



## **University of Bradford eThesis**

This thesis is hosted in [Bradford Scholars](#) – The University of Bradford Open Access repository. Visit the repository for full metadata or to contact the repository team



© University of Bradford. This work is licenced for reuse under a [Creative Commons Licence](#).

**INTERPRETATIONS OF DIGITAL EXHIBITION**

**VOLUME ONE**

**S. J. WALKER**

**PhD**

**UNIVERSITY OF BRADFORD**

**2011**

INTERPRETATIONS OF DIGITAL EXHIBITION  
Assessing the academic pertinence of commercial and political definitions  
- A Case Study

Simon James Walker

submitted for the degree  
of Doctor of Philosophy

Bradford Media School  
School of Computing Informatics and Media

University of Bradford

2011

## Table of Contents (Volume One)

<b>Acknowledgements .....</b>	<b>xiii</b>
<b>Abstract .....</b>	<b>xiv</b>
<b>Chapter One.</b>	
<b>The Aims and Objectives of this Study.....</b>	<b>1</b>
<b>Introduction to Chapter One .....</b>	<b>2</b>
<b>Chapter One:</b>	
<b>The Aims and Objectives of this Study.....</b>	<b>4</b>
<b>1.1 Subject of Study.....</b>	<b>4</b>
<b>1.2 Research Question .....</b>	<b>5</b>
<b>1.3 Overview of Approach to Study.....</b>	<b>5</b>
<b>1.4 Specific Aims of This Study.....</b>	<b>6</b>
<b>1.5 Addressing a Gap within Existing Literature.....</b>	<b>8</b>
<b>1.6 Making a Contribution to Knowledge.....</b>	<b>9</b>
<b>1.7 Conclusions Drawn .....</b>	<b>10</b>
<b>Chapter Two.</b>	
<b>Methodological Approach to Study.....</b>	<b>12</b>
<b>Introduction to Chapter Two .....</b>	<b>13</b>
<b>Chapter Two, Part One</b>	
<b>Why the ‘Case Study’ Approach was Considered Appropriate. ....</b>	<b>18</b>
Research Situations in which the Case Study Approach is Appropriate .....	18
Table 1: Relevant Situations for Different Research Strategies.....	18
Specific Applications of Case Study Research.....	22

## Chapter Two, Part Two:

<b>Designing the Specific Research Approach:</b> .....	<b>24</b>
<b>2.2.1 Defining the Units (and Subunits) of Analysis</b> .....	<b>26</b>
Why a Single-case Approach with Multiple Embedded Sub-units of Analysis was Considered Appropriate .....	27
<b>2.2.2 Developing a Continuous Strand of Questioning</b> .....	<b>29</b>
Guidepost Questions from .....	30
this study's Continuous Strand of Question Development .....	30
<b>2.2.3 Stating Propositions</b> .....	<b>31</b>
Defining the Propositions for this Study .....	31
Table 2: This Study's Propositions .....	33
<b>2.2.4 The Logic Linking the Data to the Propositions</b> .....	<b>35</b>
Developing an Analytic Strategy .....	35
Relying on Theoretical Propositions.....	35
Setting Up a Framework based on Rival Explanations .....	36
Developing Case Descriptions .....	36
Developing This Study's Analytic Strategy: .....	37
The logic linking this study's data to this study's propositions.....	37
<b>2.2.5 The Criteria for Interpreting the Findings</b> .....	<b>39</b>
Pattern Matching .....	40
Explanation Building .....	41
The Criteria for Interpreting the Findings of This Study .....	44
Literature Analysis (Critical Literature Review) .....	48
Comparative Analysis.....	54
Political Economy Analysis.....	58
Literature Survey .....	58
<b>2.2.6 Theory Development &amp; Generalisation</b> .....	<b>63</b>
Generalisation.....	64
Statistical Generalisation.....	65
Analytic Generalisation.....	65
<b>Chapter Two, Part Three:</b>	
<b>Conducting the Research &amp; Presenting the Findings</b> .....	<b>67</b>
<b>2.3.1 Data Collection</b> .....	<b>67</b>
Principle 1: Use Multiple Sources of Evidence .....	68
The use of Multiple Sources of Evidence within this study .....	69
Principle 2: Create a Case Study Database .....	70
The Creation of Case Study Database within this study .....	70
Principle 3: Maintain a Chain of Evidence .....	71
The maintenance of a Chain of Evidence within this study.....	71
<b>2.3.2 The Case Study Report</b> .....	<b>72</b>
Drawing and Presenting the Conclusions.....	74
<b>Chapter Two: Summary</b> .....	<b>75</b>

## **Chapter Three.**

### **Explanation Building:**

**A Critical Political Economy Analysis of Established Definitions ..... 79**

**Introduction to Chapter Three ..... 80**

### **Chapter Three, Part One:**

#### **The Established Definitions of Digital Exhibition –**

**An introduction to pertinent meaning making discourses..... 85**

**3.1.1 Those interpretations of Digital Exhibition which present the phenomenon to be a form of the cinema..... 86**

Defining Electronic Cinema ..... 88

Defining Digital Cinema..... 89

Political Interpretations: Unwelcome Interventions ..... 90

**3.1.2 Those interpretations of Digital Exhibition which present the phenomenon as pertaining to multiple media..... 92**

Defining Digital Cinema..... 95

Defining ‘Other Digital Stuff’ ..... 97

**3.1.3 Those interpretations of Digital Exhibition that present the phenomenon as being a form of television. .... 101**

Digital Exhibition as Television: The Response..... 103

**3.1.4 Those interpretations of Digital Exhibition that present the phenomenon as being a wholly new medium. .... 105**

### **Chapter Three, Part Two:**

**Explanation Building: The forces of Political Economy have influenced the composition of Meaning Making discourses. .... 107**

**3.2.1 Meaning Making as a reaction to the potential Democratisation of Public Exhibition ..... 109**

The Hollywood Studios (MPAA & DCI)..... 109

NATO..... 112

NATO / Hollywood ..... 116

DCMS, UKFC & EDCF..... 119

**3.2.2 Meaning Making as a Consequence of the want to elicit a Return on Investments ..... 122**

Investment by Hollywood (The MPAA & DCI) ..... 122

Investment by NATO Members ..... 127

Investment by the UKFC ..... 128

**3.2.3 Meaning Making as a response to the consideration that to tolerate the interpretation of Digital Exhibition as a form of television would mean “Big Trouble” for industry ..... 131**

**3.2.4 Disregarding the New Medium Designation ..... 137**

**Chapter Three: Assessment of Findings ..... 139**

## **Chapter Four.**

<b>Explanation Building: Digital Exhibition is a form of The Cinema. ....</b>	<b>144</b>
<b>Introduction to Chapter Four .....</b>	<b>145</b>
<b>Chapter Four, Part One:</b>	
<b>Does the Phenomenon of Digital Exhibition adhere to accepted definitions as to what The Cinema is? .....</b>	<b>149</b>
<b>4.1.1 The Cinema is...Everything that it has historically been.....</b>	<b>149</b>
<b>4.1.2 The Cinema is...The Seventh Art.....</b>	<b>150</b>
<b>4.1.3 The Cinema is...The Content Presented .....</b>	<b>151</b>
First Run Feature Films.....	151
High Quality Imagery .....	157
Film Based Motion Pictures Presenting Video Quality Imagery.....	158
16mm & 8mm Cinema.....	159
Black-And-White and Early Colour Cinema .....	161
35mm Acquisition and Presentation.....	162
<b>4.1.4 The Cinema is...A Venue.....</b>	<b>163</b>
<b>4.1.5 The Cinema is...A Contraption .....</b>	<b>165</b>
Film Based Exhibition .....	165
Changes in The Medium of The Cinema.....	168
<b>4.1.6 The Cinema is...A Conceptual Notion.....</b>	<b>169</b>
André Bazin .....	169
Has Cinema Really Never Been Invented?.....	171
Does Digital Exhibition take the cinema 'Nearer and nearer to its origins'? .....	173
Beyond Bazin.....	179
<b>Chapter Four: Summary of Findings.....</b>	<b>181</b>

## Chapter Five.

<b>Explanation Building: Digital Exhibition is a form of Television. ....</b>	<b>183</b>
<b>Introduction to Chapter Five .....</b>	<b>184</b>
<b>Chapter Five, Part One:</b>	
<b>Technologically, Digital Exhibition and Television are Indistinguishable .....</b>	<b>187</b>
<b>5.1.1 Technological Heritage.....</b>	<b>187</b>
Content Acquisition .....	187
Distribution Technologies.....	189
Content Compression .....	190
Server Systems .....	192
Display Technologies.....	195
Digital Light Processing.....	196
Liquid Crystal Display.....	199
Transmissive LCD.....	199
Reflective LCD: ILA.....	200
Reflective LCD: D-ILA.....	201
Reflective LCD: SXRD.....	202
<b>5.1.2 The Issue of Resolution.....</b>	<b>203</b>
The Resolution of ‘Digital Cinema’ .....	204
The Resolution of Television.....	205
<b>5.1.3 Digital Exhibition Technologies which have never been associated with Television.....</b>	<b>207</b>
<b>Chapter Five, Part Two: Defining Television .....</b>	<b>209</b>
<b>5.2.1 Television: The Dictionary Definition .....</b>	<b>209</b>
<b>5.2.2 Definition Through Social Use.....</b>	<b>211</b>
Context .....	211
‘Theater Television’ (& ‘Total Television’) .....	212
‘Ambient Television’ .....	214
‘Ambient Television’ in Social Communications: .....	216
The Positioning of People.....	216
‘Ambient Television’ in Social Communications: .....	217
Determination and Communication of Power Relationships.....	217
‘Ambient Television’ and the Provision of Private Experiences in Public Spaces.....	218
‘Ambient Television’ and The Commodification of Waiting.....	219
Content .....	222
Content as Defined by its Mode of Consumption.....	222
Broadcast Flow.....	222
Pay-Per-View .....	225
Store-And-Forward.....	226
Content as Defined by Programme Genres .....	227
Live Programming .....	228
Feature Film Exhibition.....	229
Specific Programme Types .....	231
<b>Chapter Five: Summary of Findings .....</b>	<b>233</b>

## **Chapter Six.**

**Explanation Building: Digital Exhibition is a Wholly New Medium ..... 237**

**Introduction to Chapter Six..... 238**

### **Chapter Six, Part One:**

**Digital Exhibition and ‘Images of Media’..... 241**

**6.1.1 Introduction to Concept ..... 241**

**6.1.2 Media as Conduits ..... 242**

**6.1.3 Media as Languages..... 243**

**6.1.4 Media as Environment..... 245**

Asking Meyrowitz’s ‘Medium Analysis’ Questions of Digital Exhibition ..... 246

What are the characteristics of Digital Exhibition that make it physically,  
psychologically, and socially different from film based exhibition regardless of  
content and grammar choices? ..... 246

What are the characteristics of Digital Exhibition that make it physically,  
psychologically, and socially different from domestic video display regardless of  
content and grammar choices? ..... 247

What social, political, and economic variables encourage the development and  
use of Digital Exhibition over film based exhibition? ..... 248

What social, political, and economic variables encourage the development and  
use of Digital Exhibition over domestic video display?..... 249

How does the addition of Digital Exhibition to the existing matrix of media alter the  
function and use of film based exhibition? ..... 249

How does the addition of Digital Exhibition to the existing matrix of media alter the  
function and use of domestic video display?..... 251

How does the rise of Digital Exhibition alter social roles and institutions whose  
structure and functions were dependent in some way on the characteristics of  
previously dominant media?..... 252

Film based Exhibition ..... 252

Domestic Video Display..... 252

**6.1.5 Digital Exhibition as ‘Subcontext’ ..... 253**

## Chapter Six, Part Two:

<b>Digital Exhibition and the New Media .....</b>	<b>254</b>
<b>6.2.1 The Principles of New Media.....</b>	<b>256</b>
Principle One: Numerical Representation .....	256
Numerical Representation and Digital Exhibition .....	257
Acquisition of Content as Encoded Numerical Representations:- .....	257
'From scratch on computers' .....	257
'Converted from analogue media sources' .....	257
'Through digital video cameras' .....	258
Algorithmic Manipulations of Content:- .....	259
'Image Compression' .....	259
'Content Encryption' .....	260
Principle Two: Modularity .....	261
Modularity and Digital Exhibition .....	261
Principle Three: Automation .....	262
Automation and Digital Exhibition.....	262
Automation of non-Feature Film Exhibition.....	262
Automation of Feature Film Exhibition.....	263
Principle Four: Variability .....	264
Variability and Digital Exhibition .....	264
Principle Five: Cultural Transcoding.....	266
Transcoding and Digital Exhibition .....	267
Identifying and Specifying the 'Computer layer' .....	267
The Influence of 'The Cultural Layer' on 'The Computer Layer' of Digital Exhibition .....	268
The Influence of 'The Computer Layer' on 'The Cultural Layer' of Digital Exhibition .....	269
Influences upon 'Organisation' .....	270
Digital Exhibition as Database .....	270
Database Cinema / Live Cinema.....	271
Digital Exhibition as Hypernarrative.....	273
Influences upon 'Emerging Genres' .....	276
Influences upon 'Contents' .....	277
Potential Democratisation of Content .....	277
Potential Subjugation of Content .....	278
<b>6.2.2 Digital Exhibition: An Old Medium as 'New Media'? .....</b>	<b>280</b>
Manovich: Digital Exhibition is an Expansion of The Cinema .....	281
Manovich: The Cinema is not a case of the New Media .....	282
Manovich: Digital technologies could transform The Cinema into New Media .....	283
<b>Chapter Six: Summary of Findings .....</b>	<b>285</b>

## **Chapter Seven.**

<b>Explanation Building: Multiple Explanations addressing the capacity to define Digital Exhibition as pertaining to multiple media.....</b>	<b>288</b>
<b>Introduction to Chapter Seven.....</b>	<b>289</b>
<b>Chapter Seven, Part One: Explanation Four -</b>	
<b>The cinema, television and Digital Exhibition</b>	
<b>have always pertained to the same ('total' / not yet invented) conceptual medium. ....</b>	<b>293</b>
<b>7.1.1 Bazin Revisited .....</b>	<b>293</b>
<b>7.1.2 Television as 'Total Cinema' .....</b>	<b>294</b>
Television: Drawing cinema nearer to its origins - i.e. the concept of a complete imitation of nature ('realism').....	295
Television: Drawing the cinema nearer to its origins - i.e. the notions and aspirations of Thomas Alva Edison .....	296
Television: Drawing the cinema nearer to its origins - i.e. the concepts and ambitions of John Logie Baird .....	298
<b>7.1.3 New media as 'Total Cinema' .....</b>	<b>300</b>
The Goal of Total Realism as the Origin of 'Virtual Reality' .....	300
The Goal of Total Fantasy as the Origin of Computer Generate Imagery.....	301
<b>7.1.4 Section Summary of Findings .....</b>	<b>303</b>
<b>Chapter Seven, Part Two: Explanations Five, Six &amp; Seven -</b>	
<b>Digital Exhibition is an Application of The Computer .....</b>	<b>304</b>
<b>7.2.1 Can Computers perform Digital Exhibition? .....</b>	<b>304</b>
<b>7.2.2 Do Computers perform Digital Exhibition? .....</b>	<b>306</b>
<b>7.2.3 The Computer is Not a Medium.....</b>	<b>307</b>
The computer is not a medium, but it 'becomes' multiple media.....	308
The computer is not a medium, but it 'accommodates' (channels) multiple media .....	308
The computer is not a medium, but it 'emulates' multiple media.....	309
<b>7.2.4 Explanations Five, Six &amp; Seven .....</b>	<b>309</b>
Explanation Five: Digital Exhibition is not a medium, but it becomes multiple media .....	310
Explanation Six: Digital Exhibition is not a medium, but it 'accommodates' (channels) multiple media .....	310
Explanation Seven: Digital Exhibition is not a medium, but it 'emulates' multiple media.....	310
<b>7.2.5 Section Summary of Findings .....</b>	<b>311</b>

<b>Chapter Seven, Part Three:</b>	
<b>Explanations Eight, Nine &amp; Ten:</b>	
<b>Digital Exhibition represents the Convergence of Multiple Media. ....</b>	<b>312</b>
<b>7.3.1 Explanation Eight:</b>	
<b>Digital Exhibition represents a convergence of the cinema, television and the computer. ....</b>	<b>313</b>
<b>7.3.2 Explanation Nine:</b>	
<b>Digital Exhibition represents the convergence of the cinema and television. ....</b>	<b>315</b>
<b>7.3.3 Explanation Ten:</b>	
<b>The Cinema has assimilated some of the technologies of the computer and television.....</b>	<b>317</b>
The Origins of New Media: Converging Historical Trajectories.....	318
Converging Historical Trajectories and Digital Exhibition.....	318
<b>Chapter Seven, Part Four:</b>	
<b>Explanations Eleven &amp; Twelve:</b>	
<b>Digital Exhibition Remediate The Cinema and Television.....</b>	<b>322</b>
<b>7.4.1 Bolter &amp; Grusin and The Genesis of New Media .....</b>	<b>323</b>
<b>7.4.2 What is Remediation and Why Remediate?.....</b>	<b>324</b>
<b>7.4.3 Digital Exhibition and the Spectrum of Remediation.....</b>	<b>326</b>
Transparent Remediation.....	326
Translucent Remediation .....	327
The Cinema .....	329
Television .....	329
The Computer (3D Computer Graphics) .....	329
Virtual Reality .....	329
Aggressive Remediation .....	332
<b>7.4.4 Explanation Eleven:</b>	
<b>Digital Exhibition is a case of the New Media which Remediate The Cinema and Television.....</b>	<b>334</b>
<b>7.4.5 Explanation Twelve</b>	
<b>Digital Exhibition Remediate The Cinema and Television – But is not a case of the New Media .....</b>	<b>338</b>
<b>7.4.6 Section Summary of Findings &amp; Implications .....</b>	<b>340</b>
<b>Chapter Seven: Summary of Findings .....</b>	<b>342</b>

**Chapter Eight:**

**Conclusion & Discussion..... 344**

**Introduction to Chapter Eight ..... 345**

**Chapter Eight:**

**The Author’s Concluding Position - A First Person Discussion ..... 348**

**8.1 The Media Theory Mass..... 348**

**8.2 No Medium Theory..... 349**

**8.3 A Compulsion to Explain Digital Exhibition ..... 351**

**8.4 What is Digital Exhibition?..... 352**

A general statement as to how Digital Exhibition should be considered within the sphere of contemporary media theory. .... 355

Explanation as to the ‘causal links’ leading to the emergence of Digital Exhibition; Explication as to the practical and theoretical relationships between Digital Exhibition and other media phenomena..... 356

**8.5 Do prevailing, industrially and politically sourced, definitions of Digital Exhibition faithfully represent the phenomenon’s position within the contemporary media theory framework? ..... 358**

**8.6 Recommended Further Work..... 360**

**8.7 Authors Final Appraisal of Study ..... 362**

**8.8 Addendum ..... 363**

## Table of Contents (Volume Two)

<b>Appendices.....</b>	<b>367</b>
<b>Appendix 1:</b>	
<b>What is Digital Cinema?...And What Isn't Digital Cinema? .....</b>	<b>368</b>
<b>Appendix 2:</b>	
<b>A Fundamental Overview of Digital Exhibition: .....</b>	<b>374</b>
Digital Projection Technologies.....	374
Digital Micromirror Device (DMD) / Digital Light Processing (DLP) .....	374
Liquid Crystal Display (LCD) .....	376
'Transmissive' LCD Projection.....	376
'Reflective LCD projection' .....	377
Appendix 2 / Figure 1: Image Resolution Comparison Chart.....	378
<b>The Content of Digital Exhibition .....</b>	<b>379</b>
The Presentation of Feature Films.....	379
' <i>The Last Broadcast</i> '.....	379
' <i>Dead Broke</i> '.....	380
' <i>Episode I</i> '.....	380
Achieving Significant Status .....	381
3D Feature Film Exhibition .....	382
The Provision of Alternative Content.....	383
Music Events .....	383
Sport.....	384
Performance Art (Expanded Cinema) .....	384
Pre-Show Presentations (Advertising).....	385
'Alternative Uses'.....	386
The Context of Digital Exhibition .....	387
Commercial Cinemas .....	387
Appendix 2 / Table 1: Count of Digital Exhibition Screens by Country .....	387
Alternative Venues .....	388
<b>Appendix 3:</b>	
<b>Framework of Rival Explanations - Linking Data to Propositions.....</b>	<b>389</b>
<b>Appendix 4:</b>	
<b>Fundamental Literatures Analysed – by Explanation.....</b>	<b>396</b>
<b>Appendix 5:</b>	
<b>The Landmark Case.....</b>	<b>403</b>
<b>Appendix 6:</b>	
<b>The South African Case .....</b>	<b>406</b>
<b>Appendix 7:</b>	
<b>A Focused Chronology of Television Display Technologies .....</b>	<b>411</b>
<b>Appendix 8:</b>	
<b>A Fundamental History of 'Theater Television' .....</b>	<b>417</b>
<b>Appendix 9:</b>	
<b>Film Based Exhibition and The Principles of New Media.....</b>	<b>421</b>

**Appendix 10:**

<b>The Tetrad of Digital Exhibition .....</b>	<b>424</b>
Introduction to Concept.....	424
Asking The Tetradic Questions of Digital Exhibition: .....	425
What does Digital Exhibition Enhance, Intensify, Enlarge, Make possible or Accelerate?.....	425
What does Digital Exhibition render obsolete or displace?.....	425
What does Digital Exhibition retrieve that was previously obsolesced? .....	426
What does Digital Exhibition produce or become when pressed to an extreme?.....	426
One Medium – Multiple Tetrads? .....	427

**Appendix 11:**

<b>Towards A Taxonomy of Moving Image Mediation:.....</b>	<b>428</b>
Grouping Moving Image Events through the Assessment of Content.....	428
Content Analysis.....	428
Genre Analysis .....	429
Grouping Moving Image Events through the Assessment of Context.....	430
Grouping by Attending and Intended Audiences.....	430
Grouping by Transmission Technology.....	431
Grouping Moving Image Events through the Assessment of Content & Context.....	432
Grouping by ‘Effects’ .....	434
Grouping by ‘Uses and Gratification’ .....	435

<b>References &amp; Notes .....</b>	<b>436</b>
-------------------------------------	------------

<b>References.....</b>	<b>437</b>
------------------------	------------

<b>Notes.....</b>	<b>489</b>
-------------------	------------

## Acknowledgements

I would like to thank my PhD supervisor Patrick Allen – who has offered invaluable support throughout my research and write-up. Patrick's interest in my chosen subject sometimes seemed to eclipse even my own, and his enthusiasm about the work which I produced was a constant encouragement. Without Patrick's guidance, I'm sure that I would never have been able to scale the mountain. I would also like to acknowledge the input of Dr. Ian Palmer. Ian did not supervise me for the whole of my research; however, the contributions made during the time that he was involved stayed with me throughout. I would also like to thank Rona Wilson, Research Administrator within the School of Computing, Informatics and Media. I'm immeasurably indebted to Rona for all the work I know that she has done to enable this to actually happen.

Thanks go to all my colleagues in the Sheffield City Council who volunteered to read through this thesis for me – without the promise of any reward other than this heartfelt acknowledgment. Thanks Martin, Kirsten, Callum, Rodney, Vikki, Wendy, Paul, Alan, Lorna, Steph – and everyone else!

I would also like to express gratitude to my family. Thanks to my brother John - who offered his time, and his considerable skills, to produce an on-line hub for my PhD. Thanks also to the Brannagans; whilst they might have wondered why their daughter would marry a middle aged student with no immediate job prospects – they never mentioned it (too much). To my own parents, Tina and Reg, I offer absolute and unbounded thanks. Their belief in me never failed, and without their support I would have never been able to stay the course. Thanks Mum, thanks Pop.

Finally, and most importantly, I would like to thank my wife Lisa.

No words that I can write will ever express the debt that I owe Lisa. As well as the invaluable practical support she has offered, her patience, understanding and encouragement provided the light I needed to see me through the darkest of times.

In this thesis I attempt to give meaning to the term 'Digital Exhibition'.

In our lives together, Lisa gives meaning to me.

## Abstract

The principal research question of this study is framed as:

**Do prevailing, industrially and politically sourced definitions of Digital Exhibition faithfully represent the phenomenon's position within the contemporary media theory framework?**

Within this work Digital Exhibition is defined as:

**The practice of presenting moving images, either live or pre-recorded, to paying audiences, in public spaces, by means of digital distribution and projection.**

The majority of established literatures concerning Digital Exhibition are aimed at producing categorical definitions of the phenomenon. These 'meaning making' discourses commonly stem from potentially ideologically affected sources.

To address this issue, the author has investigated the political economy of key commentators, and Digital Exhibition has been impartially researched following a 'case studies' methodology; with an analytical framework based upon a series of 'plausible rival hypotheses'. These hypotheses include that Digital Exhibition is...

- a form of the cinema
- a form of television
- a new (new media) medium
- multiple media
- not a medium

It is presented that each investigated hypothesis can be argued to be legitimate when employing established media theories as the means of rationalisation.

Nevertheless, the author concludes that individual industrially / politically charged definitions still do not provide an adequately comprehensive account as to the wealth of interpretations that can be drawn for Digital Exhibition.

The author also presents his own perspective as to the subjective nature of contemporary media taxonomies, and ultimately proposes that Digital Exhibition is not a medium, but is a designation offered to a subjectively defined collection of events made possible through the transmission of computational binary pulse signals.

## **Chapter One.**

### **The Aims and Objectives of this Study**

## Introduction to Chapter One

This thesis expands upon and attempts to address many of the issues and questions raised within the author's essay 'What Is Digital Cinema?... And What Isn't Digital Cinema?' (2007, pp.10-13 - reproduced as Appendix 1 of this paper, by permission of StudentFilmmakers magazine).

The primary subject of this study is the phenomenon of 'Digital Exhibition'.

In the above referenced essay, the author defines Digital Exhibition as:

“The commercial exploitation of moving pictures which have been distributed in a digital format, and which have not been transferred onto physical film prior to exhibition” (Walker, 2007, p.10).

However, without contradicting the above, within this study Digital Exhibition is now more explicitly defined as:

**‘The practice of presenting moving images, either live or pre-recorded, to paying audiences, in public spaces, by means of digital distribution and projection.’**

A concise foundational account of the technologies, contents and contexts of Digital Exhibition is presented in Appendix 2: A Fundamental Overview of Digital Exhibition.

Since the commencement of this project the author has identified that the phenomenon of Digital Exhibition is not sufficiently addressed within in existing 'media studies' literatures. The author has also identified that, of the literature which does address Digital Exhibition, a significant amount is aimed at producing categorical definitions of the phenomenon. Further, it has been found that these 'meaning making' discourses commonly stem from sources which could be described as being ideologically affected - it has been revealed that there are particular economic entities maintaining certain viewpoints / specific definitions as to what the case phenomenon is which serve their own exclusive interests. For example, it has been discovered that some commercial commentators aspire for certain aspects of Digital Exhibition to be designated as extensions of the cinema - that being the 'medium' over which they already exert industrial control, and from which they presently garner economic benefits.

In order to rectify the identified gap in existing academic literature, and address the potential political economic bias in industrial literatures, this study has focused upon the question:

**‘Do prevailing, industrially and politically sourced definitions of Digital Exhibition faithfully represent the phenomenon’s position within the contemporary media theory framework?’**

Within this work the concept of a ‘contemporary media theory framework’, as a singular subject of study, is considered as pertaining to the complete genealogy of (moving image) media theory to date. The author believes it would be remiss to present as comprehensive a discourse on ‘contemporary’ theoretical approaches which does not overtly acknowledge the contributive writings of André Bazin, Marshal McLuhan, Raymond Williams, Joshua Meyrowitz, Lev Manovich – and other such luminaries who have progressively established the total ‘framework’ of media theory.<sup>1</sup>

In the effort to answer the above research question, the author has assessed the potential to build multiple ‘plausible rival explanations’ as to how Digital Exhibition should be positioned within the framework of media studies. This has been achieved through an analysis of pertinent media theory literatures, as well as an assessment of Digital Exhibition technologies, applications and existing understandings / definitions. The rival explanations appraised include that: Digital Exhibition is a form of the cinema; it is a form of television; it represents a technology capable of channelling multiple established media; Digital Exhibition is a new and unique medium unto itself.

This chapter provides the reader with an overview as to the aims and objectives of this study. This is achieved by providing a deeper and more comprehensive examination of the subject(s) of study, and an overview as to the research approach taken by the author. The ultimate aims of this study will be explicitly presented. It will also be shown that the author intends to address a specific gap within existing academic literatures, and that in doing so the author intends to make an observable contribution to knowledge.

## Chapter One:

### The Aims and Objectives of this Study

#### 1.1 Subject of Study

As is stated above, the primary subject of this study is ‘**The Phenomenon of Digital Exhibition**’. As is also stated above, within this study Digital Exhibition is defined as the practice of presenting moving images, either live or pre-recorded, to paying audiences, in public spaces, by means of digital distribution and projection.

The author recognises the application of other forms of publicly located digital projection (such as the projection of digital advertising in shop windows, and the ‘free-to-view’ projection of sporting events in public bars or social clubs). However, this study is principally concerned with commercial exhibition.<sup>2</sup>

At the commencement of study the researcher concerned himself with addressing the question of ‘What is Digital Cinema?’. However, after considering that the studied phenomenon might not actually be a form of the cinema, the author promptly adopted an alternative nomenclature, and began to ask ‘What is Digital Exhibition?’. As research into the phenomenon proceeded, it became apparent that this study could meet an objective beyond simply describing the practical applications of pertinent equipments. The author identified a need to ask what Digital Exhibition is, not only in terms of its technological make-up, commercial processes and functions etc, but also in terms of its position within the framework of contemporary media theory. With further regards to the phenomenon’s theoretical designation, in addition to seeking an answer to the question ‘What is Digital Exhibition?’, the author began to ask why the answer to this question was not already obvious.

In order to address this later point, the ‘Subject of Study’ was consequently broadened to include an ‘embedded’ aspect of the principle phenomenon – that being the broad range of established, rival / contradictory, theoretical interpretations of Digital Exhibition published to date.

## 1.2 Research Question

As detailed above, the primary research question asked in this study is:

**Do prevailing, industrially and politically sourced, definitions of Digital Exhibition faithfully represent the phenomenon's position within the contemporary media theory framework?**

## 1.3 Overview of Approach to Study

As detailed above, the author has identified that the phenomenon of Digital Exhibition is not sufficiently addressed within in existing 'media studies' literatures. The author has also been found that the 'meaning making' discourses which do address Digital Exhibition commonly stem from sources which can be described as being ideologically affected (i.e. sources which stand to gain economically / politically should a particular interpretation of Digital Exhibition be accepted / adopted).

In order to address the gap in existing literature, and assess the nature of politically and commercially sourced interpretations, the phenomenon of Digital Exhibition has been researched following a 'case studies' methodology. An 'emergent research design' (Gillham, 2000)<sup>3</sup> has been developed – research questions emerged as data was gathered and processed, and an 'explanation building' analytic strategy (Yin, 2003)<sup>4</sup> was conceived of - a series of 'plausible rival hypotheses' (Campbell, 2003)<sup>5</sup> was derived, and engaged as a framework for the theory-building process.

In order to answer the emergent research questions, and attempt to construct the proposed 'rival explanations', data has been gathered, and processed, from broad range of literatures pertaining to practical applications of Digital Exhibition. In order to make an assessment as to the phenomenon's position within the media theory framework, literature pertaining to 'cinema', 'television' and 'new media' theory has also been consulted. Further, in order to assess whether any ideological bias may have affected their interpretations of Digital Exhibition, the political/economic orientations of those who offer particular definitions of the phenomenon have been investigated.<sup>6</sup>

## 1.4 Specific Aims of This Study

The broad procedural aims of this study are; to attempt the building of each identified rival explanation of Digital Exhibition, and compare the results from these efforts; to investigate the Political Economy of those established rival interpretations discussed here within. From these processes, this project aims to produce;

1. A general statement as to how Digital Exhibition should be considered within the sphere of contemporary media theory.
2. A general theory as to why there exists an established body of contradictory interpretations of the phenomenon.

Through the presentation of research findings, this study aims to:

3. Identify conflicting approaches as to how Digital Exhibition is presently defined.
4. Explain the 'causal links' behind the defining ('meaning making') discourses which surround Digital Exhibition (e.g. Address whether such discourses have been constructed in order to present a philosophical truth, or whether they are disingenuous – having been constructed under the influence of political economics).
5. Illustrate that the existing definitions of Digital Exhibition offered by industrial and political agents may have been constructed with ideological bias.

This study further aims to:

6. Describe the phenomenon of Digital Exhibition and the ‘real-life contexts’ in which it occurs. (e.g. physical, industrial, technological and academic settings).
7. Explain the ‘causal links’ leading to the emergence of Digital Exhibition (e.g. Address whether ‘the cinema’ and/or ‘television’ evolved to become Digital Exhibition – or whether the phenomenon was developed autonomously).
8. Make explicit the practical and theoretical relationships between Digital Exhibition and other media phenomena, with particular focus upon phenomena regarded as pertaining to ‘the cinema’, ‘television’ and the ‘new media’.
9. Demonstrate that there is an inherent subjectivity to existing media theory literatures, which allows for Digital Exhibition to be ‘legitimately’ explained as a form of ‘the cinema’, ‘television’, the ‘new media’, and as a new medium (amongst other explanations).

This study ultimately aims to:

10. Highlight that there are no definitive means by which the moving image ‘media’ can be defined - given that technologies, contents, industrial factors and audiences, etc. are not statically associated with any one form of mediation.
11. Put forward a notion that there are no moving image ‘media’ – that there are only subjective groupings of distinctly unique moving image mediation events, conceptually constructed by ‘media theorists’ for analytic purposes, and commonly designated as ‘the cinema’, ‘television’ or the ‘new media’ in an attempt to communicate an immediate understanding as to the general themes by which the individual ‘types’ of event have been associated.

It should also be noted that, whilst consciously taking a non-biased stance throughout, the author considers that the final product of this research is aimed at achieving a degree of social intervention - potentially weakening the impact of inaccurate interpretations of the primary subject of study by asking what Digital Exhibition actually is, questioning the motivations behind prevailing discourses, and ultimately offering an academically pertinent / methodologically traceable account of the object of analysis.

## 1.5 Addressing a Gap within Existing Literature

André Bazin (1967), Marshal McLuhan (1964), Nicholas Negroponte (1995), Lev Manovich (2001), Anne Friedberg (2006), Anna McCarthy (2001), Jay David Bolter & Richard Grusin (1999) and Joshua Meyrowitz (1993) respectively address the subjects of a 'total cinema', media convergence, the digitisation of contemporary media, digital imagery within film narratives, the unification of moving-image media through digital technologies, the positioning of television equipment within public spaces, the remediation of 'old media' by 'new media', and the definition of what media 'are'. An understanding of each of these subject areas is considered essential to the development of an understanding as to the position of Digital Exhibition within the media theory framework. However, except for Manovich (2001), no specific mention is made of Digital Exhibition within the literatures of those commentators named above.

Moreover, Manovich's exception is positioned within a discourse which explicitly highlights the gap in academic considerations of Digital Exhibition. Manovich recognises that "new distribution technologies such as digital film projection or network film distribution" (i.e. Digital Exhibition) "will undoubtedly have an important effect on the economics of film production and distribution" (2001, p.289). However, purporting a consideration that they would not appear to have any direct effect on film language (which he states as his 'main concern'), Manovich makes a specific note that he does *not* consider Digital Exhibition developments within his discourse on the "effects of computerization on cinema proper" (ibid).

## 1.6 Making a Contribution to Knowledge

In Chapter Two of this paper it will be presented that this study has been carried out as a single/revelatory/critical case study – whereby Digital Exhibition represents the ‘critical case’ in testing a number of established theories (including those which posit upon the nature of Digital Exhibition – as well as other established media theories), and is a ‘revelatory’ unit of analysis (given that, due to its recent emergence, the phenomenon has previously been inaccessible to scientific investigation). It will be detailed that Robert Yin considers, specifically of ‘revelatory’ case studies, “The case study is therefore worth conducting because the descriptive information alone will be revelatory” (2003, p.43). It will also be presented that Yin writes that studies such as this can be used to “determine whether a theory’s propositions are correct or whether some alternative explanations might be more relevant” (2003, p.40), adding that ‘critical case studies’ “can even help to refocus future investigations in an entire field” (ibid).

In addition to providing a unique investigation as to how the phenomenon of Digital Exhibition relates to the academic spheres of cinema studies and television studies, this study will contribute to a series of debates in the study of new media phenomena. This will be in specific regard to; how the forces of political economy can play a significant part in the ways by which new media phenomena are defined; the evolution of media phenomena from traditional to new forms; the genesis of new media phenomena from the convergence of establish mediation elements; the potential for a single technological unit to act as a channel for multiple disparate ‘media’ and the remediation of traditional ‘media’ by new media phenomena.

## 1.7 Conclusions Drawn

Ultimately the author will conclude that the established body of literature pertaining to the theoretical natures of moving image mediations does not represent a ‘contemporary media theory framework’ – but rather constitutes a ‘media theory mass’.

The author will conclude there are no established, ultimately definitive meanings which can be attributed to the terms ‘the cinema’, ‘television’ and the ‘new media’.

The author will present that commentators who use these terms do so individualistically (and often contradictorily) in order to provide a designation to a particular conceptual grouping of media experiences – very often about which they have developed a well-founded theoretical stance. The author will propose that because these terms have previously been used contradictorily, their contemporary application as designators is more likely to result in confusion than understanding. As such the author recommends that media theorists do not use these terms when labelling the groupings of mediation events about which they have a philosophical interest.

Further to this, the author will put forward his own ‘No Medium Theory’. The author argues that each and every moving image event is unique in some way, and that any grouping of such events, for analytical purposes, must be based upon subjectively chosen elemental aspects. The author presents that there are an infinite number variables to consider when determining whether there is any similarity between events, and as such there are an infinite number of ways by which moving image events can be conceptually grouped together. The author concludes that all conceptual groupings of moving image events which lead to logical analyses and significant theoretical treatments are of significance. The author does not propose there to be three particular groupings of moving image events which are intrinsically more significant than any other (such as might be considered to be ‘the cinema’, ‘television’ and the ‘new media’). Thusly, the author does not propose that any particular grouping should be selectively granted the lauded designation of ‘medium’.

As a consequence of his concluding that the terms ‘the cinema’, ‘television’ and the ‘new media’ do not carry any definitive meaning, and therefore offer do not immediate understanding, and therefore should not be used to designate the subject of any theorist’s attention – and as a consequence of his concluding that there are no moving image ‘media’ (in so much as there are no particular means of grouping distinct moving image events together that are intrinsically more significant than any other), the author ultimately does not conclude that the grouping of events about which this thesis is concerned should be designated as ‘the cinema’, ‘television’ or the ‘new media’, nor does he conclude that it should be considered to be a new ‘medium’. Rather, the author concludes that ‘Digital Exhibition’ is a valid designator for that which he has studied.

With regards to the academic pertinence of established interpretations of Digital Exhibition, the author concedes that the ‘media theory mass’ does seemingly allow for multiple ‘valid’ interpretations of the case phenomenon. However, he finds that none of the established literatures written on the subject of Digital Exhibition provide sufficient details as to the broad spectrum of potential interpretations that can be extrapolated from the media theory mass – and thusly none of these literatures address the academic issues pertaining to this situation. Ultimately, the author considers that established literatures originating from political and industrial sources should be considered as academically problematic – given that they offer limited analyses as to the theoretical nature of Digital Exhibition, they do not originate from ideologically independent sources, and their presented interpretations of Digital Exhibition can be seen as promoting their originator’s political / industrial interests.

## **Chapter Two.**

# **Methodological Approach to Study**

## Introduction to Chapter Two

As detailed in Chapter One, throughout the course of this study, the phenomenon of Digital Exhibition has been researched following a qualitative ‘case studies’ methodology. In discussing the specific methodological practices followed, the chapter is divided into three parts; Part One details why the author considered the case study methodology to be appropriate to this programme of research; Part Two details the processes involved in designing the research programme; Part Three details the specific processes which the author followed in order to conduct the research, and produce this report.

In Part One, Robert K. Yin’s (2003) discourses addressing those research situations in which the case study approach is most appropriate, and the specific applications of case study research, will be analysed and presented as showing this methodology to be suitable for this study.

It will be presented that, according to Yin, the case study approach to research is the most appropriate approach to apply when;

- The study focuses on contemporary events
- The study is required to cover contextual conditions
- The study does not require / permit control of behavioural events

It will also be presented that this study meets this specific criteria.

It will be further presented that Yin considers the case study approach to pertain to certain specific applications. The applications of case study research will be presented as;

- to “*explain* the presumed causal links in real-life interventions that are too complex for survey or experimental strategies”
- to “*describe* an intervention and the real-life context in which it occurred”
- to “*illustrate* certain topics within an evaluation”
- to “*explore* those situations in which the intervention being evaluated has no clear, single set of outcomes”

It will be presented that each of these applications of case study research can be directly associated to the aims of this study (as presented in Chapter One pp.6-7)

It is of note that upon adopting a case study approach, and in the construction of the fundamental ‘case study’ framework of this research programme, the author found the discourse of Robert Yin (2003) to provide a broadly comprehensive point of reference, and as such this text will be presented prominently throughout this chapter.<sup>7</sup>

In Part Two of this chapter it will be presented that an ‘emergent research design’ (Gillham, 2000) has been adopted. It will be detailed that the research questions and the study’s theoretical propositions ‘emerged’ as data was gathered and processed – and therefore the study adhered to Gillham’s proposals that with case study research, “questions *emerge*, and may change radically as you get to know the context at first hand” (2000, p. 17), and, “In naturalistic case study research, theorizing *emerges*” (2000, p. 35).<sup>8</sup>

It will further be presented that Robert Yin (2003) proposes there to be five requisite components to case-study research design. Moreover, it will be presented that the author of this report applied each of these fundamental components during the design of this study. The essential ‘components of research design’ are detailed to be;

- The identification of the study’s ‘Unit(s) of Analysis’ (i.e. the ‘case’ to be studied)
- The study’s questions
- Its propositions
- The logic linking the data to the propositions
- The criteria for interpreting the findings

With specific regard to ‘the logic linking the data to the propositions’ and ‘the criteria for interpreting the findings’ it will be presented that an ‘explanation building’ (Yin, 2003) analytic strategy was conceived of, and a series of ‘plausible rival hypotheses’ (Campbell, 2003) was engaged as a framework for the theory-building process.

Notably, Donald T. Campbell states, “I have come to the conclusion that the core of the scientific method is not experimentation per se but rather that strategy connoted by the phrase ‘plausible rival hypotheses’” (2003, p. ix). This strategy, Campbell explains, “includes making explicit other implications of the hypotheses for other available data and reporting how these fit”, and further that, “it also includes seeking out rival explanations of the focal evidence and examining their plausibility” (ibid).

Of the ‘Explanation Building’ strategy adopted, it will be presented that, according to Yin, “To ‘explain’ a phenomenon is to stipulate a presumed set of causal links about it” (2003, p. 120) and, “The gradual building of an explanation is similar to the process of refining a set of ideas” of which, Yin claims, an important aspect is “to entertain other *plausible or rival explanations*” (2003, p. 122). It will be presented that in producing this study the researcher entertained / attempted to construct twelve rival explanations as to the nature of Digital Exhibition.

It will also be detailed in Part Two that, in order to assess whether any ideological bias may have affected their interpretations of Digital Exhibition, those individuals and organisations who have offered particular definitions of the phenomenon have been subjected to a process of critical political economy analysis. Additionally, it will be detailed that as part of the explanation building process a significant body of literature pertaining to cinema, television, new media and medium theory has been subjected to a course of ‘literature analysis’ (critical literature review).

It will be further detailed that before data (the 'known facts') about case phenomenon was considered as supporting the construction of any one of the investigated rival hypotheses then it would have to be compared to theoretical understandings as to the nature of pertinent media and / or the media as a collective. For example, a piece of data would need to be compared to theoretical understandings as to the nature of television before it could be considered as supporting the building of an explanation of Digital Exhibition which positions the phenomenon as being a form of the medium television. It will be presented that the form of 'comparative analysis' adopted is referred to by Kerry Walk (1998) as 'lens comparison'.

With further regards to the use of established theory (both recognised media theory and existing hypotheses as to the nature of Digital Exhibition), it will be presented that this study strives to develop generalisable theories as to the natures of Digital Exhibition and the documented interpretations which surround it. It will ultimately be presented in Part Two that, according to Yin, 'analytic generalisation' is achieved when "a previously developed theory is used as a template with which to compare the empirical results of the case study" (2003, pp.32-33).

In Part Three it will be presented that Robert Yin proposes a series of "overriding principles", which he expresses as being "important to any data collection effort in doing case studies" (2003, p.85). The principles of data collection are expressed as;

- Using multiple, not just single, sources of evidence;
- Creating a case study database;
- Maintaining a chain of evidence.

It will be presented that the researcher followed these principles during the data collection phase of this study.

It will ultimately be detailed, in Part Three, that the findings of this study will be presented in a narrative form, broken up into chapters which pertain to the sub-units of analysis and present & assess the authors attempts at constructing each plausible rival hypothesis.

## Chapter Two, Part One

### Why the ‘Case Study’ Approach was Considered Appropriate.

This section presents that different research situations benefit from the employment of different research strategies - and illustrates how the particular circumstances of this study fit positively into Robert Yin’s findings concerning the appropriateness of the case study methodology. This section further provides an account as to which specific applications of research Yin presents the case study methodology as achieving – and again illustrates how these research applications are pertinent to this study.

#### *Research Situations in which the Case Study Approach is Appropriate*

It is possible to extrapolate from the work of Robert Yin a matrix as to the most suitable research strategies to use, given a particular set research conditions.

This matrix is presented below:

**Table 1: Relevant Situations for Different Research Strategies**

Research Strategy	Research Conditions		
	The Study Requires Control of Behavioural Events?	The Study Focuses on Contemporary Events?	The Study Covers Contextual Conditions?
Experiment	Yes	Yes	No
Survey	No	Yes	Limited
History	No	No	Yes
Case Study	No	Yes	Yes

Adapted from Yin (2003)

The table ('Table 1') above highlights that in order to perform experimental research, the researcher must be able to manipulate the behaviour of that which is being studied. As Yin expresses, "experiments are done when an investigator can manipulate behaviour directly, precisely, and systematically" (2003, p.8). This table also shows that whilst a conventional historical study does not require any degree of control over the studied phenomenon, as Yin considers, "the distinctive contribution of the historical method is in dealing with the 'dead' past" (2003, p.7). Conversely, and further reflecting that which is illustrated in the table above, Yin expresses that the case study is "preferred in examining contemporary events", adding that this is particularly true when "relevant behaviours can not be manipulated" (2003, p.7).

As stated above, Yin considers the case study approach as lending itself to the study of contemporary phenomena whereby the behaviour of that being studied can not be affected by the researcher. It is therefore significant that Digital Exhibition is a recent and on-going phenomenon (as is presented in Appendix 2: A Fundamental Overview of Digital Exhibition) which can not be directly manipulated for the sake of research programmes such as this; the conduct of those individuals and organisations presently developing and applying the technologies and operational processes of Digital Exhibition are beyond the control of the researcher; the behaviours of those industrial and political agents who presently aim to establish particular definitions of the phenomenon (discussed below) are also beyond the immediate influence of the researcher.

With regards to the final column of 'Table 1' (above), Yin considers that the covering of contextual conditions continues to distinguish the case study method from other research strategies. Yin notes that an experimental approach "deliberately divorces a phenomenon from its context, so that attention can be focussed on only a few variables" (2003, p.13). Yin adds that "A history, by comparison, does deal with the entangled situation between phenomenon and context, but usually with *noncontemporary events*" (ibid). Further to this Yin states, "surveys can try to deal with the phenomenon and context, but their ability to investigate the context is extremely limited" (ibid), adding that this is due to the survey designer striving to contain the number of variables to be analysed.

By comparison, Yin presents that, "you would use the case study method because you deliberately wanted to cover contextual conditions – believing that they might be highly pertinent to your phenomenon of study" (ibid). Furthering this point, and in reference to the 'technical definition' and the 'scope' of the case study approach, Yin (ibid) makes the following declaration:

*A case study is an empirical inquiry that*

- investigates a contemporary phenomenon within its real-life contexts, especially when
- the boundaries between phenomenon and context are not clearly evident.

In approaching this study it was considered that Digital Exhibition is a contemporary phenomenon which should be investigated in terms of its ‘real-life contexts’.

The contexts of Digital Exhibition were considered to be (for example); the physical locations in which Digital Exhibition can be found, the industrial/commercial sectors in which Digital Exhibition is located, and the position the phenomenon takes within the academic sphere of modern media studies. Furthermore, these contextual elements of the phenomenon were considered to be ‘highly pertinent’ to the phenomenon.

With regards to the pertinence of studying Digital Exhibition’s contextual conditions, and with regards to Yin’s declaration that the case study approach is especially suited to the study of contemporary phenomena when ‘the boundaries between the phenomenon and its contexts are not clearly evident’, it is of note that environmental factors, such as the phenomenon’s physical locations, industries and technologies, appear to be connoted, within many existing literatures, as internally defining elements of the phenomenon. For example Neil Watson and Richard Morris, of the UK Film Council, define ‘digital cinema’ as: “the projection of full-length feature films to audiences in purpose-built cinema where the quality of projection is not less than that provided by current 35mm technology” (2002, p. 5).

In this statement Watson and Morris offer a definition of ‘digital cinema’ which makes clear reference to the phenomenon’s physical and technological contexts.

Furthermore, in expressing that it pertains only to the projection of ‘full-length feature films’ Watson and Morris offer that the practices of content producers and elements of Digital Exhibition’s industrial make-up also contribute towards the phenomenon’s intrinsic constitution.

Ultimately, given the contemporary nature of the studied phenomenon, the lack of opportunities to manipulate that phenomenon, the significance of the subject's contextual conditions and the complexity of those conditions, the case study methodology appeared, to the researcher, to be the most appropriate research strategy for this programme of study. However, before formally adopting this approach, the author considered it necessary to determine whether the specific aims and objectives of this study could be achieved by the undertaking of a case study.

### ***Specific Applications of Case Study Research***

Yin identifies that “case studies have a distinctive place in evaluation research” (2003, p.15), and proposes a number of potential applications for such studies - including;

1. to “*explain* the presumed causal links in real-life interventions that are too complex for survey or experimental strategies”.
2. to “*describe* an intervention and the real-life context in which it occurred”.
3. to “*illustrate* certain topics within an evaluation”.
4. to “*explore* those situations in which the intervention being evaluated has no clear, single set of outcomes”.

It is clear that the ‘potential applications’ of case studies, as recognised by Yin, correlate precisely with the topics and related aims of this research project (presented in Chapter One, pp.4-10) – as will be discussed below.

In correlation to the first of Yin's proposed applications of case study research, Digital Exhibition is a 'real-life intervention' (i.e. is not a theoretical proposition) which is not suited to survey or experimental strategies. In further correlation to this application of case study research, this study's 'Aims and Objectives' (pp.4-11) include a declared want to '*Explain* the causal links leading to the development of Digital Exhibition'. Furthermore, as stated above that this study aims to '*Explain* the causal links behind the defining (meaning making) discourses which surround Digital Exhibition'.

In correlation to the second of Yin's proposed applications of case studies, this study aims to '*Describe* the phenomenon of Digital Exhibition and the real-life contexts in which it occurs'.

In correlation to Yin's third proposed application of case study research, this study's aims include a declared want to '*Illustrate* that the existing definitions of Digital Exhibition offered by industrial and political agents may have been constructed with ideological bias'.

In correlation to the fourth proposed application of case studies, the evaluation of Digital Exhibition (and the associated meaning making literatures also 'explored') will not ultimately provide a 'clear, single set of outcomes'. As presented in Chapter One (p.7), this study ultimately aims to present the author's observations as to the subjectiveness of contemporary media theory – in the author's conclusions it will be expressed that:

'After extrapolating from a broad range established media theory discourses (as discussed through Chapters Four to Seven), I began to believe that Digital Exhibition could ('legitimately') be placed in any one of a multitude of theoretical positions. It appeared as if there would be no right or wrong answer to the question of 'What is Digital Exhibition?', because there exists no consistent media theory framework upon which to define the phenomenon' (p. 345).

## Chapter Two, Part Two:

### Designing the Specific Research Approach:

Given the correlation between the research conditions of this study and the conditions proposed by Robert Yin (2003) as calling for a case study strategy, and given that the specific applications of case studies (as proposed by Yin) closely reflect the Aims and Objectives of this research programme, the author determined that this study should adhere to a case study research design. Yin defines 'research design' as:

“the logic that links the data to be collected (and the conclusions to be drawn) to the initial questions of study”  
(2003, p.19).

Bill Gillham (2000) expressively presents an 'emergent' design approach for case studies - whereby the research design (i.e. questions asked and theoretical propositions made, etc) 'emerges' as the researcher gains a deeper understanding of the subject being investigated. Indirectly supporting this proposition Yin states that “you should not think that a case study's design cannot be modified by new information or discovery during data collection. Such revelations can be enormously important, leading to your altering or modifying your original design” (2003, p.55). In addition to this, Yin states that:

“Once you have started collecting data, you should think of yourself as an independent investigator who cannot rely on a rigid formula to guide your enquiry” (2003, p.62).

However, as if to qualify this, Yin adds that:

“flexibility should not lessen the rigor with which case study procedures are followed” (2003, p.55).<sup>9</sup>

With reference to the 'case study procedures', Yin proposes that "five components of research design are especially important" (2003, p.21):

- A Study's Unit(s) of Analysis;
- Its Questions;
- Its Propositions;
- The Logic Linking the Data to the Propositions;
- The Criteria for Interpreting the Findings.

The general ways by which Yin's 'five components of research design' can be employed within the case study research methodology are discussed below.

Also detailed below are the ways by which these components have been specifically incorporated into the research design of this study. Furthermore, the ensuing examination of these design components reveals the degree to which the original research design for this study was modified as new discoveries were made.

### **2.2.1 Defining the Units (and Subunits) of Analysis**

One of the very first steps taken when designing and conducting any case study should be to define the study's 'units of analysis'. As Yin states, this process pertains to the "fundamental problem of defining what the 'case' is" (2003, p.22). As detailed above, this study's (single) primary unit of analysis has been specified as being '**The Phenomenon of Digital Exhibition**'.

As is also detailed above, this study aims to investigate the established, incongruous, interpretations of Digital Exhibition. The texts presenting these contradictory / rival 'meanings' (as to the nature of the case phenomenon) have been divided into four types, according to the interpretative approach taken. These four categories of texts have been designated as the study's 'sub-units' of analysis - presented below:

- 1. Those interpretations of Digital Exhibition which present the phenomenon to be a form of the cinema.**
- 2. Those interpretations of Digital Exhibition that present the phenomenon as being a form of television.**
- 3. Those definitions which present Digital Exhibition as pertaining to multiple media.**
- 4. Those definitions which present the phenomenon not as a new form of any other media, nor something that provides access to any other media, nor something that becomes any other media, but as a wholly new medium unto itself.**

The defining of the study's units of analysis in this way essentially determined that the research design would adhere to a 'single-case' approach with 'multiple embedded sub-units of analysis'. The rationale for adopting this approach is presented over the following pages.

### ***Why a Single-case Approach with Multiple Embedded Sub-units of Analysis was Considered Appropriate***

The choice of a study's unit(s) of analysis ultimately determines whether the researcher follows a 'single-case' design, or a 'multiple-case' design.

The 'single-case' study primarily addresses one overarching unit of analysis, whereas 'multiple-case' designs occur when a single study covers and compares several 'units of analysis', each of which is the subject of an analogous individual case study. Of these approaches Yin states, "although all designs can lead to successful case studies, when you have the choice (and resources), multiple-case designs may be preferred over single-case designs" (2003, p.53). In explaining why this is, Yin expresses that "single-case designs are vulnerable if only because you will have put 'all your eggs in one basket'. More important, the analytic benefits from having two (or more) cases may be substantial" (2003, p.53).

However, Yin does offer the 'single-case' design to be the most appropriate approach when the topic of analysis can be described as 'revelatory'. According to Yin "This situation exists when an investigator has an opportunity to observe and analyze a phenomenon previously inaccessible to scientific investigation" (2003, p.42). To this Yin adds, "The case study is therefore worth conducting because the descriptive information alone will be revelatory" (2003, p.43). Yin also finds the 'single-case' design to be most appropriate when the subject of analysis represents the 'critical case' in testing an established theory. Yin proposes that a 'critical case' study can meet the conditions for 'testing', 'confirming', 'challenging' or 'extending' an existing theory (2003, p.40). Yin further states the case study "can then be used to determine whether a theory's propositions are correct or whether some alternative set of explanations might be more relevant" (ibid).<sup>10</sup> Moreover, and as indicated above, within single-case designs the primary unit of analysis may still have several subunits of analysis embedded within them. According to Yin, "an embedded design can serve as an important device for focusing case study enquiry" (2003, p.45). Yin adds that "subunits can often add significant opportunities for extensive analysis, enhancing the insights into the single case" (2003, p.46).

At the outset of this study it was considered that Digital Exhibition was a ‘revelatory’ phenomenon – having only recently become a technical possibility (and even more recently, an industrial reality) – as such the author considered it appropriate to approach this phenomenon as the primary unit of analysis within a single-case study.

However as research into this phenomenon proceeded it became apparent that this study could meet an objective beyond simply describing the practical applications of pertinent technologies (See Aims and Objectives in Chapter One, pp.4-11). The author duly identified a need to consider what Digital Exhibition is with regards to its position within the framework of contemporary media theory. Furthermore, as well as asking ‘What is Digital Exhibition?’, the author now began to ask why the answer to this question was not already obvious. The emergence of this latter question relates to a discovery that certain existing interpretative discourses concerning the subject of Digital Exhibition directly contradicted other such texts (See Chapter Three for an analysis of these literatures).

The author now asked why there should be such a lack of consensus as to what the case phenomenon is. Moreover, the author began to question whether any definitions drawn by figures operating within the political / economic context of its realisation could be considered entirely ingenuous. As the author increasingly asked questions around the established definitions of Digital Exhibition, it became apparent that these interpretative texts represented a significant ‘embedded’ area of analysis - and that as such formal definition would be required. Over time it became apparent that there are four established rival / contradictory interpretative approaches towards the case subject, which were ultimately defined as the four ‘subunits of analysis’ presented above.

By explicitly considering the established definitions of Digital Exhibition to be sub-units of analysis, the focus of this study shifted towards the theoretical designations of the case phenomenon – and so the case study, as a whole, was given a purpose beyond simply *describing* the mechanisms of Digital Exhibition. The primary unit of analysis was now revealed to be the ‘*critical case*’ in testing (confirming/challenging) the pertinence of established political and commercial sourced definitions.

Furthermore, when used as a ‘lens’ through which to critically examine established academic understandings as to how the cinema, television, the computer and the ‘new media’ are defined, the phenomenon of Digital Exhibition was revealed to be a ‘*critical case*’ in testing whether designations offered from within the field of contemporary media theory accurately represent the divisions between the media.

### 2.2.2 Developing a Continuous Strand of Questioning

Further emphasising his opinion that case studies adhere to an ‘emergent’ research design approach, Bill Gillham expresses that in such studies “questions *emerge*, and may change radically as you get to know the context first hand” (2000, p.17). Further to this, Gillham adds that questions “emerge in response to asking yourself: what do I need to find out in order to achieve my aim?” (2000, p.16).<sup>11</sup>

As detailed above, the overarching research question pursued by this project is:

**Do established, industrially and politically sourced, definitions of Digital Exhibition faithfully represent the phenomenon’s position within the contemporary media theory framework?**

However, this has not been the only question asked by the researcher. For example, following initial work around the question ‘What is digital cinema’ the author began to ask why there exists incongruities within established interpretations – and whether *any* established definition can be considered as legitimate. As the author gained an ‘increasingly clear grasp’ of the issues raised, the ‘continuous strand’ of question development (Gillham, 2000, p.96)<sup>12</sup> within this study broadly emerged as shown on the following page.

***Guidepost Questions from******this study's Continuous Strand of Question Development***

- What is 'digital cinema'?
  - How does 'digital cinema' work?
  - How is 'digital cinema' defined?
- Who produces the prevalent definitions of 'digital cinema'?
- Do prevalent interpretations of 'digital cinema' suitably position the phenomenon within the framework of contemporary media theory?
  - Is 'digital cinema' *really* a type of 'cinema' (and if this is open to question what term should be used when referencing the case phenomenon)?
  - Does *Digital Exhibition* equipment *really* pertain to multiple disparate media (i.e. 'the cinema' and 'other digital stuff'<sup>13</sup>/ television)?
- What alternative interpretations/explanations of Digital Exhibition are there?
  - Might Digital Exhibition be a form of television?
  - Might Digital Exhibition be a new media form unto itself?
- What factors might be considered as influencing / limiting the ways by which Digital Exhibition is being publicly interpreted at present?
- What implications do the findings of this study have with regards to the ways by which media are generally defined within the theoretical context?

Whilst vital for the progression of research, the identification of a case to study, and questions such as *What is 'digital cinema'?* & *How does 'digital cinema' work?* do not implicitly provide a bearing as to how answers should be sought, nor what further questions should be asked. In recognition of this, Robert Yin suggests that "only if you are forced to state some propositions will you move in the right direction" (2003, p.22). The processes involved in 'Stating Proposals' are thusly discussed below.

### 2.2.3 Stating Propositions

Besides “reflecting on an important theoretical issue”, Yin suggests that within case studies each stated proposition “directs attention to something that should be examined within the scope of study”, adding that the stating of propositions “begins to tell you where to look for relevant evidence” (2003, p.22).

#### *Defining the Propositions for this Study*

In accordance with Gillham’s ‘emergent’ design approach (2000), the ultimate propositions for this project were actually revealed in stages - as data was gathered and processed. Following preliminary work in addressing the question of ‘*What is ‘digital cinema’?*’ the first stated proposition of this project was that:

**Digital cinema may or may not be a form of the traditional medium of cinema.**

This initial proposition arose from, and demanded further attention be given to, the analysis of discourses attempting to define the case phenomenon. The notion that the case phenomenon ‘*may*’ be a form of the traditional medium of cinema was drawn from, and encouraged further analysis of, discourses that refer to Digital Exhibition as cinema (‘digital’ or ‘electronic’).<sup>14</sup> For example, a paper made available through the British Governmental Department for Culture, Media and Sport (DCMS) states that “Electronic Cinema is the family name given to any means and any content shown electronically or digitally to a public audience in an out-of-home environment” (Screen Digest Report, 2002, p.35).<sup>15</sup>

The notion that Digital Exhibition ‘*may not*’ be a form of ‘the cinema’ stems from, and prompted further analyses of, discourses suggesting that the phenomenon pertains to something other than the cinema. For example, Albert Abramson states of Digital Exhibition: “Instead of being called large screen theater television (which it is), it is called E-cinema” (2003, p.268).<sup>16</sup>

The notion that Digital Exhibition might ‘not’ (exclusively) pertain to the cinema was bolstered by, and encouraged further exploration of, discourses suggesting that the case phenomenon pertains to multiple media. For example, Michael Karagosian claims that “theatrical presentation can be divided into two classes, one having the highest quality possible, the other less restrictive in quality” (2003). With regards to this, Karagosian considers it possible to “split the universe of theatrical presentation into digital cinema and everything else” (ibid), adding that, “The common language applied to ‘everything else’ is “alternative entertainment” or ‘other digital stuff” (ibid). In effect, Karagosian suggests that the technologies of Digital Exhibition pertain to the cinema (“digital cinema”) and other media (“other digital stuff”).

The initially stated proposition also prompted work in addressing the questions of *‘Who is it that produces the definitions of ‘digital cinema’?’, ‘What factors might be considered as influencing/limiting the ways by which Digital Exhibition is being publicly interpreted?’ and ‘What alternative interpretations /explanations of Digital Exhibition are there?’*. The preliminary processing of data relating to these questions led to the emergence of this study’s sub-units of analysis. The identification of these embedded cases to study led the author to expressly state a further set of propositions.

These stated propositions have been tabulated and are presented on the following page.

**Table 2: This Study’s Propositions**

<p><b>Propositions 1, 2, 3 &amp; 4)</b></p> <p><b>Those discourses which define Digital Exhibition as...</b></p> <table border="1"> <tr> <td style="text-align: center;"><u><b>1</b></u></td> <td style="text-align: center;"><u><b>2</b></u></td> <td style="text-align: center;"><u><b>3</b></u></td> <td style="text-align: center;"><u><b>4</b></u></td> </tr> <tr> <td style="text-align: center;"><b>being a form of the Cinema</b></td> <td style="text-align: center;"><b>being a form of Television</b></td> <td style="text-align: center;"><b>pertaining to multiple media</b></td> <td style="text-align: center;"><b>pertaining to a wholly new medium</b></td> </tr> </table> <p><b>are each potentially:</b></p> <ul style="list-style-type: none"> <li>a) Sincere, and present the true nature of the case phenomenon.</li> <li>b) Sincere, and yet erroneous.</li> <li>c) Disingenuous – knowingly presenting a false account as to the nature of the case phenomenon in order to promote a particular ideology.</li> </ul>				<u><b>1</b></u>	<u><b>2</b></u>	<u><b>3</b></u>	<u><b>4</b></u>	<b>being a form of the Cinema</b>	<b>being a form of Television</b>	<b>pertaining to multiple media</b>	<b>pertaining to a wholly new medium</b>
<u><b>1</b></u>	<u><b>2</b></u>	<u><b>3</b></u>	<u><b>4</b></u>								
<b>being a form of the Cinema</b>	<b>being a form of Television</b>	<b>pertaining to multiple media</b>	<b>pertaining to a wholly new medium</b>								
<p><b>Proposition 5)</b></p> <p><b>All established definitions of Digital Exhibition are erroneous (or disingenuous). An accurate definition of the phenomenon would state that:</b></p> <ul style="list-style-type: none"> <li>a) Digital Exhibition is not a medium. Digital Exhibition does not pertain to media; it does not become media, nor does it provide access to media. Digital Exhibition only imitates media.</li> <li>b) Digital Exhibition, the cinema and television should all be considered to be aspects of the same (solitary) medium.</li> </ul>											

As stated above Yin suggests that “each proposition directs attention to something that should be examined within the scope of study”, adding that the stating of propositions “begins to tell you where to look for relevant evidence” (2003, p.22).

Accordingly, the stating of (and subsequent need to test) these propositions led the author to seek out and analyse academic understandings of the cinema, television and the media in general. The stating of these propositions also led the author to look for relevant evidence as to what might have led to disingenuousness in the production of those meaning making discourses which surround the case phenomenon.

Consequently discovering that established interpretations were, in the main, sourced from industrial/political organisations (See Chapter Three), the author’s attention was directed towards the ‘critical political economy’ approach to understanding the mass media.<sup>17</sup> Thusly the author’s attention was directed towards evidence pertaining to the different economic and political / organisational standpoints of those commentators who produced the contradictory accounts as to the designation of Digital Exhibition.

## 2.2.4 The Logic Linking the Data to the Propositions

### *Developing an Analytic Strategy*

Yin describes the logical process of linking research data to a study's propositions as 'data analysis', stating that "Data analysis consists of examining, categorizing, tabulating, testing, or otherwise recombining both quantitative and qualitative evidence to address the initial propositions of study" (2003, p.109). With regards to this, and in order to assure that data gathered will be analysable, Yin proposes that every case study should "strive to have a general analytic strategy – defining priorities for what to analyze and why" (ibid), adding that "the strategy will help you to treat the evidence fairly, produce compelling analytic conclusions, and rule out alternative interpretations" (2003, p.111). Yin presents a three such 'analytic strategies':

- Relying on Theoretical Propositions
- Setting Up a Framework based on Rival Explanations
- Developing Case Descriptions

### **Relying on Theoretical Propositions**

Yin considers that the 'most preferred' analytic strategy is to "follow the theoretical propositions that led to your case study" (2003, p.111). As detailed above, Yin suggests that the stating of propositions "begins to tell you where to look for relevant evidence" (2003, p.22). Further to this, and with specific regards to data analysis, Yin also states that "the proposition helps to focus attention on certain data and to ignore other data" (2003, p.112).

### **Setting Up a Framework based on Rival Explanations**

Beyond simply 'relying on theoretical propositions', Yin presents that "A second general analytic strategy tries to define and test rival explanations" (2003, p.112). According to Yin, this strategy can be related to the first, in that "the original theoretical propositions might have included rival hypotheses" (ibid). However, Yin also suggests that this strategy is relevant "even in the absence of such theoretical propositions" (ibid). When following this strategy, even if they are not originally stated within the study's propositions, the researcher should seek to gather evidence about any revealed explanations which directly rival the original propositions. Of this process, Yin states that if the researcher finds insufficient evidence, they would be less likely to be accused of "stacking the deck in favour of the original hypotheses" (ibid).

### **Developing Case Descriptions**

Yin states that developing a descriptive framework is the weakest of the analytic strategies which he presents. However, Yin still proposes that this approach has a role within case study research. For example, Yin states this approach to be appropriate when the original purpose of the case study is to provide a purely descriptive analysis (2003, p.114). He further offers that "In other situations, the original objective of the case study may not have been a descriptive one, but a descriptive approach may help to identify the appropriate causal links to be analysed" (ibid).

***Developing This Study's Analytic Strategy:******The logic linking this study's data to this study's propositions***

Maintaining an adherence to the logic of an emergent case design, within this study the approach to linking the data gathered to the propositions shifted as new units of analysis and new propositions were revealed.

During the early stages of this research program (when initially addressing the question posed as '*What is digital cinema?*') the considered (and adopted) analytic strategy was based upon the development of a descriptive framework. The author considered 'digital cinema' to be a 'revelatory case' and therefore considered that descriptive approach would offer a unique contribution to knowledge. Data was categorised according to the chronological phase of the case phenomenon's development, as well as the particular technologies, the geographical situations and the types of presentation addressed.

As research progressed, and as he began to question the definitions of Digital Exhibition which he came across, the author began to 'follow the theoretical proposition that led to the case study' (Yin, 2003, p.111). In order to link it to the original solitary proposition (i.e. '**Digital cinema may or may not be a form of the traditional medium of cinema**'), data was categorised as either supporting or negating this explanation of the case phenomenon.

However, as discussed above, one motivation for adopting the ‘single case’ approach was that, as Yin details, it can be appropriately and specifically applied in order to “determine whether a theory’s propositions are correct or whether some alternative explanations might be more relevant” (2003, p.40). Therefore, beyond ‘simply relying’ on the initial theoretical proposition, as the study’s ‘sub-units of analysis’ were revealed, and as new propositions were stated (propositions which did, in themselves, imply the existence of rival hypotheses), the analytic strategy ultimately adopted was one whereby the author attempted to “define and test rival explanations” (Yin 2003, p.112).

As new plausible hypotheses were revealed they were added to a framework of rival explanations – which specified the relationships between data found to support those explanations and the study’s stated theoretical propositions. (The ultimately revealed framework of twelve rival explanations is presented as Appendix 3: Framework of Rival Explanations - Linking Data to Propositions).

## 2.2.5 The Criteria for Interpreting the Findings

As stated above, the author determined that the logic by which the research data could be linked to the study's propositions would be based upon the degree to which it (the data) was found to support each explanation within a framework of rival explanations. However, this determination does not specify how the gathered data will be interpreted (analysed / judged), in regards to whether it supports a particular explanation – or not.

In direct reference to the interpretation of findings, Bill Gillham expresses: "You need the 'facts' - imperfect though they may be; and you need to be able to understand them" (2000, p.12). However, despite the necessity to understand the facts (i.e. understand how and why the facts ultimately relate to the study's propositions), Robert Yin concedes that, "The analysis of case study evidence is one of the least developed and most difficult aspects of doing case studies" (2003, p.109).

Nevertheless, despite this identified area of potential weakness within the methodology, both Gillham and Yin provide discourses which aim to support case study researchers in their efforts towards developing an understanding of evidence.

As detailed above, Yin expresses that the case study researcher should develop a criteria for interpreting findings as part of the design phase. With regards to this, Yin presents two 'specific analytic techniques', which he expressly presents as apt for consideration in single-case studies (such as this) which have adopted the analytic strategy of 'Setting up a Framework based on Rival Explanations';

- Pattern Matching
- Explanation Building

### ***Pattern Matching***

Yin writes that a pattern-matching logic “compares an empirical based pattern with a predicted one” (2003, p.116). With regards to pattern-matching in studies where the analytic strategy has involved the establishment of a framework of rival explanations, Yin writes: “This analysis requires the development of rival theoretical propositions, articulated in operational terms”, adding: “the desired characteristic of these rival explanations is that each involves a pattern of independent variables” (2003, p.118). Yin goes on to detail that, for patterns based on rival explanations, the actual interpretation of data may not involve any ‘precise comparisons’. With further regard to this, Yin states: “the fundamental comparison between the predicted and the actual pattern may involve no quantitative or statistical criteria” (2003, p.119). However, Yin expresses that the low-levels of precision in non-quantitative pattern matching can result in a researcher being “overly restrictive in claiming a pattern to have been violated or overly lenient in deciding a pattern has been matched” (2003, p.120). Yin considers that a case study can be made ‘stronger’ by developing a more precise (i.e. quantitative) interpretative procedure, stating that: “The most precise quantitative result will likely occur if the study had set preestablished benchmarks” (2003, p.119-120).

Yin actually finds the second of his ‘specific analytic techniques’ to be a “special type of pattern matching” (2003, p.120). However, Yin also finds that (due to its unique procedures) this technique, which he calls *explanation building*, “deserves separate attention” (ibid).

### ***Explanation Building***

In explaining the unique procedures of this analytic technique Yin states that “the goal is to analyze the case study data by building an explanation about the case”, adding that to ‘explain’ a phenomenon is to “stipulate a presumed set of causal links about it” (2003, p.120).<sup>18</sup>

With reference to the actual procedural logic of this analytic technique, Yin suggests that explanation building has an inherently repetitive nature. With reference to this, and highlighting a key difference between explanation building and the pattern matching technique described above, Yin expresses that “the final explanation may not have been fully stipulated at the beginning of a study” (2003, p.122), but rather, “the eventual explanation is likely to be a result of a series of iterations” (2003, p.121). This ‘series of iterations’ can be broadly expressed as;

- Making a theoretical statement, or a proposition.
- Comparing the findings of the case study against such a statement or proposition.
- Revising the statement or proposition.
- Comparing other details of the case against the revision.
- Repeating this process as many times as is needed.

(Adapted from Yin, 2003, pp.121-122)

With regards to the practice of ‘Repeating this process as many times as it needed’, Yin expresses that, when following this analytic technique:

“the case study evidence is examined, theoretical propositions are revised, and the evidence is examined once again from a new perspective, in this iterative mode” (2003, p.122).

With further regard to the iterative nature of explanation building, and highlighting this technique's immediate relationship to the analytic strategy which is based upon the establishment of a framework of rival explanations, Yin states that:

“The gradual building of an explanation is similar to the process of refining a set of ideas, in which an important aspect is again to entertain other *plausible or rival explanations*”.

(2003, p.122)

Of this process Yin further states that: “your analysis should address, if possible, *all major rival interpretations*” (2003, p.137). Yin also states that some rivals “may not become apparent until you are in the midst of your data collection, and attending to them at this point is not only acceptable but also desirable” (2003, p.113). In this, Yin reveals that the practice of explanation building closely reflects Gillham's proposed emergent research design techniques. As if to labour this point (or rather to stress its significance) Yin offers this advice to the case study researcher:

“If someone else has an alternative explanation for one or more of your findings, make this alternative into a rival”

(2003, p.137).

With further reference to the identification of multiple plausible explanations, Yin appears to revise the previously stated purpose of the explanation building process. As noted above, Yin had proclaimed that the goal of this analytic technique is “to analyze the case study data by building an explanation about the case” (2003, p.120). However, with attention on the existence of rival explanations, Yin also proclaims:

“the objective is to show how these explanations cannot be built, given the actual set of case study events”  
(2003, p.122).

In actual fact this seems to be no more than an acknowledgement on Yin’s part that, as Gillham states:

“It is an axiom of scientific philosophy that theories cannot be proved – in a definitive sense – only *disproved*”  
(2000, p.34).

In essence, it appears that the aim of this analytic technique can be stated as being: to determine whether the findings of the case study can be used towards pragmatically demonstrating or disproving the practical existence of a direct line of ‘cause(s) and effect(s)’ which reflects the fundamental contributory factors behind a situation, as proposed / implicated by each hypothetical explanation within a series of rival explanations.

### ***The Criteria for Interpreting the Findings of This Study***

As detailed above, during the very early stages of this research program the author had considered 'digital cinema' to be a revelatory case. Consequently the author considered that a descriptive narrative on the phenomenon would offer a unique contribution to knowledge. At this point the author (perhaps naively) considered that the 'explanation building' analytic technique offered the most appropriate criteria for interpreting the study's findings - in that it was considered findings would be interpreted as supporting (or otherwise) the developing explanatory narrative. In fact, with regard to the application of the explanation building technique, Yin does consider: "In most existing case studies, explanation building has occurred in narrative form" (2003, p.120). However, Yin goes on to opine: "such narratives cannot be precise", adding: "the better case studies are the ones in which the explanations have reflected some theoretically significant propositions" (ibid).

Indeed, the author had not long begun the attempted building of a lone explanation of 'digital cinema' when it became apparent, from the data analysed, that further significant rival hypotheses needed to be addressed. However, even as the author formally recognised that 'Digital Exhibition as a form of the cinema' was but one in a series of plausible theoretical propositions, there seemed no cause to drastically alter the approach taken towards interpreting the study's findings.

The conscious decision to persist with the explanation building technique was made in light of the author's dawning recognition that this study would adhere to Gillham's notion of emergent research design – the author no longer considered it possible that all potential rival explanations would be apparent prior to data gathering, but rather considered that the uncovering of new explanations would be an ongoing phenomenon, likely to continue until data analysis was near completion. Moreover, the author recognised that the iterative nature of explanation building had already been (and would continue to be) instrumental in the defining of further 'theoretically significant propositions'. Initially, a solitary theoretical proposition had been made (Digital cinema may or may not be a form of the traditional medium of cinema). Following the logic of explanation building, the findings had been compared against this proposition. It was revealed that some findings implied alternative hypotheses to be addressed. The initial proposition was revised (and appended), and consequently findings were compared against each new proposition/explanation uncovered.

