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Post-production in the UK

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Elephant model and *animatronic chicken by Artem Special Effects*

Howard Shore conducting the London Philharmonic Orchestra at Abbey Road. Image: New Line Cinema

The National Short Course Training Programme

A British Telecom commercial by Artem Special Effects

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Post-production in the UK

A study of the current nature and extent of the UK post-production sector

By Salix Management Consultants Ltd

November 2003

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Contents

Contents

Table of Figures

Foreword

Harry Potter and the Chamber of Secrets © 2002 Warner Bros. All Rights Reserved. VFX by MPC.

The UK's post-production sector has been a world leader in the audiovisual industries for as long as they have existed. Whether in the creative or technical spheres, its reputation as a highly innovative, high-quality sector that the UK has every right to be proud of has never been higher.

Today, close to 1,000 UK companies compete throughout the world in areas as diverse as sound design, computer-generated visual effects, music composition and recording, dubbing, graphic design and the many other creative and technical disciplines across film, commercials, television and radio.

In common with the wider industry, the UK's post-production sector has witnessed significant growth in recent years and has the potential, and desire, to expand still further. It has both benefited from, and in many areas led, the technical revolution that has reinvigorated the audiovisual industries in the past decade. Indeed, as advances in technology make it easier than ever to make the impossible possible, the old definition of 'post-production' is itself increasingly out of step with the reality of current production practices.

This report is intended, for the first time, to shed some real light on a sector that has never, in my view, been properly appreciated or even fully defined in the way it should. Whilst the achievement of the post-production business has been impossible to ignore on the big screen, its impact across the audiovisual sectors as a whole has remained largely unknown and unquantified.

A world leader in so many areas, it has all the potential to continue its extraordinary growth, to provide more employment opportunities for talented individuals from all backgrounds in the UK and to secure its place at the very heart of Britain's creative economy.

I would like to thank the many experts and organisations that have contributed to this study, particularly the members of the VFX Committee and the many other industry representatives who supported the project. I also want to thank the dedicated staff of the UK Film Council for steering the study to conclusion and the Department of Trade and Industry for its extensive support in making the report possible. Finally, my very grateful thanks to Dr Tony Fletcher and his team for turning an almost impossible task into the report you are about to read.

So, the next time you marvel at the extraordinary escapades of James Bond, stare in wonder as men walk with dinosaurs and horses surf the waves, or lose yourself in the musical majesty of *Lord of the Rings*, remember that people the world over are sharing these experiences courtesy of British enterprise and creativity.

Steve Norris
British Film Commissioner
UK Film Council International

Executive summary

1 Nearly 1,000 specialised companies carry out post-production work across the UK's audiovisual industries. Work in the sector is split across three main areas – commercials (36.4%), film (29.3%) and broadcast (18.9%) – with the balance made up by corporate, music video, titles and idents.

2 The UK post-production sector is a world leader in terms of commercials and television and ranks with the USA and New Zealand as one of the top three providers of visual special effects for the global film industry. It has a combined annual turnover in excess of £1.39 billion.

3 Overall the sector grew by 4% in the period 2001/02, although the area of the sector serving the commercials industry has declined year on year for the past two years. This overall growth is predicted to continue, despite a background of poor economic conditions across all market sectors, evidence of shrinking production budgets and pressure on post-production fees. Current growth comes mainly from the increasing share that post production takes of overall budgets – the sector now accounts for a quarter of all production budget spend, up from 13% two years ago. There is also a direct correlation between growth in the area of the sector serving the film industry and the introduction of production tax breaks.

4 Internationally, the UK post-production industry is regarded as innovative and an early adopter of new technology.

5 Several large companies dominate the film and commercials market whereas (with the exception of some large players such as BBC Resources) the broadcast market relies on many smaller and specialised companies. There are 79 companies in the sector with 100 employees or more.

6 Companies tend to cluster around centres of production: 90% of all activity by spend is in or around London.

7 The sector's workforce is substantial and highly skilled. Overall it employs in excess of 15,000 individuals, of whom nearly a third are freelance.

Points for consideration

8 The continued success of the sector is crucial to the future of the UK's film and broadcast industries as technology plays an ever-increasing role in production, and as IT costs fall and creative possibilities increase.

9 Despite its international reputation, the sector is not perceived fully within the wider creative industries.

10 No representative organisation comprehensively serves the sector for commercial issues although a well-regarded body, the Chief Engineers of Facilities Forum (ChEFF) covers engineering and technical matters. The sector believes that it is now of the scale and size to benefit from a single representative voice. It wishes to have its views clearly heard, particularly in relation to external economic and legislative issues. Marketing the UK's post-production strengths in key territories overseas would also be enhanced by a single coordinating organisation.

11 There is a need for coherent specialist support for the myriad of small and medium-sized enterprises operating in the sector. This preponderance of small companies also acts as a disincentive to investment which itself threatens the future competitiveness of the sector.

12 Additionally, the sector is susceptible to currency exchange rates, particularly in relation to the US dollar and the euro. At the same time, competition from low-cost countries is on the increase and is seen as a growing threat.

13 As with the wider industry, training is key to the sector's long-term success. Historically, the post production industry has suffered from the lack of a strategic approach to skills shortages and gaps, although this situation is now changing. At the same time, talent in the sector is becoming global in its ability to move and UK talent provides a substantial element of the global talent base. Continuing to attract increased amounts of production to the UK will help to keep UK talent within the UK.

This report has been written by Salix Management Consultants. It is based on findings from a project financed by the Department of Trade and Industry with the support and involvement of UK Film Council International and its VFX Committee.

The project was conducted in two phases: an initial study of post-production in the film sector undertaken between October and December 2002 and a further study of post-production in the TV and commercials sectors over the period January to March 2003.

The report was produced with input from many leading industry figures. In total 85 companies working in the sector and 50 media organisations and experts contributed to the project.

The full report is available online at www.ukfilmcouncil.org.uk.

1 Introduction

Colosseum - Rome's Arena of Death © 2003 BBC/Alan Keohane. All Rights Reserved.

1.1 Purpose and scope of the study

In recent years the UK's film, TV and commercials post-production sector has been studied in part but never in totality. There is no overall trade or industry organisation covering the sector and its dynamics and membership are not well documented, except in certain specific areas. This study is designed to rectify this lack of documentation and comprises two projects:

- A study of post-production and visual effects in the film sector carried out for the VFX Committee of UK Film Council International with funding from the Department of Trade and Industry communications and information industry directorate (DTI CII) over the period October-December 2002.
- A second study of the TV and commercials sectors over the period January-March 2003. The UK Film Council managed this project for the DTI CII.

The steering committee for both projects was the VFX Committee of UK Film Council International (see Appendices).

It is accepted[1] that a world-class post-production sector is crucial to the UK's ambitions for its film, advertising and television industries as the role of technology becomes increasingly important in the production of audiovisual images. Continued success for the sector will be dependent on a small number of factors:

- The ability to compete internationally in the face of challenges for work from other countries, in some cases as a result of government subsidy and support.
- The ability to access the necessary resources to maintain investment in both computer software and hardware as well as in software research and development.
- The ability – and willingness – to invest significantly in the training necessary to build the required skills base.

1.2 Defining the sector

In order to study the post-production sector, the first task was to arrive at an agreed definition of the sector itself. For a number of reasons, this task was not as easy as it might sound:

- The term 'post-production' is used within different sectors of the audiovisual industries to mean different things. In the TV industry, for example, post-production routinely includes all editing functions, whereas this is not the case in film.
- The term 'post-production' in itself is misleading, as the advent of new techniques, many of which are digital, has meant that many traditional post-production functions are now carried out at the pre-production stage of filming or in parallel with the production process, (eg a song may be recorded for the actor to mime to during location filming, or a digital landscape may be rendered in camera for the shoot).

[1] Source: UK Film Council briefing

- There are numerous and very specialised activities within this sector, sometimes carried out by only a very few companies in the UK. In addition, within some companies, these are combined with other activities that would not generally be thought of as post-production. Many such companies do not choose to define themselves as post-production companies.
- Not all effects are visual. Manipulation of digital audio is an important sub set of the sector.

The boundaries of the sector are clearly ill-defined – for example, duplication, standards and aspect ratio conversion, DVD authoring and encoding, etc, are all activities that may be considered either in or out of sector depending on personal view. The study endeavoured to include all such companies where possible and if companies defined themselves as sector members they were included in the data.

The Screen Digest Report on the Implications of Digital Technology for the Film Industry (September 2002) quoted William Sargent of Framestore CFC as saying, "Digital is enabling every aspect of the film process to be non-linear. The term 'post' production is a misnomer. We are now a digital studio".

Ultimately post-production was defined in this project by identifying all of the activities associated with the industry. This list of activities was tested and reviewed by key industry participants and if any company was involved in one of these activities, it was considered to be part of the sector. This list was included with the questionnaire to enable the companies surveyed to determine whether they were in the sector as they had been defined. (For the full list, see Appendix 1, page 47.)

1.3 Terminology

The terms 'post-production' and 'special effects' (or 'SFX') are in widespread use throughout the industry and it is impractical to attempt to change them. However, the relevant phrases need defining for the context of this report as they are widely and variously used in the vernacular. Within this report the activities are defined as follows:

Post-production: (sometimes abbreviated to 'post')

- An activity or action on the visual image or audio that takes place away from the shoot or the studio.
- The activity is connected to the production of the physical image and audio itself rather than the business of distribution, etc. PR and advertising, for example, are excluded whilst rights clearances are included.

Production special effects:

- It is assumed that the term production is universally understood to be the physical activity of filming or videotaping on location or in the studio. Special effects produced during the shooting process are defined as post-production for the purpose of this study.

Editing:

- Within the film sector, editing is considered a separate and discrete activity central to the production of a movie. Within TV production however, editing is an integral part of post-production activities. Therefore editing in the TV sector is included as a post activity within this report.

1.4 Approach and methodology

This study was produced by eliciting detailed quantitative data from companies in the sector through a structured questionnaire. This data was supported by a series of qualitative face-to-face and telephone interviews.

Third party data and other reports were also reviewed, especially:

- BSAC (2000) study of the Visual Effects Sector (unpublished data)
- Skillset (2002) study of the Post-production and Special Visual Effects Sector
- Skillset (2000) Census of Employment in the Audiovisual Industries
- Screen Digest (2002) study of Digital Technology in the Film Industry
- The Lost in Space report (2000) into the Visual Effects Industry (David Scammell)

Primary sources were re-interviewed where appropriate.

Survey databases were prepared from first principles (subject to data protection and copyright) and a number of commercial sources were used, including principal data from the industry publication, *The Knowledge* (part of CMP Information Ltd) and from the internet database mandy.com (published by Lighthouse Internet Ltd). Record searches on Kompass, Dun and Bradstreet and *Yellow Pages* were also used. Where trade bodies publish membership listings, these were also consulted.

In total, 908 companies were uniquely identified and all of these were contacted to request participation.

1.5 Sector coverage

All the companies identified were contacted by email or post and invited to complete a short web-based questionnaire in commercial confidence. In total, 85 companies provided 'commercial in confidence' data and in the corresponding qualitative interview programme, over 50 organisations (leading companies, government, trade bodies, educators, experts, industry leaders) were either visited or participated in telephone interviews. (See Appendix 4 for a complete list.)

