. It picks up speed and moves through the numbers quickly.

SC110: The computer moves fast through numbers and equations. The distant star becomes brighter in a busy galaxy.

SC 129: In Michael's eye a star explodes. The explosion becomes a full screen supernova. The screen slowly fades and then becomes quicker as it falls into complete darkness.

SC131: The distant star seems to be fading.

SC150: Comets flash across the sky. The planets move at a fast speed. Satellite moves further into the galaxy. The light of the star is seen in the distance.

SC156: The star disappears into a gas cloud. The computer moves fast through various equations.

SC157: The images on the screen are fuzzy. They start breaking up with electrical interference. The computer freezes.

SC159: The computer remains frozen on a series of numbers.

SC163: The computer moves one digit.

SC165: The computer moves another digit.

SC167: Light spills out from the gas cloud after interference stops.

SC169: The computer moves at full speed. Full screen and green screen quantum computer.

SC171: The light from the screen becomes brighter. From the light a star appears nearly full screen.

SC173: The computer moves at full speed. The numbers become a blur.

SC175: The star starts to fade.

SC177: The star becomes smaller and smaller.

SC179: The star disappears into blackness.

SC183: The computer stops suddenly. Full screen and green screen quantum computer room.

SC193: A star shines in the distant night sky. It's the only star in the sky.

SC203: A small star blinks in the distant galaxy.

A Woman in Winter is a breakthrough movie, proving that small films can have big, near Hollywood studio-like ambition. Working closely with software company Adobe helped integrate After Effect files alongside the Photoshop stills into the body of the film. There are over 20k stills in the movie, all taken from a canon D1 shooting at 9 f.p.s. The challenge was to find a seamless route back into the story after shooting scenes at 7 f.p.s on the Sony HD 950. There was some kind of bridge required to get back into standard 25p.

The stills provided the link, creating layers, and a near physical gear change in the action. The only way to make this work was to use Adobe premier pro and after effects 7. This combination gave the film a fresh dynamic, and introduced a variety of narrative possibilities which could be easily manipulated, colourised, creating a ghostly effect that was part of the theme and aesthetic of the story.

Edinburgh during this time of year is bitterly cold which made the three week shoot even more gruelling, but it also is a time of great festivity and the various celebrations gave the production an opportunity to be part of and engage with large crowds of people, at times as much as 500k, which became part of the essential action. The story lends its Genesis to European Art house classics such as Solaris and Last Year at Marienbad. Essentially it was an experimental piece of cinema with a fractured narrative propelled by the possibility offered by digital hardware and software. Since the days of Edison and Eastman, established movie studios and big-name filmmakers have tended to focus on preserving their reputations, their status, and their revenue streams, not on innovating. Throughout history, it has always been the individuals – the mavericks – who make the changes. In other words, to track the future trajectory of cinema, keep the camera trained on the Indies and outsiders.

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October 2007

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Appendix 2:
Wag the Dog - The Long Tail Phenomenon

The concept of the so called 'long tail' has received broad attention ever since Chris Anderson, editor of Wired Magazine, published an essay on the topic in what is the world's most influential "Pop-Tech" magazine.[113]

Anderson argues that products that are in low demand or have low sales volume can collectively make up a market share that rivals or exceeds the market share of the relatively few current bestsellers or blockbusters – if the store or distribution channel is large enough.[114] This is illustrated in the graph below. When considering the popularity of different titles (e.g. the 60,000 film titles available on lovefilm.com), a number of items will rank extremely high (the blockbusters), and the majority of the other items will create a 'long tail' with an exponentially decreasing demand curve.[115] Taken together, however, "the sales" of the niche product can rival or exceed the revenues from the blockbusters.