As alluded to above, the author now identified that, within this study, the aim of the explanation building process would be to determine whether the findings could be used towards pragmatically demonstrating or disproving the existence of a direct line of 'cause(s) and effect(s)' which reflect the causal links behind the emergence of Digital Exhibition, as proposed/implicated within the revealed rival explanations. For example, within the explanation of Digital Exhibition as a form of the cinema, the presumed causal links can be very broadly expressed as 'the cinema has evolved to become Digital Exhibition'. If the findings could be used to show that the cinema was capable of such an evolution, then they would be interpreted as supporting this explanation. However, if the findings revealed that the proposed chain of causes and effects within this explanation could be proven to be fallacious (for example, if categorical evidence were to be found to show that the cinema can only *ever* be delivered through the medium of physical film) then the findings could be interpreted as wholly negating this explanation.

Furthermore, in addition to providing a criterion for interpreting the findings concerning the primary unit of analysis (i.e. the phenomenon of Digital Exhibition), this technique was also considered as providing a means to interpret findings pertaining to the sub units of analysis (i.e. established – typically commercially and politically derived - interpretations of Digital Exhibition). The author determined that the explanation building analytic technique would be used to determine whether the study's findings are able to support or negate the identified rival hypotheses concerning the causal links which led to the writing of key definitions of Digital Exhibition; i.e. that the writers were sincere and true, were sincere and yet (for some reason) erroneous, were (for some reason) purposely disingenuous.

As is detailed above, within case studies adhering to the explanation building analytic technique, the criteria for interpreting the findings pertains to whether or not those findings are able to support or negate the verification of the pertinent 'causal links' as expressed within each identified rival explanation. As is also detailed above, Robert Yin finds that "the better case studies are the ones in which the explanations have reflected some theoretically significant propositions" (2003, p.120). Yin further details that the explanation building process involves repeatedly comparing the findings of the case study against such theoretically significant propositions, expressing that: "the eventual explanation is likely to be a result of a series of iterations" (2003, pp.121).

However, possibly relating to his consideration that, “The analysis of case study evidence is one of the least developed and most difficult aspects of doing case studies” (2003, p.109), the author found that within Yin’s discourse on ‘explanation building’, there was no prescriptive guidance as to how a study’s findings can be identified as either supporting or negating the ability to prove the accurateness of the causal links proposed within ‘theoretically significant propositions’ – in so much as there was no specific guidance as to the analysis of derived/discovered propositions in order to determine their theoretical significance, and no explicit techniques presented for the (repeated) comparison of the findings to propositions.

Despite the apparent deficit within Yin’s text, the author considered that there must exist previously developed (and proven) analytic techniques which would provide such guidance, whilst remaining compliant to the explanation building process. Ultimately, following further investigations into the methodologies of research, the following interlinked analytical practices emerged as appropriate;

- Literature Analysis (Critical Literature Review)
- Comparative Analysis
- Political Economy Analysis

These practices, and their application within this study, are discussed below.

## Literature Analysis (Critical Literature Review)

As detailed above Yin notes that 'better case studies' are "ones in which the explanations have reflected some theoretically significant propositions" (2003, p.120). Consequently, it seems that to achieve a 'better' case study the researcher needs to seek out existent (and develop their own) 'theoretically significant propositions'. Bill Gillham identifies two approaches to the emergence of theory within case studies; 'deductive' and 'inductive' theorising. Gillham describes 'deductive theorising' as "hypothesis testing" (2000, p.8), subsequently referring to 'inductive theorising' as "hypothesis seeking" (ibid).

With apparent regards to the process of 'hypotheses seeking', Yin writes that the case study researcher should 'try to prepare' for their case studies by, "doing such things as reviewing the literature related to what you would like to study" (2003, pp.30-31), adding that researchers "should be aware of the full range of theories that might be relevant to your study" (2003, p.31). However, Yin also implies that it is not always feasible for the case study researcher to be consciously aware of the entire scope of relevant theories prior to the commencement of research. For example (and as noted above), Yin writes that some rival explanations (hypotheses/theories) "may not become apparent until you are in the midst of your data collection" (2003, p.113), adding that "attending to them at this point is not only acceptable but also desirable" (ibid). Clearly, when investigating cases about which all the rival explanations could not be identified before commencing research, researchers will not be able to perform a comprehensive literature review (covering *all* relevant theories) as a preparation to study.

With regards to the incapacity of case study researchers to perform an *all inclusive* literature review *prior* to theory development, Bill Gillham expresses:

“It is useful to do some reading round your research topic before you go into the actual setting, but the notion that you do an extensive literature review first from which you derive a hypothesis to test is a nonsense in real-world research. It represents an adherence to an inappropriate paradigm” (2000, p.37).

However, Gillham adds:

“nor do you take the stance that your case is so unique that you have nothing to learn from what other researchers have done or think. There can be no simple translation of their findings or theories but there will always be elements which will sharpen your insight into what you’re about” (ibid).

As such, the author of this study determined that the derivation of ‘theoretically significant propositions’ from the analysis of existent literatures should be considered as occurring *within* (i.e. not prior to) the iterative explanation building process. That is to say, as they emerged from the analysis of literatures (and other data), the author prepared to investigate each new proposition by reviewing pertinent literatures – a process which in itself ultimately led to the emergence of further propositions, thusly revealing further bodies of literature for review. However, establishing *when* the review of literature should occur still did not provide the author with any initial appreciation as to *what* might qualify as ‘pertinent literature’. Furthermore, this decision did not make apparent *which* aspects of the identified literatures should be analysed, nor *how* that analysis should be performed.

On the subject *how* literatures should be analysed, Chris Hart offers that:

“In any literature review the data for analysis is information; that is, the interpretations, understandings and arguments that others have proposed that they want you to accept as a plausible story”  
(1998, p.110).

Furthermore, according to Hart:

“The kinds of analysis relevant to literature reviewing are those which systematically extract key ideas, theories, concepts and methodological assumptions from the literatures” (ibid).

According to Judith Bell, it is easy to produce a review of literatures, whereby facts are simply collected and described (2005, p.100). However, as the author recognised, reading alone will not provide an analysis of pertinent literatures, nor will the production of a verbatim account of their content propel the writing of a case study towards any sort of conclusion. Bell, therefore, identifies the necessity to carry out the ‘not so easy’ processes of a ‘critical’ literature review (ibid). According to Bell these ‘critical’ processes involve:

“questioning assumptions, querying claims made for which no evidence has been provided, considering the findings of one researcher compared to those of others and evaluating”  
(2005, p.100).

With regards to how the researcher should evaluate the degree of ‘theoretical significance’ of a proposition (‘interpretations, understandings and arguments’) found within a surveyed literature, it is of note that Hart expresses of all literature analyses: “a certain amount of ignorance is inevitable” (1998, p.98). As justification for this statement Hart writes: “you cannot read everything on all approaches relevant to your topic” (1998, p.97), adding: “Practical considerations mean some texts cannot be closely read, while others can only be read selectively and casually. Some texts might not be read at all” (1998, p.98). As such Hart recommends that researchers maintain an attitude which “allows us to recognize our own limitations and to approach a work with the modesty and understanding characteristic of good scholarship” (ibid). Ultimately, Hart suggests that researchers should “play fair” when assessing the strengths and weaknesses of other people’s ideas.

In essence, Hart recommends that every ‘plausible’ rival hypothesis derived from the reviewing of literatures should be considered as a potentially theoretically significant proposition; as Yin proposes: “If someone else has an alternative explanation for one or more of your findings, make this alternative into a rival” (2003, p.137). Thusly, during this study no uncovered rival was dismissed out of hand, even if they did not appear to adhere to any other theory previously investigated – it was always considered that any such apparent lack of adherence may simply be because the researcher had not yet come upon the body of literature which would support the hypothesis.

The author considers that Hart's identification that the data analysed during a literature review should include "the interpretations, understandings and arguments that others have proposed that they want you to accept as a plausible story" (1998, p.110), reflects one of the key overarching aims of this study. As implied above, this study aims to question the assumptions (interpretations, understandings and arguments) made within meaning making literatures surrounding Digital Exhibition. In other words, this study aims to critically review those literatures pertaining to the established approaches to interpreting Digital Exhibition which have been identified as the four sub-units of analysis for this study (as detailed above).

The systematic extraction of the key ideas, theories and concepts from these meaning making texts (resulting in their being categorised as the sub-units expressed above), and the questioning of assumptions made there within, encouraged the author to ask which (or whether any) of these contradictory bodies of literature correctly positions the case phenomenon within the framework of contemporary media theory. As such, the author determined that, in addition to reviewing those literatures which offered interpretations of Digital Exhibition, there was an additional need to review 'media studies' literatures - in order to identify and analyse pertinent existing (theoretically significant) propositions / interpretations as to;

- What the cinema is.
- What television is.
- Whether a single set of technologies can channel/become multiple media.
- What defines the individuality of a medium.

As new rival explanations emerged from the analysis of these media centric literatures (and the explanation building process as a whole), the author found it necessary to survey further areas of media studies literature. The scope of the literature review was thusly broadened to include texts encompassing theoretically significant hypotheses as to;

- What the computer is.
- What 'media convergence' is.
- What constitutes a case of the new media.
- What 'remediation' is.

A broad, tabulated, overview as to the bodies of media theory literature which have been analysed as part of the explanation building process is presented in Appendix 4: Fundamental Literatures Analysed – by Explanation.

## Comparative Analysis

As is detailed above, Bill Gillham identifies two approaches to the emergence of theory within case studies; 'deductive' and 'inductive' theorising. As described above, the 'inductive' processes of 'hypotheses seeking' (extracting theoretically significant hypotheses from existing discourses) typically occurs during a critical analysis of pertinent literatures. Conversely, the 'comparative analysis' phase is concerned with the 'deductive' processes of 'hypotheses testing'. As is also detailed above, the explanation building process (as described by Robert Yin, 2003) is essentially concerned with establishing which of the derived theoretical hypotheses' presumed causal links actually reflect the real-life developmental conditions of the studied phenomenon.

As is further detailed above, Yin expresses that a major element of the explanation building process is the (ever) repeated step of comparing (i.e. testing) the study's findings against the study's theoretical propositions - leading to further revised propositions, which are then compared to previous and future findings. As presented below, this element of the explanation building process was adhered to during the ever emergent design of this project.

As detailed in Chapter One, the broad aim of this study is to compare the results from each attempt at building an 'explanation' of Digital Exhibition - in order to determine which (if any) interpretation of Digital Exhibition might be considered to be a true reflection of the case phenomenon's position within the framework of contemporary media theory. In order to test (attempt to build) an explanation of Digital Exhibition, the author compared the proposals made within pertinent publications (i.e. those meaning making literatures deemed as either directly supporting or negating the building of that explanation) to the findings of several further stages of comparative analysis.

When considering the approach to measuring the ‘newness’ of a media phenomenon, Martin Lister et al. propose that, “The most obvious question that needs to be asked is: ‘How do we know that something is new or in what way it is new if we have not carefully compared it with what already exists or has gone before?’” (2009, p.46). On the subject of comparison analysis, Chris Hart decrees that, “Any number of phenomena belonging to the same family of things....can usually be analysed in a comparative framework” (1998, p.132). However, Hart seeks to make clear that, “Not all things can be compared with all other things” (ibid), adding, “rarely can all the elements in one phenomenon be compared to those of another with equivalent degrees of similarity and difference” (ibid). Thusly, when approaching the comparison analysis phase of this study, the author initially considered that if it were possible to compare the known facts about Digital Exhibition to the known facts about the cinema, television, and phenomena considered as pertaining to multiple media, etc, then this would begin to show whether or not the case phenomenon belonged to these ‘family of things’. Consequently, the author compared the data (the ‘known facts’) about case phenomenon to practical accounts as to the nature of the cinema, television, and phenomena identified (within certain literatures) as pertaining to multiple media.

The ‘practical accounts’ to which the ‘known facts’ were compared include historical reports as to the technologies used, contents shown and venues employed by each media. However, as implied in the discussion on literatures reviewed (above), the author increasingly realised that in order to test the established (and emergent) interpretations of the phenomenon, the known facts about Digital Exhibition would also need to be compared to *theoretical* understandings as to the natures of the cinema, television, media (en masse) and the ‘new media’, etc.

Kerry Walk (1998) provides details as to a specific method for comparing theory to evidence, referred to as ‘lens’ (or ‘keyhole’) comparison – whereby existing texts (i.e. those containing significant theoretical propositions) are used as a ‘lens’ through which to view the subject of study. Walk suggests that ‘just as looking through a pair of glasses changes the way you see an object’, using one article as a framework for understanding another, changes the way you see the second article (ibid). Walk notes: “Lens comparisons are useful for illuminating, critiquing, or challenging the stability of a thing that, before the analysis, seemed perfectly understood” (ibid). Walk further finds: “Often, lens comparisons take time into account: earlier texts, events, or historical figures may illuminate later ones, and vice versa” (ibid).

In this study, when comparing the facts about Digital Exhibition to pertinent media theories, the ‘lens comparison’ techniques, as described by Walk, were employed. For example, in order to ‘test’ the hypothesis that Digital Exhibition pertains to television – *or, in other words, in order to determine the validity of the presumed causal links behind that hypothesis (i.e. the presumption that television has evolved to become Digital Exhibition)* - data concerning Digital Exhibition was viewed *through* pertinent theories about television. Specifically, certain facts concerning the contexts of Digital Exhibition were viewed through the ‘lens’ of those literatures which suggest television to be a domestic only phenomenon. The result of this comparison was that Digital Exhibition appeared to be something ‘not television’.

However, when comparing the contents of certain media studies literatures, there were found to be certain significant inconsistencies.<sup>19</sup> For example, John Fiske expresses that:

“television is essentially a domestic medium, the routines of viewing are part of the domestic routines by which home life is organized”  
(1987, p.72).

Conversely, Tim O’Sullivan expresses that:

“Increasingly, television has to be seen not just as the singular ‘box in the corner’, but as the diverse screens which now characterise the myriad of private and public situations and contexts from multi-set, multi-screen homes to screens in pubs, clubs, schools and workplaces”  
(1998, pp.200-201).

When the facts about Digital Exhibition’s contexts are viewed through the ‘lens’ of O’Sullivan’s discourse, then the focus shifts, and the phenomenon appears akin to television.

As these conflicting media theories were revealed, the author recognised a need to dismiss any concepts which have been rendered obsolete / proven to be erroneous. As such, the author found it necessary to perform a degree of comparative analysis around each theory and ‘real-world’ data concerning the relevant media. For example, the conflicting theories that television is an exclusively domestic medium / is a public & private exhibition medium were both compared to evidence suggesting that television, contemporarily, exists within domestic *and* public spaces.

These theories were also compared to evidence suggesting that at its origin television was conceived of as being an eventual electronic replacement for film as the prevalent exhibition medium within public auditoria. As detailed above, Walk expresses that it is a trait of lens comparison analysis that “earlier texts, events, or historical figures may illuminate later ones, and vice versa” (1998).<sup>20</sup>

## Political Economy Analysis

As is stated above, in addition to providing a criterion for interpreting the findings concerning the primary unit of analysis (i.e. the phenomenon of Digital Exhibition), the explanation building analytic technique was also considered as providing a means to interpret findings pertaining to the sub units of analysis (i.e. established interpretations of Digital Exhibition). As is also stated above, the author determined that this technique would be used to assess the study's findings as either supporting or negating the validity of the rival propositions regarding the production of existing interpretations of Digital Exhibition; i.e. that the writers were sincere and true, were sincere and yet erroneous, were purposely disingenuous.

### *Literature Survey*

Given that the originally surveyed commercial/political interpretations of Digital Exhibition offer no 'significant theoretical propositions' as to their own nature (i.e. they do not seek to describe the causal links behind their own creation), in the endeavour to 'explain' these texts they were not considered as suitable materials for inclusion in this stage of the literature analysis. Rather than 'literature' per se, these discourses were now classified by the author, as 'documentary evidence'.

Significantly, as Brendan Duffy, citing Barzun and Graff (1992, p.189), states: "One important aim of critical scholarship is to assess whether fact or bias is the main characteristic of a document" (2005, p.132). In order to determine *whether* bias is the main characteristic of Digital Exhibition's established definitions, the author considered it necessary to ask *how* and *why* bias might have influenced these documents.

In the effort to identify any established, significant, theory as to how and why bias may have characterised the politically and commercially sourced meaning making discourses which surround Digital Exhibition, the author briefly surveyed literatures pertaining to societal/cultural influences upon the media. However, during this literature survey it was discovered that, according to Peter Golding and Graham Murdock, ‘cultural studies’ offer an analysis as to how cultural industries work which has “little or nothing to say about how they actually operate as industries and how their economic organization impinges on the production and circulation of meaning” (2000, p.72). Nonetheless, it was found that Golding and Murdock themselves present an apparently appropriate theory as to what *might* have influenced the production of the established definitions of Digital Exhibition; the theory of ‘political economy’ (2000, pp. 70-92)<sup>21</sup>.

Through an analysis of pertinent literatures it was discovered that, fundamentally, the theory of political economy suggests that media organisations attempt to generate consensual understandings (i.e. ‘make meaning’) through their public communications. Furthermore, it was found that, according to this theory, the meanings which media organisations attempt to deliver/instil are influenced by their ideological constitutions. For example, Oliver Boyd-Barrett cites Golding and Murdock (1991) as considering a central concern of ‘critical’ political economy studies to be “the balance between capitalist enterprise and public intervention” (1995, p.186). Eileen R. Meehan, Vincent Mosco and Janet Wasko broadly define political economy as being about ‘survival’ and ‘control’, further stating that the theory is concerned with the means by which institutions “organize themselves to produce what they need to reproduce themselves” and how they “maintain order to meet economic, political, social and cultural goals” (1994, p.349).

Additionally, of political economy theory, Peter Golding and Graham Murdock state that the “different ways of financing and organizing cultural production have traceable consequences for the range of discourses and representations in the public domain” (2000, p.70). Golding and Murdock also propose that the “making and taking of meaning is shaped at every level by structured asymmetries in social relations” (2000, p.73). Furthermore, Golding and Murdock explain that “critical political economy is concerned to explain how the economic dynamics of production structure public discourse by promoting certain cultural forms over others” (2000, p.85). It was also found that, as Boyd-Barrett suggests, political economy studies must “demonstrate precisely how the political-economic formation of the media is related to media content, and to the discourses of public debate and private consciousness” (1995, p.190).

During the analysis of literatures addressing the theory of political economy, the author recalled Hart’s consideration that, “The kinds of analysis relevant to literature reviewing are those which systematically extract key ideas, theories, concepts and methodological assumptions from the literatures” (1998, p.110). The author considered, that while the literatures addressing this theory provided a plausible explanation as to the causal links behind the production of the incongruent interpretations of Digital Exhibition (i.e. that some/all of these interpretations are disingenuous having been constructed under the influences of political economy), they also offered methodological assumptions as to how pertinent data should be analysed in an attempt to build of this explanation.

*Methodological Approach to Critical Political Economy Analysis*

With regards to the methodological practices of political economy analysis, and as detailed above, Boyd-Barrett asserts that the critical political economy researcher must “demonstrate precisely how the political-economic formation of the media is related to media content, and to the discourses of public debate and private consciousness” (1995, p.190). However, Meehan et al assert that it is not enough merely to ‘demonstrate’ how the influences of political economy bear down upon such discourses – rather the political economy researcher must seek to both describe and diminish the impact of such influences. As Meehan et al state: “Political economy starts from the view that research is a form of both labor and social intervention” (1994, p.350), adding: “The goal is therefore more than a simple reflection of social reality but a self-reflexive process of questioning and acting on the object of analysis” (1994, p. 351).

As stated above, this study aims to question the academic pertinence of established interpretations of Digital Exhibition, and also aims to question whether the ‘discourses of public debate and private consciousness’ which surround the phenomenon might have been disingenuously constructed. Furthermore (and as is presented in Chapter One, p.7), whilst consciously taking a non-biased stance during the iterative, self-reflexive, process of question asking (and the related processes of interpreting the findings), the author considered that the final product of this research could indeed achieve a degree of social intervention - potentially weakening the impact of inaccurate interpretations by asking what Digital Exhibition actually is, questioning the motivations behind prevailing discourses, and ultimately offering an academically pertinent / methodologically traceable account of the object of analysis.

With further, specific, regards to methodological practice, Meehan et al was found to acknowledge that there have been complaints that political economists publish few articles with methods sections (1994, p.354). However, Meehan et al find that the practitioners of political economy analysis “are expected to follow criteria implicit in the paradigm and then to select the method best suited to the problem” (1994, pp.354-355). To this Meehan et al add: “Whatever the method, the process of finding and analyzing data is and should remain as rigorous for political economists as for other media researchers” (1994, p.355), and continues to express that, “Research sources and data must be evaluated” and “the criteria for that assessment must be explicit” (ibid). In these statements Meehan et al appear to indirectly sanction the overarching application of the case study methodology for the specific processes of political economy analysis – so long as the researcher finds this to be the most appropriate methodology, and adheres to rigorousness of the approach.

Significantly, Bill Gillham finds that “Case study is a *main* method”, adding that: “Within it different sub-methods are used” (2000, p.13). It therefore seems that Gillham would be accepting of the notion that the ‘critical’ political economy approach to research could be used to append the case study methodology – and even that this might strengthen the overall approach of a study. Gillham suggests that “different methods have different strengths and different weaknesses” (ibid) and, referring to the practice of ‘triangulation’, adds that if the findings of multiple methods converge (correspond) then “we can be reasonably confident we are getting a true picture” (ibid).

## 2.2.6 Theory Development & Generalisation

Whilst not offered as one of the ‘five components of research design’, Yin does express that “theory development as part of the design phase is essential, whether the ensuing case study’s purpose is to develop or test theory”<sup>22</sup> (2003, p.28). In point of fact Yin further expresses that carrying out the five components of research design “will effectively will force you to begin constructing a preliminary theory related to your topic of study” (ibid). This ‘preliminary theory’, according to Yin, should “by no means be considered with the formality of grand theory in social science”, but rather, “the simple goal is to have a sufficient blueprint for your study, and this requires theoretical propositions” (2003, p.29) adding that: “Then, the complete research design will provide surprisingly strong guidance in determining what data to collect and the strategies for analysing the data” (ibid), and concluding: “In this sense, the complete research design embodies a ‘theory’ of what is being studied” (ibid).

From the stating of the initial propositions to the adoption of an analytic strategy based upon a framework of rival hypotheses - and the execution of an explanation building analytic technique (involving the analysis of literatures which, in turn, led to the discovery / stating of further ‘significant theoretical propositions’) - the design of this research program guided the author towards the development of multiple theories as to the position which Digital Exhibition should take within the framework of contemporary media theory, and the reasons why there presently exist multiple contradictory interpretations of the phenomenon. Furthermore, the theories which were developed (i.e. the theories which emerged from the research design) guided the author towards new data to be studied. In turn, the analysis of this ‘new data’ affected the research design, by (for example) leading the author to reassess the questions asked, the propositions stated, the explanations investigated, and even the units of analysis studied. This reassessment of the research design led to the development (emergence) of further theories – thusly revealing the whole process to be an iterative chain of interconnected iterative processes.

### **Generalisation**

As discussed above, Yin considers that, “theory development prior to the collection of any case study data is an essential step in doing case studies” (2003, p.29).

However, Yin also considers that there is a purpose for the development of theory within a case study beyond facilitating the data collection and analysis phases.

Indeed, Yin expresses that the development of an appropriate theory is “the level at which the generalization of the case study results will occur” (2003, p.31).

According to Johanna Moisander and Anu Valtonen, in quantitative research, “generalization refers to the extension of research findings and conclusions from a study conducted on a sample population to the population at large” (2006, p.28).

Moisander and Valtonen continue to express that: “This, of course, is not something that qualitative researchers should set out to do in the first place” (ibid). Nevertheless, Yin (2003) still considers that a qualitative case study, such as this is, should strive to achieve generalisation. However, Yin also suggests that the mode of generalisation applied in qualitative case studies should be different to that employed in studies applying quantitative research methodologies. As such, Robert Yin presents generalisation as being achievable in two distinct ways;

- Statistical Generalisation
- Analytic Generalisation

An overview as to Yin’s understanding of these two ‘modes of generalisation’ will be presented below.

### **Statistical Generalisation**

Directly relating to Moisander and Valtonen's definition, Yin details that with 'statistical generalisation' theoretical inferences are made on the basis of empirical data collected about a sample (2003, p.32). Yin states that this method of generalisation is the most of common way of generalising when doing surveys or analysing archival data, adding that: "This method of generalizing is commonly recognized because research investigators have ready access to quantitative formulas for determining the confidence with which generalizations are made" (ibid). However, Yin considers that "A fatal flaw in doing case studies is to conceive of statistical generalization as the method of generalizing the results of a case study" (ibid). Yin explains that this is because cases are not 'sampling units', considering instead that individual case studies should be "selected as a laboratory investigator selects the topic of a new experiment" (ibid).

### **Analytic Generalisation**

Yin details that studies employing analytic generalisation are those in which "a previously developed theory is used as a template with which to compare the empirical results of the case study" (2003, pp.32-33). Furthermore, Yin proposes that "analytic generalization" is the "mode of generalization" which should be applied within case studies (2003, p.10). Yin expresses that: "case studies, like experiments, are generalizable to theoretical propositions and not to populations or universes" (ibid). In this sense, according to Yin: "the case study, like the experiment, does not represent a 'sample' and in doing a case study, your goal will be to expand and generalize theories (analytic generalization) and not to enumerate frequencies (statistical generalization)" (ibid).

As detailed in Chapter One (p.6), through the processes described in this chapter, this study does aim to produce a general statement as to what Digital Exhibition is and a general theory as to why there exists an established body of contradictory interpretations of the phenomenon. As has been detailed above, especially when discussing the 'criteria for interpreting the findings', this project has used previously developed theories as a template (lens) for comparison analyses. Theories have been expanded upon and re-examined, and statements made have been supported by a variety of evidence. In essence, the mode of theoretic generalisation achieved through this course of study is that which is referred to as 'Analytic Generalisation'.

## Chapter Two, Part Three:

### Conducting the Research & Presenting the Findings

#### 2.3.1 Data Collection

Whilst in the introduction of this Chapter it is stated that “the phenomenon of Digital Exhibition has been researched following a qualitative ‘case studies’ methodology”, it should be noted that, with regards to the actual carrying out of research, Bill Gillham stresses:

“It needs to be emphasised that case study research is not exclusively concerned with qualitative methods: all evidence is pulled into the case study researcher’s data collection” (2000, p.10).

To this Gillham adds:

“Case study research is very much like detective work. Nothing is disregarded: everything is weighed and sifted; and checked or corroborated” (2000, p.32).

Further to this, Robert Yin states that “the case study’s unique strength is its ability to deal with a full variety of evidence - documents, artefacts, interviews, and observations” (2003, p.8). Yin adds that: “case studies, are a form of enquiry that does *not* depend solely on ethnographic or participant-observer data”, and further proposes: “You could even do a valid and high-quality case study without leaving the library and the telephone or Internet, depending on the topic being studied” (2003, p.11).

Demonstrating a realisation that such a broad scope of potential data sources and data gathering techniques could ultimately prove problematic, Yin presents some guiding “overriding principles”, which he expresses as being “important to any data collection effort in doing case studies” (2003, p.85). These ‘principles of data collection’ are expressed as;

- Using multiple, not just single, sources of evidence;
- Creating a case study database;
- Maintaining a chain of evidence.

### ***Principle 1: Use Multiple Sources of Evidence***

Yin expresses that: “any finding or conclusion in a case study is likely to be much more convincing and accurate if it is based on several different sources of information, following a corroboratory mode” (2003, p.98). In fact, Yin considers that: “the need to use multiple sources of evidence far exceeds that in other research strategies, such as experiments, surveys or histories (2003, p.97).

However, rather than seeing this as a problematic issue, Yin considers that “a major strength of case study data collection is the opportunity to use many different sources of evidence” (2003, p.97). With regards to the opportunistic benefits of using multiple sources, Yin details that “the use of multiple sources of evidence in case studies allows an investigator to address a broader range of historical, attitudinal, and behavioural issues” (2003, p.98). However, again referencing that the conclusions of a case study are likely to be more convincing / accurate if they are based upon “evidence from two or more sources, but converging on the same set of facts or findings” (2003, p.83), Yin further states that, “the most important advantage presented by using multiple sources of evidence is the development of *converging lines of inquiry*” (2003, p.98).

### **The use of Multiple Sources of Evidence within this study**

For the most part, the empirical evidence pertaining to the phenomenon of Digital Exhibition (i.e. the primary unit of analysis) which is applied within this study, was attained through the Internet, as were the definitions of Digital Exhibition offered by industrial and political agents (i.e. the embedded unit of analysis).

However, whilst it may have been predominantly channelled through a single technological medium, a wide range of data types were gathered from a wide range of sources. These data sources include; technical papers from the manufacturers of digital projectors, strategy proposals from bodies such as the European Union and the UK Film Council, press releases from film studios companies adopting digital distribution strategies, journal articles on the subject of Digital Exhibition, published e-mail communications between industry experts, official industrial policy documents, even filed patent applications (including one for a 1920s television system based on reflection, and one for a 1990s integrated computer / video cassette system), etc. In addition to the Internet, the library also proved an invaluable means of gaining access to multiple types and sources of data; the number of books concerning media theory employed (and cited) within this study is significant.

***Principle 2: Create a Case Study Database***

Yin presents this ‘principle of data collection’ as being “to do with the way of organizing and documenting the data collected for case studies” (2003, p.101).

This principles is summarised by Yin, in his decree that “every case study project should strive to develop a formal, presentable database, so that in principle other investigators can review the evidence directly and not be limited to the written case study reports” (2003, p.102). With regards to the actual formation of a case study database, Yin states that one of the most important characteristics of case study notes and documents is that they be “organized, categorized, complete, and available for later access” (2003, p.103). Yin also states that it is helpful to develop an ‘annotated bibliography’ of case study documents, but stresses that texts produced expressly for the case study database should not form part of the final case study report (ibid). Nevertheless, despite considering that the case study database should be independent to the report itself, Yin does offer that: “Every report should still contain enough data so that the reader of the report can draw independent conclusions about the case study” (2003, p.103).

**The Creation of Case Study Database within this study**

Following Yin’s decree that all evidence be ‘organized, categorized, complete, and available for later access’, upon uncovering a significant piece of data on the internet, the author produced an ‘off-line’ copy, catalogued that copy according to the explanations it could be considered as supporting / negating, and filed it within the authors own ‘evidence database’.

Further to this, whilst a fully comprehensive ‘annotated bibliography’ was not produced, the author did produce an ‘evidence framework’ document. This document detailed the absolute key texts (including discourses on theory, technical specifications, journals, political policies, etc) around which each explanation would be constructed. This framework also made reference to those texts which might prevent the construction of each explanation.

***Principle 3: Maintain a Chain of Evidence***

With regards to the proposed tenet of data collection whereby the case-study researcher should develop ‘chains of evidence’, Yin states that the principle “to allow an external observer – in this situation the reader of the case study – to follow the derivation of any evidence, ranging from initial research questions to ultimate case study conclusions” (2003, p.105) – adding that: “the external observer should be able to trace the steps in either direction (from conclusions back to initial questions or from questions to conclusions)” (ibid). Yin offers a number of practical suggestions as to how this is achieved. For example, Yin states that: “the report itself should have made sufficient citation to the relevant portions of the case study database” (ibid), and adds that: “the database, upon inspection, should reveal the actual evidence and also indicate the circumstances under which the evidence was collected” (ibid).

**The maintenance of a Chain of Evidence within this study**

As detailed above, during the (emergent) design phase the authored had determined; The questions asked, the study’s units of analysis, the study’s propositions, the logic linking the data to the propositions and the criteria for interpreting the findings. Having stringently applied each of Yin’s proposed components of research design, and having created a case study database the author found that the ‘chain of evidence’ essentially maintained itself. The data was categorised within the database to the explanation(s) to which it pertained and the explanation building logic linked the data to the propositions – which were derived from the questions asked and the studies units of analysis.

With regards to the construction of the case study report, the author prepared this chapter in order to provide the reader with a comprehensive understanding of this process, enabling them to trace the logical steps from data to questions - back and forth. Furthermore, in the presentation of findings, the author considered (and presented) the evidence as key to understanding the theoretical propositions made.

Further details as to the composition of this report are present below.

### 2.3.2 The Case Study Report

Bill Gillham offers a consideration that within case study reports theory needs to be presented in a way that is “much more than impressionistic”, adding that:

“impressions and assertions must be substantiated in some way” (2000, p.12). Of this, Gillham ultimately stresses: “theory is not primary; evidence is primary” (ibid).

This notion as to the importance of substantiating theory through the presentation of evidence reflects the approach taken by the author of this report. Having pursued an explanation building strategy for the interpretation of the research findings, the author duly considered that, in order to explicate the nature and the import of an explanation, i.e. a theoretical hypothesis as to the nature of the primary/secondary units of analyses, then the case study report would have to comprehensively present the evidence which contributed to the emergence, construction, and (possible) negation of that explanation.

Robert Yin reports that: “In most existing case studies, explanation building has occurred in narrative form” (2003, p.120). Further to this (and as detailed above)

Donald T. Campbell expresses:

“I have come to the conclusion that the core of the scientific method is not experimentation per se but rather the strategy connoted by the phrase ‘plausible rival hypotheses’” (2003, p.ix).

Campbell further expresses that, for a study which has followed this strategy (such as this), rather than presenting hypotheses and evidence in the ‘context-independent manner of positivistic confirmation’, “it is presented instead in extended networks of implications” (ibid).

In the effort to present an all-embracing paper that describes the complexity of the 'extended network of implications' concerning the phenomenon of Digital Exhibition (i.e. the primary unit of analysis), this report has been divided into a series of evidence-led narrative chapters:

- **Chapter Three**

This chapter provides a narrative around the author's attempt to build an explanation as to the origins of the established interpretations of Digital Exhibition, suggesting that they have been composed to meet the political / industrial aspirations of their authors.

- **Chapter Four**

This chapter provides an account as to the author's attempt to build an explanation of Digital Exhibition as a form of 'the cinema'.

- **Chapter Five**

This chapter provides a narrative account as to the author's attempt to build an explanation of Digital Exhibition as a form of 'television'.

- **Chapter Six**

This chapter provides an account as to the author's attempt to build an explanation of Digital Exhibition as a unique 'medium' unto itself (as a case of the 'new media').

- **Chapter Seven**

This chapter provides an account as to the author's various attempts to build explanations which would validate those established interpretations of Digital Exhibition that present the case phenomenon as pertaining to multiple media.

With regards to Campbell's suggestion that case study findings should be presented in "extended networks of implications" (2003, p.ix), it is of note that should the any one of the explanations as to the nature of Digital Exhibition (presented in Chapters Four through Seven) be found to offer a true account of the phenomenon's genealogy, then all of those other explanations would, by implication, be negated. Furthermore, the explanation as to the origins of established interpretations which presents political / industrial literatures as being ideologically flawed would be duly fragmented – as some interpretations would be proven to be false, whilst others would be proven true. See Appendix 3 for further details as to the implicative relationships between explanations.

***Drawing and Presenting the Conclusions.***

With regards to the ultimate conclusions offered within this report, it should be recalled that Yin states that ‘explorative’ case studies deal with subjects where there are “no clear, single set of outcomes” (2003, p.15). With further regards to the conclusions offered within this report, it should also be recalled that, as Gillham states: “It is an axiom of scientific philosophy that theories cannot be proved – in a definitive sense – only *disproved*” (2000, p.34). Moreover, it should be recalled that Gillham offers that when presenting case study findings, “theory is not primary; evidence is primary” (2000, p.12), and that Yin offers that ‘every report’ should “contain enough data so that the reader of the report can draw independent conclusions about the case study” (2003, p.103).

Having brought each of these points to mind, the reader might then consider that the ultimate conclusion of this study will offer less of a categorical expression as to the motivation of those commentators producing prevailing interpretations of the case phenomenon, and more of a comment as to the subjectiveness of contemporary media theory. Furthermore, the reader should be aware that concepts which were necessarily considered as the ‘known truths’ of media theory during the explanation building process – i.e. that ‘the cinema’ and ‘television’ are somehow definable articles / experiences both of which warrant the status of ‘medium’, that there is a definable / absolutely identifiable class of ‘media’ which warrants the ‘new media’ designation, etc. – will ultimately be rejected by the author.

## Chapter Two: Summary

The aim of this chapter was to provide the reader with a comprehension as to methodology used by the author when researching the phenomenon of Digital Exhibition (so in order to answer the study's overarching question, 'Do prevailing, industrially and politically sourced, definitions of Digital Exhibition faithfully represent the phenomenon's position within the contemporary media theory framework?').

It has been presented that the 'case studies' discourse of Robert K. Yin provided the fundamental framework for the methodological approach taken. It has also been presented that the research adhered to Bill Gillham's notion of an 'emergent' case study research design. The research design features Yin's five components of research design by establishing;

- The Study's Unit(s) of Analysis;
- Its Questions;
- Its Propositions;
- The Logic Linking the Data to the Propositions;
- The Criteria for Interpreting the Findings.

This study was presented as being a single-case study with multiple embedded units of analysis. The study's primary unit of analysis was presented as being;

- **'The Phenomenon of Digital Exhibition'.**

The sub-units of were presented as being;

- Those interpretations of Digital Exhibition which present the phenomenon to be a form of the cinema.
- Those interpretations of Digital Exhibition that present the phenomenon as being a form of television.
- Those definitions which present Digital Exhibition as pertaining to multiple media.
- Those definitions which present the phenomenon not as a new form of any other media, nor something that provides access to any other media, nor something that becomes any other media, but as a wholly new medium unto itself.

This study's 'continuous strand of question development' began with the question 'What is Digital Cinema?' and progressed through to 'Do prevailing, industrially and politically sourced, definitions of Digital Exhibition faithfully represent the phenomenon's position within the contemporary media theory framework?'

The propositions of this study essentially offered that each of the identified established interpretations of Digital Exhibition (i.e. the sub-units of analysis) might be;

- Sincere and true
- Sincere yet erroneous
- Disingenuous and false

Two further propositions were offered, both suggesting that *all* of the established interpretations of Digital Exhibition were erroneous;

- Digital Exhibition is not a medium
- Digital Exhibition, the cinema and television are each aspects of the same medium

The logic linking the research data to these propositions was presented as primarily involving the development of a framework of plausible rival explanations. A table presenting each of the rival explanations and their relationship to the propositions is presented as Appendix 3 of this paper.

The criteria for interpreting the findings of this study is presented as being based upon a particular pattern matching strategy which pertains to the building (or negating) of those rival explanations which link the research data to the propositions. As part of this iterative process, the researcher performed a survey of theory rich media literatures, and performed several 'lens comparison' analyses (typically comparing 'real world' data found about the case phenomenon to the theories gathered from the literature survey). The explanation building process also involved an investigation around the political economy of the originators of those established interpretations of Digital Exhibition which form the sub-units of analysis. With regards to the development of theory within this programme of research pertains to the processes of 'inductive' and 'deductive' theorising (hypotheses seeking and testing respectively). Furthermore, the mode of generalisation applied is 'Analytic Generalisation'.

It has been presented that, when conducting the research, the author adhered to Yin's 'overriding principles' of data collection. These principles pertaining to;

- The use of multiple sources of evidence
- The creation of a case study database
- The maintenance of a chain of evidence

It has ultimately been detailed that, in the presentation of the findings and theories stemming from this research, the author has applied a linear narrative format to the iterative explanation building processes across five chapters.

**Chapter Three.**

**Explanation Building:**

**A Critical Political Economy Analysis**

**of Established Definitions**

## Introduction to Chapter Three

This chapter acts as a precursory review of literature; examining existing texts which address the question of ‘*What is Digital Exhibition?*’ As such, this chapter aims to provide the reader with an understanding as to the contradictory nature of established discourses which attempt to define Digital Exhibition’s place within the framework of media studies. Furthermore, this chapter questions whether domineering interpretations of Digital Exhibition might be drawn, not from a philanthropic want to discover and demonstrate a philosophical truth, but rather, from a self-serving desire to fabricate and disseminate understandings of Digital Exhibition which promote the originators’ own political and commercial ideologies.

It is the consideration of the author that, at this incipient stage, the processes involved in developing an understanding of Digital Exhibition (within the realms of publicly funded enterprise, private industry, and academia, as well as within the minds of the public en masse) could have a lasting affect on how the phenomenon is perceived and approached by all parties concerned. It is also considered, by the author, of particular import that political/economic bias does not pervert academic (and general) understandings of Digital Exhibition. It is therefore considered that literatures attempting to definitively characterise the various aspects of Digital Exhibition (i.e. ‘meaning making’ discourses) must be carefully scrutinised - with regards to both pertinence and political / economic influence. This is offered as being particularly true for discourses stemming from influential parties working within the field of Digital Exhibition, who can be considered as having a significant bearing upon how the phenomenon will ultimately be perceived by the public.

Addressing the notion that, on all manner of subjects, domineering parties are able to influence the perceptions of others, Peter Golding and Graham Murdock propose that the:

“making and taking of meaning is shaped at every level by structured asymmetries in social relations”

(2000, p.73).

Golding and Murdock further suggest that the process undertaken by those parties creating perceptions (which will support their own economic and/or political goals) essentially involves the dissemination of ‘meaning making’ discourses. Of this

Golding and Murdock state:

“the different ways of financing and organizing cultural production have traceable consequences for the range of discourses and representations in the public domain”

(2000, p.70),

adding further that:

“critical political economy is concerned to explain how the economic dynamics of production structure public discourse by promoting certain cultural forms over others”

(2000, p.85).

This chapter thusly applies a critical political economy approach to the analysis of existing literatures addressing the subject of Digital Exhibition.

This chapter is divided into two parts. In Part One, existing ‘meaning making’ discourses about Digital Exhibition will be examined in order to determine whether the different approaches taken towards interpreting the case phenomenon might stem from sources with different cultural/political and/or commercial/economic ideologies. The meaning making discourses examined will be categorised according to the sub-units of analysis to which they pertain to. As presented in Chapter Two (p.26), this study’s sub-units of analysis have been defined as:

- **Those interpretations of Digital Exhibition which present the phenomenon to be a form of the cinema.**
- **Those interpretations of Digital Exhibition that present the phenomenon as being a form of television.**
- **Those definitions which present Digital Exhibition as pertaining to multiple media.**
- **Those definitions which present the phenomenon not as a new form of any other media, nor something that provides access to any other media, nor something that becomes any other media, but as a wholly new medium unto itself.**

The literatures of three European publicly funded organisations (the UK Film Council, The British Governmental Department of Culture Media and Sport & the European Digital Cinema Forum) will be presented as supporting the interpretation of Digital Exhibition, in all its parts, as a form of the cinema. The literatures of three North American private industry groups (The National Association of Theatre Owners, The Motion Picture Association of America, and Digital Cinema Initiatives LLC) will be presented as supporting an interpretation of Digital Exhibition whereby high-end (high-cost / high-resolution) systems pertain to the cinema, but low-end (low cost / low-resolution) systems pertain to something else (i.e. Digital Exhibition pertains to multiple media). Furthermore, it will be presented that some published literatures also present an interpretation of Digital Exhibition as a form of television, whilst others present the phenomenon to be a wholly new medium.

In addition to asking ‘What is Digital Exhibition?’ the author has concerned himself with why the answer to this question is not already clear – in other words, having determined that there were contradictory notions within the established definitions of the phenomenon, the author began to question why there should be such a lack of consensus as to what Digital Exhibition is.

Relating to this latter issue, in Part Two of this chapter it will be presented that the conflicting discourses examined offer interpretations of Digital Exhibition which appear to support the conflicting political-economy ideologies of their originators. For example, the Hollywood studios offer an interpretation of Digital Exhibition which renders low-cost independently distributed features films as something other (less) than the cinema, and the American National Association of Theatre Owners (NATO) offers an interpretation which would designate as ‘not cinema’ any low-resolution presentations, such those which might occur in venues that don’t specialise in the presentation of filmed entertainment. Conversely, the UK Film Council (UKFC) offers an interpretation of Digital Exhibition which applies the cinema designation to every one of the systems (low-end and high-end) which they have invested in (an investment totalling nearly £14million).

In addition to the contrary responses of these organisations to the potential for Digital Exhibition to democratise distribution and exhibition, and in addition to their each being guided by a (competitive) want to garner a return on any investments made, it will be presented that there is a related, and *almost* unilateral, want to distance Digital Exhibition from television. It is presented that this want stems from a general perception that the cinema is a superior medium to television – and that audiences might be dissuaded from experiencing Digital Exhibition if it was thought to be television.

In relation to this, it is also presented that the few parties who have attempted to designate Digital Exhibition as television may also have political economy motivations - in so much as they would *rather* potential customers were dissuaded from purchasing tickets that might contribute to the funding of further digital installations, because they feel an emotive attachment to the medium of physical film.

Ultimately it will be concluded that all the discourses examined in this chapter do stem from ideologically biased sources, and therefore the interpretations which they present must be very thoroughly scrutinised before being accepted as academically pertinent.

## **Chapter Three, Part One:**

### **The Established Definitions of Digital Exhibition –**

#### **An introduction to pertinent meaning making discourses.**

As detailed in Chapter Two (p.26), the sub units of analysis addressed within this study are the established (principally commercially and politically derived) interpretations of Digital Exhibition. In Chapter Two, these interpretations were categorised as:

- Those commercially and politically derived interpretations of Digital Exhibition which present the phenomenon to be a form of the cinema,
- Those definitions which present Digital Exhibition as pertaining to multiple media, Those interpretations of Digital Exhibition that present the phenomenon as being a form of television,
- Those definitions which present the phenomenon not as a new form of any other media, nor something that provides access to any other media, nor something that becomes any other media, but as a wholly new medium unto itself.

The political economy of these approaches to applying a meaning to the phenomenon of Digital Exhibition will be addressed below.

### **3.1.1 Those interpretations of Digital Exhibition which present the phenomenon to be a form of the cinema.**

The discussion below focuses upon three bodies of discourse which attempt to define Digital Exhibition through the application of a nomenclature that designates it as ‘cinema’. In the examined texts the case phenomenon is referred to in two parts – these ‘parts’ being ‘electronic cinema’ (e-cinema) and ‘digital cinema’ (d-cinema).

The definitions of these terms will be addressed over the following pages.

The specific discourses examined are sourced from the British Governmental Department for Culture, Media and Sport (DCMS), the UK Film Council (UKFC) and the ‘European Digital Cinema Forum’ (EDCF). A brief overview of these organisations, and their goals, is presented below.

Established in 1997, the DCMS is responsible for British governmental policy on cultural issues which might concern (for example) museums and galleries, broadcasting, and the national film industry (About us, n.d. a). It is stated within DCMS literature that they specifically “aim to help create a sustainable, stable and successful film industry that brings both cultural and economic benefits to the UK” (Film, n.d.).

Established in 2000 as a non-departmental public body, the UKFC are “the Government-backed lead agency for film in the UK” (About us, n.d. b). According to their website they “fund script development, film production, short films, film export and distribution, cinemas, film education, culture and archives, festivals and audience support schemes” (Funding, n.d.). It is also declared on the UKFC website that they are “here to make sure that the UK has a dynamic film industry fit for the digital age and to help UK audiences enjoy the best of British and world cinema” (Strategy, n.d.). As stated by Ciar Byrne, “The Film Council is funded from a combination of government grants and lottery money” (2005).<sup>23</sup>

The EDCF was formed in Stockholm on June 13<sup>th</sup> 2001, following a ‘liaison’ between several European publicly funded bodies; The Swedish Work Group for E-cinema (a division of the Swedish Film Institute<sup>24</sup>), the Department of Trade and Industry/DCMS Group on Digital Film Production and Distribution (UK), and Groupe de Travail Cinéma Numérique (CNC<sup>25</sup>/CST<sup>26</sup> - France). According to the organisation’s own literatures, the group’s purpose is to facilitate the “successful deployment” of ‘digital cinema’ across Europe, where ‘successful deployment’ means:

- Most of the cinemas are included
- Film distribution is preserved, particularly the independent sector
- Digital cinema is treated as an opportunity for the cultural heritage of cinema
- No films are excluded from digital distribution and exhibition

(What is EDCF?, n.d.).

With regards to funding, it is stated within the group’s ‘foundation document’ that this shall come from “contributions made by the participating companies, institutions, organisations and persons” as well as “contributions made by public sector organisations, businesses and international organizations” (EDCF Foundation, 2003, p.5).

### ***Defining Electronic Cinema***

*DCMS*: In a paper commissioned by and made available through the DCMS it is stated that,

“Electronic Cinema is the family name given to any means and any content shown electronically or digitally to a public audience in an out-of-home environment”

(Screen Digest Report, 2002, p.35).

*UKFC*: In a paper, made available through the UKFC, Neil Watson & Richard Morris state that ‘e-cinema’ represents,

“the use of digital technology”

In order to

“distribute and exhibit a wide range of moving image material to groups of people in a wide variety of venues”

(2002, p.4).

*EDCF*: Similarly, Lasse Svanberg, a founding member of the EDCF, suggests:

“e-Cinema should be considered an umbrella concept that embraces electronic and digital screenings of all kinds of moving images in cinema or cinema-like public premises”

(2001, p.78).

### ***Defining Digital Cinema***

*EDCF*: Following from his definition of ‘e-cinema’, Svanberg goes on to state that the term ‘digital cinema’ should be used to reference,

“the high-end of e-cinema, meaning, for the most part, screenings of new feature films in large first-release cinemas equipped with digital presentation techniques that deliver an audiovisual quality comparable to, or better than, 35mm film answer prints”

(2001, p.78).

*DCMS*: Similarly, within the above cited DCMS commissioned paper ‘digital exhibition’ is defined as being,

“equivalent or superior in terms of resolution, contrast and colour spectrum – to that of standard 35mm film stock” (Screen Digest Report, 2002. p.35).

Furthermore, within that same paper it is stated that ‘digital cinema’ is,

“not a generic term for any form of digital image acquisition or projection, nor is its use to be associated with that of non-feature film content or projection outside traditional cinemas” (ibid, p.78).

*UKFC*: Comparably, Watson & Morris (writing for the UKFC) consider the term ‘digital cinema’ to designate,

“the projection of full-length feature films to audiences in purpose-built cinema where the quality of projection is not less than that provided by current 35mm technology”(2002, p. 5).

In essence it seems as if the discourses of the EDCF, DCMS and UKFC are allied in presenting an understanding that (as specifically expressed by Svanberg) the term ‘digital cinema’ “represents a digital ‘non-celluloid’ extension of the traditional cinema industry” (2001 p.78).

***Political Interpretations: Unwelcome Interventions***

As stated above, the EDCF, the DMCS and the UKFC are each, in some way, publicly funded. It is significant to note, therefore, that the discourse of at least one industrial organisation strongly implies that political bodies should not be involved in the meaning making processes surrounding Digital Exhibition. The organisation of note being the 'International Union of Cinemas' (UNIC – 'Union Internationale des Cinémas').

According to UNIC's own literature, this group is a union of "national associations of cinema owners of eighteen mainly European countries"<sup>27</sup> (UNIC, n.d.). With regards to the operational goals of UNIC, within their own literature it is expressed that: "As the organization representing the overall and diverse interests of its membership, UNIC serves to protect the position of cinema exhibitors" (About UNIC, n.d.). With further regards to their overarching goals, it is stated that: "Within UNIC, exchanges of views and information take place on the development of the exhibition market in particular, and on the film industry in general. The main issues are windows<sup>28</sup>, piracy and digital cinema" (ibid).

In a paper published by the 'European Commission'<sup>29</sup> it is written that UNIC consider:

"only those involved in this [the cinema exhibition] market should have to agree on the possible launch of digital cinema and on a common definition of a digital standard"

(Commission staff working paper, n.d., p.5).

Further to this, the European Commission paper details that UNIC propose:

"it is not the role of the Commission to anticipate the development of a competitive private market nor to encourage the artificial creation of new cinemas in this way" (ibid).

Although the discourse of the International Union of Cinemas was written with specific focus on the European Commission, it would certainly seem probable that UNIC would include the British Governmental Department of Culture Media and Sport, and even the EDCF as inappropriate bodies to be involved in the defining of 'digital cinema'. Furthermore, whilst the UKFC *is* involved in the exhibition market (meeting one of UNICs stipulated requirements for being involved in the launch of 'digital cinema'), it is imagined that UNIC would still be scornful of this publicly funded body being actively involved in both the processes of defining 'digital cinema' and the 'creation of new cinemas' through its 'the digital fund for non-theatrical exhibition'.

Ultimately, despite the possible protestations of UNIC, and despite their separating the case phenomenon into two parts, the author considers that the discourses of the DCMS, UKFC and ECDF promote a significant unified understanding as to the case phenomenon. This being that, Digital Exhibition is, in its entirety, an extension to the medium of the cinema. Whilst the designation of 'digital cinema' is reserved only for that 'part' which imitates contemporary 35mm feature film presentation, the phenomenon, as a whole, is still designated as being an 'electronic' type of 'cinema'.<sup>30</sup>

However, it is recognised that each of these organisations are principally publicly funded, and as is expressed in Chapter Two (p.59) Peter Golding and Graham Murdock state that the 'critical political economy' method of analysing the processes of meaning making (as performed by a diverse array of media groups) is "centrally concerned with the balance between capitalist enterprise and public intervention" (2000, p.70). Furthermore, and is also expressed above, Golding and Murdock state that the political economy approach "sets out to show how different ways of financing and organizing cultural production have traceable consequences for the range of discourses and representations in the public domain" (2000, p.72). Therefore, before performing a comprehensive political economy analysis of the established interpretations of Digital Exhibition, the author found it necessary to examine some meaning making discourses sourced from capitalist enterprises.

### **3.1.2 Those interpretations of Digital Exhibition which present the phenomenon as pertaining to multiple media.**

In discourses which present Digital Exhibition as pertaining to multiple media, the phenomenon is again commonly found to be referred to in two parts; ‘digital cinema’, and everything else that does not reach the standards of ‘digital cinema’ (as determined by those parties producing such discourses). The specific texts examined are sourced from an industrial coalition of (mainly North American) exhibitors - known as the National Association of Theatre Owners (NATO), and two collaborative bodies of the major Hollywood studios; The Motion Picture Association of America (MPAA) and the Digital Cinema Initiatives (DCI). An overview of these organisations and their goals is presently directly below.

The major Hollywood studios play an unquestionably domineering role within the global ‘film’ industry. As presented by Finola Kerrigan, figures from the European Audiovisual Observatory (EAO)<sup>31</sup> show that “19 of the top 20 films by box office revenue for 2007 were US films or US/European co-productions” (2010, p.18). According to Kerrigan: “This shows that US, or to be more specific, Hollywood films are dominating the box office across the European Union”, adding that: “This pattern of box office domination is evident in the majority of film markets” (ibid). According to Allen J. Scott: “At the present time, there are seven major studios in Hollywood: Metro-Goldwyn-Mayer, Paramount Pictures, Sony Pictures Entertainment (Columbia-Tristar), Twentieth Century Fox, Universal Studios, Walt Disney and Warner Brothers” (2004, p.42) . Scott further states: “These seven majors are joined together in the Motion Picture Association of America (MPAA)” (ibid).

One of the main ways by which the MPAA (Hollywood) studios profit from their feature-film productions (beyond product placements, brand merchandising, DVD rental/retail, network/pay-per-view television contracts and non-theatrical licensing - e.g. oil-rig, in-flight, hotel, military entertainments, etc) is by taking a negotiated percentage share of the box-office revenue from exhibitors.<sup>32</sup> Furthermore, according to Edward Jay Epstein: “Studios’ distribution arms also handle films produced by independent and foreign filmmakers” (2005, p.115). Epstein goes on to state: “For this service, they usually charge one third of all the revenues from theatres”, adding that this charge is incurred “after they re-cover all the advertising, print and other marketing expenses” (ibid).

In March 2002 a second ‘joining’ of the seven studios occurred – this collaboration was originally called ‘Newco’ but the name was changed within months to ‘Digital Cinema Initiatives’ (DCI). According to DCI literature, the group was conceived “as a joint venture of Disney, Fox, MGM, Paramount, Sony Pictures Entertainment, Universal and Warner Bros. Studios” (DCI announces completion of overall system requirements, 2004).

It is of note that both the MPAA and the DCI have openly sought to create a categorical definition of ‘digital cinema’ through their discourses – including two of those examined below, which are respectively entitled ‘Goals for Digital Cinema’ and the ‘Digital Cinema System Specification’. It is of further note that Mike Goodridge reports that the DCI has indicated a global agenda. Goodridge cites a ‘studio statement’ as detailing that:

“We are working on adopting standards to be used in the US although our long-term goal is inter-operability with deployments by others worldwide” (2002).

In addition to each of the Hollywood studios, the ‘National Association of Theatre Owners’ (NATO) can also be seen to be an American organisation with a significant influence on global perceptions of Digital Exhibition. This significant level of influence is due to NATO being (as is stated within their own literature), “the largest exhibition trade organization in the world, representing more than 26,000 movie screens in all 50 states and in more than 40 countries worldwide” (Who We Are, n.d.). In a communication with the author of this thesis, David E. Binet, Membership Services Coordinator of NATO, expresses that:

“NATO’s primary source of funding comes from dues from its members”  
(2009).<sup>33</sup>

Of NATO’s primary source of funding, it was announced, in a 2004 Business Wire news article, that NATO “counts among its membership every major North American motion picture exhibitor and hundreds of smaller independent companies” (Exhibition Giant AMC Entertainment Joins, 2004). In that same Business Wire article NATO President John Fithian is cited as stating: “the exhibition industry has never stood more united” (ibid). With regards to the role of NATO in defining Digital Exhibition, the group’s official Internet site declares:

“NATO takes an active role in seeking out and influencing the development and implementation of new technologies for the benefit of its members”  
(Why you should join NATO, n.d.).

### ***Defining Digital Cinema***

Much like those interpretations of Digital Exhibition which present the phenomenon to be a form of the cinema, those discourses which suggest that the case phenomenon pertains to multiple media commonly use the designation ‘digital cinema’ to reference the electronic replication of practices commonly associated with film-based cinema.

*NATO*: Writing on behalf of NATO, Michael Karagosian, (who is described as the ‘Digital Cinema Consultant’ to NATO<sup>34</sup>) states his consideration that:

“the accepted definition of digital cinema is the art of presenting first-run motion pictures”  
(2003).

Referring to this definition in a separate paper, Karagosian writes:

“I defined cinema as the art of presenting motion pictures. The term digital cinema simply means we are applying digital technology to the art”  
(2004).

*MPAA*: In a paper published by the MPAA it is stated, of ‘digital cinema’:

“The system should be based around global standards so that content can be distributed and played anywhere in the world as can be done today with a 35mm film print”  
(Goals for Digital Cinema, 2000).

Despite drawing such overt associations between digital and film based systems, and contrary to the discourses presented in 3.1.1, the discourses of the MPAA, DCI and NATO present that Digital Exhibition presentations must actually rise above the image quality of 35mm film if they are to be interpreted as a digital form of the cinema – as detailed below:

*MPAA:* In the same MPAA sourced text as is cited above it is stated of ‘digital cinema’:

“its quality must exceed the quality of a projected 35mm ‘answer print’”  
(Goals for Digital Cinema, 2000, p. 1).

*DCI:* Within the ‘standards setting’ discourse of the DCI it is determined that:

“The Digital Cinema system shall have the capability to present a theatrical experience that is better than what one could achieve now with a traditional 35mm Answer Print”  
(Digital Cinema System Specification v1.0, 2005, p.17).

*NATO:* NATO president John Fithian expresses that:

“I’ve heard some commentators say that digital projection is just as good as film. That isn’t enough”  
(2002 a).

Following from this Fithian asks:

“Why change to an expensive, unproven technology to get an experience that is ‘just as good’ as we have now?” (ibid).

Fithian ultimately asserts:

“Digital cinema must be better than film” (ibid).

### ***Defining ‘Other Digital Stuff’***

As detailed in 3.1.1, there does exist another set of discourses which present Digital Exhibition as a phenomenon of two parts, whereby one part is presented as replicating the generic practices of contemporary film based movie exhibition, and the other part is presented as pertaining to the provision of alternative entertainments, i.e. ‘alternative contents’, content in ‘alternative venues’, and presentations in resolutions lower than 35mm film. In those discourses addressed in 3.1.1, that aspect of Digital Exhibition presented as aping film based exhibition is specifically referred as being ‘digital cinema’, whilst the other (‘low-end’) aspect is not granted a unique identifier. However, despite this ‘low-end’ of Digital Exhibition being given no specific designation, both aspects of the phenomenon are still referenced as pertaining to the cinema - under than ‘family name’ (or ‘umbrella concept’) of electronic cinema, or e-cinema.

With this latter point in mind, it is significant to note that Patrick von Sychowski, a senior analyst at the London based media consultancy organisation ‘Screen Digest’, finds that, “the term Electronic Cinema itself can be problematic, whether abbreviated as eCinema, E-Cinema or plain e-cinema” (2000, p.11). In fact, von Sychowski goes so far as to claim that the “film industry” chooses not to use the phraseology of ‘e-cinema’ due to the potential association with ‘e-commerce’ and a concern that “digital delivery and exhibition of mainstream films in cinemas could become confused in the mind of the public with the streaming of films over the Internet” (ibid). If this is found to be true, and ‘film industry’ *has* rejected the overarching nomenclature of ‘electronic cinema’, then whilst the ‘high-end’ of Digital Exhibition will still be referred to as ‘digital cinema’, the ‘lower-end’ of the phenomenon will be denied its ‘cinema’ designation, essentially implicating that it must pertain to something that is ‘not-cinema’.

Indeed, as alluded to by von Sychowski (2000), the MPAA, the DCI and NATO each do not commonly employ the terms ‘electronic cinema’ or ‘e-cinema’ within their discourses. Furthermore, having rejected these expressions, neither the DCI nor the MPAA designates any title to those aspects of Digital Exhibition which fail to meet their ‘specifications’, or ‘goals’, for digital cinema. In fact such aspects of Digital Exhibition are scarcely acknowledged within the discourses of these organisations.

Significantly, the discourses of NATO *do* make reference to those aspects of Digital Exhibition which don’t meet the organisation’s criteria for ‘digital cinema’. NATO representative have even offered these aspects of the case phenomenon a specific designation. However, the language employed by the cinema exhibition organisation may ultimately be considered just as dismissive as the taciturnity of the MPAA and DCI – and again implicitly suggests that ‘lower quality’ aspects of Digital Exhibition are something ‘other’ than cinema.

Referring directly to the phenomenon of Digital Exhibition, NATO consultant Michael Karagosian claims that “theatrical presentation can be divided into two classes, one having the highest quality possible, the other less restrictive in quality” (2003). With regards to this claim, and his afore cited statement that ‘digital cinema’ represents the “art of presenting first-run motion pictures”, Karagosian considers: “Our definition of digital cinema allows us to split the universe of theatrical presentation into digital cinema and everything else” (ibid). Karagosian expressly adds that: “The common language applied to ‘everything else’ is ‘alternative entertainment’ or ‘other digital stuff’” (ibid).

Notably, within the DCI's published 'Digital Cinema System Specification' document, it is categorically stated that the "digital cinema system" should "not preclude the capability for alternative content presentations" (Digital Cinema System Specification v1.0, 2005, p3). It appears, therefore, that the Hollywood studios consider that 'alternative content' can fall within the remit of 'digital cinema' (providing it achieves an appropriate image resolution) – directly conflicting with the statement of NATO's 'digital cinema consultant'.

However, it appears that Karagosian might not have accurately reflected the *official* NATO stance in his discourse. In an NATO published newsletter, NATO President John Fithian also openly contradicts Karagosian's consideration that the designator 'digital cinema' can only apply to 'first run motion pictures'. In this text Fithian proposes that: "Digital cinema technologies would make it easier for our members to show musical concerts, sporting events, fine art entertainment, business theatre, religious events, and even educational programming" (2001, p.113). Furthermore, Fithian adds that: "Motion pictures will always be our biggest business. But digital cinema may open new doors to essential new revenue streams" (2001, p.120).

The origin of the incongruities within these discourses, quite probably stems from the fact that Fithian himself is often credited with coining the term ‘Other Digital Stuff’ (ODS) in order to describe non-Hollywood feature film content.<sup>35</sup> However, a report from the Society of Motion Picture and Television Engineer<sup>36</sup> (SMPTE)’s ‘digital cinema summit’<sup>37</sup> implies that when Fithian first publicly presented the term ODS he did not necessarily mean to associate it with ‘alternative content’ per se, but rather he was making reference to presentations with a low image quality. In this report, Bob Smith cites Fithian as declaring: “Lately ‘digital cinema’ has been mistakenly applied to endeavors that are not actually cinema quality presentations”, adding: “‘Other digital stuff’ or ‘ODS’ is what I call what Kurt Hall and Regal CineMedia are doing (with low-resolution pre-show advertising). It’s what Landmark and Microsoft are planning on doing (with low-quality independent film screenings)”<sup>38</sup> (2003). The reasons as to why the DCI and NATO might wish to prevent ‘alternative contents’ from being branded ‘ODS’ are discussed in 3.2.1 below.

Ultimately - despite any ambiguity as to whether or not the provision of ‘alternative content’ should automatically relegate Digital Exhibition presentations to the status of ODS (as opposed to a digital brand of the cinema) - the rejection of the term ‘electronic cinema’ as a designator for the entirety of the phenomenon still renders *some* aspects of Digital Exhibition as ‘not cinema’.

### **3.1.3 Those interpretations of Digital Exhibition that present the phenomenon as being a form of television.**

NATO and the Hollywood studios present that Digital Exhibition pertains to multiple media, one of which is the cinema - the remainder being undefined ('stuff'). Notably however, there are some discourses which appear to offer a definition for the 'stuff' that adds to the make-up of Digital Exhibition. Designating the phenomenon as pertaining to the cinema, but describing the technology as pertaining to the lineage of television, these discourses suggest Digital Exhibition to be some sort of hybridisation of the two. For example, writing in a paper for media-industry consultants 'Screen Digest', Patrick von Sychowski expresses that "each development in television – colour, higher definition, video-taping, and most recently compression and encryption – also brought the concept of e-cinema closer to realisation" (2000). Even Michael Karagosian recognises, in a NATO newsletter, that "digital cinema has more in common with digital television than any other technology" (2001 a). When considering whether this interpretation comes from any political sources, it is notable that von Sychowski details how "the International Telecommunications Union -- a body of the United Nations that focuses on radio frequencies and issues of communication between countries -- tried to mandate HDTV, which offers an image that is 1.9K, as the global d-cinema standard" (2003 c). Moreover, a document sourced directly from the International Telecommunications Union (ITU)<sup>39</sup> states that as a group they consider 'D-cinema' to represent, "the merging of television and cinema technologies" (ITU and The Big Screen, n.d.).

Significantly, whilst each of these discourses still suggests that the phenomenon pertains to the cinema (at least in part), others consider this entirely erroneous. For example, Albert Abramson, who was employed for thirty years by the American television broadcaster CBS (Columbia Broadcasting System), claims, with regards to big-screen entertainment, a personal want for “a more efficient and less costly means of production and distribution” (2003, p.268). Of this want, Abramson offers “By the year 2000 it has finally begun to come to fruition”, adding however:

“Instead of being called large screen theater television (which it is),  
it is called E-cinema”  
(2003, p.268).

Similarly, Godfrey Cheshire, chairman of the New York Film Critics Circle, declares: “The end of film will help hasten cinema toward past-tense museum status” (1999). Cheshire declares Digital Exhibition to be “the overthrow of film by television” (ibid), stating that this amounts to “a dissolution of cinema aesthetics and the enforced close of cinema’s era in the history of technological arts” (ibid).

***Digital Exhibition as Television: The Response***

Patrick von Sychowski expresses that, 'Hollywood' "fiercely resisted" the ITU's aforementioned proposal that HD should be mandated as the standard for 'digital cinema' (von Sychowski further expresses that the "The entertainment constituency within the European Union also rejected the notion" [2003 c]). Indeed, the notion that Digital Exhibition might (in any way) pertain to television has led to fierce resistance, and an ultimate rejection, from many of commentators representing those organisations' who's meaning making discourses have already been addressed within this chapter.

*NATO*: NATO consultant Michael Karagosian who (despite proposing that 'digital cinema has more in common with digital television than any other technology') resolutely presents his opinion (in an alternative paper) that: "Digital cinema is not television – it is much more complex, flexible, and quality-oriented" (n.d. a).

Furthermore, of one particular Digital Exhibition system (installed by Landmark Theaters, and discussed in greater detail in Appendix 5: The Landmark Case), NATO president John Fithian announced: "It's for small independent movies for small screens. But its not Digital Cinema" (2003). The specific reason Fithian gives for denying this system 'digital cinema' status is that the planned projectors were "designed for television-quality video" (ibid).

*DCI*: The Hollywood studios, through the discourse of the DCI, also appear to have made an effort to disassociate that which they call ‘digital cinema’ from television. This has been attempted by making it explicit that their definition of ‘digital cinema’ pertains only to technologies which exceed the capabilities of existing high definition (HD) television systems (in complete opposition to the proposal of the ITU). Indeed, Walt Ordway, Chief Technical Officer of the DCI, categorically states of this effort: “The thrust of what we’ve been doing at DCI, is trying to define a specification for a system that starts at just a little bit more than HD and goes to 4K”<sup>40</sup> (Lines of Resolution, 2003).

*DCMS*: Beyond NATO and the DCI, it was found that those commentators who embraced the notion that all aspects of Digital Exhibition should be considered as pertaining to the cinema (i.e. electronic cinema) were hesitant to embrace the notion that the any aspect of the phenomenon might also be television. For example, in the previously cited paper, issued by the British Government through the DCMS, it is stated that:

“Although a commentator in *Sight and Sound* magazine dismissed the Celluloid or Silicon road-show’s<sup>41</sup> demonstration of the capabilities of electronic cinema as ‘television writ very large indeed’, it is difficult to predict what crossover there will be between television and e-cinema in the future” (Screen Digest Report, 2002, p.45).

This discourse indicates that the author of the paper considers the potential for ‘e-cinema’ (i.e. Digital Exhibition) and television to ‘crossover’, but also that they are not the same.

### 3.1.4 Those interpretations of Digital Exhibition that present the phenomenon as being a wholly new medium.

Whilst still using the prevailing vernacular (i.e. digital / electronic cinema), it is significant to note that several commentators have implied that Digital Exhibition does not (in any part) pertain to the cinema, or television, but is a wholly new medium. For example, with reference to the ‘newness’ of Digital Exhibition, Dr James A. Clark and Michael W. Bruns (of broadcast technology provider Thompson Grass Valley) declare:

“The digital cinema revolution is not just a change in the technology of the medium. It is a completely new system that will add a variety of experiences for the viewing customer” (2000, p.1).

Clark and Bruns go on to suggest that “It will change the way theatres do business, with the possibility of new revenue sources, new cost structures and new players” (ibid). Clark and Bruns even suggest that these new business models will “obsolete the term ‘film exhibition industry’ in favor of a more general term such as ‘theatrical presentation industry’” (ibid). Correspondingly, Patrick von Sychowski claims that “e-cinema is more than just a technical upgrade for film” adding, more explicitly, that:

“It [e-cinema] is an entirely new medium whose full potential and eventual implications we cannot yet grasp” (2000, p.11).

Furthermore, despite his use of the term ‘digital cinema’, and ardent support of the interpretation of Digital Exhibition as pertaining to multiple media, even NATO consultant Michael Karagosian claims of Digital Exhibition:

“It [digital cinema] is more than an upgrade from film, it is a whole new medium” (2000).

Notably, whilst Karagosian finds it to be a ‘*whole*’ new medium<sup>42</sup>, one commentator implies that the ‘new medium’ aspect of Digital Exhibition is just one of the multiple media to which the phenomenon pertains (the *new* medium being 3D motion pictures).

Lenny Lipton (co-chair of the American Society of Cinematographers Technology Committees' subcommittee studying stereoscopic cinematography) is cited by Mike Seymour as expressing: "Digital technology – content creation, post-production, and projection – has enabled the stereoscopic medium to become a part of the filmmaking armamentarium; not only to provide beautiful projection but to provide a dependable product, free from the mistakes of the past" (2008). Significantly, Seymour further cites Lipton as adding that:

"today's modern 3D digital projection is free from fatigue and eyestrain, and can now allow content creators to do their best to discover the art of this new medium" (2008).

As if in direct (pre-emptive) dismissal of Lipton's claim that stereoscopic Digital Exhibition pertains to a new medium (as well as offering an implicit contradiction of Clark and Bruns' consideration that Digital Exhibition will obsolete the term 'film exhibition industry') a 2005 press release from digital projector manufacturer 'Barco' states that: "3D stereoscopic technology used in digital cinema is a new application of film entertainment and is becoming a development trend welcomed by the film industry" (Barco Digital Cinema projector performs, 2005). Whilst this statement lightly embraces the notion of newness (in its claim that 'digital cinema' offers a 'new application of film entertainment') it ultimately stops far short of suggesting the phenomenon to be a new medium. Indeed, the notion that Digital Exhibition is (either in part or as a whole) a new medium has not become one of the *prevailing* interpretations of the phenomenon.

In the following section of this chapter, the author will attempt to build a political economy centred explanation as to *why* the discourses examined above were composed in such ways that they inculcate specific, and seemingly influential, 'meanings' of Digital Exhibition.

## Chapter Three, Part Two:

### **Explanation Building: The forces of Political Economy have influenced the composition of Meaning Making discourses.**

Eileen R. Meehan et al (1994) broadly define ‘political economy’ as being about ‘survival’ and ‘control’. Meehan further states that one of the central issues about which research in this area is concerned is the question of how institutions “maintain order to meet economic, political, social and cultural goals” (1994, p.349). Oliver Boyd-Barrett writes that, when carrying out political economy research, “the different media sectors cannot be studied in isolation, as they are interlinked through corporate control, and their activities can only be understood with reference to the broad economic context” (1995, pp.188-189). Moreover, Boyd-Barrett suggests that studies of ‘political economy’ must demonstrate “how the political-economic formation of the media is related to media content, and to the discourses of public debate and private consciousness” (1995, p.190).

With specific regards to how Digital Exhibition is being interpreted, this chapter has already broadly begun to establish how the ‘political-economic formations’ of interlinking media organisations relates to the ‘discourses of public debate and private consciousness’.

This section will further address the specific relationships between those organisations which have produced Digital Exhibition's prevailing interpretations – showing, for example, that Hollywood and NATO to have an economically symbiotic partnership, whilst presenting that the investigated (financially co-related) European bodies see Hollywood as a domineering competitor. With further reference to the cited definitions of political economy research, this section will also address the specific (and interlinking) 'economic, political, social and cultural goals' of the pertinent parties.

Ultimately, over the following pages will be presented an assessment as to the possibility of building an explanation about the composition of established interpretations of Digital Exhibition, whereby it is considered that the explored organisations and individuals directly aimed their interpretative discourses at achieving their ideological (political/economical) goals.

### 3.2.1 Meaning Making as a reaction to the potential

#### Democratisation of Public Exhibition

##### *The Hollywood Studios (MPAA & DCI)*

As noted above, Allen J. Scott details that: “At the present time, there are seven major studios in Hollywood” (2004, p.42). Scott then further states: “These seven majors are joined together in the Motion Picture Association of America (MPAA), which functions as an exclusive cartel promoting their interests” (ibid). With regards to what the Hollywood studios’ interests are, British film producer David Puttnam is cited, within the summary of a panel discussion prepared by the Council of European Responsibilities (COEUR)<sup>43</sup>, as stating: “Hollywood dominates the world's cinema screens, while it is itself dominated, solely, by the tyranny of the bottom line” (Europe, a culture of shared causes?, 1999).

Contradicting Puttnam’s use of the word ‘solely’, the vice president of Digital Exhibition technology providers ‘Qualcomm’, Stephen Morley, asserts (in a communication with the author of this paper) that, in addition to ‘the bottom line’, ‘power’ is also of significant interest within Hollywood. Offering a further intimation that the Hollywood studios operate as a protectionist cartel, and with specific reference to their attitudes towards Digital Exhibition, Morley states:

“The ONLY reason studios will accept a new technology is if it

- 1) keeps the power base the same and
- 2) makes them more money.

If it doesn't do the first, it almost doesn't matter that it can do the second”.  
(25 May 2005)

To this statement Morley adds that: “Of course, power DOES change, but no one in the studios is going to pro-actively support any technology or business that they believe is going to change the power base” (25 May 2005). Ultimately Morley expresses:

“Hollywood is afraid that digital cinema will lead to the ‘democratization of theatres’ by allowing new media businesses to usurp the time on the screen that the major studios have locked for years. This is protectionism, plain and simple, but it has served the industry well since its inception and it isn't changing” (ibid).

Morley's declarations as to the Hollywood studios' fears concerning Digital Exhibition –the democratisation of exhibition and the usurping of their screen time by new media businesses - can be directly compared / contrasted to an statement by Landmark Theaters' CEO Paul Richardson. Richardson declared of an anticipated low-cost / low-resolution Digital Exhibition venture (which was ultimately abandoned by his organisation after it was designated as 'ODS' by NATO and failed to achieve recognition as 'digital cinema' by the DCI – as discussed in Appendix 5):

“I believe that we will look back at this moment as one when we were able to fundamentally change the business model in a way that will allow far more of these [independently produced] films to compete successfully”  
(Landmark Theatres and Microsoft, 2003).

The Landmark case is not the only instance of an application of Digital Exhibition which has promised to provide grounds for Hollywood's concern over the potential democratisation of big screen entertainment. As presented in Appendix 2: A Fundamental Overview of Digital Exhibition, the cases of low-budget releases such as *'The Last Broadcast'* and *'Dead Broke'* illustrate that less than 2K (i.e. lower-cost) Digital Exhibition can be (and has already been) used to eliminate the financial necessity of independent filmmakers to attain a distribution deal with the major Hollywood studios. With regards to this phenomenon, Spencer Ante cites Avos Weiler, co-producer of *'The Last Broadcast'*, as asserting: "The weakest link in the chain of digital filmmaking was distribution. Now, we're saying, 'Hey you can distribute this yourself'" (1998). Clearly, a successful system of self-distribution would not only threaten to lessen the power and the profit (screen dominance and consequential audience share) of Hollywood productions, but it would also eradicate the studio's power over filmmakers seeking distribution<sup>44</sup> - consequently effecting the 'bottom line' garnered from their domineering relationship with independents.<sup>45</sup>

It can now be considered that Morley's observations that "no one in the studios is going to pro-actively support any technology or business that they believe is going to change the power base" and "Hollywood is afraid that digital cinema will lead to the democratization of theatres" (ibid) provide the foundation for a political economy based explanation as to why (through their pointed refusal to recognise Digital Exhibition at HD resolution as 'digital cinema') the MPAA and the DCI have attempted to revoke the right of independent filmmakers to claim their works as pertaining to the cinema - when low-cost, i.e. below 2K, digital systems are used to presentation their productions.

## **NATO**

In addition to the Hollywood studios, it can also be considered that NATO might have concerns as to the democratising affects of Digital Exhibition. A further analysis of the discourses of NATO reveals that this organisation has two broad aims for Digital Exhibition; firstly to make sure that it does not disrupt existing power relationships, and secondly to ensure that America's exhibitors 'benefit' from its introduction.