As regards the total of 908 UK based post-production companies, it is probable that there are more companies operating in the UK. Although the methodology identified most companies in the sector some smaller companies appear to operate by networking rather than advertising or appearing in even the free industry directories. It was not possible to estimate the number or size of this group. This survey has contacted all the large and medium sized companies.

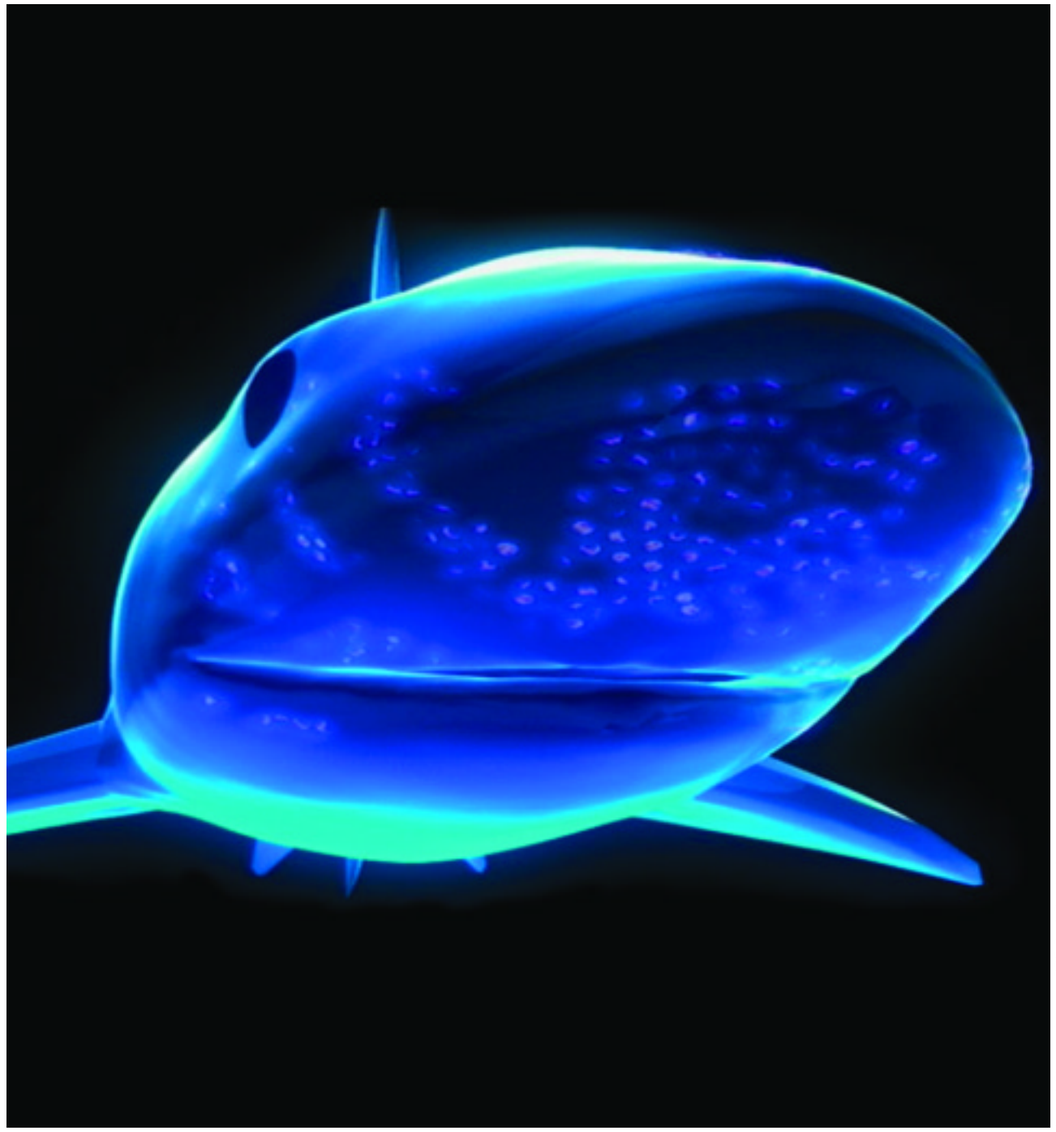
1.6 Validity of data

The authors have made every effort to ensure this study is as comprehensive and inclusive as possible. In recognition of the diverse and fragmented nature of the sector, a number of additional techniques have been used to attempt to ensure that the results are based on reliable data:

- Interviewing to convergence: steps were taken to compare all interviews and data submissions, measure how often respondents came up with new or substantially different information and to calculate the likelihood of how far the survey should be extended to be inclusive.
- Triangulation: this industry survey was compared with other surveys that used different data collection methods to validate the data that was collected. Examples here include comparisons with trade organisation memberships, the *Knowledge* database and the *Skillset 2000 Employment Census.*
- Advertising for recipients: at the start of the project a press release was issued which was widely published in trade magazines. A number of companies came forward to be included through this.
- Networks: all companies that completed questionnaires were asked to suggest their closest competitors and these companies were contacted.
- Expert review: a number of leading industry personnel were asked to review the listings.

The similarity between the survey's results and face-to-face interview feedback suggests that this industry is relatively structurally consistent. It can, therefore, be concluded that the response group is representative of the entire population.

2 Market and industry overview



Smart Sharks. Image: BBC Post Production

This report was produced at a time of continued global economic uncertainty. It is appropriate, therefore, to consider both the macroeconomic environment in which UK post-production companies operate and the climate in the principal industry sectors from which they derive revenue.

Global economic conditions continue to pose significant challenges for companies in the sector. Weaker growth, falling business confidence and increased uncertainty are still prevalent in countries around the world.

The slowdown in growth of GDP in the major G7 economies continues and in the UK consumer spending has also begun to fall. In 2002, for the first time since 1974, growth slowed significantly and simultaneously in the USA, Europe and Japan, accompanied by sharp declines in the expansion of world trade, investment, industrial production and stock markets.

Currency exchange rates, particularly against the US dollar, will negatively impact the ability of UK post-production companies to attract work from the USA. It is widely accepted that the US dollar has been overvalued against the euro and to a lesser extent the pound for some time. This has made it more attractive to source work from the UK. Recently, the US dollar has undergone a significant reduction in value relative to the euro, with a smaller reduction against sterling. This relative devaluation will make the UK more attractive than the euro zone, but makes overseas production more expensive for US companies.

2.1 UK creative industries: overview

The relative success of post-production companies in the UK is directly related to activities arising from the primary industries they service, in particular, films, commercials and television.

Figure 1 Employment in UK creative industries [2]

CREATIVE INDUSTRY	(THOUSANDS)
Advertising	93
Film & video	45
TV & radio	102
Other creative industries	1,083

Figure 1 demonstrates that the film, commercials (as part of advertising) and TV sectors together comprise around 25% of the labour force in the UK creative industries, with TV the largest individual employer at around 10%.

Figure 2 Revenue from UK creative industries [3]

REVENUE	(£ BILLIONS)
Advertising	3.0
Film & video	3.6
TV & radio	12.1
Other creative industries	94

The creative industries in the UK generate revenues of around £112.5 billion and employ some 1.3 million people. The industries account for over 5% of GDP and exports contribute around £10.3 billion to the balance of trade. Recent growth rates in output (up to 16% in 1998) have been more than double the economy as a whole.

Figure 3 Exports from UK creative industries[4]

EXPORTS	(£ MILLIONS)
Advertising	774
Film & video	653
Television [sic]	440

The data demonstrates that whilst TV is the largest employer of the three sectors, it is the most focused on the domestic UK market and has the smallest exports. The commercials industry (as part of advertising), which accounts for 7% of creative industries' exports, is the largest exporter.

Whilst the TV sector is the most UK focused, it generates three times the revenue of the film sector and four times that of the commercials sector, accounting for 11% of the total UK creative industries market.

Overall, the UK's creative industries are highly respected across the world and are significant contributors to 'UK plc'. Although London and the South East continue to be major magnets for these industries, there is growing recognition of the important contribution arising from the English regions, Northern Ireland, Scotland and Wales. Recent evidence from a DTI study on cluster development has highlighted the increasing significance of creative clusters in many parts of the UK.[5]

[2 3 4 5] DCMS – Creative Industries Mapping Document 2001

2.2 Primary creative sector overviews

Post-production companies in the UK derive their work from three principal industry sectors: film, TV and commercials. Figure 4 shows the breakdown of post-production work in the UK as measured by the percentage of companies' revenue that derives from each source.

Figure 4 How UK post-production work is split between various sectors[6]

SECTOR	TURNOVER %
Commercials	36.4
Feature film	29.3
Broadcast TV	18.9
Titles and channel idents	4.1
Music video	2.5
Corporate	2.5
Radio	0.2
Video games	0.2
Other	5.9

Discussions with sector experts and comparison with the revenue figures derived from the *DCMS Creative Industries Mapping Document (2001)* shows that post-production varies considerably in importance in each sector, ranging from up to 20% or more of all advertising and film, down to less that 2% in the TV sector.

The success of post-production companies is directly linked to the dynamics of each of these primary sectors and they are discussed briefly in the following sections.

[6] DCMS – Creative Industries Mapping Document 2001

2.2.1 Film

Research undertaken by the UK Film Council for the *Film in the UK Statistical Yearbook 2002* showed inward investment up, domestic spending down, fewer films shooting in the UK, but co-productions flourishing. This study included not only information on domestic UK film production, inward investment productions (films originating overseas but filmed in the UK) and UK co-productions filming in the UK, but also co-productions filmed abroad that involved spend within the UK.

Film production spending in the UK in 2002 totalled £567 million, comprising £268 million from inward investment, £165 million on domestic UK productions and £134 million on co-productions.

The UK was involved in the production of a total of 115 films, including 30 inward productions, 42 UK productions and 43 co-productions.

As far as the post-production community was concerned this was a reasonable year in that several blockbusters that made extensive use of special effects technologies were produced in the UK, eg *Die Another Day, Lara Croft Tomb Raider II: The Cradle of Life, Harry Potter and the Chamber of Secrets*.

"For film, there is no room for complacency about the future. Both inward investment and domestic production figures show a clear trend towards fewer films with bigger budgets." Steve Norris, British Film Commissioner

The survey data shows that post-production is becoming an increasingly important part of film production and a detailed survey of commercial information shows that up to a quarter of the entire budget spent on film production in the UK is spent with post-production companies.[7] This is up from around 13% just two years ago.

[7] Salix data based on a detailed analysis of key UK companies and movies

2.2.2 Commercials

The markets for TV, cinema and radio advertising in the UK are currently all in a state of uncertainty; commentators are divided about how serious this is and they disagree widely about the prospects for a recovery.

In 2000, £17 billion was spent on advertising in Britain, 28% of which was spent on campaigns for cinema and television.[8] London is one of the three main centres for the global advertising industry and is used increasingly as a base for targeting pan-European and global markets. The UK's advanced IT infrastructure, including digital television and the use of the English language, makes it an attractive location for advertising production.

In addition, the UK is a centre for advertising best practice, known for its model of self-regulation and methodology for assessing advertising effectiveness. The World Trade Organisation cites the UK Advertising Standards Authority as one of the leading self-regulatory bodies in the advertising world. Elsewhere, UK advertising agencies are noted for their creativity in devising advertising campaigns and for winning numerous international awards.