The New Marketplace
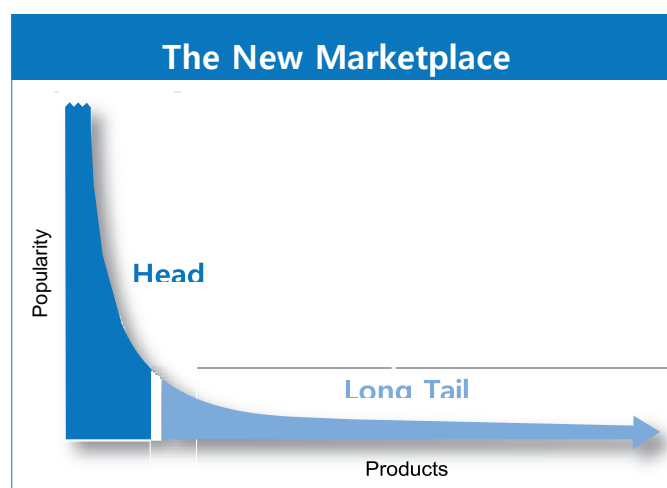
However, the Long Tail phenomenon does not only empower online mega-stores such as Amazon.com or Lovefilm.com, but has also strong implications for the film industry.

The theatrical market in the film industry is a classic example of a market that is dominated by a small number of highly popular products, and a large number of small and niche films with little or no audience. In 2005/2006, the top 100 films released in the UK had a combined market share of 92%, with the remaining 367 films accounting for only 8% of the audience.[116]

With regard to the Long Tail concept, the popularity of these top 100 films could be attributed to an imperfect matching of demand and supply, rather than a pure consumer preference for mainstream product. Good examples to illustrate the argument are Bollywood films in the US. Each year, India's film industry produces more than 800 feature films. There are an estimated 2 million Indians in the USA, yet the top-rated (according to Amazon's Internet Movie Database) Hindi-language film, Lagaan: Once Upon a Time in India, opened on just two screens, and was one of only a handful of Indian films to secure USA distribution. Although there is clear market potential for Indian films in the US (and the argument can be easily transferred to nearly any niche film), the market is physical non existent because the audience is too thinly spread.

An exhibitor will only show films in his cinema that can attract a sufficiently large audience to keep him in business and make a profit. As he can only draw on his local population, the films on offer will cater to this local population. To maximise his sales with his limited screens, the exhibitor is likely to show mainstream products with a low common denominator – films that appeal to a broad audience, independent and niche product is destined to fall by the wayside as its audience is too thinly spread. The domination of American films in cinemas around the world is built on this phenomenon. Similarly, a DVD retail or rental store can only carry a certain amount of DVDs due to limited shelf space. As consumers spend their money on a limited range of products, these products are more likely to become bestsellers. The popularity of these products is not, however, a reflection of real consumer tastes, but a consequence of limited selection.

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[113] *He has also written a book on the topic which is about to be published in July 2006.*

[114] *As a former Amazon employee described it: "We sold more books today that didn't sell all yesterday, than we sold today of all the books that did sell yesterday."*

[115] *Lionel Felix & Damien Stolarz, 'Video Blogging and Podcasting', Focal Press 2006*

[116] *http://www.ukfilmcouncil.org.uk/information/statistics/yearbook/?y=2005&c=1*

In an online environment these restrictions do not exist. According to Anderson, unlimited selection combined with infinite shelf space and real-time information on buying trends is revealing what consumers actually want. Consumers might find that their taste is not as mainstream as marketing, a lack of alternatives, and a hit-driven culture may have led them to believe.

For independent filmmakers, the true meaning of the Long Tail may well be salvation. The Long Tail is the ultimate sales promise: in an online environment, almost anything is worth offering, because it is likely to find a buyer in the long run. Moreover. it might well be more expensive to evaluate the possible profit of releasing a product, than to just release it.

In the face of Long Tail economics, filmmakers should re-evaluate their focus on the theatrical window. There is an audience out there for small films, for worthy films, for niche films, for weird films, for trash – it only needs to be found. To unlock the power of the Long Tail means true independence – there is no need to be dependent on government film funding if a film can stand on its own financial legs by reaching the otherwise too thinly spread audience in the real world, through online distribution. European producers should focus their eyes on markets they have not had access to before. Through online distribution it is possible to break into the US market, as well as to build an audience demand in emerging markets in Asia and neighbouring countries.

Ultimately, the Long Tail can work for the small content producer. This should not distract from the fact that a pro-active approach to find one's audience is absolutely crucial. However, the new paradigm for the DigitALL environment is: If it is available, the audience will find it. Or to paraphrase Kevin Costner in Field of Dreams: If you release it, they will come.

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