Of the role that NATO has taken with regards to the standards definition work of the DCI, Michael Karagosian and G. Kendrick Macdowell (NATO Vice President, General Counsel and Director of Government Affairs) openly declare:

“our goal has been to retain the manner of doing business in a digital world as it exists today in the film world”

(2005, p.1).

Furthermore, as detailed above, the official NATO website candidly declares:

“NATO takes an active role in seeking out and influencing the development and implementation of new technologies for the benefit of its members”

(Why you should join NATO, n.d.).

NATO, as an exhibition trade organisation, is funded by its memberships and would consequently achieve growth (increasing its power and profit) should new exhibitors emerge (providing that those exhibitors were eligible<sup>46</sup> and wanted to join NATO).

However, at any given time the members which NATO profess to seeking benefit for represent the (mainly American) existing exhibitor market, i.e. NATO does not aim to benefit community centres, for example, wishing to enter the exhibition trade.

Therefore, as a consequence of the want to influence ‘the development and implementation of new technologies for the benefit of its members’, NATO is unlikely to support any system which might invoke significant competition to the existing exhibitor market, i.e. NATO would seek to lessen the significance of any technology which might democratise public exhibition – such as low-cost Digital Exhibition equipment. As stated in the DCMS paper cited above, Digital Exhibition technology “opens up the possibilities that non-cinema venues can be equipped with digital projectors to screen films, repertory features, alternative programming” (Screen Digest Report, 2002, p.38).

As detailed in Chapter One (p.113), in 2001 Giovanni Cozzi co-founded ‘Emerging Cinemas’ with the aim of bringing Digital Exhibition to ‘non-cinema venues’ in America. Peter H. Putman cites Cozzi as stating “Any college or university campus or community centre would be a natural fit. These venues already attract the types of audiences who would support alternative cinemas, and the facilities are usually adequate for theatrical presentation” (2001 a). Significantly, Michael Goldman cites Ira Deutchman, CEO of Emerging Pictures, as stating: “if we were to adhere to the letter of the DCI standard, the projection equipment plus server...it would [require] an investment of more than \$100,000”, and adding that: “it would be difficult for these facilities to have the bandwidth that would [be] required” (2008). Thusly, Emerging Pictures do not adhere to the DCI standard.

It is expressed on the Emerging Pictures website, of those DCI discourses which attempt to define 'digital cinema': "These guidelines do not take into consideration the capture - production formats used by the independent film and documentary creators nor the fact that art cinemas typically have smaller screens and more limited audiences" (The i-cinema Standard, n.d.). As a consequence, Emerging Pictures offer their own unique contribution to the nomenclature of Digital Exhibition, and have published their own 'guidelines' as to what they refer to as 'i- Cinema'. As stated in the Emerging Pictures literature, these guidelines "establish the minimum technology quality specifications for the digital cinema presentation of independent - international, (hence the "i" in i-Cinema features) documentaries and 'alternate content' programs" (ibid). Significantly, the Emerging Pictures 'i-cinema' specification *does* grant the 'cinema' designation to presentations employing 1.2K projection (minimum) – so long as the image offered by these projectors, on the specific screens which they serve, provides a "Faithfulness to the filmmakers vision and capture format" (ibid).

However, no matter how faithfully they might adhere to a filmmaker's vision, NATO does not designate any 1.2K schemes as cinema (digital, electronic, or even i-cinema). Rather, the discourses of NATO disavow all uses of low-cost Digital Exhibition equipment, and thusly categorise the experiences of Emerging Cinemas as ODS. As such, it can be positively stated that NATO's approach to defining Digital Exhibition directly reflects its desire to benefit its members, by protecting them from emerging cinema competition.

In addition to ‘Emerging Cinemas’, Landmark Theaters had planned to use non-DCI compliant equipment to exhibit independently produced films (see Appendix 5). As detailed above, Landmark Theaters’ President, Paul Richardson, had declared of their initial (and ultimately abandoned) Digital Exhibition scheme: “we will look back at this moment as one when we were able to fundamentally change the business model in a way that will allow far more of these [independently produced] films to compete successfully” (Landmark Theatres and Microsoft, 2003). That NATO condemned this scheme as ODS (as discussed in section 3.2) draws one to compare Richardson’s declaration regarding fundamental change to Karagosian and Macdowell’s statement that it is NATO’s goal for Digital Exhibition to, “retain the manner of doing business in a digital world as it exists today in the film world” (2005, p.1).

One possible explanation as to why NATO has not embraced the idea using of Digital Exhibition to revolutionise the existing business practices of film exhibition may simply be that they believe that these practices have been of benefit to their members, and that change may be to the detriment. For example, NATO might consider that any system which empowers independent ‘self-distributors’, i.e. promotes the ‘democratisation of theatres’, will ultimately impact upon the profitability of the Hollywood studios. NATO might also consider that if the Hollywood studios start making less money from the distribution of independent films to independent cinemas, they would be encouraged to offset this deficit by increasing the film rental fees<sup>47</sup> for mainstream movies, as charged to the bulk of NATO’s contributing members. Although John Fithian details that: “As a trade organisation, NATO does not involve itself directly in any issues relating to film rental charges” (2002 b, p.5), it should be recalled that: “NATO takes an active role in seeking out and influencing the development and implementation of new technologies for the benefit of its members” (Why you should join NATO, n.d.).

### ***NATO / Hollywood***

In addition to those democratising affects discussed above, it is plausible to consider that Digital Exhibition could bring about an end to the exhibitor's autocratic control over the operational practices of exhibition.

According to Alan A. Friedberg: "One of the areas of tension between distributor and exhibitor occurs when the exhibitor wants to remove a picture due to poor performance" (1992, p.349).<sup>48</sup> Notwithstanding any tension, John Fithian indicates that it is the exhibitor who makes the ultimate decision as to whether or not a film gets shown. According to Fithian, under the existing film based system, distributors ship content to exhibitors in metal canisters, and, "From that point on, as long as they comply with their contractual obligations, theatre operators control the show" (2001, p.113). Fithian clarifies this point, stating that "Exhibitors assemble their show elements and determine their screen time", adding: "In other words, movie theatre operators operate their business" (ibid).

However, Fithian also issues concerns relating to the possibility that the DCI defined security systems for 'digital cinema', designed to prevent unauthorised presentation, could actually lock the exhibitor out of the decision making process – with regards to which films (or alternative content) get shown, when and how often. Fithian expresses that 'in the digital world' "data controls", and that "he who has the digital keys controls the digital data" (ibid). In regards to this point Fithian ultimately asserts that: "Theatre owners do not want to be reduced to little more than brick-and-mortar businesses who build complexes that the studios then operate remotely" (ibid).

Such was Fithian's concern that in 2003 he, and Jan van Dommelen (president of UNIC), wrote an open letter to Charles Goldwater (CEO of DCI). In this letter the presidents of America's and Europe's largest exhibition trade organisations demand that "studios and exhibitors must find a way, through DCI or elsewhere, to answer the fundamental business issues that will control the manner in which security systems are deployed in cinemas" (van Dommelen, J. & Fithian J., 2003, p.3). Fithian and van Dommelen further decree that *all* participants "must agree to design any security standards in a manner that will not interfere with normal business operations within a cinema complex or change the competitive balance between exhibitor and distributor" (ibid). Fithian and van Dommelen ultimately express that without this agreement: "we will not support the continuing efforts of DCI" (ibid).

It seems that whilst NATO exhibitors hope that Digital Exhibition will increase their profitability, NATO would still be prepared to reject the technology if it meant that they could not "retain the manner of doing business in a digital world as it exists today in the film world" (Karagosian and Macdowell, 2005, p.1). NATO's proposed withholding of support from the DCI, thusly appears to represent a threat by the exhibition industry to refuse installation of that DCI compliant equipment which could save Hollywood \$millions in film handling fees. It can now be imagined that, whilst the studios might consider it an attractive proposition to augment their power within the industry, by taking control of exhibition operations, they would be prepared to negotiate a compromise.

Indeed, Hollywood studios (i.e. the DCI) and NATO must have been able to reach some agreement to the satisfaction of both parties. The year following the issuing of his warning that NATO would not support the DCI unless they reached an agreement around the definition of security systems, John Fithian made a declaration that:

“NATO has worked to support the efforts of DCI by meeting regularly with DCI executives and providing input, suggestions and commentary on the draft specifications as requested. DCI, in turn, has been very responsive to the input of our industry”  
(2004).

It might now be suggested that the harmonious relationship (which Fithian implies as existing) between NATO and the DCI has consciously led to the harmoniousness of their discourses on the subject of Digital Exhibition. It should be noted at this point that NATO’s members and the Hollywood studios have a somewhat symbiotic economic relationship. Whilst the majority of NATO exhibitors are economically reliant upon Hollywood product, the Hollywood studios require a significant income from the box-offices of NATO exhibitors in order to achieve profit<sup>49</sup>. With regards to their stances on Digital Exhibition, both parties hope to increase their profits through the application digital technologies - exhibitors hope that they might increase their profits by providing audiences with a greater range of content (and perhaps increasing ticket prices – as is discussed below), whilst the studios hope to save money through the elimination of print fees and transport costs (& increase their revenues through the exhibitors’ increase in ticket prices). Moreover, as discussed above, both parties would very much hope to lessen the significance of those ‘ODS’ technologies which might democratise public exhibition.

**DCMS, UKFC & EDCF**

As presented above, the language used by the American industrial groups NATO and the Hollywood studios consentaneously divides the phenomenon of Digital Exhibition into two parts – that which is cinema and that which is something else (i.e. something less). The literature of the European, publicly funded bodies UKFC and the DCMS, and that of the EDCF (a body of European, publicly funded organisations) similarly attempts to divide Digital Exhibition into two separate components. However, as detailed above, the discourses of these groups offer that the phenomenon *as a whole* pertains to the cinema, i.e. they refer to Digital Exhibition as ‘electronic cinema’.

An indication as to why all aspects of the phenomenon (including lower-than-35mm resolution systems) have been assigned the lauded designator of ‘cinema’ (as opposed to ‘ODS’, or a complete lack of recognition) within these discourses is evidenced in a statement (concerning Digital Exhibition) from the EUREKA<sup>50</sup> funded ‘Information Technology for European Advancement’ (ITEA)<sup>51</sup> cluster:

“While the motivation of Hollywood is to dominate global circuits, the Europe [sic] has broader aims, namely to support Europe’s indigenous film industry in the face of greatly increased global competition”  
(Creating a complete digital cinema chain, n.d.).<sup>52</sup>

*DCMS / UKFC*: Indeed, as stated above, the DCMS expresses an aim to “help create a sustainable, stable and successful film industry that brings both cultural and economic benefits to the UK” (Film, n.d.). In an official DCMS paper it is further stated that: “The Department for Culture, Media and Sport together with the UK Film Council is working closely with other Government Departments to identify how best we can work together to meet the industrial and cultural needs of the British film industry” (British Film Industry: Government Response, 2003, p.5). Reflecting this, the UKFC has expressed an aim to “maximise the exploitation of digital technologies as a key opportunity for the nations and regions of the UK to enhance their position within Europe and the global film economy” (Digital Technology Strategy, 2003, p.5).

*EDCF*: Similarly, EDCF literature states that the group “provides a focus for European D-Cinema interests and a channel to direct any issues to the appropriate national and international companies and agencies to ensure that European interests are served in all areas of D-Cinema deployment” (How to Join, n.d.).

However, despite the published aims of the DCMS and UKFC, Hollywood product still very much dominates Britain’s exhibition market. According to a UKFC publication, in 2008, UK productions (including UK/USA co-productions) held a non-dominant 30.7% share of Britain’s exhibition market (09 Statistical Yearbook, 2009, p.11). Meanwhile, according to the UKFC, Hollywood productions *were* dominant, with a 65.2% market share (excluding UK/USA co-productions) (ibid). Moreover, and perhaps somewhat skewing the statistics in the UK’s favour, within the list of UK/USA co-productions, which the UKFC counted only within the UK’s market share, were five of the top twenty films of that year; ‘*Mamma Mia!*’, ‘*Quantum of Solace*’, ‘*The Dark Knight*’, ‘*Chronicles of Narnia: Prince Caspian*’ and ‘*Sweeney Todd*’ (09 Statistical Yearbook, 2009, p.12).

Furthermore, despite the aims of the EDCF, Cécile Despringre (CEO of the Federation of European Film Directors) highlights that the situation in Britain is broadly reflected across the whole of Europe. According to Despringre, (in Europe) “European films achieved a market share of 24.6 percent in 2005” (2008, p.78). Despringre adds that films produced in Europe which benefited from incoming US investment (such as Harry Potter and the Goblet of Fire and Charlie and the Chocolate Factory) obtained a market share of 13.3% (ibid), whilst “US films totalled 59.9 per cent of market share and others only 2.2 per cent” (2008, p.78). Despringre ultimately concludes that: “At national level, markets are dominated by US films, complimented by national films and there is barely any space left for European non-national films” (ibid).

It seems, therefore, that the DCMS, UKFC and EDCF would embrace any system which could ‘fundamentally change the business model’ of content distribution presently in operation across Europe, so as to promote the distribution of each nation’s (Hollywood independent) output, both indigenously and across borders. It would also seem likely that these bodies would accept and present any such system as pertaining to the cinema - certainly, it is highly *unlikely* that any means of democratising exhibition, so as to facilitate each of these organisations’ stated goals, would be publicly denounced as being ODS - which as David S. Cohen of Variety magazine points out, when spoken out-loud, is actually pronounced ‘odious’ (2006).

### **3.2.2 Meaning Making as a Consequence of the want to elicit a Return on Investments**

It was as early as 2001 that, in a speech given at the National Institute of Standards and Technology (NIST)<sup>53</sup> 'Digital Cinema conference', John Fithian announced, "significant issues and challenges confront the potential transition, not the least of which is the issue of costs" (2001, p.113). Indeed since its inception, two questions have been at the forefront of the Digital Exhibition phenomenon- 'Who will pay?' & 'How can it done profitably?'

#### ***Investment by Hollywood (The MPAA & DCI)***

Mike Goodridge considers that the question of "Who will pay for the conversion of the lion's share of theatres" has been "a cause of conflict between distributors and exhibitors" (2002). Patrick von Sychowski adds that "NATO (National Association of Theatre Owners) has been involved in lengthy discussions with DCI, which has held direct talks with exhibitors while NATO has also been having direct meetings with the film studios, to try to resolve this vexed issue" (2004, p.135).

At the crux of the issue of 'Who will Pay?', according to von Sychowski, is that "Theater owners are adamant that it will not be them - at least, not bearing the bulk of the cost" (2003 d). In further regard to this point von Sychowski cites NATO's John Fithian as stating: "the studios stand to save millions of dollars in film print costs and distribution costs. We do not see any similar savings for cinema operators" (ibid).

In a similar vein, Russ Ferstandig (who Chris Marlowe (2002) describes as the 'founder and president of Mobius Research, founder and head of Miramax's Digital Cinema Initiatives and founder of the Electronic Cinema Initiative') is cited, by Peter H. Putman, as observing that (in 1999): "Theater owners are waiting for distributors to make the first move" (1999). Highlighting a further significant truism, Ferstandig adds that those distributors (i.e. the Hollywood studios) for whom the exhibitors waiting "won't want to invest money and not see a return on their investment" (ibid).

Eventually, in 2008, some of the Hollywood studios and some NATO member exhibitors apparently determined how costs could be allocated and covered between them. As reported by Jeremy Kay: “Disney, Paramount, Fox, Universal and Lionsgate are understood to have reached an agreement with AMC Entertainment, Cinemark and Regal Cinemas” (2008). Kay details that the agreement reached relates to the “structuring of virtual print fees to pay for the conversion process” (ibid). According to Carolyn Giardina, the term ‘Virtual Print Fees’ (VPF) pertains to a system whereby “studios agree to contribute a fee per screen, per movie to offset exhibitors’ installation costs” (2008).

From that presented in 3.2.1, it would seem fair to suggest that the Hollywood studios would have only ever been willing to invest in lower-cost Digital Exhibition systems if they could have absolutely ensured that those systems would not be used to usurp their dominance in the ‘independent’ film distribution business. In other words, Hollywood would have only invested in low-end Digital Exhibition if they were put in charge of determining presentation content. However, as detailed above, exhibitors are typically unwilling to allow the studios such control over their operations.

As such, the Hollywood studios have only agreed to sponsor exhibitors in the purchase of high-end DCI compliant systems<sup>54-55</sup>, under a VPF agreement which requires the exhibitors to make a significant initial investment (as will be discussed in more detail below), and which dictates that those exhibitors will only recoup any of that investment from the studios if (and when) they show content supplied by those studios.

As discussed above, Stephen Morley states that the ‘only’ reason studios will accept a new technology is if keeps the power base the same and makes them more money (25 May 2005). With the 2008 VPF agreement, it seems that the studios have been able to place exhibitors in a situation whereby they would be financially dependent upon the presentation of Hollywood distributed product, i.e. they have kept the power base the same. However, Morley suggests that both of his conditions must be met before the studios would accept a new technology – i.e. Digital Exhibition must make them *more* money.

According to figures provided by von Sychowski, in 2003, “the investment required to outfit the average 24-plex will be \$2.4 million-\$3.6 million - a staggering sum to recoup if ticket prices remain constant” (2003 d).<sup>56</sup> Indeed, whilst savings are to be made through the elimination of film handling costs, it can be considered that the Hollywood studios would still desire a direct return on their investment (the payment of virtual print fees) in the form of increased revenues. As is presented above, David Putnam considers: “Hollywood dominates the world's cinema screens, while it is itself dominated, solely, by the tyranny of the bottom line” (in Europe, a culture of shared causes?, 1999), and as Russ Ferstandig expresses, the studios “won't want to invest money and not see a return on their investment” (cited by Putman, 1999).

In order for the studios to increase the value of their share of the box-office revenues, exhibitors would have to attract larger audiences, and/or charge more for patrons to experience the Digital Exhibition version of a Hollywood production. It is fair to argue that for either of these outcomes to occur audiences would have to believe there to be some sort of value added to their purchase of a ticket for the ‘digital cinema’ (as designated by the studio and exhibitor) version of a movie - which they could also see (perhaps for less money) projected through film. This then offers an plausible explanation as to why the discourses of both the Hollywood studios and the exhibition body NATO proclaim that in order to be considered as ‘digital cinema’ Digital Exhibition must offer a visual experience *superior* to that attainable through physical film – which is (after all) currently considered to be of ‘cinema’ quality.

Evidence that audiences do believe ‘digital cinema’ to mean “better than film” can be found in the discourse of Craig Sholder, vice-president of entertainment solutions at digital projector manufacturer Christie. Sholder expresses that following a series of ‘key strategic investments in digital cinema’ which ‘can provide audiences with a superior movie viewing experience’, “Audiences are willing to pay premium ticket prices” (Christie Certifies Growing Number, n.d.).<sup>57</sup>

Another operational area requiring significant investment, from which the Hollywood studios demand a significant return, is the production of content. However, it must be noted that the content produced by the Hollywood studios is not limited to the standard fare of film based cinematic exhibition. Indeed, according Stanley I. Ornstein, each of the 'leading movie studio distributors' "produces movies and television shows, and many own television stations, cable systems, cable channels, theme parks, publishing and newspaper operations, professional sports teams, music firms, and retail outlets" (2002, p.283). With specific regards to the studio's interests in music production, Dave Laing details that the entertainment division of the Sony Corporation comprises of both the Sony Hollywood studio and 'Sony Music Entertainment' (SME) (2003, p.635). Laing continues to express that: "Worldwide SME is one of the top three music industry companies, vying for top position with Universal the Warner Music Group" (ibid). It is of significance to note that Sony, Universal and Warner are each represented within the Digital Cinema Initiatives group.

With regards to the broader range of filmed/videoed entertainments which the Hollywood studios have a financial stake in the production of (and reflecting the degree to which they have invested in this area), Eli Noam goes so far as to express that: "What the numbers show is that after 1996, the six major Hollywood studios have collectively dominated television production" (2009, p.110).<sup>58</sup>

That Digital Exhibition provides a new channel through which the studios can sell the varied entertainments which they produce (or which are produced by their affiliates) - such as music events (music videos, concerts/festivals), television shows, and even sporting fixtures - provides a clear economic rationale as to why it is unconditionally expressed within the DCI's 'Digital Cinema System Specification' document, that the "digital cinema' system should "not preclude the capability for alternative content presentations" (Digital Cinema System Specification v1.0, 2005, p3).

### ***Investment by NATO Members***

As discussed above, and as expressed by Patrick von Sychowski:

“There is an unspoken understanding between studios and cinema owners that 35mm print distribution cost savings should and will ultimately help pay for the coming large scale digital cinema installations, coupled with the acknowledgement that exhibitors should also ultimately own the equipment” (2004, p.135).

As is also discussed above, if the exhibitors are ultimately going to own the equipment, and they are not going to allow the studios direct control over that equipment, then the studios are going to demand that the initial investment in any such equipment is made by the exhibitors.

Despite the significant length of time it has taken for them to initiate an extensive program of Digital Exhibition installations (it has been over a decade since the first digital presentation of ‘*The Last Broadcast*’), it actually seems that if ownership (and control) is guaranteed to lie with them, broadly speaking, exhibitors are not wholly averse to investing in Digital Exhibition. In point of fact, in a paper published by the European Commission, European exhibition body UNIC suggests that:

“Digital cinema will only be able to develop if exhibitors consider it is to their advantage and if they have the opportunity to invest in it” (Commission staff working paper, n.d., p.5).

Much like the Hollywood studios, however, NATO member exhibitors are profit led enterprises (it is a specified condition that exhibitors must operate on a 'for profit' basis in order to join NATO), and therefore they require a return on any investments made. Consequently, it seems probable that, again much like the Hollywood studios, exhibitors would hope to attract larger audiences to (and charge an increased fee for) digital presentations, as well as achieving extra revenues from the presentation of 'alternative content'. Accordingly, and once more reflecting the situation with DCI and the Hollywood studios, NATO discourses are composed in a way that directly addresses its members' financial desires. For example, 'digital cinema' is presented as having an image quality superior to that of film based cinema, 'alternative content' is designated as 'digital cinema' (as opposed to ODS), and the phenomenon of Digital Exhibition is divided into two separately identifiable elements. This latter stroke can be considered as 'educating' audiences as to the differences between 'high' and 'low-end' installations, helping those audiences identify which exhibitors have installed 'high-end' equipment, and discouraging them from patronising independent (of NATO) 'low-end' (i.e. ODS - 'odious') exhibitors.

### ***Investment by the UKFC***

As detailed by Patrick Von Sychowski: "Outside of the United States, both public and private ventures are pushing ahead with their own installations without waiting for DCI specifications or studio sugar daddies to step in and foot the bill for the conversion" (2003 c). Nevertheless, despite their Hollywood independence, it is still fair to assume that the parties involved in financing such ventures expect to see a return on their investments. Although, in the case of public investments, those hoped for returns might be in the form of a strengthened domestic film industry and/or improved public access to cultural experiences (beyond the output of the Hollywood studios).

With regards to this subject, it is of note that the UKFC has invested significantly in 'lower resolution' projectors for 'non-theatrical exhibition'. As stated within the UKFC's own literature: "The Distribution and Exhibition Department's Digital Fund for Non-Theatrical Exhibition provides funding of £500,000 to enable over 100 organisations to upgrade their equipment and thereby extend the range of cinema-going opportunities across the country" (Group and Lottery Annual Report, 2005, p.14). As detailed in Appendix 2, Adam Minns reports that "Film clubs and local film societies, community groups and mobile film exhibitors" could apply to the 'Digital Fund for Non-Theatrical Exhibition', and that organisations could secure up to £5,000 to "help buy DVD-based digital projection equipment" (2004).

In addition to this initial 'digital fund' (aimed at extending the range of 'cinema-going opportunities' in the UK, through an investment in 'DVD-based' digital projectors), in 2009 the UKFC allocated £1.2 million (Lottery funding) to a 'Rural Cinema Pilot Scheme'. As part of this scheme, according to UKFC literature (and in addition to portable DCI compliant projectors), "The UK Film Council will also provide support for Blu-Ray-based digital projection equipment" (Bringing cinema to rural communities, 2009, p.3). It is further stated within this paper that: "Whilst this equipment will not provide the same levels of presentation as DCI, nor is it likely to facilitate the screenings of new releases, it will still allow the presentation of older releases and other content at a high level of quality", with added note that: "The system is cheaper than the industry standard equipment and can be portable or fixed in a single venue" (ibid). Significantly, according to the UKFC literature: "The objective for the strategy is to bring the cinema experience to rural areas" (ibid, p.1).

A further statement on the UKFC website reads: “The average Hollywood blockbuster opens on 300-plus screens across the UK; most independent films, restored classics, documentaries and foreign language films still struggle to reach over ten per cent of those screens” (Digital Screen Network, n.d.). This is followed directly by an assertion that: “Digital screening cuts the cost of releasing films”, and ultimately a declaration that: “That’s why UK Film Council and the Arts Council England have created the Digital Screen Network – a £12 million investment to equip 240 screens in 210 cinemas across the UK with digital projection technology to give UK audiences much greater choice” (ibid). Of this scheme, Rex Beckett details that: “The equipment used to distribute and project content for the Digital Screen Network is capable of reproducing clear, stable images with a resolution up to 2048 x 1080 pixels” (2005, p.6). In other words, the Digital Screen Network (DSN) employs DCI compliant 2K projectors.

It is apparent that the UKFC (which is economically associated to the DCMS – which is a member of the EDCF) has invested a considerable sum of money in Digital Exhibition, and the UKFC financed systems cover the complete range of Digital Exhibition, from high-end DLP projectors to standard television resolution DVD projectors. Whilst the UKFC might not expect a fiscal return on their investments, they have expressed high expectations for their *cultural* returns. As detailed above, within the group’s own literatures the UKFC express their expectations as being; to ‘give UK audiences much greater choice’, to ‘extend the range of cinema-going’ and to ‘bring the cinema experience to rural areas’. This desire for cinema-centric cultural outcomes from fiscal investments provides a ‘political economy’ rationale as to Watson and Morris’ (UKFC) employment of the term ‘e-cinema’ when describing ‘the use of digital technology’ to “distribute and exhibit a wide range of moving image material to groups of people in a wide variety of venues” (2002, p.4). Certainly, given the cultural and financial commitments made by the UKFC, it is apparent why they would not seek to relegate the status of their own low-cost systems to that of ‘stuff’.

However, it would also seem that having invested the vast majority (£12million) of their Digital Exhibition funds in 2K projection systems, the UKFC would still prefer potential audiences not to be ‘put off’ by the notion that the DSN offers something akin to that which can be experienced at a DVD-projection based film club. As such, it seems likely that the UKFC would use their discourse to help audiences make a distinction between the different types of system – without revoking the cinema designation from either. This then can explain why they still divide the phenomenon of Digital Exhibition into two separate parts – with only ‘high-end’ systems being designated as ‘*digital cinema*’.

### **3.2.3 Meaning Making as a response to the consideration that to tolerate the interpretation of Digital Exhibition as a form of television would mean “Big Trouble” for industry**

Further evidence that the influences of ‘political economy’ have borne down upon the originators of Digital Exhibition’s established interpretations can be seen in the stances taken towards the suggestion that Digital Exhibition might pertain to television.

As discussed above, the discourses of NATO and the Hollywood studios attempt to establish ‘digital cinema’ as pertaining to a higher technical specification than television. For example (as presented above) Walt Ordway (DCI) asserts that the minimum standards for ‘digital cinema’ should be set at ‘just a little bit more than HD’ (i.e. above High Definition television standards), John Fithian (NATO) explicitly declares that a system designed to produce ‘television quality’ imagery should not be considered as pertaining to ‘digital cinema’<sup>59</sup>, and Michael Karagosian (NATO) declares: “Digital cinema is not television – it is much more complex, flexible, and quality oriented” (n.d. a).

The discourses of the UKFC, DCMS & EDCS offer a broader, more comprehensive, opposition to the notion that Digital Exhibition pertains to television. These European public bodies present that even those aspects of Digital Exhibition which produce images in standard/high television definitions do not pertain to television - rather *all* aspects of Digital Exhibition are positive embraced as pertaining to the cinema.

Notably, the cited North American and European organisations each appear to be using their discourses in an attempt to differentiate television from those aspects of Digital Exhibition in which they have made financial/cultural investments. One plausible explanation for this is that the authors of these discourses have been influenced by a concern that the appeal of the cinema (i.e. going out) over television (i.e. staying in) might be lessened should audiences consider both media to be the same. As evidenced in an EDCF publication:

“There is absolutely no denying that home entertainment and theatrical screening compete for attention, time and money of the consumers”  
(Digital Cinema: The EDCF Guide, 2005, p.23).

Furthermore, openly addressing the motivation behind the apparent want to distance Digital Exhibition from television, NATO exhibitor Kurt Hall (CEO of ‘Regal CineMedia’) declares:

“If we do something that in any way can be thought of as just big TV, we’re in big trouble. Our business will not do well going forward”  
(as quoted by Nicole Sperling, 2003).

The concern of exhibitors, that Digital Exhibition might be thought of as ‘just big TV’, can now be argued as contributing towards Fithian et al’s decision to designate ‘television quality’ Digital Exhibition as ‘other digital stuff’ (as opposed to ‘large screen television’, for example). It can be argued that if an influential body such as NATO openly declared low-resolution Digital Exhibition to be a form of television, then audiences might assume high-resolution Digital Exhibition to simply be a more advanced version of the same. This concern can also be argued as contributing towards Karagosian’s dismissive discourse on the subject of ‘alternative content’. As discussed above, despite NATO’s official stance to the contrary, Karagosian presents any digital content other than feature-films to be ‘ODS’. Significantly, in an alternative text, Karagosian proposes that through the potential to offer ‘grander forms of movie entertainment’ than are possible through film,

“Digital cinema is the path for differentiating cinema from the home”  
(2000).

This discourse reveals a genuinely enthusiastic reaction to the notion that high-end Digital Exhibition could set apart public and domestic entertainments. It can, therefore, be argued as likely that Karagosian would object to classifying as ‘digital cinema’ any form of ‘alternative content’ which, due to its similarity to television programming, might actually counter this potentially ‘differentiating’ affect - and conversely draw audiences to liken the two forms of entertainment.

Beyond the purely economic issue of whether audiences will spend their leisure time (and money) on domestic or public entertainments, there is a further explanation as to why certain discourses avoid designating any aspect of Digital Exhibition as television. This explanation hinges upon the notion that, far from being considered as 'The Seventh Art', the designator of television carries with it many negative cultural connotations. Indeed, whilst Phillipe Kern, General Secretary of the European Film Companies Alliance<sup>60</sup>, writes that: "In Europe, cinema is considered an important cultural form rather than simply entertainment" (n.d.), John Hartley expresses that the set phrase "television rots your brain" has become generally accepted as "normal science" (2004, p.387).

The broad acceptance of such negative statements concerning television might then explain why a culturally driven organisation such as the UKFC would not wish to present their plans to 'extend the range of cinema-going' as otherwise being an 'extension to the range of TV viewing'. Furthermore, within the commercial sector, the notion that television is a culturally inferior medium to the cinema is a long-standing selling point for public exhibition – as Mark Lawson observes, "For film-makers and moviegoers, the phrase 'made for TV' has always been an insult" (2005).

The nature and the level of concern held, regarding that all brands of Digital Exhibition (high-end and low-end) might be confused with (or perhaps recognised as) big-screen television (in the minds of audiences), leads again to the question as to why the Hollywood studios have chosen designate the provision of 'alternative content' as 'digital cinema' - or rather, a consideration of the nature of the concern around this subject leads to a further plausible political economy explanation as to why this stance has been taken.

As discussed above, and as Leo Bogart expresses: “The same Hollywood studios produce television shows and commercials, feature films and videos” (1994). As such, and again as discussed above, Hollywood may see Digital Exhibition as a new commercial channel through which to peddle their varied wares. It may now also be argued that the studios see Digital Exhibition as a means of lifting the negative connotations of ‘television’ away from all the entertainments which they produce. Rather than invoking a (negative) perception of Digital Exhibition as television, Hollywood might hope that, through the designation of ‘digital cinema’, those forms of entertainment which are presently considered as exclusively pertaining to the (‘brain rotting’) medium of television, might now be (positively & primarily) perceived of by audiences as the potential content of ‘the seventh art’.

Of course, as detailed above, there are commentators who do openly express an interpretation of Digital Exhibition as television. For example, the film critic Godfrey Cheshire, interprets Digital Exhibition as “the overthrow of film by television” (1999), and states that this amounts to “a dissolution of cinema aesthetics and the enforced close of cinema’s era in the history of technological arts” (ibid). With regards to Cheshire’s stance, it is significant to note that whilst Roger Ebert, another noted film critic<sup>61</sup>, does not *directly* designate the phenomenon as television, he has, like Cheshire, suggested that the move towards Digital Exhibitions is not a positive one (culturally and economically). For example, Scott Kirsner cites Ebert as stating: “Digital Exhibition at best is seen as only ‘almost as good’ or ‘about as good’ as film” (2008, p. 109), and further, that if it is adopted Digital Exhibition “will be perceived as no better than high-def home TV in the consumer pipeline”, adding: “Theaters have traditionally offered *better* pictures than TV, not the same” (ibid).

It might be argued that (despite making their living by watching and writing about the experiences brought to audiences by filmmakers, distributors and exhibitors) film critics such as Cheshire and Ebert are politically and economically independent of the Digital Exhibition phenomenon – and therefore free from political economy bias. However, such an argument would be erroneous. Cheshire and Ebert represent the economic entity that is Digital Exhibition's ultimate customer base – they speak as member of the audience, and (unlike the DCI, NATO, the EDCF, DCMS, etc) they speak directly to the audience (through their newspaper articles, books, etc). Furthermore, Cheshire and Ebert are arguably *emotionally* biased against Digital Exhibition – their discourses suggest that as well as being film critics, they are both 'film fans'.<sup>62</sup> The discourses of Cheshire and Ebert are also clearly aimed at discouraging the adoption of Digital Exhibition. In other words, Cheshire and Ebert encourage their fellow audience members to stop funding (through their patronage) a technology which might eventually make unattainable that experience which they have strong feelings of support for - the presentation of moving images through film. Their emotional predisposition would appear to drive their personal political economies.

Ultimately, the discourses of Cheshire and Ebert (as audience representatives) validate the concerns of those parties who have expressed that audiences might be indisposed to embracing Digital Exhibition because of its technological kinship with television. Moreover, the discourses of these commentators are, arguably, consciously composed as an attempt to incite audiences in such a way that the exhibitors' concerns become true.

### 3.2.4 Disregarding the New Medium Designation

Whilst the ‘newness’ of Digital Exhibition (new technologies, new operational practices, new contents, new venues, etc) has prompted some commentators to (casually) reference the phenomenon as being a new medium, this designation is not commonly found within industrially/politically sourced literatures.

When considering the reasons behind this lack support for the interpretation of Digital Exhibition as a new medium (beyond the fact that it may not be such), it is pertinent to recall Patrick von Sychowski’s discourse around the film industry’s attitude towards the terminology of ‘e-cinema’. According to von Sychowski the “film industry” has rejected this term out of a concern that the “digital delivery and exhibition of mainstream films in cinemas could become confused in the mind of the public with the streaming of films over the Internet” (2000, p.11). It might then also be considered that the ‘film industry’ would be hesitant to designate Digital Exhibition as a ‘new medium’, because the words ‘new’ and ‘medium’ might associate the phenomenon with the concept and phraseology of ‘new media’ – which (like the prefix ‘e’) is commonly associated (in the mind of the public) with Internet applications.

It is of further consideration that, if Digital Exhibition were to be designated as a wholly new medium, this would categorically divorce the phenomenon from the cinema (and its rich cultural heritage) - directly counteracting against the efforts of those influential political and industrial commentators in Europe and America who, as discussed above, have been especially keen to (conceptually) marry Digital Exhibition to the cinema.

Significantly, whilst Clark and Bruns do not overtly express that the case phenomenon would be something 'not cinema', this is implied in their statement that the 'newness' of Digital Exhibition will ultimately

“obsolete the term ‘film exhibition industry’ in favor of a more general term such as ‘theatrical presentation industry’”

(2000, p.1).

On review, it certainly does seem fair to consider that the 'more general term' of 'theatrical presentation industry' somehow lacks a certain resonance (as compared to the term 'the cinema', for example). It also seems fair to consider that this potential lack of resonance would be of some concern to all parties with a vested interest in the phenomenon.

## Chapter Three: Assessment of Findings

This chapter has examined the interpretations of Digital Exhibition presented within discourses stemming from significant public bodies and private enterprises; it has examined how these interpretations might have been politically / economically derived. However, this chapter has largely been concerned with discourses stemming from Europe and North America – and the affects so far examined have also been largely limited to these continents. Please note, therefore, that Appendix 6: The South African Case presents an overview study as to the interpretations of (and consequential impact on) Digital Exhibition in South Africa.

It has been presented above that there are four established interpretations of Digital Exhibition;

- It is a form of the cinema
- It pertains to multiple media
- It is a form of television
- It is a new medium

The first of these interpretations primarily were found to stem from publicly funded bodies operating within Europe.

The second of these interpretations primarily were found to stem from American, privately funded, trade organisations which operate within the film and cinema industries of North America.<sup>63</sup>

It was found that the third and fourth interpretations originate, for the most part, with interested parties not employed directly within the film industries (that is not working as public or private financiers, content producers, distributors or exhibitors).

In addition to the presented established interpretations of Digital Exhibition, it has also been presented above that Eileen R. Meehan (1994) broadly defines ‘political economy’ as being about ‘survival’ and ‘control’. Whilst not contradicting Meehan’s interpretation, the author of this paper now proposes that political economy can be alternatively be described as being about ‘promotion’ and ‘protection’. The author proposes that the subjects protected and/or promoted by an individual or organisation are determined according to their political/economic ideologies – which, as Meehan implies, can be derived from the expressed ‘economic, political, social and cultural goals’ of those parties, and also from an analysis of what they need to ‘produce in order to reproduce themselves’ (1994, p.349).

The protected/promoted subjects can include a party’s own levels of power/control within/over an area of industry, their bottom-line profits, a particular cultural phenomenon, or even a physical article, which they consider as important, etc. Ultimately, the author proposes that political economy is concerned with identifying whether, in the effort to protect and promote the subjects of their ideological choice, parties employ ‘meaning making’ discourses with the aim of manipulating the political/economic beliefs, and consequential behaviours of their readers.

The identified goals of the Hollywood studios and NATO include a want to promote the generation of revenues, and a want to protect the existing power relationships - between both groups and over others. As such, it can be considered pertinent to a political economy study that the combined discourses of the Hollywood studios and NATO appear to discourage exhibitors from installing the sort of low-end projection systems which might shift power towards Hollywood independent content producers/distributors. Furthermore, the combined discourses of these groups also serve to protect the existing exhibition market by superciliously describing low-cost systems as unworthy (thusly discouraging potential 'alternative venue' consumers) whilst conjunctively raising revenues by promoting high-end systems as being capable of delivering superior experiences than those attainable through physical film.

The identified goals of the investigated publicly funded bodies include a want to promote and protect their own domestic (and continental) film industries, as well as a want to improve public access to culturally diverse 'cinema' experiences. As such it can be considered pertinent that the discourses of these organisations (aimed at both exhibitors and audiences) promote as pertaining to the cinema the application of low-cost systems, which could increase the number of screens upon which culturally diverse/domestic (Hollywood independent) films are shown, and lessen the cost of distributing those films.

One of the goals of those who define the case phenomenon as television has been identified as a want to see the commercial continuation of physical film (as opposed to its subjugation by digital technologies). Thusly, it can even be considered as pertinent to the subject of political economy that an industrially independent, and well regarded film critic would attempt to use their influence over public opinion in order to persuade readers that ‘physical film’ *means* ‘culturally significant’, and that ‘digital’ *means* ‘lower-quality’ – especially if this persuasion appears to be performed with the aim of discouraging patronage of the Digital Exhibition industry, denying that industry its requisite finances and thusly promoting/protecting the medium of physical film (and consequently the industries surrounding physical film).

Ultimately, there is no way to categorically refute the possibility that the originators of these discourses actually believe them to represent the truth, and have offered them for entirely selfless reasons. However, it can not be ignored that, as presented in this chapter, there are a multitude of ways by which the contradictory interpretations examined serve to protect and promote the political/economic ideologies of those who composed them.

As a further point of consideration, it is of note that Oliver Boyd-Barrett cites Golding and Murdock (1991) as asserting that: “political economy has always been critical, if perhaps not quite as critical of the public as the privately controlled media” (1995, p.191). As such, the author is keen to call attention to the fact that all the discourses addressed within this chapter, i.e. those of both public and private origin, have been presented as potentially protectionist and self-promoting (i.e. potentially biased).

The author is also keen to call attention to that fact that, as remarked by Brendan Duffy, “If you detect bias, that does not necessarily mean that the document should be dismissed as worthless. In some cases the most useful evidence can be derived from biased sources which accurately reveal the true views of an individual or group” (2005, p.133). In point of fact, the author does not consider the documents addressed in this chapter to be at all worthless. In addition to their providing the impetus for this political economy study, the author considers that there *may* be an element of truth in each of the discourses presented. However, the author is also aware of the portentously persuasive power of well funded, well presented and near omnipresent (yet still biased and potentially false) interpretations. Considering this, and Duffy’s further proclamation that: “The biased document will certainly need to be analysed cautiously and compared with evidence from other sources” (ibid), the author again draws to mind that *all* the potential rival explanations of Digital Exhibition must be subjected to rigorous academic scrutiny – as discussed in Chapter Two above.

As such, the following four chapters will present evidence from the author’s attempts at building explanations of the case phenomenon whereby it is interpreted as being a form of the cinema; a form of television; a new medium; something which pertains to multiple media. By implication, the evidence presented within these chapters will contribute to the explanation building process pertaining to the sub-units of analysis - whereby each established approach to the interpretation of Digital Exhibition is hypothesised to be disingenuous, sincerely composed and true, or sincerely composed but erroneous.

## **Chapter Four.**

### **Explanation Building:**

### **Digital Exhibition is a form of The Cinema.**

## Introduction to Chapter Four

It is presented in this thesis' 'Specific Aims of This Study' (pp.6-7) that one of the broad objectives of this study is to present a statement as to how Digital Exhibition should be considered within the sphere of contemporary media theory. With regard to this objective, it is also detailed that this study aims to 'Explain the 'causal links' leading to the emergence of Digital Exhibition (e.g. Address whether the cinema and/or television evolved to become Digital Exhibition – or whether the phenomenon was developed autonomously)', and 'Make explicit the practical and theoretical relationships between Digital Exhibition and multiple media (including the cinema and television)'. Focussing upon the relationship between Digital Exhibition and the cinema, this Chapter begins to realise these aims.

It is presented in Chapter Two that this research programme has adhered to a 'case studies' research design, with the specific approach to understanding research findings being based upon an 'explanation building' analytic technique – whereby attempts are made to explain the case phenomenon in numerous ways, based upon identified conceivable hypotheses.

It is also presented in Chapter Two (p.16) that Robert Yin considers:

“The gradual building of an explanation is similar to the process of refining a set of ideas, in which an important aspect is again to entertain other *plausible or rival explanations*”

(2003, p. 122).

Significantly, Yin further proclaims that:

“the objective is to show how these explanations cannot be built, given the actual set of case study events” (ibid).<sup>64-65</sup>

This chapter forms a part of the presentation of the findings of the explanation building process. As such, this chapter provides a narrative account as to the evidence concerning the author's attempt to construct a specific explanation as to the origins of Digital Exhibition, and also the author's attempt to categorically negate that explanation (i.e. show that it cannot be built). The explanation addressed within this chapter is that Digital Exhibition is, in all its forms (i.e. irrelevant of image resolution, content and venue), an appendage to the cinema.

This chapter also attempts to ascertain whether evidence as to the nature of the primary unit of analysis (i.e. the phenomenon of Digital Exhibition) can be used as implicative evidence in determining whether or not the 'sub-unit of analysis' defined as **'Those interpretations of Digital Exhibition which present the phenomenon to be a form of the cinema'** pertains to body of literature which is; both sincere and true; sincere yet false; wholly disingenuous.

In the attempt to construct / negate the explanation of Digital Exhibition as the cinema, the form of evidence analysis performed will be that referred to by Kerry Walk (1998) as a lens comparison. Existing theories as to the nature of *cinema* will be employed as the 'lenses' through which to view Digital Exhibition. It is considered that if, through this analysis, the case phenomenon is revealed to be categorically incompilant with all such existing theories then the explanation of Digital Exhibition as a form of the cinema will have been disproved. In order to perform the lens comparison, this chapter will provide a review of established theories as to the nature of the cinema. Particular attention will be paid to Michael Karagosian's evolving definition of the cinema – which he first expresses as “the art of presenting motion pictures”, then “the art of presenting film-based motion pictures” and ultimately “the art of presenting first-run motion pictures” (2003).

This string of definitions is considered significant as it is through this that the NATO consultant justifies the American stance that certain applications/varieties of Digital Exhibition should be considered as pertaining to the cinema – whilst others should not. Even beyond Karagosian, the academic theories addressed will be found to offer a series of diverse approaches regarding the construction of a definition of the cinema. For example, in the examined literatures the cinema is defined as being a form of art; it is defined in terms of the content presented; in terms of the quality of the image presented; as the product of the mechanisms for projecting moving images through physical film, and as an ideological concept existing only in the mind.

It will be argued that given the subjective nature of discourses which attempt to present the cinema as an artistic form it is not possible to immediately discount *any* aspect of Digital Exhibition as pertaining to the cinema based upon this notion alone. It will be argued that short-form entertainments, such as those presented by the Lumière brothers, have been recognised in academic literatures as pertaining to the cinema, and therefore it is not possible to immediately discount the possibility that Digital Exhibition also pertains to the cinema - even when employed in the presentation of 'alternative content'. It will also be argued that it is not possible to immediately discount low-resolution/poor colour reproduction Digital Exhibition presentations as pertaining to the cinema, given that black-and-white and low-resolution formats such as 8mm and 16mm film have also been recognised as examples of the cinema. It will further be argued that it is not possible to immediately discount those Digital Exhibition presentations that occur in non-purpose build auditoria as being cinema – given that the first presentation of the cinema occurred in a Parisian café.

It will be presented that a common trend in academic texts attempting to uncover the nature of the medium referred to as ‘the cinema’ have focussed upon the physical medium of film. It will be considered that, although the physical medium of the cinema has changed over time, i.e. from celluloid to plastic, if film is accepted to be the defining quality of the cinema, then Digital Exhibition can not be such. However, it will also be presented that André Bazin (1967), amongst others, considers that the cinema has never been invented, but exists only as a concept in the mind. Bazin, et al will be shown to consider that that which is referred to as the cinema within contemporary media studies, i.e. film based motion picture presentation, is only one, technologically flawed, attempt at realising the total concept of cinema and therefore there is no need to limit the cinema’s technological definition to the application of physical film.

Ultimately, it will be offered that if one can accept the notion that the cinema has never been invented *and* if one can accept that the phenomenon of Digital Exhibition represents an attempt towards the total realisation of the concept of the cinema, then, (as with past attempts employing physical film) one might accept Digital Exhibition as being referred to as a form of the cinema within the framework of contemporary media studies. However, the author recognises that the analysis presented in this chapter has not been able to categorically prove that Digital Exhibition is a form of the cinema; it has merely failed to disprove this notion. Furthermore, the author also recognises that before recommending that the case phenomenon be universally accepted and referred to as being a form of the cinema, and in order to adhere to the rigour of the case study methodology, the construction of further alternative explanations must be attempted.

## Chapter Four, Part One:

### Does the Phenomenon of Digital Exhibition adhere to accepted definitions as to what The Cinema is?

#### 4.1.1 The Cinema is...Everything that it has historically been

Media commentators have, on occasion, examined and attempted to present / instil an understanding of ‘the cinema’ as it was at the time of their writing.<sup>66</sup>

However, any study of ‘contemporary cinema’ (whenever it might have been carried out) can only provide a ‘snap-shot’ as to the state of the medium at any given moment – and therefore, such a study can not provide an all encompassing answer to the question of what the cinema is.

Following this logic, many contemporary literatures which attempt to instil a degree of understanding as to what the cinema is (as a summed whole, as opposed to ‘what the cinema is/was at a given moment in time’) comprehensively examine the medium’s complete history. Examples of such texts include Kristin Thompson and David Bordwell’s *Film History: An Introduction* (1994) and Barry Salt’s *Film Style & Technology: History & Analysis* (1992). This approach suggests that the cinema is best described, academically, as the sum of its entire history – i.e. the cinema, as a subject of academic study, is understood to be everything that the medium has ever been. In point of fact, as Scott MacQuire observes, “cinema is usually defined with reference to the celebrated screenings held by the Lumière brothers at the *Grand Café* in Paris on 28 December 1895” (1998, p.3).

This approach to understanding ‘what the cinema is’ has been adopted within this chapter. The author presents that ‘the cinema’, as a subject of academic study, can not be comprehensively defined through a description of its contemporary form alone. Rather, within this chapter, it is proposed that any definition as to ‘what the cinema is’ must be able to be subjected to accepted historical accounts as to ‘what the cinema has been’. That the author ultimately concludes the term ‘the cinema’ to be rendered meaningless by its history of contradictory usage is presented in Chapter Eight: Conclusion and Discussion.

### 4.1.2 The Cinema is...The Seventh Art

In the 1910s Ricciotto Canudo first coined the term 'The Seventh Art'. According to Mark Winokur and Bruce Holsinger, Canudo used this terms in order to connote the cinema's status as a new and powerful rival to painting, music, sculpture and the other fine arts, and also to "promote to the French intelligentsia the aesthetic possibilities and philosophical challenge of the emergent medium" (2001, p.369). Since the 1910s, the concept of 'the cinema' as art has disseminated widely – and is even presently recognised in dictionary definitions; for example, one Internet dictionary, *'Dictionary.com Unabridged (v 1.1)'*, suggests that the term 'the cinema' can be used to reference "motion pictures collectively, as an art" ('cinema', n.d. a). However, as with other 'arts', there is little consensus amongst the 'intelligentsia' (French and otherwise) as to which 'aesthetic possibilities' and 'philosophical challenges', when met, are of most artistic merit. For example, according to J. Dudley Andrew, the influential French film critic André Bazin found that "Cinema attains its fullness in being the art of the real" (1976, p.137), whereas, and also cited by Andrew, Rudolf Arnheim held that if film were an instrument of reality then cinema could not be considered as art, since there would be "no true opportunity for an artist to manipulate such a medium" (1976, p.28). With regards to the literature of French theorist Georges Duhamel, Robert Stam writes: "While film theorists like Arnheim were trying to decide exactly what kind of art the cinema was, Duhamel denied that the cinema was an art at all" (2000, p.64). Stam goes on to cite Duhamel (1931, p.37): "the cinema has sometimes diverted me and sometimes moved me, it has never required me to rise superior to myself. It is not an art. It is not art" (2000, p.64).

In fact the artistic value of every, motion picture is subject to debate<sup>67</sup> – a debate which can never be resolved as it is fuelled by subjective personal preference. Furthermore, it would seem that this debate centralises around the production values of the motion picture and not the presentation medium. Ultimately, therefore, it does not seem possible to dismiss any aspect of Digital Exhibition as pertaining to 'the cinema' through an argument based upon an artistic definition of the cinema.

### 4.1.3 The Cinema is...The Content Presented

#### *First Run Feature Films*

Michael Karagosian, NATO's 'Digital Cinema' consultant, offers an additional view of the cinema as art - one which does not bring into question the artistic merit of each article of content presented. Karagosian writes: "I'll suggest a simple definition for *cinema*: the art of presenting motion pictures" (2003). To this, Karagosian adds that "Since this simple definition is not technology-dependent, I can also define *digital cinema* as the art of presenting motion pictures" (ibid).

Both film based exhibition and all forms of Digital Exhibition are involved in the presentation of 'motion pictures' (that may or may not be considered to be of artistic merit). This immediately suggests, therefore, that Karagosian considers that all forms of Digital Exhibition pertain to the cinema. However, Karagosian goes on to qualify his definition of the cinema, explaining: "My simple definition is elegant, but unfortunately, it has a problem. There's nothing in this definition that connects cinema to a particular image quality level" (ibid). With regards to this, Karagosian, goes on to consider that "Historically, cinema has been about the display of film-based content", and that "While other distribution media have been introduced since the advent of film, such as broadcasting, consumer video tape, laser disc, DVD, and MPEG files over the Internet, none produce pictures superior to that of film" (ibid). It is this division in quality, according to Karagosian, that has made "viable the staggered release windows that are unique to the distribution of motion pictures" (ibid). By the expression 'release windows' Karagosian refers to way in which feature films are released at different times on different media platforms. Karagosian further writes: "My simple definition of cinema, therefore, may describe the cinema business of 60 years ago, but it doesn't take into account the staggered release windows in use today" (ibid).

Karagosian continues: “If I define cinema as the art of presenting film-based motion pictures, then I capture the quality difference between that found in the cinema, and that found elsewhere” (2003). However, this definition negates the possibility to consider any form of Digital Exhibition to be a form of cinema – therefore, according to Karagosian, this definition needs further refinement. It is the opinion of Karagosian that to include Digital Exhibition by redefining the cinema as ‘the art of presenting film-based *and digital* motion pictures’ is not acceptable – given that this suggests that those who view the contents of a DVD on a television set, or a film downloaded from the Internet are actually experiencing the cinema. Indeed, of the redefinition of the cinema so as to accommodate Digital Exhibition, Karagosian writes that “This has been the cause of much discussion in Hollywood, and indeed, most of the world” (ibid).

Ultimately Karagosian proposes that ‘the accepted definition’ of ‘digital cinema’ is “the art of presenting first-run motion pictures” (ibid). It is the author’s consideration that Karagosian uses the term ‘first-run motion pictures’ to describe ‘first-run’ feature films. Therefore, given that Karagosian considers that “The term digital cinema simply means we are applying digital technology to the art” (2004), it can be surmised that Karagosian is ultimately defining ‘the cinema’ as the art of presenting first-run feature films.

It is through this definition that Karagosian finds it possible to divide Digital Exhibition into two classes- that which pertains to the cinema (i.e. that which is involved in the presentation of first run feature films - referred to as 'digital cinema'), and that which does not (i.e. that which is not involved in the presentation of first run feature films - referred to as 'other digital stuff'). However, given that there has never been a consensus reached as to what constitutes the art of the cinema – even amongst philosophical luminaries with a particular interest in this topic (for example Ricciotto Canudo, Hugo Munsterberg, André Bazin, Rudolf Arnheim, etc) - it seems apt to question whether the NATO 'digital cinema' consultant's suggestion that the cinema's artistic definition be limited to the presentation of first-run feature films can be considered absolute. This especially true when one considers that, as is presented below, historically the content of that referred to as 'the cinema' has included significantly more than just feature films – first run or otherwise.

With regards to Karagosian's consideration that the cinema can be defined in terms of the presentation of first-run feature films, it is of note that David A. Cook writes (of American cinema exhibition) "During the studio era, exhibition was controlled through a run-zone-clearance system of distribution in which the country was divided into thirty markets subdivided by zones" (2002, p.4). Cook explains that "Within each zone theaters were classified as first-run (urban showcase usually owned by the majors), second-run ('neighbourhood' cinemas), and subsequent-run" (ibid). Anthony Downs suggests that such a situation still exists today and provides a further explanation as to the concepts of 'first' and 'second run':

"The first run theater has first crack at a new picture in the area; after it has finished showing the picture there is a gap of about four weeks before the second-run house gets a chance to show it. This gap exists so that the advance billing of the second-run house does not compete with the advertising of the first-run theater" (2002, p.123).

Clearly, neither Cook nor Downs consider that the activities of ‘second run’ and ‘first-run’ exhibitors pertain to two separate media. Rather both Cook and Downs present that ‘first run’, ‘second run’ and ‘subsequent run’ exhibition are complimentary approaches to the commercial exploitation of the cinema.

It now seems that Karagosian’s definition of the cinema was too limited, and it is not possible to immediately disregard cases of Digital Exhibition as pertaining to the cinema simply because they are involved in the presentation of second (or subsequent) run feature films. Moreover, there is a further aspect of Karagosian’s definition of the cinema still open to debate – that being his suggestion that the cinema pertains exclusively to feature film presentation.<sup>68</sup>

In fact, any definition of the cinema which presents it to be a medium of feature film exhibition does not stand-up to historical scrutiny. As David Lusted details: “The early cinema typically took the form of short films, interspersed with live acts, and freely mixed fantasy and documentary elements” (1991, p.27). Indeed, of films such as ‘*Workers Leaving the Factory*’ which was an approximately one minute long, single shot effort entitled after its subject, Paul Martin Lester writes, “The Lumières’ first films were similar to those created by purchasers of video cameras – glorified home movies” (2006, p.278).

Kristin Thompson and David Bordwell concede that “From the beginning fiction films were also important”, adding that “The Lumières’ *Arroseur arrosé*, presented in their first program in 1895, showed a boy tricking a gardener by stepping on his hose” (1994, p.13). However Thompson and Bordwell further note, even as the cinema ‘moved smoothly’ into the ‘spectrum of popular entertainment’:

“most subjects were non-fiction, or ‘actualities’. These might be ‘scenics’ or short travelogues, offering views of distant lands; News events might be depicted in brief ‘topicals’”  
(1994, p.12).

Specifically of the presentation of ‘news events’, James Riordan and Arnd Krüger add that:

“By the late 1920s cinema newsreels also incorporated footage of sporting events which would often be the first time that the public had witnessed a sporting event as a visually mediated sporting product”  
(2003, p.1).

According to Thompson and Bordwell, it was from around 1899 that producers began making ‘longer films’ consisting of ‘multiple shots’ (1994, p.13). Notably, the development of longer films was not purely a natural artistic evolution. According to Lusted “the feature film evolved at least partly because film distributors wished to reach a more middle-class audience in order to increase their profitability. They therefore sought to bring cinema more into line with the forms favoured by that audience, particularly the novel and theatre” (ibid). Quentin Falk writes that the Australian 1906 production of ‘The Story of The Kelly Gang’ is “Generally considered to be the world’s first commercial feature film” (2003, p.9).

Although in the contemporary market full-length feature films may have achieved a monopolistic dominance over any other form of cinema content, if one considers that the cinema existed prior to the 1906 release of *'The story of The Kelly Gang'*<sup>69</sup> then the cinema can not be defined as pertaining exclusively to this form of entertainment. Karagosian's definition of the cinema is thusly revealed to be flawed. As such Karagosian's definition can not legitimately be used to support the notion that the digital presentation of first-run feature films pertains to the cinema. However, given that the common consensus is that the cinema existed before the development of the feature film, and that it is recognised as capable of presenting more than just 'first-run motion pictures', it is also significant to note that Karagosian's definition can not legitimately be used to support the notion that 'alternative content' can not pertain to the cinema.

### ***High Quality Imagery***

In direct contradiction to Karagosian's discourse, it has been presented above that 'the cinema' can not be restrictedly defined in relation to the provision of 'first run motion pictures' - because that which has historically been referred to as 'the cinema' is capable of mediating a varied content, including news, sports, entertainment, documentary, fictional narrative, short-form and feature-length motion pictures. However, it should be recalled that the NATO consultant initially defined the cinema as 'as the art of presenting film-based motion pictures' and only altered this to 'the art of presenting first run motion pictures' so that certain aspects of Digital Exhibition could also be categorised as pertaining to 'the cinema'. Furthermore, it should be recalled that Karagosian referenced 'first run motion pictures' only as an attempt to make explicit his consideration that 'the cinema' ought to be defined as having a superior image quality to 'secondary' release media such as DVD and the Internet. It now seems that the intended meaning of Karagosian's definition of the cinema might have been alternatively expressed as; 'cinema is the art of presenting motion pictures with an image quality comparable to film-based projection'; an interpretation of Karagosian's discourse which avoids the already negated references to 'first run' content.

A reflection of this interpretation of Karagosian's definition of the cinema can be found in the discourse of his NATO superior, John Fithian. As detailed in Chapter Three (p.100), Bob Smith cites Fithian as stating: "Lately 'digital cinema' has been mistakenly applied to endeavors that are not actually cinema quality presentations" (2003). As is presented above, it was in relation to this declaration Fithian coined the term 'Other Digital Stuff' in order to separately identify Digital Exhibition ventures capable of producing only lower (than 'cinema quality') resolution images.

Despite Fithian's expressed convictions, it will be presented below that this revised understanding of Karagosian's discourse still fails to provide any justification for dividing Digital Exhibition into two separate phenomena (i.e. the cinema and 'other stuff') - and may even be considered as supporting the notion that all forms of Digital Exhibition pertain to the cinema.

As discussed above, Karagosian employs the term '*film based motion pictures*' in order to indicate that the cinema boasts a superior image quality to other media. As such, Karagosian implies that only Digital Exhibition presentations which are capable of an image quality equal to '*film based motion pictures*' can legitimately be considered as pertaining to the cinema. However historically (and contemporarily) the image quality of '*film based motion pictures*' has not been a constant factor.

### **Film Based Motion Pictures Presenting Video Quality Imagery**

Jason Silverman writes that "just as 1915 is remembered for 'The Birth of a Nation', the first Hollywood epic, and 1927 for 'The Jazz Singer', the first talking picture, 1998 could go down in film history as a watershed for digital film" (1999).

According to Peter Broderick it was the premieres of '*The Celebration*' and '*The Idiots*' at the 1998 Cannes Film Festival which "proved that the Digital Revolution was well underway" (1999). Significantly both the '*The Celebration*' and '*The Idiots*' were produced under the 'Dogme 95' mandate. This mandate dictates that whilst being shot on Digital Video (DV) at standard television resolutions, both films had to be printed onto 35mm film for presentation purposes. However, such 'film based motion picture' presentations were not limited to festival screenings, as Broderick asserts: "following festival runs, many digital features are receiving theatrical distribution" (1999).<sup>70</sup>

Notably, standard television resolution DV is not the only video format which has been used for feature film acquisition. In 1987 an Italian production, '*Julia and Julia*', was captured using an analogue form of High Definition Television (HDTV) video. Notably, and despite its television quality imagery, '*Julia and Julia*' is recognised as pertaining to the cinema - for example of this film Roger Ebert notes: "Whatever fate this movie has at the box office, it will win a footnote in cinematic history as the first feature shot entirely in high definition television and then transferred to film" (1988). Furthermore, of the digitally acquired HDTV feature film '*Collateral*' (2004), Jonathan Romney of the Independent on Sunday newspaper wrote: "this one is cinema through and through" (2004).

### **16mm & 8mm Cinema**

Video acquisition is not the only form of film-based motion pictures offering an image quality lower than that of standard 35mm film. Indeed, Karagosian's original definition of the cinema ('the art of presenting film-based motion pictures') does not expressly refer to 35mm film – therefore we might also consider that 8mm and 16mm film-based motion pictures can be considered as pertaining to the cinema.

Indeed, both 16mm and 8mm film formats *have* historically been considered as pertaining to the cinema. With regards to 16mm cinema, Ian Mundell, considers that "The case for 16mm cinema had been made in 1949 by Jean Cocteau" (2004) adding that Jean Rouch's films of the 1940s and 1950s, such as '*Moi, un noir*' and '*Les Maîtres fous*' gave a "practical demonstration of what could be done with colour 16mm" (ibid). With regards to 8mm cinema, P. Adams Sitney writes of avant-grade film maker Stan Brakhage: "The furthest that Brakhage ever came in extending the language of 8mm cinema was his editing of the 23<sup>rd</sup> *Psalm Branch*" (2002, p.217).

It should be noted that a frame of 16mm film is approximately one quarter of the size of a 35mm frame, and a frame of 8mm film is approximately one sixteenth of the size of a 35mm frame – the image resolutions achieved through 16mm and 8mm reflects this size differential. According to Stuart Blake Jones, Richard H. Kallenberger and George D. Cvjetnicanin, 8mm film offers a resolution equivalent to 250 horizontal scan lines (i.e. vertical resolution) and 16mm film offers a resolution equivalent to 500 horizontal scan lines (2000, p.48). Therefore, in terms of image resolution, even low-resolution digital projectors might be said to be capable of meeting the re-interpretation of Karagosian’s definition of the cinema: ‘cinema is the art of presenting motion pictures with an image quality comparable to film-based projection’. However, just as Randy Hoffner writes of television images, “display resolution is not the only factor, and maybe not even the primary factor, in determining picture quality” (2004), other factors such as frame-rate, the contrast between light and dark areas of the picture and the reproduction of colours are considered as affecting the image quality of film-based projection.

It can now be asked; do these ‘other factors’ dictate that only high-end Digital Exhibition equipment can truly achieve the image quality of *‘film based motion pictures’* –and thusly relegate low-end equipment to something other than the cinema?

## **Black-And-White and Early Colour Cinema**

Significantly, although they employed 35mm film, the first ‘cinema’ presentations of the Lumière brothers employed a projected rate of sixteen frames per second (16fps) – that being much slower than the twenty-four frames per second (24fps) standard of modern cinema projectors. As Nicholas J. Wade & Michael T. Swanston note, 16fps became a standard for ‘early cinema’ but “is rather slow for visual persistence and so the pictures appeared to flicker – hence ‘the flicks’” (2001, p.192). Moreover, the Lumière presentations - heralded as marking the birth of the cinema, were all without any colour.

It was not until 1906 that George Smith developed the cinema’s first commercially successful photographic colour process ‘Kinemacolor’.<sup>71</sup> However, the image quality of colour cinema was not always as it is today. According to a report on the ‘widescreenmuseum.com’ Internet site, Kinemacolor suffered from “color fringing when objects moved”, “dark images” and “untold grief if the film was not loaded in the projector in appropriate sync with the colour wheel” (Kinemacolor The first successful color system, n.d.). Significantly, this report also adds that ‘two-colour processes’, i.e. colour processes which only employ two colour filters, such as Kinemacolor, could not reproduce blue or pure white (ibid).

It would now seem that if digitally acquired, 8mm, 16mm, silent (16fps), black-and-white, and early colour presentations are considered as pertaining to the cinema, then the cinema can not be uniquely defined as being a high-image-quality phenomenon.

### 35mm Acquisition and Presentation

On occasion even contemporary 35mm film-based cinema productions offer ‘low quality’ imagery. In fact, Peter Wollen considers that some elements of contemporary 35mm-film-based cinema purposely draw upon low-resolution imagery. In his discourse on the subject Wollen writes about ‘artistic’ films which,

“subverted the technical and material sub-structure of cinema – flicker films, films which showed the dust particles and scratches that are part of every film’s destiny, films that blew up the image by re-filming it until the spectator became aware of the grains of silver embedded in the celluloid – whose tarnishing from light to dark still remains the essential precondition of cinema” (2002, p.18).

In fact, even beyond exceptional examples such as 8mm, 16mm, early cinema, art cinema and video acquired productions, there is evidence to suggest that the cinema can not be distinguished from ‘other stuff’ based upon its image quality alone. As Steven Morley observes in an interview by Perry Sun:

“Film purists will tell you that perfect 35mm film can offer 4k horizontal resolution. But that’s not what you and I see when we go to our local cinema. Due to the film’s high-speed duplication process, lens flare, misalignment of the projector, etc., we’re lucky if we see 800 to 1000 pixels across the screen” (2000).

In this Morley openly suggests those who experience ‘the cinema’ are ‘lucky’ if ever experience anything which is above resolutions akin to domestic television.

It can now be argued that it is not possible to define the cinema based upon the artistic merit, the length (i.e. feature-length or otherwise), the exhibition schedule (i.e. first run or otherwise) or the image quality of that presented. Therefore it can also be argued that such attributes can not be used disassociate any aspect of Digital Exhibition from ‘the cinema’. Perhaps then it might be questioned whether the venue in which the experience occurs can define the medium – and thusly disqualify certain types of Digital Exhibition from being categorised as ‘the cinema’.

#### 4.1.4 The Cinema is...A Venue

The choice of venue does appear to qualify or negate the classification of cinema – at least according to some of those discourses examined in the Literature Review above.<sup>72</sup>

For example, the discourse of the Lasse Svanberg, a founding member of the ‘European Digital Cinema Forum’ (EDCF), suggests that the term ‘e-cinema’ should be limited to “electronic and digital screenings of all kinds of moving images in cinema or cinema-like public premises” (2001, p.78). Similarly, in a report for the UK Film Council, Neil Watson and Richard Morris consider that the designation of ‘Digital Cinema’ should be reserved for “the projection of full-length feature films to audiences in purpose-built cinema” (2002, p. 5).<sup>73</sup> However, Watson and Morris also consider that Digital Exhibition in ‘non-purpose built venues’ should be considered as the cinema - stating that ‘e-cinema’ represents “the use of digital technology” to “distribute and exhibit a wide range of moving image material to groups of people in a wide variety of venues” (2002, p.4). And indeed, when one examines the entire history of that which is referred to as ‘the cinema’, it seems somewhat erroneous to suggest that ‘the cinema’ can only pertain to purpose built auditoria. Undeniably, that which is widely recognised as the birth of the cinema (i.e. the first Lumière presentation in 1895) occurred not in a purpose built venue, but in an eatery; the Grande café, Paris.

Furthermore, it should be recognised that the market for publicly exhibited moving pictures actually began with Thomas Edison, his Kinetoscope, and the travelling showmen who would tour America, introducing to communities far and wide the wonders of filmed entertainment. This is significant, as even after the Lumières introduced film projection, circus tents, town, village and school halls, etc. would act as makeshift auditoria for those exhibitors who took cinema to the people. This practice only began to decline after the introduction of sound (the equipment necessary carried significant complications for the travelling showman) and the increased popularity of Hollywood feature films (again studio-independent travelling showmen would find the expense of acquiring, transporting and maintaining quality prints from Hollywood distributors to be ruinous).

Moreover, rather than ‘purpose built venues’, according to Roberta E. Pearson, ‘in the early cinema period, circa 1895 to 1907’: “The cinema was exhibited in vaudeville theaters and opera houses” (2004, p.315). Pearson goes on to note that at this time ‘the cinema’ was not the only attraction of such venues, but was presented alongside the live acts for which the location had been originally designed. Bill Baillieu and John Goodchild detail that during this period some premises were fully converted from their original purpose. For example, Baillieu and Goodchild note that in 1906:

“George Hale opened a ‘cinema’ in Oxford Street. The premises had also been a shop and the conversion took the form of a railway carriage. The audience sat in the carriage and watched travel films through its windows” (2002, p.4).

Nevertheless, it is unlikely that even such comprehensively converted venues would be meet the EDCF’s criteria for ‘cinema-like public premises’ (this being the term they use to determine whether a particular case of Digital Exhibition should be considered as pertaining to the cinema).

Particularly highlighting the point that purpose built venues are not universally considered as defining ‘the cinema’ is Baillieu and Goodchild’s declaration that: “the birth of commercial cinema in Britain can be dated precisely – 20 February 1896. On that day the Lumière brothers’ films were shown at the Royal Polytechnic Institute in London” (2002, p.1). This can be compared against Sarah J. Smith’s declaration that “moving pictures were introduced to the British public in 1896 and the first purpose-built cinema in Britain was erected ten years later” (2005, p.5).

Essentially, both these discourses show that ‘the cinema’ is recognised as existing in the UK some ten years prior to the first purpose-built venue.

Ultimately, given that eating houses, circus tents, theatres, converted shops, and educational facilities have all been considered as venues in which the cinema can exist, it would seem the cinema can not be defined through its venue - nor can the venue of Digital Exhibition be considered as negating its qualification as the cinema.

## 4.1.5 The Cinema is...A Contraption

### *Film Based Exhibition*

As detailed above, Michael Karagosian writes: “If I define cinema as the art of presenting film-based motion pictures, then I capture the quality difference between that found in the cinema, and that found elsewhere” (2003). Significantly Karagosian adds to this: “I can think of no one in Hollywood who would question that definition” (ibid). Indeed, this definition of cinema - which makes reference to the technologies of film projection but which does not reference the form of content shown, the quality of the image (other than it being achievable through physical film) nor the venue in which the presentation takes place – is one which is commonly expressed within academic literatures concerned with the cinema.

As detailed above MacQuire considers that “cinema is usually defined with reference to the celebrated screenings held by the Lumière at the *Grand Café* in Paris on 28 December 1895” (1998, p.3). Indeed, Bolter and Grusin suggest that “The cinema itself began when the Lumière brothers exhibited their films in a Parisian café” (2000, p.174). Siegfried Kracauer and Aristides Gazetas write, “Louis Lumière [1864-1948] invented the Cinematographe, which combined moving images with front projection”, and, of the events within the Grand Café’ “The success of the exhibition was immediate, winning the enthusiastic support and wonder of the public, and constituting the official birth of the cinema as we know it today” (2000, p.6).

Similarly Brian Winston considers that:

“Two Frenchmen, the Lumière Brothers, gave the first public cinema (their term) show, using a projector to throw a moving image onto a screen, before an audience, arranged as a live theater, in 1895. So the cinema was invented”

(1995, p.58).

Whilst still presenting the cinema as an ‘invention’, there are submissions as to the inventors of cinema, which contradict those presented on the previous page.

For example Thomas Elsaesser offers that:

“Although it seems ‘perverse to argue that the cinema was not ‘invented’ in France, it is nonetheless true that Max and Emil Skladanowsky showed projected moving images to a paying public at the Berlin Wintergarten on 1 November 1895 almost two months earlier than the Lumière Brothers’ performance”  
(1996, p.15).

No matter who was responsible, it seems that each of the discourses above consider the cinema to have been invented when a technological contraption designed to project moving images through film was first presented to a paying audience. With regards to this, Lee R. Bobker writes that:

“The raw material of cinema is a strip of celluloid (cellulose acetate) which has been coated with an emulsion sensitive to light and capable of receiving and retaining images”  
(1969, p.47).

In fact many commentators consider that the origins of the cinema stretch beyond the first presentation of projected moving images through film, as James Chapman finds,

“Histories of the origins of cinema tend, inevitably, to privilege the technological preconditions that were necessary for the projection of moving pictures. These included still photography....the invention of celluloid....and of celluloid roll film”  
(2003, p.52).

Indeed, commentators such as Thompson and Bordwell, Salt and Monaco (amongst many more) appear to consider that, in addition to an analysis as to the style of approach taken by filmmaking communities, a discourse as to the nature of filmic technologies, and the history of how physical film came to be adopted by Edison and the Lumières et al, is requisite in determining the nature of the cinema. The literature of Bruce Hinrichs offers an example of such discourse:

“Three landmark events led to the cinema in its present form. In 1888, George Eastman developed a light sensitive paper (later celluloid) strip on a roll that he called film. Soon afterward, William Dickson, a British employee of Thomas Edison, developed the sprocket mechanism for the vertical advancement of a roll of film which he had ‘perforated’. Finally, French brothers Louis and Auguste Lumière, who ran a photographic equipment company in Lyons, invented the Cinematograph—a machine capable of recording images on film and then later projecting the frames in succession at a very rapid speed onto a large screen”  
(1996).

To this Hinrichs adds:

“The modern cinema, of course, is dependent upon the same principle.” (ibid)

With further regards to this last sentiment, that the modern cinema is still dependent on the technologies of film, as noted above, Peter Wollen finds that the tarnishing, from light to dark, of the grains of silver embedded in celluloid “still remains the essential precondition of cinema” (2002, p.18).

### ***Changes in The Medium of The Cinema***

It has been suggested above, that the definition of the cinema, as an academic subject, is all that the cinema has been – it now seems that this definition could be made more explicit; the cinema, as an academic subject, pertains to the history of moving image presentation through the technologies of physical film projection.

However, if it is considered that the Lumière brothers (or the Skladanowsky brothers) invented the cinema when they first commercially projected moving pictures through physical film, and if the history of the cinema is subsequently considered analogous to the history of physical film projection technologies, then following from Walker (2007) it must be asked: “Can any variety of Digital Exhibition truly pertain to the cinema – a medium which until this time has been intrinsically linked with physical film?”

It might be possible to argue that Digital Exhibition can still pertain to the cinema, if a precedent is found to show that the physical medium of the cinema is variable.

In fact, it is possible to argue that the distribution and presentation medium of the cinema has changed several times since it was invented. Jan-Christopher Horak notes that whilst, in cinema’s very early days nitro-cellulose proved to be cost efficient, visually satisfactory and technically sufficient, there were two areas with recognisable room for improvement. First was that the physical film and the captured image deteriorated over time, and second was that nitro-cellulose has a highly combustible nature (2000). Horak further details that as early as 1911 Kodak had introduced its first ‘Safety’ base film, made from cellulose-diacetate, but adds that this “lacked the geometric stability, tensile strength and flexibility of nitrate cellulose” (ibid). Horak notes that the industry was largely despondent in regards to diacetate but that in the early 1940s a stable cellulose triacetate was developed and that after 1948 the industry began rapidly switching to this medium. Furthermore, detailing that celluloid already does not hold a monopoly in cinema projection, Horak proclaims that, in recent years, scientists have solved problems relating to a lack of solubility and a susceptibility to static electricity, “making polyester base film stocks the standard for the industry” (ibid).

Nevertheless, whilst celluloid might have been subjugated by polyester, the fact is that physical film is still at the core of technological definitions of the cinema. It is significant therefore that noted film theorist André Bazin does not consider that the cinema should be defined by *any* technological trappings - as will be discussed below.

#### **4.1.6 The Cinema is...A Conceptual Notion**

##### ***André Bazin***

André Bazin categorically states that “Any account of the cinema that was drawn merely from the technical inventions that made it possible would be a poor one indeed” (1967, p.18). Rather than as a contraption Bazin considers that the cinema should be defined as a particular concept – one which has existed since before the invention of physical film. Of the earliest applications of celluloid film Bazin considers: “The nostalgia that some still feel for the silent screen does not go far enough back into the childhood of the seventh art” (1967, p.21). Bazin explains that:

“The real primitives of the cinema, existing only in the imaginations of a few men of the nineteenth century, are in the complete imitation of nature” (ibid).

Following that this concept (‘the complete imitation of nature’) existed prior to the development of those technologies which could begin to realise it, Bazin considers that the origins of the cinema are, in essence, mythological:

“the myth of Icarus had to wait on the internal combustion engine before descending from the platonic heavens. But it had dwelt in the soul of everyman since he first thought about birds. To some extent, one could say the same thing about the myth of cinema”

(1967, p.22)

In further reference to the myth of the cinema Bazin writes: “The concept men had of it existed so to speak fully armed in their minds, as if in some platonic heaven” (ibid).

Further to this Bazin writes:

“If cinema in its cradle lacked all the attributes of the cinema to come, it was with reluctance and because its fairy guardians were unable to provide them however much they would have liked to”

(1967, p.21).