The industry exercises self-government through the Advertising Association, which represents the views of the whole advertising industry – advertisers, agencies and media – in relation to advertising policy. It is a federation of 24 trade associations and professional bodies.

In the area of key interest to post-production companies, TV advertising expenditure suffered a huge drop in early 2002. Although it had recovered somewhat by the end of that year, television advertising expenditure was predicted at £3.7 billion in total for 2002, a substantial decrease on 2001.[9]

Changes in gross advertising spend at source, however, appear to mask certain structural problems within the industry. Anecdotal evidence suggests that the fragmentation of channels has caused a decline in the number of high budget advertisements (typically heavy users of post-production) being produced, while there is an increase in the production of lower cost direct response adverts. The situation is also uncertain across Europe. For example, Europe's biggest commercial broadcaster recently admitted revenues in its key German market declined in 2002 and did not see an end to the slump in television advertising across Europe in 2003.[10]

Within the USA the situation is slightly more positive as the advertising market is predicted to grow by 6% in 2003; however, this is dependent on corporate profits, consumer spending and a growing economy, and is again hard to predict.

Of further concern is the current serious slowdown in consumer expenditure in the UK: one recent

survey (March 2003) of consumer services firms showed over 40% of companies said they were less confident about the business situation, anticipating a further deterioration in the volume and value of business over the next three months.[11] This is important as corporate profits drive advertising spending, particularly for national level campaigns. Broadcast television is particularly vulnerable to advertising expenditure shifts away from TV to other media.

[8] Advertising Association Information Centre – *Facts and Figures on Advertising Expenditure*
[9] Advertising Association http://www.adassoc.org.uk/inform/stats.html
[10] RTL Group (October 2002) press release
[11] March 2003 survey by the CBI www.cbi.org.uk

2.2.3 TV and radio

The UK television industry is acknowledged as one of Europe's most dynamic. The introduction of digital technology and the deregulation of broadcasting in the 1990s overhauled the economics of the sector and paved the way for the introduction of pay-TV and today's multi-channel environment. At the same time, radio broadcasting has witnessed a similar transformation that has brought new audiences to the medium. Commercial radio grew at twice the rate of other media in 2000. Digital technology, the internet and innovations in telecommunications are allowing for a number of new and innovative methods of service delivery by television and radio. Over time, these innovations will lead to a convergence in media: the availability of all services on all platforms.

The Communications Act, which was passed into law in July 2003, aims to provide a new regulatory framework for this fast-changing landscape. It has created a new single regulator for the world of telecommunications and broadcasting, bringing economic and content regulation together for the first time, and has introduced a new 'lighter touch' for that regulation, particularly in relation to broadcasting. It has rewritten the rules on cross-media ownership and spectrum management as a means of encouraging competition and investment, and is intended to promote universal access to the UK's media and communications services.

There has been significant growth in revenues over the last five years, particularly for multi-channel TV, as Figure 5 (below) shows.[12] Revenues grew by over 10% per year on average overall (in nominal terms), with terrestrial channel revenues growing at 6% per year on average and multi-channel revenues at 18%.[13]

Figure 5 Growth of UK TV revenues (£ million) [14]

CHANNEL	1997	1998	1999	2000	2001
Multichannel TV	1,700	2,000	2,100	2,800	3,400
ITV (incl. GMTV)	1,800	1,850	1,950	2,100	1,850
BBC TV	1,200	1,400	1,500	1,550	1,600
Channel 4 (incl. S4C)	500	550	600	650	625
Five	50	100	150	200	175

There is consensus in the UK post-production industry that programme budgets are shrinking and there is pressure on fee rates. However, the explosion in distribution channels has led to many more programmes being made and the proportion of post-production is increasing slightly, (eg more idents, titles, etc).

[12] ITC – Market and Statistical Review
[13] Of the £7.7 billion in revenues, around £4.3 billion was invested in programming, including in-house production and external commissions, news, sports and acquisitions (including rights) and regional programmes. The network terrestrial broadcasters (BBC One, BBC Two, ITV, Channel 4 and Five) spent approximately £2.9 billion on programming in total in 2001, around two-thirds of the UK broadcasters' total programming spend. The majority of this expenditure, £2.5 billion, was devoted to network programming, with the BBC and ITV spending a further £400 million on programmes for the nations and regions. Total multi-channel programming expenditure was around £1.4 billion in 2001 (the remaining one-third of the broadcasters' total programming expenditure). This figure includes programming expenditure by BSkyB, investment by the main network channels on their new digital services, and expenditure by other multi-channel channel providers. Acquisitions, sports/movie rights and news dominate this, with a relatively small proportion invested in independent productions. (Source ITC)
[14] http://www.itc.org.uk/latest_news/press_releases/release.asp?release_id=656

2.3 Key conclusions

In considering all the three market sectors we may come to some broad conclusions:

- Post-production companies operate at the foot of the value chain in all their industry sectors and thus lack the ability to develop their own markets.
- The extent to which post-production is taking budget from production is unclear, but this effect is obviously happening. The rapid advances in, and falling prices of, technology means that commissioning organisations can now, on occasion, use advanced post-production techniques to make high quality, creative pieces without the high costs and associated difficulties of using human actors.

synthespian noun.
A synthetic thespian.
A simulated character that 'acts' in 3-D animations and games (such as Woody and Buzz Lightyear in *Toy Story*).
"The synthespian, an artificially-created 'human' actor, is the Hollywood Screen Actors' Guild's nightmare."
Allan Laing, The Herald, 26 December 2001

- Within film it is clear that US companies wield enormous market power and there is no reason to expect this to change.
- Within commercials recovery is very much linked to the UK economy and consumer spending.
- Within TV the market looks highly commoditised and shrinking programme budgets are clearly a problem for post-production companies. Legislation that requires more programming to be locally made would have a palliative effect.
- Medium-sized facilities risk being squeezed on three fronts: by large companies such as those with a broad scope, range of services and geographical coverage; those with a considerable depth of know-how; and the small desktop companies which have low overheads and high flexibility.

2.4 Industry value chains

In order to describe in detail the parameters within which UK post-production companies operate in the three sectors, a standard value chain model was used. This contains the following key elements:

- Relationships (who is 'driving' the chain) from both an economic view and also from a creative and technical aspect;
- Geography;
- Capacity, technology and skills;
- Institutional and regulatory influences.

2.4.1 Film post-production

The film industry is very different from the worlds of commercials and television. It is almost completely based on a global market, relationships are international and the major US studios (Warner Bros, Paramount, Disney, Universal, etc) dominate the industry. For the most part, decisions on post-production and visual special effects are crucial to the look and design of a major motion picture. Today digital visual effects are used as standard production tools, eg as sky replacement, set extensions, etc. For period and other films they provide the most cost-effective alternative to set builds or armies of extras.

Advances in digital have also made it possible to create whole new styles of film, for example, all-digital CGI movies such as *Monsters Inc* and *Ice Age*.

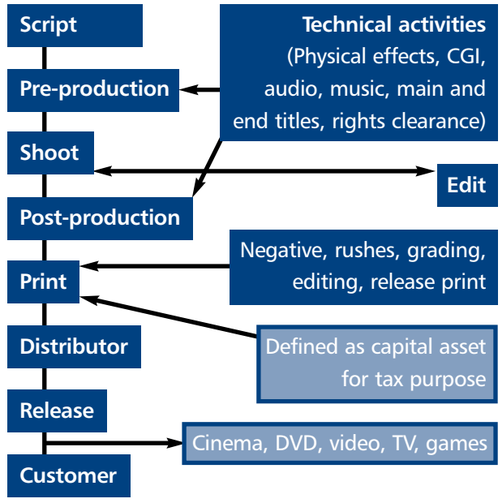
Major effects work is confined largely to high-budget productions, particularly those produced by the US majors. Film post-production work in the UK, therefore, tends to comprise an unreliable

flow of several very large contracts a year. This makes it difficult for smaller companies to work on film as only the larger companies can flex their organisation size to accommodate major projects.

There is increasing sophistication of effects in some low-budget films, eg the short film *Inferno* being shown at the Sci-Fi London film festival has been cited as an example of what can be achieved.[15]

[15] www.sci-fi-london.com/movies/lono2.htm

Figure 6 Film value chain



Relationships

The economic power within the film industry rests primarily with the large US studios which are both the largest producers and distributors of motion pictures.

US-based supervisors commission most film post-production contracts; they are the key influencers and also the economic buyers.

Buying power is concentrated in the USA and this has a huge effect on the UK film post-production industry, as only the very largest UK companies have the equipment and skills to bid for and work on the top global movies. These UK companies tend to have contacts in the US studios and have reasonable forewarning of major movies; however, it is estimated is that only a tiny percentage of all film post-production work actually leaves the USA.[16] The US studios only choose to go abroad for post-production work when costs are more competitive. This acts as a constant pressure on UK rates. Anecdotal evidence suggests that UK companies, both to keep staff in work and to attract the important kudos of working on the latest global blockbuster, take some US post-production contracts at a loss. Further anecdotal evidence suggests that companies use more profitable commercials work to effectively subsidise work on features.

There was no evidence suggesting UK companies get together in consortia to bid for major film work; however, there is plenty of evidence that US studios parcel work out themselves. Again this suggests market power lies entirely with the USA.

[16] Based on a review of major films produced in the USA and those produced in the UK.

Geography

Although feature film production is dominated by the USA, many movies are, of course, made in other countries. The relationship between the studio, the production location and post-production work is a complex one, although anecdotal evidence suggests that directors favour undertaking post-production work in their home location where possible, and failing this at the same location as the shoot. As it is the global blockbusters that use sophisticated post-production and as these are mainly US films, this would account for the US dominance.

The UK clearly benefits from being part of the English-speaking world. Although in terms of technical skills and specific equipment, some countries are on a similar level, (eg Australia, Japan, South Korea[17]), the UK has an advantage when it comes to US productions, as it is a natural port of call for US business thanks to the shared language and cultural empathy. Indeed, several US companies from the post-production sector have established offices in London. The sole exception found is international versioning, which is usually done better and more efficiently locally.

Language issues dominate the film world – for global distribution, films have to be made in English and therefore tend to be produced in English-speaking countries. For example, indigenous European, Indian and other Asian films generally have more localised distribution, hence smaller budgets and are often more character-based than effects-driven. These factors all militate against 'high-end' post-production.

In the UK post-production houses specialising in film are concentrated around the main filmmaking centres. Prime centres are London's Soho and the studios.

[17] South Korea has more than 60 colleges and university departments for animation, and more than 3,000 people graduate from them every year, Korean Herald.

Capacity, technology and skills

During the survey a number of respondents remarked that the capacity for high-end film post-production in the UK is perceived as 'limited' in some way and thus unable to support more than a few major films concurrently. Factual evidence was not found to support this and no one specifically mentioned movies that had been turned away for lack of capacity. However, this is a damaging assertion if believed by US producers.

Again, a number of respondents felt that much of the top creative work is still done in California – this being a consequence of size, investment in R&D and studio patronage. Detailed discussions with leading figures in UK post-production companies indicated that the best UK post houses could match US companies, except where these US companies have invested more in hardware.