Bazin also writes that: “it would be absurd to take the silent film as a state of primal perfection which has gradually been forsaken by the realism of sound and colour”, adding: “The primacy of the image is both historically and technically accidental” (ibid).<sup>74</sup> Moreover, considering that the ‘real primitives’ of the cinema are actually found in the concept of completely imitated nature, and considering that developments such sound and colour allow for more accurate representations of the natural world, Bazin claims that: “Every new development added to the cinema must, paradoxically, take it nearer and nearer to its origin” (ibid). From this Bazin concludes that (‘in short’):

“cinema has not yet been invented” (ibid).

Bazin refers to the unrealised conceptual form of the cinema as ‘total cinema’ (1967, p.20).

Evidently, Bazin does not consider the cinema to be a medium driven by technological evolution. Rather he considers that the concept of the cinema has existed (fully formed) since the nineteenth century - and that the role of the technological architect has merely been to develop ever more precise attempts at realising that original concept. It is this consideration that leads Bazin to declare:

“The cinema owes virtually nothing to the scientific spirit” and propose that “Even Edison is basically a do-it-yourself man of genius” (1967, p.17).

Significantly, however, Bazin does clearly recognise that attempts to realise the myth of the cinema have been made. Furthermore, somewhat incongruously he refers to such attempts at realisation as ‘cinema’.<sup>75</sup>

It should now be asked whether or not Digital Exhibition can be considered as an attempt to realise the myth of the cinema (i.e. 'the complete imitation of nature'). It should also be asked whether or not Bazin would have recognised the case phenomenon as pertaining to the cinema, even if it does not fully realise the myth. It should further be asked whether or not Bazin's consideration that the cinema is a medium not yet invented has any academic credibility.

### **Has Cinema Really Never Been Invented?**

Notably, Hugh Gray, the official translator of Bazin's work from French to English, writes in his introduction to the second volume of the translated essays of Bazin: "the obsession of Bazin with concrete reality is in line with the broad tradition of bourgeois humanism which sees in painstaking and preconceived realism the ideal of the artist". (1971, p.11). Perhaps, then, it could be argued that Bazin overstated the intentions of those who originally imagined the concepts which would eventually lead to the phenomenon known as 'the cinema'. Perhaps the 'complete imitation of nature' is too broad a remit even for the mythological 'total cinema'.

Certainly it seems possible to argue that there are certain aspects of the physical/natural world which the cinema was never intended to completely imitate - such as the materiality of three-dimensional objects. However, it is also possible to contemplate that Bazin might have been so 'obsessed' with the concept of mimesis that he was unable to consider that the cinema might have been conceived of as means for screening not just 'imitated natural reality' but also original fantasy.

With regards to the possibility that Bazin over-valued the potential of filmic realism, one commentator, Ian Christie, certainly appears to concur with Bazin's notion that the imaginations of 'men of the nineteenth century' shaped the direction of filmic mediation, whilst finding that these men would not have been particularly concerned with simple reflections of the real world. Christie presents that fantasy genre authors such as Jules Verne and Henry Rider Haggard, as well as 'many other popular artists', created a "cinematic vision before the invention of moving pictures, a space and time machine of the imagination" (1994, p.27). Christie pronounces of these authors: "They, rather than the many local inventors of the camera and projector, were the pioneers of cinema as a new kind of experience" (ibid). Furthermore, and further echoing Bazin's theory of 'total cinema', Christie adds: "All that remained was for reality to catch up with fiction, which it started to do in 1895" (ibid).

Nevertheless, whilst it is possible to argue that Bazin was over zealous in declaration that the real primitives of the cinema are in the complete imitation of nature, it still seems fair to consider that the vision of cinema's original conceptual architects has never been *totally* realised. It might now also be considered that 'total cinema' cannot ever be realised through the use of physical film.

As Bazin determines, prior to the invention of the film projector those creative minds who envisioned the potential of 'the cinema' yet to come did not strictly limit their imaginations to silent, black-and-white presentations. It might now also be considered improbable that anyone pondering the full potential of a moving image medium (before a realisation of the limits of film based exhibition) would have strictly confined their vision to two dimensional, passive / pre-recorded presentations. Furthermore, it is certainly unlikely that those who originally conceived of the cinema (before the invention of the Cinematograph) also conceived it as including 'motion blur' – something which, as David K. Irving, and Peter W. Rea write, "is caused by film's relatively low frame rate of twenty four frames per second" (2006, p.193).

That the cinema was ever incapable of presenting images in colour and with sound is due to the limitations of historic filmic technologies. That (film based) cinema still can not deliver high quality three dimensional images, interactive content or presentations without any ‘motion blur’, is due to the enduring, and immutable limitations of physical film based technologies. It thusly seems true to offer that ‘the cinema’ can never reach its ‘total’ conceived potential through the application of film.

### **Does Digital Exhibition take the cinema ‘Nearer and nearer to its origins’?**

As stated above, André Bazin considers that:

“every new development added to the cinema must, paradoxically, take it nearer and nearer to its origin” (1967, p.21).

Could this statement be true of Digital Exhibition – does the case phenomenon bring the cinema closer to its conceptual roots?

If the ‘origins’ of the cinema are indeed in the minds of those who first imagined a publicly presented medium of moving pictures, then perhaps they should be recognised as pertaining not to ‘the complete imitation of reality’, but a more general set of conceptual notions as to the experiential form of such a medium. From that presented above, it seems that some of the originally conceived practical aspects of the cinema have been perverted as the technologies and industries surrounding it have developed. For example, the concept of a travelling cinema was stymied by the cumbersome nature of sound playback technologies and the concept of a cinema of non-feature-film content was stymied following the commercial success of the feature film.

Along similar lines, it could be argued that the Lumière brothers – who presented the films which they themselves had made - had conceived of the cinema as a medium through which filmmakers could control the distribution and exhibition of their own productions and that this was ultimately thwarted as major studios sought to take charge over the phenomenon. In point of fact, this is also how Edison conceived the control of content for his ‘pre-cinema’ device, the Kinetoscope.

It could also be argued that the cinema was not originally conceived as an experience of stony silent film appreciation. Indeed following from the Music Hall, motion picture venues were originally seen as quite a rambunctious environment.

According to Butsch,

“The Depression and movies with sound changed movie audiences of the 1930s from those of the 1920s and earlier.” adding that “Sound silenced audiences, discouraging the sociability that had marked working-class audiences before” (n.d.).

With regards to how Digital Exhibition might return to the cinema originally held conceptions which have since been divorced from the medium, it is of note that, as has been discussed above, Digital Exhibition has broadly reintroduced the practice of presenting ‘alternative content’ on the ‘big screen’. With regards to how Digital Exhibition revisits the concept of ‘travailing cinema’ it is significant to note that in October 2004 it was announced that the UK Film Council was to grant £500,000 of National Lottery money to a total of 81 film clubs and local film societies, community groups and mobile film exhibitors. It was stated that these exhibitors would receive grants from the Council’s Digital Fund for Non-Theatrical Exhibition (NTE) in order to help buy high quality DVD-based digital projection equipment. According to the official announcement:

“The grants from the Digital Fund (NTE) have been carefully balanced between groups wishing to start a new film club or mobile cinema - such as village halls and rural community groups”.

(Film Fans Across The UK Benefit, 2004)

With regards to the concept of 'self-distribution', it is of note that, as detailed above Spencer Ante cites Weiler, co-producer of *'The Last Broadcast'* as asserting of Digital Exhibition:

“The weakest link in the chain of digital filmmaking was distribution. Now, we're saying, 'Hey you can distribute this yourself’” (1998).

It seems that Digital Exhibition might also mark a return of the concept of a sociable cinema. For example, although William Gallagher writes, of a David Bowie concert shown through Digital Exhibition technologies, that: “the audience didn't know whether to clap”, he also notes that one member of that audience jokingly shouted "Turn it up!" whilst another called out; "Is this Pirates of the Caribbean?" (2003).

Out of recognition of such happenings, Godfrey Cheshire suggests of Digital Exhibition:

“I'll bet one thing about our media experience of the last half-century comes close to reversing itself [sic]. Typically, people now watch TV as if in a group, even when alone, and view movies as individuals, even when accompanied by others. That is, they'll talk, hoot, flip the bird at the tube, but sink into mesmerized solitude before the movie screen. Digital may well turn that around. People wanting to watch serious movies that require concentration will do so at home, or perhaps in small, specialty theaters. People who want to hoot and holler, flip the bird and otherwise have a fun communal experience....will head down to the local enormoplex” (1999).

Clearly then, many aspects of Digital Exhibition do mark a return to the cinema's originally conceived form. However, as detailed above, Bazin decreed that *every* new development added to cinema must take it nearer and nearer to its origins, and it seems unlikely that Edison, the Lumières or even Bazin himself ever conceived of the cinema as being a phenomenon of interactive video gaming and targeted marketing. Nevertheless, it is possible argue that Bazin provides a blueprint as to an argument against forever rendering a potential application of modern technology which had never, historically, been thought of to be cinema (nor indeed thought of at all) as being something 'not cinema'.

As noted above Bazin considers that long before the Lumière brothers developed their Cinematographe, the concept men had of the cinema existed "fully armed in their minds" (1967, p.17). However, as is also noted above, Bazin described the primacy of the image (before sound) as both historically and technically accidental. In that vein, it might now be considered that the conceptual model of 'what cinema is', as held in the late Nineteenth and early Twentieth Centuries, can also be described as technically and historically accidental. That is to say; in his text Bazin makes reference to the fact that early cinema was silent and black and white, only because of technological limitations, not because this was the ultimate form that cinema was conceived as. We may now also consider that, just as the technologies which have been developed in order to realise the concept of cinema have evolved, so too have the notional concepts of what cinema is.

In suggesting that “cinema has not yet been invented” Bazin makes clear that he does not consider the medium to exist as a physical contraption. He did not perceive cinema to be defined or constrained by technology, but rather he considered cinema to be a notional concept; a medium in the mind. The technology of cinema might be described as the tools used in any attempt to realise that concept. As discussed above, Bazin apparently considered the fully formed ‘origin’ of cinema to be in notional concepts held by those who imagined a ‘medium’ capable of achieving the ‘complete imitation of reality’. However, as also discussed above, Bazin - who Hugh Gray describes as being ‘obsessed’ by reality, refused to consider that those parties who imagined a ‘medium’ capable of generating original fantasies might also claim equal recognition as the cinema’s conceptual originators. Bazin also failed (or consciously neglected) to consider that the conceived notions of those parties who developed the practical mechanisms of film-based cinema might further claim recognition as the cinema’s conceptual originators.

In fact, if the cinema has not yet been invented, then it appears pertinent to suggest that the abstract concepts of any single mind or even a particular group of minds can not be proclaimed as being the definitive origins of the medium. Rather, it can be argued that the models of the cinema held in the minds of its conceptual and practical architects change as technological developments reveal new potential directions – and that the ‘origins’ of cinema (the held concepts of what cinema could be) are thusly relocated with each new generation of architect. Through their developments each practical architect brings the medium closer to their own originating concepts; for example, if someone were to conceive of an interactive cinema, and they went on to develop such a system then they have brought the cinema closer to their own originating concept - therefore, as Bazin suggested each and every technological development added to the cinema continues to take it nearer to its origins.

By this measure, and paraphrasing Bazin – whilst perpetuating his consideration that total cinema is a myth, cinema will never be invented. Bazin considered the technology of cinema to be capable of evolving so in order to better realise the concept of ‘total cinema’, i.e. the concept that is cinema. We might now consider that, as technology stimulates the imagination, the notional concept of ‘what cinema can be’ is also capable of evolving. Followed to its natural conclusion, it would seem that if any technology ever facilitated the creation and presentation of live, infinite resolution images, with an infinite frame rate and an infinite colour spectrum, the architects of cinema could still conceive of a ‘next generation’ application requiring further technological evolution.

If one extrapolates purely from the works of Bazin then it might be concluded that Digital Exhibition can not be a case of the cinema, not because it is anything other than the cinema, but rather because the cinema is a hypothetical concept forever projected beyond that which is technologically possible. However, each incarnate attempt to realise the concept of the cinema has been granted the designator ‘cinema’ within the sphere of media studies. It could plainly be argued that Digital Exhibition can be described as being mankind’s latest attempt to realise that concept. Therefore, it might be argued that Digital Exhibition should be referred to and be considered, within the sphere of media studies, as ‘the cinema’.

### ***Beyond Bazin***

There are a number of commentators, beyond Bazin, who support the hypothesis that the cinema has not been invented per se – such as Munsterberg, Monaco & Ceram.

Hugo Munsterberg, as cited by Dudley Andrew, highlights an assured truism:

“without technology there would be no moving pictures” (1976, p.15). However,

according to Andrew, Munsterberg further suggests that “without psychosociological pressures, these pictures would sit unprojected in attics and museums” (ibid), and

that, “it is society’s craving for information, education and entertainment that allows cinema to exist at all” (ibid). This discourse again suggests that the cinema is more

than just the apparatus used. Munsterberg’s discourse suggests that filmic

technology merely facilitates the delivery of cinema to society, and from this it is

possible to infer that should an alternative technology exist to better facilitate the public dissemination of ‘information, education and entertainment’ then this

technology could assume the mantle of the cinema.

Furthermore, it may be that the ‘psychosociological pressures’ applied by society, as referred to by Munsterberg, are driven by society’s awareness of technical

possibilities, e.g. society demands talking moving-pictures because this is known to be possible. In which case the cinema going public, as well as the technicians who

build the apparatuses, could be considered the architects whose notional concepts

can be said to be the origins of the cinema - giving further rise to the premise that

cinema, as a concept, is a constantly adjusting, near infinitely expansive medium.

James Monaco claims that:

“every art is shaped not only by the politics, philosophy, and economics of society but also by its technology”

(2000, p.68).

The view that the technology of cinema ‘shapes’ the art of cinema, appears to correlate with the premise that the notional concept of cinema, i.e. the medium’s origin, is affected by technological advancement. Further, Monaco indicates that the relationship between physical film and the cinema should not be considered definitive. Politics, philosophy and economics change overtime, as well as over geography, and yet for over one hundred years and across the globe the cinema has flourished - this gives rise to a consideration that the technology of the cinema might also change whilst the medium remains. It appears that Monaco considers that such things may ‘shape’ an art but they do not necessarily define it.

C.W. Ceram (1965) is cited by Michael Chanan as writing:

“It is a mistake to ask when the cinema was invented. Only cinematography was invented. The cinema is far more than an apparatus, and it was not invented; it ‘grewed’ - like Alice”

(1995, p.109).

## Chapter Four: Summary of Findings

From that presented above it has been found that it is not possible to categorically refute any aspect of Digital Exhibition as pertaining to the cinema based upon the content, the image quality or the venue of that presented. This is because, historically, the designatory term ‘the cinema’ has been applied to presentations of varied contents, with diverse image qualities, in a myriad of venues. Furthermore, due to the subjective nature of artistic definitions, it is not possible to refute any aspect of Digital Exhibition as pertaining to the cinema based upon the artistic merits of that presented.

It is proposed above that one near constant in historical understandings of the cinema is that the medium is realised through the application of physical film. However, it is also found that André Bazin, et al, consider that the cinema has not been realised through the technologies associated with physical film. Rather, Bazin argues that the projection of moving images through film represents a flawed attempt at the realisation of the total concept of the cinema. Bazin also considers that the total concept of the cinema was fully determined in the nineteenth century. However, whilst Bazin is almost undoubtedly correct in his assertion that film based technologies will never fully realise the conceived possibilities of the cinema as held in the minds of its nineteenth century notional architects, it would presently appear unduly limiting to suggest that the conceptual potential of all that the cinema could be (i.e. ‘total cinema’) ceased to expand beyond the imaginations of ‘a few men of the nineteenth century’. Indeed, the author of this paper proposes that the concept of ‘total cinema’ continuously grows as new technologies reveal new potential directions for the medium.

Ultimately, it is proposed that if Bazin's interpretation of the cinema, i.e. that the cinema is a medium beyond invention, is accepted then Digital Exhibition, as a whole, might be considered as belonging to the lineage of attempts at the realisation of the concept – and should, therefore, be categorised within the framework of contemporary media studies as a being form of the cinema.

Nevertheless, before this proposal is fully accepted it is necessary to assess the ability to build explanations of the phenomenon based around the alternative rival hypotheses proposed above. In the next chapter an attempt will be made to explain Digital Exhibition as being a form of television.

**Chapter Five.**

**Explanation Building:**

**Digital Exhibition is a form of Television.**

## Introduction to Chapter Five

As detailed above, the broad objective of this study is to establish a general theory as to Digital Exhibition's position within the framework of contemporary media theory.

As further detailed above, this study also aims to; 'Explain the 'causal links' leading to the emergence of Digital Exhibition (e.g. Address whether the cinema and/or television evolved to become Digital Exhibition)', and; 'Make explicit the practical and theoretical relationships between Digital Exhibition and multiple media (including the cinema and television)'. This chapter continues to realise these aims; progressing the explanation building process, with a focus upon the relationship between Digital Exhibition and television.

As is detailed above, Robert Yin states of the explanation building procedure:

"The gradual building of an explanation is similar to the process of refining a set of ideas, in which an important aspect is again to entertain other *plausible or rival explanations*" (2003, p. 122). As is also detailed above, Yin further offers that "the objective of the explanation building process is to show how explanations cannot be built, given the actual set of case study events" (ibid). Thusly, this chapter provides a narrative account as to the evidence concerning the author's attempt to construct / negate an explanation as to the origins of Digital Exhibition- whereby the phenomenon is, in all its forms, a variety of television.

This chapter also attempts to ascertain whether evidence as to the nature of the primary unit of analysis (i.e. the phenomenon of Digital Exhibition) can be used as implicative evidence in determining whether or not the 'sub-unit of analysis' defined as **'Those interpretations of Digital Exhibition that present the phenomenon as being a form of television'** pertains to body of literature which is; both sincere and true; sincere yet false; wholly disingenuous.

'Part One' of this chapter will present a comparative analysis study whereby technologies contemporarily considered as pertaining to television will be compared to the technologies of Digital Exhibition. Following Patrick von Sychowski's consideration that "each development in television – colour, higher definition, video-taping, and most recently compression and encryption – also brought the concept of e-cinema closer to realisation" (2000, p.15), the technological heritages of television and Digital Exhibition will be compared in order to determine whether both might be considered as pertaining to a single technological lineage. Further to this, and given that within the sphere of Digital Exhibition image resolution is commonly cited as differentiating that referred to as 'digital cinema' from that referred to as 'other digital stuff', a study as to the image resolutions of both Digital Exhibition and television systems will be carried out in order to determine whether this might effectively differentiate the two. Finally, consideration will be given to those technologies which do pertain to Digital Exhibition but which have not (as of this time) ever been considered as pertaining to television.

From this comparative analysis it will be presented that many of the core technological elements of Digital Exhibition can be considered as pertaining to television. It will also be proposed that image resolution is not a universally recognised defining characteristic of television, i.e. there is no pre-determined upper resolution limit at which point a technology ceases to be regarded as television. With regards to those technologies employed in Digital Exhibition which are not currently considered as pertaining to television, it will be suggested that because the technologies of television are continually evolving and increasing (e.g. black-and-white to colour cathode ray tubes, and the introduction of liquid crystal display systems), if the social application of Digital Exhibition can be shown to pertain to television then all the technologies employed by Digital Exhibition could be accepted as being 'television technologies'.

As suggested in 'Part One' of this chapter, in 'Part Two' it will be presented that technologically Digital Exhibition adheres to the 'dictionary definition' of television. However, following Jostein Gripsrud's consideration that the designator of 'television' only refers to a "particular social usage" (1998, p.18) of video-display technology, an effort will be made to determine whether the 'social usage' of Digital Exhibition systems might be analogous with those of television.

The first aspect of television examined with regards to determining the medium's social use will be the contexts within which the medium is situated. It will be presented that, just as with contemporary Digital Exhibition, television has historically and contemporarily been considered to be a public exhibition medium. With regards to this, a 'lens comparison' (Walk, 1998) will be presented, analysing the phenomenon of Digital Exhibition through Anna McCarthy's (2001) concepts of 'ambient television'. Ultimately it will be presented that Digital Exhibition adheres to each of McCarthy's conventions for 'ambient television'.

The second aspect of television examined, with regards to determining its social use, will be the content of the medium. With regards to the models of content consumption, and following a critical analysis of Raymond Williams' literature regarding the delivery of television content as a 'continuous flow', it will be presented that contemporarily the programme content of broadcast television may be consumed as discrete articles on a 'pay-per-view'/'store-and-forward' basis. Following from this, the programme genres of both Digital Exhibition and television will be compared. The literature of J. David Bolter and Richard A. Grusin (1999) will provide a framework of analysis. Evidence will be sourced from Jostein Gripsrud (1998) and Phillip Swann (2000), as well as numerous 'real-world' accounts as to how television has been applied in the provision of content. This evidence will be compared to 'real-world' accounts as to the provision of content via Digital Exhibition. It will ultimately be presented that, in terms of content delivered (as with technologies engaged and contexts employed), the medium of television and the phenomenon of Digital Exhibition *appear* analogous.

## Chapter Five, Part One:

### Technologically, Digital Exhibition and Television are Indistinguishable

#### 5.1.1 Technological Heritage

Despite his definition of ‘digital cinema’ (whereby he implies the phenomenon to pertain to a higher image quality than television), according to NATO consultant Michael Karagosian, “digital cinema has more in common with digital television than any other technology” (2001 a). Correspondingly, and as noted above, Patrick von Sychowski claims that it is,

“important to remember that each development in television – colour, higher definition, video-taping, and most recently compression and encryption – also brought the concept of e-cinema closer to realisation”  
(2000, p.15).

In this section content acquisition, distribution, compression, server and display technologies will be examined in an effort to determine whether there does truly exist a direct relationship between technologies considered as pertaining to the medium of television and those employed in the practices of Digital Exhibition.

#### ***Content Acquisition***

In the effort to determine whether Digital Exhibition and television may (or may not) be analogues, it is significant to examine the technologies employed at the point of content creation. With regards to the creation of content for Digital Exhibition there are three discernable techniques- ‘from scratch on computers’ (i.e. computer generated imagery - CGI), ‘converted from analogue media sources’ (i.e. digitally scanned film) and additionally, acquisition through digital video cameras.

As will be shown below, television content is similarly acquired.

'*Star Wars: Episode II*', the first motion picture to be shot using a 24p CineAlta 1080x1920 pixel resolution digital video camera<sup>76</sup> and presented through Digital Exhibition technologies, was released in 2002. However, two years *prior* to this, Peter Sussman<sup>77</sup>, announced (in a press release referencing the fourth season of '*Gene Roddenberry's Earth: Final Conflict*'): "We are thrilled to be the first episodic television production in the world to shoot using Sony's cutting-edge 24P CineAlta technology" (Gene Roddenberry's Earth, 2000). Notably, the use of CGI in television also predates its use in Digital Exhibition. In 1999, Disney Pixar's full length motion picture '*Toy Story 2*' became the world's first all CGI movie to be presented through Digital Exhibition. However, Jeremy Cantor and Pepe Valencia identify that the "world's first all-CG television series" (Fantome's '*Geometric Fables*') was released in 1991 (2004, p.7).<sup>78</sup>

In addition to '*Toy Story 2*', 1999 saw the digital exhibition of '*Star Wars Episode I: The Phantom Menace*' – which was originally captured on 35mm film and then digitally scanned prior to exhibition. However, that 35mm film has been used to acquire Digital Exhibition content does not immediately differentiate the phenomenon from television. In fact, since the early dawn of television emulsified film has been used as an acquisition technology. According to David Mellor, it was in the 1930s that, due to the inefficiency of his own video camera system, John Logie Baird developed a 'telecine'<sup>79</sup> device to convert conventional photographic film into broadcast video (2000 a, p.202).<sup>80</sup>

It now appears, therefore, that the acquisition technologies of both Digital Exhibition and television are analogous. Both phenomena have historically (and contemporarily) employed digital video, CGI and motion picture film.

### ***Distribution Technologies***

As observed by Thomas Doherty, “In the 1950s, television images travelled over the air, not via coaxial cable or fiberoptic lines. Electrons swirled out from towering transmitters, surfed on the electromagnetic spectrum, bombarded rooftop antennas, and linked up to the living room receiver, also known as the television set” (2003, p.60). However, according to Tim O’Sullivan “the recent period” has been,

“characterised by the development of other forms of television, notably those which are not based on terrestrial broadcasting and reception, but which come from ‘the skies’, down the cable or from the local video rental outlet” (1998, pp.198-199).

Might we now consider Digital Exhibition to be one of these ‘other forms of television’? It is certainly significant that, corresponding with the television distribution technologies addressed within O’Sullivan’s discourse, George Torkildsen details that the media consultancy organisation ‘Screen Digest’ predicts that, through the advancement of Digital Exhibition “film reels will disappear in time and film data will be stored digitally and sent to cinemas by satellite, DVD or cable” (2005, p.212).

Some ‘real world’ cases whereby Digital Exhibition content has been delivered via satellite (ala television ‘from the skies’), DVD and video tape (i.e. physical media akin to that which is, according to O’Sullivan, employed by ‘local video rental outlets’ to distribute television content) respectively include the 2000 Hollywood feature film ‘Bounce’ – which according to Karagosian “was hailed as the first digital satellite transfer of a first-run movie” (2001 b), the 2001 independent production ‘*Mau Mau Sex Sex*’ - which according to Jennie Rose was “one of the first features shot on DV and the very first to be distributed coast-to-coast on DVD” (2003)<sup>81</sup>, and the musical play ‘*Putting It Together*’ – the digital exhibition of which event manager Marc John states: “Since this was a single venue event we did not conduct a satellite transfer of the content as the courier of a Mammoth 2 (video) tape proved sufficient” (2002).

It now appears that, in terms of both acquisition and distribution systems, television and Digital Exhibition share a significant degree of technological commonality.

### ***Content Compression***

With further regards to two of the distribution technologies detailed above, Peter Symes details that a two hour long movie in 3996 x 2160 pixel resolution (4K) would “need over 700 DVDs in its uncompressed form”, adding that “Transmission of a single movie over a satellite transponder, even if we assume a totally error-free circuit, would take more than 2 weeks” (2005, p.123). Video compression is, therefore, a critical technology in making Digital Exhibition a viable phenomenon.

It is thusly significant that, as Walter Ciciora et al detail:

“The first large-scale application of digital video compression was, and still is, broadcast television services”

(2004, p.78).

Further relating to this subject Sonja Schenk details specifically that the ‘MPEG2’ system of data compression and decompression was “originally developed for full-frame broadcast quality video” adding that presently MPEG2 is “used for DVDs and certain types of Digital Television” (2001, p.76). Given that MPEG2 has presently been embraced as a Digital Exhibition empowering technology<sup>82</sup> (having been used to compress feature films such as ‘*The Last Broadcast*<sup>83</sup>’ and ‘*Jurassic Park III*<sup>84</sup>’) it now seems pertinent to consider that Digital Exhibition might actually be one of those ‘certain types of Digital Television’.

Notably however, MPEG2 is not the only compression method employed in the distribution of Digital Exhibition content. For example, according to a report in the Indian publication ‘Cinema Systems Magazine’:

“On 16 December 2003, DG2L Technologies Ltd., a provider of next-generation digital media technologies, became the first company to announce an MPEG-4 based end-to-end digital cinema system”

(DG2L Releases World’s First MPEG-4 Digital Cinema System, 2004).

Moreover, in July 2005 a coalition of the major Hollywood studios decreed that JPEG2000 should be adopted as the standard compression system for Hollywood feature films (Digital Cinema System Specification V1.0, 2005, p.37). However, that Digital Exhibition may be achieved through the service of multiple compression systems still closely reflects the situation of digital television – which, for example, also employs MPEG-4<sup>85</sup> and JPEG2000.<sup>86</sup>

Ultimately, it seems that von Sychowski was correct in his consideration that ‘compression’ is one of the recent “developments in television” which has “brought the concept of e-cinema closer to realisation” (2000, p.13). Furthermore, whilst in recent times Digital Exhibition has adopted specific compression systems not commonly associated with television (i.e. not MPEG2), the medium of television does not appear to be defined by the specific compression algorithm which it uses.

## **Server Systems**

Another fundamental technology which can be considered as pertaining both to Digital Exhibition and television is the 'digital video server'. It is this technology which, in the case of Digital Exhibition, allows cinema operators to digitally store content in a central location and then forward it, as required, to digital projectors.<sup>87</sup> According to Michael Karagosian:

“There are two models for the secure storage and playout of digital cinema content: the Broadcast Server model, and the Data-Centric model” (n.d. b).

Karagosian details that “the broadcast model gets its name by following the server architecture of the broadcast industry” (2005, p.264). Karagosian goes on to detail that ‘in the broadcast industry’ the server is the ‘image rendering device’ and that “the output of the broadcast server is essentially what consumers view in their homes, after transmission over air, satellite, or cable.”(ibid). Karagosian further details that, within a Digital Exhibition site that has adopted the ‘Broadcast model’, video data is stored in a remote server (i.e. one which is not located with the digital projector) which “decompresses the image and audio data, and pushes a synchronous audio stream to the cinema audio processor and a synchronous image stream to the projector” (2005, p.265).

Before they were employed in the realisation of Digital Exhibition, the technologies required to push synchronous streamed video from a remote source to a passive receiver had already been developed - for television applications. In point of fact, Karagosian suggests that “In early implementations of Digital Cinema, the broadcast model seemed a logical system architecture to pursue” because “Professional broadcast-style products having the desired image quality and interfaces were readily available” (ibid).

It now seems that, with regards to the 'Broadcast model', Digital Exhibition server technologies can be directly associated with television. However, might it also be considered that the 'Data-Centric model' represents Digital Exhibition's evolution beyond television?

According to Karagosian, the Data-Centric model distinguishes itself from the Broadcast model by using the server only for isochronous data transfer (2005, p.267). Furthermore, unlike the Broadcast model, the data sent from the server is still in a compressed and encrypted format - with decryption and decompression being carried out by a device located at the projector. According to Karagosian, in the Data-Centric model, "the 'server' is really nothing more than storage" (n.d. c). Additionally, Karagosian states: "data is only served from the storage array upon the request of the projector. Thus, the Data-Centric model projector 'pulls' data from storage, a major distinction from the Broadcast Server model server, which 'pushes' data to the projector" (ibid).

Presently, for Digital Exhibition systems the 'Data-centric model' is considered, by Karagosian, preferable to the 'Broadcast model'- as it reduces network costs<sup>88</sup>, it increases security<sup>89</sup>, and it allows a single server to serve multiple digital projectors which may each commence presentation of the video content at any time.

Significantly, there does seem to be a one recognised form of television to which the Data-Centric model of Digital Exhibition is analogous; Video on Demand (VOD).<sup>90</sup> In a paper for the 'Association of Computing Machinery', Huadong Ma and Kang G. Shin detail that, in a typical VOD system, "video files are stored in a set of central video servers, and distributed through high-speed communication networks to geographically-dispersed clients" (2006). Ma and Shin further detail that, "Upon receiving a client's service request, a server delivers the video to the client as an isochronous video stream" (ibid). Further reflecting the situation of Digital Exhibition, the data delivered through a 'video-on-demand' television system is typically in a compressed format. Moreover, given that VOD is commonly offered as a 'Pay-Per-View' (PPV) service, presentation must be limited to those who have paid, and therefore the data that is 'pulled' from the server is delivered in an encrypted format.

It is of additional note that with the Data-Centric model of Digital Exhibition isochronously delivered video data is requested, received, buffered, decompressed and decrypted by a technological unit located within or in close proximity to the Digital Exhibition display device (i.e. the projector). Reflecting this situation in VOD television systems the request for, reception, buffering, decryption and decompression of isochronously delivered video data is performed by a 'Set-Top-Box'- a technological unit located with the TV set (i.e. the television display device).

### ***Display Technologies***

It is perhaps the display device that most broadly characterises what is meant by television technologies; the ‘television set’ presents content on a ‘television screen’. In order for the case phenomenon to qualify as being television it would seem that the digital projector and the ‘big screen’ of Digital Exhibition must qualify as being a ‘television set’ and ‘television screen’.

The technologies of television display are well documented as being exceptionally varied and continually evolving. Appendix 7: A Focused Chronology of Television Display Technologies provides an account of just some of the display technologies which have been considered as pertaining to television throughout the history of the medium; those discussed being the rotating mirror drum projector, the cathode ray tube (CRT), e-beam addressable liquid surfaces (specifically as employed in Eidophor Projectors) and liquid crystal display (LCD - reflective and transmissive).<sup>91</sup>

Over the following pages, the display technologies of Digital Exhibition will be examined in order to determine whether they might actually be derivations of these, or any other, television systems. A foundational discourse on the technologies of Digital Exhibition is presented in Appendix 2: A Fundamental Introduction to Digital Exhibition.

## Digital Light Processing

With regards to Digital Exhibition display technologies, in 2002 David Bloom wrote, in 'Variety Magazine', that "The only commercially available systems now in theaters are based on Texas Instruments' DLP technology" (2002). As detailed in Appendix 2, 'DLP' technology refers to the use of Digital Micromirror Devices (DMDs) in high-resolution motion picture projectors.

According to Larry J. Hornbeck, "DMD projection display technology started from humble beginnings with a two-line demonstration in 1990" (1998 a, p.35).

By 1994 Michael A. Mignardi, of Texas Instruments reported (of DMDs): "a light modulator for high-definition projection television systems has been constructed using an array of micro-mirrors" (1994, p.1). Significantly, however, Hornbeck details that it was not until in May 1997, three years *after* the construction of this DLP television system, that a program was eventually initiated to develop a "DLP Cinema Technology Demonstration Projector" (1998 b, p.3). Hornbeck further suggests that the 'DLP Cinema Technology' would simply be an enhanced form of that which had already conceived of for television, stating that:

"The goal was to rapidly upgrade an existing projector to produce high-quality, high-brightness images for evaluation in cinema applications"  
(1998 b, p.3).

With regards to the actual commercial application of DLP technologies it of further note that that DLP rear projection television units were released to market approximately one year before ‘*The Last Broadcast*’ became first public digital exhibition of a feature film achieved through DLP technologies.<sup>92</sup>

However, despite DLP existing (practically and commercially) as a television display system prior to its being employed as a Digital Exhibition technology, it is significant to note that some commentators consider that a specific configuration of this technology can actually be used to identify Digital Exhibition as pertaining to the cinema, as opposed to television. Indeed, it is stated on Texas Instruments own website<sup>93</sup> that:

“DLP Cinema technology is derived from DLP technology, using the same Digital Micromirror Device semiconductor. While the typical DLP subsystem uses one DMD chip, a DLP Cinema projection system uses three DMDs” (DLP Technology FAQs, n.d.).

In fact, DLP projectors can be fitted with one, *two* or three DMD devices. However, it must be noted that the notion of ‘three-chip DLP’ pertaining exclusively to Digital Exhibition whilst ‘one-chip DLP’ pertains to television is not entirely accurate – as will be discussed on the following page.

It is fair to say that single-chip DLP systems are commonly associated with domestic television display. However, it should also be recognised that they have been employed in public exhibition. For example, in March 2006 Panasonic unveiled two models<sup>94</sup> which the official press-release describe as “widescreen one-chip mid-to-large venue DLP projectors ideal for projection interstitial materials including movie trailers and commercials” (Panasonic Announces New Wide Screen, 2006).

It is also fair to say there is no three-chip rear projection television (RPTV) set currently available. However, it should be noted that three-chip apparatuses which could be described as front projection television (FPTV) systems have been available for several years. For example, in 2004, equipment manufacturer InFocus announced the availability of “a new three-chip DLP home cinema projector that brings the performance of commercial digital cinema to the elite home theater connoisseur” (InFocus Launches Flagship, 2004). Moreover, Hornbeck observes that it was early in 1997 (i.e. prior to *The Last Broadcast*) that “three-chip, high brightness systems for home theater and large-venue applications were brought to the market” (1998 a, p.41).

Ultimately, both ‘one-chip’ and ‘three-chip’ DLP systems were applied in domestic apparatuses before being employed as Digital Exhibition display technologies. Therefore, (and without even taking into consideration that the projection of video through the employment of an electro-mechanical system of moving mirrors harks back to Ernst Alexanderson’s mirror-drum system – See Appendix 7) it now appears possible to argue that the ‘DLP Cinema projector’ represents an advanced form a television display technology. This can be further evidenced in that in 2004 DLP technology was nominated for a ‘Billboard Digital Entertainment and Media Award’ in the category of ‘Television Technology of the Year’<sup>95</sup> (2004 Awards Finalists, 2004).

## Liquid Crystal Display

Despite the claims of David Bloom (2002), DLP is not the only technology which has been used to present digitally distributed moving pictures to commercial, public, audiences. There have been many such presentations made through the use of projectors employing various different types of liquid crystal display technology.

### *Transmissive LCD*

In 2003 projector manufacturer 'Christie Digital' announced that they had entered into a commercial arrangement with 'Carlton Screen Advertising' (CSA), a company which specialises in delivering 'pre-show' moving image advertising to film-based public venue exhibitors (Carlton Screen Advertising Goes Digital, 2003). According to the 'Christie Digital' press release, CSA's investment decision to equip one hundred and fifty screens in the UK with 'multimedia LCD projection' was seen as "the first major step towards digital cinema in the UK" (ibid).<sup>96</sup>

Given that (as discussed in Appendix 7) LCDs have been employed in television display since 1982, 'transmissive LCDs' have been employed in television display since 1984 and 'transmissive LCD' projectors have been employed as front projection television display units since 1989, it would seem that, if Christie's comments are granted, 'the first major step towards digital cinema in the UK' pertains to a technology which belongs to the lineage of (and is still contemporarily used as) television display.

*Reflective LCD: ILA*<sup>97</sup>

One of the first projector technologies employed in the field of Digital Exhibition was the Victor Company of Japan (JVC)'s 'Image Light Amplifier' (ILA).

The core technology of the ILA projector is an LCD-liquid crystal light valve (LCLV) housed upon a reflective surface – as was the core technology of Seiko Epson's LCD TV watch (See Appendix 7). However, rather than a grey metal sheet the ILA's LCLV is housed upon a highly reflective surface, and rather than using ambient light (as the TV watch did) ILA projectors employ the light from a powerful xenon lamp.<sup>98</sup>

Furthermore, unlike standard LCD displays which require a matrix of transparent electrodes to deliver a direct electrical signal to specific areas of the panel, the ILA LCLV is a continuous non-pixelated liquid surface housed upon a 'photoactivated' 'light-to-voltage' converter. Hornbeck (1998 a, p.23) thusly considers the LCLVs employed in the ILA projector to be analogous to the oil-film technology employed by the Eidophor FPTV systems discussed in Appendix 7. Hornbeck details that "the source of addressing for both the photoactivated LCLV and the oil-film technology is a rasterized e-beam" (ibid). Notably, the signal input for the ILA's 'photoactivated' reflective LCLV is, according to Hornbeck, the light output from a cathode ray tube (CRT) (ibid) – See Appendix 7.

In essence then, whilst ILA technology (as a complete package) has never have been fitted into domestic television display systems, given that that technology pertains to an adaptation of the e-beam addressable liquid surface signal address techniques of oil-film projection, and given that it employs Liquid Crystal Display technologies to reproduce (and amplify) the visual output of a cathode ray tube (all of which are presented as television display technologies in Appendix 7), it would certainly seem pertinent to consider the ILA projector as representing the continued application of recognised television display technologies.<sup>99</sup>

*Reflective LCD: D-ILA*

JVC's successor to the ILA system is known as D-ILA (Direct Drive Image Light Amplifier). The main difference between these systems is that D-ILA does not employ cathode ray tubes and photoactivated LCLVs.<sup>100</sup> However, despite housing no CRTs, it is still possible to argue that D-ILA is essentially an advanced television display technology (beyond its obvious relationship to other LCD television systems).

JVC's original conception of D-ILA was as a domestic television display technology. Jon Iverson cites Takeo Shuzui (president of JVC) as stating at the launch of the first D-ILA projector (in 1998): "D-ILA is a key technology that makes possible an extremely bright, high-definition projector for home and business use", and further that D-ILA "paves the way for consumer HDTV projection" (1998).

Two years later, in 2000, Evan Powell described JVC's DLA-G11 projector as "the first D-ILA based projection system that is street-priced within the reach of many home theater buyers" (2000 a). Significantly, JVC did not publish an intention to expand the application of D-ILA into the field of Digital Exhibition until *after* they had introduced the DLA-G11.<sup>101-102</sup>

*Reflective LCD: SXR*

In 2004, a new 4K (4096x2160 pixels resolution) digital-source projector was unveiled.<sup>103</sup> The technology used to generate the images for this projector has been named by the Sony Corporation, the company responsible for its development, as 'Silicon X-tal Reflective Display' (SXR). According to Sheigh Crabtree, even before its first official demonstration Sony had already begun "touting the SXR chip as the 'holy grail' of d-cinema because of its ability to project 4K images" (2004).

Like the D-ILA, SXR employs three reflective LCD panels - suggesting that the SXR belong to the technological lineage of LCD television display systems. Moreover, evidence that SXR is in essence a 'television technology' can be seen in how the technology was applied prior to its application in Digital Exhibition systems. According to a paper published by Sony, in 2003 the company's 'SXR' technology "was first used in the industry's first full HD home use front projector"<sup>104</sup> (Featuring Reflective Liquid Crystal Display, n.d., p.4). It is further reported that "In March 2005, Sony released the largest Japanese-market consumer TV set"<sup>105</sup> (ibid, p.1) - a television set which again employed 'SXR' technologies.

Indeed, according to a report in Screen Digest magazine, it was not until 2005, two years *after* the launch of domestic SXR appliances, that Sony 'finally unveiled' the 'world's first market-ready' 4K Digital Exhibition projector based upon SXR technologies (Advances made in 4k d-cinema systems, 2005, p.22).

It would seem, therefore, that much like the archetypal Digital Exhibition display systems (DLP, LCD, ILA and D-ILA) Sony's newer SXR technology can not be divorced from the technological lineage, nor contemporary application, of television.

## 5.1.2 The Issue of Resolution

As discussed above it has been suggested that, with regards to DLP systems, the difference between television and so-called ‘digital cinema’ systems has been considered to be in the number of Digital Micromirror Devices employed. However, as detailed above, real world applications show that this does not prove categorical. In this section a further fundamental element which is commonly considered as differentiating ‘digital cinema’ display technologies from those of television will be investigated- that being ‘image resolution’.

Of one particular proposal for the in-cinema installation of transmissive LCD projectors (made by Landmark theatres – See Appendix 5: The Landmark Case) NATO president, John Fithian, declared: “It’s for small independent movies for small screens. But it’s not digital cinema” (2003). Ultimately, Fithian suggested that this scheme would not be ‘digital cinema’ because the planned projectors were “designed for television-quality video” (ibid). Conversely Nick Dager, editor of the ‘Digital Cinema Report’ described Landmark’s proposal as a “watershed moment in the evolution of digital cinema” and further asserted: “yes, it is digital cinema” (2003).

The inability to clearly identify whether schemes such as that proposed by Landmark should be designated as ‘digital cinema’, ‘other digital stuff’, or ‘e-cinema’ prompted a number of organisations to bolster their process of technological standards setting – in the hope that the ‘correct’ use of the term ‘digital cinema’ might be comprehensively defined. In particular, according to Melissa J. Perenson, it is the “resolution debate” which “underscores the need for standards” (2001).

Many of the issues surrounding the want to distinguish between ‘digital cinema’, ‘other digital stuff’ and ‘e-cinema’ etc. have been discussed above; however, it is argued below that it is not possible to produce technological standards which are ‘underscored’ by the issue of resolution that will comprehensively define any aspect of Digital Exhibition as being distinctly disconnected from television.

### ***The Resolution of 'Digital Cinema'***

One of the first of the technological standard setting efforts actually overtly attempted to positively associate the 'high-end' of Digital Exhibition (i.e. that which is deemed by industrial parties to merit the designator 'digital cinema') with television.

As detailed in Chapter Three (p.101), according to Patrick von Sychowski:

“the International Telecommunications Union – a body of the United Nations that focuses on radio frequencies and issues of communication between countries – tried to mandate HDTV, which offers an image that is 1.9K, as the global d-cinema standard”  
(2003 c).

However, the International Telecommunications Union (ITU)'s proposal that 'digital cinema' be defined as being a 'high-definition' form of television was not considered acceptable by many of those companies operating within the cinema industries – including the major Hollywood studios.

On April 2, 2002, the seven major Hollywood studios, (Paramount, Warner Bros., 20<sup>th</sup> Century Fox, Disney, Universal Pictures, Sony and MGM) issued a joint press release announcing the formation of an organisation specifically intended to examine the issues surrounding 'digital cinema'. This organisation, which came to be known as 'Digital Cinema Initiatives LLC' (DCI) did not concur with the approach taken by the ITU. Suggesting that the standards used to define digital cinema should be set above the highest domestic specification<sup>106</sup>, Walt Ordway, the DCI's Chief Technical Officer is reported as having expressed:

"The thrust of what we've been doing at DCI is trying to define a specification for a system that starts at just about a little bit more than HD and goes to about 4K" (Lines of Resolution- DCI's Ordway Talks 2K-4K Standard, 2003).

Given this Walt Ordway's dismissal of 'HD' as pertaining to 'digital cinema', the work of the DCI could be interpreted as an attempt by the Hollywood studios to establish 'digital cinema' as that element of Digital Exhibition which is recognisably, and measurably, not television. However, whilst the DCI attempt to define 'digital cinema' through the standardisation of image quality, it is of note that image quality is not a standard defining element of television, but rather is an arbitrary factor changing over geographical area and time – as is discussed below.

### ***The Resolution of Television***

The image resolution of equipment considered as pertaining to the medium of television has increased as technologies have developed. According R.W. Burns: "on 2 November 1936 the BBC opened the world's first regular service of high definition television from Alexandra Palace in North London" (2004, p.451).

At this time 'high definition' referred to a 405 line mechanism, notably superior to John Logie Baird's 30-line system which the BBC had adopted in 1932 (McLean, 2000 a, p.4). Over half a century later, in the early 1990s, Japan introduced an analogue 1035 line television system (Ive, 2004, p.4), and in 1993 America proposed the adoption of a 1080 line digital HDTV system (Hopkins, 1994).

By the mid-2000s television systems were being developed which actually adhered to Ordway's proposed image range for 'digital cinema' ("that starts at just about a little bit more than HD and goes to about 4K"). In 2005 staff writers for the 'Digital Cinema Magazine' website cite Andrew Stucker, Sony's general manager of digital projection systems as stating: "we sell a 2K projector for the home market" (What You need to Know About Digital Projection, 2005). In 2006, Iain Mackenzie reported, for the BBC, that the Japanese state broadcaster NHK had begun development on the successor to HDTV – which they refer to as Ultra-High Definition Television (U-HDTV).

According to Mackenzie, "U-HDTV has a screen resolution of 7680 x 4320 pixels – approximately sixteen times that of normal HDTV" (2006). Interestingly, Mackenzie adds that:

"although the system is ultimately designed for television, currently technology means it can only be shown on a cinema screen using a state of the art projector" (ibid).

This state of ever increasing image resolution might lead one to consider that there is no actual predetermined upper limit as to what constitutes television. It might also be considered, therefore, that any resolution standard presently set for that referred to as 'digital cinema' will *eventually* be lower than that achievable by that referred to as television. Ultimately, it seems that whilst this aspect of the standards setting process might separately identify different types of Digital Exhibition equipment (i.e. low and high resolution), resolution does not comprehensively differentiate that designated as 'digital cinema' (or indeed e-cinema and ODS) from that designated as television.

### 5.1.3 Digital Exhibition Technologies which have never been associated with Television

As detailed above Michael Karagosian considers that “digital cinema has more in common with digital television than any other technology” (2001 a). The findings presented above would appear to bear this proposition out. Nevertheless, it can still legitimately be argued that there are technologies involved in the presentation of Digital Exhibition content which are not (yet) commonly considered as pertaining to television.

In addition to 4K resolution SXRD chips, for example, the lenses used in many Digital Exhibition systems are designed to fill a screen significantly larger than those of any ‘home cinema’ system, and the software systems used to co-ordinate the Digital Exhibition technological infrastructure are often bespoke systems designed solely for purpose.

However, it has been shown above (and in Appendix 7) that concepts of television are not rigidly defined by any technological standards or practices. Commentators have been found to present that the distribution of television may occur over the air, through cables or even on physical media such as DVDs or video tape. It has been offered that the content of television may (or may not) be compressed through the use of various algorithmic protocols. Furthermore, it has been presented that television programming may be broadcast as a synchronous stream of video, pushed into the homes of viewers, or it may be pulled from a media server as isochronous data blocks.

Other common technologies which are presently considered as pertaining to television include remote control devices, surround sound speaker systems, and the Personal Video Recorder (a tool used to digitally store television programming as it is broadcast for asynchronous viewing). It even seems that the display device itself, the 'television set', may be a mechanical system which projects images onto a silver-screen, may be a rear-located CRT, may be a reflective LCD wrist watch or an e-beam addressed oil-film projector (See Appendix 7).

Notably, the technologies of television display also include systems which house matrices of electrically charged gas (i.e. plasma screens). Furthermore, in February 2006, the Mitsubishi Corporation revealed their plans to produce a laser-based rear projection TV (Mitsubishi makes world's 1st, 2006). In short, the technologies considered as pertaining to television are both evolving and increasing. Therefore, if it was determined that Digital Exhibition is a form of television, all the technologies involved would be television technologies.

Ultimately, it has not proven possible to categorically negate the hypotheses that Digital Exhibition is a form of television through an analysis of the technologies applied. Furthermore, it must be taken into consideration that the application of a technology which currently pertains to television does not by immediate association determine that phenomenon to be television. This can be seen in that satellite distribution is employed in modern telephony; the original application of the CRT was as an oscilloscope; LCDs are commonly employed in digital watches, etc.

Given that the technologies (and the image resolution) of television do not appear to be the defining factors of the medium, in order to determine whether the interpretation of Digital Exhibition as television is legitimate, it seems pertinent, indeed necessary, to examine how television *can* be defined. Consequently, this will be addressed in the following section of this chapter.

## Chapter Five, Part Two: Defining Television

### 5.2.1 Television: The Dictionary Definition

'The American Heritage Dictionary of the English Language' defines television as:

“The transmission of visual images of moving and stationary objects, generally with accompanying sound, as electromagnetic waves and the reconversion of received waves into visual images”.

(‘Television’, n.d.)

As well as applying to the domestic medium this statement clearly describes the processes involved in disseminating and presenting Digital Exhibition content. The 'American Heritage Dictionary' definition is appended by notice that 'television' also pertains to “An electronic apparatus that receives electromagnetic waves and displays the reconverted images on a screen” (ibid). This plainly suggests that the designator 'television' can be applied to Digital Exhibition apparatuses. Finally, 'television' is stated to be “The integrated audible and visible content of the electromagnetic waves received and converted by such an apparatus” (ibid). Given that the above definition allows for 'such an apparatus' to be a Digital Exhibition system, the 'audible and visible content' of Digital Exhibition might also be considered as 'television'. It ultimately seems that if this dictionary definition is taken as *definitive* then one can conclude Digital Exhibition to be television.

In further relation to such findings, Jostein Gripsrud details that ‘the New Merriam Webster Dictionary (1989 edition)’ states that television is the -

“transmission and reproduction of images by a device that converts light waves into radio waves and then converts these back into visible light rays” (1998, p.18).<sup>107</sup>

Gripsrud further states that:

“Whether the pictures transmitted and reproduced show what is going on somewhere as it happens, have been stored for a while, or have been created by computers is irrelevant to the dictionary’s definition” (ibid).

However, Gripsrud also considers that there are limits to such definitions of television, stating: “we do not think of video surveillance as ‘television’” and that this is because ‘television’ “refers to a particular social *use* of the technology” (ibid).

Following from this, it now seems pertinent to establish whether it might be that the ‘particular social uses’ of television and Digital Exhibition technologies separate, or unify, the traditional medium and the contemporary phenomenon.

## 5.2.2 Definition Through Social Use

It is considered within this paper that the ‘social use’ of a particular media technology can be broadly painted through a study of the environments in which that media technology is socially employed, how the physical nature of the medium is used as a means of social communication, the content that is delivered to society through the technology, and the ways by which society consumes that content.

In this section the ‘social uses’ of television will be examined and compared to the ‘social uses’ of Digital Exhibition. This section will be divided into two broad sub-sections; Context and Content. However, it is of note that within the sub-section entitled ‘Context’, discussion will occur as to the types of content that are presented in particular contexts, and vice versa. When addressing the ‘social use’ of any media technology it is the opinion of the author that it is impossible to divorce completely the questions of ‘what is consumed?’ and ‘where is it consumed?’

### **Context**

With regards to the medium’s social use, John Fiske expresses a commonly held consideration:

“television is essentially a domestic medium, the routines of viewing are part of the domestic routines by which home life is organized”  
(1987, p.72).

However, as von Sychowski notes:

“It is important to remember that television was not technologically pre-determined to develop as a consumer good product and a medium for the individual or family”  
(2000, p.13).

Finding that television has not always been ‘essentially a domestic medium’ Gripsrud notes that in 1937 “as many as 109 public viewing rooms were known in London”, and that “Sets could be found in big stores like Harrods, in restaurants, with audiences varying between 10 and 100” (1998, p.22). Gripsrud even goes so far as to suggest that “in terms of audience numbers, then, British television in the 1930s was largely a medium for public exhibition” (ibid).

The nature of both historical and contemporary public exhibition television systems (known as ‘theater television’<sup>108</sup> & ‘ambient television’ respectively) will be examined below, and their societal functions will be compared to the societal functions of Digital Exhibition systems.

### **‘Theater Television’ (& ‘Total Television’)**

That television could offer a commercial / communal (auditoria based / large screen) exhibition experience was a prevailing notion at the inception of the medium; and was a prevailing reality shortly afterwards.

Without question, early experimental television apparatuses were technologically limited to only a few square inches in area. However, many of the technical architects actively involved in the figuration of the medium (including those working within the Radio Corporation of America (RCA) and Britain’s John Logie Baird) held in their minds a concept of television as something comparable to that experienced in cinema auditoria. Writing retrospectively Baird himself details, with regards to his feelings towards the medium during the 1930s: “It seemed to me that now we should concentrate on television for the cinema” (in R.W. Burns, 1986, p.438). Furthermore, both Baird and RCA actually made considerable progress in the achievement of this concept. Indeed, according to William Boddy, “The chief alternative to television as advertiser-supported, network-distributed programming to the home in the 1930s and 40s was large-screen theater television” (1990, p.22).

After several years of accomplishment, the eventual decline of 'theater television' was largely to do with the outbreak of World War II;

- The onset of WWII forced the closure of many exhibition venues.
- Television equipment manufacturers focused their attentions upon military needs. The maintenance / development of 'theater television' systems drew to a halt. Therefore, whilst film based exhibitors soon re-opened to an eager audience, 'Theater television' struggled recover its lost market / momentum.
- After WWII television equipment manufacturers were geared towards the production of small low-cost receivers (having been involved in the production of military radar equipment, etc).
- A commodity starved public embraced the domestic 'television set'.

As people increasingly had free access to broadcast television in their own homes, the *raison d'être* of pay-per-view 'theater television' became increasingly unclear.

Further details as to the ascension and decline of this phenomenon are presented in Appendix 8: A Fundamental History of 'Theater Television'.

To paraphrase André Bazin (1967), it now seems that: The primitives of television, existing only in the imagination of a few men of the nineteenth and early twentieth centuries, are in the complete supersession of the cinema. To further paraphrase Bazin, and given that the decline of 'theater television' and the ascendancy of privately owned television equipment both appear to have been brought about by the events of World War II, it can be considered that the contemporary dominance of the domestic is 'both historically and technically accidental'.<sup>109</sup> It can be argued, therefore, that in effecting the same social functions as conceived of for, and initiated by 'theater television', Digital Exhibition actually better achieves the originally conceived of social uses of television than the domestic receiver ever could. In other words, if one accepts Bazin's notion of 'total cinema'<sup>110</sup> then it can be argued that Digital Exhibition represents a motion towards the achievement of 'total television'.

Despite that presented above, if as decreed by Jerry C. Whitaker (1994, p.10), the domestication of the medium following WWII did mark the *end* of ‘theater television’, then it could be argued that historical precedences (and the concepts of television as held by the medium’s intellectual architects) have been obsolesced as the medium has evolved – and that television is *contemporarily* defined as pertaining exclusively to the domestic locale.

If this argument is granted then, perhaps, with regards to the positioning of Digital Exhibition within the *contemporary* framework of media studies, the new phenomenon can not be defined as being television. However, such an argument weakens when one considers that contemporary television is still very much a medium of public exhibition – as will be discussed below.

### **‘Ambient Television’**

Towards the end of the Twentieth Century Tim O’Sullivan found that:

“Increasingly, television has to be seen not just as the singular ‘box in the corner’, but as the diverse screens which now characterise the myriad of private and public situations and contexts, from multi-set, multi-screen homes to screens in pubs, clubs, schools and workplaces”  
(1998, pp.200-201).

Anna McCarthy refers to publicly positioned television as ‘ambient’, and affirms that in present times,

“TV integrates into everyday environments so well that we barely notice its presence”  
(2001, p.2).

We might now ask; through the installation of Digital Exhibition systems, has television been (barely noticeably) integrated into the cinema auditoria?<sup>111</sup>

As detailed above, the purpose of this section of this thesis is to determine whether the social application of Digital Exhibition can be aligned with that of television, or indeed whether a noticeable difference in social application disproves the hypotheses that Digital Exhibition is television. It is significant, therefore, that McCarthy argues that contemporary public installations of television have specific social uses.

McCarthy suggests that the positioning of 'ambient television' equipment is used to position people- specifically with regards the 'spectator positions' that they are "encouraged to occupy within the social organisation of the space" (2001, p.119).

McCarthy further argues that the positioning of public exhibition television equipment is used to as a form of social communication - informing viewers as to the level of power they hold within the relevant social space.

McCarthy identifies a third social use of 'ambient television equipment; creating private viewing experiences in public. According to McCarthy "The architectural construction of a private viewing experience in public is a convention of television outside the home" (2001, p.4).

A fourth social application of 'ambient television', according to McCarthy is to 'commodify the act of waiting' (2001, p.195).

Each of these social applications of 'television outside the home' will be discussed further below, and it will be determined whether or not Digital Exhibition performs the same functions.

*'Ambient Television' in Social Communications:**The Positioning of People*

According to McCarthy, the physical arrangement of television displays outside of the home is used as a means of informing public audiences as to how they should position themselves. According to McCarthy:

“As part of the public built environment, television operates through invisible and unremarkable conventions, inchoate forces of culture, control and habit that conspire to determine where the TV sits within its environment – behind a counter, or up high, or in an alcove. Such issues may seem dictated by transparent functionality, but they are simultaneously, like all architecture, *forms of social communication*”  
(2001, p.119).

As noted above, McCarthy suggests that the positioning of the television display “helps to position people”- specifically with regards the ‘spectator positions’ that they are “encouraged to occupy within the social organisation of the space” (ibid).<sup>112</sup>

Architecturally the positioning of the Digital Exhibition display undoubtedly owes a debt to the ‘unremarkable conventions, inchoate forces of culture, control and habit’ associated with film based cinema, and thusly appears to be ‘dictated by transparent functionality’. However, at the same time, the positioning of the audience within the auditorium, between the Digital Exhibition screen and the digital projector unit, is clearly determined, dictated and communicated by the relative positioning of equipment. It seems, therefore, that Digital Exhibition fully adheres to this particular social application of television.

*'Ambient Television' in Social Communications:**Determination and Communication of Power Relationships*

McCarthy goes on to identify a second 'social communication' application of television equipment within public spaces. McCarthy argues that factors such as the height of the public exhibition television screen, and the inaccessible positioning of the control system, are used to inform viewers as to the level of power they hold with regards to the proceedings.

According to McCarthy, "one could argue that the most widespread difference between the physical treatment of domestic TV sets and public ones" may be the fact that "the latter are often firmly fixed in place, requiring a ladder and screwdriver to move them from their locations" (2001, p.122). McCarthy suggests "In discouraging physical interference with the TV, overhead placement also prevents the users of a space from accessing its controls", adding that in this respect:

"television even acquires some of the status of institutional speech; its inaccessibility communicates to the users of the space that the right to make a decision about what channel the screen is tuned to is reserved for its proprietor alone" (ibid).

With Digital Exhibition the digital projector is typically situated not only overhead, but in another room which is entirely inaccessible to the public audience. The immovable nature of the screen on which that audience views the projected images, which typically stretches to significant heights, can be considered to 'discouraging physical interference'. Furthermore, even the screen itself is physically distanced from the source, therefore audience members can clearly see that any attempt to manhandle the display area would not result in their accessing its controls. Just as McCarthy presents as a social application of television within public contexts, it is possible to consider that the inaccessibility of the Digital Exhibition projector communicates to members of the audience that the right to make a decision about what is presented on the screen is 'reserved for its proprietor alone'.

*'Ambient Television' and the Provision of Private Experiences in Public Spaces*

As detailed above, McCarthy identifies a third social use of television equipment within public spaces; creating private viewing experiences. In McCarthy's own words:

“The architectural construction of a private viewing experience in public is a convention of television outside the home”

(2001, p.4).

In order to illustrate this point McCarthy discusses venues with multiple ceiling-mounted television screens, such as shopping centre food courts - stating:

“This proliferation of screens paradoxically makes public spectatorship a particular kind of private experience in which each viewer is provided with a personal sight line”

(2001, p.122).

McCarthy further explains that multiple monitors guarantee an unobstructed view by “fragmenting the audience into multiple viewing ‘stations’” (ibid).

McCarthy does not consider that ‘multiple monitors’ is the only way by which the physical positioning of television displays can construct a ‘private viewing experiences in public’, and provides further examples such as “a miniature monitor attached to a recumbent bike in the gym” or via “the use of concrete barriers that shield disturbing video images from children’s eye at the United States Holocaust Memorial Museum” (2001, p.4). McCarthy presents these particular examples in order to illustrate that the means by which audiences can use television to undergo private viewing experiences in public spaces are ‘site-specific’ (ibid) - that is to say that the application of a ‘place-based’ television installation is far more shaped by the space it inhabits than it is capable of shaping the place itself (McCarthy, 2001, p.247). This suggests that if an ‘ambient television’ system was to be located in a cinema environment then it would be shaped by/adopt the visual relations of the auditorium.

With regards to the question as to whether the societal uses of Digital Exhibition reflect those of television, it is of note that McCarthy finds that the ‘visual relations of the theater’ (i.e. the visual relations of the cinema auditorium) represent “the classical articulation of spectatorship’s promise of a discursive zone of privacy in public” (ibid). McCarthy details that the auditorium environment offers a private viewing experiences in public by “positioning the bodies of the collective audience in ranks with unidirectional sightlines” (ibid). Digital Exhibition does pertain to the ‘visual relations’ of the theatre/cinema auditorium, and therefore it would seem that the phenomenon fully adheres to this particular social application of television.

#### *‘Ambient Television’ and The Commodification of Waiting*

Referring again to public exhibition television, McCarthy states that:

“The TV screen, whether it offers a private view for individuals, or addresses large collectivities en masse, always manages to interweave its images, sounds, and commercial appeals into the institutional and not-so-institutional practices that define its public locations”  
(2001, p.2).

McCarthy further argues that:

“one of television’s central institutional tasks in spaces outside the home is to accompany – and, in the case of place-based media, commodify – the act of waiting”  
(2001, p.195)

adding that, whilst ‘often associated with *wasting* time:

“watching television is a way of passing time suddenly *legitimized* when it takes place in waiting environments”  
(2001, p.199).

Just as with television, the commodification of waiting is a one of the 'central institutional tasks' of Digital Exhibition, this is evidenced in the case of Regal cinemas. In February 2003 the Regal cinema chain debuted a twenty minute long digitally projected pre-show advertising programme, known as '*The Twenty*'. To generate content for '*The Twenty*', Regal partnered with a number of American media producers including NBC, Turner Broadcasting Systems inc. (TBS) (Turner In The Multiplexes, 2003) and Vivendi Universal Entertainment (Vivendi & Convex Join NBC and TBS, 2003). Julie Moran Alterio reports that content featuring TV chat-show host Jay Leno, or the comic actors from television programmes such as '*Scrubs*' and '*Will and Grace*', and even the premier of a reality-TV show called '*Last Comic Standing*', in which stand-up comedians are auditioned in a manner similar to the '*Pop Idol*' formulae, began to appear on Regal screens before the start of the main presentation (2003).

In the article by Alterio, Cliff Marks, president of marketing and sales for Regal CineMedia - the promotional arm of Regal Entertainment, states of '*The Twenty*': "It's an entertainment experience for the patrons while they are waiting in their seats for the movies they came to see" (ibid). However, Alterio also cites Douglas Litowitz, a law professor at Lewis & Clark Law School in Portland, Oregon as claiming, of '*The Twenty*': "It's got nothing to do with entertainment. It's marketing". Alterio further cites Litowitz as asserting: "What they're doing at Regal now is blurring the line between advertising and entertainment. This is insidious. It's creeping commercialization into everything" (ibid).

It is notable, with regards to criticisms such as Litowitz's, that McCarthy details how when positioned in public spaces,

“Television's presence occasions moral outrage among journalists and consumer advocates confronted by the squawking display of audiovisual billboards, although it is seldom prolonged”

(2001, p.94).

Furthermore, with regards to Marks' promotion of *'The Twenty'*, it is notable that McCarthy adds:

“when critics object to the screen's 'intrusion' networks counter with an image of the TV as a free attraction, another dimension of a site's publicness”

(2001, p.111)

Ultimately it would appear that Digital Exhibition adheres to each of the social applications of publicly situated television, as identified by Anna McCarthy.

That is to say that, as with 'ambient television', the positioning of Digital Exhibition equipment is used as a means of communicating to social audiences – guiding them to a suitable physical position, and informing them as to the social power structures; Digital Exhibition is used by audiences to undertake private viewing experiences whilst in public situations; and Digital Exhibition is used to commodify the act of waiting in public spaces.

## **Content**

It certainly seems that, with regards to the social spaces in which the case phenomenon is used (e.g. cinema auditoria), and with regards to how it is used by the equipment owners and paying audiences, Digital Exhibition could be considered as a site-specific form of public exhibition television. However, as detailed above, in addition to ‘where’ it is consumed’, ‘what is consumed’ through television can be considered as an influence on (and in-turn be influenced by) the societal usage of the medium. Therefore, in this section, it will be examined whether that which is consumed through television might be analogous, or heterologous, to that which is consumed through Digital Exhibition.

## **Content as Defined by its Mode of Consumption**

### *Broadcast Flow*

In an effort to explain Raymond William’s theory of ‘broadcast flow’ Bernadette Casey et al note that “Raymond Williams (1974) has argued that television is not received as a set of discrete and distinct programmes, but as a flow or sequence of images and feelings that we absorb over a whole day or evening” (2002, p.206).

Williams himself notes that:

“in all developed broadcasting systems the characteristic organisation, and therefore the characteristic experience, is one of sequence or flow”

adding that:

“This phenomenon of planned flow, is then perhaps the defining characteristic of broadcasting, simultaneously as a technology and as a cultural form” (1990, p.86).

In effect Williams argues that the content of television is not defined by individual programmes, but is rather defined as a continuous ‘flow’ of programming<sup>113</sup>.

In his discourses around ‘broadcast flow’, William’s appears to discount historical precedence in his consideration that television content is not received as a set of discrete programmes – given that the audiences of ‘theater television’ did not absorb a flow of images over a whole day or evening, but rather viewed the content presented as discrete and distinct programmes. Therefore, it can be taken that William’s argument is that *contemporarily* television is not received in such a manner. However, it is of note that Williams first presented this notion of ‘broadcast flow’ as the defining characteristic of television in 1975, and, as detailed above, according to O’Sullivan, ‘the recent period’ (i.e. post 1975) has been,

“characterised by the development of other forms of television, notably those which are not based on terrestrial broadcasting and reception, but which come from ‘the skies’, down the cable or from the local video rental outlet” (1998, pp.198-199).

With regards to the latter of these ‘other forms of television’, in 2000 Swann noted his considering that “Renting a movie has long been taken for granted in our culture” (2000, p.86). In fact, the history of this particular ‘form of television’ was initiated just two years *after* Williams had published his work characterising television as a medium of ‘flow’.<sup>114</sup> Presently, Casey et al note that:

“by choosing to hire (or purchase) a pre-recorded tape such as a Hollywood movie...viewers can chose to opt out of schedules altogether” (2002, p.251).

This seemingly represents a way of consuming television content not as ‘flow’ but as discrete articles. It would thusly appear that the content of this particular ‘form of television’ is presented and consumed in much the same way as Digital Exhibition content - with both being ‘used’ as an alternative to broadcast television scheduling.

Still, perhaps William's notion of 'broadcast flow' may hold true if it is considered that video cassettes, and DVDs, are not, as O'Sullivan described them, 'forms of television'. Indeed, there are commentators who do define television as a broadcast only medium. For example, according to Bruce M. Owen, television is "a broadcast medium" (1999, p.19), according to Srivastava, Wang, Lim and Hwang, "television is a broadcast medium" (2002, p.19), according to Mara Einstein, television is "a broadcast medium" (2004, p.36) and according to A. Michael Noll, "The same television signals are sent to everyone; television is a broadcast medium" (1997, p.57). In a similar vein Robert Padjen et al note:

"Television is a broadcast medium and uses various mediums to receive the information, such as coaxial cable and satellite dishes"  
(2001, p.377).

If it is granted that the designator of television should be limited to that which is broadcast (i.e. not delivered via video or DVD), and if it was found that all broadcast content is consumed as 'flow', then perhaps the content of Digital Exhibition could be immediately distinguished from that of television. However, it will be presented below that there are two important forms of broadcast television which, just as with physically distributed and Digital Exhibition content, are not consumed as 'flow': 'Pay Per View' and 'Store and Forward' television.

*Pay-Per-View*

That Digital Exhibition and television are both served by cable and satellite broadcast distribution technologies has been addressed above (as has the fact that the display technologies of both can present content stored on physical media such as DVD).

With regards to those ‘forms of television’ (as identified by O’Sullivan) which come ‘down the cable’ or from ‘the skies’, it is of significance to note that broadcast television does offer a content distribution/reception model quite different from ‘broadcast flow’ but very much akin to that of Digital Exhibition; Pay-Per-View.

According to Phillip Swann “in the late 1980s and into the ‘90s, cable TV operators tried to copy the success of home video by adding a handful of pay-per-view movie channels” (2000, p.88). Swann further notes that this system became an ‘overnight sensation’ when adopted by American satellite television provider ‘DirecTV’ (2000, p.89).

Notably, the similarities between Digital Exhibition and pay-per-view television go beyond the fact that both provide content as discretely consumed articles (as opposed to ‘broadcast flow’); both have also assumed a phraseology and content presentation model more commonly associated with film based exhibition. Presently the British satellite television provider BSkyB offers a service, known as the ‘*Sky Box Office*’, which is advertised as offering, on a ‘pay-per-view’ basis, “recent movies” showing “as often as every 15 minutes” (Sky Guide Explained, n.d.).

### *Store-And-Forward*

Since O'Sullivan's identification of 'other forms of television' (1998, pp.198-199), there has been a further significant technological development; the Personal Video Recorder (PVR) and 'store and forward television'. As detailed by Jock Given:

"For television's digital future, much interest has centred on the Personal Video Recorder (PVR), launched in 1999 by two Silicon Valley companies, TiVo and Replay TV" (2003, p.208). Given further details that "The PVR was intended to capitalise on the expected demand for asynchronous TV viewing" (ibid), and that "PVRs and associated services offered the ability to record programs onto a hard disk like those found in a computer...and play them back some time later" (ibid).

Significantly, according to Mark Pesce,

"With the advent of the PVR and store-and-forward television viewing, the program schedule is freed from the tyranny of the programmer, empowering the viewer"

(2004).

The technological similarities between this particular 'form of television' and Digital Exhibition are clear, in that Digital Exhibition content may be distributed to exhibitors via broadcast satellite and may be recorded onto a hard disk 'like those found in a computer' (i.e. like the video data server – discussed above). It is of further note, with regards to Pesce's statement pertaining to the advent of 'store-and-forward television' that Karagosian expresses (of Digital Exhibition): "In America, we focus on the use of store-and-forward technology for movies", whilst accepting that "we cannot exclude streaming media to the theatres" (2001 c).

Ultimately, it now seems that even if content distributed on physical media is not considered as pertaining to television, rather than just being used by broadcasters for the delivery of a content 'flow' (as described by Raymond Williams), society as a whole may now use broadcast television to experience individually paid-for/digitally stored-and-forwarded feature films, as well as other forms of content, as entirely discrete articles. Furthermore, it would appear that Digital Exhibition closely adheres to this particular 'social use' of the medium.

## Content as Defined by Programme Genres

David Bolter and Richard A. Grusin provide a means of categorising the genres of television content. Bolter and Grusin offer ‘the commercial’ as a particular type of content which is “often considered quintessential to television” (1999, p.192).

Bolter and Grusin further suggest that “Television’s claim to superiority over film, photographs and earlier visual media is that a television broadcast can be ‘live’” (1999, P.187). Nevertheless, according to Bolter and Grusin, “the prime target of television’s remediation<sup>115</sup> has been film” (1999, p.185). Through these statements, Bolter and Grusin appear to categorise television’s application into three key spheres; ‘short-form commercial programming’, ‘live programming’ and ‘feature film exhibition’. It will be examined, below, the degree to which Digital Exhibition content might be categorised as ‘live programming’ or ‘feature film exhibition’. It has already been detailed above that Digital Exhibition presents short-form commercial programming as it commodifies the act of waiting.

In addition to the three broad spheres identified by Bolter and Grusin, it is recognised that the genres of television content can be classified as specific programme types, for example sports coverage, music television, educational television and religious programming, etc. Therefore, presented below will be a study as to whether the specific types of programme delivered through Digital Exhibition can be considered analogous, or heterologous, to that presented as television.

### *Live Programming*

Referring to what he describes as ‘the illusion that the events we have been watching were taking place as we watched them’, Jostein Gripsrud considers that “Immediacy or ‘liveness’ is a key aesthetic value in television” (1998, p.19). Moreover, with regards to actual live broadcasting, Gripsrud affirms that:

“The capacity for transmission of ‘reality in the raw’ is what separates television from other media” (ibid).

It is notable, therefore, that Digital Exhibition equipment is quite capable of presenting live, or ‘as-live’ programming. For example, on September 8, 2003, satellite broadcast technologies were employed in the live transmission of a ninety minute David Bowie concert<sup>116</sup> to cinemas across the UK as well as to cinemas in Paris, Munich and Zurich (Gallagher, 2003).<sup>117</sup> Satellite broadcast technologies were again employed for the repeat showing of the concert, on September 15, in auditoria across Australia, America and Canada (ibid). Directly, relating to Gripsrud’s definition of immediacy as pertaining to ‘the *illusion* that the events we have been watching were taking place as we watched them’, BBC reporter William Gallagher cites one commentator, who witnessed the Digital Exhibition presentation in Australia, as expressing:

“It was hard to know how to react to a performance that was presented as being ‘live’ in the full knowledge that it was more akin to watching a DVD at home (albeit on one massive screen!)” (ibid).

*Feature Film Exhibition*

As detailed above, certain commentators have attempted to divorce the phenomenon of 'digital cinema' from that of in-cinema digital advertising and the presentation of live events (which, as discussed above has commonly been referred to as 'other digital stuff'). For example, Michael Karagosian asserts that

“the accepted definition of digital cinema is the art of presenting first-run motion pictures”

(2003).

Such a definition might successfully create distinctions between different forms of in-auditoria presentation, however (much like the resolution based work of the DCI discussed above) it does not divorce 'digital cinema' from television - because television can also be employed in the presentation of 'first-run motion pictures'.

Phillip Swann predicts that, in the near future, movie studios might experiment with putting first-run films on Pay Per View television (2000, p.95). As an example he suggests that “the new Tom Cruise summer film could be made available to PPV viewers on a one-night-only basis – but on the same day as the film’s premiere in movie theatres” (ibid). Swann even suggests that “the studio would charge a higher price than the ticket to the movie theatre” in order to assess whether consumers would pay a “premium price to see a new film in the comfort of their own home” (ibid).

In fact, the concept of broadcast television as a ‘first-run’ channel for film distribution is not purely hypothetical. For example, Steven Spielberg’s 1971 film ‘*Duel*’ (David A. Cook, 2002, p.142) and Uli Edel’s 1996 production of ‘*Rasputin*’ (Ian McKellen, 2000), premiered on American television before being released in cinemas across Europe. More recently, Jon Healey reports that the 2005 film ‘*Sisterhood of the Travelling Pants*’ was released on DVD in China on the same day as its debut in American cinemas (2005). Healy states that this release marked a “groundbreaking response to movie piracy” (ibid).

Furthering this approach to the combat of piracy, in 2006 Steven Soderbergh’s film ‘*Bubble*’ received simultaneous release in cinemas, on DVD and HD cable television. Explaining, in an article by Xeni Jardin, the reasons why he employed television in the ‘first run’ release window, Soderbergh expressed: “Simultaneous release is already here. We’re just trying to gain control over it”, and continued:

“Name any big-title movie that’s come out in the last four years. It has been available in all formats on the day of release. It’s called piracy”  
(Jardin, 2005).

### *Specific Programme Types*

With regards to the specific forms of content which may be experienced through television, the British satellite television provider BSkyB currently offers (according to the company's own website) a 'educational and entertaining range of channels' (Channel Packages, n.d.). According to BSkyB, these channels include those which specialise in the delivery of feature-length motion pictures<sup>118</sup>, music programming<sup>119</sup>, sporting events<sup>120</sup>, fine art entertainment<sup>121</sup>, business news<sup>122</sup>, religious programming<sup>123</sup>, and even educational programming.<sup>124</sup>

In comparing that which is provided by multi-channel television providers and the content of Digital Exhibition, it is significant to note that, as is detailed above, the National Association of Theater Owners' president John Fithian considers: "Motion pictures will always be our biggest business. But digital cinema may open new doors to essential new revenue streams" (2001). Regarding these 'new revenue streams' Fithian states that, "Digital cinema technologies would make it easier for our members to show musical concerts, sporting events, fine art entertainment, business theatre, religious events, and even educational programming" (ibid).

It might be considered that the content genres described by Fithian can be directly associated with the content genres of those BSkyB channels named above.

Furthermore, In addition to reflecting that which is currently available through contemporary television channels it is also noteworthy that, in terms of content, Fithian's considerations for Digital Exhibition closely match fundamental concepts of television developed before any attempts at realising the medium were made.

According to Gripsrud, Norwegian writer Arne Garborg published a novel, in 1891, which described a future in which "people had screens in their homes which allowed them to watch and listen to opera, ballet, circus, religious services, parliamentary debates or concerts" (1998, p.21).