Many respondents mentioned a demonstrable 'brain-drain' of film post-production talent from the UK and Europe to the USA – possibly a consequence of more career opportunities and a much larger market. A corollary of this is that if UK companies cannot supply the skills, fewer productions will come to Europe. It should be noted, however, that not all work requires top-of-the-range skills as much post-production work is commoditised.

Institutional and regulatory influences

Major drivers for film activity outside the USA are local fiscal incentives for production (eg tax breaks). There is considerable concern in the UK film post-production sector that were the Section 48 tax break to be removed and not replaced, there would be a decline in post-production work coming to the UK.

Most evidence seems to suggest that after fiscal incentives, creativity, capacity and then cost are the key determinants. Broadly, the UK is considered attractive price-wise compared to the rest of Europe, but not compared to the Pacific Rim countries (and to a certain extent Eastern Europe). If industries in these countries develop then we are likely to see a substantial impact on UK businesses.

Summary

Due to the relatively small number of major movies requiring high-end post-production that come to the UK each year, film post-production in the UK is part of an overall film, TV and commercials post-production community. This is unlike the situation in the USA, where the market is large enough to support a film-only post-production sector.

Because of this size issue and also because of its leading position as a maker of cutting-edge commercials, the UK's leading-edge capability in post-production is, to an extent, led by the demand for commercials work rather than film. This is a consequence of the profitability and greater reliability of commercials work.

Ultimately, film is a hits-driven business. The major studios are all based in the USA and they decide which films to produce based on market research, industry trends and occasionally technological advances. The percentage of post-production can rise or fall dramatically depending on current fashion, although there is a general trend towards increased use of SFX. The demand for film post-production is highly variable and unpredictable. Global competition for film post-production work at the very top end is strong and likely to increase as new capabilities in Eastern Europe, Asia and the Pacific Rim emerge.

For the larger UK post companies this is a high capital, low margin and volatile industry, operating under market conditions that are largely outside their own control.

It can certainly be said that what is good for attracting feature film production to the UK is good for the UK post-production industry, and there is further anecdotal evidence that a strong film post-production sector will retain films that shoot in the UK. There is no hard evidence that post-production attracts film productions to the UK.

2.4.2 Commercials post-production

In many ways, the making of an advertisement more closely mirrors the film production process than television production. The career route of directors from commercials and pop videos to major motion pictures is a well-known one.

In the early 1950s Ingmar Bergman shot nine commercials for a soap product called Bris. He was part of an illustrious list including David Puttnam, Ridley Scott, Alan Parker, Hugh Hudson and Adrian Lyne who all moved on to the bigger screen.

Advertising is a quasi-global business and significant industry trends include the growth of multinational agencies offering integrated services to their clients (eg including below the line, direct marketing, etc). There has also been a major shift towards the use of specialists and independents for media planning and buying services.

Figure 7 UK leading agencies [18]

RANK 2001	RANK 2000	AGENCY	GROSS INCOME 2001 (£ MILLIONS)
1	2	Saatchi & Saatchi	53
2	–	Publicis	48
3	1	McCann-Erickson	44
4	3	J Walter Thompson	40
5	5	Abbot Mead Vickers BBDO	37
6	9	Lowe	37
7	7	Ogilvy & Mather	36
8	8	M&C Saatchi	31
9	10	Leo Burnett	31
10	6	BMP DDB	30

Many commercials are now created for use in more than one country. Originally this was partly driven by savings on agency and production costs, but there is still a significant cost attached to refining work for local attitudes and social customs. One of the key points, however, is the clients' need to build strong and consistent brand images. For most advertisers and media agencies, the answer lies in the doctrine of 'think global, act local'. A central media team manages the majority of international campaigns with network agencies in local markets responsible for implementation.

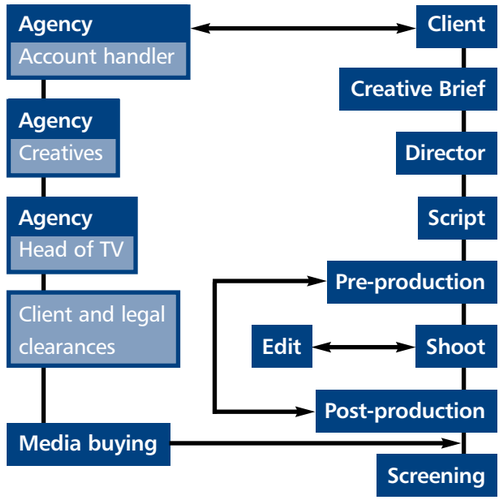
Commentators suggest polarisation is occurring between the larger multinational networks and the smaller national and independent agencies that handle European creative work but form a strategic alliance with other agencies for distribution.

The largest [TV] advertising deal of its kind in the UK – worth £320 million (€500 million) – has been signed by Unilever with Carlton Sales and Granada Media Sales [in a] ground-breaking four-year deal.[19]

Overall, advertising is a substantial, creative business and the UK is a world leader. The value chain Figure 8 (right) shows how the process of producing a high-end TV commercial closely mirrors that of making a feature film (Figure 6, page 20). Generally speaking, UK agencies bring the post-production work back to the UK so that the directors, agencies and clients can have close control over the finished product. Many of Europe's largest agencies are headquartered in London.

[18] www.media.guardian.co.uk/advertising/tables/0,7678,745020,00.html
[19] Unilever press release

Figure 8 Commercials value chain



Relationships

Key relationships for post-production companies in this sector are similar to those in the film sector. The appointment of the post house tends to be a joint agency/director decision and the director (who is normally appointed by the agency), working closely with advertising agency creative staff (eg agency Head of TV), will have the deciding 'say' in where post-production work goes.

It is clearly much more the case than in film that a new effect can be the single driver for a commercial treatment, certainly at the top of the market. In some ways this mirrors the activities of the larger US post houses – eg breakthroughs in the computer rendering of fur coupled with major investment in powerful computers made the movie *Monsters Inc* possible. In some cases, UK post-production houses have their own 'signature styles' and it is these that attract the client. Good examples of this might include Aardman's animations for PG Tips and motion capture techniques for Gap advertisements.

Geography

Again, mirroring the film sector, post-production houses specialising in commercials tend be based close to the larger agencies, the vast majority of which are in London. Whilst there is undoubtedly a thriving business in advertising outside the capital, this tends to be more about print and other media, as TV commercials work is generally placed with the larger companies. With production costs often running into hundreds of thousands of pounds and ITV commanding around £70,000 for a 30-second slot during *Coronation Street*, this is a medium for advertising FMCG (fast moving consumer goods, eg washing powder) and other high value consumer products.

There is also a market for advertising in the cinema – there are over 3,000 cinema screens in the UK and approximately 7% of the population visit the cinema at least twice a month and 30% go at least once every two to three months. Since 1985, there has been a steady growth in cinema admissions and this trend is continuing.[20]

Some radio commercials use post-production technologies, although this remains a very specialised area.

[20] Research and Statistics Unit, UK Film Council

Capacity, technology and skills

TV commercials are usually made to standard lengths to fit broadcaster slots and are typically 30 seconds. A specialised sector is direct response television (DRTV) commercials. These feature telephone numbers and are longer (typically 40 or even 60 seconds) as they contain more complex information. Sponsorship credits are also becoming more popular and are shorter than commercials – typically 5, 10 or 15 seconds long. These are often sophisticated and based heavily on SFX technologies. For post-production purposes they are considered as commercials.

Institutional and regulatory influences

All commercials broadcast within the UK have to adhere to strict legal guidelines as published by the ITC (Independent Television Commission). Monitoring and final clearance for transmission is controlled by the BACC (Broadcast Advertising Clearance Centre).

Summary

The sharp decline in TV advertising has eroded the economic base of many UK post-production houses and there is good anecdotal evidence that the margin commercials represent to the post-production companies is not being compensated for by film work. There also does not appear to be enough high value broadcast TV work to make up for this shortfall.

A thriving commercials sector is clearly fundamental to the UK post-production industry. In the absence of major feature films, many advertisements offer the pinnacle of creativity that is so important to staff working in the industry and provide the economic basis for many companies to continue operating.

The post-production industry in commercials is in a somewhat invidious position as it is relatively far down the value chain and is at the mercy of forces outside its control. The advertising business is obviously dependent on the UK economy and in particular consumer spending. As the ability and will of companies to invest in expensive advertising diminishes, the knock-on effect is direct.

The contract flows in the advertising sector are different to those in film – there are many more domestic contracts, the lead times are shorter and decisions are made locally. However, in the short term, lower production spend and fewer adverts being made has had a dramatic effect on prices and margins.

Anecdotal evidence suggests that this situation has been exacerbated by the dot.com crash. In the late 1990s many post-production companies diversified into this area and expected substantial developments in audiovisual production and post-production for the web. This has clearly not materialised.

2.4.3 Broadcast TV post-production

The key drivers of programme production are commissions from the broadcasters themselves. Although today there are over 200 channels available to UK viewers, the majority of commissions for original programming are derived from the five free-to-air terrestrial channels – BBC One, BBC Two, ITV, Channel Four (S4C in Wales) and Five.

The UK spends more per capita on original production than any other country in the world. Commercial broadcasters must maintain quotas for original content that are set by the current commercial regulator, the ITC: ITV 65%; Channel Four 60% overall, 70% in peak time; Five 55%. Around 90% of the BBC's output is made in EU/EAA countries, the majority in the UK.

In addition, all channels have a statutory requirement to commission at least 25% of their original programming each year from independent production companies. Failure to make these quotas can have a considerable impact on the post-production sector. Both Channel Four and Five commission the majority of their programming from independents.

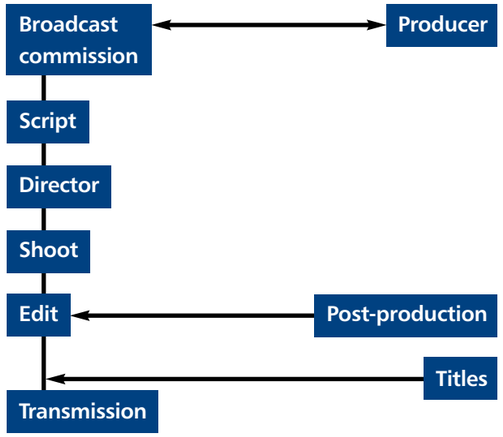
"Independent productions obligations have helped to maintain the diversity of British television. They have supported the development of creative and technical skills. And they have created a thriving and innovative production industry, which is an important part of successful creative industries."
Government Communications Bill

Within the context of this output, post-production plays a very different role to that of the other sectors studied. Most TV programmes are made to very tight budgets and generally producers do not have the budget for high-end post-production, except in the most occasional of cases.

To this extent, most TV producers categorise and understand post-production in a very different way to filmmakers. In particular editing is treated as an integral part of post-production. Special effects, for example, are often inserted at the edit stage or during live broadcast at the producer's request (eg Quantel effects). The only areas that are generally considered to be either pre or post-production in TV are rights clearances, titles, ADR and, to an extent, music and sound.

That said, there are some notable uses of post-production technologies in TV, for example idents (the channel identifiers, often small movies in their own right) and programmes made without human participants, eg cartoons, animations, etc. The provision of titles for programmes is a small and specialised sector in its own right.

Figure 9 TV value chain



In consequence, it becomes difficult to study this sector as the majority of programme budgets outside of location/studio shooting and talent costs are spent on editing – and TV post is moving rapidly onto the desktop. A number of respondents reported producers doing their own edits on AVIDs and high-end PCs. This will become increasingly prevalent as more and more productions are shot on high-end DV.