It now seems, in addition to its technological lineage and its adherence to the dictionary definition, in terms of Digital Exhibition's 'social use' the case phenomenon is analogous with the medium of television.

With regards to where the media technologies are employed, it has been presented that both Digital Exhibition and television can be found in public spaces, and historically the latter was commonly found in 'cinema' auditoria – as Digital Exhibition is today. Much like Digital Exhibition, television was originally conceived of as a means of replacing film in the provision of publicly exhibited motion pictures – and as a means of increasing the types of content which could be shown in 'cinema' auditoria. Presently, both public exhibition television and Digital Exhibition are used as forms of social communication (both guide audience members to their correct positions & both inform audience members as to the location of power within the social space), both are used by audiences to undertake private viewing experiences whilst in public, and both are used to commodify the act of waiting.

With regards to the ways by which society consumes content, it has been found that the programmes of both Digital Exhibition and television are contemporarily viewed as individual discrete articles - as opposed to a continuous flow of content. In fact, it has been found that both asynchronous television viewing and Digital Exhibition can be used as a means of escaping the typical 'broadcast flow' (Raymond Williams, 1974). Moreover, with regards to the forms of content that are provided, both Digital Exhibition and television are found to deliver 'first-run' motion pictures, both are found to deliver commercial programming, and both are found to deliver content which is either live or which attempts to generate the 'illusion' of liveness. In fact both television and Digital Exhibition are found to deliver an exceptionally wide (and analogous) range of programme genres.

## Chapter Five: Summary of Findings

In the attempt to the build (or negate the building of) an explanation of Digital Exhibition whereby the phenomenon is categorised as a form of television, it has been asked whether the technologies and the social applications of Digital Exhibition are analogous to those of television.

In Part One it was found that the essential technologies of Digital Exhibition can be considered as having been initially developed for, or as a minimum used in, the delivery of television. It was found that the technologies of content acquisition for both television and Digital Exhibition include high and standard definition digital video, 35mm celluloid film and digital image generation. It was found that the distribution methods of both Digital Exhibition and television include satellite and cable broadcast and (according to O'Sullivan) the delivery of physical media such as DVD and video tape. It was found that the systems for storing and forwarding content from Digital Exhibition servers closely reflect those of broadcast and VOD television. It was also found that each of the systems presently used to display Digital Exhibition content (i.e. DLP, LCD, ILA, D-ILA and SXRD projectors) can be considered as advanced forms of recognised television display technologies. Additionally, it was presented that efforts to distinguish the technologies of Digital Exhibition from those of television by referencing the image resolutions achievable are unsound. It was presented that since the earliest experiments in display technology the image resolution of equipment designed for television's delivery has consistently increased – with no indication that the medium has a predetermined upper resolution limit.

Whilst plainly sharing many fundamental technologies, it was noted that some of the technologies of Digital Exhibition have not, as of this time, been considered as pertaining to television. Examples of such were identified as the lenses used in Digital Exhibition projectors and the bespoke software systems used to co-ordinate Digital Exhibition technological infrastructures. However, it was found that television as a phenomenon appears to be accepting of new technologies. Therefore, it was considered that the entire technological arrangement of Digital Exhibition could be classed as an addition to the technologies of television, should the application of Digital Exhibition systems be proven to be analogous to the application of television systems.

In Part Two it was found that Jostein Gripsrud considers the medium of television to be more than just an arrangement of technological apparatuses. It was found that Gripsrud considers the medium of television to be a particular 'social usage' of those technologies. Within this chapter it was presented that the 'social usage' of television can be shown through a series of studies regarding the environments in which it is employed; how its physical nature is used as a means of social communication; the content that is delivered to society through it; and the ways by which society consumes that content.

It was found that before television equipment became predominantly domestic, it was largely considered as a tool for public exhibition. It was discussed that the originating concepts of television pertain to a medium capable of usurping film-based cinema as society's instrument of publicly screened entertainment. It was found that the failure of television to achieve this during the 'theater television' period was in large part due to the events of World War II – such as the closing of equipment manufacturing sites, technological advancements such as the miniaturisation of cathode ray tubes, and a flourishing post-war economy in America. In essence, it was found that the domestication of television was a technological and historical accident. As such, it was considered that Digital Exhibition better realises some of the originating concepts of television than domestic receivers.

It was also found that, in present times, television is still commonly employed as a public exhibition medium, and that such 'ambient' television systems are used as tool of social communication (expressing suitable audience positions and power relations); used as a mean of undertaking private viewing experiences in public spaces; and used to commodify the act of waiting. It was found that Digital Exhibition is also used to achieve these same ends.

With regards to the content of television, the concept of 'broadcast flow' (Raymond Williams, 1974) can not presently be considered as definitive. It was found that, just as with Digital Exhibition, broadcast television can be used as a means of consuming discrete articles of content on a 'Pay-Per-View' basis. It was also found that, just as with Digital Exhibition, through the technologies of the 'Personal Video Recorder' broadcast television can be used to experience discrete articles of content on a 'store-and-forward' basis.

With further regards to the content of television it was found that Bolter and Grusin identify three spheres of television programming; 'the commercial', 'live programming' and 'the feature film'. It was determined that Digital Exhibition is used to deliver each of these particular types of moving-image material. Ultimately, it was presented that there seems no specific content that is shown through the medium of television that could not be projected onto the Digital Exhibition screen.

It seems, therefore, that in terms of its societal function (and thusly its technological make-up) Digital Exhibition could be described as being a form of public exhibition television. In fact, just as it was considered that Digital Exhibition might represent a movement towards the realisation of 'total cinema' (in Chapter Four, pp.169-180), the findings of this chapter appear to suggest that Digital Exhibition might represent a movement towards the realisation of 'total television' – that being the embodiment of everything that it has been imagined that television could be.

There now appears a paradox – through analyses comparing academic understandings of the cinema and television, historical accounts as to the effective and conceptual natures of these traditional media, and documented evidence as to the technologies and applications of Digital Exhibition, it seems possible to construct explanations of the case phenomenon as both the cinema *and* television.

## **Chapter Six.**

### **Explanation Building:**

# **Digital Exhibition is a Wholly New Medium**

## Introduction to Chapter Six

As detailed above, Martin Lister et al. propose that when measuring the ‘newness’ of a media phenomenon, “the most obvious question that needs to be asked is: ‘How do we know that something is new or in what way it is new if we have not carefully compared it with what already exists or has gone before?’” (2009, p.46). However, having compared Digital Exhibition to established media phenomena (in Chapters Four and Five), so far, neither those interpretations which present Digital Exhibition as pertaining to the cinema, nor those which present it as a form of television, have been *proven* to be erroneous. Nevertheless, given that these interpretations are ostensibly mutually exclusive, the fact that neither can (yet) be dismissed indicates that neither can be claimed as undoubtedly true. Thus, there is still reason to investigate those interpretations of Digital Exhibition which present the phenomenon to be a new medium; as detailed in Chapter Three (p.105), Patrick von Sychowski claims: “e-cinema is more than just a technical upgrade for film”, adding:

“It is an entirely new medium whose full potential and eventual implications we cannot yet grasp” (2000, p.11).

Furthermore, NATO consultant Michael Karagosian claims of Digital Exhibition:

“It is more than an upgrade from film, it is a whole new medium”  
(2000).

In the continued effort to negate the previously explored explanations of Digital Exhibition, and in order to determine whether contemporary media theory could facilitate an interpretation of the phenomenon as a new medium, Part One of this chapter employs the literature of Joshua Meyrowitz (1993). Meyrowitz’s discourse on ‘Medium Theory’ is used to capacitate an examination into the question of which aspects of a medium make that medium identifiable from all other media. Furthermore, with specific regards to Digital Exhibition, this section asks whether the uniquely identifiable aspects of media indicate the case phenomenon to be a form of the cinema, television – or neither (i.e. something new).

In Part One, it will be presented that Joshua Meyrowitz proposes there to be “three underlying metaphors for what a medium is” (1993, p.64) - these ‘metaphors’ being: “media as conduits”, “media as languages” and “media as environments” (1993, pp.63-74).

Meyrowitz asserts that the ‘media as conduits’ metaphor focuses upon the content of media. Meyrowitz further asserts that the ‘media as languages’ metaphor focuses upon the unique ‘grammar’ used by each ‘type’ of medium. Meyrowitz ultimately asserts that the ‘media as environment’ metaphor addresses the physical, psychological, social, political, and economic variables which pertain to a medium. Meyrowitz presents the ‘media as environment’ metaphor as being that which should be adopted when assessing whether a media phenomenon has qualities which mark it as a medium unique from any others. This is because, according to Meyrowitz, elements of content can be shared across media, and similar types of media (i.e. moving image media) even share specific grammar choices. Following this logic, it will be presented that although certain aspects of the content of Digital Exhibition might appear akin to that of the cinema / television, this does not mean that Digital Exhibition *is* the cinema / television.

Furthermore, even though the environment of Digital Exhibition will be presented as being different to those of domestic television display and film based cinema, it will still be found that this does not necessarily mean that Digital Exhibition is a different medium to the cinema / television. This is because, as will be presented, Meyrowitz suggests that the environment of a medium can change as its technologies change.

In Part Two of this chapter it will be presented that some media theorists have expressed a belief that a phenomenon determined to be a case of the 'new media' cannot be a new form of any established media. For example, Dr. Jan Simons states of the term 'new media': "media designated by that term are different from the media we are familiar with" (2002, p.231). Moreover, Martin Lister categorically finds that "the newness of new media is, in part, real, in that these media did not exist before now" (2003, p.3). As such, in this section an effort will be made to build an explanation of the case phenomenon as a case of the 'new media'.

In the endeavour to explain the nature of that referred to as 'new media', and in order to determine whether Digital Exhibition might be classified as such, the 'Principles of New Media' compiled by Lev Manovich (2001) will be reviewed, and compared to identified aspects of the case phenomenon. The form of analysis performed will once again be that referred to by Walk (1998) as a 'lens' comparison - Manovich's text will be used as a lens through which to view Digital Exhibition. It will be presented that Digital Exhibition does adhere to each of Manovich's 'principles of new media'. However, it will be found that this does not automatically negate explanations one & two. It will be presented that Lister et al (2009) consider that established media (such as the cinema and television) can undergo technological and cultural changes which lead to their becoming cases of the 'new media'. Furthermore, whilst it will be presented that Manovich concurs with Lister et al, it will be found that he considers Digital Exhibition to be an expansion of the cinema which has not yet taken the traditional medium to the point of 'new media' status.

## Chapter Six, Part One:

### Digital Exhibition and 'Images of Media'

#### 6.1.1 Introduction to Concept

Joshua Meyrowitz argues that “a fair amount of confusion in media studies” has resulted from “the lack of explicit treatment of the most basic of question: ‘What are media?’” (1993, p.63).<sup>125</sup> In furtherance to this Meyrowitz asks “What are the characteristics of each medium (or each type of media) that make it physically, psychologically, and socially different from other media and from live interaction, regardless of content and grammar choices?” (1993, p. 69).

Meyrowitz considers that, ‘analytically’, media processes can be separated into three elemental areas (1993, p.73);

- **Content:** “those elements that transcend any particular medium”
- **Grammar:** “those elements that involve manipulations of a particular medium’s production variables”
- **Medium:** “those aspects of each communication environment that are relatively constant, regardless of content and grammar choices”

Following from this Meyrowitz proposes that “virtually all the specific questions and arguments about a particular medium, or media in general, can be linked to one of three underlying metaphors for what a medium is” (1993, p.64). Meyrowitz presents these ‘metaphors’ to be (1993, p.63-74):

- **‘Media as Conduits’** (pertaining to Content)
- **‘Media as Languages’** (Grammar)
- **‘Media as Environments’** (Medium).

In a further attempt to negate those explanations so far examined, in this section it will be determined whether the exploration of Meyrowitz’ ‘metaphors’ can be used to separate Digital Exhibition from either the medium of television, the medium of the cinema – or indeed both.

### 6.1.2 Media as Conduits

According to Meyrowitz, “the most common image of a medium is that it is a sort of *conduit* that is important insofar as it delivers *content*” (1993, p.64). Meyrowitz considers that this metaphor naturally leads to a series of questions pertaining to the content of the medium, starting with “What is the Content?” and leading to “What alternative types of media content are possible” (ibid).

Indeed, within this thesis much of that presented has pertained to these very questions. It has been presented that the content of Digital Exhibition is, by enlarge, first run feature films; this was originally used to support of the explanation of Digital Exhibition as the cinema, although it has also been presented that feature films can often be found as the content of television. It has also been presented that types of ‘alternative content’ such as live and short-form commercial programming are also delivered through Digital Exhibition (as well as through television and, historically, the cinema).

However, Meyrowitz’s literature strongly implies that, in isolation, the study of content will not provide proof as to the true nature of Digital Exhibition. This is because, as Meyrowitz asserts:

“it is common in our culture to believe that there is some *content essence* that can be transported relatively unchanged from medium to medium”  
(1993, p.65).

As an example of this content transcendence, Meyrowitz notes that feature films are made from books (either ‘faithfully’ or ‘unfaithfully’). Furthermore, Meyrowitz suggests that when transcripts of recorded interviews are made it is assumed that the written text “retains something from the original discussion and from the recording (ibid).

The notion of a medium-spanning ‘content essence’ now allows for consideration that, although they appear to share the same content, the cinema, television *and* Digital Exhibition *might* each be a separately identifiable medium. However, if content can traverse from medium to medium, then as a subject of analysis, it can not be used to prove (or categorically negate) *any* of the presented interpretations of Digital Exhibition. Indeed, Meyrowitz overtly considers that research which focuses on media content “tends to minimize the attention given to the nature of the particular medium that holds or sends the message” (ibid). In short Meyrowitz finds that:

“the study of content that is stimulated by the conduit image of media is largely *medium-free*” (ibid).

### 6.1.3 Media as Languages

Meyrowitz presents the second of his media metaphors, ‘media as languages’ as one which focuses attention upon “the unique *grammar* of each medium” (1993, p.66). Meyrowitz explains that: “rather than viewing the medium as a relatively passive conduit, grammar analysts look at the plasticity of the medium in altering the presentation and meaning of content elements” (1993, p.67). Meyrowitz further expresses that those who draw on this metaphor must explore,

“the particular expressive variables, or production techniques, within each medium or each general type of media”  
(1993, pp.66-67).

Meyrowitz adds that “while the conduit metaphor leads one to analyze content that crosses from medium to medium”, the language metaphor “tends to focus attention on those variables that function only within a specific medium or within a particular type of media” (1993, p.67). Still, as Meyrowitz notes: “one cannot discuss grammar choices without also considering content” (ibid).

With regards the ‘grammars’ of Digital Exhibition, television and the cinema, Meyrowitz specifically notes that ‘film and video’ “share many similar variables” (1993, p.67). Indeed, as implied by the findings of Chapters Four and Five, the grammars of the feature film, news report and short-form commercial have each been employed by both the cinema and television. The grammars of the cinema and television, therefore, cannot be described as being uniquely different to each other.

Given that Meyrowitz asserts that ‘each medium’ has a ‘unique grammar’, it may be inferred that the ‘media as language’ metaphor reveals television, the cinema and Digital Exhibition to be aspects of the same solitary medium (the potential to explain both television and film based exhibition, as well as Digital Exhibition, as elements of ‘Total Cinema’ will be addressed in Chapter Seven, pp.293-303). However, with repeated mention of grammar analysis exploring particular ‘types of media’ Meyrowitz can also be considered as implying that the cinema and television are specifically distinct entities which both belong to a particular class of analogous media.

It appears that, just as with the ‘media as conduit’ metaphor, the ‘media as language’ metaphor can not be used to determine the precise nature of Digital Exhibition - other than in determining that no matter how the phenomenon is ultimately defined, it can be considered to ‘share many similar variables’ with other moving image media.

### 6.1.4 Media as Environment

Meyrowitz considers that “A third answer to the question ‘What are media?’ is that each medium is a type of *environment* or *setting* or *context* that has characteristics and effects that transcend variations in content and manipulations of production variables” (1993, p.69). Meyrowitz adds that this approach leads to what he calls ‘*medium analysis*’ – stressing that he uses the singular ‘*medium*’ because “those who draw on this metaphor examine the relatively fixed features of *each* medium” (ibid). In this Meyrowitz appears to imply that each medium pertains to a unique (relatively fixed) ‘environment’. Therefore, if Digital Exhibition can be seen pertain to a significantly different environment than that of film based exhibition, or that of domestic broadcast television, then it can be considered that the relative explanations addressed above would be negated.

Meyrowitz asserts that: “With medium analysis, the focus is on those *environmental features* of the medium that are largely out of the control of users once the medium is in use” (1993, p. 70), and adds that ‘broadly speaking’, the environment metaphor leads one to ask (1993, p. 69)

- What are the characteristics of each medium (or each type of media) that make it physically, psychologically, and socially different from other media and from live interaction, regardless of content and grammar choices?
- What social, political, and economic variables encourage the development and use of media with some features over media with other features?
- How does the addition of a new medium to the existing matrix of media alter the function and use of older media?
- How does the rise of new forms of media alter social roles and institutions whose structure and functions were dependent in some way on the characteristics of previously dominant media?

Over the following pages these questions will be asked of the case phenomenon - with regards to its relationship to film based exhibition and domestic video display.

***Asking Meyrowitz's 'Medium Analysis' Questions of Digital Exhibition***

**What are the characteristics of Digital Exhibition that make it physically, psychologically, and socially different from film based exhibition regardless of content and grammar choices?**

Clearly, the principle physical difference between Digital Exhibition and the traditional cinema experience is that the former does not employ physical film to project moving images. Nevertheless, in terms of audience experiences<sup>126</sup>, the physicality of the two may still be considered near indistinguishable.<sup>127</sup> However, it is widely considered that the ability of any medium to present live imagery psychologically affects audiences in a way that pre-recorded film based exhibition can not. For example, William Boddy writes that:

“The opposition between film’s ‘feel of the past’ and the immediacy of live television created different putative audience paradigms for film and live programs in which viewers of a live performance were seen as more highly involved than those of film programs” (1990, p.81).

Although he writes about the emergence of live television programming, Boddy’s discourse can be considered as equally pertinent to the emergence of live Digital Exhibition. In fact, even when Digital Exhibition presentations are pre-recorded it seems an understanding that the phenomenon pertains to video as opposed to film can still impact upon an audience’s psychological reaction. As detailed above, William Gallagher cites one spectator of a pre-recorded digital presentation of a David Bowie concert as expressing: “It was hard to know how to react to a performance that was presented as being ‘live’ in the full knowledge that it was more akin to watching a DVD at home (albeit on one massive screen!)” (2003).

**What are the characteristics of Digital Exhibition that make it physically, psychologically, and socially different from domestic video display regardless of content and grammar choices?**

Whilst as discussed above, there does not seem to be a pre-determined screen size at which point television equipment ceases to pertain to television, at present there is generally speaking, a considerable size differential between a spectator's home screen and that experienced in a public auditoria. In examining whether there are any characteristics of Digital Exhibition which cause the phenomenon to be considered as psychologically and socially different from domestic television, this physical difference in size should not be belittled.

Although writing about the difference in psychological reaction to film-based exhibition and domestic television screens, the discourse of Carmel Giarratana could easily be applied to Digital Exhibition and domestic television. According to Giarratana "the largeness of the cinema screen, as opposed to the smallness of the television screen or the photograph, changes the dramatic weight of everything" (2002, p.71). Giarratana goes on to express that the 'mythical and technical largeness' of the big-screen has "significant repercussions for the representation of cultural and political spaces not only within the imaginary narrative space of cinematic representation, but also for the way in which we identify with actors/characters and the spaces both metaphoric and literal-that they inhabit" (ibid.).

In addition to its dimensions, the discourse of Geoff King implies that the physical location of the Digital Exhibition screen also psychologically/socially differentiates it from domestic television. King states that: "the impact of the sheer size of the cinema screen is magnified by the social convention of viewing it in a special place in the dark" (2002, p.239), adding: "The reduced audio-visual impact of the small screen is exacerbated by the fact that it is watched usually in normal lighting conditions amid a world of domestic distractions" (ibid.). Ultimately King considers that "Big and small screens lend themselves to different uses as a result of both their audio-visual qualities and the particular social and economic contexts in which each has been developed" (ibid.).

## **What social, political, and economic variables encourage the development and use of Digital Exhibition over film based exhibition?**

Broadly speaking Digital Exhibition and film based exhibition can be considered as fulfilling similar social roles, as both offer the public ‘outside of the home’ entertainment in the form of communal and commercial moving picture experiences. However, as presented above, exhibitors are economically encouraged to introduce Digital Exhibition by the potential to offer previously unachievable social experiences such as the spectatorship of live sports and the participation in interactive events.

As has been detailed above, there are also a number of political/economic variables that have (slowly) encouraged the adoption of Digital Exhibition over film based exhibition. For example Digital Exhibition is seen as being economically advantageous – in that it eliminates film handling costs from the distribution process. In America this has encouraged the large industrial film distributors (i.e. the Hollywood studios) to invest in the phenomenon’s development. In Europe, the notion that reduced costs will lead to more local/independent filmmakers in getting their films to market (thusly decreasing the dominance of Hollywood production in European cinemas) has encouraged publicly funded organisations to invest in its development.

Further to this, it can be argued that the continued development of Digital Exhibition equipment (especially those developments which bring about ever higher resolutions) is encouraged by a want to achieve heightened audience satisfaction – and the economic success that this will bring. It can also be argued that such developments are encouraged by industrial politics; it has been discussed above that the major Hollywood studios and NATO (America’s largest industrial body representing motion-picture exhibitors) have decreed that the celebrated designator of ‘digital cinema’ should only be applied to presentations employing very high resolution systems. In Chapter Three (pp.109-118) it is argued that one reason for Hollywood and NATO to take this stance is so as to decrease the perceived economic threat of lower-resolution systems which might promote a democratisation of film distribution and exhibition.

### **What social, political, and economic variables encourage the development and use of Digital Exhibition over domestic video display?**

That it is experienced 'outside the home' is clearly one of the primary social variables which encourage the 'use' (by general audiences) of Digital Exhibition over domestic video display. Also, that it is able to offer audiences an experience which is near indistinguishable from 'the cinema' (a medium which is widely presented as culturally superior to television) encourages publicly funded, i.e. inherently political, organisations such as the UKFC to invest in its development (as discussed in Chapter Three). Moreover, manufacturers who have to date only been involved in the production of relatively low-cost domestic equipment are now able to expand their market to include public exhibitors. Furthermore, the technologies which they have sold for home use have only ever carried the designation 'television' (which as discussed in Chapter Three carries the stigma of being a medium which 'rots the brain', p.134) - through the development of Digital Exhibition manufacturers are now able to market this technology as being akin to the designated as 'digital cinema'.

### **How does the addition of Digital Exhibition to the existing matrix of media alter the function and use of film based exhibition?**

The emergence of Digital Exhibition has already prompted developments in the technologies of 35mm film projection; the 'MaxiVision 48' system, for example, which enables 48 frames per second projection<sup>128</sup> and has been marketed as a direct rival to digital projection.<sup>129</sup> However, it has been widely suggested that digital technologies will ultimately bring about a complete end to the use of 35mm film in public exhibition (and acquisition). For example, Paolo Cherchi Usai<sup>130</sup> implies that as acquisition increasingly becomes a digital process so too will exhibition. Usai is cited by Nicola Christie as ultimately concluding that: "35mm film will die. The death will be slower than we originally imagined but it is only a matter of time" (2005). As if in reverse concurrence, Vittorio Storaro<sup>131</sup> considers that the total replacement of 35mm projection units will prompt the cessation of 35mm production. Ultimately Storaro concludes: "This is a process that we can slow down or speed up, but it cannot be stopped" (n.d., p.3).

However, despite expressing that the ‘death’ of 35mm use is inevitable, Vittorio Storaro does not consider this to mean a complete end to all film based production / projection. Rather, he considers that the producers, distributors and exhibitors of “epic-spectacular-big romance stories” will move towards high resolution, large-scale film formats (ibid).

Indeed, since the emergence of Digital Exhibition, there have already been a number of new approaches to the application of the large-scale IMAX film system. For example, in 2002 IMAX unveiled a system which “enabled conventional Hollywood blockbusters to be digitally re-mastered into IMAX’s format” (History & Milestones, n.d. a), in 2002 ‘*The Matrix Revolutions*’ became “the first Hollywood film to be simultaneously released to IMAX and conventional theatres” (ibid), and in 2003 the IMAX introduced a “new large-format theatre system designed specifically for use in multiplex theatres” (IMAX Corp: Key Developments, n.d.). Still, despite this apparent shift in application, it must be considered that (as Digital Exhibition technologies continue to develop) higher resolution systems (such as IMAX) might eventually endure the same fate as 35mm film - and the ultimate function of *all* film based exhibition (from 8mm to 70mm, and perhaps even beyond) will be to satisfy a specialist market with a particular (perhaps nostalgic) interest in this historically significant practice.

### **How does the addition of Digital Exhibition to the existing matrix of media alter the function and use of domestic video display?**

As detailed above, Godfrey Cheshire suggests that the Digital Exhibition experience will be a somewhat rambunctious affair, thusly encouraging people who prefer to watch films in a controlled environment to do so at home (using their television set). Another factor which might be considered as encouraging this function of television is the improving quality of the images produced through home receivers. Indeed, even Roger Ebert considers that present-day domestic technologies are preferable to at least one form of film based presentation. Of 16mm film projection in the home Ebert muses: “I’d rather watch a Blu-Ray movie on my big HD screen” (2008).<sup>132</sup>

Of a notion that Digital Exhibition will actually *contribute* to the development of improved domestic video technologies, Sandy George cites Mike Selwyn (the Managing Director of UIP<sup>133</sup> in Australia) as questioning whether exhibitors who install Digital Exhibition equipment are being “used as a testbed for selling the technology into homes, putting cinemas out of business” (2004). Although George suggests that Selwyn asked this with ‘tongue in cheek’, it actually seems that there may be some truth behind the sentiment. For example, as detailed in Chapter Five, Andrew Stucker, Sony’s General Manager of digital projection systems, is cited by staff writers for the ‘Digital Cinema Magazine’ as stating: “we sell a 2K projector for the home market” (What You need to Know About Digital Projection, 2005). Furthermore, as is also presented in Chapter Five (p.206), in 2006, Iain Mackenzie reported that the Japanese state broadcaster NHK had begun development on the successor to HDTV – which has a screen resolution approximately sixteen times that of normal HDTV” (2006).

If Digital Exhibition technologies do improve and roll into the home environment, and if public auditoria are transformed into disorderly social spaces, it is (almost) conceivable that even a self confessed ‘partly sentimental’ ‘traditionalist’ such as Roger Ebert might shift his allegiance to television. Certainly, for more the more general viewer, it seems likely that the ‘home cinema’ function of domestic equipment will be impelled by the introduction of Digital Exhibition.

## **How does the rise of Digital Exhibition alter social roles and institutions whose structure and functions were dependent in some way on the characteristics of previously dominant media?**

### *Film based Exhibition*

Beyond the ‘turning around’ of the social functions of domestic broadcast television and public auditoria, and beyond even the fact that exhibition auditoria can now provide society with an almost infinite range of media content, Digital Exhibition is likely to have an huge impact on those institutions (e.g. film processors, distributors, exhibitors, etc) which were previously dependent upon the physical medium. One specific, and notable, example of such an institution is Technicolor Inc. – a company which Robin Sabin describes as “the largest supplier of movie prints to the industry” (2000). According to Sabin, Lanny Raimondo, the CEO of Technicolor had anticipated the “erosion of his company’s core business” and set about repositioning Technicolor “for a role in a filmless film industry” (2000). In 2001 ‘Technicolor Digital Cinema’ (TDC), announced that they would adapt to a ‘Third Party Middle Man’ / ‘Virtual Print Fee’ business model – whereby they (in partnership with equipment manufacturers) would install digital projectors and establish digital distribution infrastructures, recouping their investment by charging distributors on a per article of content and exhibitors on a per showing basis.

### *Domestic Video Display*

The institutions whose structure and functions were (& are still) dependent in some way on the characteristics of domestic broadcast television include those equipment manufacturers who now sell to the public exhibition market (such as Sony and Texas instruments), and also the content producers who will find themselves having to produce in ever higher resolutions as the technologies of Digital Exhibition roll into the domestic setting.

### 6.1.5 Digital Exhibition as ‘Subcontext’

From that presented in this thesis, it seems apt to consider Digital Exhibition as sharing some aspects of both the environments of contemporary film based exhibition and broadcast video presentation – for example the physical and social experience is akin to film based exhibition, and many of the technological institutions which have entered the field of Digital Exhibition previously operated within the domestic television market. Conversely, there also appear to be many matters which separate Digital Exhibition from both film based exhibition and from domestic television (including the physical, psychological, social, political, economic and industrial factors addressed above). It may now seem possible to conclude that, because it pertains to unique operational variables, with measurable implications regarding the functions of older media and the social role of the moving picture exhibitor, etc, Digital Exhibition represents a unique ‘environment’ and is, therefore, a unique medium.

However, Meyrowitz asserts that “changes in technology can alter the setting of a medium, even when it goes by the same name” (1993, p.70). Meyrowitz elucidates, stating: “what we call ‘television’ has been an evolving environment of broadcast, cable, satellite and, soon, high-definition TV–each with different implications”, adding that: “In effect then, the names we call various media often refer to a cluster of similar, but not identical, *subcontexts* of communication” (ibid). Following these assertions (found only in the footnotes of his literature) it becomes clear that, whilst not categorically dismissing the notion that Digital Exhibition is a unique medium, Meyrowitz’s work appears to offer a degree of support to the explanations of Digital Exhibition as either a ‘subcontext’ of television, or (given that the phenomenon commonly goes by the name) a subcontext of the cinema – the setting (i.e. the environment) of which has changed as the technology has become digital.

In fact, in expressing a consideration that content can be shared across media, ‘similar types’ of media share a common grammar, and changing technologies can alter the setting of a medium, the literature of Meyrowitz does not, in isolation, invalidate *any* of the explanations / interpretations of Digital Exhibition proposed within this paper.

## Chapter Six, Part Two:

### Digital Exhibition and the New Media

Ultimately (as presented above), Joshua Meyrowitz (1993) fails to offer a framework which can comprehensively identify Digital Exhibition as being a brand of the cinema or television – or indeed show the phenomenon to be neither. Meyrowitz considers that changing technologies can alter an existing medium's 'setting', and offers no means to identify whether any particular phenomenon is a new medium, or an old medium with a new environment.<sup>134</sup> As if to indicate the relevance of resolving this specific situation, Hugh Mackay and Tim O'Sullivan observe that:

“in analysing continuities and transformation, it is important to distinguish between ‘old media in new times’ and ‘new media’”  
(1999, p.4).

Significantly, in their use of the words 'new media', Mackay & O'Sullivan are not simply suggesting that the media researcher must determine whether a medium is 'not old'. Rather, they are making reference to a particular class of media, known as 'new media'.

In suggesting that 'new media' can be distinguished from 'old media in new times' Mackay and O'Sullivan imply that if Digital Exhibition can be shown to be a case of the 'new media', then the phenomenon would be automatically distinguished from any older media (such as the cinema and television), i.e. the phenomenon would be shown to be a new medium. As if to corroborate this inference, Dr. Jan Simons states of the term 'new media': “media designated by that term are *different* from the media we are familiar with” (2002, p.231 - emphasis added). Moreover, Martin Lister categorically finds that “the newness of new media is, in part, real, in that these media did not exist before now” (2003, p.3).

Consequently, in order to determine whether it might be a case of the new media, the phenomenon has been subjected to a further process of comparative analysis – whereby known qualities of Digital Exhibition have been compared to a published understanding of what ‘new media’ is. Lev Manovich’s ‘Principles of New Media’ (2001) will be used as the framework for reading existing knowledge about the phenomenon of Digital Exhibition. Each ‘principle’ will be presented, followed by evidence as to the degree to which Digital Exhibition adheres to it.

## 6.2.1 The Principles of New Media

Lev Manovich presents five 'Principles of New Media', which he describes as summarising "some key differences between old and new media" (2001, p.27).

Notably, Manovich considers that "not every new media object obeys these principles", and that they should be considered, therefore, "not as absolute laws but rather as general tendencies of a culture undergoing computerization" (ibid). The five principles presented by Manovich are:

1. **Numerical Representation**
2. **Modularity**
3. **Automation**
4. **Variability**
5. **Cultural Transcoding**

### ***Principle One: Numerical Representation***

Manovich refers to the first principle of new media as 'Numerical Representation', stating that:

"All new media objects, whether created from scratch on computers or converted from analogue media sources, are composed of digital code; they are numerical representations" (2001, p.27).

This notion, according to Manovich, has two key consequences – firstly that "a new media object can be described formally (mathematically)", and secondly that "a new media object is subject to algorithmic manipulation" (ibid).

Manovich explains this latter point, expressing that by applying appropriate algorithms, we can, for instance,

"automatically remove 'noise' from a photograph, improve its contrast, locate the edges of the shapes, or change its proportion. In short, *media becomes programmable*" (ibid).

## Numerical Representation and Digital Exhibition

With regards to the creation of content for Digital Exhibition there are *three* discernable techniques- ‘from scratch on computers’ (i.e. computer generated animation), ‘converted from analogue media sources’ (i.e. digitally scanned film) and additionally, acquisition through digital video cameras. In line with Manovich’s first principle, the products of each of these techniques are ‘composed of digital code’, and therefore are ‘numerical representations’ which are ‘subject to algorithmic manipulation’ – as evidenced below.

### *Acquisition of Content as Encoded Numerical Representations:-*

#### *‘From scratch on computers’*

Of the visual content of entirely computer generated movies, such as ‘*Toy Story*’ and ‘*Shrek*’, David Surman, senior lecturer in computer games design, at the International Film School - Wales, writes:

“The computer generated image is not automatically produced, but is the result of an algorithm, a calculation which is the result of human ideation, whose visual product (the seen pixel) is the outcome of a written equation” (2003).

#### *‘Converted from analogue media sources’*

Bill Birney, of the Microsoft Corporation, describes the process of converting analogue content to digital code. Birney states that:

“Film is run through a scanner, which converts light to a data stream that is then stored on a digital disk recorder (DDR) or recorded on a digital videotape” (2003).

Birney further notes:

“When the movie is in data form, it can be manipulated by using effects software and hardware, if necessary, and then compressed and encoded.” (ibid)

*‘Through digital video cameras’*

Specifically relating to Manovich’s statement that new media objects can be ‘described formally’, and with reference to digital video acquisition, Pablo Hidalgo details:

“All cameras are built for the same basic function: the gathering of light onto an imaging surface. Whereas film cameras use lenses to funnel light onto the photochemical surface of unexposed film, digital cameras sample that light, and assign numerical data to describe its qualities”  
(2003).

In compliance with Manovich’s first principle, once the media product, ultimately destined for Digital Exhibition, exists in a mathematically describable format (i.e. digitally), it is ‘subject to algorithmic manipulation’ (i.e. it is ‘programmable’). And indeed, before a digitised motion picture can be transmitted to exhibitors, the images (or rather the ‘numerical representations’) do undergo a series of ‘algorithmic manipulations’ – these include ‘Image Compression’ and ‘Content Encryption processes’ – as discussed over the following pages.

*Algorithmic Manipulations of Content:-**'Image Compression'*

A 4K digital image (in 1.85:1 ratio) consists of 3996x2160 pixels (for a total of 8,631,360 pixels per frame) (Symes, 2005, p.123). Peter Symes details that “each pixel is represented in the *Digital Cinema Distribution Master* (DCDM)<sup>135</sup> by three 12-bit values”. Symes explains that this “works out to 310,728,960 bits, or nearly 40 megabytes, per frame”, and that with 172,800 frames (at 24fps), a two hour movie accounts for “a total of nearly 7 terabytes” (ibid). Symes describes this as “a phenomenal amount of data”, noting that a dual layer DVD can only store 9.4 gigabytes, meaning that a two-hour movie would require over seven hundred DVDs in its uncompressed form. Symes further expresses that: “Transmission of a single movie over a satellite transponder, even if we assume a totally error-free circuit, would take more than 2 weeks” (ibid). Steven B. Cohen, details that:

“In order to make distribution and transmission cost-effective, the master must be compressed using one of several algorithms” (2002).

One example of those compression algorithms referred to by Cohen is Qualcomm’s bespoke ‘Adaptive Block Size Discrete Cosine Transform’ (ABSDCT). According to literature from Qualcomm: “The ABSDCT algorithm reduces in size the amount of digital information needed to represent high-quality digital images, such as in a digital cinema feature, by as much as 35 to 40 times” (Qualcomm Grants Development License, 2001). The Qualcomm literature further states: “The ABSDCT algorithm divides a digital image into regions, or 'blocks,' that vary in size from 2x2 to 16x16 pixels. Each block is then transformed to the discrete cosine domain and processed to remove information from the image that will not be visible” (ibid). Other compression systems used in Digital Exhibition include the DCI approved JPEG-2000 and the MPEG-2 algorithms (Andriani et al, n.d.).

*'Content Encryption'*

Robert Schumann details that encryption is the act of “obfuscating the original data (*cleartext* or *plaintext*) such that one cannot convert the encrypted data (*cyphertext*) back into plaintext without the knowledge of a secret (the *key*)” (2005, pp.150-151). Schuman further notes that “these encryption schemes are known as *ciphers*” (2005, p.151). Directly relating to Manovich’s principle of ‘Numerical Representation’, Schuman adds: “Modern digital ciphers are almost always based on mathematical and/or logical manipulation of digital data” (ibid). Significantly, Digital Exhibition content is commonly encrypted using such digital ciphers.

In 2001 the National Association of Theater Owners (NATO) produced a list of ‘concerns and requirements’ regarding Digital Exhibition systems - included in that list was “International acceptance of a single encryption algorithm” (Call for Digital Cinema Standards, 2001). With further reference to ‘modern digital ciphers’ (based on ‘mathematical and/or logical manipulation of digital data’), Morley, Thyagarajan & Irvine find that: “security algorithms exist in the public domain today that have proven their cryptographic strength as being adequate for protecting highly valuable content such as digital cinema content” (2004, p.4). Specifically, Morley, Thyagarajan & Irvine suggest that “the federal standard triple-DES<sup>136</sup> algorithm provides easily implemented electronic encryption capability that is more than strong enough to secure digital cinema content for many years to come” (ibid).

From that presented above, it is considered that Digital Exhibition does adhere to Manovich’s principle of ‘Numerical Representation’ - Digital Exhibition content can be described formally (mathematically), and is the subject of algorithmic manipulations

### ***Principle Two: Modularity***

The second of Manovich's principles of new media, 'Modularity', is described as the "fractal structure of new media." (Manovich, 2001, p.30). Manovich details that "Just as a fractal has the same structure on different scales, a new media object has the same modular structure throughout" (ibid). Manovich elucidates further, stating: "Media elements, be they images, sounds, shapes, or behaviours, are represented as collections of discrete samples (pixels, polygons, voxels, characters, scripts). These elements are assembled into larger-scale objects but continue to maintain their separate identities. The objects themselves can be combined into even larger objects – again, without losing their independence" (ibid).

### **Modularity and Digital Exhibition**

Digital Exhibition adheres to this 'principle of new media'; the content of Digital Exhibition conforms to a modular structure. Matt Cowan and Loren Nielsen note that "the imaging devices in digital projectors are generally made of distinct *picture elements* (pixels) that are used to make up an image", and further state: "These elements are small colored dots that when viewed in totality result in an image" (2005, p.240). As detailed above these 'pixels' may also be grouped together into 'blocks', for algorithmic manipulation (i.e. image compression). Just as with film based exhibition, the complete images (projected at a rate which enables moving pictures) are assembled into shots, which make-up scenes, which, in turn, form an entire moving picture product. Furthermore, as the 'Digital Cinema Initiative's Digital Cinema System Specification' document details: "Feature films have been subdivided for some time into discreet temporal units for film systems called reels. This concept and practice will continue in use for the Digital Cinema system. In Digital Cinema, a reel represents a conceptual period of time having a specific duration chosen by the content provider. Digital Cinema reels can then be electronically spliced together to create a feature presentation." (Digital Cinema System Specification - V1.0, 2005, pp. 9-10).

***Principle Three: Automation***

Manovich details that “the numerical coding of media (principle 1) and the modular structure of a media object (principle 2) allow for the automation of many operations involved in media creation, manipulation, and access” (2001, p.32). Manovich thusly offers the possibility to remove human interaction from the creative process (i.e. ‘Automation’) as the third principle of new media.

**Automation and Digital Exhibition***Automation of non-Feature Film Exhibition*

Automation can be seen to be one of the principle features of Digital Exhibition. With regards to pre-show programming, Cohen notes that the “Technicolor Digital Cinema, Avica, EVS and QuVis servers offer the ability to change programs with the touch of a few buttons and are designed to allow for automatic ad and trailer insertion, as well” (2002). Andreas Fuchs cites Tom Galley of Regal CineMedia as detailing that: “In case of a live event, for example, the recording is uplinked to a satellite and then streamed down to the operations center of Hughes Network Systems, from where the content is delivered to the participating theatre via our multi-cast network” (2003). Fuchs further cites Galley as detailing that: “At the theatre, there is a computer for each auditorium, so that we can show independent programs” (ibid) and further that:

“Once the content is uploaded to the client hard disk, the projection is very intuitive. The entire process runs continuously and fully automatic through the built-in interface with the film [sic] projector that controls changeover times” (ibid).

### *Automation of Feature Film Exhibition*

The automation of Digital Exhibition appears to have permeated into every aspect of the phenomenon, including feature film presentation. According to Eric Taub of the New York Times, Mark Kahn, a 'Pacific Theaters' engineer responsible for the company's digital installations, states: "I created a program that allows the projectionist to just push a button and leave. The system lowers the lights, plays the trailers, turns off the lights, and starts the digital projector" (2003). In an article for Forbes magazine, Betsy Schiffman goes so far as to express that, in the 'digital age', exhibitors wouldn't need a projectionist (2000). Correspondingly, John Fithian notes that "In a fully implemented digital regime, we may need fewer staff and less real estate to operate" (2001).

It should also be noted that, as addressed in Chapter Three (p.116), the NATO president voices apprehension as to where the control of an automated exhibition system might be located:

"In the current world, distributors ship films to exhibitors in metal canisters. From that point on, as long as they comply with their contractual obligations, theatre operators control the show. Exhibitors assemble their show elements and determine their screen times. Exhibitors know and interact with their customers. In other words, movie theatre operators operate their business" (ibid).

Fithian further asserts:

"Theatre owners do not want to be reduced to little more than brick and mortar businesses who build new complexes which the studios then operate remotely" (ibid).

Nonetheless, despite Fithian's concerns, it would appear that Digital Exhibition positively adheres to Manovich's third principle of new media; 'automation'.

***Principle Four: Variability***

Of the fourth principle of new media, 'Variability', Manovich states, "a new media object is not something fixed once and for all, but something that can exist in different, potentially infinite versions" (2001, p.36). Manovich details that "old media involved a human creator who manually assembled textual, visual, and/or audio elements into a particular composition or sequence. This sequence was stored in some material, its order determined once and for all. Numerous copies could be run off from the master, and, in perfect correspondence with the logic of an industrial society, they were all identical" (ibid). New media, in contrast, Manovich claims, is characterised by variability. Manovich explains that "Instead of identical copies, a new media object typically gives rise to many different versions" (ibid).

**Variability and Digital Exhibition**

The potential for Digital Exhibition to facilitate variable content has been widely recognised. In an interview with Julie Tamaki, Michael Joe, 'Universal Pictures' executive in charge of digital cinema initiatives', states that one "real advantage of digital cinema from the consumer perspective" is that it "allows the studios and filmmakers and exhibitors to potentially offer more, varied content and do things we haven't been able to do historically in a film-print world" (2006). Tamaki further cites Joe as stating that these 'things' which were impossible in a 'film-print world' include "making different versions of a movie available during the theatrical window" (ibid).

As an example, Tamaki cites Joe as stating:

"it will be much easier to do things like allow directors to put their directors' cuts of their films in theaters (or) to potentially offer a movie with different endings" (ibid).

Josh Kairoff provides further details as to the variable nature of Digital Exhibition, writing:

“With digital cinema, the movie studios have the ability to modify their content whenever it is found desirable. Movies can be changed even after they are released. Anything from language to brand product placement to scene selection can be controlled based on market demand. If mistakes are discovered, they can be corrected by downloading new content. A movie theater could even select which language or version (PG or R) of a movie to show and when”

(2000).

Demonstrated at the ‘Aichi Expo 2005’ in Japan, was a further manifestation of Manovich’s principle of ‘variation’ within the phenomenon of Digital Exhibition.

According to an article in ‘The Times’ newspaper, whilst queuing outside what appeared to be an ‘ordinary cinema’, members of the audience placed their faces into a ‘hole in the wall’ for a few seconds. It is reported that high-resolution digital cameras performed a scan of each audience member from several angles. Once the digitally animated film began, the entire cast was made up of “walking, talking digital replicas of people in the audience” (Go to the cinema and star in the film, 2005).

Beyond variance in feature film presentation Hose, Winchell, Walker & Ratzel propose:

“An advantage of a digital cinema system over a film-based system [is that] the user can create multiple Platters in a digital cinema system that contain the same feature presentation yet can tailor the advertising to audience demographics” (2002, p.16).

Hose et al explain that:

“A matinee might have a younger audience while a late night showing might have a more mature audience, each of which can be targeted with appropriate advertising, potentially increasing advertising revenues for the exhibitor.” (ibid).

***Principle Five: Cultural Transcoding***

Manovich declares: “New media may look like media, but this is only the surface” (2001, p.48). Manovich refers to this ‘surface’ layer, i.e. that which looks like media, as the ‘cultural layer’ of new media (2001, p.46). Beyond the surface, according to Manovich, can be found the ‘computer layer’ of new media (ibid). Explaining this concept (whereby new media consists of a ‘cultural layer’ and a ‘computer layer’) Manovich examines the digital image:

“On the level of representation, it belongs on the side of human culture, automatically entering in to dialog with other images, other cultural ‘semes’ and ‘meythemes’. But on another level, it is a computer file that consists of a machine-readable header, followed by numbers representing color values of its pixels. On this level it enters into a dialog with other computer files. The dimensions of this dialog are not the image’s content, meaning, or formal qualities, but rather file size, type of compression used, file format, and so on. In short, these dimensions belong to the computer’s own cosmology rather than to human culture” (2001, pp.45-46).

Manovich considers that “from one point of view new media is indeed another type of media” (2001, p.47), but adds that ‘from another point of view’ “it is simply a particular type of computer data, something stored in files and databases, retrieved and sorted, run through algorithms and written to the output device” (2001, pp.47-48). Noting that ‘images feature recognizable objects’, Manovich claims that “from one point of view, computerized media still display structural organization that makes sense to its human users” (2001, p.45). However, in contrast Manovich also claims: “from another point of view, its structure now follows the established conventions of the computer’s organization of data” (ibid).

It will be presented below that Digital Exhibition can be divided into two notional strata: the ‘cultural layer’ and the ‘computer layer’; however, the principle of ‘Cultural Transcoding’ not only determines that the cultural and computer layers should be identifiable within cases of ‘the new media’, but more specifically is concerned with the identification of interactions between the layers. According to Manovich, “the computer layer and the culture layer influence each other” (2001, p.46). It is asked, therefore, whether such influences can be identified within the case phenomenon.

### **Transcoding and Digital Exhibition**

#### *Identifying and Specifying the ‘Computer layer’*

In addition to finding that the computer layer of new media pertains to “file size, type of compression used, file format and so on” (2001, pp.45-46), Manovich presents specific ‘examples of categories in the computer layer’ these being: “process and packets (as in data packets transmitted through the network); sorting and matching; function and variable; computer language and data structure” (2001, p.46). It is significant, therefore, that in 2002 Karagosian identified that for the ‘standardisation’ of Digital Exhibition, decisions would have to be made with regards to developing criteria for ‘Image resolution’, ‘Pixel grid’, ‘Aspect ratio’, ‘Color coding’, ‘File format’, ‘Compression format’, ‘Encryption algorithm’, ‘Distribution packaging’, ‘License format’, ‘Digital Rights expression format’, and ‘Metadata’, etc. As part of that same presentation, Karagosian announced:

“Our file formats, our encryption format, our method for packaging content, our method for distributing content, our license format, all of these should be developed as firm foundations upon which we can build interoperable systems” (2002 c).

In essence, Karagosian has identified the existence of Digital Exhibition’s ‘computer layer’- and declared that it should adhere to a set of standardised technical specifications.<sup>137</sup> It is presented below that in the development of these ‘computer layer’ specifications the DCI found it necessary to refer to the phenomenon’s ‘cultural layer’.

*The Influence of ‘The Cultural Layer’ on ‘The Computer Layer’ of Digital Exhibition*

According to Manovich, examples of categories belonging to the cultural layer of new media include “the short story; story and plot; composition and point of view; mimesis and catharsis, comedy and tragedy” (2001, p.46).

In order to determine how the ‘computer layer’ should be constructed so as to facilitate an acceptable audience experience, the DCI sought out and referenced moving-picture content produced by the ‘American Society of Cinematographers’ (ASC). Kerrie Mitchell details that, in 2003, the DCI approached the ASC with regards to “using the guild's filmmaking talent to develop a new kind of test film” (2004). According to Mitchell, in order to ‘fully push the limits’ of Digital Exhibition systems, “the two groups wanted a film that could approach the production values and emotional content of a full-length feature” (ibid). Mitchell cites cinematographer Curtis Clark as stating: “In the past, [film tests have] largely been very sterile and highly technical. We thought, ‘Well, we know how to make movies, so let's make a mini movie’” (ibid). Mitchell notes that the DCI had a “‘shopping list’ of visual factors that can pose a challenge for digital systems, including color contrast, fine detail, rain, smoke, fire, spinning bicycle wheels, and tracking shots past vertical lines, like slats in a picket fence” (ibid). From this list, the ASC produced a twelve minute film featuring a 1950s Italian wedding procession. According to the DCI press release, “the wedding scenes, shot during daylight, at night, during rain and in other variable settings, will serve as a robust test of image quality for digital projectors, compression systems, and other elements of a digital cinema system” (DCI Announces Completion and Availability of ‘StEM Mini-Movie’, 2004).<sup>138</sup>

*The Influence of ‘The Computer Layer’ on ‘The Cultural Layer’ of Digital Exhibition*

With regards to ‘digital cinema’ (as the DCI use that term), the development of technological standards has clearly been influenced by the ASC’s ‘Mini-Movie’ (including the ‘emotional content’ therein). In other words the phenomenon’s computer layer has clearly been influenced by the phenomenon’s cultural layer. However, given that Manovich declares that during the process of ‘cultural transcoding’ “the computer layer and the culture layer influence each other” (2001, p.46), it must also be determined whether or not the ‘computer layer’ of Digital Exhibition has any influence on the ‘cultural layer’.

Manovich details that “Because new media is created on computers, distributed via computers, and stored and archived on computers, the logic of a computer can be expected to significantly influence the traditional cultural logic of media; that is, we may expect that the computer layer will affect the cultural layer” (2001, p.46).

Manovich further claims that “the ways in which the computer models the world, represents data, and allows us to operate on it; the key operations behind all computer programs (such as search, match, sort and filter); the conventions of HCI – in short, what can be called the computer’s ontology, epistemology, and pragmatics- influence the cultural layer of new media, its organization, its emerging genres, its contents” (ibid).

An examination as to how the ontology, epistemology and pragmatics of the computer have influenced the ‘organisation’, ‘emerging genres’ and ‘content’ of Digital Exhibition is therefore presented below.

### **Influences upon ‘Organisation’**

As noted above, referring to the cultural layer of ‘new media’ phenomena, Manovich details that “computerized media still displays structural organization that makes sense to its human users” (2001, p.45). It is significant to note that Manovich himself appears to consider that the computer layer of Digital Exhibition has no direct influence on the meaningful structural organisation of the phenomenon’s cultural layer, stating that although “new distribution technologies such as digital film projection or network film distribution” will “undoubtedly have an important effect on the economics of film production and distribution, they do not appear to have a direct effect on film language” (2001, p.289).

### *Digital Exhibition as Database*

Manovich opines that “modern film language is built on discontinuities: short shots replace one another; point of view changes from shot to shot” (2001, p.144), and he refers to this practice as ‘sequential narrative’ (2001, p.232).<sup>139</sup> Following the pervasiveness of the novel and the cinema, Manovich describes the ‘sequential narrative’ as “the key form of cultural expression of the modern age” (ibid). To this he adds that ‘the database’ is a correlating form of cultural expression introduced by the ‘computer age’ (ibid). Detailing the difference between these two ‘cultural forms’ Manovich writes: “the database represents the world as a list of items, and it refuses to order this list. In contrast, a narrative creates a cause-and-effect trajectory of seemingly unordered items (events)” (2001, p.225). Further to this Manovich writes of databases: “they appear as collections of items on which the user can perform various operations - view, navigate, search. The user’s experience of such computerized collections is, therefore, quite distinct from reading a narrative or watching a film” (2001, p.219).

Manovich notes that ‘the new media’ tend to ‘favour’ the “database form” over others, adding: “Many new media objects do not tell stories; they do not have a beginning or an end; in fact, they do not have any development thematically, formally, or otherwise that would organize their elements into sequence. Instead they are collections of individual items, with every item possessing the same significance as any other” (ibid).

It would seem that if the organisation of any particular presentation element of Digital Exhibition can be seen to ‘favour’ the ‘database form’ over that of the ‘sequential narrative’, then this could be taken as evidence that the ‘computer layer’ of Digital Exhibition can and does effect the organisation of its own ‘cultural layer’ – and also, perhaps, evidence that Manovich was wrong to dismiss Digital Exhibition as having no effect upon ‘film language’. Significantly, one particular application of Digital Exhibition systems *is* referred to, by Timothy Jaeger, as ‘database cinema’.

#### *Database Cinema / Live Cinema*

Michael Lew details that “In live cinema, the performer is essentially editing and sequencing previously recorded digital video on the fly while at the same time being on view to an audience” (2004, p.1). Moreover, according to Timothy Jaeger, such ‘performers’ (who he refers to as ‘Video Jockeys’) “produce a ‘database cinema’ that relies on the intuitive grabbing and shuffling of clips, sounds, and software in real time” (2005, p.22). However, it must be understood that even with ‘database cinema’ audiences do not experience Digital Exhibition in its ‘database form’ (that being an un-sequenced list), rather they are presented with content as an organised series of elements ordered into sequences.

In fact, it appears that the structural organisation of ‘database cinema’ actually closely adheres to that of film based cinema. Jaeger considers that “clip-based databases allow for the creation of narrative” (ibid)<sup>140</sup> and adds (of the ‘mixing’ of content by Video Jockeys): “the unsaid principle of mixing relies on the history of narrative in cinema” (2005, p.16). In this Jaeger refers to the means by which audiences are made aware that the presentation has not yet reached a conclusion: “Even with intercutting and still frames that were prominent in silent films, *the film always continues*. The same thing can be said for the mix... the mix always implies future images” (ibid).

Ultimately, it seems that, just as Manovich writes of ‘modern film language’ (2001, p.144), the organisation of ‘database cinema’ is “built on discontinuities” and that “short shots replace one another”. Thusly, Manovich’s notion that the computer layer of Digital Exhibition has not directly influenced the structural organisation of the phenomenon is not negated.

*Digital Exhibition as Hypernarrative*

It is significant to note that the assemblage and presentation of narratives from a database of content does not pertain exclusively to Digital Exhibition. In fact, Manovich himself states of ‘media objects’ (without distinguishing between new and old): “under the surface, practically all of them are databases” (2001, p.226). Indeed, all motion pictures (including those projected through physical film) are constructed from a database of potential scenes and shots (i.e. clips) – elements of which are chosen for inclusion, pieced together, or rejected by the film editor.

Manovich describes the means by which media users (e.g. exhibition audiences) are granted access to the contents of media databases as ‘interfaces’ (2001, p.227). Manovich describes a key difference between the natures of ‘old media’ and ‘new media’ interfaces, stating that “Historically, the artist made a unique work within a particular medium. Therefore the interface and the work were the same....With new media, the content of the work and the interface are separated. It is therefore possible to create different interfaces to the same material. These interfaces may present different version of the same work...Or they may be radically different from each other” (2001, p.227). In other words, with ‘old media’ the organisation of content generally occurs once and only once, whereas with ‘new media’ (due to the means by which computers may retrieve and arrange, without altering, materials stored within a database) the material may be organised in a unique way every time the content of the database is presented.

The notion that databases are found to be at the core of ‘practically all’ narrative media (both old and new) causes Manovich to redefine his conception of the narrative structure. Manovich now states: “The ‘user’ of a narrative is traversing a database, following links between its records as established by the database’s creator” (Manovich, 2001, p.227). Furthermore, following that the logic of the computer allows for the organisation of media content, i.e. the production of interfaces, to occur any number of times with any number or variants, Manovich coins a new term, ‘*hypemarrative*’, stating that a hypemarrative can “be understood as the sum of multiple trajectories through a database” (ibid).

As presented above Digital Exhibition content does develop - “thematically, formally, or otherwise” (Manovich, 2001, p.218) - with its elements organised into a sequence, i.e. Digital Exhibition is not presented as a database. Nevertheless, if it is found to adhere to the concept of ‘hypemarrative’, then the structural organisation of Digital Exhibition’s cultural layer could be described as having been influenced by the logic of the computer. Accordingly, Michael Lew writes of ‘live cinema’:

“film has been freed from the inherent linearity of the physical tape or celluloid medium. Stored as chunks of data on a hard disk that can be randomly accessed, film no longer needs to be presented in a linear, deterministic way, as a static sequence of shots on a one-dimensional timeline; rather it can be presented as a connected constellation of shots in a multidimensional narrative or performance space, that can be traversed in multiple ways, generating a different interpretation of the same film each time” (2004, p.1).

Significantly, according to Manovich, “A traditional linear narrative is one among many other possible trajectories, that is, a particular choice made within a hypertextual narrative” (2001, p.227). It might now be considered that although Digital Exhibition presentations can (and usually do) appear as a ‘sequential narrative’, Digital Exhibition’s inherent organisation pertains to the hypertextual structure - due to the means by which systems may retrieve and arrange digitally stored content in numerous formations without any modification to that content.

It is of further significance to note that Manovich considers that for media with a hypertextual structure, “if only one interface is constructed the result will be similar to a traditional art object” (2001, p.227). It can now be assumed that, Manovich failed to recognise the potential for Digital Exhibition to facilitate a change in the traditional language of film (i.e. from the ‘one-dimensional timeline’ of a linear narrative to a ‘multidimensional narrative’) because the *usual* (though not compulsory) choice for traversing Digital Exhibition’s hypertextual structure is still as a ‘sequential narrative’ and the *typical* (though not exclusive) practice is to construct just one interface to the database of Digital Exhibition content.

Ultimately it seems that, although each individual ‘interface’ to the content of Digital Exhibition may be structured in a similar way to that of traditional cinema, the ‘computer layer’ does influence the organisation of the ‘cultural layer’ as a whole, through the particular ways by which the logic of the computer facilitates a variable structure.

## Influences upon ‘Emerging Genres’

With regards to the ways by which computers represent and facilitate operations upon data, Chris Crawford notes that “people claim that the computer’s true essence lies in its ability to crunch numbers, or handle mountains of information” (2002, p.16). Conversely, however, Crawford asserts that (‘while these are desirable features’), “they don’t lie at the core of what makes the computer so important to our civilisation.” (ibid). Crawford elucidates, asserting that, “we had plenty number-crunching and data-cubbyholding computers in the 1960s and 1970s, but we don’t talk about ‘the computer revolution’ until the 1980s” (ibid). According to Crawford: “the revolutionary new element was interactivity” (ibid). Beyond the emergence of ‘live cinema’, it would seem, therefore, that the ‘computer layer’ of Digital Exhibition might be considered to have influenced its own ‘cultural layer’ should any aspect of interactivity be evidenced within the ‘emerging genres’ of the phenomenon.

Correspondingly, in a press release from Regal Cinemas, it was announced that in 2003 the chain’s Digital Exhibition system has been employed in the presentation of “an interactive, ‘virtual classroom’ event with Academy Award-winning director James Cameron to discuss his latest feature film, ‘Ghosts of the Abyss’” (Coldplay’s first concert film, 2003). Furthermore, according to Julie Moran Alterio, “the digital network Regal has installed is also coming into play as the chain promotes its theaters for seminars, corporate training and business meetings” (2003), each of which, by their nature, requires an element of interactivity.

## Influences upon ‘Contents’

With further regards to the way that computers represent and facilitate operations upon data, and with regards to the ontology of computerised media, Raymond Ku describes the ability to make perfect copies as a “revolutionary characteristic of digital reproduction” (2002, p.271). Ku details that “An analog recording of a CD, radio broadcast, or a photocopy of a book is not the same as the original, and subsequent copies continue to degrade”, but that, in contrast, “digital copies are identical to the original digital master” (ibid). Ku further details that a digital copy can therefore “be used to produce countless subsequent digital copies, all identical to the original” (ibid). Should the ability to make perfect copies been seen to have an effect on the ‘content’ that is presented through Digital Exhibition, then the ‘computer layer’ of the phenomenon can again be evidenced as having an effect upon the ‘cultural layer’.

### *Potential Democratisation of Content*

Out of the ability to make perfect copies (from a remote source), digital exhibitors will have access to, and have the ability to present, a near infinite supply of moving image content. In addition to already existing product (available from television, DVD, and broadband download etc.), every filmmaker will, in theory, be able to digitize their new productions and upload them onto the Internet – thus making them available to every digital exhibitor in the world. Joe Ashbrook Nickell cites Rodger Raderman, founder and CEO of Ifilm.net, as suggesting, “Distributing films over the Internet for theaters allows us to practically eliminate the cost of distribution,” and adding: “This will open a whole lot of possibilities to get films out there that traditionally wouldn’t get theater time.” (1999). Correspondingly, in the announcement of a Digital Exhibition seminar at the 2002 Woodstock independent film festival, it was claimed that: “The great promise of the Digital Cinema Revolution is to slash costs and democratize the production, distribution, and exhibition of films” (Digital Exhibition – Coming to a Theater Near You, 2002).

### *Potential Subjugation of Content*

In addition to the wealth of content available from independent sources, and again through the capacity to draw perfect digital copies from a remote source, digital exhibitors also have the ability to obtain and present the most popular (and therefore profitable) content on a higher number of screens than is currently possible using physical prints. Indeed, according to independent film director Alex Cox it is ‘multinationals’ such as ‘Sony, Universal/Vivendi, 20th Century Fox and AOL Time Warner’ that are behind the push for Digital Exhibition, and according to Cox, “these are big-time, corporate control freaks” who “are not interested in freedom, in democracy, in art, or in diversity” (2002). Cox goes on to suggest of these companies, and their aims for Digital Exhibition: “They want to dictate not only what we see, but where and how we see it” (ibid).

Indeed, to mark the heavily promoted opening weekend of a Hollywood feature-film, every single digitally equipped auditorium in the world could (theoretically) be used to present the same content at the same time – representing the ‘voluntary subjugation’ (Ess, 2001, p.12) of Digital Exhibition to mainstream Hollywood. Paraphrasing Charles Ess (who wrote of the dominance of the English language on the Internet): the motion picture could become a cultural capital that exercises ‘symbolic power over the cultural have-nots in the virtual world system’ (ibid).

Whether the ‘computer layer’ of Digital Exhibition will augment the ‘cultural layer’ of Digital Exhibition with a richer tapestry of content, or whether it will help the distributors of mainstream Hollywood product to dominate global screen time is something that can not be determined in advance. As von Sychowski states, Digital Exhibition is a new phenomenon whose “full potential and eventual implications we cannot yet grasp” (2000, p.11). Moreover, as William Goldman famously observes, with regards to the ability of filmmakers predict what audiences will choose to see: “Nobody knows anything” (1983, p.39).

It seems that through the ability of Digital Exhibition to present perfect digital copies of content, stored anywhere in the world, big-screen entertainment might undergo a process of democratisation. It also seems that, as a result of this same ability, exhibitions might voluntarily subjugate their auditoria to the Hollywood system. It further seems that this uncertainty in itself could be considered as a significant effect of the ‘computer layer’ on the cultural logic of Digital Exhibition, an effect which is reflected in other new media phenomena such as the Internet.<sup>141</sup>

Despite the unpredictability of audience taste and consumer demand, with regards to the ways that “the computer models the world, represents data, and allows us to operate on it” (Manovich, 2001, p.46), the ‘computer layer’ of Digital Exhibition does appear to have an influence on the organisation, emerging genres and content of the phenomenon’s ‘cultural layer’. Therefore, it seems that Digital Exhibition fully adheres to the principle of ‘cultural transcoding’, which Manovich describes as “the most substantial consequence of the computerization of media” (2001, p.45). In fact, as presented above, it would seem pertinent to conclude that Digital Exhibition closely adheres to each of Manovich’s theories and principles of new media; Numerical Representation, Modularity, Automation, Variability *and* Cultural Transcoding. This certainly adds credibility to the explanation of Digital Exhibition as a case of the new media.

## 6.2.2 Digital Exhibition: An Old Medium as ‘New Media’?

It is detailed above that Mackay and O’Sullivan consider that: “it is important to distinguish between ‘old media in new times’ and ‘new media’” (1999, p.4), and further that Dr Jan Simons states of the expression ‘new media’: “media designated by that term are different from the media we are familiar with” (2002, p.231).

Reading such texts in isolation might lead one to consider that cases of the ‘new media’ must be *different* to (i.e. distinguishable from) cases of the ‘old media’ (in new times) – and therefore it might seem that by using Manovich’s literature as the ‘lens’ through which to view Digital Exhibition, the phenomenon has been revealed to be neither the cinema nor television – but instead it has been shown to be something new (i.e. a case of the new media).

However, despite Martin Lister having previously stated that “the newness of new media is, in part, real, in that these media did not exist before now” (2003, p.3), in a 2009 publication Lister et al present that rather than exclusively pertaining to ‘different media’ the term ‘new media’ can also reference ‘changed media’. Lister et al now state that “the unifying term ‘new media’ actually refers to a wide range of changes in media production, distribution and use” (2009, p.13), adding that: “These are changes that are technological, textual, conventional and cultural” (ibid). As an example this Lister et al offer that “it can be argued that ‘digital television’ is not a new medium but is best understood as a change in the form of delivering contents of the TV medium” (2009, p.47). Making their point explicit, Lister et al present a consideration that: “Many digital new media are reworked and expanded versions of ‘old’ analogue media” (2009, p.12)

Significantly (and as will be presented below), further analysis of Manovich’s writing reveals that he actually supports the interpretation of Digital Exhibition as a form of the cinema, and further that he (like Lister et al [2009]) considers it possible for established media (such as the cinema) to undergo ‘technological, textual, conventional and cultural’ expansions which would lead to their changing from ‘old’ to ‘new media’.

***Manovich: Digital Exhibition is an Expansion of The Cinema***

As implied above, Manovich (2001) apparently considers Digital Exhibition to be an operational appendage to the cinema, driven predominantly by economic factors.

As is discussed above, in a chapter of *'The Language of New Media'* (2001) significantly entitled *'What is Cinema?'* (pp.286-333) Manovich declares of “new distribution technologies such as digital film projection or network film distribution” (i.e. Digital Exhibition): “these developments will undoubtedly have an important effect on the economics of film production and distribution” (2001, p.289).

However, in that same chapter, Manovich announces that Digital Exhibition is omitted from his discourse on “the effects of computerization on cinema proper” only because it does not appear to have any direct effect upon “film language” (ibid). This suggests that if Manovich *had* considered Digital Exhibition to bear a significant influence upon ‘film language’<sup>142</sup> then he *would* have included the phenomenon within his list of ‘the effects of computerization on cinema proper’.

Given that he appears to consider Digital Exhibition to be an expansion to film based cinema, it must be made clear that Manovich does not consider film based cinema to be a case of the new media – as discussed below.

***Manovich: The Cinema is not a case of the New Media***

That Manovich does not consider film based cinema to be a case of the new media is evidenced in that, having presented his own 'Principles of New Media', he decries a number of alternative "popularly held notions about the difference between new and old media" (2001, p.49) – making a point to illustrate that such 'popularly held notions' are not unique to the new media by applying them also to the cinema.

Manovich dismisses the notion that "In contrast to analog media, which is continuous, digitally encoded media is discrete" (2001, p.50), stating that "cinema was from its beginning based on sampling-the sampling of time" (ibid). Manovich elucidates, stating that the cinema "sampled time twenty-four times a second" (ibid). Manovich also dismisses the notion that new media is distinct from old media because all digital media share the same digital code thus allowing "different media types to be displayed using one machine-a computer-which acts as a multimedia display device" (ibid), stating that "filmmakers had been combining moving images, sounds, and text (whether intertitles of the silent era or the title sequence of the later period) for a whole century" (2001, pp.50-51). Manovich also dismisses the notion that only new media allow for random access, stating that since the dawn of analogue moving image acquisition, individual frames have been made available, in any sequence, for manipulation and reordering by the film's editor (2001/, p.51). Ultimately, Manovich declares: "Discrete representation, random access, multimedia - cinema already contained these principles. So they cannot help us to separate new media from old media" (2001, p.52).

With regards to the above however, it should be noted that as Mark B. N. Hansen states:

"For almost every claim advanced in support of 'newness' of new media, it seems that an exception can readily be found, some earlier cultural or artistic practice that already displays the specific characteristic under issue."

(2004, p.21)

Indeed, it is even possible to argue that certain forms of film based exhibition already adhere to each of Manovich's 'Principles of New Media' (as presented in Appendix 9).

As detailed above (and despite an apparent adherence to each of his five ‘principles’ - see Appendix 9: Film Based Exhibition and The Principles of New Media), Manovich does not consider that film based cinema pertains to the ‘new media’. Furthermore, in making overt his consideration that Digital Exhibition does not affect ‘film language’ / have any notable ‘effect on cinema proper’, Manovich also presents that as an expansion of the traditional medium, Digital Exhibition has not (yet) brought about a sufficient degree of ‘Cultural Transcoding’ for the cinema to achieve new media status. Significantly however, in an alternative text (discussed below) Manovich does suggest that, through developments in digital technologies, the cinema might *eventually* change from ‘old’ to ‘new media’.

***Manovich: Digital technologies could transform The Cinema into New Media***

Alluding to his consideration that Computer Generated Imagery (CGI) has a significant, but not transformational impact of upon the cinema’s cultural layer (see Appendix 9), in a 2002 essay entitled ‘Old Media as New Media: Cinema’ Manovich states that before the cinema can be considered to be ‘new media’:

“Contemporary creators of digital *visual fictions* need to find new ways to reflect the particular reality of our own time, beyond embracing digital special effects or digital ‘immediacy.’”

(2002, p.217)

To this, Manovich adds:

“The computer’s new capacities for automatically indexing massive scale recordings do offer one new direction beyond those that cinema has explored to date.” (ibid)

Ultimately, Manovich offers his own consideration as to what will be required to happen before the cinema can achieve new media status:

“Rather than seeing reality in new ways, the trick may be simply to pour all of it onto a hard drive, then find out what kind of interface the user needs to work with all the recorded media. In short, a filmmaker needs to become an interface designer. Only then will *cinema* truly become *new media*.” (ibid)

In actual fact, Digital Exhibition already closely adheres to Manovich's design for a new media form of the cinema. Whilst it may not be 'all' of reality, Digital Exhibition presently facilitates access to an immeasurable database of moving image content (through Internet download, digital television compatibility, DVD distribution etc). Furthermore, this material can be (and is) 'poured' into Digital Exhibition server systems. Additionally, many Digital Exhibition systems presently require the use a purpose designed computer interface in order to acquire and construct that which is shown to the audience. Moreover, Jaeger details that the guiding force behind the works of 'Video Jockeys' (who, as detailed above, he describes as producing "a 'database cinema' that relies on the intuitive grabbing and shuffling of clips, sounds, and software in realtime" 2005, p.22) is "a graphical user interface that dictates the parameters and flow of control in how images move from hard drive to screen" (2005, p.21).

The specific language employed by Manovich (2002) suggests that, as of 2002, he did not believe Digital Exhibition to have (yet) brought about the transformation of the cinema from old to new media. Still, whether this is because he meant his proclamation regarding 'all of reality' to be taken literally, or whether he simply overlooked the fact that Digital Exhibition already meets his requisite criteria for the cinema as new media, a review of the literature of Lev Manovich evidently offers that through the capabilities of Digital Exhibition the cinema could (or has already) become a form of 'the new media'.

## Chapter Six: Summary of Findings

This chapter has been concerned with determining whether it is possible to analyse Digital Exhibition through the lens of existing media (medium & new media) theories – and in doing so successfully construct (or negate) an explanation of Digital Exhibition as a wholly new medium – as opposed to a new form of previously established ‘media’ (i.e. the cinema or television).

The literature of Joshua Meyrowitz was found to present the contemporary media theory framework as bearing three broad approaches to understanding what a medium is. The first and second presented approaches centre upon the mediated content and the ‘grammar’ of that content – however, as Meyrowitz addresses, it is possible for content to be shared across similar media (such as the moving image media). Therefore, it is not possible to dismiss the notion that Digital Exhibition is a unique medium just because it shares content elements with the cinema and television (nor is it possible to use this as evidence that the phenomenon is related to either of these established media). Meyrowitz presents the third approach as being concerned with that which is ‘unique’ about each medium - considering this ‘uniqueness’ to manifest itself as the sum of all the medium’s environmental factors. However, Meyrowitz concedes that, whilst each medium has a unique environment, that environment changes as the technologies of the medium evolve. Consequently, even though Digital Exhibition was found to have a unique environment, it was not categorically determined whether this was because it is a new medium or a new form of an older medium (i.e. the cinema or television).

Extrapolating from the contents of discourses upon the subject of the ‘new media’ (such as that of Martin Lister who states that “the newness of new media is, in part, real, in that these media did not exist before now” [2003, p.3]), it was proposed that if Digital Exhibition could be proven to be a case of the ‘new media’ then it would automatically be proven to be a new medium (i.e. neither the cinema nor television). From that presented above, it has been found that Digital Exhibition does adhere to each of the five ‘Principles of New Media’ as determined by Lev Manovich (2001), i.e. Digital Exhibition pertains to ‘Numerical Representation’, ‘Modularity’, ‘Automation’, ‘Variability’ and ‘Cultural Transcoding’.

However, rather than immediately positioning the case phenomenon as a new medium, it has been found that Manovich himself considers Digital Exhibition to represent an extension to the medium of the cinema. Furthermore, Manovich (2001) overtly expresses a belief that Digital Exhibition does not even represent a ‘new media’ form of the cinema. Manovich does not consider that the digital nature of Digital Exhibition, i.e. the ‘computer layer’, affects the ‘language’ of the phenomenon, i.e. the ‘cultural layer’, to a sufficient degree to warrant the ‘new media’ designator.

The author offered a challenge to Manovich’s dismissive stance as to the nature of Digital Exhibition. It was argued that the digital (computational) nature of the case phenomenon engenders a ‘hypernarrative’ content structure – which has a significant impact upon its (cultural) ‘language’. Furthermore, it was found that Manovich himself implies that the technologies of Digital Exhibition could transform the cinema from a case of the ‘old media’ to a case of the new media (2002) - and, although he still does not consider that this transformation has yet occurred, it was presented that Digital Exhibition already very closely reflects Manovich’s suggested preconditions.

Ultimately, and regardless of the phenomenon's own 'new media' credentials, it has been found that 'new media theory' (as a whole) can not be cited as categorically proving or negating the explanation of Digital Exhibition as a new medium.

For example, it has been presented that, as B. N. Hansen states:

“For almost every claim advanced in support of ‘newness’ of new media, it seems that an exception can readily be found, some earlier cultural or artistic practice that already displays the specific characteristic under issue.”

(2004, p.21)

Furthermore, it has been presented that published literatures on the subject offer conflicting viewpoints as to whether or not 'old media' can become new media.

Such issues suggest that contemporary 'new media' theory might be more fragmented than frameworked. Indeed, Glen Creeber explicitly proposes that:

“There is no set method or theoretical framework for studying New Media”

(2009, p.11),

adding that:

“the field is a complex and diverse one and it would be naïve to suggest that a methodological and theoretical approach could ever be drawn up and regarded as definitive” (ibid).

The implications of this for a piece of work with the stated intent of positioning Digital Exhibition within the *framework* of contemporary media theory will be examined in Chapter Eight: Conclusion and Discussion.

## **Chapter Seven.**

### **Explanation Building:**

**Multiple Explanations addressing the capacity to define**

**Digital Exhibition as pertaining to multiple media**

## Introduction to Chapter Seven

As detailed in Chapters Two & Three, there are a number of established approaches to the interpretation of Digital Exhibition. These are broadly categorised as:

- Those which interpret it as being a form of the cinema
- Those which interpret it as a form of television
- Those which interpret it as being a wholly new medium
- Those which interpret it as pertaining to multiple media

So far in this thesis it has not proven possible to categorically negate the first three of these interpretations – or, in other words, it has so far appeared possible to construct multiple incongruous explanations as to the nature of the case phenomenon.

Significantly, those commercial / political interpretations of Digital Exhibition which, in Chapter Three (pp.92-100), were found to present the phenomenon as pertaining to multiple media can be identified as directly relating to each of these (non-negated) incongruent explanations. That is to say, they present Digital Exhibition as being (in some way) made-up of the cinema, television and / or media that are new:

- Michael Karagosian presents that some aspects of Digital Exhibition pertain to the cinema - whilst claiming that others do not. Karagosian states that: “Our definition of digital cinema allows us to split the universe of theatrical presentation into digital cinema and everything else” (2003).
- The International Telecommunications Union (ITU) states that as a group they consider ‘D-cinema’ to represent: “the merging of television and cinema technologies” (ITU and The Big Screen: Digital Cinema, n.d.).
- Lenny Lipton implies that Digital Exhibition pertains to a ‘new medium’ only if it is used in a certain way – i.e. when it is involved in stereoscopic presentations. Lipton is cited by Mike Seymour as expressing: “today's modern 3D digital projection is free from fatigue and eyestrain, and can now allow content creators to do their best to discover the art of this new medium” (2008).

Following from the discovery of that discussed above, this chapter presents the findings of an inquiry into whether or not contemporary media theory can provide a plausible explanation as to why it has not proven possible to negate any of the rival interpretations of Digital Exhibition presented in Chapters Four, Five and Six.

Furthermore, it has been asked whether this explanation (as to the inability to negate multiple explanations pertaining to multiple media) would corroborate, and explicate, the commercial / political interpretations of Digital Exhibition which present the phenomenon as pertaining to more than one medium.