Extract from an article discussing the new Apple 'digital hub' applications known collectively as iLife: "[10 years ago] the editing process was slow and expensive – both in capital costs and in experts' time. That put creating credible TV, even watchable TV, out of the reach of most of us – even if we had the means to distribute it. Yet in the space of a decade, I now have that kind of computing power – much more, in fact – sitting on my desk."[21]
Neil McIntosh, The Guardian

[21] Monday 10 February 2003, The Guardian

Relationships

The key relationships that UK post-production companies have in the TV sector are with the broadcasters and independent production companies. In most cases this is commoditised, reasonably long-term work.

Interview evidence suggests that many of these contracts come from unofficial networks and personal relationships that have developed over a number of years. There is also supporting data: many of the post companies are relatively small and do not advertise, except perhaps in the trade listings journals.

The flow of work to the post-production companies is reasonably assured, although their continued existence is always somewhat precarious as it is often predicated on a few major relationships, which in turn rely on commissions from the broadcasters. There is considerable evidence to suggest a blurred line between the smaller companies and the self-employed/contract market. As the cost of hardware and software has fallen and equipment comes increasingly onto the desktop we can see evidence of multi-skilling (eg producers/directors doing their own editing), and editors and other operatives working from home or interchangeably with the independent's staff. Many of the independent outfits themselves are also small organisations and may have few full-time staff, hence the extensive use of freelances, contractors and single person limited companies.

BBC Resources

During this survey a detailed interview was held with the BBC in commercial confidence. In addition, staffing and turnover figures were provided which are included anonymously in the sector statistics but not in this section.

The BBC runs by far the largest post-production facility in the UK. It has the most staff and highest turnover of all the companies in the sector and is substantially larger than any privately owned company. It is the only UK facility comparable in scale to the large US companies and has a broader range of capabilities than probably any single one of them, encompassing sound, editing, digital effects, 3D animation and format transfers.

The corporation's post-production activities are run by BBC Resources, its broadcast facilities operation which also has responsibility for outside broadcasts, studios, and costume and wigs.

BBC Resources concentrates mainly on TV broadcast work – there are only single figure percentages of work in films and other areas. It is split into two enterprises, BBC Resources Ltd, a wholly owned subsidiary which provides services outwith the corporation and a Production Services Division which provides services in-house. The BBC asserts that there is an increase in the outsourcing of tasks to the private sector.[22]

The role and activities of BBC Resources excites considerable comment from UK private sector companies operating in the UK market. Recurring respondent comments included:

- The more stable environment of the BBC contrasts sharply with the project-based environment of the private sector operators.
- The BBC has a role in the training and development of staff that then move into the wider private sector. A decline in numbers at the BBC could have a huge effect as the formal BBC training schemes are the only ones of any size in the industry.
- There is a common perception that BBC Resources provides publicly financed competition to the private sector and that this is, in some way, unfair. No one offered concrete evidence to support this.
- The role of the BBC in outsourcing more work was a boost to private industry.
- On-going reductions in headcount at BBC Resources were cosmetic, with ex-BBC staff simply carrying out the same work but at arms length. No specific examples were offered to support this.

It is clear that, whatever the facts, by virtue of its size, skills and reputation, BBC Resources has a pivotal role in the UK TV post-production sector and that its policies and operations are poorly understood by many private sector competitors. The true impact of BBC Resources on the sector certainly merits further examination.

[22] Salix interview with BBC Resources. Information provided by the BBC

Geography

Proximity to the production company is generally considered an important factor. Timescales in television can be very short, so the speed with which tapes can be relayed between the production company and editing/post-production suites is crucial. Whilst the technology certainly exists to digitise and transmit rough footage and perform the post-production function remotely, no real evidence was found of it being used widely within this community. Respondents normally cited cost and technical complexity as reasons for low take up. It looks certain that these techniques will gradually make progress as they are clearly efficient and may be cost effective. That said, producers and directors often wish to be physically present with the editor to make final decisions.

This tends to lead to clustering around the main centres from where the work emanates – ie independent production companies are near their clients, the commissioning bodies; and post houses tend to be near the producers. We have anecdotal evidence to suggest that while broadcasters may have targets for regionality of programme commissioning, etc, the rules are often observed more within the letter than the spirit, with production companies having satellite offices, eg just outside the M25, but still within range of London.

As a result, the majority of post-production work in TV is carried out in and around the major cities where the broadcasters are based, eg London, the South East, Bristol, Birmingham, Manchester and Edinburgh.

Capacity, technology and skills

The whole TV production process is characterised by a flexible, creative, collaborative/team working and non-hierarchical approach. Such structures promote small groupings. In addition, the dramatically falling cost of the technical resources means that many companies can now afford to buy and operate their own equipment without access to market capital.

Institutional and regulatory influences

The main issues that affect post-production companies in this sector are common to all small businesses. Regulation regarding the production of domestic programming only directly applies to the commissioning bodies, but as there is likely to be a direct correlation between the number of programmes made in the UK and the amount of post-production work this is discussed in some detail below.

The Communications Act

Since it first emerged in the form of a white paper in January 2000, the Communications Act has been the source of vociferous debate across the media industries. Critics of the original Bill feared that lifting the ban on foreign ownership of ITV and Five would lead to a flood of cheap imported programming and an accelerated production drift to the South East under a possible single ITV.

The Government responded to these fears by introducing a host of amendments during the Bill's passage through Parliament. One of these amendments introduced the concept of a public interest plurality test which would be invoked were there to be a bid for ITV or Five by a non-EU company. The Act also introduces new targets for regional production and investment for Five, and a new regional investment target for Channel Four, in addition to its existing regional production target.

Also incorporated into the Act are the majority of recommendations from the ITC's review of the programme supply market, which was instigated by Culture Secretary Tessa Jowell in the autumn of 2002.

Designed to level the playing field between broadcasters and the independent production sector, the ITC's proposals included: the introduction of binding codes of practice governing the dealings of public service broadcasters with independent production companies which are to be approved and monitored by Ofcom; the imposition of market pricing for programmes made by independents; and awarding producers the right to sell their programmes to overseas broadcasters in the secondary market.

Ofcom is now empowered to measure the quota of independent productions achieved by broadcasters by value as well as volume, and the quota will be applied separately to BBC One and BBC Two.

Overall, the Act can be read as a positive for the post-production sector, as it ensures the commercial future of the independent producer, one of its key client groups, and should, if the Government is correct, lead to greater investment in broadcasting generally. However, the legislation has not protected the supply chain flowing from the independent producer and could possibly be to the detriment of the post-production sector.

The Act should also impact positively on another important sector for the post-production industry, as broadcasters, as part of their public service obligations, are now required to "reflect, support and stimulate" UK feature films in their schedules, which may mean both increasing investment in, and programming of, British films.

Summary

With the exception of specialised niche areas (animation, cartoons, etc), there is no evidence that post-production work in the UK TV sector is anything other than commoditised and mainly domestic. Whilst it is true that certain high-end TV

The Mazda Robot. Image: Artem Special Effects

productions are attracted to the UK this is normally because of location issues, because they are co-productions, because of acting talent or other creative factors and post-production does not appear to play a strategic role in these decisions.

2.4.4 Other sectors post-production

There are numerous other specialised sectors where post-production technologies are routinely used to manipulate images and audio:

- Pop videos: whilst these are generally high quality productions (effectively mini films or high value commercials, sometimes with substantial budgets) they are produced in limited numbers and may be considered as a specialty niche.
- New media: the predicted boom in new media does not appear to have produced any strong economic broadcast or narrowcast models. Businesses like AtomFilms[23] show what these might look like in the future, but currently most of the material used appears to be created primarily for other media and then reformatted.
- Radio adverts: this is a specialty audio sector. Because of technological implications, the cost and utility of sound manipulation facilities is many times lower than that of the visual image.
- Games: in 2002 the DTI produced a substantial report on the UK games industry.[24] Special effects technologies in this sector appear to be mainly in the purview of the games creators themselves, although there is some limited reformatting of materials from the original films.
- Live broadcasts (eg news, sports): special technologies are available for the manipulation of video and audio during live broadcasts. The on-site director makes decisions on effects and the whole system is very much tied into the hardware available. Companies operating in this sector were not surveyed during this study.

With the growth in low cost Digital Video (DV) equipment, the advent of the IEEE1394 (Firewire) technology and the bundling of software with operating systems (eg iLife and Windows Movie Maker 2), there has been an inevitable blurring of the boundaries between amateur (home) video production and commercial businesses. This area is not further considered in this study.

[23] www.atomfilms.com
[24] www.dti.gov.uk/cii/services/contentindustry/computer_games_leisure_software.shtml

3 The role of technology

The Giant Claw. Image: Framestore CFC/BBC

3.1 Overview

Technology is one of the key drivers of change in the industry. The introduction of new technologies has revolutionised both production and post-production activity across the audiovisual industries in the past decade. The advent of digital, in particular, has made possible a host of new delivery platforms, eg DVD and streaming video, and is set to radicalise the film exhibition sector with the coming of digital cinema.

In film production, digital video is already a favourite amongst film students, documentary makers and art-house directors for reasons of cost and flexibility and is beginning to enter mainstream filmmaking with such movies as *Star Wars Episode II: Attack of the Clones.*

Today the post-production industry is already digital and it is only in creating final prints for screening that film or video are commonly used. With DVD and new media the whole process is end-to-end digital.

More than 700 hp [Hewlett Packard] workstations and 500 hp servers now comprise the core of DreamWorks' graphics platform. And that's just the beginning. As part of a recently announced three-year multimillion dollar technology alliance aimed at revolutionising animation production, hp and DreamWorks will continue to work together to discover the groundbreaking technologies that continually reshape the way films are created.[25]
UK TV and press advertisement March 2003

For post-production houses, access to the latest technology can be a significant factor in securing high profile projects from the UK and internationally and attracting the best operators. The UK's major companies are generally regarded as innovative and early adopters of new technology. Nevertheless in some emerging areas, such as motion capture technology, the sector has been seen as old-fashioned and lagging behind countries such as South Korea and India.

Evidence from technology suppliers suggests that the UK market for post technology has stagnated over the past 12 months after two years of rapid growth. This has mirrored the global trend and is attributed in part to the general slowdown in the world economy.

[25] http://www.hp.com/country/us/eng/msg/corp/htmldreamworks.html

3.2 Market sector

Technology providers to the post-production industry can broadly be divided into two main areas:

- High-end providers such as Avid, Discreet and Quantel.
- Entry-level/mid-range providers such as Pinnacle, Apple and Adobe.

In addition, there are a host of specialist companies supplying specific technologies such as standards

conversion and compression applications (Snell & Wilcox, Sorenson Media) or motion capture solutions (Vicon). Some of the leading post-production companies themselves have also entered this market. Framestore CFC's keying technology, for example, has been licensed by Apple for use in its compositing tools. Last year the company spun off Filmlight, which was formed by its technical R&D team to work on the development of an integrated digital film mastering process. Its first product to market is Northlight, a 35mm digital film mastering scanner.