Following an extensive literature survey, it was found that there are multiple plausible explanations as to how / why a medium might appear to pertain to multiple media – and thusly hold a capacity to be explained as such. When applied to the phenomenon of Digital Exhibition, these explanations are presented within this paper as:

- **Explanation 4:**

To consider the cinema and television as separate media has always been erroneous. They represent a single concept – and thusly a single conceptual medium; ‘total cinema’. Digital Exhibition is an extension of this medium.

- **Explanation 5:**

The computer is not a medium – but it can transform into multiple media. Digital Exhibition is an application of the computer.

- **Explanation 6:**

The computer is not a medium – but it can accommodate (channel) multiple media. Digital Exhibition is an application of the computer.

Explanations 7-12 follow below.

- **Explanation 7:**

The computer is not a medium – but it emulates / imitates multiple media.

Digital Exhibition is an application of the computer.

- **Explanation 8:**

The screen media (the cinema, television, the computer) are converging and so losing their independent statuses – they are becoming a single unified medium. Digital Exhibition represents this unification.

- **Explanation 9:**

When media converge (through the interactions of humankind) they produce new media. Digital Exhibition represents the new medium produced from the convergence of the cinema, television and the computer.

- **Explanation 10:**

Media appropriate the technologies of other media. This does not result in the cessation of the original media, nor does it result in the genesis of disparate media. This results in the evolution of the appropriating medium. When media converge in this way, the appropriating medium's technological genealogy is synthesised with that of the bestowing medium. When a medium's genealogy is synthesised with the historical trajectory of computer technologies, the medium evolves to become a case of the 'new media'.

The cinema has appropriated some of the technologies of the computer (and television) – as such it has evolved into a new media form; Digital Exhibition.

Explanations 11-12 follow below.

- **Explanation 11:**

Digital media pertain to that class of media known as ‘new media’ and are therefore distinct from older media – such as the cinema and television.

New media are created in order to satisfy humankind’s desire for immediacy (the illusion that communication can occur without a mediating technology).

New media are not formed from the convergence of older media, nor do they spontaneously materialise. New media are consciously drawn from within the environmental contexts of other media – and thusly share (whilst refashioning) aspects of their contextual identity with other media. As their roles within the media matrix are established, new media appropriate (‘remediate’) recognised techniques for achieving immediacy from already established media.

Digital Exhibition is a case of the new media which has been drawn jointly from (and thusly shares aspects of) the contextual environments of the cinema and television. When it was first introduced to the media matrix, Digital Exhibition appropriated / remediated aspects of certain other, older, media which are recognised as achieving a significant degree of immediacy. For example, Digital Exhibition remediated the cinema’s moving image content and television’s presentation of live transmissions.

- **Explanation 12:**

Explanation 12 is very similar to Explanation 11; however, this explanation does not present Digital Exhibition as being a case of the ‘new media’.

Ultimately, the author does not find it possible to categorically negate any of these explanations.

## Chapter Seven, Part One:

### Explanation Four -

#### The cinema, television and Digital Exhibition

**have always pertained to the same ('total' / not yet invented) conceptual medium.**

In Chapter Six (p.234) it was presented that Joshua Meyrowitz finds there to exist a school of research which focuses upon the “unique *grammar* of each medium” (1993, p.66). It was also considered in Chapter Six that the sharing of grammar across Digital Exhibition, the cinema and television might be due to their each being a similar ‘type of media’ (i.e. they are all moving image media). However, in this section it is alternatively considered that the sharing of grammar across these phenomena occurs because they are actually each elements of the same ‘total’ medium.

#### 7.1.1 Bazin Revisited

As presented above, André Bazin does not consider that the cinema should be defined in terms of its technological trappings, stating:

“Any account of the cinema that was drawn merely from the technical inventions that made it possible would be a poor one indeed”  
(1967, p.18).

Further to this Bazin considers that the notion of ‘the cinema’ was *totally* developed (in the mind) long before the invention of film based projection:

“The concept men had of it [the cinema] existed so to speak fully armed in their minds, as if in some platonic heaven”  
(1967, p.21).

Bazin considers that this notional concept (which he refers to as ‘total cinema’) pertains to “the complete imitation of nature” (1967, p.21). However, by the time of his death, Bazin did not consider that film based technologies had been able to realise this concept –and as such he states, in the posthumously published ‘What is Cinema? Volume 1’, that: “cinema has not yet been invented” (ibid). In fact, given that physical film is not able to fully simulate the natural world (for example, it can’t present events ‘live’ as they happen) it can be surmised that Bazin might have argued that *any* attempt to realise the concept of ‘total cinema’ through the use of physical film would be inherently flawed, and a film based ‘total cinema’ would *never* be invented.<sup>143</sup> The notion that the cinema is not defined by the technologies of film allows one to consider that it *may* pertain to the presentation of images through an electronic screening device. Indeed, it is argued (below) that, like film based projection, the development of broadcast television can also be considered as a (flawed) movement towards the realisation of the concept that is ‘total cinema’.

### 7.1.2 Television as ‘Total Cinema’

Given that this hypothesis is extrapolated from the works of André Bazin, who considers that: “Every new development added to the cinema must, paradoxically, take it nearer and nearer to its origin” (1967, p.21), it must now be asked; did / do the technologies of television draw the medium of the cinema nearer to its origins (i.e. the notions as to all that the cinema could be, held in the minds of its conceptual architects)?

**Television: Drawing cinema nearer to its origins -*****i.e. the concept of a complete imitation of nature ('realism')***

As stated above, Bazin considers that the concept of 'total cinema' pertains to "the complete imitation of nature" (1967, p.21). Bazin also considers that the 'guiding myth' inspiring the invention of cinema was "integral realism, a recreation of the world in its own image" (ibid). It is therefore significant to note that television is commonly referred to in relation to its ability to mediate realistic content. For example, John Fiske describes the content of television as 'realistic' because "it reproduces the dominant sense of reality" (1987, p.21). According to Fiske: "We can thus call television an essentially realistic medium because of its ability to carry a socially convincing sense of the real" (ibid). John Caughie observes that television's 'sense of reality' stems from its heritage as a live phenomenon:

"Television's formation in a technology 'innocent' of recording gives it the unique and specific possibility of exploiting its illusory capacity for the capturing of reality in 'unmediated' description, the 'rush of the real' in its untidiness, rather than the mediation and ordering of the narrative method" (2000, p.122).

With further reference to 'realism' and 'television', Fiske offers that even after the emergence of video recording, television's technological processes still achieve an 'illusory capacity for the capturing of reality'. Fiske states:

"cheaply produced drama, such as soaps and sitcoms, are normally shot with multiple cameras in the studio and have limited or no post-production editing. This means that the time taken to perform an action on television coincides precisely with the time taken to perform it in 'real-life'" (1987, p.21).

Fiske adds,

"This absence of authorial (or editorial) intervention adds subtly to the sense of realisticness, the sense that the camera is merely recording what happened" (1987, pp.22-23).

Given its capacity for live transmission and its ability to carry a ‘socially convincing sense of the real’, it can be argued that the development of video production, distribution and reception has shifted the phenomenon of mediated moving pictures some way towards (one of) cinema’s originating concepts and ‘the complete imitation of nature’.

***Television: Drawing the cinema nearer to its origins -  
i.e. the notions and aspirations of Thomas Alva Edison***

As detailed above, Bazin himself does not consider the cinema’s conceptual fathers to be those people responsible for the technological development of moving pictures. In fact, Bazin writes: “the cinema owes virtually nothing to the scientific spirit” adding of Thomas Edison, “Even Edison is basically only a do-it-yourself man of genius” (1967, p.17).

However, in Chapter Four (pp.186-178), it is argued that Bazin fails to recognise that the societal role of the cinema actually stretches beyond providing ‘integral realism’. It is also argued that any nineteenth century notion as to what the cinema should be would be limited by recognised technological constraints of the day. It was further argued that if the cinema has never been invented, then it should be considered that the concept as to *what the cinema is* evolves as technologies reveal new potential. It is therefore argued that the origins of the cinema are not *limited* to those nineteenth century minds which conceived of a medium capable of “the complete imitation of nature” (ibid). Rather, the origins of the cinema are *also* located in the minds of all of those who have worked towards its technical realisation. With regards to this, it is significant to note that, despite Bazin’s protestation, many commentators consider that the cinema originated in the mind of Thomas Alva Edison.

Rhiannon Guy writes that: “Inventor extraordinaire, Edison played a pivotal role in the development of the cinema. It was he who suggested equidistant holes along the sides of cine film” (2004, p.10). Further to this, Stanley J. Solomon suggests that Edison’s contribution to the medium was fundamental: “In the late 1880’s numerous inventors were discovering methods of photographic objects in motion and projecting the developed pictures so that they could be viewed by several people at one time”, adding that “Not until Thomas Edison began to give some attention to the problem was the basic system invented that is used today” (1972, p.89). With further reference to Edison, Thomas Elsaesser observes that the inventor did not consider himself as merely a ‘do-it-yourself man’. According to Elsaesser, Edison ‘waxed lyrical’ about “the revolution his invention was to bring mankind” (2000, p.201). Elsaesser also references Edison’s declared belief that: “a total reproduction of life, presenting the human likeness and voice, the bodily envelope and its soul’ constituted the true goal of human emancipation” (ibid).

From that presented above, it would seem that to many commentators Thomas Edison can lay certain claim to having one of those ‘minds’ in which the conceptual origins (both practical and abstract) of the cinema resided. It is significant to note, therefore, that the mechanisms of that which we presently call ‘the cinema’ do not (totally) realise the ‘revolutionary’ phenomenon that was conceived of by Edison. As detailed by Robert Sklar, in 1891 Edison announced that “he was within a few months of achieving direct transmission of live events in the home” (1975, p.11). Furthermore, Monaco claims (of the cinema):

“if the development of the technology had progressed along the lines Edison had laid down, the result would have been a medium much more like television, experienced privately, eventually in the home”  
(2000, pp.232-233).

It now seems that the originating concept for the cinema which resided ‘fully armed’ in the mind of Thomas Edison was never totally realised through the application of physical film. In actual fact, it seems that the development of domestic broadcast television can be considered as more closely realising Edison’s concept of total cinema than his own contraptions ever did.

***Television: Drawing the cinema nearer to its origins -  
i.e. the concepts and ambitions of John Logie Baird***

It is argued in Chapter Four that:

‘If the cinema has not yet been invented, then it appears pertinent to suggest that the abstract concepts of any single mind or even a particular group of minds can not be proclaimed as being the definitive origins of the medium. Rather, it can be argued that the models of the cinema held in the minds of its conceptual and practical architects change as technological developments reveal new potential directions – and that the ‘origins’ of cinema (the held concepts of what cinema could be) are thusly relocated with each new generation of architect’  
(p.177).

If electronic moving image mediation *is* considered as being pertinent to total cinema, then it can now be argued that John Logie Baird was one of those ‘next-generation’ conceptual architects – who (like many others before and since) never saw his concept of the cinema totally realised.

Indeed, Baird did apparently envisage the technologies of television as eventually augmenting physical film as one of the technologies of ‘cinema’. As detailed in Chapter Five (p.212), Baird is cited by R.W. Burns as having written, in the 1930s:

“It seemed to me that now we should concentrate on television for the cinema and should work hand-in-glove with Gaumont-British, installing screens in their cinemas and working towards the establishment of a broadcasting company independent of the BBC for the study of television programmes to cinemas”

(1986, p.438).

However, as is also detailed in Chapter Five, despite his high hopes, and some notable successes in the field, Baird never achieved his goal of establishing a broadcasting organisation specialising television programmes for cinema exhibition.

Quite clearly, it can now be argued that *domestic* broadcast television is a technologically compromised version of Baird’s ‘total’ concept for the future of the cinema. Furthermore, it can also be argued that Digital Exhibition takes the moving image media closer to the achievement of Baird’s concept of ‘total cinema’ than film based exhibition or domestic video display ever could.

### 7.1.3 New media as ‘Total Cinema’

It has been already been presented (in Chapter Four, pp.169-180) that Digital Exhibition can be described as being mankind’s latest attempt to realise the concept of ‘total cinema’ – in so much as the concept of ‘total cinema’ is redefined whenever new notions as to what the cinema is (and what it might one day become) are prompted by the potential of new technologies. It has also been presented (in Chapter Six, pp.281-284) that Lev Manovich implies Digital Exhibition to be a form of the cinema which uses new technologies to expand the established potential of the medium. Further to this, however, Manovich is presented as considering that Digital Exhibition is drawing ever nearer to the status of ‘new media’ – and in fact the author argues that Digital Exhibition already meets each of Lev Manovich’s ‘Principles of New Media’ (Chapter Six, pp.256-279). Consequently, it is significant to find that - although some commentators consider that any phenomenon which qualifies as ‘new media’ must certainly be a wholly new medium - Manovich himself suggests that the notional origins of certain types of digitally mediated new media phenomena actually pertain to the concept of ‘total cinema’.

#### ***The Goal of Total Realism as the Origin of ‘Virtual Reality’***

In examining Bazin’s essay ‘The Evolution of The Language of Cinema’ (1967, pp.23-40), Manovich presents Bazin as considering that the ‘realistic representations’ of cinema should “approximate the perceptual and cognitive dynamics of natural vision” (2001, p.186). As such, according to Manovich, Bazin interpreted the exploitation of acquisition techniques which offer a ‘high depth of field’ (i.e. that stylistic direction of content production which results in a large portion of the frame appearing in sharp focus) as: “a step towards realism, because now the viewer can freely explore the space of film image” (ibid).

Significantly, Manovich finds that: “Bazin's idea that deep focus cinematography allowed the spectator a more active position in relation to film image, thus bringing cinematic perception closer to real life perception, also finds a recent equivalent in interactive computer graphics”, adding: “with such extensions of computer graphics technology as virtual reality, the promise of Bazin's ‘total realism’ appears to be closer than ever” (2001, p.189).<sup>144</sup> In essence then, Manovich implies that the conceptual origins of virtual reality (which he presents as being an ‘area’ of new media [2001, p.8]) are located in the want to create an immersive *virtually* realistic experience – i.e. the complete *imitation* of nature. In other words, Manovich suggests the origins / aspirations of virtual reality are the same as Bazin suggests of the cinema. As such, neither has yet been *totally* achieved.

### ***The Goal of Total Fantasy as the Origin of Computer Generate Imagery***

Notably, in Chapter Four (p.172) the author argues that there is no reason why (prior to the invention of projected photography) the ‘men on the nineteenth century’ who are credited by Bazin with the abstract invention of cinema would have limited their imagined concepts to the projection of photographic reality. Indeed, as discussed in Chapter Four, Ian Christie, presents that *fantasy* genre authors such as Jules Verne had created a “cinematic vision before the invention of moving pictures” (1994, p.27), adding that: “All that remained was for reality to catch up with fiction” (ibid). Without doubt, from the earliest days of film projection efforts have been made to take cinema closer to the originating visions of Verne et al. Indeed, just seven years after the first commercial Lumière showings, in 1902 filmmaker Georges Méliès released his special effects laden ‘*A Trip to the Moon*’ – based upon Verne’s novel ‘*From the Earth to the Moon*’ (1865).

The notion that the fantastical illusory aspect of filmic production pertains to the totality of cinema now contributes to the argument that the conceptual origins (and therefore the ultimate objectives) of certain new media phenomena also pertain to the mythical medium of ‘total cinema’ – underlined by Manovich’s presentation of Méliès (who took his own inspiration from Verne) as being ‘the Father of Computer Graphics’ (2001, p.200). Manovich even considers that as the increasing levels of detail in computer generated imagery draw digital media closer to Méliès’ (and thusly Verne’s) originating cinematic concepts, they also draw new media closer to the *total* synthesis of reality - stating:

“computer-generated imagery is not an inferior representation of our reality, but a realistic representation of a different reality”  
(2001, p.202).

Furthermore, Manovich directly references Digital Exhibition in a statement implying that new media’s capacity for presenting the realistically fantastic is a *continuation* towards total cinema - which furthers the progress already made through the use of film:

“we should not assume that the history of illusion ends with 35mm frames projected on the screen across the movie hall – even if a film camera is replaced with computer software, a film projector is replaced with a digital projector, and the film reel itself is replaced with data transmitted over a computer network.”  
(2001, p.199).

It certainly now seems that Lev Manovich believes that certain digital media endeavour to take moving image mediations closer to the originating (nineteenth century & continually shifting) concepts of the cinema.

Ultimately, it appears possible to argue that film based exhibition, analogue video reception / display and digital moving image mediations all pertain to the same conceptual medium known as ‘total cinema’.

### 7.1.4 Section Summary of Findings

From that presented above, it appears that the conceptual aspirations behind the development of domestic broadcast television and certain types of new (digital) media are the same as those which were behind the development of film based cinema; each was developed with the ultimate aim of achieving a means of delivering imitated reality & realised fantasy, as moving images, to audiences in public and personal spaces.

In essence, the totality of each medium's ultimate objective is the same, and therefore, should their totality ever be achieved, each medium would be the same. It can thusly be considered that film based cinema, analogue video presentation and Digital Exhibition are each compromised versions of the same ultimate medium – i.e. 'total cinema'. In essence then:

- Traditional cinema is a film based / public exhibition phenomenon, and is a flawed attempt at (yet a movement towards) the achievement of 'total cinema'.
- Broadcast television is an electronic / domestic exhibition phenomenon, and is a flawed attempt at (yet a movement towards) the achievement of 'total cinema'.
- Digital Exhibition is a digital / public exhibition phenomenon, and is a flawed attempt at (yet a movement towards) the achievement of 'total cinema'.

The notion that film based projection, broadcast 'television' and Digital Exhibition are all approaches to the realisation of 'total cinema' is compelling (and provides a neat account as to why it appears possible to categorise Digital Exhibition as television *and* the cinema – and why it is interpreted by some as being a phenomenon which pertains to both). However, it would ultimately seem negligent to accept an explanation which will fundamentally change the existing media theory framework (i.e. an explanation which positions broadcast television, the cinema and new media each as alternative approaches to the same medium) - before exhausting all further possible explanations that can be drawn from within the present framework.

## Chapter Seven, Part Two:

### Explanations Five, Six & Seven -

#### Digital Exhibition is an Application of The Computer

In Chapter Six it was found that the literature of Joshua Meyrowitz could not identify whether Digital Exhibition was a new medium or a new form of an old medium.<sup>145</sup>

In this section it is hypothesised that the mechanisms of Digital Exhibition do not, in themselves, pertain to any individual medium – but rather represent a set of technologies which is capable of one of the following:

- becoming multiple media
- providing access to / channelling multiple media
- emulating the characteristics of multiple media

In essence, each of these explanations present the case phenomenon to be an application of the digital computer. Furthermore, in this section the computer is presented as being something which is not, in itself, a medium.

#### 7.2.1 Can Computers perform Digital Exhibition?

In order to determine whether Digital Exhibition might be considered as an application of computer technologies, it will be necessary to determine whether ‘the computer’ is capable of receiving, storing and digitally projecting moving pictures.

Certainly, just as with Digital Exhibition system the computer is able to play-back and store moving pictures from physical media, such as Digital Versatile Discs (DVDs).

Michael Miller writes: “A DVD drive for your computer system can read computer software on DVD discs, play back DVD-format movies and play back standard CD-ROM discs” (1999, p.214).<sup>146</sup> Furthermore, just as with Digital Exhibition

systems, the computer is able to receive and play back broadcast media. Sharon

Yull, Alan Jarvis, Jenny Lawson & Andrew Smith detail that a ‘TV Card’ is an

“adaptation of the graphics card. It enables your computer to receive the standard terrestrial UHF signal” (2005, p.142).<sup>147</sup>

As with Digital Exhibition systems, computers may also be used to download and play back moving picture content from the Internet. Jack W. Plunkett details of those websites that offer legal movie downloads: “Users log onto a site, browse to find a movie, download it and then watch the film on their computer monitors” (2006, p.13). Notably, the computer can even act as the ‘first run’ presentation window for major motion pictures- although this is not always sanctioned by the content owners. For example, according to a report produced by ‘USA Video Interactive Corp’, a man who obtained a digital ‘workprint’ of the 2003 movie ‘*Hulk*’ used software tools to “defeat security protections in the film designed to prevent unauthorized duplication”, and then, posted the copied film onto the Internet two weeks before the American cinema release (USVO Video Piracy Brief, n.d. p.4).

It certainly seems that computer technologies can be used to retrieve, store and play back motion pictures from various sources. Furthermore, it appears that the fact that Digital Exhibition uses electronic projectors (as opposed to ‘computer monitors’) does not negate the possibility to consider the phenomenon as an application of the computer. Electronic projectors are actually becoming an increasingly standard technology for presenting the output of computer systems. According to an article on the ‘BuyerZone’ website:

“The projector industry has exploded as notebook computers and multimedia projectors have replaced slide trays and transparencies in conference rooms everywhere” (Multimedia Projectors, 2008).

In summary; the computer is *able* to perform the technical functions of Digital Exhibition – that is a computer can be used to retrieve, store and electronically project moving images. Therefore, it now seems pertinent to ask; ‘do computers perform Digital Exhibition?’

## 7.2.2 Do Computers perform Digital Exhibition?

There are numerous examples of literatures which suggest that Digital Exhibition is a particular function of the computer. Notably, these literatures commonly stem from sources involved in the realisation of Digital Exhibition technologies. For example, Dr. James Clark, of Thomson Grass Valley, expresses that Digital Exhibition owes its realisation to historical developments in computer technologies: “The drive toward fully capable digital cinema systems is accelerating quickly, fuelled by the continued expansion of disk drive capability, the increased sophistication of compression algorithms, and improvements to other, key digital technologies” (2001). Further to this, the Microsoft Corporation openly declares their ‘digital cinema solution’ (DCS) to be a derivative of computer architectures. According to official Microsoft literature: “the DCS Cinema System employs a networked PC [Personal Computer] architecture that integrates into existing theater infrastructure”<sup>148</sup> (Landmark Theatres and Microsoft, 2003). Moreover, Morley, Thyagarajan and Irvine, of Qualcomm, state that “An efficient digital cinema system design balances the use of off-the-shelf technology with specialized hardware and software designed to meet the specific needs of this application” (2000, p.1). Morley, Thyagarajan and Irvine also declare: “the use of standard computer, storage, networking and communication equipment results in cost-effective design that benefits from other widespread uses of these technologies” (ibid). Additionally, a press release from Cinemark, a large North-American motion picture exhibition chain, explains that: “The digitized movie is stored by a computer/server which ‘serves’ it to a digital projector for each screening of the movie” (Cinemark Digital Projection, n.d.).

There now certainly seems an ample evidence to justify the statement that ‘Digital Exhibition is an application of the computer’. Consequently, it is asked below; ‘how are specific applications of computer technologies positioned within the framework of contemporary media theory?’

### 7.2.3 The Computer is Not a Medium...

A number of texts, produced from within the sphere of media studies, actually suggest that the computer is not, in itself, a medium. For example, in 1988 Timothy Binkley authored an essay entitled 'The computer is not a medium' (1988, pp. 154-173).

In an alternative text Binkley writes:

“The computer is not a medium because it is neither a submissive repository of imprinted information nor a communication conduit. It is rather more like the creatures who sit at the termini of media and cogitate between transmissions and receptions”  
(1989).

To this Binkley adds:

“By confusing computers with media, we belittle their role in the creative process. The computer’s prowess portends abundant assets of an entirely different order” (ibid).

Binkley ultimately suggests:

“Media embody culture, computers conceptualize it” (ibid).

Presented below are extracts from several further sources who consider that the computer is a not a medium. However, the texts presented below each offer an alternative argument as to what the relationships between the computer and media are. Within these texts are found three broad approaches to explaining how the computer *appears* to mediate without being a medium:

- The computer is not a medium (singular), but it *becomes* multiple media
- The computer is not a medium, but it *accommodates* (i.e. is a channel for) multiple media
- The computer is not a medium, but it *emulates* multiple media

***The computer is not a medium, but it ‘becomes’ multiple media***

Further relating to the notion that the computer is not a medium, digital / cinema artist Robert Edgar writes (in a paper originally published in the Position Papers for The Third Conference on Computers, Freedom and Privacy, 1995):

“A computer is not a medium, it is an open-ended set of technologies, any of which can be extended, transformed, substituted, and programmed into entirely new media”

(1995).

This proposal suggests that should a computer receive and display television signals, then the computer *becomes* (i.e. is ‘extended, transformed, substituted, and programmed into’) television. However, the computer becomes *different* (new) media when used as a means of playing computer games, listening to music, browsing the Internet, reading a novel, etc.

***The computer is not a medium, but it ‘accommodates’ (channels) multiple media***

In a discourse on the position of electronic games in contemporary media theory Espen Aarseth writes that “there is no ‘computer medium’ with one set of fixed capabilities” (2004, p.45). Moreover, Aarseth expresses:

“It cannot be repeated often enough that the computer is not a medium, but a flexible material technology that will accommodate many very different media” (ibid).

This proposal offers that the computer is essentially like a passive conduit through which ‘many very different media’ can pass / be observed. As if watching television through a pair of binoculars - which do not themselves ‘become’ as aspect of television – a medium can be experienced through the use of a computer, but the computer does not become a facet of the medium.

***The computer is not a medium, but it ‘emulates’ multiple media***

For his entry on ‘Electronic Publishing’, within the ‘Encyclopaedia of New Media: an essential reference to communication and technology’ (Stephen Jones, ed. 2003), Ken Friedman expresses that: “Any computer is, in theory and practice, a multitude of machines that can be used for any purpose that can be programmed” (2003, p.173). To this Friedman adds,

“The computer is not a medium in the original sense of the word.

The computer is a device that uses software to emulate the performance and characteristics of many kinds of media” (ibid).<sup>149</sup>

Unlike the previous propositions, this explanation as to the relationship between computer and media offers that the computer user never experiences a medium. Rather the computer user is only ever offered an imitation of media. This could be likened to a film projector being used to project an image of a television set – with a television programme being shown on the screen; whilst it would appear to audiences of such an event that they were experiencing television – in actuality they would be experiencing an emulation of that medium.

**7.2.4 Explanations Five, Six & Seven**

From that presented above, it seems possible to conclude that the mechanisms of Digital Exhibition pertain to the technologies of the digital computer – and as such the phenomenon is neither the cinema nor television. In fact, if the discourses of Binkley et al are accepted as theoretically sound, then it can be concluded that, in itself, Digital Exhibition is not any medium. However, as detailed in Chapters Four and Five, Digital Exhibition does perform functions typically associated with the cinema or television (e.g. the presentation of first run feature films, the commercialisation of waiting, etc). The discourses above reveal three plausible explanations around this issue - it can be argued that under such circumstances Digital Exhibition;

- Becomes the cinema / television (*Explanation Five*)
- Accommodates (channels) the cinema / television (*Explanation Six*)
- Emulates the cinema / television (*Explanation Seven*)

***Explanation Five: Digital Exhibition is not a medium, but it becomes multiple media***

When it is employed as the delivery agent for content typically associated with a particular medium (e.g. the cinema / television), the technologies of Digital Exhibition actually become the apparatuses of the delivered medium. For example, when delivering the cinema experience, the Digital Exhibition projector becomes a cinema projector, the screen becomes a cinema screen, etc. For the time that it is employed as such (but only for that time) a Digital Exhibition installation does pertain to the cinema. In essence the presented content reconfigures the Digital Exhibition (computer) system. The content digitally reprogrammes the equipment, thusly changing its nature.

***Explanation Six: Digital Exhibition is not a medium, but it ‘accommodates’ (channels) multiple media***

During the time that it is employed in the delivery of content typically associated with a particular medium, the technologies of Digital Exhibition act as a passive conduit – channelling that medium to audiences without there being any affect on its own nature. Media is experienced *through* Digital Exhibition, but Digital Exhibition is not a medium. By this theory, whilst the audience (or single user) does have a media experience, a computer (which is ‘not a medium’) is still a computer when it is used to present television (to a single user via a standard monitor, for example) - and it remains a computer when it is used to present the cinema (to a mass audience via a digital projector).

***Explanation Seven: Digital Exhibition is not a medium, but it ‘emulates’ multiple media***

During those times that Digital Exhibition is employed in the delivery of content typically associated with a particular medium, audiences might believe that they are experiencing the medium (e.g. the cinema / television) – but they are not; they are experiencing the output of a programmed algorithmic / mathematical computation which has been designed to emulate that medium.

## 7.2.5 Section Summary of Findings

There have been revealed three further plausible explanations as to the position which Digital Exhibition should take with the media theory framework. Each of these explanations interprets the phenomenon not as a medium, but as an application of the computer. The difference between these explanations is in the ways by which they interpret what happens when Digital Exhibition offers experiences akin to those of the cinema or television. Explanation Five interprets the phenomenon as 'becoming' the media to which it appears akin; Explanation Six interprets the phenomenon as passively 'channelling' that medium; Explanation Seven interprets the phenomenon as 'imitating' the medium.

Should either Explanations Five or Six be proven to be the true status of Digital Exhibition, then this would provide confirmation as to the legitimacy of that interpretation of the phenomenon which presents it as pertaining to multiple media. Whilst both these explanations suggest that the phenomenon itself is not a medium, they do indicate that the audiences' experiences are (multiple) media. Conversely, if Explanation Seven should be proven true, then this would support the hypothetical proposition whereby *none* of the established interpretations are true – and that Digital Exhibition does not pertain to any media.

However, whilst each of these explanations appear compelling, as Bill Gillham states: "It is an axiom of scientific philosophy that theories cannot be proved – in a definitive sense – only *disproved*" (2000, p.34). Furthermore, the effort put into the building of Explanations Five, Six & Seven did not categorically disprove *any* of other previously discussed explanations - nor did the attempt to build any one of the explanations addressed in this section succeed in negating the other two.

## Chapter Seven, Part Three:

### Explanations Eight, Nine & Ten:

#### **Digital Exhibition represents the Convergence of Multiple Media.**

This section will examine the possibility to consider that that the cinema, television and the computer have somehow ‘converged’ in the formation of Digital Exhibition. It will be presented that the result of any convergence consequently pertains to the historical lineages of its component parts, thus this notion offers a rationale as to why it appears possible to explain Digital Exhibition...

- ... as a continuation of the cinema (see Explanation One)
- ... as an evolution of television (see Explanation Two)
- ... as an extension to the applications of the computer  
(see Explanations Five, Six & Seven)

Three specific explanations around convergence and Digital Exhibition will be offered.

Explanation Eight proposes that, as a result of media converging, the component phenomena lose their individuality, becoming aspects of a new amalgam medium.<sup>150</sup>

Explanation Nine suggests that component media retain their individual status and that the amalgam is a new and distinct medium. Explanation Ten suggests that when (old) media converge with digital technologies (i.e. the computer) the result is a ‘new media’ form of those (formerly old) media.<sup>151</sup>

### 7.3.1 Explanation Eight:

#### **Digital Exhibition represents a convergence of the cinema, television and the computer.**

*And as a consequence of this convergence, Digital Exhibition, television and the cinema should each be considered as aspects of the same (solitary / unified) medium.*

Anne Friedberg does not believe that the cinema and television have always pertained to the same ‘total’ medium<sup>152</sup> (see Explanation Four); rather, she considers that these are previously distinct media which have, for many years, been undergoing a process of unification through *convergence*. According to Friedberg: “Convergence – once merely a discursive buzz word – has become a literal description of the co-dependency of the movie screen, TV screen, and computer screen” (2006, p.6).

Of the process of unification, Friedberg had claimed, in a discourse from 1997, that: “the differences between the media of movies, television, and computers are rapidly diminishing” and that this true for both the “technologies of production” and the “technologies of reception and display” (1997, p.439). In a more recent text, however, Friedberg updates her stance, stating: “By now, the once distinct material differences between cinematic, television, and computer screens have vanished” (2006, p.236).

Notably, Friedberg offers that, in the case of television and the cinema, the process of convergence has been occurring since before the influence of digital technologies. According to Friedberg “a ‘convergence’ of film and television technology began without fibre-optic cable, occurred before the digitalisation of imagery and preceded the advent of the home computer” (2002, p.31). Indeed, rather than any of these, Friedberg presents a belief that the VCR was “the first technology to begin to erode the historical differences between television and film, altering as it did the terms of electronic and cinematic viewing” (ibid). Nevertheless, despite considering that analogue video recording began the process, Friedberg ultimately appears to concur with Friedrich A. Kittler’s consideration that “the general digitalization of information and channels erases the difference among individual media” (1999, p.1). Friedberg states: “by 2002, the material differences between cinematic, televisual and computer media have been eroded beyond recognition by the digital technologies that have transformed them” (2002, p.31).

The notion that digital technologies have ‘eroded beyond recognition’ the ‘material differences between cinematic, televisual and computer media’ prompts Friedberg to pose two hypothetical questions: “have we arrived at a convergent ‘single medium’?” and “Have the screens of cinema, television and computer really lost their apparatical distinctions?” (2002, p.32). In essence, Friedberg (2002) asks whether the cinema and television have converged (through the facility of digital technologies) to become a single unified medium. Furthermore, it seems that Friedberg (2006) considers that the answer to this question would be in the positive. As detailed above, in a 2006 publication Friedberg states categorically: “By now, the once distinct material differences between cinematic, television, and computer screens have vanished” (2006, p.236).

Explanation Eight is not founded upon a notion that media theory has until this time been erroneous in considering the cinema and television to be separate media – rather this explanation offers that Digital Exhibition is a manifestation of the recent / contemporary unification of the cinema, television and the computer. Nevertheless, both this explanation and Explanation Four (which presents that the cinema and television have *a/ways* pertained to a unified ‘total’ medium) ultimately offer that in contemporary media theory discourses traditional cinema, television and Digital Exhibition should be recognised as being one single medium – i.e.:

- Traditional cinema is the film based / public exhibition form of the unified medium of moving picture entertainments
- Broadcast television is the electronic / domestic exhibition form of the unified medium of moving picture entertainments
- Digital Exhibition is the electronic / digital / public exhibition form of the unified medium of moving picture entertainments

Whilst the literatures of Anne Friedberg underscore the plausibility of this explanation, that which is stated above (p.301) still holds true, ‘it would ultimately seem negligent to accept an explanation which will fundamentally change the existing media theory framework (i.e. an explanation which positions broadcast television, the cinema and new media each as alternative approaches to the same medium) - before exhausting all further possible explanations that can be drawn from within the present framework’.

### 7.3.2 Explanation Nine:

#### **Digital Exhibition represents the convergence of the cinema and television.**

*However, the converged media have retained their statuses as disparate / independent media. The result of their convergence (Digital Exhibition) is a new medium which has been 'born' as a separate entity, but which shares aspects of its technological / operational history with both the cinema and television.*

With regards to the effect of media convergence, Marshall McLuhan presents an alternative interpretation to that of Anne Friedberg. In 1964 McLuhan introduced to the sphere of media theory the concept of 'media hybrids' which he specifically describes as "the interpretation of one medium by another" (1964, p.59). McLuhan does not offer that a 'hybrid medium' represents the cessation of its component media as individual entities – nor does he present a hybrid as being a new form of that medium being interpreted, nor that medium interpreting another. Rather, McLuhan considers that the 'hybrid' is a new medium, stating:

"The crossings or hybridizations of the media release great new force and energy as by fission or fusion"  
(1964, p.57)

And adding:

"The hybrid or the meeting of two media is a moment of truth and revelation from which new form is born"  
(1964, p.63).<sup>153</sup>

Indeed, there are historical precedents whereby new and unique media appear to have emerged from the convergence of other media technologies. For example, the cinema arguably emerged when the film based technologies of photography were crossed with the projection technologies of the shadow play; also television materialised when the moving image capabilities of cinema converged with the electronic broadcast capabilities of radio. Of course, within the sphere of contemporary media theory these phenomena (photography, the cinema, television and radio) are all presently recognised as being distinct media.

The theories of Marshal McLuhan, and the apparent historical precedents presented above, allow for Digital Exhibition to be explained as a new and unique 'hybrid' medium - 'born' from a contrived interplay between the cinema and television, facilitated through digital (computer) technologies. This explanation indicates a reason as to why it appears possible to explain the phenomenon as pertaining to multiple media, and why the literature of Meyrowitz (and McLuhan & McLuhan - see Appendix 10: The Tetrad of Digital Exhibition) could not be used to categorically divorce the case phenomenon from the media of the cinema and television. Confirmation of this explanation would categorise Digital Exhibition as their autonomous offspring, and yet this new independent medium would still pertain to the familial lineage of its multiple parent media.

However, in order to achieve confirmation of this explanation (whereby the case phenomenon is a new medium) it will be necessary to negate any explanation suggesting Digital Exhibition to be a computer, those explanations of the phenomenon which present it as being either the cinema or television, and those exhibition which present the cinema, television and Digital Exhibition as all being the same medium – as well as each of those explanations which have yet to be considered. So far, it has not proved possible to categorically negate any explanations presented.

### 7.3.3 Explanation Ten:

#### **The Cinema has assimilated some of the technologies of the computer and television.**

*This has resulted in a convergence of the historical trajectories of these phenomena.*

*And the outcome of this convergence is the evolution of the cinema to 'new media' status.*

In Chapter Six it was offered that if Digital Exhibition could be found to be a case of the 'new media', then this would indicate it must be a new medium, i.e. not be a form of the cinema (or television). However, the literatures of Lev Manovich were presented as offering a counter argument to this proposition. Manovich proposes that it is possible for traditional media (such as the cinema) to evolve into 'new media' forms.

As detailed in Chapter Six (p.283), Manovich writes:

“the computer’s new capacities for automatically indexing massive scale recordings do offer one new direction beyond those that cinema has explored to date. Rather than seeing reality in new ways, the trick may be simply to pour all of it onto a hard drive, then find out what kind of interface the user needs to work with. In short, a filmmaker needs to become an interface designer. Only then will *cinema* truly become *new media*”  
(2001, p.217).

In this section, the potential to explain Digital Exhibition as a new media form of the cinema will be further addressed – with particular reference to Manovich’s notion that cases of the new media represent a ‘convergence’ of old media and computer technologies - as presented on the following page.

### ***The Origins of New Media: Converging Historical Trajectories***

Lev Manovich details that both computing and media technologies began in the 1830s, “with Babbage’s Analytic Engine and Daguerre’s daguerreotype” (2001, p.20). Manovich further details that “eventually” in the middle of the twentieth century, a modern digital computer was developed to more efficiently perform calculations on numerical data, and that in a ‘parallel movement’ came the rise of modern media technologies, which facilitate the “storage of images, image sequences, sounds, and text using different material forms” (ibid).

Despite their parallel developments, Manovich presents the histories of the computer and media as having run disparately for several decades. Ultimately however, Manovich presents “the translation of all existing media into numerical data accessible through computers” as pertaining to “the synthesis of these to histories” (ibid).

This synthesis (convergence / amalgamation) of histories results in new media – according to Manovich, who expressly states: “new media represents a convergence of two separate historical trajectories: computing and media technologies” (ibid).

### ***Converging Historical Trajectories and Digital Exhibition***

Manovich’s concept of converging (technological) historical trajectories presents that the appropriation of computer technologies by a medium does not result in the formation of a new medium. Rather, Manovich suggests, the appropriating medium evolves to become a ‘new media’ form, with a genealogical lineage which now includes a synthesis of the historical trajectories of its own ‘traditional form’ and that of the computer.

This notion begins to support the explanation building process around Manovich’s concept whereby a phenomenon such as Digital Exhibition could be considered to be both the latest evolved form of the original medium (i.e. the cinema), as well as a case of the ‘new media’ (See Chapter Six).

Digital Exhibition can be interpreted as a manifestation of the synthesis of the histories of computing and cinema technologies. As described in Chapter Four, much of the content (e.g. the feature film), the typical venue of Digital Exhibition (i.e. the cinema auditorium), as well as the screen, projection lenses, and sound systems etc. of Digital Exhibition can be seen as belonging to the historical lineage of the cinema. Additionally, as described above, Dr. James Clark expresses that Digital Exhibition also owes its realisation to historical developments in computer technologies:

“The drive toward fully capable digital cinema systems is accelerating quickly, fuelled by the continued expansion of disk drive capability, the increased sophistication of compression algorithms, and improvements to other, key digital technologies”  
(2001).

However, it must once again be noted that in addition to the cinema and computing, Digital Exhibition appears to pertain to the technological historical lineage of a further traditional medium; television. As detailed above, von Sychowski recognises that “it is important to remember that each development in television- colour, higher definition, video taping, digitisation and most recently compression and encryption- also brought the concept of e-cinema closer to realisation” (2000, p.15).

Digital Exhibition can now be considered as belonging to three (previously disparate) historical technological trajectories; the cinema, television and the computer.

It might be considered that this offers an explanation as to why it appears possible to construct so many contradictory explanations of the case phenomenon.

It would certainly seem that should Digital Exhibition be viewed from the isolated perspective of 'the cinema', the phenomenon might be construed as belonging to that particular historical line and consequently could be interpreted as a contemporary variety of that medium. Furthermore, should Digital Exhibition be viewed from the isolated perspective of television, then the phenomenon could be construed as belonging to that particular historical line and consequently would be interpreted as a contemporary variety of television. If Digital Exhibition was viewed only from perspective of the computer, then the phenomenon could be construed as belonging to that particular historical line, and consequently would be interpreted to be a new application of the computer. Moreover, should Digital Exhibition be viewed from the joint perspectives of the cinema *and* the computer then the phenomenon could be interpreted as representing the convergence of cinema and computing historical trajectories, and therefore be interpreted as *both* a case of the 'new media' and an evolved variety of the cinema.

However, due to the lack of regard paid by Manovich to the role of television technologies in Digital Exhibition, this interpretation of the case phenomenon (extrapolated from Manovich's own literature) might now be considered as unduly focused upon the cinema. It must, therefore, be asked; does the interpretation of Digital Exhibition as a new media form of the cinema hold true if one considers that Digital Exhibition represents the convergence of the technological histories of computing and *multiple* media?

When considering how the concept of converging media technological histories might affect the positioning of Digital Exhibition within the contemporary media theory framework, it is necessary to examine some historically precedential convergences - including some which apparently occurred long before the dawn of digital media. Notably, there are historical precedents to suggest that when one medium (for example, the cinema) adopts the technological heritage of another (for example, television), it continues to be considered, within the sphere of contemporary media studies, as a variety of the original medium. For example, the convergence of silent cinema and sound recording technologies resulted in an evolved form of the cinema; and the convergence of text based newspaper production and the technologies of photographic reproduction resulted in an evolved form of newspaper.

It does not now seem possible to immediately dismiss the notion that Digital Exhibition is a 'new media' form of the cinema just because such a notion is based upon an account which fails to consider any relationship between the phenomenon and television. When one examines the historical precedents, it might still be considered that Digital Exhibition could be a form of the cinema - which has *adopted* some of the technologies of television as it has become a case of the 'new media'. However, even if all other explanations were negated, this consideration still does not provide an immediate answer as to how Digital Exhibition should be positioned within the framework of contemporary media theory - because this notion also makes it possible to explain the case phenomenon as a 'new media' form of television which has adopted some of the technologies of the cinema.

## Chapter Seven, Part Four:

### Explanations Eleven & Twelve:

#### Digital Exhibition Remediates The Cinema and Television

From the evidence and analysis already discussed, it is still not clear which medium / media Digital Exhibition pertains to – or indeed whether it is a medium at all.

In this section it will be considered that that the difficulty experienced in categorising Digital Exhibition is a key indicator as to the phenomenon's proper position within the framework of contemporary media theory. Particular attention will be paid to the theories of Jay David Bolter and Richard Grusin (2000) – which will be used as the lens through which to view Digital Exhibition.

With regards to the genesis of new media Bolter and Grusin theorise that:

“New digital media are not external agents that come to disrupt an unsuspecting culture. They emerge from within cultural contexts, and they refashion other media, which are embedded in the same or similar contexts” (2000, p.19).

Additionally, Bolter and Grusin will be presented as theorising that:

“What is new about new media comes from the particular ways in which they refashion older media and the ways in which older media refashion themselves to answer the challenges of new media” (2000, p.15).

With regards to the notion of new media 'refashioning' older media, Bolter and Grusin theorise that:

“Digital visual media, can best be understood through the ways in which they honor, rival, and revise linear-perspective painting, photography, film, television and print” (ibid).

With further regards to the 'refashioning' of older media, Bolter and Grusin detail that: “we call the representation of one medium in another *remediation*”, and they argue that: “remediation is a defining characteristic of the new digital media” (2000, p.45).

The analysis which follows will be aimed at determining whether or not Digital Exhibition is a new and unique ‘digital visual medium’ which has emerged from the contexts of the cinema and television, and so successfully ‘remediates’ (revises, refashions, honours and represents) other media that it becomes essentially indistinguishable from those media (i.e. the cinema and television).

### **7.4.1 Bolter & Grusin and The Genesis of New Media**

With regards to the origins of new media, Marshal McLuhan states that media “interact and spawn new progeny” adding that they “depend upon us for their interplay and their evolution” (1964, p.57). Conversely however, Bolter and Grusin express that: “there may be no conscious interplay between media”, adding: “The interplay happens, if at all, only for the reader or viewer who happens to know both versions to compare them” (2000, p.45). Rather than being ‘born’ from the interplay of media then, Bolter and Grusin express that new media ‘emerge’ from within the same or similar cultural contexts as other media (2000, p.19). Furthermore, reflecting Bazin’s consideration that the workings of physical film projection do not characterise the cinema (see Chapter Four, pp.169-178), Bolter and Grusin do not consider that the ‘technologies’ of a medium to be its mechanical apparatuses (alone). Bolter and Grusin express that:

“media technologies constitute networks or hybrids that can be expressed in physical, social, aesthetic, and economic terms”  
(2000, p.19).

With specific regards to the genesis of new media, Bolter and Grusin add:

“Introducing a new media technology does not mean simply inventing new hardware and software, but rather fashioning (or refashioning) such a network” (ibid).

In other words, Bolter and Grusin consider that new media are formed when a new network of ‘physical, social, aesthetic, and economic’ media elements emerges from within a context pertaining to similar already established networks.<sup>154</sup>

It can be now argued that the emergence of Digital Exhibition (as a new medium) from the environments of the cinema and television, reflects the introduction of a new technology (network) which has involved a refashioning of the established networks of the cinema and television - in terms of their 'physical, social, aesthetic, and economic' structures. For example (and as discussed through out this thesis); Digital Exhibition eliminates the need for *physical* film in auditoria exhibition, it *physically* enlarges the electronic image, and *physically* positions video technologies in cinema auditoria (which thusly affects their *social* and *aesthetic* values). With regards to *economics*, Digital Exhibition introduces new revenues / commercial competitors for existing content producers and established exhibitors. With further regard to this latter point, Digital Exhibition facilitates the use of alternative *physical* spaces for the presentation of motion pictures - thusly generating new *social* applications for filmed entertainment and new *economic* threats for established exhibitors.

### 7.4.2 What is Remediation and Why Remediate?

As detailed above, Marshal McLuhan considers that the 'interpretation of one media by another' results in the genesis of new (hybrid) media (1964, p.59).

Conversely, Bolter and Grusin consider that the 'interpretation' of other media by a new medium occurs *after* that new medium has already emerged. Bolter and Grusin further consider that this interpretation (or remediation) of other media occurs out of a desire for the new medium to appropriate the techniques of achieving 'immediacy' as employed by those other media.

Bolter and Grusin express that ‘our culture’ carries a contradictory imperative for immediacy and hypermediacy (2000, p.5). In this Bolter and Grusin refer to the want for communications to appear as if they have not employed any intervening or mediating agency (immediacy), and the want for media products which appear to celebrate their status as products of the media (hypermediacy).<sup>155</sup> In particular, Bolter and Grusin consider that new media are (i.e. every new medium is) developed out of the commercial desire to offer consumers an experience which provides a greater degree of immediacy than can be provided by existing media.

Specifically, according to Bolter and Grusin, it is the ‘desire for immediacy’ which

“leads digital media to borrow avidly from each other as well as from their analog predecessors such as film, television, and photography”  
(2000, p.9).

Bolter and Grusin add that:

“Whenever one medium seems to have convinced viewers of its immediacy, other media try to appropriate that conviction” (ibid).

With regards to the borrowing / appropriation of characteristics which promote immediacy, and as is detailed above, Bolter and Grusin state that:

“we call the representation of one medium in another *remediation*”  
(2000, p.45).

The questions now raised are; ‘Has the technological development of Digital Exhibition been driven by a want to offer a greater degree of immediacy than can be achieved through previously existing media technologies?’ and ‘Has Digital Exhibition actually achieved a perception of immediacy by refashioning (remediating) other media?’

### 7.4.3 Digital Exhibition and the Spectrum of Remediation

Bolter and Grusin write:

“we can identify a spectrum of different ways in which digital media remediate their predecessors”

(2000, p.45).

Three specific forms of remediation within this spectrum as identified by Bolter and Grusin can be labelled as ‘transparent’, ‘translucent’ and ‘aggressive’. It will be presented below that Digital Exhibition can be considered as adhering to each of these types of remediation.

#### ***Transparent Remediation***

According to Bolter and Grusin “the logic of immediacy dictates that the medium itself should disappear and leave us in the presence of the thing represented” (2000, pp.5-6). However, Bolter and Grusin explain that in some cases this “disappearing act” is not *primarily* intended create the illusion that the audience is in the presence of an aspect of the ‘real-world’, but rather is intended to create the illusion that the audience is in the presence of different medium (which is representing that aspect of the ‘real world’). In such cases, according to Bolter and Grusin, the medium is “imitating not an external reality but rather another medium” (2000, p.28). Of this form of remediation, Bolter and Grusin state that:

“The digital medium wants to erase itself, so that the viewer stands in the same relationship to the content as she would if she were confronting the original medium”

(2000, p.45).<sup>156</sup>

Bolter and Grusin specifically state of digital media which imitate physical media in such a way: “Since the electronic version justifies itself by granting access to the older media, it wants to be transparent” (ibid).

In addressing whether or not Digital Exhibition justifies itself through its ability to transparently represent film based cinema, it is significant to find that John Fithian states: “I’ve heard some commentators say that digital projection is just as good as film” (2002 a). Furthermore, the extent to which Digital Exhibition, within just a few years of its emergence, could (and did) achieve this particular form of remediation is evidenced in Jim Mendrala’s review of a screening of ‘*Space Cowboys*’ during which the ‘reels’ alternated between film and digital projection. According to Mendrala:

“Those seated in the rear half of the auditorium were hard put to tell the difference. Many turned around during the performance to see what was running, film or digital.”

(2001)

More recent texts suggest that audiences still/increasingly stand in the same relationship to the content of Digital Exhibition as if they were confronting film based exhibition. For example Michael Allen (2009) offers that: “Many, if not most of those watching a digitally projected feature are no doubt oblivious to the ‘revolution’ taking place before their eyes” (p.68).

### ***Translucent Remediation***

In a further discussion as to the relationship between the remediated and remediating media, Bolter and Grusin express that some creators of ‘electronic remediations’

“seem to want to emphasize the difference rather than erase it. In these cases, the electronic version is offered as an improvement, although the new is still justified in terms of the old and seeks to remain faithful to the older medium’s character”

(2000, p.46).

According to Bolter and Grusin, in such cases the “borrowing” of another medium’s properties “might be said to be translucent rather than transparent” (ibid).

It is now asked, therefore; What ‘translucent’ improvements does Digital Exhibition offer to an older medium (and do those improvements offered reflect a commercial want for Digital Exhibition to provide an experience of heightened immediacy, as compared to that provided by the older medium, whilst still perceivably retaining the characteristics of that older medium)?

In addressing this query, attention should be paid to a particular claim made in a statement from the Sony Corporation:

“Digital distribution and projection mean spectacular quality, with no image detail lost to the print process. There’s no annoying ‘gate jitter’ and ‘weave’, no scratches or dust on the print”

(Entertaining the future, 2006, p.8).

Indeed, one of the driving forces behind the development of Digital Exhibition has been the elimination of the ‘artefacts’ of film based cinema - which can remind public exhibition audiences of the mediating technology - and which can thusly reduce perceived immediacy. Attention should also be paid to the commercial use of the ‘cinema’ designation when discussing Digital Exhibition – for example in John Fithian’s expression that “Digital cinema must be better than film” (2002 a).

In referring to it as a form of the cinema Fithian justifies the existence of Digital Exhibition in terms of its relationship to the cinema – indicating that the new will remain faithful to the old, whilst emphasising that it will improve upon what has gone before.

It is presented below that the cinema, television, the computer and even virtual reality systems have each attempted to convince audiences as to their abilities to offer immediacy. However, each also has some inherent hindrances which compromise their abilities to conceal their mediating technologies. It is also presented below that it can be argued that Digital Exhibition attempts to remediate properties of each of these media phenomena, and in the process offer a perceptible improvement to them all.

## **The Cinema**

Bolter and Grusin cite Bazin (1980, p.240) as concluding that “photography and the cinema...are discoveries that satisfy, once and for all in its very essence, our obsession with realism” (2000, p.26). However, according to Bolter and Grusin, in this Bazin was wrong: “These two visual technologies did not satisfy our culture’s desire for immediacy” (ibid). Indeed, as discussed above, and as Philip Rosen observes, “media of mechanical/electronic reproduction such as phonography, photography and cinema...offer no possibility of liveness” (1993, p.60).

## **Television**

Bolter and Grusin consider that domestic broadcast television pertains to a “point-of-view technology that promises immediacy through its insistent real-time monitoring of the world” (2000, p.224). However, the limited screen size and resolution of the television set diminishes the medium’s ability to “disappear and leave us in the presence of the thing represented” (Bolter and Grusin, 2000, p.6).

## **The Computer (3D Computer Graphics)**

Bolter and Grusin express that ‘the computer’s promise of immediacy’ comes in part from its ability to generate and present three-dimensional graphics (2000, p.224); however, Maciej Klimek points out that: “At times it can be difficult to achieve a convincing representation of a three-dimensional object on a two dimensional screen” (1997, p.61).

## **Virtual Reality**

Eradicating the issues of a ‘two dimensional screen’ Bolter and Grusin express that virtual reality is an ‘immersive’ medium (its “purpose is to disappear”- 2000, p.21). However, in reference to the necessity of users to wear what they describe as “a bulky head-mounted display” (2000, p.22), Bolter and Grusin also find that ‘this disappearing act’ is “made difficult by the apparatus that virtual reality requires” (2000, p.21-22)

It must now be asked; Has Digital Exhibition appropriated the large scale photographic realism of the cinema, the live ‘real-time monitoring’ of television, the three-dimensional graphics of the computer, and the immersive experience of virtual reality, and if so, does it offer a noticeable improvement to these phenomena? If this query is answered in the positive, then it would seem possible to argue that (in an attempt to appropriate the convictions of immediacy offered) Digital Exhibition borrows properties of the cinema, television, the computer and virtual reality systems whilst emphasising its difference (superiority) to each of these media phenomena - i.e. it would be possible to explain Digital Exhibition as adhering to the concept of translucent remediation.

It is significant, therefore, that one real-world instance whereby Digital Exhibition has achieved large scale, photorealistic, live, immersive, three-dimensional programming is discussed in a 2006 article on the BBC News website (entitled ‘Live 3D sport plan for US cinemas’). Of this event, and with specific reference to the want to offer consumers a higher degree of immediacy than is offered by any other screen media, Shari Redstone - president of the ‘National Amusements Incorporated’ exhibition chain, is cited as claiming: “We are not just putting the game up on the big screen but making the experience like being in Fenway Park<sup>157</sup>” (Live 3D sport plan for US cinemas, 2006). Furthermore, as opposed to a ‘bulky head mounted display’, two companies that have developed systems for the provision of such three-dimensional experiences through Digital Exhibition, and both describe the apparatuses used as ‘lightweight’. In a testimonial on the In-Three website, Dennis Muren, Senior Visual Effects Supervisor at Industrial Light and Magic states: “The glasses are small lightweight – you don’t get headaches anymore” (Testimonial, n.d.). Similarly, Matt Cowan, Chief Technology Officer of Real D, describes their headsets as “comfortable, lightweight glasses that are a lot like sunglasses” (International Edition No. 8, 2006).

One further characteristic of ‘Translucent Remediation’, identifiable from within the text of Bolter and Grusin, is that it leads to hypermediacy. As is presented above, Bolter and Grusin detail that it is the ‘desire for immediacy’ which “leads digital media to borrow avidly from each other as well as from their analog predecessors such as film, television, and photography” (2000, p.9). However, according to Bolter and Grusin:

“although each medium promises to reform its predecessors by offering a more immediate or authentic experience, the promise of reform inevitably leads us to become aware of the new medium as a medium. Thus, immediacy leads to hypermediacy” (2000, p.20).

The argument that Digital Exhibition adheres to the concept of ‘Translucent Remediation’ would, therefore be strengthened if evidence were be found to suggest that the technological improvements offered to the cinema, television, etc. actually makes audiences aware as to its nature as a medium. Two pieces of such evidence are presented below.

In a review of a digital screening of Mike Figgis’s ‘*Time Code*’ (2000), film critic P. Nelson Reinsch writes: “The lack of scratches on the surface of the film and the vibrant colors gave an added immediacy to the image” (1999). Notably however, Nelson Reinsch adds that this “made the image resemble a live satellite feed” (ibid). As detailed above, a member of an audience who experienced a pre-recorded Digital Exhibition presentation of a David Bowie concert is cited by William Gallagher as declaring: “It was hard to know how to react to a performance that was presented as being ‘live’ in the full knowledge that it was more akin to watching a DVD at home” (2003). Seemingly, this audience member recognised the efforts made to achieve a simulation of ‘liveness’, and was (to a degree) aware that the digital presentation offered a level of immediacy beyond that which could have been expected from film based exhibition. However (and despite the offering of a more immersive screen), this audience member still found that the simulation of liveness made them conscious as to the fact they were experiencing a medium (akin to watching a DVD).

### ***Aggressive Remediation***

In addition to transparent and translucent remediation, Bolter and Grusin find that

“The digital medium can be more aggressive in its remediation” (2000, p.46).

Bolter and Grusin explain that the digital medium can ‘aggressively’ “try to refashion the older medium or media entirely, while still marking the presence of the older media and therefore maintaining a sense of multiplicity or hypermediacy” (ibid).

When drawn through this kind of remediation, according to Bolter and Grusin:

“the older media are presented in a space whose discontinuities, like those of collage and photomontage, are clearly visible” (2000, p.46). From this Bolter and Grusin opine that: “The windowed style of the graphical user interface favors this kind of remediation”, adding that: “clickable tools activate and control the different programs and media. The graphical user interface acknowledges and controls the discontinuities as the user moves among media” (ibid).

It could be considered that live / database cinema (as discussed in Chapter Six, pp.271-272) represents Digital Exhibition’s aggressive remediation of both the cinema and television (with particular regards to its video content). As is presented in Chapter Six, Michael Lew details that “In live cinema, the performer is essentially editing and sequencing previously recorded digital video on the fly while at the same time being on view to an audience” (2004, p.1). Moreover, according to Timothy Jaeger, such ‘performers’ (who he refers to as ‘Video Jockeys’),

“produce a ‘database cinema’ that relies on the intuitive grabbing and shuffling of clips, sounds, and software in real time”

(2005, p.22).

It can now be considered that this form of Digital Exhibition visibly displays the discontinuities of the cinema and television as it tries to radically refashion the older media (to a point close to total deconstruction). Yet, even live / database cinema still marks the presence of the older media; as noted in Chapter Six (p.272), Jaeger considers (with regards to the ‘mixing’ of the visual elements of ‘live cinema’):

“the unsaid principle of mixing relies on the history of narrative in cinema”  
(2005, p.16).

From that presented above, it certainly seems possible to explain Digital Exhibition as a new medium which has emerged from the environmental contexts of the cinema and television (and other such screen media), and which employs digital technologies in the remediation of the cinema and television (and the computer & virtual reality, etc).

#### 7.4.4 Explanation Eleven:

### Digital Exhibition is a case of the New Media which Remediate The Cinema and Television.

Bolter and Grusin declare that: “What is new about new media comes from the particular ways in which they refashion older media” (2000, p.15).

Bolter and Grusin also present that the emergence of new media results from the *refashioning* of old media technologies (i.e. contextual networks) – and (as has been presented throughout this thesis) Digital Exhibition does appear to have refashioned the contexts of both the cinema and television - with new equipments, new economic practices, new forms of content, etc. However, this does not, by itself, immediately determine the case phenomenon to be a new medium (or a case of the new media). As is discussed in Chapter Six (p.253), Joshua Meyrowitz observes that “changes in technology can alter the setting of a medium” (1993, p.70). This observation now suggests that should the technologies of an older medium become digital, then the contextual network of that older medium would be duly ‘refashioned’.

It initially seems that the declaration “What is new about new media comes from the particular ways in which they refashion older media” (2000, p.15), could be used to substantiate the building of an explanation of Digital Exhibition as a new medium which refashions (remediate) the *content* of both television and the cinema.

However, as with the ‘refashioning’ of media networks, just because a particular phenomenon ‘remediate’ the contents of various other media, this does not immediately qualify that phenomenon as a being new and unique medium – nor does it immediately qualify that phenomenon being as a case of the new media.

Indeed, as is detailed in Chapter Six (p.242), Joshua Meyrowitz finds:

“it is common in our culture to believe that there is some *content essence* that can be transported relatively unchanged from medium to medium.”

(1993, p.65)

At this juncture it is significant to recall B. N. Hansen's declaration that:

“For almost every claim advanced in support of ‘newness’ of new media, it seems that an exception can readily be found, some earlier cultural or artistic practice that already displays the specific characteristic under issue.”

(2004, p.21)

Indeed, Bolter and Grusin do not present remediation as being unique to new media (or *the* new media), observing that even in the seventeenth-century artists would seek to remediate architecture in their paintings (2000, p.11). Furthermore, Bolter and Grusin openly consider that “remediation operates in both directions” (2000, p.48) - offering as an example that “users of older media such as film and television can seek to appropriate and refashion digital graphics, just as digital graphics artists can refashion film and television” (ibid).

Taking into account that ‘remediation operates in both directions’ it now appears that the cinema and television can be considered as continually remediating each other; just as feature films (originally presented as products of the cinema) are later shown on television, shows originally made for television are later remade as feature films for presentation as the cinema (e.g. ‘*Miami Vice*’, ‘*The X-Files*’, ‘*Star Trek*’, etc). Moreover, as Bolter and Grusin dictate, *both* these ‘older media’ (the cinema and television) ‘appropriate and refashion digital graphics’.

It now seems apposite to declare that, when presented in its complete form, the repeatedly cited declaration of Bolter and Grusin (from the previous page) reads:

“What is new about new media comes from the particular ways in which they refashion older media and the ways in which older media refashion themselves to answer the challenges of new media”

(2000, p.15).

This then can now lead to numerous explanations of Digital Exhibition – whereby the phenomenon is...

- ... a case of the cinema, which has refashioned itself as an electronic medium, in answer to the challenge of digital high definition broadcast and DVD (remediating aspects of television and digital screen media).
- ... a case of television, which has refashioned itself as a public exhibition medium, in answer to the challenge of the Internet as provider of domestic entertainment (remediating aspects of the cinema and digital screen media).
- ... a new (digital) medium, which has refashioned the networks and contents of the cinema and television, as it established itself as a purveyor or heightened immediacy (remediating aspects of the cinema and television).

At this stage then, the literature of Bolter and Grusin does not appear to have provided a framework for definitively categorising Digital Exhibition as a case of the new media. However, the absence of an open declaration notwithstanding, a pragmatic analysis of their discourse *does* strongly suggest that Bolter and Grusin consider that digital distribution and reception technologies pertain exclusively to new media, i.e. they do not pertain to new varieties of older media (although they may be used to remediate aspects of the older media). By extension Bolter and Grusin consider that analogue distribution and reception technologies are always indicative of the 'older media' (although they may be used to remediate aspects of the 'new media') – as will be discussed further on the following page.

Suggesting that they consider the term ‘new media’ as referring to digital mediations, Bolter and Grusin clearly use the terms ‘digital media’ and ‘new media’ interchangeably – as evidenced in extracts such as:

“What is new about **new media** comes from the particular ways in which they refashion older media” (2000, p.15 – emphasis added):

“Once again, what is new about **digital media** lies in their particular strategies for remediating television, film...” (2000, p.50 – emphasis added).

Furthermore, that Bolter and Grusin consider that the term ‘new media’ as *exclusively* pertaining to digital mediations – whilst considering analogue mediations to be cases of the ‘older media’ – is evidenced in the statements such as:

“The desire for immediacy leads digital media to borrow avidly from each other as well as from their analog predecessors such as film, television, and photography”

(Bolter and Grusin, 2000, p.9)

“users of older media such as film and television can seek to appropriate and refashion digital graphics”

(Bolter and Grusin, 2000, p.48).

Consequently, if one considers that Digital Exhibition pertains exclusively to digital mediation, it would now seem apparent that the literature of Bolter and Grusin positions the phenomenon as being a case of the ‘new media’, and a unique medium:

- Which remediates the contents and technologies of the cinema and television,
- which has emerged from within the contexts of the cinema and television,
- which, therefore, shares a contextual history with the cinema and television,
- but which can be identified as distinct from those ‘older’ media.

Whilst the author finds this particular approach to interpretation compelling, it is still not the ultimate explanation of Digital Exhibition explored within this thesis.

## 7.4.5 Explanation Twelve

### **Digital Exhibition Remediates The Cinema and Television – But is not a case of the New Media**

As detailed above the literature of Bolter and Grusin can be considered as supporting the explanation of Digital Exhibition whereby the case phenomenon is a case of the new media which remediates the cinema and television (as well as virtual reality, 3D computer animation, etc). Notably, however, Dr Jan Simons questions the long-term value of applying the label ‘new media’ to any phenomena.

Simons considers that, if anything, “the term ‘new media’ has an unequivocally ambiguous status” (2002, p.231) – substantiating this statement with a suggestion that:

“since any ‘old medium’ can be digitalised and integrated into a new media object, the term ‘new media’ virtually encompasses all media once all difference between media has been dissolved ‘into a pulsing stream of bits and bytes’” (ibid).

From this Simons draws the question; does it mean that when a film is screened in the cinema, released on video or broadcast on television, it is part of the ‘old media’, but when released in a digital format it is a ‘new media’ object? (ibid). As suggested from the analysis of Lev Manovich’s literature above, and as Simons concludes, the answer to this question is not always obvious.

Ultimately, Simons finds the term ‘new media’ to be like the term ‘postmodernism’:

“everybody seems to know what is meant by these composites, but nobody knows exactly what they mean. To say that a medium or media are ‘new’ or that a work of art is ‘postmodern’ is not saying very much except that the media designated by that term are different from the media we are familiar with or that the work of art under construction comes ‘after’ modernism” (2002, p.231).

Furthering this analogy, Simons details that the term ‘postmodern’ ‘has gradually gone out of fashion’ and expresses that: “so, too, will the term ‘new media’” (2002, pp. 231-232). To this Simons adds: “nothing can stay ‘new’ or ‘post’ forever” (2002, p.232).

Notwithstanding the fleeting nature of the new media designation, it actually is possible to argue that Digital Exhibition should not even be considered as adhering to Bolter and Grusin’s understanding of new media. As declared above, if Digital Exhibition were found to pertain exclusively to digital mediation then the literature of Bolter and Grusin can be used to categorise the phenomenon as a unique medium and case of the new media. However, it can be argued that Digital Exhibition is not a purely digital medium. In LCD based projection systems the analogue response of the liquid crystals, and the resultant analogue gradation of light, essentially represents the conversion of the content from digital to analogue prior to its projection (through the lens)<sup>158</sup> (See Appendix 2 for greater detail as to the technicalities of LCD projection). That which the audience sees on the screen is an analogue representation of the digital content – just as when digital images are printed onto film prior to exhibition (which Bolter and Grusin consider to represent a case of the old media remediating the new). As such, it seems plausible to explain Digital Exhibition as a new medium which remediates the contents of the cinema and television; which has emerged from within the contexts of the cinema and television; which, therefore, shares a contextual history with the cinema and television, but which can be identified as distinct from those ‘older’ media. This explanation is unmistakably akin to Explanation Eleven – only it does not offer the ephemeral (potentially erroneous) ‘new media’ status to the case phenomenon.

### 7.4.6 Section Summary of Findings & Implications

In this section, it has been presented that upon initial inspection Digital Exhibition appears to adhere to Bolter and Grusin's criteria for categorisation as a new medium - and a case of the new media. It was found that Digital Exhibition has emerged from the cultural contexts of the cinema and television. It was found that Digital Exhibition is a phenomenon characterised by the want to deliver a higher degree of immediacy than is currently possible (through traditional film based cinema and television). Moreover, it was found that Digital Exhibition can be described as refashioning and remediating various (technological / content) aspects of various 'older' media – including the cinema and television. However, upon further analysis, it was found that Bolter and Grusin consider that 'older' media such the cinema and television can also accommodate such characteristics.

After yet further analysis of their literature, it was also presented above that Bolter and Grusin consider there to be one fundamental characteristic which separates the new media from older media. Bolter and Grusin draw a clear distinction between media that are distributed and received digitally (the 'new media') and those which are mediated via analogue technologies ('older media'). It was thusly offered that, when using the literature of Bolter and Grusin as the lens through which to view it, Digital Exhibition appears as a case of the 'new media', and as a new medium - which remediates, but can be identified as uniquely different to older media such as television and the cinema.

It was also presented that Dr Jan Simons considers the 'new media' designation to be ephemeral. Moreover, it was recalled that Digital Exhibition does *not* pertain exclusively to digital display technologies. Some 'digital' projectors use the digital code signal to generate and control an analogue light signal. Therefore it was considered that Digital Exhibition might not be a case of the new media, but might still be a new medium - which remediates, but can be identified as uniquely different to older media such as television and the cinema.

The obvious issue with this latter explanation is that Bolter and Grusin essentially offer only one characteristic by which to separate new media from old – that being that new media pertain exclusively to digital distribution and presentation technologies. As this is *not* true of Digital Exhibition<sup>159</sup>, the literature of Bolter and Grusin can not be used to categorically negate the interpretations of the phenomenon as the cinema or television.

## Chapter Seven: Summary of Findings

This chapter has presented numerous attempts at explaining the nature of Digital Exhibition in an effort to determine whether the discourses of John Fithian and Michael Karagosian, et al, are correct in their interpretation of the phenomenon as pertaining to multiple media. Moreover, through the attempted construction of the explanations addressed within this chapter, the author hoped to reveal a theory as to why it appears possible to build (or rather, impossible to negate) numerous seemingly incongruent explanations around the phenomenon of Digital Exhibition. However, at the conclusion of this effort, it still seems that none of the hypotheses as to the nature of Digital Exhibition presented in this chapter (and in this thesis as a whole) can be categorically dismissed. As such, it is still undetermined whether or not Digital Exhibition should be considered as:

- A case of the 'new media'

and / or:

- An evolved form of the cinema – having appropriated some of the technologies and techniques of television and computerised mediations.
- An evolved form of television – have appropriated some of the technologies and techniques of the cinema, and computerised mediations.
- A manifest representation that the cinema, television and certain new media have conceptually always been one and the same (total) medium.
- A unique medium unto itself - the progeny of the cinema and television; having been born out their convergence (which has been facilitated through the application of digital computer technologies).
- A manifest representation as to the end of the cinema, television and the computer as individual entities, and their combined evolution into a new, single, unified medium.

(This list continues on the following page.)

- A new and unique medium which has emerged from within the contexts of the cinema and television, and which remediates aspects of these ‘older’ media as well as other digital and analogue media phenomena.
- Something which isn’t a medium at all - but is a particular application, or set of applications, of ‘the computer’.

If it is an application of the computer, it still remains undetermined whether Digital Exhibition:

- *emulates* multiple media,
- *accommodates* [channels] multiple media, or
- *transforms into* multiple media

Ultimately then, the author has not yet been able to categorically prove, nor dismiss, any of the interpretations offered. It must now be asked whether this is due to the nature of the phenomenon itself – or whether it reflects an inherent issue with regards to how media are defined, either when vigilantly employing established theories offered from within the sphere of contemporary media theory, or when making a instinctive call based upon on preconceived, ideologically questionable, notions as to what media are.

## **Chapter Eight:**

# **Conclusion & Discussion**

## Introduction to Chapter Eight

As detailed in Chapter One, the principle research question of this study was:

**Do prevailing, industrially and politically sourced definitions of Digital Exhibition faithfully represent the phenomenon's position within the contemporary media theory framework?**

As presented in Chapter Two, the approach to study followed the methodology of the embedded case study. The author developed an 'explanation building' analytic strategy whereby a series of 'plausible rival hypotheses' was derived, and engaged as a framework for the theory-building process.

In Chapter Three the author identified several broad / conflicting established approaches to the interpretation of Digital Exhibition – these being that it is:

- A form of the cinema
- A form of television
- A new medium
- A phenomenon which pertains to multiple media

Through a Political Economy analysis of their originators, the author also identified, within Chapter Three, that each of these interpretations stemmed from sources which could be described as ideologically affected.

Through Chapters Four to Seven the author presented evidence from his explanation building analysis of the established interpretations of Digital Exhibition. A series of twelve plausible rival explanations as to the 'causal links' which have led to the development of Digital Exhibition were investigated. In order to assess the validity of each explanation 'real life' aspects of the case phenomenon were compared against established theoretical contemplations as to the natures of the media. However, it has not proven possible to employ established media theory to categorically negate any one of the explanations of Digital Exhibition investigated.

Consequently, it has not proven possible to categorically refute the validity of *any* of the established interpretations of Digital Exhibition offered by commercial and political commentators.

In this chapter the author presents a first person discussion around his beliefs as to why it has been found possible to employ established media theory texts in the construction of multiple contradictory explanations as to the nature of Digital Exhibition.

The author presents his belief that that historically media theorists have conceptually grouped disparate moving image events together (for analytic purposes) and designated those groupings as being 'the cinema', 'television' or the 'new media'. However, the author presents that different theorists have applied these designations to different abstract groupings – and therefore concludes that they no longer have any definitive meaning. Furthermore, the author presents that the sphere of contemporary media theory offers no prescriptive rules as to how moving image events should be conceptually grouped together. The author presents that there are an infinite number of possible ways by which moving image events could be logically grouped (following that there are an infinite range of contextual and content variables upon which the groupings could be based) – and he presents a belief that each grouping might offer as valid a theoretical understanding as any other. Consequently, the author proposes that no single grouping should be considered as more significant than any other, and thusly the author offers that no particular abstract collection of moving image events warrants the designation of 'medium'. The author recognises that in this he now rejects several concepts which he had previously considered (and presented within the 'Explanation Chapters'<sup>160</sup>) as known truths. Such concepts include that the cinema and television are somehow definable articles which warrant the status of 'medium', and that there is a definable / absolutely identifiable class of 'media' which warrants the 'new media' designation.

Given that he rejects these concepts, the author presents that he will not designate the phenomenon as being a form of 'the cinema', 'television' or the 'new media' – or even as a 'medium' (new or otherwise). Nevertheless, the author does offer a general statement as to how Digital Exhibition should be considered within the sphere of contemporary media theory.

Within this chapter the author also presents a general theory as to why there exists an established body of contradictory interpretations of Digital Exhibition. Whilst offering that it is *possible* that the originators of these interpretations each drew inspiration from different areas of media theory, the author will conclude that no industrially / politically charged definitions provide an adequately comprehensive representation as to the wealth of interpretations that can be drawn for Digital Exhibition (through an adherence to recognised approaches to media theory). The author suggests that the established definitions of Digital Exhibition, which appear limited in scope, are limited in such a way that could, if widely accepted, be of political or economic benefit to their originators. Therefore, the author concludes that the contradictory interpretations of Digital Exhibition have not been drawn from a want to present a philosophical truth, but from a want to promote their authors' own interests.

The author will then present his considerations as to future work which could follow this study. The author presents there to be a need to further develop his 'No Medium' theory, and suggests that a starting point for this work should be to undertake a comprehensive study upon noted literatures which purport to be concerned with the theoretical natures of 'the cinema', 'television' and / or the 'new media'. The author suggests that the outcome of this study should be the production of a catalogue of descriptive accounts as to the practical variables which have been taken into consideration by theorists when grouping moving image events into the three 'media' categories. The author proposes that such a piece of work would provide clarity as to what the subjects of classic media theory texts are (given that there is little meaning to the terms 'the cinema', 'television' and 'new media'). The author also proposes that this work would begin to establish a comprehensive taxonomy of moving image mediations; one which would not apply a greater significance to any one (or three) particular system(s) of conceptually grouping together moving image events.

Ultimately, the author will briefly present his belief that this study has been of value, and that it has met each of the Aims and Objectives, as aid out in Chapter One.

## Chapter Eight:

### The Author's Concluding Position - A First Person Discussion

#### 8.1 The Media Theory Mass

As detailed above, the principle research question for this study was framed as:

**'Do prevailing, industrially and politically sourced definitions of Digital Exhibition faithfully represent the phenomenon's position within the contemporary media theory framework?'**

I initially felt that in order to answer this question I would need to determine how the phenomenon's position within the 'contemporary media studies framework' should actually be expressed. However, after extrapolating from a broad range established media theory discourses (see Chapters Four to Seven), I began to believe that Digital Exhibition could ('legitimately') be placed in any of a multitude of theoretical positions. Following from Glen Creeber's finding that: "There is no set method or theoretical framework for studying New Media" (2009, p.11) it now appeared as if there would be no right or wrong answer to the question of 'What is Digital Exhibition?', because there exists no consistent media theory framework upon which to define the phenomenon.

Indeed, I have found established definitions of 'the cinema', 'television', the 'new media' (and even definitions of what a medium is) to be subjective in nature.

I do not offer this as a criticism of the approaches to theorisation taken by luminaries such as Bazin, McLuhan, Manovich, Bolter and Grusin, et al – rather, it is offered as recognition that the subjects about which these great thinkers have offered their individual (and commonly conflicting<sup>161</sup>) theories are philosophical - rather than practical. The learned scholars discussed within this thesis do not just present objective descriptions of technologies, contents and contexts – rather, they present subjective hypotheses as to what the summed result of these empirical elements 'mean'. Nevertheless, whilst each individual definition put forward might offer a significant contribution to the complete philosophy of media, the outcome of there being so many conflicting approaches as to what the media are (and what each medium is) has contemporarily resulted not in a structured framework of media theory – but rather in what might be described as a 'media theory mass'.

## 8.2 No Medium Theory

Having determined that there was no structured framework of contemporary media theory I was compelled to question *why* a century-plus of theory development had not produced an ultimately authoritative understanding as to what the moving image media are, how they are formed, what happens when they share content & technologies (i.e. 'converge'), etc. I subsequently began to consider that perhaps the natures of 'the cinema', 'television' and the 'new media' can not be categorically defined because they do not exist.

As discussed above the terms 'the cinema', 'television' and the 'new media' are subjectively defined. This subjectivity does not only pertain to their philosophical natures – but these terms are actually used by different media theorists to describe different elemental (technological, experiential, contextual, content) groupings.