The high-end providers have pioneered the use of digital production techniques in the feature film and video sectors. These companies are able to offer a range of integrated solutions aimed at meeting the most stringent of post-production demands and over the past decade they have established a loyal customer base amongst post houses that have come to rely on their products and services.

Traditionally the solutions offered by these companies have been based on bespoke hardware, (eg Henry Infinity from Quantel) or on high-end Unix workstations and servers from companies such as Silicon Graphics. A state-of-the-art editing suite can still cost between £200k and £350k.

"The extraordinary battle scenes in Peter Jackson's *[The Lord of the Rings] The Two Towers* that have thrilled cinema audiences around the world [were] made possible with a PC-run computer program." [26]

Companies such as Pinnacle Systems, Apple and Adobe, with a background in TV broadcasting, print media and consumer products, are providing increasingly powerful alternatives to the traditional market leaders at a fraction of the cost. There is little difference in functionality and in many cases those parts of the production process that involve significant amounts of number crunching can more cost-effectively be outsourced to specialist third parties.

Competition from these new mid-range solutions has led many of the high-end providers to make their applications available on the desktop, to run on either Microsoft PCs or Apple Macs.
In the past, the capital cost of professional equipment has acted as an effective barrier to entry in this marketplace. With the development of powerful and affordable desktop systems, however, post-production houses with capital tied up in expensive equipment will increasingly be challenged by new entrants benefiting from comparatively low start-up costs. This may prove similar to the desktop publishing revolution of the 1980s and 1990s.

"For a while now, sound editors have been able to afford their own ProTools editing systems, which they rent to productions they work on. The Final Cut Pro platform will allow all picture editors to own their own system as well." [27]

[26] Assault on the Senses, Kim Griggs, IEE Review, March 2003
[27] www.apple.com/hotnews/articles/2001/04/bobsarles/

3.3 Conclusions

Developments in technology are clearly benefiting the industry as a whole. In what is a creative, people-based business, access to the technology is becoming less of an issue. The growth in the number of conventional distribution channels and the development of entirely new ones is creating a need for more audiovisual content and, at the same time, a need to more clearly differentiate that content.

Digital technology is fundamentally changing the traditionally sequential approach to the post-production process. This enables innovative organisations to develop new ways of working and ultimately to create entirely new business models. At the same time new segments are gaining importance: digital archiving, data integration and digital intermediate work, restoration, and even distribution. These all provide opportunities for post-production houses.

Falling technology costs will clearly threaten those organisations with a traditional business model based on the hiring out of expensive capital assets. Such organisations need to find other ways of adding value if they are to survive. With falling margins and a much greater emphasis on outsourcing post-production activities, there is also an increasing imperative for creative companies to capitalise on technological innovations.

By establishing a more symbiotic relationship with technology providers, the post-production companies can share this development effort and thus reduce their costs. Conversely, the technology providers can incorporate these innovations into their mainstream product offerings as a means of differentiating them from their competitors.

What is very clear, however, is that except at the very top of this market, access to technology is no longer a major issue.

4 Survey results

VFX supervisors working on Harry Potter and The Chamber of Secrets. Image: MPC

4.1 Introduction

The UK post-production sector is a world leader in terms of commercials and television, and is led by only the USA and New Zealand as a provider of visual special effects for the global film industry. Although it is not possible to determine the non-UK industry in detail, it does seem likely that other countries, (eg Australia) are close to or equal to the UK in sophistication, if not size.

Its three market sectors – film, TV, commercials – utilise many of the same skills and technologies but are fundamentally different businesses with distinct business cycles and end users (film studios, broadcasters, industrial and FMCG (fast moving consumer goods) companies, and advertising agencies).

"There's kudos in films, money and creativity in commercials and bulk and reliability in TV."
Research respondent

Respondents placed a high value on networking and industry relationships and emphasised the importance of talent, creativity and technology.

Post-production is already a pivotal part of the manufacture of audiovisual images, and if anything its role is likely to increase. Respondents showed a clear sense of this being recognised by their immediate clients and peers but felt that the wider creative industries viewed the sector as 'black box'. This is an industry-wide problem that needs to be addressed.

4.2 Sector overview

The key details of the UK post-production industry as we measure them are shown in Figure 10 below.

Figure 10 Industry overview

Companies uniquely identified as in sector	908
Total no. of staff identified [28]	15,043
% of staff identified as freelance	31
Turnover for the sector in 2002 [29]	£1,387m

[28] The survey data differs quite considerably from the Skillset Audit 2001. Reasons for this variation are noted in the text.

[29] In order to develop a turnover figure companies were grouped according to their profile into one of the following strata: very large, large, medium, small and micro. Using profiles from other industry reports and the research related to this survey, the population of each of these groups was estimated. An inflation factor was then applied to the figures for turnover and staff numbers. Summing the data in each stratum then gave the overall estimated industry figure.

4.3 Market dynamics and structure

The common perception of respondents is that, despite the current economic climate, production levels across film, TV and commercials have remained steady, although there is a noticeable squeeze on budgets. Overall, growth in the industry has come from the increasing share that post-production takes of production budgets

rather than a growth in the quantity of business or number of productions. Many respondents cited the BBC as the only organisation that had increasing or stable production budgets.

Figure 11 Sector growth

TURNOVER	2000 £ MILLIONS	2001 £ MILLIONS	2002 £ MILLIONS
	1,314	1,340	1,387

The post-production sector has shown consistent, modest growth over the last three years, in an environment where the global economy and production budgets in general were under increasing pressure. At the same time, UK film spend fell between 2000 and 2001 by 45% and rallied by only 12% the following year. Post-production demonstrates a tenacity to hold onto budget by carving an increasing niche for itself.

A number of respondents also suggested that the shape of the industry is likely to change with medium-sized houses being squeezed out in favour of a small number of one-stop shops and a larger number of specialist companies. This looks likely to be more of an issue in the commercials sector than TV, which continues to support very large numbers of small businesses with attendant lower capital costs. Especially at the top end, post-production is an expensive industry to stay in. One respondent said, "You have to spend to stand still," referring to capital costs of new equipment and charges for software licences. The industry has been through radical technological change over the past five years and this has certainly led to polarisation, with small low overhead commoditised suppliers at one end and the capital intensive top end companies at the other.

4.4 Industry geography

The majority of companies that operate in post-production are based in or around London. Whilst nearly 70% of companies (by number) are based there, in terms of measurable turnover they account for nearly 91% of economic value. Of these, a substantial number are within Soho.

Figure 12 Company locations

REGION	NUMBER OF COMPANIES IN DATABASE	%	% 2002 TURNOVER
Soho (W1)	226	24.9	48.1
London (excl. Soho)	338	37.3	42.9
SE England (excl.London)	117	12.8	0.4
S&W England	92	10.2	0.9
Midlands	35	3.9	3.8
N England	57	6.3	3.7
Wales	21	2.3	0.0
Scotland	20	2.2	0.2
N Ireland	1	0.1	0.0

This is not particularly surprising, as service companies are generally based close to their clients. There are major concentrations around the larger advertising agencies, independent production companies and broadcasters. Of the 84 companies which responded to the survey, eight were based at major studios. For the UK this concentration is an advantage compared to Germany, for example, where the industry is spread out between Munich, Frankfurt, Berlin, Hamburg and Cologne. Similarly, in Australia the top companies are spread out, mainly around Sydney's outskirts and Adelaide.

In general, it might be expected that better communications (especially broadband communications) would see companies relocate to lower cost areas, however the survey shows no signs of substantial activity outside the major conurbations. Several respondents commented on the genuine feeling of community spirit being in Soho engendered, despite the obvious cost pressures.

4.5 External factors

As part of the survey respondents were asked what external factors impact upon their businesses. The survey concentrated on remarks specific to the sector, while general remarks that apply to all small and medium sized businesses were excluded. The most affected area is film where there are two significant issues:

- The US dollar exchange rate. If the dollar weakens, fewer movies come to the UK and domestic post-production suffers. Clearly this is outside the industry's control but as more than 95% of its business comes from the USA it is absolutely crucial.
- Tax breaks for film bring productions to the UK and the post-production industry benefits directly from these. If for example, the Section 48 relief which expires in 2005, simply disappears without any replacement there would undoubtedly be an impact on UK companies. A number of respondents suggested that Canada and France were currently winning significant amounts of work because of government-led tax breaks that had been implemented in these countries.

Within the more general industry a number of other issues are relevant:

- Companies find the rules relating to R&D tax credits complex and they rarely claim.[30] On further questioning only one respondent was found who actually carried out basic level R&D as defined in the tax regulations and they had effectively decided the difficulty and cost of the paperwork was not worth it. Upon closer questioning, the majority of respondents who claimed to do R&D appeared to focus much more on software and hardware development.
- Working Time Directive – UK post-production companies use a standard opt-out so the regulations were not seen as a significant problem.

Within the whole industry there are substantive issues regarding Intellectual Property Rights (IPR), royalties, copyrights, etc, which arise from the reformatting and reuse of images and sound across different media and distribution channels. These were not covered in detail.

[30] 9 out of 10 claims fail. Source The Sunday Times

4.6 Sales and marketing

Within the sector nearly all respondents identified themselves as working predominantly in one market sector (ie either TV, commercials or film), but doing work in the other sectors if the opportunity arose. Companies therefore tend to act as though they are part of two communities, post-production and whichever sector they belong to.

The organisations interviewed encompassed a wide range of operational models. Examples include:

- 'One-stop shops' that believe they offer everything that could be required from a post-production house. These one-stop shops believe clients are now looking for a bundled range of services under one roof.
- Organisations that specialise in only certain areas of post-production. These believe they offer a higher quality of service for their particular area than the one-stop shops. A substantial number of these are very small (eg freelances or micro organisations) but some are major players eg De Lane Lea which specialises in audio.
- The 'elite group'. Although these companies do not define themselves by this term, it is quite clear that most of the industry sees companies like Cinesite, Framestore CFC, MPC, The Mill and others as being in this group. These companies tend to focus mainly on films and commercials.
- Media conglomerates. The main example of this is Ascent, a subsidiary of Liberty Media Group, which has taken over a number of post-production houses over the last couple of years.

Most of the companies spoken to were entities in their own right and most were founded in the relatively recent past. The original founders were still key figures in the organisation.

A detailed survey of where work for UK post-production companies originates shows quite clearly that this is a domestic business.

Figure 13 Sources of work

REGION	% OF BUSINESS BASED ON TOTAL TURNOVER
UK	70.2
US, West Coast	15.8
US (excl. West Coast)	7.3
Continental Europe	5.6
Asia & Australasia	0.9
Rest of the World	0.3

A detailed examination of work originating from the USA, particularly the West Coast, shows this is virtually all accounted for by film.

Many respondents felt that relationships with directors and key individuals in production companies were the crucial element to winning more work and these networks constituted the backbone of the entire industry. There were, however, a small number of respondents who thought that untrue. Overall, only 2% of staff employed in the industry are defined as being employed in a sales capacity. This may be accounted for by the numerous companies that are owner-managed businesses and do not identify sales as a discrete job function.

Regarding contracting methodologies, around one third of all companies surveyed said they sometimes partnered with other companies for bigger bids. However, in the film industry particularly, there is plenty of evidence of economic buyers parcelling out work in lots, which increases their purchasing power.

A number of respondents remarked that they would welcome industry-approved procedures for tendering.