For example, some theorists claim that 'the cinema' is exclusively a medium of feature length films – whilst others find that it can accommodate short-form content, some theorists offer that 'television' occurs only in the domestic locale – whilst others find that it can also be experienced outside the home, and some theorists claim the 'new media' must offer interactivity – whilst others consider this term as describing any form of digitised mediation. As such, it appears appropriate to consider that 'the cinema', 'television' and the 'new media' do not exist as corporeal entities (nor even as fully formed conceptual notions) – they are but a triumvirate of terms which mean different things to different people.

In essence then, I now began to consider that the moving image 'media' are myths; that is to say - there are no 'media', there is no 'medium', there are only logical constructs formed by (and residing within) the perceptive minds of individual media theorists; these constructs pertain to the subjective grouping together of moving image events for analytic purposes, and are commonly designated as 'the cinema', 'television' or the 'new media' by media theorists in an attempt to immediately communicate to others the subject of their conjectural musings.<sup>162</sup>

Clearly, audiences *do* experience moving image mediations – such events do occur. However, each and every single event has some unique qualities (within its elemental constitution of programme contents, industrial participants, event venues, audience members, operational technologies, etc.) which make that event different to all others. Furthermore, because the potential interweaving of elemental variables across events appears infinite (e.g. analogue video displays can occur in public auditoria, Hollywood produced feature films can be shown via digital projection, digital sound systems can be used in conjunction with film projectors, etc.), the conceptual grouping together of these uniquely different moving image events requires the media theorist to subjectively weigh those elements which they perceive to be significant and similar against those which they perceive to be extraneous, or which establish each event to be distinct. Appendix 11: Towards a Taxonomy of Moving Image Mediation presents an account of some of the many varied ways by which ‘media’ theorists have traditionally categorised ‘media’ events for analytic purposes.

I do not consider any grouping of moving image moving image events to constitute a ‘medium’. There are a potentially infinite range of different moving mage events which can be categorised / grouped together in a potentially infinite number of ways (e.g. by content genre, audience type, transmission technology, etc. See Appendix 11), and there is no particular grouping (or type of grouping) which I would consider to be more theoretically / philosophically significant than any other. Moreover, I do not consider it constructive to designate any grouping of moving image events as ‘the cinema’, ‘television’ or the ‘new media’ – given that these designations have historically been applied to so many different / contradictory groupings they presently convey very little meaning (and any additional definitions of these terms can only contribute to this situation - not resolve it). Nevertheless, I do consider it valuable to group together moving image events for analytic purposes. The infinite possible variations of contexts, technologies, audiences and contents do need to be organised for methodical analysis to occur. Furthermore, theorists need to establish a scope to their work, and need to offer (meaningful) designations to their subjects.

### 8.3 A Compulsion to Explain Digital Exhibition

Despite having found there to be no definitive explanation of Digital Exhibition to be drawn from within the existing mass of media theory, I still felt a strong desire to express my own hypothesis as to what Digital Exhibition is, and how it relates to other media phenomena.

I recognised that if I was to ultimately propose that all Digital Exhibition events belonged to a grouping of media phenomena which should be designated as ‘the cinema’, ‘television’ and / or the ‘new media’, then I would be compelled to present the definitions of ‘the cinema’, ‘television’ and the ‘new media’ which I had used to reach this conclusion. As such, I would either have to draw my own definitions for these terms, or I would have to subjectively pick one established set of definitions over all the others that are available from within the media theory mass. However, I questioned the pertinence of taking my work in this direction. I felt that this process would fall beyond the remit of my study; I felt that my work *had* been aimed at determining Digital Exhibition’s position within the *established* media studies framework, and even though this aim ultimately proved unrealisable, my intention *had never* been to create a framework to fit my own considerations. Furthermore, I considered that no matter how impartial I might wish my work to be, the ‘media definitions’ which I selected to base my conclusion upon would be subjectively derived, and would be influenced by my own particular area of interest (that being the phenomenon of Digital Exhibition). I felt that this would be an inappropriate approach to take, given that I have been critical of industrial and commercial commentators who have based their own interpretations of Digital Exhibition on self-serving interpretations as to what ‘the cinema’, ‘television’ and the ‘new media’ are. Moreover, I considered it essentially valueless to designate Digital Exhibition as being ‘the cinema’, ‘television’ and / or the ‘new media’ because any definitions which I offered for these terms would fail to provide an ultimately authoritative understanding - they would only append the media theory mass, and contribute to the overall lack of meaning conveyed by these terms.

Nevertheless, having taken all of the above into consideration, I *still* felt it would be remiss of me to have discussed at such length the phenomenon of Digital Exhibition without offering my own analysis as to what it actually is.

## 8.4 What is Digital Exhibition?

As implied above, I do not consider it meaningful to categorise Digital Exhibition as ‘the cinema’, ‘television’ or the ‘new media’, nor do I consider it meaningful to claim Digital Exhibition to be a ‘medium’ (new or otherwise). Indeed, I do not consider it pertinent to consider that any of the infinite ways by which moving image events can be grouped together are fundamentally more significant than any other. However, as indicated above, I *do* consider it constructive to group moving image events together for analytic purposes, and I do consider that the grouping together of moving image events can be based upon any number of shared / similar elemental aspects (See Appendix 11 for further discussion).

Furthermore, I consider that a modern taxonomy of moving image mediations should allow for an expansive designatory nomenclature. Consequently, I consider that Digital Exhibition is a particular, subjectively derived, grouping of individual moving image events which have been collectively designated as ‘Digital Exhibition’ within my work.

Indeed, in the Introduction to this thesis (on page 1) I defined Digital Exhibition as:

**‘The practice of presenting moving images, either live or pre-recorded, to paying audiences, in public spaces, by means of digital distribution and projection’**

In this statement, I logically, yet subjectively, defined and presented the qualities that a moving image event would need to achieve in order for me to consider it as belonging to the grouping of moving image events that I have designed as ‘Digital Exhibition’.

In essence then, this definition represents what Digital Exhibition is. However, I now feel that it is apt to further address some of the issues around those particular types of contents and contexts which I consider as pertaining to ‘Digital Exhibition’.

In my definition, I expressed that the moving image content of events which qualify as pertaining to Digital Exhibition can either be live or pre-recorded, and I placed no further limitations on what may be shown. I intended to offer that that which I designate as Digital Exhibition can consist of an essentially infinitely broad range of content types; allowing for feature films (of all 'genres'), short form programming, advertising, sporting events, business programming, etc. all to be included within my conceptual grouping. However, I now accept that my definition of Digital Exhibition may be open to subjective interpretation, with regards to the potential to present spontaneously generated digital images, such as the abstract forms that might be created as part of a 'live cinema' showing, or those produced when playing computer games, which may not be universally regarded as 'live' as they do not present occurrences happening in the 'real world'. I address this issue in a revised definition of Digital Exhibition, presented at the conclusion of this section.

By determining (or intending to determine) that Digital Exhibition is a term used to designate a grouping of moving image events that is not limited by the content presented, I also present that this grouping of events is not limited by any aspect of the production context. For example, my definition of Digital Exhibition allows for content to come from any geographical area, it allows for content to be captured using any acquisition technologies (so long as distribution occurs digitally), furthermore, other than determining that they must make their product available for public presentation, I place no restrictions on the political / industrial ideologies of those parties who produce the content of an event which qualifies as pertaining to Digital Exhibition.

In stressing that I would be focusing my research on commercial presentations (i.e. paying audiences), I attempted to limit the contextual scope of Digital Exhibition at the point of exhibition. I considered that this would distinguish the topic of my study from digitally projected advertisements in shop windows (for example). Furthermore, in conjunction with their having to occur in ‘public spaces’, I felt that by expressing that Digital Exhibition events had to be paid for by the audience, I would be grouping together events in accordance to how people ‘used’ them. That is, at the outset of this study I held a preconception that the designator of Digital Exhibition should describe events that audiences would ‘use’ as a means of consciously forsaking domestic entertainments and routines. However, as I worked through this thesis, I began to question whether such experiential factors were appropriate when considering what aspects of an event could be used to mark it as pertaining to Digital Exhibition.

I have recognised, within my thesis, events such as business seminars and ‘interactive virtual classrooms’ as pertaining to Digital Exhibition – which it subsequently seemed to me would offer very different ‘uses and gratifications’<sup>163</sup> as compared to presentations of feature films or sporting events. Furthermore, I have presented industry premiers and technological demonstrations (i.e. complimentary entertainments) as qualifying to be classed within my grouping of events designated Digital Exhibition.

It now seems to me that overtly determining that Digital Exhibition can only occur in ‘public spaces’ remains a valid way of limiting the events which can be so designated. However, it seems that I am not able to imply a specific use, nor dictate a degree of commerciality, when attempting to distinguish Digital Exhibition events from other ‘ambient’ digitally projected mediations. As such I present a revised definition of Digital Exhibition at the conclusion of this section.

In my original definition I attempted to specify the particular ‘transmission technology’<sup>164</sup> which should be employed, if an event was to qualify as pertaining to Digital Exhibition. However, as I continued my studies I began to recognise that the phrase ‘by means of digital distribution and projection’ was actually open to (further) subjective interpretation. I discovered that whilst some exhibition systems were able to receive digitally encoded signal transmissions, they had to convert those signals into analogue signals before they could be used to manipulate the liquid crystal cells housed in the projection unit. I also discovered that even when an LCD projector was able to manipulate the liquid crystals through the direct use of digital pulses, the movement of crystals themselves was analogue – and therefore that projected was not digital in nature. Following these discoveries, I found it to be possible (perhaps even necessary) to exclude all LCD projected events from the grouping of ‘Digital Exhibition’ as prescribed by my initial definition. I did not wish, however, to limit my subject to events made possible from DLP projection. Given this, and those other considerations stated above, I have chosen to refine my statement as to how Digital Exhibition should be considered within contemporary media theory (i.e. what Digital Exhibition is):

***A general statement as to how Digital Exhibition should be considered within the sphere of contemporary media theory.***

**‘Digital Exhibition is the collective designation given to moving image events which involve projected presentations of live, pre-recorded or spontaneously generated moving images, in public spaces, to audiences that have for the most part chosen to occupy those public spaces in order to experience said presentations.**

**In order for an event to be designated as Digital Exhibition, the moving image content must be received at the exhibition venue in the form of a computational binary pulse signal, and must not subsequently be recorded onto any physical medium for projection purposes’.**

***Explanation as to the 'causal links' leading to the emergence of Digital Exhibition;  
Explication as to the practical and theoretical relationships between Digital  
Exhibition and other media phenomena.***

I do not consider Digital Exhibition to be an evolved form of 'the cinema' or 'television'. I do not believe that Digital Exhibition is a manifestation of the convergence of 'the cinema' and 'television'. I do not consider that Digital Exhibition imitates, becomes or channels 'the cinema' or 'television'. Furthermore, I do not believe that Digital Exhibition has been developed autonomously and yet remediates 'the cinema' and 'television'. This is because I do not believe that the terms 'the cinema' and 'television' actually describe single, identifiable, phenomena (as I have discussed above).

However, I do believe that at its emergence (i.e. with the presentation of '*The Last Broadcast*' in 1998) Digital Exhibition was the manifestation of an effort to provide an experience which audiences would mostly associate with publically located film based exhibition, through the use of computing technologies and display technologies which had been developed, in the main, for broadcast / privately consumed mediations. Furthermore, I consider that the motivation behind this 'convergence' of mediation techniques was the potential offer parties who were commercially involved in the film exhibition industry a lower-cost content distribution channel. Moreover, as new / improved computing and display technologies / techniques have become available for use (regardless as to whether these were developed within the computing industries, domestic display industries, the public display industries, or elsewhere), I believe that that which has been appropriated into Digital Exhibition systems is that which has been considered as being of commercial benefit to those involved in Digital Exhibition (i.e. those which achieve reduction in distribution costs, an increase in audiences, or those which can warrant an increase in fees charged).

As detailed above, at its emergence Digital Exhibition was exclusively concerned with offering the same ‘sort’ of audience experiences as could also be achieved through physical film (at a lower cost to industry). Whilst I believe that Digital Exhibition systems will still be used to ‘remediate’ / ‘imitate’ film based exhibition in this way, because of the want to increase audience numbers, and increase the fees charged (by all parties who charge, to all parties who pay), I believe that Digital Exhibition systems will increasingly be used to present content that is beyond the capabilities of physical film systems – such as interactive presentations, live presentations, 3D presentations, and even live interactive presentations in 3D.

Ultimately, I believe that the want to achieve ever greater commercial (and also artistic) success will continue to drive further developments in (and appropriations into) the technologies and techniques of Digital Exhibition – until such point as it is made wholly redundant by a system which can not be considered as pertaining to my definition of Digital Exhibition.

## **8.5 Do prevailing, industrially and politically sourced, definitions of Digital Exhibition faithfully represent the phenomenon's position within the contemporary media theory framework?**

I now consider that this question can not be answered directly, given that, as presented above, I do not believe there to be a contemporary media theory 'framework', but rather, I believe there is a contemporary media theory mass. Nevertheless, I do not believe that Digital Exhibition should be considered as being a form of 'the cinema', 'television', the 'new media', or even as a new 'medium'. It therefore seems to me that the established interpretations as to how the case phenomenon should be regarded, discussed within Chapter Three of this thesis, are all erroneous. As such, it now needs to be determined whether the evidence presented within this thesis supports the notion that the authors of these erroneous interpretations were sincere (and yet mistaken) in their approaches, or whether they have been purposely disingenuous.

It should be recalled that, as is presented above:

'after extrapolating from a broad range established media theory discourses (as discussed through Chapters Four to Seven), I began to believe that Digital Exhibition could ('legitimately') be placed in any one of a multitude of theoretical positions. It appeared as if there would be no right or wrong answer to the question of 'What is Digital Exhibition?', because there exists no consistent media theory framework upon which to define the phenomenon' (p.344).

As such, it would seem improper to suggest offhand that those commentators who have positioned the phenomenon in contradiction to my own considerations must be deceitful. It now seems that the subjective and varied nature of established 'media' definitions, which made it impossible for me to immediately and categorically determine Digital Exhibition's position within the 'framework of media theory', now also make it impossible to immediately and categorically determine whether industrial / political delegates are genuine in their beliefs, or whether they have consciously lied in order to promote meanings which support their / their organisations' ideological positions.

It has been presented within this thesis as possible to employ established media theory literatures in order to construct an explanation of Digital Exhibition (in its entirety) as a form of the cinema. It has also been shown to be possible to use established media theory literatures to build an explanation of Digital Exhibition as a form of television; a case of the new media & a wholly new medium; a phenomenon which actually pertains to multiple media; an application of the computer which emulates / becomes / channels multiple media; a single case of the new media which remediates multiple media, etc. However, whilst I have taken a very broad approach to my analysis of the phenomenon, and investigated it from multiple theoretical standpoints – thus finding each to be erroneous, it certainly seems possible that other commentators might have investigated just one of these explanations and found it to be ‘valid’ through a limited analysis of established media theory literatures. Nevertheless, not only is it my feeling that any texts which present Digital Exhibition as pertaining to ‘the cinema’, ‘television’, the ‘new media’ or as being a new ‘medium’ are wrong, I also consider that it is not at all insignificant that the designations offered by industrial and political commentators can be seen to be supportive of their own ideological principles (as presented in Chapter Three).

I may never be able to categorically prove that those commentators (discussed in Chapter Three) who have presented limited interpretations of Digital Exhibition were principally concerned with achieving the political / economic effects which they believed would come about as a result of a wide acceptance of those interpretations, as opposed to a want to disseminate their true feelings as to the nature of Digital Exhibition. However, I note with certainty, that none of the established interpretations of Digital Exhibition presented within this thesis made reference to the exceptionally broad spectrum of possible interpretations that can be drawn from established media theory literatures. Furthermore, I present with certainty that all industrially / politically sourced literatures which attempt to categorise and designate any media phenomena should be treated as methodologically problematic – in so much as their authors have not started from an ideologically neutral position.

## 8.6 Recommended Further Work

Before finalising this thesis, I should like to propose a project of study (pertaining to my submitted ‘No Medium Theory’) which I think would result in a further significant contribution to knowledge. In my conclusions, above, I have presented that:

‘there are no ‘media’, there is no ‘medium’, there are only logical constructs formed by (and residing within) the perceptive minds of individual media theorists; these constructs pertain to the subjective grouping together of events for analytic purposes, and are commonly designated as ‘the cinema’, ‘television’ or the ‘new media’ by media theorists in an attempt to immediately communicate to others the subject of their conjectural musings’.

With further regards to this notion, I have also presented that

‘I do not consider any grouping of moving image events to constitute a ‘medium’. There are a potentially infinite range of different events which can be categorised / grouped together in a potentially infinite number of ways... and there is no particular grouping (or type of grouping) which I would consider to be more theoretically / philosophically significant than any other’.

Moreover, I have presented that:

‘I do not consider it constructive to designate any grouping of moving image events as ‘the cinema’, ‘television’ or the ‘new media’ – given that these designations have historically been applied to so many different / contradictory groupings they presently convey very little meaning’.

Consequently, I would like to see a comprehensive study carried out upon on those noted media theory texts which have purported to address the natures of the three ‘media’ types. I would like to see the production of a ‘catalogue’ of descriptive accounts as to the practical variables which have historically been taken into consideration by theorists when grouping moving image events into categories, which they have then designated as ‘the cinema’, ‘television’ or the ‘new media’. I propose that such a piece of work would provide clarity as to what the subjects of classic media theory texts are (given that there is little meaning to the terms ‘the cinema’, ‘television’ and ‘new media’). I also propose that this work would begin to establish a comprehensive taxonomy of moving image mediations; one which would not apply a greater significance to any one (or three) particular system(s) of conceptually grouping together mediation events.

With specific regards to the interpretations of digital mediation systems – I recommend that further studies, similar to this, be undertaken with focus upon systems that have been designated as ‘digital *television*’ and ‘digital *telephony*’. I consider it vitally important that our understanding as to what a particular moving image event is should not be driven by the political / economic objectives of a highly vocal group of commentators – nor indeed by the outdated notion that mediated communications can be easily categorised as pertaining to just one of a handful of ‘media’ types.

## 8.7 Authors Final Appraisal of Study

I believe that I have met all my aims for this study - as laid out in Chapter One. I have: provided a general statement as to how Digital Exhibition should be considered within the sphere of contemporary media theory (Aim 1); provided a general theory as to why there exists an established body of contradictory interpretations of the phenomenon (Aim 2); identified conflicting approaches as to how Digital Exhibition is presently defined (Aim 3); explained the 'causal links' behind the defining ('meaning making') discourses which surround Digital Exhibition (Aim 4); illustrated that existing definitions of Digital Exhibition offered by industrial and political agents may have been constructed with ideological bias (Aim 5); described the phenomenon of Digital Exhibition and the 'real life contexts' in which it occurs (Aim 6); explained the 'causal links' leading to the emergence of Digital Exhibition (Aim 7); made explicit the practical and theoretical relationships between Digital Exhibition and other media phenomena (Aim 8); demonstrated that there is an inherent subjectivity to existing media theory literatures, which allows for Digital Exhibition to be 'legitimately' explained as a form of 'the cinema', 'television' and as a new medium (Aim 9); highlighted that there are no definitive means by which moving image 'media' *can* be defined – given that technologies, contents, industrial factors and audiences, etc. are not statically associated with any one form of mediation (Aim 10); put forward a notion that there are no moving image 'media' – that there are only subjective groupings of distinct unique moving image events, conceptually constructed by media theorists for analytic purposes, and commonly designated as 'the cinema', 'television' or the 'new media' in an attempt to communicate an immediate understanding as to the general themes by which the individual 'types' of event have been associated (Aim 11).

Furthermore, I believe that my approach to this research has been non-biased throughout. I also believe that I have adhered to the rigours of the embedded case study method. Ultimately, I believe that this has been a worthwhile 'critical case study' which, as Robert Yin expresses "can even help to refocus investigations in an entire field" (2003, p.43). I hope now that my work might go on to help refocus not only investigations into Digital Exhibition, but also into the total masses of contemporary media & media theory.

## 8.8 Addendum

As referenced above, William Goldman states of the 'Screen Trade', "Nobody knows anything" (1983, p.39). In this Goldman is telling us how impossible it is to predict the public's reaction to a film prior to its release. With this in mind, I chose not to make any firm prediction (within the main body of my thesis) as to how the future of Digital Exhibition might unfurl. I felt that it could not be foretold, from the technologies alone, how audiences would decide to use Digital Exhibition - and I believe that the future application of Digital Exhibition lies with the decisions of those audiences who will ultimately fund its installation.

Further to this, in tackling the question 'Do prevailing, industrially and politically sourced definitions of Digital Exhibition faithfully represent the phenomenon's position within the contemporary media theory framework?' I was attempting to prevent academic, and popular, understandings as to 'what Digital Exhibition is' from being perverted by potentially disingenuous, politically and economically motivated, discourses. I felt that the level of success (or otherwise) of the self-serving strategies pursued by those industrial and political commentators who have endeavoured to establish various forms of Digital Exhibition as being the cinema (or otherwise) was less relevant than the fact that they were indeed 'self-serving'.

However, in light of recent events in the UK, I now feel that I would like to address some of these issues.

In 2010 it was announced that the UK Film Council is being shut down (UK Film Council to be abolished, 2010), the Governmental contribution to the British Film Institute is to be cut by 15% over a four year period (BFI Funding Slashed, 2010) and the Arts Council funding is to be cut by around 30% (Arts Council responds, 2010). As such, I now feel it is appropriate to issue a warning as to the potential future of Digital Exhibition in the UK.

In Chapter Six of this thesis (p.278) I expressed that:

“to mark the heavily promoted opening weekend of a Hollywood feature-film, every single digitally equipped auditorium in the world could (theoretically) be used to present the same content at the same time”

I presented that this would essentially represent the ‘voluntary subjugation’ of Digital Exhibition to mainstream Hollywood. Furthermore, I paraphrased Charles Ess (2001, p.12) in my statement that;

“the motion picture could become a cultural capital that exercises ‘symbolic power over the cultural have-nots in the virtual world system” (p.278)

Nevertheless, until recently I felt confident that the entire UK motion picture exhibition industry would not succumb to such levels of subjugation. This confidence was fed by positive rhetoric from independent filmmakers and distributors – such as Avos Weiler, co-producer of ‘*The Last Broadcast*’, who is cited above (Chapter Four, p.175) as asserting: “The weakest link in the chain of digital filmmaking was distribution. Now, we’re saying, ‘Hey you can distribute this yourself” (Spencer Ante, 1998). However, the essence of my belief that Hollywood would not dictate the absolute future of Digital Exhibition in the UK came from the existence of organisations such as the UKFC and The Arts Council, and their ‘Digital Fund for Non-Theatrical Exhibition’, the ‘Rural Cinema Scheme’, and the ‘Digital Screen Network’, etc.

With independent and Hollywood filmmakers enthused by the possibilities, and a network of Hollywood and independently funded Digital Exhibition systems, I had considered that at worst Digital Exhibition might lead to a maintained equilibrium between independent and Hollywood exhibition – and at best it might lead to significant benefits to all concerned parties (most especially those audience members who appreciate a wide range of contents). Presently however, with the abolishment / reorganisation of the UKFC, BFI and the Arts Council my confidence is waning.

I should be clear – I am still confident that in the future it will be quite affordable for companies, and even individuals, to install into public locations electronic display systems which by today's standards can be considered to be of a very high-quality. In the very long term we can be sure that the resolution and quality of domestic display technologies will increase. It is my belief that eventually that which is sold for the home market will be, in terms of display quality, akin to that which is presently used in public auditoria - and invariably as new technologies get better, earlier generation systems get cheaper. I also still believe that internet distribution will allow independent filmmakers to affordably make their films available for exhibition via such systems.

However, my very genuine concern is that without an institution like the UK Film Council which, under a governmental mandate, takes responsibility for the quality of those independent films exhibited, British audiences might be deterred from venturing out to see such productions. Moreover, if the UK is deprived of a well financed system of promoting high-quality independent filmmaking and exhibition – at this very moment – then by the time Digital Exhibition reaches a cost level at which it is able to liberate public exhibition from Hollywood control, there might only be Hollywood producing any big-screen content (in the English language at least).

I should, in conclusion, make my opinions absolutely apparent. I believe that Digital Exhibition is the future format for large screen entertainment, in the UK and worldwide. I believe that this will be a format that *could* offer a means for *all* filmmakers to show the world what they are capable of achieving. However, without laying the foundations of a significant Hollywood-independent Digital Exhibition infrastructure, without providing a long term commitment to build upon those foundations, without supporting the drive of independent content producers, and without instilling into the British public an eagerness to experience independent product - the UK production, distribution and Digital Exhibition industries will find themselves wholly dominated by the power of Hollywood. Moreover, I now very much fear that with this degree of power, Hollywood might even succeed in getting us all to think of high-end Digital Exhibition (i.e. that which they produce) as being a form of 'the cinema', whilst relegating everything else to an ODS status.

**INTERPRETATIONS OF DIGITAL EXHIBITION**

**VOLUME TWO**

**S. J. WALKER**

**PhD**

**UNIVERSITY OF BRADFORD**

**2011**

## **Appendices**

## Appendix 1:

### What is Digital Cinema?...And What Isn't Digital Cinema?

*Article by Simon Walker*

*Originally published in StudentFilmmakers Magazine, June 2007, pp.10-13*

This is, very possibly, not the first article you've ever read with the title 'What is Digital Cinema?' Indeed, the duty of defining 'what digital cinema is' has already been accepted by a slew of filmmakers, exhibitors, industry consultants, equipment manufacturers, political organisations and even the occasional academic. But what is it?

Essentially, the term 'digital cinema' is used to describe the commercial exploitation of moving pictures which have been distributed in a digital format, and which have not been transferred onto physical film prior to exhibition.

So then, that's 'digital cinema' defined and done! Unfortunately, it's not quite so simple. Some people (often very influential people) feel that there should be conditional limits applied to this definition - and different people apply different conditions. For example, Michael Karagosian, the 'Digital Cinema consultant' to America's National Association of Theater Owners (NATO), claims that "the accepted definition of digital cinema is the art of presenting first-run motion pictures"<sup>1</sup>. And, in a paper commissioned by the UK Film Council, Neil Watson & Richard Morris offer that "digital cinema is defined as the projection of full-length feature films to audiences in a purpose-built cinema where the quality of projection is not less than that provided by current 35mm technology"<sup>2</sup>.

Significantly, not all commentators are convinced that it is necessary to limit the definition of ‘digital cinema’ to a presentation quality equalling 35mm print resolution. In an article published by NATO, Bill Mead, creator of the independently run ‘DCinemaToday.com’ website, is cited (by Alma Freeman) as observing that “even a cinema owner projecting a DVD can legally and legitimately claim ‘digital’ status, because he is technically correct”<sup>3</sup>. Furthermore, whilst the Digital Cinema Initiatives (DCI) group - formed by representatives from each of the major Hollywood studios - appear to agree with Watson and Morris’ resolution-based restrictions, they do not appear to agree that ‘digital cinema’ should be limited to the presentation of ‘first-run’ feature films; it is stated in the DCI ‘Digital Cinema System Specification’ document that “The Digital Cinema system shall have the capability to present a theatrical experience that is better than what one could achieve now with a traditional 35mm Answer Print” and that “The Digital Cinema system shall also not preclude the capability for alternative content presentations”<sup>4</sup>. Adding further to the confusion is that some equipment manufacturers are not so quick to deny non-purpose-built venues the right to associate themselves with the phenomenon of ‘digital cinema’. For example, in a promotional report entitled, “Digital Cinema for Alternative Venues”, on the website of ‘Qube Cinema Incorporated’, it is claimed that through their technologies, “The power of digital cinema is no longer restricted to cinema halls”<sup>5</sup>.

In light of such contradictions, Walt Husak, a member of the Society of Motion Picture and Television Engineers (SMPTE), and senior manager of Electronic Media at Dolby Labs, declared in an open e-mail to SMPTE members: “I suspect the intended meaning of digital cinema will be lost on the consumer. My guess is it will become anything that is delivered and projected in digital”<sup>6</sup>.

### ***Projected in Digital?***

Unfortunately, even this consideration is not technically, one-hundred-percent legitimate. There are at this time (and speaking very generally) two types of projector associated with the term ‘digital cinema’. The first of these employ the Texas Instruments Digital Micromirror Device (DMD) – a microchip coated in millions of tiny mirrors, each of which represents a single picture element (pixel). Within a DMD projector digital video data signals undergo a process of ‘pulse width modulation’ (PWM), which translates the data into binary pulses of electricity (either on or off). These electrical pulses cause the microscopic mirrors to move in such a way that the light from a projection lamp, which is reflected off the micromirrors and onto a screen, may be rotated completely off or fully on. When rotated ‘off’ the relative pixel shows as black on the projection screen, and white when the mirror is rotated ‘on’. Although the mirrors are only able to project light as digital/binary signals (i.e., black or white), the ‘flicker rate’ of each mirror is so fast (and controllable) that a comprehensive greyscale is perceived by the human eye. The application of DMDs in this manner is referred to as ‘Digital Light Processing’ (DLP).

Reflective Liquid Crystal Display (LCD) technology, the second approach to ‘digital cinema’ projection, has largely been driven by JVC and the Sony corporation, who have developed systems known as the ‘Direct Drive Image Light Amplifier’ (DILA) and the ‘Silicon X-tal Reflective Display’ (SXRD) respectively. Both these systems house LCD panels that are able to directly receive a digital input, i.e., digital video data, which has undergone a process of PWM. However, it has to be noted that in all LCD devices the physical motion of the liquid crystals – which dictates how much light passes on to the screen - is actually analogue.

In other words (although both receive a digital-input) the DLP projector acts like a digital light-switch, i.e., it switches light on or off, whereas the reflective LCD projector acts like a dimmer switch, i.e., it provides an analogue modulation of light levels in projected images. This now brings into question the validity of the expression ‘digital projection’. It could feasibly be argued that with LCD systems the image is no more ‘digitally projected’ than a CGI/DV picture which has been printed onto film immediately prior to exhibition.

### ***So What is ‘Digital Cinema’?***

Once again I ask, ‘What is digital cinema?’ Well, my previously suggested definition of digital cinema, “the commercial exploitation of moving pictures which have been distributed in a digital format, and which have not been transferred onto physical film prior to exhibition” still appears valid, but this evidently does not satisfy all concerned parties. Therefore I personally attribute this definition to the term ‘Digital Exhibition’. Ultimately it would now appear to be that the term ‘digital cinema’ means different things to different people, and therefore the phenomenon of ‘digital cinema’ can be defined as a fundamentally indeterminate variety of the phenomenon of Digital Exhibition as a whole.

Clearly, this is not the all enlightening answer you were hoping for when you set about reading this article – and it actually carries with it a number further fundamental questions - including, ‘How do people refer to those varieties of Digital Exhibition which do not match their preferred definition of digital cinema?’ Or in other words...

### ***What isn’t Digital Cinema?***

The nomenclature for those aspects of Digital Exhibition which don’t meet an individual’s definition of ‘digital cinema’ falls into two broad camps. In Europe the term used is ‘electronic cinema’ (or e-cinema for short). This is evidenced in a report commissioned by the British governmental Department of Culture Media and Sport (and compiled by ScreenDigest). In this report it is claimed that ‘Electronic Cinema’ is the family name given to any means and any content shown digitally to a public audience in an out-of-home environment, which at its ‘highest form’ is known as ‘digital cinema’. Furthermore it is stated that “E-cinema is thus a term that can be applied to non-feature content, digital projectors of less than 35mm equivalent quality and non-cinema screening venues”<sup>7</sup>. Significantly, the language used here overtly suggests such application of Digital Exhibition represent a ‘lower form’ of entertainment than ‘digital cinema’.

In American literature that which fails to meet the ‘digital cinema’ criteria is not generally deemed worthy of the revered ‘cinema’ designator (digital, electronic or otherwise). This is evidenced in the discourse of NATO consultant Michael Karagosian. Karagosian claims that “[digital] theatrical presentation can be divided into two classes, one having the highest quality possible, the other less restrictive in quality”. Furthermore, with regards to this, and his statement that ‘digital cinema is the art of presenting first-run motion pictures’ Karagosian considers, “Our definition of digital cinema allows us to split the universe of [digital] theatrical presentation into digital cinema and everything else”. Karagosian adds that, “The common language applied to ‘everything else’ is “alternative entertainment” or ‘other digital stuff’”<sup>8</sup>. It is not insignificant that the acronym for ‘other digital stuff’ (ODS) is pronounced ‘odious’.

### *Yet More Questions - Unanswered*

I concede that I have not provided you with the comprehensive ‘definitive’ definition of ‘digital cinema’. I hope, however, that you will now begin to question anybody who actually professes to be able to provide such a thing. I really hope that you will ask yourself ‘Why would anyone want to so limit their definition of digital cinema?’, ‘Why would they openly seek to devalue that which does not meet their personal specifications?’, ‘What’s in it for them?’, and maybe you might even ask yourself – ‘Can any variety of Digital Exhibition truly pertain to the cinema – a medium which until this time has been intrinsically linked with physical film?’

Perhaps we’ll explore some of these questions together next time.

*Article References (as published):*

<sup>1</sup> Karagosian, M. (2003) Introduction to Digital Cinema [Internet], Karagosian MacCalla Partners. Available from:

<[http://mkpe.com/publications/digital\\_cinema/insasia/introduction\\_to\\_dc.php](http://mkpe.com/publications/digital_cinema/insasia/introduction_to_dc.php) >

Also Published in the December 2003 issue of INS Asia Magazine

<sup>2</sup> Watson, N. & Morris, R. (n.d.) Specialised Distribution and Exhibition: E-Cinema. [Internet], UK Film Council. Available from:

<<http://www.ukfilmcouncil.org.uk/usr/downloads/ECinemaMainReport.pdf>>

<sup>3</sup> Freeman, A. (2004) Digital Divide [Internet] In focus: Available from:

<<http://www.natoonline.org/infocus/04augustseptember/digitaldivide.htm>>

<sup>4</sup> Digital Cinema Initiatives (2005) Digital Cinema System Specification V1.0 [Internet], Digital Cinema Initiatives, LLC. Available from:

<[http://www.dcinovies.com/DCI\\_Digital\\_Cinema\\_System\\_Spec\\_v1.pdf](http://www.dcinovies.com/DCI_Digital_Cinema_System_Spec_v1.pdf)>

<sup>5</sup> Digital Cinema For Alternative Venues (n.d.) Digital Cinema For Alternative Venues [Internet], Qube Cinema. Available from: <<http://www.qubecinema.com/qubemini.htm>>

<sup>6</sup> Husak, W. (4 April 2003) RE: [DC28.0]. FW: Landmark Theaters and Microsoft Create the Largest Digital Cinema Circuit in United States. Email to members of the Society of Motion Picture and Television Engineers [SMPTE]. Digital Cinema Group [DC-28].

<sup>7</sup> Screen Digest Report on the Implications of Digital Technology for the Film Industry (2002) Screen Digest Report on the Implications of Digital Technology for the Film Industry. [Internet], Department of Culture Media and Sport. Available from:

<[http://www.culture.gov.uk/PDF/Screen\\_Digest\\_Report.pdf](http://www.culture.gov.uk/PDF/Screen_Digest_Report.pdf)>

<sup>8</sup> Karagosian, M. (2003) Introduction to Digital Cinema [Internet], Karagosian MacCalla Partners. Available from:

<[http://mkpe.com/publications/digital\\_cinema/insasia/introduction](http://mkpe.com/publications/digital_cinema/insasia/introduction)

Also Published in the December 2003 issue of INS Asia Magazine.

## Appendix 2:

### A Fundamental Overview of Digital Exhibition:

#### *Digital Projection Technologies*

Digital projection is a fundamental requisite for Digital Exhibition. In fact, digital projection so underpins the constitution of the case phenomenon that in order to develop an understanding as to what Digital Exhibition is, it is necessary to develop a basic understanding as to how digital projection is achieved.

Dan Ochiva accurately observes: “Most current digital projectors employ either of two standard technologies: DMD (digital micromirror device) or LCD” (2004, p.517). This section aims, therefore, to provide a rudimentary introduction to these ‘two standard technologies’.

#### **Digital Micromirror Device (DMD) / Digital Light Processing (DLP)**

Dr. Larry Hornbeck details that in 1977 Texas Instruments initiated a U.S. Government-funded program to build a “membrane-based spatial light modulator for optical processing applications” (1998 a, p.30). This ultimately led to the invention of the Digital Micromirror Device (DMD) in 1987 (ibid). Upon every DMD is an array of microscopic mirrors, each of which represents a single picture element (pixel), and each of which acts, as described by Hornbeck, as ‘digital light switch’: “its only capability is to turn light on or off” (1998 a, p.35).

Within a DMD display device, digital video data signals undergo a process of ‘pulse width modulation’ (PWM), which essentially translates data into binary pulses of electricity (either on or off). In accordance to the image displayed, these electrical pulses cause the microscopic mirrors to move in such a way that the light from a projection lamp, which is reflected off the Micromirrors and onto a screen, may be rotated completely off or fully on. When rotated ‘off’ the relative pixel shows as black on the projection screen, and white when the mirror is rotated ‘on’. Although the mirrors are only able to project light as binary signals (i.e. black or white), the ‘flicker rate’ of each mirror is so fast (and controllable) that a comprehensive greyscale is perceived by the human eye. The application of DMDs in this manner is referred to as ‘Digital Light Processing’ (DLP).

There are two systems for producing colour imagery through DLP projectors; the colour wheel system and dichroic prism system;

- The colour wheel system employs a spinning disc (or wheel) of colour filters which is positioned between the light source and DMD. As the disk spins a different coloured beam of light is reflected off the array of micro-mirrors. The disk spins so rapidly and the DMD can be so precisely controlled that a full colour pictures is produced on screen. The colour wheel system can either employ one single or two separate DMD chips.
- Projectors employing the dichroic prism system of colour image production house three DMD chips as well as a set of dichroic colour-splitting prisms. These prisms divide the source light into the primary colours (directing the beam of each colour to one of the DMDs), and also combine the modulated light as it is reflected off each DMD, before it traverses through the projection lens.

## Liquid Crystal Display (LCD)

According to Hornbeck, it was in 1888 that botanist Friedreich Reinitzer first observed two distinct melting points for a single cholesterol-based material: “One where the solid melted into a milky looking liquid, and a second at which the cloudy liquid turned into a clear liquid” (1998 a, p.19). As noted by Hornbeck, the ‘cloudy’ intermediate phase eventually came to be known as the ‘liquid crystal’ phase (ibid).

In the 1970s it was discovered that the molecular structure of an extremely thin layer of this liquid crystal material (sandwiched between treated polarised glass surfaces) was altered when an electrical charge was applied across transparent electrodes. In the absence of any voltage the liquid crystal layer adopted a structure whereby light was able to pass, when an appropriate voltage was applied the liquid crystal’s molecules would physically rotate and no light was able to pass through the polarised apparatus. By varying the voltage applied (through an analogue signal) a comprehensive greyscale could be realised. The device which achieved this effect became known as a ‘Liquid Crystal Light Valve’ (LCLV). A ‘Liquid Crystal Display’ (LCD) was eventually developed by piecing together a lattice/matrix of transparent electrodes and liquid crystal cells.

### *‘Transmissive’ LCD Projection*

In 1989 Sharp developed an LCD video projector (Sharp History: 1988 ~ 1989, n.d.). In this projector the light from a rear-located source was provided by a powerful halogen lamp. This light was split into the three primary colours through the use of a ‘dichroic beamsplitter’. It passed through three separate (one each for the red, blue and green light beams) transparent / ‘transmissive’ LCD panels which each formed images based upon a video signal input. Ultimately, the light beams re-converged and passed through a single projection lens. Although such projectors could receive a digital input, the digital video data needed to be converted, within the projector, to an analogue voltage signal before it could be utilised by the LCD.

*'Reflective LCD projection'*

In the early 1990s the Victor Company of Japan (JVC) unveiled a new type of LCD projector that employed a technology which JVC call the 'Image Light Amplifier' (ILA). Within ILA projectors light from a powerful xenon lamp was divided (by means of a 'dichroic beamsplitter') into the three primary colours. Each primary colour beam was passed through the front of one of three separate LCD panels - which were housed upon a highly reflective surface. The coloured light which was able to pass through the LCDs was reflected back through a projection lens – to form a complete image on the display screen. As with 'transmissive' LCD projection systems, in such projectors the LCD panels were only able to receive an analogue voltage signal, and the digital input was thusly converted within the projector.

In recent years both JVC and the Sony corporation have developed reflective LCD projectors (known as the 'Direct Drive Image Light Amplifier' – D-ILA, and the 'Silicon X-tal Reflective Display' –SXRD respectively) which contain LCD panels housed upon highly reflective silicon microchips. Such projectors (known as Liquid Crystal on Silicon – or LCoS systems) are able to directly receive a digital input.<sup>165</sup>

However, as detailed by Dr. Raymond Soneira (president of the 'DisplayMate Technologies Corporation'):

“the physical process that controls the brightness of each pixel is actually analog for LCoS and all other Liquid Crystal based technologies”  
(2006).

In this Soneira is referring to the fact that the analogue motion of the liquid crystals results in the analogue modulation of light levels in projected images. Just as Hornbeck likens the DMD to a 'digital light switch' (which may be either 'on' or 'off'), Soneira states that the method of addressing D-ILA LCs is:

“similar to how the lowly light dimmer controls an analog tungsten lamp”  
(2006).<sup>166\_167</sup>

## *Image Resolutions*

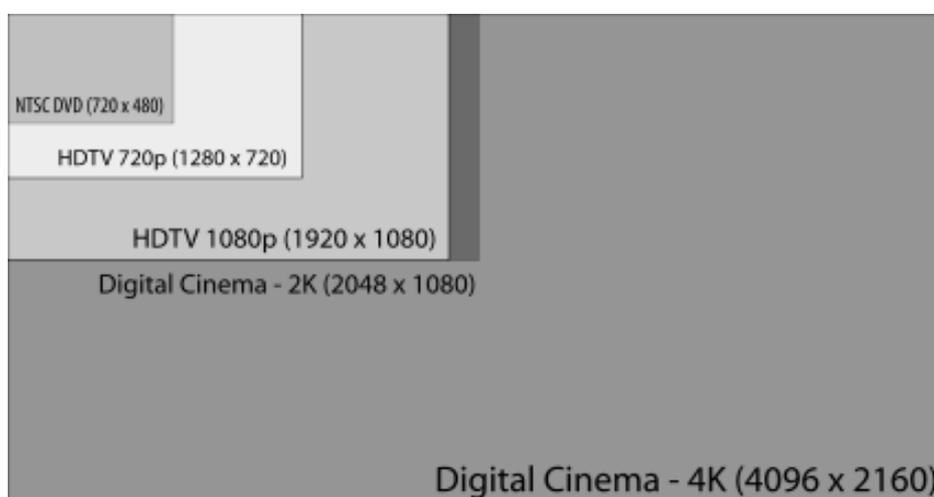
The resolution of a Digital Exhibition projector is measured by the number of individual picture elements (pixels) that can be achieved in the formation of each complete frame.

The resolution of digital projectors is categorised as shown below:

- **SD: Standard Definition** (as in Standard Definition television e.g. NTSC, PAL).  
The precise meaning of ‘SD’ varies geographically, but typically pertains to imagery of approximately 300000 pixels per frame. However, SD frames are usually interlaced so there are only approximately 150000 pixels on the screen at any one time. SD systems are considered to be at the ‘low-end; (i.e. low-cost) of the projection market.
- **HD: High Definition** (as in High Definition television).  
The designation of HD is applied to multiple different image resolutions. For example, HD can refer to image resolutions of 1280 x 720 pixels (921600 per frame), or 1920 x 1080 pixels (2073600). HD projectors are considered to be at the low-end of the professional projection market – and have been rejected for use by the ‘Digital Cinema Initiatives’ (DCI) Hollywood studio coalition.
- **2K:**  
This designation is applied to projectors can achieve a resolution of 2048 x 1080 pixels (a total of 221840 per frame). 2K systems are considered to be at the lower-end of the ‘high-end’ (i.e. high-cost) projection market.
- **4K:**  
This designation is applied to projectors can produce imagery with up to 4096 x 2160 pixels (a total of 8847320 pixels per frame). These are considered to be high-end (i.e. highly expensive) systems.

Figure 1 (below) highlights the differences in the total pixel count attainable by projectors capable of achieving the resolution standards addressed above.

### **Appendix 2 / Figure 1: Image Resolution Comparison Chart**



(Adapted from Gerald Millerson & Jim Owens, 2009, p.269)

### ***The Content of Digital Exhibition***

In order to provide the reader with a broad understanding as to the phenomenon which is to be explored through this work, this section will present a brief history of Digital Exhibition in its application. The following pages will provide details as to the types of content which have been shown, to paying audiences, through digital projection. This section will also provide some details as to the types of venue which have been used to commercially present moving pictures through Digital Exhibition.

### **The Presentation of Feature Films**

#### *'The Last Broadcast'*

The Digital Exhibition phenomenon began in earnest when a *very* low budget<sup>168</sup> Digital Video (DV) acquired horror movie became world's first digitally distributed in-cinema feature film presentation. Stefan Avalos and Lance Weiler, co-producer-directors of *'The Last Broadcast'* (1998) had not signed a contract with any of the major film distributors, and so (rather than accepting that their movie would never reach an audience) the pair formed their own distribution company<sup>169</sup> (Savlov, 1998). Negotiations were promptly entered into with a manufacturer of DLP projectors<sup>170</sup> (Ante, 1998), and on March 9th 1998, in Doylestown, Pennsylvania<sup>171</sup>, the movie was digitally premiered (in 'Standard Definition' NTSC). However, Avalos and Weiler were not content to limit their film's release to a single cinema screen. Wider distribution was sought, geo-orbital satellites were employed, exhibitors in five cities across America showed the film, and with obvious irony, in October 1998, *'The Last Broadcast'* became first ever broadcast-to-cinemas digitally exhibited feature film.

*'Dead Broke'*

Just six months after the events surrounding *'The Last Broadcast'*, a second feature film was presented through digital projection. On May 5<sup>th</sup> 1999 the online film distributor iFilm.net made *'Dead Broke'*<sup>172</sup> available for public download off the Internet. Whilst this was not the first film to be made available by the Internet for viewing on home computers, *'Dead Broke'* is cited by Joe Ashbrook Nickell (1999) as being both the first in-cinema showing of a film distributed through the Internet, and also the world's first simultaneous online and theatrical premier of a feature length film. At the same time that people could first watch it on their home PCs, 'The Tribeca Film Center', an American exhibitor, was presenting *'Dead Broke'* via an SD LCD digital projector to a paying audience - having downloaded it from the Internet themselves earlier in the day.

*'Episode I'*

In March 1999, at the American 'National Association of Theatre Owners' (NATO) 'ShoWest' convention in Las Vegas, many mainstream movie exhibitors and film industry affiliates had the opportunity to experience the phenomenon of digital movie projection for the first time. Francesca Dinglasan (1999) reports that attendees were invited to view digitally projected images, which were shown on one half of a cinema screen (both HD LCD and DLP projectors were employed), and compare them directly to traditional 35mm images (provided by Eastman Kodak), which were placed on the opposing half of the screen.<sup>173</sup> According to Dinglasan, it was following this presentation that George Lucas made his (destined to be long remembered) announcement that the first of three planned prequels to the original *'Star Wars'* trilogy would be presented digitally on two screens in New York and two screens in Los Angeles (ibid).

Just as Lucas had declared, *'Star Wars: Episode I - The Phantom Menace'* began its digital run at two Loews' cinemas in New York and at Pacific's 'Winnetka' Theatre and AMC's 'Burbank 14' in Los Angeles, on Friday June the 18<sup>th</sup> 1999 - held through until the 18<sup>th</sup> of July (Graser, 1999).<sup>174</sup> Both DLP and ILA projectors were employed.<sup>175</sup>

### *Achieving Significant Status*

Following the reportedly successful presentations of *'The Last Broadcast'*, *'Star Wars'*, etc. through 1998-1999, in the new millennium both Hollywood and America's independent film communities continued to embrace the possibilities of Digital Exhibition.

In June 2000 Fox Animation's *'Titan A.E.'* followed the lead set by *'Dead Broke'*, being the first Hollywood financed film to have a cinematic showing from a broadband wired download. However, this was not an 'Internet' download. Annlee Ellingson cites Andrew Setos, executive VP of the new technology group at Fox, as stating: "There is a misconception we were using the Internet. We did not use the Internet" (2000, p.59). Ellingson further cites Setos as explaining: "The Internet is a specific application of all these fibers that are crisscrossing the country. [Technology provider] Qwest opened a private pipe from Burbank to Atlanta for us on the same facility as the Internet uses, but not the Internet. So it was a private data call" (ibid).

Further to this, in November 2000, and following the lead set by *'The Last Broadcast'* (more than two years later), *'Bounce'* (another film released through the 'Miramax' studio) became, according to journalist Trevor Boyer, "the first major motion picture delivered via satellite" (2000). However, this was not strictly speaking a 'broadcast' event, the 'major motion picture'<sup>176</sup>, was bounced off a Boeing satellite into just a single New York cinema.

By 2004, the Digital Exhibition of feature film content had become quite a common happening. In fact, following the 2K digital premier of Universal Pictures' *'The Bourne Supremacy'* in July of that year, Texas Instruments (manufacturers of the Digital Micromirror Device utilised by DLP projectors) announced that their particular brand of Digital Exhibition equipment was "increasingly becoming the projection standard for major motion picture premieres and critical screenings" (Texas Instruments DLP Cinema, 2004).

### *3D Feature Film Exhibition*

On November 4, 2005, the digital presentation of feature films entered a new phase. On this day Disney's computer generated animation '*Chicken Little*' received a simultaneous release, in America, both on physical film and on eighty-four screens (in seventy-nine cinemas) digitally (Crabtree, 2005). However, the audience's experience during the digital presentation of '*Chicken Little*' differed from that of its filmic counterpart significantly as the digital release was presented in 3D.

The technology (provided by 'Real D') used in the 3D presentations employed a digital projector with polarised lenses and a 'polarising silver screen'. Additionally each member of the audience was required to wear polarised eyepieces, which David, M. Halbfinger describes as, "cheap disposable glasses" (2005). The polarisation of the projected pictures and the spectator's glasses made it possible to separately deliver images to either the right or left eye of audience members. Halbfinger details that, in order to achieve the '3D effect', the film was digitally projected at 144 frames per second (as opposed to the standard of 24 frames per second for the film release), with each alternating frame showing only that which was intended to be seen by the left or right eye (ibid).<sup>177</sup>

Following from the '*Chicken Little*' project Disney went on to release a second computer animated film '*Monster House*' in digital 3D – this time, as reported by Scott Jentsch, the 3D version was shown on more than two hundred and fifteen screen in more than two hundred locations (2006). According to a report by Screen Digest: "the number of 3D-compatible cinema screens has grown in recent years, to more than 7,000 by 2009. This number is anticipated to rise to 15,000 by 2013" (Cinema Industry Moving to 3D, 2009).

## The Provision of Alternative Content

Digital Exhibition does not require physical film to present moving pictures, but rather it employs digitally encoded video. As a result of this Digital Exhibition need not be limited to the presentation of feature films, nor even pre-recorded materials. Therefore, whilst NATO president John Fithian categorically states “Motion pictures will always be our biggest business” he also concedes that Digital Exhibition “may open new doors to essential new revenue streams” (2001, p.120). Fithian explains that digital technologies “make it easier for our members to show musical concerts, sporting events, fine art entertainment, business theatre, religious events, and even educational programming” (ibid). Such programming is referred to as ‘Alternative Content’. Over the following pages will be presented key examples of where and how Digital Exhibition has been involved in the presentation of such ‘Alternative Content’.

### *Music Events*

Over a two day period in November 2001, in the main Odeon Leicester Square two-thousand seat auditorium, four showings of Stephen Sondheim’s *‘Putting It together’* were presented through digital projection.<sup>178</sup> On September 8, 2003, David Bowie and a consortium of technology partners around the world<sup>179</sup> collaborated in the live broadcast presentation of a ninety minute concert to cinemas across Europe (Gallagher, 2003). Furthermore, Kurt Hall, President and CEO of Regal CineMedia tells that the ‘Regal’ cinema chain has used digital technologies to “multicast live concert events with artists such as Korn, Tom Petty and Grammy Award-winning rock band Third Day to multiple theatre locations across the country [USA]” (2003).

### *Sport*

According to Laura Bushell, during the 2002 FIFA World Cup the UK's United Cinemas International (UCI) exhibition chain made provisions to digitally screen all of the England and Ireland matches, as well as the tournament final (2002). Bushell further reports that the Odeon cinema chain made provisions to show England's qualifying matches in their Leicester Square, Liverpool, Birmingham, Manchester and Newcastle multiplexes (ibid).<sup>180</sup> In America, on May 29 2003, America's 'Major League Soccer' (MLS) and 'Regal CineMedia' (RCM) announced an agreement to present four live MLS contests through June and July 2003 on selected Regal Entertainment Group (REG) cinema screens (Regal Entertainment Group, 2003).<sup>181</sup>

### *Performance Art (Expanded Cinema)*

Michael Lew details that Digital Exhibition technologies have facilitated a 'new' form of visual entertainment; 'live cinema'. According to Lew: "In live cinema, the performer is essentially editing and sequencing previously recorded digital video on the fly while at the same time being on view to an audience" (2004, p.1).

The 'Cimatics International Festival for Live Audio Visual Arts & VJ-ing' reportedly involves "live cinema' shows, interactive audiovisual installations", as well as, "audiovisual concerts and performances" (Cimatics 05, 2005).

*Pre-Show Presentations (Advertising)*

Michael Karagosian, ‘Digital Cinema Consultant’ to NATO, states that: “major motion pictures are not the killer application for electronic cinema”<sup>182</sup> (2002 a). Considering the “the high cost of projectors and servers, the lack of a new compelling audience experience, and the increase in production/distribution costs in the early years of the technology” (ibid), Karagosian goes on to suggest: “the killer application for electronic cinema is advertising” (ibid).

Indeed, around the world there has been significant industrial interest in the concept of advertising through Digital Exhibition. In 2003, it was reported that Kodak was to test a digital advertising system in Fulham Broadway, London, New York City, Tokyo, Hollywood and Shanghai (Kodak unveils d-cinema operating system, 2003). Also in 2003, Regal CineMedia’s digital advertising programme debuted. According to Julie Moran Alterio within three months digital advertising was showing on two-thousand three-hundred Regal screens<sup>183</sup> across America (2003). According to Patrick von Sychowski, the foremost pioneer in the digital advertising field is a Norwegian media concern, which, von Sychowski details, “pushed through the conversion of every Scandinavian cinema almost overnight in January 2001” (2003 a).

*‘Alternative Uses’*

Von Sychowski defines ‘Alternative Uses’ as “the utilisation of cinemas in ways that large-screen entertainment (whether film or alternative content) does not appear to have the potential to do” (2003 b, p.176). Von Sychowski elucidates, stating that this “involves uses such as staging corporate events, holding education seminars, interactive gaming concepts and even Sunday morning worship telecasts” (ibid). Von Sychowski finds that such uses often, though not always, involve technology additional to the networked digital projector: “primarily some form of return channel and interactive interface” (ibid).

Julie Moran Alterio notes that Regal CineMedia has employed its digital capabilities in the provision of corporate training and business seminars. According to Alterio, as of April 2003 Microsoft had been the biggest customer, having hosted “more than 300 nation-wide sales meetings at Regal Entertainment theatres” (2003). Additionally, a press release issued by ‘National Cinemedia’ (a collaborative venture between Regal and AMC theaters) reports that in December 2004 Regal cinemas hosted, what they describe as “A live, Big Screen Classroom educational event in partnership with The History Channel” (Big Screen Entertainment, 2006, p.2). This ‘educational event’ reportedly featured an “interactive Q & A session with the ‘real’ Ben Franklin” and was “simulcast live from Carpenter’s Hall and the National Constitution Center in Philadelphia to Regal Entertainment Group movie theatres nationwide” (ibid).

The ‘National Cinemedia’ press release highlights another ‘alternative use’ for cinemas, facilitated through the technologies of Digital Exhibition; adding value to feature film presentations. According to the ‘National Cinemedia’ publication, in October 2005 Clay Smith of ‘The Insider’ hosted a thirty-minute ‘live-via-satellite’ interview session with actress Charlize Theron and director Niki Caro who “shared stories about the making of ‘North Country’ as well as answer [sic] pre-selected questions from the theatre audiences” (Big Screen Entertainment, Education and Sports Premiere Events, 2006., p.1).<sup>184</sup>

## *The Context of Digital Exhibition*

### **Commercial Cinemas**

Statistics provided by ‘DCinemaToday.com’ show that as of 2008<sup>185</sup> there were seven thousand eight hundred and thirty seven ‘commercial cinema’ screens with Digital Exhibition capabilities world wide. This is broken down as shown in the table below:

**Appendix 2 / Table 1: Count of Digital Exhibition Screens by Country**

Country	Digital Screens	Country	Digital Screens	Country	Digital Screens
USA	5242	Portugal	29	Sweden	5
China	623	Singapore	28	Indonesia	5
UK	298	Taiwan	17	South Africa	4
France	192	Mexico	16	Ecuador	4
Korea	180	Thailand	16	Chile	3
Canada	179	Brazil	15	Colombia	3
Germany	155	Luxembourg	14	Peru	3
Russia	123	Turkey	14	Philippines	3
Japan	100	Switzerland	13	Argentina	2
Belgium	97	Greece	12	Kazakhstan	2
Italy	65	Bulgaria	10	Latvia	2
Spain	47	Israel	8	UAE	2
Norway	41	Romania	8	Malaysia	1
Ireland	41	Finland	7	Czech Republic	1
Poland	39	Iceland	7	Bermuda	1
Netherlands	37	Hungary	6	Falkland Islands	1
Austria	34	Croatia	6	Iran	1
India	34	Denmark	5		
Australia	32	New Zealand	5	<b>Globally</b>	<b>7837</b>

Note: These figures do not include installations described by ‘DCinemaToday.com’ as being limited to ‘Pre-Show Quality’ projection.

## Alternative Venues

The potential for organisations beyond established film-based exhibitors to digitally present moving pictures to commercial audiences has also been widely recognised. In a report by Screen Digest<sup>186</sup> it was stated that Digital Exhibition technology “opens up the possibilities that non-cinema venues can be equipped with digital projectors to screen films, repertory features, alternative programming” (Screen Digest Report, 2002, p.38).

In 2001 Giovanni Cozzi co-founded ‘Emerging Cinemas’ with the aim of bringing Digital Exhibition to non-cinema venues. Peter H. Putman cites Cozzi as stating:

“Any college or university campus or community centre would be a natural fit. These venues already attract the types of audiences who would support alternative cinemas, and the facilities are usually adequate for theatrical presentation”  
(2001 a).

Moreover, Adam Minns reports that in 2004 the UK Film Council launched a £500,000 National Lottery funded initiative, referred to as ‘the digital fund for non-theatrical exhibition’ in order to “boost access to films in areas without a local screen”. Minns details that “Film clubs and local film societies, community groups and mobile film exhibitors” could apply to the fund and that organisations could secure up to £5,000 to “help buy DVD-based digital projection equipment” (2004).

**Appendix 3:**

**Framework of Rival Explanations - Linking Data to Propositions**

Explanation	Primarily Supported Proposition(s)	Non-Negated Proposition(s)	Contradicted Proposition(s)
<p><b>1. Digital Exhibition represents a continuation in the technological development of the cinema.</b></p>	<p><b>1. Those discourses which define Digital Exhibition as being a form of the cinema are;</b>                      a. Sincere efforts to present the true nature of the case phenomenon.</p>	<p><b>2. Those discourses which define Digital Exhibition as being a form of television are;</b>                      b. Sincere, and yet erroneous.                      c. Disingenuous – knowingly presenting a false account as to the nature of the case phenomenon in order to promote a particular ideology.</p> <p><b>3. Those discourses which define Digital Exhibition as pertaining to a set of technologies which channel/become multiple media are;</b>                      b. Sincere, and yet erroneous.                      c. Disingenuous – knowingly presenting a false account as to the nature of the case phenomenon in order to promote a particular ideology.</p> <p><b>4. Those definitions which present the phenomenon as a wholly new medium are;</b>                      b. Sincere, and yet erroneous.                      c. Disingenuous – knowingly presenting a false account as to the nature of the case phenomenon in order to promote a particular ideology.</p>	<p><b>1. Those discourses which define Digital Exhibition as being a form of the cinema are;</b>                      b. Sincere, and yet erroneous.                      c. Disingenuous – knowingly presenting a false account as to the nature of the case phenomenon in order to promote a particular ideology.</p> <p><b>2. Those discourses which define Digital Exhibition as being a form of television are;</b>                      a. Sincere efforts to present the true nature of the case phenomenon.</p> <p><b>3. Those discourses which define Digital Exhibition as pertaining to a set of technologies which channel/become multiple media are;</b>                      a. Sincere efforts to present the true nature of the case phenomenon.</p> <p><b>4. Those definitions which present the phenomenon as a wholly new medium are;</b>                      a. Sincere efforts to present the true nature of the case phenomenon.</p> <p><b>5. All established definitions of Digital Exhibition are erroneous (or disingenuous). An accurate definition of the phenomenon would state that:</b>                      a. Digital Exhibition is not a medium; it does not become media, nor does it provide access to media. Digital Exhibition imitates media.                      b. Digital Exhibition, the cinema and television should all be considered to be aspects of the same (solitary) medium.</p>

Explanation	Primarily Supported Proposition(s)	Non-Negated Proposition(s)	Contradicted Proposition(s)
<p><b>2. Digital Exhibition is a form of public exhibition television.</b></p>	<p><b>2. ‘Television’ Definitions are;</b> a. Sincere / True</p>	<p><b>1. ‘Cinema’ Definitions are;</b> b. Sincere yet Erroneous c. Disingenuous / False</p> <p><b>3. ‘Multiple Media’ Definitions are;</b> b. Sincere yet Erroneous c. Disingenuous / False</p> <p><b>4. ‘New Medium’ definitions are;</b> b. Sincere yet Erroneous c. Disingenuous / False</p>	<p><b>1. ‘Cinema’ Definitions are;</b> a. Sincere / True</p> <p><b>2. ‘Television’ Definitions are;</b> b. Sincere yet Erroneous c. Disingenuous / False</p> <p><b>3. ‘Multiple Media’ Definitions are;</b> a. Sincere / True</p> <p><b>4. ‘New Medium’ definitions are;</b> a. Sincere / True</p> <p><b>5. All Established Definitions are wrong;</b> a. Digital Exhibition is not a medium - Digital Exhibition imitates media. b. Digital Exhibition, the cinema and television are aspects of the same medium.</p>
<p><b>3. Digital Exhibition is a Wholly New Medium – neither The Cinema nor Television.</b></p>	<p><b>4. ‘New Medium’ definitions are;</b> a. Sincere / True</p>	<p><b>1. ‘Cinema’ Definitions are;</b> b. Sincere yet Erroneous c. Disingenuous / False</p> <p><b>2. ‘Television’ Definitions are;</b> b. Sincere yet Erroneous c. Disingenuous / False</p> <p><b>3. ‘Multiple Media’ Definitions are;</b> b. Sincere yet Erroneous c. Disingenuous / False</p>	<p><b>1. ‘Cinema’ Definitions are;</b> a. Sincere / True</p> <p><b>2. ‘Television’ Definitions are;</b> a. Sincere / True</p> <p><b>3. ‘Multiple Media’ Definitions are;</b> a. Sincere / True</p> <p><b>4. ‘New Medium’ definitions are;</b> b. Sincere yet Erroneous c. Disingenuous / False</p> <p><b>5. All Established Definitions are wrong;</b> a. Digital Exhibition is not a medium - Digital Exhibition imitates media. b. Digital Exhibition, the cinema and television are aspects of the same medium.</p>

Explanation	Primarily Supported Proposition(s)	Non-Negated Proposition(s)	Contradicted Proposition(s)
<p><b>4. Digital Exhibition, the cinema and television all pertain to the same solitary medium; ‘Total Cinema’.</b></p> <p><b>The cinema and television should have always been considered to be technologically diverse attempts at realising the same medium (‘Total Cinema’).</b></p> <p><b>Digital Exhibition is a further strive towards the total achievement of this solitary medium.</b></p>	<p><b>5. All Established Definitions are wrong;</b></p> <p>b. Digital Exhibition, the cinema and television are aspects of the same medium.</p>	<p><b>1. ‘Cinema’ Definitions are;</b>            b. Sincere yet Erroneous            c. Disingenuous / False</p> <p><b>2. ‘Television’ Definitions are;</b>            b. Sincere yet Erroneous            c. Disingenuous / False</p> <p><b>3. ‘Multiple Media’ Definitions area;</b>            b. Sincere yet Erroneous            c. Disingenuous / False</p> <p><b>4. ‘New Medium’ definitions are;</b>            b. Sincere yet Erroneous            c. Disingenuous / False</p>	<p><b>1. ‘Cinema’ Definitions are;</b>            a. Sincere / True</p> <p><b>2. ‘Television’ Definitions are;</b>            a. Sincere / True</p> <p><b>3. ‘Multiple Media’ Definitions area;</b>            a. Sincere / True</p> <p><b>4. ‘New Medium’ definitions are;</b>            a. Sincere / True</p> <p><b>5. All Established Definitions are wrong;</b>            a. Digital Exhibition is not a medium - Digital Exhibition imitates media.</p>
<p><b>5. Digital Exhibition is not a solitary medium.</b></p> <p><b>Digital Exhibition is an application of the computer.</b></p> <p><b>The computer can <i>transform</i> into multiple media, depending on its appliance.</b></p>	<p><b>3. ‘Multiple Media’ Definitions area;</b>            a. Sincere / True</p>	<p><b>1. ‘Cinema’ Definitions are;</b>            b. Sincere yet Erroneous            c. Disingenuous / False</p> <p><b>2. ‘Television’ Definitions are;</b>            b. Sincere yet Erroneous            c. Disingenuous / False</p> <p><b>4. ‘New Medium’ definitions are;</b>            b. Sincere yet Erroneous            c. Disingenuous / False</p>	<p><b>1. ‘Cinema’ Definitions are;</b>            a. Sincere / True</p> <p><b>2. ‘Television’ Definitions are;</b>            a. Sincere / True</p> <p><b>3. ‘Multiple Media’ Definitions area;</b>            b. Sincere yet Erroneous            c. Disingenuous / False</p> <p><b>4. ‘New Medium’ definitions are;</b>            a. Sincere / True</p> <p><b>5. All Established Definitions are wrong;</b>            a. Digital Exhibition is not a medium - Digital Exhibition imitates media.            b. Digital Exhibition, the cinema and television are aspects of the same medium.</p>

Explanation	Primarily Supported Proposition(s)	Non-Negated Proposition(s)	Contradicted Proposition(s)
<p><b>6. Digital Exhibition is not a medium.</b></p> <p><b>Digital Exhibition is an application of the computer.</b></p> <p><b>The computer is not a medium (nor does it become media); it pertains to a set of technologies which act as a <i>conduit</i> for multiple media.</b></p>	<p><b>3. ‘Multiple Media’ Definitions are;</b></p> <p>a. Sincere / True</p>	<p><b>1. ‘Cinema’ Definitions are;</b>            b. Sincere yet Erroneous            c. Disingenuous / False</p> <p><b>2. ‘Television’ Definitions are;</b>            b. Sincere yet Erroneous            c. Disingenuous / False</p> <p><b>3. ‘Multiple Media’ Definitions area;</b>            b. Sincere yet Erroneous            c. Disingenuous / False</p> <p><b>4. ‘New Medium’ definitions are;</b>            b. Sincere yet Erroneous            c. Disingenuous / False</p>	<p><b>1. ‘Cinema’ Definitions are;</b>            a. Sincere / True</p> <p><b>2. ‘Television’ Definitions are;</b>            a. Sincere / True</p> <p><b>4. ‘New Medium’ definitions are;</b>            a. Sincere / True</p> <p><b>5. All Established Definitions are wrong;</b>            a. Digital Exhibition is not a medium - Digital Exhibition imitates media.            b. Digital Exhibition, the cinema and television are aspects of the same medium.</p>
<p><b>7. Digital Exhibition is not a medium.</b></p> <p><b>Digital Exhibition is an application of the computer.</b></p> <p><b>The computer is not a medium, but pertains to a set of technologies which can <i>imitate</i> multiple media.</b></p>	<p><b>5. All Established Definitions are wrong;</b></p> <p>a. Digital Exhibition is not a medium - Digital Exhibition imitates media.</p>	<p><b>1. ‘Cinema’ Definitions are;</b>            b. Sincere yet Erroneous            c. Disingenuous / False</p> <p><b>2. ‘Television’ Definitions are;</b>            b. Sincere yet Erroneous            c. Disingenuous / False</p> <p><b>3. ‘Multiple Media’ Definitions area;</b>            b. Sincere yet Erroneous            c. Disingenuous / False</p> <p><b>4. ‘New Medium’ definitions are;</b>            b. Sincere yet Erroneous            c. Disingenuous / False</p>	<p><b>1. ‘Cinema’ Definitions are;</b>            a. Sincere / True</p> <p><b>2. ‘Television’ Definitions are;</b>            a. Sincere / True</p> <p><b>3. ‘Multiple Media’ Definitions area;</b>            a. Sincere / True</p> <p><b>4. ‘New Medium’ definitions are;</b>            a. Sincere / True</p> <p><b>5. All Established Definitions are wrong;</b>            b. Digital Exhibition, the cinema and television are aspects of the same medium.</p>

Explanation	Primarily Supported Proposition(s)	Non-Negated Proposition(s)	Contradicted Proposition(s)
<p><b>8. Digital Exhibition represents that the cinema and television have recently <i>converged</i>.</b></p> <p><b>Presently, Digital Exhibition, the cinema and television should be considered to be aspects of the same (solitary / unified) medium.</b></p>	<p><b>5. All Established Definitions are wrong;</b></p> <p>b. Digital Exhibition, the cinema and television are aspects of the same medium.</p>	<p><b>1. ‘Cinema’ Definitions are;</b>            b. Sincere yet Erroneous            c. Disingenuous / False</p> <p><b>2. ‘Television’ Definitions are;</b>            b. Sincere yet Erroneous            c. Disingenuous / False</p> <p><b>3. ‘Multiple Media’ Definitions area;</b>            b. Sincere yet Erroneous            c. Disingenuous / False</p> <p><b>4. ‘New Medium’ definitions are;</b>            b. Sincere yet Erroneous            c. Disingenuous / False</p>	<p><b>1. ‘Cinema’ Definitions are;</b>            a. Sincere / True</p> <p><b>2. ‘Television’ Definitions are;</b>            a. Sincere / True</p> <p><b>3. ‘Multiple Media’ Definitions area;</b>            a. Sincere / True</p> <p><b>4. ‘New Medium’ definitions are;</b>            a. Sincere / True</p> <p><b>5. All Established Definitions are wrong;</b>            a. Digital Exhibition is not a medium - Digital Exhibition imitates media.</p>
<p><b>9. Digital Exhibition represents that the cinema and television have recently converged.</b></p> <p><b>The convergent media have retained their status as disparate/independent media. The result of their convergence is a ‘new’ medium; ‘born’ as a separate entity.</b></p> <p><b>Digital Exhibition is a new and unique (solitary) medium which shares aspects of its technological / operational history with both the cinema and television.</b></p>	<p><b>4. ‘New Medium’ definitions are;</b>            a. Sincere / True</p>	<p><b>1. ‘Cinema’ Definitions are;</b>            b. Sincere yet Erroneous            c. Disingenuous / False</p> <p><b>2. ‘Television’ Definitions are;</b>            b. Sincere yet Erroneous            c. Disingenuous / False</p> <p><b>3. ‘Multiple Media’ Definitions area;</b>            b. Sincere yet Erroneous            c. Disingenuous / False</p>	<p><b>1. ‘Cinema’ Definitions are;</b>            a. Sincere / True</p> <p><b>2. ‘Television’ Definitions are;</b>            a. Sincere / True</p> <p><b>3. ‘Multiple Media’ Definitions area;</b>            a. Sincere / True</p> <p><b>4. ‘New Medium’ definitions are;</b>            b. Sincere yet Erroneous            c. Disingenuous / False</p> <p><b>5. All Established Definitions are wrong;</b>            a. Digital Exhibition is not a medium - Digital Exhibition imitates media.            b. Digital Exhibition, the cinema and television are aspects of the same medium.</p>

Explanation	Primarily Supported Proposition(s)	Non-Negated Proposition(s)	Contradicted Proposition(s)
<p><b>10. Digital Exhibition represents that the cinema and television (&amp; the computer) have recently converged. The outcome of this convergence is the evolution of the cinema to ‘new media’ status – i.e. Digital Exhibition.</b></p>	<p><b>1. ‘Cinema’ Definitions are;</b> a. Sincere / True</p>	<p><b>2. ‘Television’ Definitions are;</b> b. Sincere yet Erroneous c. Disingenuous / False</p> <p><b>3. ‘Multiple Media’ Definitions area;</b> b. Sincere yet Erroneous c. Disingenuous / False</p> <p><b>4. ‘New Medium’ definitions are;</b> b. Sincere yet Erroneous c. Disingenuous / False</p>	<p><b>1. ‘Cinema’ Definitions are;</b> b. Sincere yet Erroneous c. Disingenuous / False</p> <p><b>2. ‘Television’ Definitions are;</b> a. Sincere / True</p> <p><b>3. ‘Multiple Media’ Definitions area;</b> a. Sincere / True</p> <p><b>4. ‘New Medium’ definitions are;</b> a. Sincere / True</p> <p><b>5. All Established Definitions are wrong;</b> a. Digital Exhibition is not a medium - Digital Exhibition imitates media. b. Digital Exhibition, the cinema and television are aspects of the same medium. c. Digital Exhibition is a new medium.</p>

Explanation	Primarily Supported Proposition(s)	Non-Negated Proposition(s)	Contradicted Proposition(s)
<p><b>11. Digital Exhibition is a case of the ‘new media’.</b></p> <p>+ <b>Digital Exhibition is a new and unique medium, with a unique technology, history &amp; environment.</b></p> <p><b>Digital Exhibition ‘remediates’ (Bolter and Grusin, 1999) the cinema and television whilst a unique place is established for it within society’s media matrix.</b></p>	<p><b>4. ‘New Medium’ definitions are;</b></p> <p>a. Sincere / True</p>	<p><b>1. ‘Cinema’ Definitions are;</b></p> <p>b. Sincere yet Erroneous</p> <p>c. Disingenuous / False</p> <p><b>2. ‘Television’ Definitions are;</b></p> <p>b. Sincere yet Erroneous</p> <p>c. Disingenuous / False</p> <p><b>3. ‘Multiple Media’ Definitions area;</b></p> <p>b. Sincere yet Erroneous</p> <p>c. Disingenuous / False</p>	<p><b>1. ‘Cinema’ Definitions are;</b></p> <p>a. Sincere / True</p> <p><b>2. ‘Television’ Definitions are;</b></p> <p>a. Sincere / True</p> <p><b>3. ‘Multiple Media’ Definitions area;</b></p> <p>a. Sincere / True</p> <p><b>4. ‘New Medium’ definitions are;</b></p> <p>b. Sincere yet Erroneous</p> <p>c. Disingenuous / False</p> <p><b>5. All Established Definitions are wrong;</b></p> <p>a. Digital Exhibition is not a medium - Digital Exhibition imitates media.</p> <p>b. Digital Exhibition, the cinema and television are aspects of the same medium.</p>
<p><b>12. Digital Exhibition is a new medium.</b></p> <p><b>Digital Exhibition is a unique medium which remediates the cinema and television.</b></p> <p><b>The ‘new media’ designation is irrelevant and/or erroneous.</b></p>	<p><b>4. ‘New Medium’ definitions are;</b></p> <p>a. Sincere / True</p>	<p><b>1. ‘Cinema’ Definitions are;</b></p> <p>b. Sincere yet Erroneous</p> <p>c. Disingenuous / False</p> <p><b>2. ‘Television’ Definitions are;</b></p> <p>b. Sincere yet Erroneous</p> <p>c. Disingenuous / False</p> <p><b>3. ‘Multiple Media’ Definitions area;</b></p> <p>b. Sincere yet Erroneous</p> <p>c. Disingenuous / False</p>	<p><b>1. ‘Cinema’ Definitions are;</b></p> <p>a. Sincere / True</p> <p><b>2. ‘Television’ Definitions are;</b></p> <p>a. Sincere / True</p> <p><b>3. ‘Multiple Media’ Definitions area;</b></p> <p>a. Sincere / True</p> <p><b>4. ‘New Medium’ definitions are;</b></p> <p>b. Sincere yet Erroneous</p> <p>c. Disingenuous / False</p> <p><b>5. All Established Definitions are wrong;</b></p> <p>a. Digital Exhibition is not a medium - Digital Exhibition imitates media.</p> <p>b. Digital Exhibition, the cinema and television are aspects of the same medium.</p>

## Appendix 4: Fundamental Literatures Analysed – by Explanation

### Explanation One:

Digital Exhibition represents a continuation in the technological development of the cinema.

### Presumed Causal Links:

The medium of the cinema has entered / passed through a phase of technological evolution. This has resulted in the cinema now being achievable through the application of digital exhibition equipment.

### Analysed Literatures:

- Literatures offering to define the characteristics of the cinema.
  - With particular focus upon;
    - Ricciotto Canudo's notion that cinema is 'The Seventh Art' (1923).
    - Michael Karagosian's evolving definitions of the cinema (2003) – which present the cinema as pertaining only to 'first-run' feature films.
    - Texts which address the cinema as pertaining only to purpose built premises.
    - Texts which present the cinema as pertaining only to the application of physical film.
    - André Bazin's concept of 'Total Cinema' from 'What is Cinema – Volume 1' (1967).

### **Explanation Two:**

Digital Exhibition is a form of public exhibition television.

### **Presumed Causal Links:**

The medium of television has entered / passed through a phase of technological evolution. This has resulted in television now being achievable through the application of digital exhibition equipment.

### **Analysed Literatures:**

- Literatures offering to define the technological characteristics / social applications of television. With particular attention upon;
  - Jostein Gripsrud's notion that the medium of television is defined according to a particular 'social use' of televising technologies, from his essay "Television, Broadcasting, Flow: Key Metaphors in TV Theory" (1998).
  - Literatures addressing the history of 'theater television'.
  - Anna McCarthy's notion of 'Ambient Television' (2001).
  - Raymond Williams' notion of 'broadcast flow', from his publication 'Television Technology and Cultural Form 2<sup>nd</sup> edition' (1990).

### **Explanation Three**

Digital Exhibition is a Wholly New Medium – unrelated to The Cinema or Television

### **Presumed Causal Links:**

The medium of Digital Exhibition has recently been invented and introduced to the framework of contemporary media.