4.7 Competition

The majority of competition at the commodity end of the market undoubtedly comes from locally based competitors. Many companies felt that the lowered cost of technology has spawned many lower cost domestic competitors, which in turn has driven prices down.

However, and in the film sector particularly, the high-end companies are competing on a world stage, especially with US-based companies. There is evidence from hardware and software companies to suggest that the Pacific Rim is gearing up towards developing indigenous post-production industries.

There is a model from the more general IT industry to consider here; it used to be felt that emerging countries would develop by buying cheaper hardware and software and competing on price for commoditised work with lower wage rates. A number of countries have not followed this model but have instead gone straight to the top end of the market with state-of-the-art facilities and equipment.

A majority of UK post-production companies cited the greatest threat to their business as foreign competition.[31] During the survey the most commonly mentioned countries that were perceived as encroaching on the UK post-production industry were Australia, the Czech Republic, Germany and India.

Respondents were asked to describe what made their own company successful. The answers to this were illuminating. Companies were able to provide more than one reason, but by far the most common answer was the combination of service and quality.

Figure 14 Success factors [32]

	%
Service	51
Technology	21
Price	15
Quality	14

The majority of respondents that mentioned the BBC were positive in their comments and normally they praised the quality of its work, as well as its contribution to the development of the industry over the years. However, several respondents were cynical in their view of the relationship between the BBC and BBC Resources. They felt the corporation used the directorate preferentially for its own post-production work while underwriting its costs in terms of external work. Two interviewees suggested that, in effect, their licence fee was contributing towards their competitor's success.

[31] 38 separate comments
[32] 138 separate comments

4.8 Growth and access to finance

The vast majority of companies in this sector are privately owned and most are also independent.

Figure 15 Company ownership models

OWNERSHIP TYPE	%
Private	90
Public	10
ARE YOU OWNED BY ANOTHER ORGANISATION ?	
Yes	21
No	79

It is clear that the majority of companies in the sector find it hard to raise finance for expansion. With the exception of a few enterprises that form part of larger corporate holdings, companies are private and many fall into the micro category of small and medium-size enterprises or SMEs (DTI – fewer than 10 employees).

These small companies have a fundamentally different business model to the larger ones and generally finance themselves through cash flow or overdrafts. For all but a select group of firms, commoditised work in the TV and commercials sector appears to underpin their whole cash flow model with film being seen as the very top end. How easy it is for companies to step up to film is unclear, but the anecdotal evidence shows that this is unlikely; companies will grow to a certain size and then be unable to expand further. The risks of gearing up to compete at the top end look very large.

Figure 16 How organisations finance large projects

	%
Cash flow	46
Bank loans	20
Leasing	17
Private investment	12
Grants / Lottery	3
Stock issue	0
Other	2

4.9 People

Every respondent interviewed said that the culture of the post-production industry could be characterised as 'creative', 'young' and 'relaxed'. The vast majority believed their organisations were fun places to work, and that people worked very hard.

Skillset, the Sector Skills Council for the audiovisual industries, has carried out a number of studies on workforce-related issues for this sector. In this section, therefore, we cover only specific respondent comments on the human side of the business. This section should be read in the context of the fact that only 79 companies in the sector have more than 100 employees and over 500 have fewer than 10.

Figure 17 Job roles

ROLE	% OF WORKFORCE	% THAT ARE FREELANCE
Creatives and operators	64	39
IT & support	10	13
Production	13	21
Administration	11	7
Sales (dedicated staff)	2	6
Total industry staff:	15,043	31

The figures derived from the survey show a considerably higher number of people working in the industry than the 2001 Skillset survey.[33] The research undertaken for this report, however, covered a wider definition of post-production. One of the key findings is the high percentage of

freelances and contractors employed in the sector. The most common explanations for this included:

- The inability of smaller companies to keep specialists in full-time employment.
- A need to dramatically flex organisation size to projects at short notice.
- A lifestyle choice on the part of the freelances themselves.

Another key observation is the low reported percentage of dedicated sales personnel in the industry. As mentioned this might be a function of owner managers doubling up roles; most of the larger companies interviewed had dedicated sales staff.

4.9.1 Education

In common with other parts of the wider industry, the majority of new recruits to the post-production sector enter the business as 'runners' or juniors on short-term contracts. Progression then depends on ability and enthusiasm. Companies interviewed generally showed little concern for the educational or social background of new runners – attitude and personality were cited as the most important factors. Again, as with other industry sectors, graduate recruitment is widespread. Related university or college courses were quite often disparaged and there is a perception that some education providers misrepresent the industry to students, leading them to believe that they would be able to enter the sector at a higher level than was possible in reality.

Some training and education providers, however, were praised for producing course leavers with high quality sector-relevant skills. Particular mention was made of Bournemouth University, the University of Hertfordshire (model design), Ravensbourne College (engineering and operations), and the Tonmeister course at the University of Surrey (sound).

A number of the larger companies in the sector have developed relationships with a selected group of universities and colleges which might involve input into curriculum design, lecturing, external assessment and the provision of structured work placements. While benefiting the course provider by increasing the relevancy of their courses, these relationships also provide employers in the sector with a better skilled pool of potential new entrants.

There is the potential for a wider implementation of links between education providers and the industry, particularly in mathematics and engineering. In the USA this linkage is commonplace.[34]

[33] Skillset breakdown

Post-production	5,548
Sound	2,226
Special physical effects	227
Animation	570
	8,571

[34] www.math.ucla.edu/newsevents/news/mawbruin.html

4.9.2 Training and skills development

Within the sector new entrants generally learn on the job, acquiring relevant skills and competencies in an ad hoc fashion, as and when opportunities arise to sit in with experienced staff or spend time on unused equipment.

Anecdotal evidence from the survey suggests that unstructured but extensive training is the norm, taking place either on-the-job or after hours. This is predominantly self-funded, self-motivated and largely invisible (in terms of resources) training.

A number of respondents noted that they sent technical staff on external courses and also arranged formal in-house training, however the sample sizes were not large enough to report meaningful data on this. It is true to say, however, that certain of the larger companies have instituted advanced workforce development programmes aimed at ensuring a company skills base of high-end specialist skills.

"Current industry subsidised training initiatives are not aimed at broadcast TV post-production companies. In addition, this area of the sector is unable to take advantage of existing Modern Apprenticeship frameworks. Graduates who make up the bulk of recruits in this area, are specifically excluded. The Post Production Training Initiative, a group funded by ChEFF and supported by the IVCA, has been campaigning, both via Skillset and directly to the Department for Education and Skills, on this issue." Neil Hatton, Frontier Post Ltd

One notable factor from the survey of technology companies was how high-end technology companies, particularly in the USA, are now providing training and are starting to work with third party trainers to increase their ability to deliver. This is a widely followed model in the IT sector providing the dual benefit of increasing revenue streams and locking in technicians to one piece of software.

The *Developing UK Film Talent* survey and report published by Skillset, the UK Film Council and the National Screen Agencies in February 2003, outlined the findings of a comprehensive survey of training provision, skills gaps and shortages in the film industry. In relation to post-production, a number of areas were identified as priorities including project management skills for existing practitioners; training for VFX practitioners in image management systems; and training in software skills, technical, research, development and engineering skills for SFX practitioners.

Provision for these gaps were addressed in the *UK Film Skills Strategy* published in September 2003 by Skillset and the UK Film Council.

4.9.3 Careers

Career progression within the UK industry is a serious problem. In the majority of smaller companies there are few opportunities for advancement as the founders tend to own and operate the businesses. In addition, there are so few large companies that, with the exception of the most talented individuals, intra-UK mobility is also an issue.

Another factor impacting on film post-production companies is that top staff are often lured by high salaries to work in the USA, leaving the UK with a brain drain. This is less the case in TV and commercials but it still happens.

Conversely, the UK is clearly an aspirant destination for post-production staff from Europe and the Commonwealth, some of whom can work here without permits.

Coupled to this is the issue of balancing supply and demand. As noted, UK post-production companies make extensive use of freelances when they need to gear up for larger projects. While this is an effective means of keeping overheads low, it raises a number of longer-term issues in terms of skills investment and workforce stability.

"A major problem for the industry is that it is running out of talented people at the right level. This means that American filmmakers that come to the UK are bringing their own technicians with them, exacerbating the situation because it means that British talent doesn't get to work on major films, increasing American distrust in British ability." Research respondent

4.10 Sector representation

Overview

A number of current industry organisations include the post-production sector in their constituencies but none has a specific remit for the sector. In part this is a consequence of the wide scope of some of these organisations, and the fact that elements of the post-production industry are often represented at a second tier level through affiliate membership status, etc.

In addition, many of these organisations already face considerable challenges in representing the

interests of their core constituencies at a time of such flux in the industry and lack the resources needed to address the singular issues facing the post-production sector.

Historically, companies and individuals working in the facilities industry were represented by the UK chapter of the International Teleproduction Society (ITS), a US-based trade association. In 1999, the UK chapter was relaunched as the Image Industry Alliance (i2a) but maintained affiliation with both the US ITS and the European Federation of Sound and Image Technical Industries (FEITIS).

In 2000, i2a ceased operation due to a dearth in funding. The work of its Engineering Committee, however, was to continue, and in May 2001 this element of i2a was relaunched as the Chief Engineers of Facilities Forum (ChEFF), a stand-alone organisation representing principally the TV facilities sector on technical and engineering matters. This body is also affiliated with the US ITS and FEITIS and has close ties with the European Broadcasting Union, a professional association for national broadcasters.

Respondent comment

The lack of a single voice for the entire film, TV and commercials post-production sector is widely seen by respondents as a disadvantage. It is viewed as an obstacle to a unified lobby on relevant issues, as a disincentive in terms of government assistance and a barrier to people seeking information.

While many survey respondents were doubtful of the ability of some of the larger existing organisations to increase their effectiveness in representing the post-production industry, over 96% said they were in favour of a dedicated representative organisation for the sector.

"The industry needs a collective voice to dispel the myths, to accentuate the good and to make the industry aware of the problems facing the sector." Research respondent

Many respondents felt that there would be difficulties involved in setting up such a body. The two main reasons were:

- The size of the industry and the need for extensive networking make it difficult for companies to sit down with competitors and discuss business.
- Many companies are run by independently-minded entrepreneurs who find it hard to collaborate with other organisations.

Where practical suggestions were made, a substantial number of respondents favoured an independent, and possibly non-industry, head for such a body.

There was very little common ground amongst respondents as to what form such an organisation should take and indeed how it would interact with existing bodies. However respondents were clearer about general objectives:

- Representation to government:
  - On fiscal and legislative issues.
  - On workforce issues.
  - On technical standards.
- Marketing the UK as destination.

There are representative bodies outside the UK that could provide a model – the most commonly mentioned being the Hollywood Post Alliance.[35]

[35] www.hpaonline.com

4.11 Opportunities

The majority of respondents saw their opportunities lying within the domestic market although some saw overseas expansion as a possibility. Only a very few saw new platforms (eg 3G phones, DVD) as significant growth areas. A number of respondents linked their fortunes to upturns in the primary markets and an expansion of production activity.[36]

"The Communications Bill will allow independent TV production companies to retain their secondary rights, so they will be keen to develop their business potential in the USA. However, this will mean delivering in High Definition, so the broadcast post-production sector will have to make some bold investments in expensive new kit and the necessary skills if it is to support its customers' drive for exports." Neil Hatton, Frontier Post Ltd

Many respondents asserted that competitive differentiation is currently based more on talent than machines, however this may change with the advent of HDTV; those who invest in the necessary equipment will certainly have a short-term competitive advantage if this standard is more widely adopted by the broadcast industry.[37]

[36] 45 separate comments
[37] 107 separate comments

5 Issues for consideration

Code 46. BBC Films/Revolution/United Artists/UK Film Council. Image: Farmpost

Based on the results of the survey and the detailed comments given by respondents, a number of key issues affecting the sector have been identified.

5.1 Promoting the sector

Post-production in the UK is growing slightly against a background of shrinking production budgets and poor economic conditions. It is clearly a dynamic and creative sector which is central to several of the primary key UK creative industries. Reasonable evidence was found to suggest the UK is number two in the world; however, there is equal reason to assume that overseas providers could easily take market share away from the UK. This is particularly true in the case of film.

Despite its importance, aside from the Chief Engineers of Facilities Forum (ChEFF), the sector does not have a single authoritative voice to speak on its behalf. It believes that it is now of the scale and size to benefit from a single representative voice.

Until the industry is able to make its commercial needs known and to lobby effectively for these, it will continue as a largely unrecognised collection of disparate and smaller companies.

5.2 External factors

Being at the foot of the value chain in all its sectors, the UK post-production industry is subject to considerable market forces over which it has little control. Industry fortunes are therefore linked to those of the primary industries it supplies. There is compelling evidence that input from a post-production industry voice would be welcomed by, and add weight to, primary industry lobbies, for example:

- The continuation of tax breaks for film – this would support the competitiveness of the UK thus increasing the extent of post-production carried out here.
- Quotas for TV programming sourced from the UK/EU – the more TV programmes made in the UK, the more work goes to UK post-production companies.

5.3 Marketing the UK as a destination for post-production

Within the film sector there is evidence to suggest that US studios do not fully understand the capability of the UK in high-end film post-production and in particular believe it to be resource constrained. The larger UK companies do have some sales representation in the USA but this is limited.

In other sectors it is clear that work can be attracted to the UK and many post companies believe this to be a route to expansion. However, virtually all smaller companies have little or no overseas representation and there is clearly scope for centralised marketing activities to develop an export business for 'UK post-production plc'. This situation is compounded by the nature of the

domestic industry because of its reliance on networking and personal contacts. Good industry marketing skills will be needed to develop an export business.

5.4 Support to smaller companies

All government support to UK post-production companies is currently channelled through standard small business support mechanisms (eg Business Links). The exception is Skillset whose remit is to tackle the skills and productivity challenge within the industry. No private sector organisations exist to channel sector-wide assistance.

There is good evidence that post-production is a complex mix of creativity and ICT. It should be noted that in other industries where disparate skills are combined, specialist organisations exist to provide practical support and services to membership – for example the Entertainment & Leisure Software Publishers Association (ELSPA), which provides a specific and collective identity for the British computer and video games industry.

The appendices list all the UK organisations and bodies whose remit covers at least part of the post-production sector. All such bodies were approached for input into this study.

5.5 Investment

The nature of the markets in which UK post-production companies operate, the industry structure and the relative organisational size all mean that companies have little or no access to capital markets for fund raising. Indeed, it may only be possible for a very few companies to get to a size suitable for public listing. The survey shows that virtually all companies use cash flow or bank loans to finance operations.

There is also compelling evidence that the larger hardware and software suppliers to the industry recognise this problem and have developed a range of leasing and other financing solutions to enable them to buy their products.

5.6 People

Skillset deals with all the areas of training, skills development and career development in UK post-production. During this survey the most common respondent remarks were that:

- There continues to be a problem keeping top talent in the UK.
- The 'runner' route still remains the most prevalent way of entering the industry.
- There are clearly progression issues for staff working in such a small industry and with only a limited number of large firms to move between.
- Changes in the BBC have had a large effect on training and skills.
- This is young industry – many of the people who started it still control it.

5.7 Recommendations for action

Under the terms of reference for this project, no specific recommendations for action are made in this report. However, this report is being widely circulated in the industry for comment.

Appendices

Appendix 1: Post-production and production special effects activities

There is no fixed or industry standard definition of what post-production encompasses; often the line between production and post is exceedingly blurred. Respondents to this study were provided with the following list of activities that may generally be considered to be post-production. Companies were also invited to include or exclude themselves from the sector on the basis of their own assertion.

2D Compositing	Graphics
3D Digital Compositing	Idents
3D Scanning	Mechanics
ADR	Models & Miniatures
Animation	Motion Capture
Animatronics	Motion Control
Archiving	Music & Effects
Atmospherics	On-line Editing
Audio Special Effects	Opticals
Background	Prosthetics
CGI	Pyrotechnics & Fire
Clearances (Library)	Restoration
Clearances (Sound)	Soundtrack
Credits	Spot Effects
Costume Effects	Stills Manipulation
Digital Effects	Telecine
Digital Matte Painting	Titles
Editing	Virtual Studio/Sets
Encoding	Voice Post Synching
Film Treatment & Restoration	Wire Effects
Foley Effects	

Other categories of activity have been suggested as being within the purview of activities that may be described as post-production or closely aligned to post-production. These include transmission and play out, TV studios, TV OBs, TV equipment hire, duplication, standards and aspect ratio conversion and DVD authoring.

Appendix 2: Trade and industry organisations

The following is a list of some of the most relevant organisations.

APA – Advertising Producers Association
The APA represents the interests of production companies involved in the making of television commercials.
www.a-p-a.net

APRS – Association of Professional Recording Services
A membership organisation aiming to promote excellence within the audio industry. Its members are recording studios, post-production houses, mastering, replication, pressing and duplicating facilities, and providers of education and training, as well as audio engineers, manufacturers, suppliers, and consultants.
www.aprs.co.uk

APPS
The Audio Post-Production Studios group is one of the membership groups of the APRS open to film, television and video audio post facilities companies.
www.aprs.co.uk/directory/apps.html

AMPS – Association of Motion Picture Sound
An organisation for UK film and television sound technicians which aims to promote the science, technology and creative application of all aspects of sound and image recording for film, television and allied media.
www.amps.net

BKSTS – the Moving Image Society
BKSTS encourages and promotes excellence in all aspects of moving image and associated sound technology.
www.bksts.com

BAFTA – British Academy of Film & Television Arts
The UK's leading organisation advancing the art and technique of film, television and interactive media.
www.bafta.org

BSAC – British Screen Advisory Council
An independent industry-funded body that provides policy advice to government and industry on a European and national level.
www.bsac.uk.com

ChEFF – Chief Engineers of Facilities Forum
A stand-alone organisation representing the TV facilities sector on technical and engineering matters.
www.cheff.sohonet.co.uk/index.html

DCF – Digital Content Forum
Launched by the DTI and a number of trade associations, the DCF is a representative body for the UK's digital content sector. It raises awareness of key topics amongst its members and provides a formal liaison and information exchange between government and the industry.
www.dcf.org.uk

FT2 – Film and Television Freelance Training
The leading provider of structured new entrants training for the UK's film and television industries. Its industry-supported schemes include a new entrants technical training programme, setcrafts apprenticeship training scheme and independent companies researcher training scheme. It is currently piloting an intern scheme for trainee development executives.
www.ft2.org.uk

Industry Party
A gathering of 3D animation and digital effects professionals which aims to build a strong community of high-end 3D artists and digital effects practitioners in London and the UK.
www.industryparty.co.uk

IVCA – International Visual Communication Association
Trade body for everyone involved in corporate communication programmes, events and business media.
www.ivca.org

ITC – Independent Television Commission
The ITC licenses and regulates commercial television services in the UK except S4C in Wales.
www.itc.org.uk

Ofcom – Office of Communications
Set to be vested at the end of 2003, Ofcom will be a single regulator for the UK's converging communications sector, merging the functions of existing bodies the ITC, the Broadcasting Standards Commission (BSC), the Office of Telecommunications (Oftel), the Radio Authority and the Radiocommunications Agency.
www.ofcom.org.uk

PACT – Producers Alliance for Cinema and Television
Trade association and employers' body representing independent television, feature film, animation and interactive media production companies.
www.pact.co.uk

Production Guild
A professional organisation representing the interests of individuals engaged in senior management and accounting roles in the film, television and visual media production industries.
www.productionguild.com

RTS – Royal Television Society
The RTS promotes the art and science of television broadcasting and provides a forum for debate on the technical, cultural and social implications of the medium.
www.rts.org.uk

Skillset
The Sector Skills Council for the audiovisual industries. It aims to maintain the competitiveness of the sector through developing strategies to ensure the delivery of skills development and education provision that meets the sector's current and future needs.
www.skillset.org

Appendix 3: The VFX committee of UK Film Council International

The VFX committee comprises:

- Colin Brown,
  Chief Executive Officer,
  Cinesite (Europe) Ltd
- Natasha Clennell
  Marketing Manager,
  DEC & F&L, BBC
- Paul Docherty
  Visual/Digital Effects Supervisor,
  Peerless Camera Company
- Vikki Dunn
  Managing Director,
  The Farm Group
- Emma Ibbetson
  Head of Production,
  Smoke & Mirrors
- David Jeffers
  Managing Director,
  The Moving Picture Company
- Mike Kelt
  Managing Director, Artem
- Steve Norris
  British Film Commissioner,
  UK Film Council International
- Nicky Sargent
  Managing Director, The Farm Group
- William Sargent
  Joint Chief Executive,
  Framestore CFC
- Robin Shenfield
  Managing Director,
  The Mill
- Alison Small
  Head of Information,
  UK Film Council International
- Courtney Vanderslice
  Head of Feature Film Production,
  Cinesite (Europe) Ltd
- Penny Verbe
  Facilities Director,
  Smoke & Mirrors
- Clare Wise
  Director, UK Film Council International

Appendix 4: Interviews and acknowledgments

(Please note that comments cannot be attributed to any of these respondents unless specifically indicated in the text)

Face-to-Face and personal interviews

4.2.2.
Audiovision
BBC Resources
Blue
Broadcasting Center Europe
Carlton Television
Cinesite
Das Werk
De Lane Lea
Delux Productions
Fiber (Australia)
Framestore CFC
Frontline TV
Glassworks
Golden Square
Molinare
NATS
Peerless Camera Company
Pol Thiltges Distribution
Red
RTL
Rushes
Smoke & Mirrors
St Anne's
The Carousel Picture Company
The Farm Group
Videosonics

Industry and trade associations

ChEFF
APPS
Skillset
AMPS
BSAC
BKSTS
Production Guild
PACT

Technology

Discreet
Quantel
Vicon Motion Systems
AVID
Adobe
Apple Computer Europe, Inc.
Soreson Media
Snell & Wilcox

Government and agencies

DCMS
DTI
SBS
UK Film Council/UK Film Council International

Education

National Film and Television School

Industry experts

We are grateful to the following for their advice and help especially: Steve Harrow, Drew Jones (Framestore CFC), Alastair Hopkins, Gene Kelly (Ensemble Productions), Simon Gosling (Moving Picture Company), Andy Balmer (Beam TV), De Lane Lea, and Octavia Holmes and Sarah Nicholson at UK Film Council International.

The Salix staff and associates who worked on this project included:

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