### **Analysed Literatures:**

- Literatures addressing the question of: What are the defining characteristics of an individual medium? And the related questions...
    - 'What are media?', 'What are new media?'
    - 'What is a medium?', 'What makes one medium unique from any other?'
- With particular attention paid to;
- Joshua Meyrowitz concept of 'medium theory' from his paper 'Images of Media' (1993).
  - Lev Manovich's 'Principles of New Media' from 'The Language of New Media' (2001)
  - Manovich's essay 'Old Media as New Media: Cinema' (2002)

#### **Explanation Four:**

Digital Exhibition, the cinema and television all pertain to the same solitary medium; ‘Total Cinema’. The cinema and television should have always been considered to be technologically diverse attempts at realising the same medium. Digital Exhibition is a further strive towards the total achievement of this solitary medium.

#### **Presumed Causal Links:**

The total achievement of the cinema, i.e. the absolute aim of its original inventors, has never been realised. Thusly, in totality, the cinema has not yet been invented. Film based exhibition is merely a technologically compromised attempt at the realisation of ‘total cinema’. When addressing all the efforts which have been made towards the achievement of total cinema, and because it can *never* be achieved through physical film (physical film being incapable of presenting live imagery, for example), video technologies should have also (and always) been considered as being just as (if not more) pertinent than celluloid. Digital Exhibition represented a further step towards the achievement of ‘total cinema’.

#### **Analysed Literatures:**

- André Bazin’s concepts of ‘Total Cinema’ (1967)
- Literatures addressing the concept of ‘realism’ in television.
- Literatures addressing any relationships between the conceptual origins of the cinema and television.

#### **Explanation Five:**

Digital Exhibition is not a solitary medium.

Digital Exhibition is an application of the computer.

The computer can *transform* into multiple media, depending on its appliance.

#### **Presumed Causal Links:**

The computer is not a medium. The evolution in digital computing has resulted in a technology capable of achieving high quality digital exhibition in public spaces.

Through this capability, the computer is able to transform into (literally become) the cinema / television, etc. depending on its application. Equipment manufacturers and exhibitors have commercially exploited these capabilities.

#### **Analysed Literatures:**

- Literatures categorically stating that the computer is not a medium. For example Timothy Binkley’s essay ‘The Computer is Not a Medium’ (1988).
- Literatures offering to define the digital computer as a set of technologies which can be transformed into different media. For example, Robert Edgar’s paper ‘HDID and Aesthetic Practice (1995).

**Explanation Six:**

Digital Exhibition is not a medium.

Digital Exhibition is an application of the computer.

The computer is not a medium (nor does it become media);  
it pertains to a set of technologies which act as a *conduit* for multiple media.

**Presumed Causal Links:**

The computer is not a medium. The evolution in digital computing has resulted in a technology capable of achieving high quality digital exhibition in public spaces.

Through this capability, the computer is able to provide access to (channel) the cinema / television, etc. depending on its application. Equipment manufacturers and exhibitors have commercially exploited these capabilities.

**Analysed Literatures:**

- Literatures categorically stating that the computer is not a medium.
- Literatures offering to define the digital computer as a set of technologies which can accommodate multiple media. For example, Espen Aarseth's paper 'Genre Trouble: Narrativism and the art of Simulation' (2004).

**Explanation Seven:**

Digital Exhibition is not a medium.

Digital Exhibition is an application of the computer.

The computer is not a medium, but pertains to a set of technologies which can *imitate* multiple media.

**Presumed Causal Links:**

The computer is not a medium. The evolution in digital computing has resulted in a technology capable of achieving high quality digital exhibition in public spaces.

Through this capability, the computer is able to accurately imitate the cinema / television, etc. depending on its application. Equipment manufacturers and exhibitors have commercially exploited these capabilities.

**Analysed Literatures:**

- Literatures categorically stating that the computer is not a medium.
- Literatures offering to define the digital computer as a set of technologies which can emulate multiple media. For example, Ken Friedman's definition of 'Electronic Publishing' (in Stephen Jones (ed.) Encyclopaedia of New Media: an essential reference to communication and technology, 2003).

### **Explanation Eight:**

Digital Exhibition represents that the cinema and television have recently *converged*. Presently, Digital Exhibition, the cinema and television should be considered to be aspects of the same (solitary / unified) medium.

### **Presumed Causal Links:**

The cinema and television were technologically independent media. Digital Exhibition presently employs some of the technologies and practices of both the cinema and television. In essence, Digital Exhibition is an example of electronic/broadcast cinema and a case of television on a cinema screen (in a public auditorium).

Digital Exhibition is both the cinema and television; thusly, the cinema and television have become polar extremes of the same medium.

### **Analysed Literatures**

- Literatures addressing the theories of media convergence / digital convergence.  
With particular attention paid to three texts by Anne Friedberg;
  - ‘The End of Cinema: Multimedia and Technological Change’ (1997).
  - ‘CD and DVD’ (2002)
  - ‘The Virtual Window’ (2006)

### **Explanation Nine:**

Digital Exhibition represents that the cinema and television have recently converged. The convergent media have retained their status as disparate/independent media. The result of their convergence is a ‘new’ medium; ‘born’ as a separate entity. Digital Exhibition is a new and unique (solitary) medium which shares aspects of its technological / operational history with both the cinema and television.

### **Presumed Causal Links:**

The cinema and television are technologically independent media. Some of the technologies & practices of the cinema have been put together with some of the technologies & practices of television, and some of the technologies of the computer, to create a new medium; Digital Exhibition. The ‘parent’ media, the cinema and television, have not been significantly affected by the emergence of the new medium.

### **Analysed Literatures**

- Literatures addressing the theories of media convergence / digital convergence.  
With particular attention paid to;
  - Marshal McLuhan’s ‘Understanding media: The extensions of man’ (1964).

### **Explanation Ten:**

Digital Exhibition represents that the cinema and television have recently converged. The outcome of this convergence is the evolution of the cinema to ‘new media’ status – i.e. Digital Exhibition.

### **Presumed Causal Links:**

The cinema and television were technologically independent media. Over recent years, the cinema has begun to assimilate the technologies of television, and the computer - resulting in a convergence of the historical trajectories of the cinema, television and the computer. The outcome of this convergence is the evolution of the cinema to ‘new media’ status – i.e. Digital Exhibition. The status of television as a medium remains unchanged.

### **Analysed Literatures**

- Literatures offering to define the characteristics of the cinema and the ‘new media’.  
With particular focus upon;
  - Lev Manovich’s notion of convergent historical trajectories from ‘The Language of New Media’ (2001).
  - Manovich’s essay ‘Old Media as New Media: Cinema’ (2002)

### **Explanation Eleven:**

Digital Exhibition is a case of the ‘new media’.  
Digital Exhibition is a new and unique medium, with a unique technology, history & environment.  
Digital Exhibition ‘remediates’ the cinema and television whilst a unique place is established for it within society’s media matrix..

### **Presumed Causal Links:**

The cinema and television area technologically independent media. Over recent years, a new medium has begun to emerge – Digital Exhibition. While the commercial exploiters of this new medium determine exactly how it can best be used (and sold), they have chosen to employ it as a remediator of existing media (mainly the cinema and television). Digital media which remediate older media are classed as being ‘new media’.

### **Analysed Literatures**

- Literatures offering to define the characteristics of new media and ‘new media’.  
With particular focus upon;
  - Bolter and Grusin’s concept of ‘Remediation’ (1999)

**Explanation Twelve:**

Digital Exhibition is a new medium.

Digital Exhibition is a unique medium which remediates the cinema and television.

The ‘new media’ designation is irrelevant and/or erroneous.

**Presumed Causal Links:**

Over recent years, a new medium has begun to emerge – Digital Exhibition. While the commercial exploiters of this new medium determine exactly how it can best be used (and sold), they have chosen to employ it as a remediator of existing media (mainly the cinema and television).

**Analysed Literatures**

- Literatures offering to define the characteristics of new media and ‘new media’.

With particular focus upon;

- Bolter and Grusin’s concept of ‘Remediation’ (1999).
- Dr Jan Simons’ essay ‘New Media as Old Media: Cinema’ (2002)

## Appendix 5: The Landmark Case

The investigation into those discourses discussed in section 3.1 brought to light certain incongruities across the range interpretations stemming from different politically and industrially orientated commentators. However, it was only during the analysis of data surrounding a proposed Digital Exhibition co-venture, between independent film exhibitor Landmark Theaters and software producer Microsoft, that the author began to earnestly consider whether prominent and powerful groups (such as NATO and the DCI) might be motivated by something more than an altruistic desire to present their beliefs as to the true nature of the case phenomenon. At this stage in the research programme, the author began to question whether the meaning making discourses of such parties might, in fact, be used to affect influence over the individuals and groups which will be ultimately responsible for the introduction of Digital Exhibition to the industrial marketplace. Presented below, therefore, is an overview as to the events of this ‘Landmark Case’.

On April 2, 2003, Carl Diorio, of Variety Magazine, reported that: “Arthouse giant Landmark Theaters will today announce plans to outfit its entire 177-screen circuit for digital cinema and a related effort to deal directly with filmmakers lacking distribution for their low-budget digital video features” (2003). The president and CEO of Landmark Theaters, Paul Richardson, declared of the proposed scheme whereby low-cost, low-resolution digital projectors would be introduced to each of their venues: “I believe that we will look back at this moment as one when we were able to fundamentally change the business model in a way that will allow far more of these [independently produced] films to compete successfully” (Landmark Theatres and Microsoft, 2003).

Significantly, it was also in April 2003 that (as reported within a NATO publication) Walt Ordway stated that the DCI were attempting to produce a standardised definition of ‘digital cinema’. As detailed above this definition would, according to Ordway, mean that in order to qualify as ‘digital cinema’ systems would have to start at “a little bit more than HD” (Lines of Resolution, 2003). As if in a direct retort to Landmark, this definition would prohibit them from claiming ‘digital cinema’ status. As detailed above, John Fithian describes the planned system as having been “designed for television-quality video” (2003).

Furthermore, it was shortly after the Landmark scheme was announced that, according to Bob Smith, John Fithian “only half-jokingly coined a new term” (i.e. ODS) in order to “combat rampant misperceptions about what is and what isn’t legitimate digital cinema” (2003). Smith details that it was during the NATO President’s ‘State of The Industry’ address of 2003 that the Fithian declared his use the term ‘Other Digital Stuff’ (ODS) to describe “what Landmark and Microsoft are planning on doing (with low-quality independent film screenings)” (2003). Smith goes on to cite Fithian as expressing of the proposed Landmark installations: “I do not consider those efforts digital cinema” (ibid). As detailed above, in an alternative text Fithian once again denounced the Landmark project: “It’s for small independent movies for small screens. But its not Digital Cinema” (2003).

Notably, in direct response to this latter declaration, Nick Dager, editor of the on-line journal ‘Digital Cinema Report’ writes: “With all due respect to John Fithian, president of the National Association of Theatre Owners, the Landmark deal is a watershed moment in the evolution of digital cinema and, yes, it is digital cinema” (2003). Nevertheless, despite Dager’s protestation, in refusing to recognise Landmark’s ‘efforts’ as ‘digital cinema’ (and given that they do not offer the ‘electronic cinema’ designation to any aspect of Digital Exhibition’), through the discourses of John Fithian, and Walt Ordway, NATO and the DCI had essentially revoked the classification of ‘cinema’ from any digital presentation which Landmark might make. Their endeavours to bring independently produced films to the big-screen were instead labelled ‘stuff’.

In considering the implications of NATO's approach to the Landmark case, it should be brought to mind that audiences are familiar with the concept of 'going to the cinema', as opposed to the concept of 'going out to watch other digital stuff'. Furthermore, it must be considered that 'the cinema' is commonly referred to as 'The Seventh Art'<sup>187</sup>, which according to Mark Winokur and Bruce Holsinger connotes the medium's status as a 'powerful rival to painting, music, sculpture and the other fine arts' (2001, p.369), whereas the word 'stuff' is defined within the Oxford English Dictionary as pertaining to "nonsense; rubbish" (Stuff, n.d.). Moreover, as David S. Cohen of Variety magazine points out, when spoken out-loud, the abbreviation 'O.D.S.' (which Fithian uses to describe Landmark's proposed venture) is actually pronounced 'odious' (2006).

It might now be considered that NATO's overt effort to designate this enterprise as ODS was actually an attempt to discourage Landmark from pursuing the scheme - informing the exhibitor that do to so would degrade their enterprise - from cinema status to an new 'odious' form of entertainment (stuff) with no audience awareness and no guaranteed audience acceptance. It is significant to note, therefore, that shortly after Fithian's dismissive 'State of The Industry' address, Landmark Theaters abandoned their initial 'digital cinema' project, and did not return to the concept of Digital Exhibition for further two years.

In 2005 Landmark announced that just six 'DCI compliant' (Sony SXRD) 4K projectors would be installed at various locations over the summer of that year. Brian Brooks cites Mark Cuban (co-owner of Landmark Theatres) as referring to this new scheme as "Digital Cinema", and as stating:

"Landmark Theatres will give our customers the best of all digital experiences. Sony's 4K digital projectors allow us to project live concerts and sporting events, ultra high-resolution movies and presentations created using future technologies. Most important, it provides a viewing experience for movies that far exceeds what other theaters are doing" (2005).

Notably, although they still embraced the concept of 'alternative content', this time Landmark did not announce any intention to use low-cost projectors, or any desire to 'fundamentally change' the business model of feature film distribution to the favour of independent filmmakers.

## Appendix 6: The South African Case

Digital Exhibition in South Africa began in earnest in 2004 when the country's two largest exhibition/distribution companies, Ster-Kinekor and Nu Metro, began installing low-cost/low resolution projectors. In a report published in Screen Africa, Dave Keet of 'South Africa's biggest post production facility' The Video Lab (VLab) is cited as expressing: "Standards set by the DCI (Digital Cinema Initiative)...who have published a system specification for D-cinema agreed upon by the major Hollywood studios, are just too expensive for this country. South Africa has 1.3k projectors. Whereas the DCI minimum is 2K" (Wildlife, Docs and the Big Screen, 2007, p.32). However, despite Keet's observation, over 2006 and 2007, both Ster-Kinekor and Nu Metro began to introduce DCI compliant 2K projectors.

Much like those interpretations of Digital Exhibition which present the phenomenon as pertaining to multiple media, the discourses of South Africa's commercial exhibitors seem to divide Digital Exhibition into multiple media – instances of the 'high-end' of the phenomenon (i.e. systems with a resolution of 2K+) are referred to as pertaining to the cinema (i.e. are designated 'digital cinema'), whilst the 'lower-end' is considered as 'other stuff' (i.e. is offered no particular designation). For example, following the 2006 installation of a 2K projection system, which is described as "the country's, and the continent's, first Hollywood studio endorsed digital cinema projector" (SA Digital Cinema Era Launched, 2007, p.43), exhibition chain Ster-Kinekor released an official statement that "We're excited about ushering in digital cinema for South African audiences" (ibid). Notably, the proclamation that Ster-Kinekor were 'ushering in digital cinema' came two years *after* they had initiated plans to roll out low-resolution Digital Exhibition systems (as reported by Andrew Worsdale, 2004).

Beyond the exhibition industry, some South African commentators have embraced the interpretive concept that *all* aspects of Digital Exhibition pertain to the cinema. However, these commentators have not adopted the term ‘e-cinema’, which, as indicated by von Sychowski, carries associations with ‘e-commerce’ and causes concern that the “digital delivery and exhibition of mainstream films in cinemas could become confused in the mind of the public with the streaming of films over the Internet” (2000, p.11). Furthermore, these commentators have not limited their use of the term ‘digital cinema’ to only the ‘high-end’ of Digital Exhibition. Rather, the ‘digital cinema’ designation has been used within these South African discourses to denote the ‘umbrella concept’ that embraces all kinds of digital screening.

For example, in an article entitled ‘The truth about Digital Cinema’ (issued by VLab) it is stated, with regards to their interpretation of ‘digital cinema’: “Digital cinema requires three things: servers, projectors and encodings. There is 5.1 sound, 1.3k projectors, 16x9 formats, and yes, it can be confusing” (The Truth About Digital Cinema, 2009). Furthermore, in this article VLab's Managing Director, Dave Keet is cited as expressing: “Digital cinema encodings are evolving all the time. We reinvent the wheel for new technology and don't apply a standard formula” (ibid), while VLab's General Manager and Head of Visual Effects, Tracey Williams, adds that: “Whether you have decided to finish in film resolution from the start (HD or 2K) or you have already finished in SD (standard definition) – we know what to do” (ibid). VLab's head engineer, Gerhard Roets even goes so far as to issue the ‘digital cinema’ designation to installations in non-theatrical venues, stating: “We have also done digital cinema work for museums and entertainment centres” (ibid).

With specific regards to the categorisation of ‘alternative content’ (as ‘digital cinema’ or otherwise), a report produced by the Cape Film Commission (CFC), who are funded jointly by the “Unicity of Cape Town and by the Provincial Government of the Western Cape” (How to Make Your Community a Star, n.d., p.5)<sup>188</sup>, expresses that one specific “benefit of digital cinema” is “the creation of new revenue streams such as pay per view sporting, music and conference events as well as low costs advertising and educational programming” (Audience Development Report, 2006, p.65). Furthermore, with reference to the presentation of independent (non-Hollywood produced / distributed) feature-film content, it is declared, within the VLab article, that: “Digital cinema is now more available to the local filmmaker” (The Truth About Digital Cinema, 2009).

With further reference to the categorisation of local / independent presentations as ‘digital cinema’, with further reference to Digital Exhibition activities beyond America and Europe, and once again suggesting that South African commentators operating outside of the commercial exhibition industry consider lower-resolution installations of Digital Exhibition to pertain to ‘digital cinema’, within the CFC’s report on Audience Development, it is expressed that: “Brazil, China and India have taken the lead in rolling out digital cinemas specifically aimed at attracting and building audiences for local and specialist content” (Audience Development Report, 2006, p.65). Significantly, whilst Claudia Kienzle reports that: “As part of the China Film Bureau, the China Film Group has been evaluating the newest equipment and buying the best of everything” (2003), of those installations in Brazil and India, it is stated within a report commissioned by the Cultural Cinema Consortium (CCC)<sup>189</sup> of Ireland: “these cinemas are using a less technically demanding system similar to HD television broadcasts, systems which are not ‘DCI compliant’ and are therefore prohibited from being used to screen US studio commercial releases” (Digital Cinema in Ireland, 2008, p.14).

That non the ‘DCI compliant’ systems installed around the world are actually ‘prohibited’ from showing Hollywood product, is reflected in the discourse of Helen Kuun, Ster-Kinekor Distribution's marketing manager for local content. Kuun is cited, within a Screen Africa article, as expressing that Ster-Kinekor’s ‘lower than 2K’ systems were “only for local digital releases, not Hollywood ones” (Wildlife, Docs and the Big Screen, 2007, p.32). Therefore, in examining the political economy of South Africa’s exhibitors, Ster-Kinekor and Nu-metro (who have chosen not to offer non-DCI compliant systems the ‘digital cinema’ designation), it is significant to note the degree to which they are financially dependent upon Hollywood product (as compared their lack of income from the domestic film industry). This can be observed in the Cape Film Commission’s report, which presents that these two companies “primarily function as sales and marketing arms for US studios (70% of all titles) with a lesser number of films derived from US independent producers (25%), Europeans, (4%) and others (1% - including 0.5% South African)” (Audience Development Report, 2006, p.5).

Notably, of the 2004 installation of low-cost/low-resolution projectors by Ster-Kinekor, the Managing Director of technology provider Spectrum Visual Networks, Manny Teixeira, states: “Probably *the most important benefit* of HD for the South African film industry, is that the cost of releasing digitally mastered and distributed movies is far less than is the case with 35mm” (cited by Andrew Worsdale, 2004: emphasis added). Conversely, in 2007 (after the installation of their first high-cost 2K projector) CEO of Ster-Kinekor Fiaz Mohamed appears to indicate that (whilst it carries a degree of populist appeal, and is thusly acknowledged) the claim that Digital Exhibition could aid local filmmakers is not of immediate concern to the exhibitor. Mohamed is cited (in an article published in Screen Africa) as claiming of ‘digital cinema’: “*In the long run* this will be good news for South African filmmakers as well, as it *potentially* allows for broader and easier distribution of films” (SA Digital Cinema Era Launched, 2007, p.43: emphasis added).

It might now be considered a reflection of the commercial insignificance of local content that Ster-Kinekor and Nu-Metro do not seek to associate their low-cost installations with the lauded designation of ‘digital cinema’. It might also be considered that these organisations would want prospective customers to understand that their new (and expensive) ‘digital cinema’ installations offer an improved quality of image when compared to the output of those low-cost projectors which potential audiences might have previously experienced. Furthermore, it might perhaps reflect their commercial dependency on Hollywood product, that Ster-Kinekor and Nu-Metro comply entirely with the DCI’s interpretations of Digital Exhibition. With regards to this point, it is significant to note that Mark Harris, National Product Manager of Nu Metro states: “Hollywood-compliant digital means the very finest quality” (in, Nu Metro’s Montecasino Flagship, 2007, p.7).

Beyond the notion that the discourses of South Africa's exhibitors have been driven by the same political economy forces which impelled America's exhibitors to define Digital Exhibition as pertaining to the cinema and other stuff, it can be argued that the literatures of both the VLab and CFC have also been composed in such a way that they promote the political economy ideologies of their originating organisations.

The discourses and the financial organisation of VLab reveal a potential political economy rationale for designating all aspects of Digital Exhibition as cinema. VLab profit from the sale of their products and services to filmmakers and venues (including 'non-theatrical' venues). Therefore, it might seem obvious that their best interests would be served by promoting their services as pertaining to the cinema – rather than any 'lower' form of entertainment.

As presented above, it can be argued that, within Europe, publicly funded bodies have sought to protect and promote their national film industries through the designation of all aspects of Digital Exhibition as cinema. It can now also be considered that the publicly funded Cape Film Commission might have been influenced by the same protectionist and self promoting political economy driven impulse. Notably, Laurence Mitchell, the CEO of CFC describes himself as "the custodian of the film industry in the Western Cape" (2009).

## Appendix 7:

### A Focused Chronology of Television Display Technologies

#### *The Rotating Mirror Drum Projector*

In 1926 Ernst F.W. Alexanderson applied for a patent pertaining to ‘the electrical transmission of pictures’, stating: “The picture to be transmitted may be an ordinary still picture, a moving picture, or a view” (1926, p.4). As described by Alexanderson, in the 1926 patent application, the display equipment he had designed comprised of “an image receiving member, or screen, a hollow cylinder – having a series of lenses set therein in a spiral...and a driving motor” (ibid). Alexanderson further details that “within the cylinder and at the focal point of the lenses are four small mirrors”; that “at a point opposite the end of the cylinder are four oscillographs having small mirrors and in a suitable position to throw light on these mirrors”, and ultimately that: “A light beam from each of these sources is condensed by a suitable lens on one of the oscillograph mirrors from whence it is reflected to another lens and condensed on one of the four mirrors. The four light beams reflected from each of these pass simultaneously through the same lens and produce four spots of light on the screen. As the cylinder rotates...these four spots of light travel down across the screen in four parallel paths or bands” (ibid). Alexanderson also submitted plans for an alterative system whereby “the light spots are reflected on the screen from a series of rotating mirrors instead of being projected thereon by lenses” (ibid).

According to Russell W. Burns, in March 1928 Alexanderson reported on a demonstration of “the projection of a television image on a silver screen” (1998, p.214). According to Burns, “The light source was sufficiently intense to produce a 48-line image about 18 inches square” (ibid). In fact, the Encyclopaedia Britannica reports “Alexanderson demonstrated television in his own home as early as 1927”, adding that in 1930 he was responsible for “the first public exhibition of television with a system that displayed the picture on a 7-foot (2-metre) screen” (Ernst F.W. Alexanderson, n.d.).

### *The Cathode Ray Tube*

Ultimately mechanical television display systems, such as Alexanderson's, failed to achieve technological hegemony, and as Tom Harris details: "For the past 75 years, the vast majority of televisions have been built around the same technology: the cathode ray tube (CRT)" (n.d.). The 'Focal Encyclopaedia of Photography' (Richard D. Zakia, Leslie Stroebel eds.) describes the CRT as being "An evacuated glass tube used to display data in a visual form by the use of a moving electron beam (cathode ray)", adding that "In this device, a narrow beam of accelerated electrons passes through an electrostatic or magnetic deflecting field before striking a phosphor screen at the end of the tube" (1993, p.92). As described by Stuart Blake Jones, Richard H. Kallenberger and George D. Cvjetnicin: "Electrons flow from the source (the gun) and strike the phosphor particles, producing visible light" (2000, p.353).

The first CRT was produced in 1897 by the German physicist Karl Ferdinand Braun.<sup>190</sup> Braun's original tube was nothing more than an oscilloscope, that is an instrument which produces an instantaneous visual representation of the oscillations of a directly sourced electrical pulse. However, according to Larry J. Hornbeck, "Improvements to the Braun tube, or CRT, continued and by 1907 it was sufficiently advanced to be incorporated into a patent application by Boris Rosing for a complete television system" (1998 a, p.9). According to Paul Schatzkin it was not Rosing, but Philo Farnsworth who, on September 7, 1927 "demonstrated for the first time that it was possible to transmit an 'electrical image' without the use of *any* mechanical contrivances whatsoever" (2002, p.251). Schatzkin goes on to detail that, through the use of his 'Image Oscillite' (a CRT built using an Erlenmeyer flask), "Farnsworth replaced the spinning disks and mirrors with the electron itself, an object so small and light that it could be deflected back and forth within a vacuum tube tens of thousands of times per second" (ibid). Still however, according to Hornbeck, following the delivery of a paper (describing his new 'Kinescope') to the Institute of Radio Engineers at Rochester, New York, on November 18, 1929, it was Vladimir Zworykin, a student of Boris Rosing, who went on to develop "the first practical CRT for home television use" (1998 a, p.9).

A further notable extension to the application of CRTs in television is the development of ‘rear-projection television’ (RPTV). Jerry Whitaker notes that because CRT technology in the 1930s did not permit wide deflection angles, the picture tubes were very long, “So long, in fact, that the devices were mounted (in the larger-sized models) vertically. A hinge-mounted mirror at the top of the receiver cabinet permitted viewing” (2001, p.4). By the end of the 1940s this concept had advanced to the stage whereby, within the television cabinet itself, a CRT would project images, through a short-throw lens, onto an internal mirror which would then reflect those images onto the rear-side of a translucent panel- the opposite side of which served as the viewing screen. Given that the translucent panel was further away from the mirror than was the CRT, the projected image would be optically enlarged. It is reported that in 1947 RCA’s first black-and-white RPTV (the ‘648PTK’) housed a ‘giant’ 15 by 20 inch rectangular viewing screen (1947: RCA's First Rear Projection Television, n.d.).

### *E-beam Addressable Liquid Surfaces*

Whilst the CRT is certainly the most common form of television display technology, David Mellor cites Phillippe Roth, optical specialist in the R&D Lab Systems Division of Gretag Imaging in Switzerland, as stating: “The Gretag Eidophor has been the most powerful large screen television projector on the market during 40 years” (2000 b). Mellor further cites Roth as detailing of the ‘Gretag Eidophor’: “It was invented for the presentation of televised pictures on movie theatre screens and found its way through all applications requiring large, live pictures of high brightness” (ibid).

According to Hornbeck, in 1939 Professor Fritz Fischer, head of the Technical Physics Department at the Swiss Federal Institute of Technology in Zurich, submitted a patent for a “light-valve technology based on a thin oil film control layer (1998 a, p.11). This technology was ultimately applied in what is known as the ‘Gretag Eidophor television projector’ – a front-projection television (FPTV) device. In an earlier paper, Hornbeck details that, unlike the phosphorescent glass screen of the CRT, the Eidophor “did not use a solid material for the display surface, but rather a liquid” (1995, p.4). The liquid used was an electron-beam (e-beam) addressable oil film. Hornbeck further describes how this equipment works: “An e-beam is rastered over the surface of the oil film, charging the surface and producing an analog two dimensional electrostatic image. The pressure developed by the electrostatic image produces deformations on the oil film surface that can be converted into an analog image by Schlieren<sup>191</sup> projection optics” (ibid). According to Albert Abramson, “In September 1952, it was reported that an Eidophor color TV system for theater use had recently been demonstrated by 20<sup>th</sup> Century-Fox in New York City” (2003, p.56).

### *Liquid Crystal Display*

As detailed above, Hornbeck details that it was in 1888 that botanist Friedrich Reinitzer first observed two distinct melting points for a single cholesterol-based material, “One where the solid melted into a milky looking liquid, and a second at which the cloudy liquid turned into a clear liquid” (1998 a, p.19). As noted by Hornbeck (*ibid*), the ‘cloudy’ intermediate phase would eventually come to be known as the ‘liquid crystal’ (LC) phase. In the 1970s it was discovered that the molecular structure of an extremely thin layer of this liquid crystal material (sandwiched between treated polarised glass surfaces) could be altered should an electrical charge be applied across transparent electrodes (also housed between the glass surfaces). In the absence of any voltage the liquid crystal layer adopted a structure whereby light was able to pass. When an appropriate voltage was applied the liquid crystal’s molecules would rotate and no light was able to pass through the polarised apparatus. By varying the voltage applied (through an analogue signal) a comprehensive greyscale could be realised. The device which achieved this effect became known as a ‘Liquid Crystal Light Valve’ (LCLV). A ‘Liquid Crystal Display’ (LCD) was developed by piecing together a lattice/matrix of transparent electrodes and liquid crystal cells.

Early LCDs were positioned upon a grey reflective backing, and under the control of the light-valve matrix external light passed through the front of the LCD before being reflected back to illuminate the display. Such LCDs were capable of producing black and white (or rather black and grey) images, black being apparent only when voltage was applied to selected liquid crystal cells -preventing ambient light from passing through those areas of the LCLV. The first ‘reflective LCD’ television display device was developed by the ‘Seiko Epson Corporation’ - according to a paper published by Seiko Epson, in 1982 the company released the ‘DXA002’, which they describe as the “world’s first black-and-white TV watch” (ET-10, n.d.). Seiko Epson were also making progress in the development of a ‘transmissive LCD’ whereby (rather than utilising reflected ambient light to illuminate the display) light from a rear positioned source could be directed through, and controlled by, a transparent LCLV matrix. According to literature published by the ‘Seiko Epson Corporation’, in August 1984 the company released the ‘ET-10’, which they describe as “the world’s first commercialized liquid crystal color TV” (*ibid*). This paper further specifies that the colour LCD panel employed was “a transmissive type” (*ibid*).

The screen of the ET-10 was just over 2 inches squared; however, by 1988 the Sharp Corporation was producing 14 inch transmissive LCD television sets. Furthermore, according to literature from the Sharp Corporation: “A survey of television viewing revealed that more and more consumers were spending time watching programs on videotapes and laser discs rather than regular TV broadcasting. These consumers also expressed the desire for a larger viewing screen for their entertainment. In 1989, in response to this trend, Sharp developed a 100-inch large-screen LCD video projector” (Sharp History: 1988 ~ 1989, n.d.). Such projectors work in much the same way as ‘direct view’ LCD television sets, except the light from the rear-located source is provided by a powerful halogen lamp and is split into the three primary colours (through the use of ‘dichroic beamsplitters’), passed through three separate transmissive LCD panels (one each for the red, blue and green light beams), before re-converging and passing through a single projection lens.

The earliest LCD projectors housed large liquid crystal panels, however over time these diminished in size, and as Peter H. Putman expresses: “When portable LCD projectors first appeared in 1994, they took the world by storm” (2003). By 1995 projectors such as the ‘InFocus LitePro 580’ were being sold on their ‘home theatre’<sup>192</sup> credentials such as broadcast television compatibility (PAL, NTSC and SECAM) and the potential use of VCRs and laser disc players for video input (LitePro 580 user’s Guide, n.d.). Significantly, whilst the LitePro 580 was also sold as a business-presentation tool, by 2000, as Evan Powell expresses, the ‘Sony VPL-VW10HT’ (a transmissive FDTV LCD projector) was “designed from the ground up exclusively as a home theater product” (2000 b), and by the end of 2002, as reported by Thomas J. Norton, Sony had unveiled their ‘Gran Wega’ (KF-60DX100) system; a commercial market RPTV set employing transmissive LCD panels (2002).

## Appendix 8:

### A Fundamental History of ‘Theater Television’

#### *‘Theater Television’ and the conceptual inception of the medium*

The ‘theater television’ movement was initiated in earnest when, according to Albert Abramson, and as reported in the New York Times, on June 14 1930 it was announced that “RCA in affiliation with Radio-Keith-Opheum was going to install television sets in theatres throughout the country” (1995, p.95). It was just one month later, in July 1930, that RCA employed a New York RKO cinema to demonstrate a working five foot high (large-screen) television system (Whitaker, 1994, p.8). Following this, according to Jerry C. Whitaker, one reporter ‘for a leading entertainment magazine’ wrote: “With this successful experiment, the technical arrangements are virtually complete for projecting (television) on normal-sized motion picture screens... Television will be a regular feature in large theaters before the new year” (ibid). The notion of television in movie theatres was at this time no mere fancy; according to Rachael Low just days after the RCA demonstration (‘from 28 July to 9 August 1930’) Baird presented “the first run of television in a public place of entertainment, at the coliseum theatre” (1996, p.50). Notably this all occurred more than half a decade before the BBC officially began its regular television broadcast service intended for domestic receivers.

Both the Baird and RCA companies, as well as others such as EMI and Sycophony Ltd, continued to perceive of and develop television as an alternative to film based public exhibition for several years, and according to von Sychowski, technological advances were “closely mirrored by commercial opportunities” (2000, p.14).

---

*'Theater Television' and the impact of World War II*

John Logie Baird was particularly optimistic about the commercial opportunities afforded by 'theater television'. Baird details, with regards to his feelings towards the medium during the 1930s: "It seemed to me that now we should concentrate on television for the cinema and should work hand-in-glove with Gaumont-British, installing screens in their cinemas and working towards the establishment of a broadcasting company independent of the BBC for the study of television programmes to cinemas" (in R.W. Burns, 1986, p.438). In keeping with these aspirations Baird continued to advance his 'theater television' systems. According to Donald McLean, 'after two years of development', in 1938, Baird's 120-line colour projection television was demonstrated in the Dominion Theatre in London's West End (2000 b, p.22): "Never before had colour television been demonstrated publicly" (ibid).

However, despite his high hopes, and notable successes in the field, Baird would never achieve that goal of establishing a broadcasting organisation specialising in television programmes for cinema exhibition. On 3 September 1939 Britain, France, Australia and New Zealand declared war on Germany. The fear of bombing by enemy aircraft temporarily put a halt to the public exhibition industries of Europe (both film and television) as cinemas were closed by Governmental decrees. Film based cinema quickly re-appeared; however, developments in television (both public and domestic) remained in suspension as manufacturers began work in an entirely different field. According to Paul Schatzkin "the electronics industry geared its assembly lines to produce radar equipment and military communications gear" (n.d.).

Notably, America did not join the war effort until December 1941, and American commentators continued to express confidence in the concept of 'theater television'. For example, in 1940 Irving Fiske (as detailed in Boddy, 1990, p.22) argued that "television's growth need not depend on the extent to which it finds acceptance in the nation's homes" adding that "the entire basic premise that television's place is in the home is itself open to doubt". However, just as had happened in Europe, when the USA declared war on Japan equipment manufacturers such as RCA abandoned their work on 'theater television' in order to concentrate on military applications.

---

*The Return and Failure of 'Theater Television' Post-World War II*

Lynn Spigel finds that in the immediate post war era television was still perceived of as a public exhibition medium: “television was mainly exhibited in public establishments such as taverns, department stores, and even on busses” (1992, p.32). However, Paul Schatzkin suggests that the war ultimately provided the “economic and technical mobilization” that would compel the growth of domestic television “on a large scale” (n.d.). Schatzkin also notes that (with regards to the domestic application of television), after the war (i.e. post 1945) “factories converted easily to producing television receivers, which the commodity starved public was eager to buy in mounting numbers” (ibid).

During this period the Hollywood movie studios began to recognise the significant financial potential of domestic television. According to Whitaker it had actually been before the war, in 1938, that Paramount ‘took the lead’ by purchasing a ‘significant interest’ in DuMont Laboratories, a manufacturer of television sets. Whitaker details that “Paramount put the first television station in Chicago on the air in 1940, and established another in Los Angeles in 1943” (1994, p.9). Whitaker further details that “At the end of World War II, the other major movie corporations sought to get into the television business” (ibid).

However in 1948 the U.S. Supreme Court declared that the Federal Communications Commission (FCC) should not grant a licence to broadcast domestic television content to any corporation convicted of monopolistic practices. This move prevented many of the studios from entering the domestic television industry, therefore, according to Whitaker: “Disappointed but undaunted, the movie corporations returned to the idea of theater television” (ibid).

Whitaker asserts that, following Hollywood's returned interest, "numerous theater television systems were installed across (America) with some degree of commercial success" and further that the primary purpose of such installations was the presentation of live performances on the big screen: "By May 1952, more than 300 different events had been presented" (1994, p.10). The pinnacle of the post-war 'theater television' movement came when, as reported on the 'Terra Media' website, on September 23 1952 a heavyweight boxing bout between Rocky Marciano and Jersey Joe Walcott was "screened to paying audiences on large-screen television in 49 cinemas in 31 US cities" (1952, n.d.).

Ultimately however, in America 'theater television' did not become the dominant form of the medium. Spigel finds that, largely due to the 'booming' post war economy, "over the course of the 1950s, television was rapidly installed into American homes", adding that by 1955 television was "installed in a majority of households in *all* areas of the country" (1992, p.320). With regards to this phenomena, Whitaker notes that "As home television receivers became affordable, the interest in theater television began to diminish" (1994, p.10). Considering why this might have occurred Whitaker finds: "It was no longer necessary to travel to the nearest movie house to view a news broadcast or sporting event", and ultimately suggest: "As television grew and matured, entertainment programming appeared as well, marking the end of theater television" (ibid).

Notably, the course of post-war 'theater television' in America was closely mirrored in other countries. In Britain, as detailed in the 'Screen Digest' report commissioned by the British Department of Culture Media and Sport, whilst "cinema television was resumed in many London Rank theatres for several years after the War", and whilst "it made a brief re-appearance in the late 1970s and early 1980s when several video cinemas were set up in London and Edinburgh", in the post-war years "the concept of electronic cinema largely disappeared" (Screen Digest Report, 2002, p.39). Significantly this report also suggests that the 'disappearance' of 'cinema television' lasted "until the mid 1990s", i.e. until the emergence of Digital Exhibition (ibid).

## Appendix 9

### Film Based Exhibition and The Principles of New Media

It is presented in Chapter Six (p.282) that Mark B. N. Hansen states:

“For almost every claim advanced in support of ‘newness’ of new media, it seems that an exception can readily be found, some earlier cultural or artistic practice that already displays the specific characteristic under issue.”

(2004, p.21)

It is also presented in Chapter Six that Lev Manovich decries several commonly considered statements as to what defines the ‘new media’ – by highlighting that such statements can also be made of the cinema. This section will determine whether the cinema might also display the specific characteristics of the ‘new media’ as claimed by Manovich (2001) within his discourse on the ‘Principles of New Media’.

As detailed in Chapter Six (p.256), Manovich’s five ‘Principles of New Media’ are presented as:

1. **Numerical Representation**
2. **Modularity**
3. **Automation**
4. **Variability**
5. **Cultural Transcoding**

With regards to film based presentations pertaining to media objects which can be described formally, i.e. pertain to ‘Mathematical Representation’, as Manovich himself observes: “rather than filming physical reality, it is now possible to generate film-like scenes directly on a computer” (2001, p.300). Significantly, Manovich does not appear to consider the printing of ‘numerical representations’ (i.e. computer generated imagery) onto an analogue medium (i.e. film) for exhibition purposes as automatically negating the designation of new media. Manovich details that “the popular understanding of new media identifies it with the use of a computer for distribution and exhibition rather than production” (2001, p.19). However, Manovich proposes that this definition should not be considered absolute, stating:

“There is no reason to privilege the computer as a machine for the exhibition and distribution of media over the computer as a tool for media production or as a media storage device” (ibid).

With regards to film based presentations pertaining to the principle of ‘Modularity’, it should be noted that feature films are commonly composed of scenes, which are made up of shots, which in turn are constructed of individual frames – each of which can be viewed as separate articles. Furthermore, as detailed above, the ‘Digital Cinema Initiative’s Digital Cinema System Specification’ document notes that: “Feature films have been sub-divided for some time into discreet temporal units for film systems called reels” (Digital Cinema System Specification - V1.0, 2005, p.9)

Contemporary film projection systems can also be also considered as adhering to Manovich’s principle of ‘Automation’. In fact, Richard W. Haines details that ‘cue tape’ was first introduced to projection systems in the 1950s - in order to automate reel changeovers for 3D productions. Haines explains of ‘cue tape’:

“It was a short strip of metal tape fastened onto the edge of the film at a specific location. At the reel change mark (usually at the end of the third assembled reel), the film passed two electrical contacts and the cue tape completed a circuit between the contacts. In essence it acted as a switch which turned of the first projector, lamphouse and sound and turned on the second unit”  
(2003, pp.95-96).

To this Haines adds:

“Cue tape could also be used to dim house lights and open the curtains”  
(2003, p.96).

In addition to pertaining to the automatic presentation of modularly composed numerical representations, film based exhibition has also been known to be a ‘Variable’ entertainment. A case in point would be the digitally acquired feature film ‘*28 Days Later*’ which, after twenty eight days of film based exhibition in American cinemas, was augmented with an alternative ending in an attempt to boost revenues (Davies, 2003).

With regards to ‘Cultural Transcoding’ and the film based exhibition of Computer Generated Imagery (CGI), it is notable that Manovich claims: “Once live-action footage is digitized (or directly recorded in a digital format), it loses its privileged indexical relationship to prefilmic reality” (2001, p.300), explaining that:

“The computer does not distinguish between an image obtained through a photographic lens, an image created in a paint program, or an image synthesised in a 3-D graphics package, since they are all made from the same material – pixels. And pixels, regardless of their origin, can be easily altered, substituted one for another and so on.”  
(2001, p.300)

Manovich appears to consider that the affect of cinematic imagery losing its ‘indexical relationship to prefilmic reality’, can be read as the ‘computer layer’ of contemporary cinema influencing its own ‘cultural layer’. This is evidenced in Manovich’s discourse around his consideration that “the mutability of digital data impairs the value of cinema recordings as documents of reality” (2001, p.307).

According to Manovich, with the emergence of CGI: “Cinema becomes a particular branch of painting – painting in time. No longer a kino-eye, but a kino-brush” (2001, p.308). Of this Manovich considers: “Computer media return to us the repressed of the cinema” (ibid) – explicating that:

“Twentieth-century cinema’s regime of visual realism, the result of automatically recording visual reality, was only an exception, an isolated accident in the history of visual representation, which has always involved, and now again involves, the manual construction of images.  
(2001, pp.307-308).

Of this, and directly alluding to the notion that the cultural layer of the cinema is being influenced by the computer layer of digital content production, Manovich ultimately declares:

“Directions that were closed off at the turn of the century when cinema came to dominate the modern moving image culture are now again beginning to be explored. The moving-image culture is being redefined once again; cinematic realism is being displaced from the dominant mode to merely one option among many” (ibid).

Ultimately, it does appear that film based exhibition *can* adhere to each of Manovich’s ‘principles of new media’. However, despite this apparent adherence Manovich still does not consider the cinema as yet pertaining to the new media (as is discussed in Chapter Six). Manovich (2002) suggests that only through developments in Digital Exhibition technologies, might the cinema *eventually* change from ‘old’ to ‘new media’ (also discussed in Chapter Six).

## Appendix 10

### The Tetrad of Digital Exhibition

#### *Introduction to Concept*

As discussed in Chapter Six (p.241), Joshua Meyrowitz argues that “a fair amount of confusion in media studies” has resulted from “the lack of explicit treatment of the most basic of question: ‘What are media?’” (1993, p.63). However, there have been some commentators (besides Meyrowitz) who have sought to address this situation; such as Marshall McLuhan and his son Eric McLuhan.

McLuhan & McLuhan offer that there are four general, verifiable statements can be made about all media, which can be determined by asking four questions (1988, p.7). McLuhan and McLuhan refer to these four questions as ‘the tetrad’ (ibid), and further present them to be ‘laws of media’, which are intended “provide a ready means of identifying the properties of, and actions exerted upon ourselves by, our technologies and media and artefacts” (1988, p.98). McLuhan & McLuhan frame the four questions as:

- What does the artefact enhance or intensify or make possible or accelerate?
- If some aspect of a situation is enlarged or enhanced, simultaneously the old condition or unenhanced situation is displaced thereby. What is pushed aside or obsolesced by the new ‘organ’?
- What recurrence or retrieval of earlier actions and services is brought into play simultaneously by the new form? What older, previously obsolesced ground is brought back and inheres in the new form?
- When pushed to the limits of its potential (another complementary action), the new form will tend to reverse what had been its original characteristics. What is the reversal point of the new form?

(1998, pp.98-99)

---

***Asking The Tetradic Questions of Digital Exhibition:***

**What does Digital Exhibition Enhance, Intensify, Enlarge, Make possible or Accelerate?**

As has been presented above, Digital Exhibition makes possible live and interactive presentations within cinema auditoria, necessitating (and thusly facilitating) the acceleration of the delivery of captured images from source to audience. Digital Exhibition enlarges the pool of content from which exhibitors can draw, and the screen upon which electronically distributed moving images are viewed. Digital Exhibition can be considered as enhancing the potential of technologies developed for television presentation, and the application of venues built for traditional cinema exhibition. Furthermore, in facilitating higher resolutions than previously possible, Digital Exhibition could be considered as intensifying the experience of communal moving pictures spectatorship and also the experience of viewing electronically transmitted moving pictures.

**What does Digital Exhibition render obsolete or displace?**

As has been presented above, it has been proposed that Digital Exhibition holds the potential to render obsolete a significant proportion of the exhibition workforce. Digital Exhibition can be considered as being used to render obsolete the role of physical film in delivering communal moving picture experiences. Thusly, the notions of film as the only medium capable of realising big-screen exhibition, and of electronic distribution being only capable of delivering content to the domestic locale will be obsolesced. Furthermore the notion that cinema auditoriums are monopolised by feature film presentation will be rendered obsolete (with the advent of alternative content), as may be the notion that cinema auditoriums monopolise the public presentation of feature films (with the advent of alternative venues). Ultimately, if Digital Exhibition can be identified as being a distinct medium from the cinema, it is proposed that the former may eventually displace the latter.

---

### **What does Digital Exhibition retrieve that was previously obsolesced?**

Digital Exhibition retrieves obsolesced aspects of both television and the cinema.

For example, retrieving a past aspect of the cinema, Digital Exhibition promotes the showing of non-feature-film material (sporting events, etc.) in cinema auditoria. Another all but obsolesced practice which has historically been considered as pertaining to the cinema, and which has now been retrieved through Digital Exhibition (and through the work of the UKFC and ‘Emerging Pictures’, for example) is the commercial presentation of moving pictures to the public in non-site specific venues. An aspect of television which has been retrieved from its very origins can be seen in the use of electronic projection to provide a commercial public entertainment. As is discussed above (Chapter Four.), Digital Exhibition even retrieves conceptual (but not necessarily realised) notions of the cinema, as imagined by the medium’s inventors, with particular regards to ‘immediacy’ (live programming, higher than film resolutions, high-quality 3D, etc.)

### **What does Digital Exhibition produce or become when pressed to an extreme?**

According to Richard Rickitt, following the digitisation of distribution, “the continued use of a large screen to view films is by no means a certainty” (2000, p.298).

Rickitt goes on to detail, “A new technology that dispenses with any form of screen by actually projecting images directly on to the retina of the eye is already available” (ibid).

Rickitt cites Douglas Trunbull as considering: “The scope for our increased interaction with such entertainment is huge”, though Rickitt also notes that Trunbull accepts it is presently hard to tell how this might affect ‘the cinema’ – and considers that the communal enjoyment by audiences of “filmed entertainment over which they have no control” will continue for “some time to come” (ibid). Nevertheless, Rickitt details that Trunbull ultimately asserts a belief that from this technology “some new form of entertainment will evolve”, which he considers “will probably be a highly interactive mixture of the computer game and the cinema as we know it” (Ibid). Rickitt cites Trunbull’s imagined future of Digital Exhibition: “Ultimately such entertainment may even plug directly into our brain, supplying images and sound and even stimulating certain nerves to control our feelings and emotions” (ibid).<sup>193</sup>

---

### **One Medium – Multiple Tetrads?**

From that presented above, it certainly appears as if Digital Exhibition does produce a tetrad that can be uniquely identifiable from those which could be produced for film based exhibition and domestic television exhibition. However, this unique tetrad still may not be considered enough to categorically divorce the phenomenon from those other moving image media.

The notion that more than one distinct tetrads can be produced for the same medium is drawn from a consideration of ‘silent cinema’ and ‘the talkies’ (both of which are considered to be types of the cinema). Undoubtedly these two similar but not identical ‘brands’ of the same medium would both generate unique tetrads – for example, the talkies ‘intensified’ the silent exhibition experience, ‘displaced’ silent cinema as primary exhibition technique, ‘retrieved’ the notion that actors could be heard by their audiences, and ‘when pushed to an extreme’ became motion picture sound track albums.

The implications of it being possible for one medium to produce multiple tetrads (as the technologies of the medium evolve) are clear – whilst Digital Exhibition’s tetrad might be unique, the possibility to interpret the phenomenon as a technologically new form of the cinema, or a new form of television, still remains.

## Appendix 11:

### Towards a Taxonomy of Moving Image Mediation:

As is presented within this thesis, there are a potentially infinite range of different moving image events which can be categorised/grouped together in a potentially infinite number of ways. As is also presented within this thesis, there is definite value in grouping together events for analytic purposes. As such, presented in this section is a discussion as to the elemental aspects of events which might be considered, by a media theorist, as being significant - when determining whether or not an event belongs to a particular grouping. Over the pages following, it is presented that these 'elemental aspects' can be categorised as pertaining to either the event's content or its context.

#### *Grouping Moving Image Events through the Assessment of Content*

It is by no means a new concept to consider that media theorists might seek to group moving image mediations together based upon aspects of their contents. Indeed, there are various established and well practiced processes aimed towards placing media phenomena into analytic categories based upon that which audiences see and hear. Two such approaches to event classification are referred to as Content Analysis and Genre Analysis.

#### **Content Analysis**

Within 'The SAGE Glossary of the Social and Behavioral Sciences', (Larry Sullivan, ed.) 'Content Analysis (media studies)' is defined as: "a systematic means of understanding, categorizing, or describing a message's content" (2009, p.108). Susanna Hornig Priest finds that a 'simple form of media content analysis' involves "measuring the actual amount of space or time given to particular topics" (ibid). However, Hornig Priest adds that:

"More often, the purpose of content analysis is to go further, to classify certain elements of media material (whether this consists of news stories or soap operas) in a particular way, in order to answer a particular research question that the research has posed" (ibid).

Hornig Priest further finds that:

"content analysis is often concerned with less clear-cut categorizations, such as the presence or absence of particular themes (subtopics) or frames (alternative forms of story emphasis)" (2010, p.85)

adding:

"Themes and frames are latent to some degree; that is they really cannot be directly measured but represent categories that researchers apply by exercising judgements that are partially subjective" (ibid).

## Genre Analysis

With reference to the concept of media ‘genres’, Daniel Chandler addresses that: “Since classical times literary works have been classified as belonging to general types which were variously defined” (2000, p.1). With further reference to media genres, Joanne R. Gilbert states: “As human creatures, we are constantly categorizing data collected throughout our daily experience. Constructing a genre is on such means of categorization” (2004, p.42). Gilbert goes on to cite Ernest Borman (1976, p.173) as describing a genre as being “‘a construct of the critic which guides investigations’ as well as a construct in the minds of the audience and a feature of the rhetorical discourse” (ibid). Similarly, Chandler cites Jane Feuer (1992, p.144) as presenting that: “A genre is ultimately an abstract conception rather than something that exists empirically in the world” (2000, p.1). To this Chandler adds: “the classification and hierarchical taxonomy of genres is not a neutral and ‘objective procedure’”, and further states: “There are no undisputed ‘maps’ of the system of genres” (ibid).

As indicated above, both ‘Genre Analysis’ and ‘Content Analysis’ are now revealed to be concerned with the subjective / conceptual grouping together of events for analytic purposes – with those groupings being based upon aspects of the events’ contents. However, it is significant to recognise that content is not the only elemental aspect of moving image events used by media theorists to pool disparate phenomena together. As discussed over the following pages, it is common for moving image events to be collectively considered – according to their shared or similar environmental aspects.

### ***Grouping Moving Image Events through the Assessment of Context***

The grouping together of events based upon shared or similar contextual elements is, once again, a well developed and well documented practice. Established conceptual contextual groupings have been based upon such things as the technologies used by / the political economies of / the practical behaviours of those agents producing, distributing and / or exhibiting the content; as well as the production locales, the exhibition venues, the actors employed and the attending / intended audiences (as discussed below), etc.

#### **Grouping by Attending and Intended Audiences**

Ronald D. Smith writes: “Media and media tactics are often divided into categories based on distinguishing features” (2005, p.157). Offering that such ‘distinguishing features’ can include the size, breadth and commercial nature of media consumers, Smith provides an (incomprehensive / subjectively derived) inventory of audience defined categories of media phenomena:

- **Mass media;**  
“are accessible to most people; thus they are media that enjoy vast audiences”
- **Targeted media;**  
“have not only much narrower but also more homogeneous audiences”
- **Trade media;**  
“are distributed via subscription and are read for professional or business purposes”
- **Popular media;**  
“focus on information of interest to people in their personal lives”
- **Public media;**  
“are accessible to everybody”
- **Nonpublic media;**  
“are more restricted in their coverage and their availability.  
They often choose to limit access and circulation to audiences drawn from specific occupations, professional or associations”  
(extrapolated from Smith, 2005, p.158)

Notably, a single event might fall into several of the above categories. For example, a commercial feature film might be ‘public’, ‘popular’ and ‘mass’ (although arguably, most moving image events are ‘targeted’ towards certain segments of society).

## Grouping by Transmission Technology

In researching how the ‘media’ are defined (principally with the aim of determining which ‘medium’ Digital Exhibition should be considered to be), the author of this paper has found that the technological method of delivering content to its audience is very often taken into consideration by media theorists who seek to determine which of their personal conceptual groupings a event should fall into. The author refers to this contextual area as the ‘Transmission Technology’<sup>194</sup> – and finds there to be three broad classifications of such, which in chronological order of development are;

- **Directly viewable physical transmission technologies**
  - Physically carried
- **Electronic analogue signal transmission technologies**
  - Physically carried [e.g. via video tape]
  - Electronically transmitted over the air / through cables
- **Electronic computational binary pulse signal transmission technologies**
  - Physically carried [e.g. via digital versatile disk, DVD]
  - Electronically transmitted over the air / through cables

It does appear, on casual observation, possible to directly associate these three classes of mediation technology to the respective designatory terms of ‘the cinema’, ‘television’ and the ‘new media’. However, to do so would be to submit a subjective definition as to what these terms should refer. As discussed throughout this thesis, it is by no means universally accepted that the designations ‘the cinema’ and ‘television’ should be withheld from digital mediations, nor is it universally considered that all digital mediations pertain to the designator of ‘new media’.

To consider that the ‘media’ should be defined by the transmission technologies of moving image events would only present yet another theory to the media theory mass. Furthermore, it should be recognised that a single media phenomenon / event can actually employ more than one ‘Transmission Technology’. For example, a moving image installation can employ video screens and film projected imagery, and it is common for contemporary feature film showings to employ physical film projectors and sound systems which interpret physically carried digitally encoded signals.

In fact, it would not be possible to take every single minute detail of an event's environment into consideration when determining whether or not to conceptually group it together with other events. Furthermore, not all aspects of an event's context can be quantifiably scored / objectively described. For example, audiences might be defined by their mood, social status or artistic tastes; exhibition venues might be categorised by their architectural style ('gothic', 'modernistic', 'industrial', etc.) or their atmosphere ('sombre', 'light', 'electric', etc), etc.

In Chapter Six (p.245) Joshua Meyrowitz (1993, p.69) was presented as considering that each 'medium' has a unique environment. However, it can now be argued that each and every moving image event has an environment which is unique unto itself. Clearly there are environmental aspects which can be shared across events (for example, the same venue can be used for multiple events) and there can be similarities between certain contextual elements (the broad industrial ideologies of two different films' production companies, for example); however, it is clear that the summed totality of an event's context is always unique to that event.<sup>195</sup>

### ***Grouping Moving Image Events through the Assessment of Content & Context***

From discussions presented within this thesis, it is apparent that the same (or similar) content can be shared across multiple venues employing the same display technologies (e.g. television sets can show the same programmes whether they are positioned in the domestic locale or in offices, shops, pubic bars, cafes, gyms, etc.). Furthermore, it has been noted in this thesis that the different Transmission Technologies can be (and are) used to carry very similar contents (the same feature film might be projected through film, projected via digital projector, received via analogue broadcast transmission, or digitally streamed off the Internet).

As detailed in Chapter Six (p.242) Joshua Meyrowitz asserts:

“it is common in our culture to believe that there is some *content essence* that can be transported relatively unchanged from medium to medium”  
(1993, p.65).

Given that the author of this thesis reject the validity of using the term ‘medium’ to describe any grouping of events (as presented in Chapter Eight, pp. 348-350), Meyrowitz’s assertion can now be considered as meaning that content can be ‘transported relatively unchanged’ across different contextual groupings.

Thusly, given that the same content can be seen in different contexts, and given that similar contexts can be used to show different contents (for example, a public auditorium can be used to present feature films, show sporting events, host interactive seminars, etc), it can now be considered that media theorists can (and commonly do) group moving image events into conceptual categories based upon the practices and perceived implications of offering particular ‘types’ of content *and* employing particular ‘types’ of context. For example, in his definition of ‘television’ Daniel Miller states: “television is a domestic medium (and is characterised by programme forms specially designed for that purpose)” (1995, p.316), and in his definition of ‘new media’ Pramod K. Nayar references contextual aspects, as well a particular content type (interactive content):

“All new media is interactive in the sense that the art object is sensitive to the audience's presence (an engagement with the context), even as the audience constructs a certain form of the art object”  
(2010, p.52).

Furthermore, within this thesis (p.21) it has already been presented that Neil Watson and Richard Morris of the UK Film Council consider that the designation of ‘Digital Cinema’ should be reserved for “the projection of full-length feature films to audiences in purpose-built cinema” (2002, p.5).

## Grouping by ‘Effects’

The perceived *impact* that the presentation of particular ‘types’ of content have on particular ‘types’ of context (e.g. those defined by categories of audience) is another significant means by which media analysts categorise phenomena. For example, as Elizabeth M. Perse writes: “Over the years, there has been a good deal of research and anecdotal evidence that children do become frightened by some media content” (2001, p.215). Of this, Perse adds:

“Over the years, certain movies and television programs have been anecdotally linked to childhood fear. Some movies (e.g., Indiana Jones and the Temple of Doom, and Gremlins), rated PG, were so frightening that another *category* to the MPAA movie code was created: PG-13”

(2001, pp. 215-216, emphasis added).

Some commentators consider that media phenomena can even be categorised by the longevity of ‘media effects’. For example, discussing the impact of advertising, R. K. Singla observes:

“Some media have short-term effects e.g., newspapers, radio, television, etc.

On the contrary, magazines and outdoor advertising have long-term effects”

(2006, p.351).

Some media theorists even consider the ‘effect’ of an event whereby a particular ‘feeling’ is invoked within audience members can be used as a means of classification. As discussed above, some analysts have used the designators of ‘the cinema’ and ‘television’ to describe both analogue and digitally mediated events. Such commentators apparently perceive that analogue and digital technologies are able to invoke an analogous range of feelings in audience members. Conversely however, some commentators consider digital and analogue mediated events should be distinctly categorised – because they *cannot* produce the same ‘feelings’. Accordingly, Gretchen Hailer and Rose Pacatte present that:

“Many film aficionados think that digital films are not films at all because they provide a different experience, a different ‘feel’ for moviegoers. These critics fear that the texture of the film will not evoke the same emotional response from audiences”

(2007, p.61).

---

### Grouping by ‘Uses and Gratification’

As opposed to assessing the impact of events on apparently docile audiences, practitioners of the ‘uses and gratification’ approach to analysing mediation phenomena classify events according to why particular sections of the audience choose to experience particular types of content in particular types of context - and how they utilise the messages that they receive. Arthur A. Raney, Jason K. Smith and Kaysee Baker observe that: “Generally speaking, uses and gratifications researchers contend that media use is motivated by many needs including diversion and escape, emotional release, companionship, socialization and social utility, self-exploration and awareness, value reinforcement and surveillance” (2006, p.191).

The discussions above have shown that there are a multitude of manners by which moving image event classification presently occurs – and that each technique (which offers significant analytic value) can be considered as valid. The author does not present this to be the ultimate account of all techniques which have or can be used to conceptually group events together. Rather, it is presented as an attempted to show that that there is no ‘definitive’ way of categorising moving image phenomena.

This consideration contributed to the author’s conclusion that it is misguided to consider there to be three ultimately definitive, fundamental and consistent overarching categories of moving image event (i.e. ‘media’); ‘the cinema’, ‘television’ and the ‘new media’.

## References & Notes

## References

09 Statistical Yearbook (2009) **09 Statistical Yearbook**, UK Film Council [Internet]. Retrieved from: <http://www.ukfilmcouncil.org.uk/media/pdf/2/p/2009.pdf> [Accessed June 6, 2010]

1947: RCA's First Rear Projection Television (n.d.) **1947: RCA's First Rear Projection Television**, CED Magic [Internet]. Retrieved from: <http://www.cedmagic.com/history/rca-first-project-648ptk.html> [Accessed June 6, 2010]

1952 (n.d.) **1952**, Terra Media [Internet]. Retrieved from: <http://www.terramedia.co.uk/Chronomedia/years/1952.htm> [Accessed June 6, 2010]

2004 Awards Finalists (2004) **2004 Awards Finalists**, Digital Entertainment Awards [Internet]. Retrieved from: <http://www.digitalentertainmentawards.com/finalists.html> [Accessed June 6, 2010]

A History of Home Video (n.d.) **A History of Home Video**, Independent Dealers of Entertainment Association [Internet], April 04. Retrieved from: <http://www.idealink.org/Resource.phx/vsda/pressroom/history-of-industry.htx> [Accessed June 6, 2010]

Aarseth, E. (2004) *Genre Trouble: Narrativism and the art of Simulation*. In Wardrip-Fruin, N. & Harrigan P. (ed.) **First Person: new media as story, performance, and game**. Massachusetts, MIT Press

About EFCA > Background (n.d.) **About EFCA > Background**, European Film Companies Alliance [Internet]. Retrieved from: [http://www.efcasite.org/d\\_about\\_1bg.html](http://www.efcasite.org/d_about_1bg.html) [Accessed June 6, 2010]

About Sky Arts (n.d.) **About Sky Arts**, Sky Arts [Internet]. Retrieved from: <http://www.skyarts.co.uk/skyarts/about> [Accessed June 6, 2010]

About UNIC (n.d.) **About UNIC**, Union International des Cinemas [Internet].

Retrieved from: <http://www.unic-cinemas.org/en/index.php?page=1> [Accessed June 6, 2010]

About us (n.d. a) **About us**, Department for Culture Media and Sport [Internet].

Retrieved from: [http://www.culture.gov.uk/about\\_us/default.aspx](http://www.culture.gov.uk/about_us/default.aspx) [Accessed June 6, 2010]

About us (n.d. b) **About us**, UK Film Council [Internet]. Retrieved from:

<http://www.ukfilmcouncil.org.uk/about> [Accessed June 6, 2010]

About us (n.d. c) **About us**, The Society of Motion picture and Television Engineers

[Internet]. Retrieved from: <http://www.smpte.org/about/> [Accessed June 6, 2010]

Abramson, A. (1995) **Zworykin, Pioneer of Television: Pioneer of Television**.

Chicago, University of Illinois Press

Abramson, A. (2003) **The History of Television, 1942 to 2000**. London, McFarland & Company.

Adams, S. (1998) **Just Press Play**, Philadelphia City Paper [Internet] November 26.

Retrieved from: <http://www.citypaper.net/articles/112698/cm.cruise.shtml> [Accessed June 6, 2010]

Advances made in 4k d-cinema systems (2005) **Advances made in 4k d-cinema**

**systems**, All Business [Internet] November. Retrieved from:

<http://www.allbusiness.com/media-telecommunications/movies-sound-recording-movies/7524523-1.html> [Accessed June 6, 2010]

Alexanderson, E.F.W. (1926) **Patent 1694301: Electrical Transmission of Pictures**,

Free Patents Online [Internet]. Retrieved from:

<http://www.freepatentsonline.com/1694301.pdf> [Accessed June 6, 2010]

Allen, M. (2009) *Digital cinema: virtual screens*. In: Creeber G. & Royston M. (ed) **Digital Cultures – Understanding New Media**. Maidenhead, Open University Press. pp. 61-69.

Alterio, J. M. (2003) **Lights, camera, advertisements**, The Journal News [Internet] April 14. Retrieved from:  
<http://www.thejournalnews.com/newsroom/041403/d0114regalstory.html> [Accessed January 28, 2006]

Andrew, J. D. (1976) **The Major Film Theories - An Introduction**. Oxford, Oxford University Press.

Andriani, S. et al (n.d.) **Comparison of Lossy to Lossless Compression Techniques for Digital Cinema**, Institute of Electrical and Electronics Engineers [Internet]. Retrieved from: <http://ieeexplore.ieee.org/iel5/9716/30672/01418803.pdf> [Accessed June 6, 2010]

Ante, S. (1998) **The First Broadcast**, Wired News [Internet] July 30. Retrieved from: <http://www.wired.com/culture/lifestyle/news/1998/07/14111> [Accessed June 6, 2010]

Arts Council responds (2010) **Arts Council responds to 29.6 per cent funding cut**, Arts Council England [Internet]. Retrieved from:  
<http://www.artscouncil.org.uk/news/arts-council-responds-296-cent-funding-cut/> [Accessed March 3, 2011]

ASC And DCI Creating Digital Cinema Test Film (2003) **ASC And DCI Creating Digital Cinema Test Film**, Digital Cinema Today [Internet] September 3. Retrieved from: <http://www.dcinematoday.com/dc/PR.aspx?NewsID=41> [Accessed June 6, 2010]

Ashbrook-Nickell, J. (1999) **The Dawn of Digital Movies?**, Wired News [Internet] May 5. Retrieved from: <http://www.wired.com/news/politics/0,1283,19501,00.html> [Accessed June 6, 2010]

Audience Development Report (2006) **Audience Development Report**, Cape Film Commission [Internet] November. Retrieved from:  
<http://www.capefilmcommission.co.za/documents/CFC%20Audience%20Development%20Annexure.pdf> [Accessed June 6, 2010]

Baillieu B and Goodchild J. (2002) **The British Film Business**, Chichester, John Wiley & Sons Ltd.

Bancroft, D. J. (2000) *Advanced and Economical Telecine Technology for Global DTV Production*. In: **2000 Broadcast Engineering Conference Proceedings**, National Association of Broadcasters NAB. Las Vegas: NAB Conference, Apr. 2000.

Barco Digital Cinema projector performs (2005) **Barco Digital Cinema projector performs the premiere 3D demonstration on the China Digital Cinema Forum at BIRTV**, Barco [Internet] August 27. Retrieved from:  
<http://www.barco.com/en/pressrelease/1597/> [Accessed June 6, 2010]

Barnouw E. (2001) **Media Lost and Found**. New York, Fordham University Press.

Bazin, A. (1967) **What Is Cinema? Essays selected and translated by Hugh Gray – Volume One**, California, University of California Press.

Bazin, A. (1980) *The Ontology of the Photographic Image*. In Trachtenberg, A. (ed.) (1980) **Classic Essays in Photography**. New Haven, Leete's Island Books. pp. 247-244.

Beckett, R. (2005) **UK Film Council - Digital Screen Network DSN Content Specification: Version 1.1**, The UK Film Council [Internet]. Retrieved from:  
[http://www.lightillusion.com/zippdf/dsn\\_guidelines.pdf](http://www.lightillusion.com/zippdf/dsn_guidelines.pdf) [Accessed June 6, 2010]

Bell J. (2005) **Doing your research project: a guide for first-time researchers in education, health and social science, Fourth Edition**. Maidenhead, Open University Press.

BFI Funding Slashed (2010) **BFI Funding Slashed**, LPA MovingPictures [Internet]. Retrieved from: <http://www.lpa-movingpictures.com/news/bfi-funding-slashed.aspx> [Accessed March 3, 2011]

Big Screen Entertainment (2006) **Big Screen Entertainment, Education and Sports Premier Events**, National CineMedia [Internet]. Retrieved from: [http://www.nationalcinemedia.com/cms/articlefiles/173-Big\\_Screen\\_Concerts\\_Event\\_Premiere\\_List\\_041006.pdf](http://www.nationalcinemedia.com/cms/articlefiles/173-Big_Screen_Concerts_Event_Premiere_List_041006.pdf) [Accessed June 6, 2010]

Binet D.E. (2009) **Re: Financing Model**. E-mail to Author (S. Walker) November 4.

Binkley, T. (1988) *The Computer is Not a Medium*. In **Philosophic Exchange 19/20**, (1988/89) pp. 155-73.

Binkley, T. (1989) *Medium or Tool*. In **Computer Graphics World**, February.

Birney, B. (2003) **The Windows Media Digital Cinema Process**, The Microsoft Corporation [Internet] April. Retrieved from: <http://www.microsoft.com/windows/windowsmedia/howto/articles/DigitalCinemaProcess.aspx> [Accessed June 6, 2010]

Bloom, D. (2002) **Debate Brews over Special 'K' Standard**, Variety [Internet] October 09. Retrieved from: <http://www.etconsult.com/news/articles/Variety10.9.02..pdf> [Accessed June 6, 2010]

Blum, D. (1958) **A Pictorial History of the Talkies**. New York, Grosset and Dunlap.

Board and Management (2008) **Board and Management**, Swedish Film Institute [Internet] November 17. Retrieved from: <http://www.sfi.se/en-gb/About-SFI/Verksamhet/Organisation/Board-and-management/> [Accessed June 6, 2010]

Bobker, L.R. (1969) **Elements of Film**. New York, Harcourt, Brace & World.

Boddy, W. (1990) **Fifties Television: The Industry and Its Critics**. Chicago, University of Illinois Press.

Bogart, L. (1994) **Who pays for the media?**, Access my Library [Internet], March 1. Retrieved from: [http://www.accessmylibrary.com/coms2/summary\\_0286-157230\\_ITM](http://www.accessmylibrary.com/coms2/summary_0286-157230_ITM) [Accessed June 6, 2010]

Bolter, D.B & Grusin, R. (1999) **Remediation – Understanding New Media**. London, The MIT Press.

Boyd-Barrett, O. (1995) *The Political Economy Approach*. In Boyd-Barrett, O. & Newbold, C. (ed.) **Approaches to Media: A Reader**. London, Arnold, pp. 186-192.

Boyer, T. (2000) **Bounce-ing from satellite to silver screen**, Digital Content Producer [Internet] December 1. Retrieved from: [http://digitalcontentproducer.com/mag/video\\_bouncing\\_satellite\\_silver/](http://digitalcontentproducer.com/mag/video_bouncing_satellite_silver/) [Accessed June 6, 2010]

Bringing cinema to rural communities (2009) **Bringing cinema to rural communities: the UK Film Council's Rural Cinema Pilot Scheme**, the UK Film Council [Internet]. Retrieved from: [http://www.ukfilmcouncil.org.uk/media/pdf/j/2/Rural\\_cinema\\_pilot\\_scheme\\_strategy\\_document.pdf](http://www.ukfilmcouncil.org.uk/media/pdf/j/2/Rural_cinema_pilot_scheme_strategy_document.pdf) [Accessed June 6, 2010]

British Film Industry: Government Response (2003) **British Film Industry: Government Response to the Select Committee Report on the British Film Industry Session 2002-2003**, The Department of Culture Media and Sport [Internet]. Retrieved from: <http://www.culture.gov.uk/images/publications/907134Cm6022Film.pdf> [Accessed June 6, 2010]

Broderick, P. (1999) **DIY = DVC**, Next Wave Films [Internet] March. Retrieved from: <http://www.nextwavefilms.com/ulbp/ss.html> [Accessed June 6, 2010]

Brooks, B. (2005) **Landmark Plans Digital Projection for its Theatres**, Indiewire [Internet], March 16. Retrieved from: [http://www.indiewire.com/article/landmark\\_plans\\_digital\\_projection\\_for\\_its\\_theatres/](http://www.indiewire.com/article/landmark_plans_digital_projection_for_its_theatres/) [Accessed June 6, 2010]

Bruns, M.W. & Whittlesey, J.T. (2000) **4:4:4 Compression of Moving pictures For Digital Cinema Using the MPEG-2 Toolkit**, BNET [Internet]. Retrieved from: <http://jobfunctions.bnet.com/abstract.aspx?docid=103718> [Accessed June 6, 2010]

Burns, R.W. (1986) **British Television: The Formative Years**. London, Peter Peregrinus Ltd.

Burns, R.W. (1998) **Television: An International History of the Formative Years**. London, The Institute of Electrical Engineers.

Burns, R.W. (2004) **Communication: An International History of the Formative Years**. London, The Institute of Electrical Engineers.

Bushell, L. (2002) **UK cinemas kick off World Cup screenings**, Screen Daily [Internet] May 14. Retrieved from: <http://www.screendaily.com/uk-cinemas-kick-off-world-cup-screenings/409187.article> [Accessed June 6, 2010]

Butsch, R. (n.d.) **American Movie Audiences of the 1930s**, Cambridge Journals Online [Internet]. Retrieved from: <http://journals.cambridge.org/action/displayAbstract;jsessionid=8353FC1FAE084EDFF6EA17D974F5A221.tomcat1?fromPage=online&aid=93096> [Accessed June 6, 2010]

Byrne, C. (2005) **New council proposed to help music industry**, The Independent [Internet], June 17. Retrieved from: <http://www.independent.co.uk/arts-entertainment/music/news/new-council-proposed-to-help-music-industry-494412.html> [Accessed June 6, 2010]

Call for Digital Cinema Standards (2001) **Call for Digital Cinema Standards**, NATO [Internet] December 12. Retrieved from: <http://www.natoonline.org/digitalcinemaletter.htm> [Accessed June 6, 2010]

Campbell, D.T. (2003) *Foreword*. In Yin, R.K. **Case Study Research Design and Methods, 3rd edition**. London, Sage, pp.ix-xi.

Cantor, J. & Valencia, P. (2004) **Inspired 3D Short Film Production**. London, Thomson Course Technology.

Canudo, R. (1923) *Reflections on the Seventh Art*. In Abel, R. (ed.) (1988) **French Film Theory and Criticism**. Princeton, Princeton University Press. pp.291-302.

Carlton Screen Advertising Goes Digital (2003) **Carlton Screen Advertising Goes Digital with Christie Projection**, Christie Digital [Internet] March 03. Retrieved from: <http://www.christiedigital.co.uk/AMEN/Corporate/MediaCenter/PressRelease/CarltonScreenAdvertisingGoesDigitalWithChristieProjection.htm> [Accessed June 6, 2010]

Casey, B., Casey, N., Calvert, B., Franch, L., & Lewis, J. (2002) **Television Studies - The Key Concepts**. London, Routledge

Caughie, J. (2000) **Television Drama: Realism, Modernism, and British Culture**. Oxford, Oxford University Press.

Ceram, C.W. (1965) **Archaeology of The Cinema**. New York, Harcourt, Brace & World.

Chanan, M. (1995) **The Dream That Kicks: the prehistory and early years of cinema in Britain**. London, Routledge.

Channel Packages (n.d.) **Channel Packages**, British Sky Broadcasting [Internet]. Retrieved from: <http://mysky.sky.com/portal/site/skycom/skyhelpcentre/howtogetsky?nodeId=1375b506-3b9a-4b27-b1c6-9d35984ba618&articleId=3274510&contentid=4770710> [Accessed June 6, 2010]

Chapman, J. (2003) **Cinemas of the World: Film and Society from 1895 to the Present**. London, Reaktion Books.

Cheplic, M. (1999) **Celluloid-Less Heroes**, Digital Content Producer Magazine [Internet] January 01. Retrieved from:  
[http://digitalcontentproducer.com/mag/video\\_celluloidless\\_heroes/index.html](http://digitalcontentproducer.com/mag/video_celluloidless_heroes/index.html)  
[Accessed June 6, 2010]

Cheshire, G. (1999) **The Death of Film/The Decay of Cinema**, New York Press [Internet] December 30. Retrieved from: [http://www.nypress.com/article-180-the-death-of-film\\_the-decay-of-cinema.html](http://www.nypress.com/article-180-the-death-of-film_the-decay-of-cinema.html) [Accessed June 6, 2010]

Christie Certifies Growing Number (n.d.) **Christie Certifies Growing Number of Cinema Re-Sellers**, Digital Cinema Report [Internet]. Retrieved from:  
<http://www.digitalcinemareport.com/Christie-Re-Sellers-Program> [Accessed June 6, 2010]

Christie, I. (1994) **Early Cinema and the Birth of the Modern World**. London, British Film Institute

Christie, N. (2005) **Arts: A defining moment**, The Financial Times [Internet] October 11. Retrieved from:  
[http://us.ft.com/ftgateway/superpage.ft?news\\_id=fto101120050151402599&page=2](http://us.ft.com/ftgateway/superpage.ft?news_id=fto101120050151402599&page=2)  
[Accessed June 6, 2010]

Ciciora, W., Farmer, J., Large, D. & Adams, M. (2004) **Modern Cable Television Technology**. London, Elsevier

Cimatics '05 (2005) **Cimatics '05**, Cimatics [Internet] October 18. Retrieved from:  
[http://www.cimatics.com/entries/pdf/Cimatics05\\_program\\_EN.pdf](http://www.cimatics.com/entries/pdf/Cimatics05_program_EN.pdf) [Accessed June 6, 2010]

Cinema Industry Moving to 3D (2009) **Cinema Industry Moving to 3D**, Sony. [Internet] Retrieved from:  
[http://www.sony.net/united/3D/static/technology/digital\\_cinema/progression/](http://www.sony.net/united/3D/static/technology/digital_cinema/progression/) [Accessed June 6, 2010]

'cinema', (n.d. a) '**cinema**', Dictionary.com Unabridged (v 1.1). Random House, Inc. [Internet] Retrieved from: <http://dictionary.reference.com/browse/cinema> [Accessed June 6, 2010]

'cinema', (n.d. b) '**cinema**', Compact Oxford English Dictionary [Internet]. Retrieved from: [http://www.askoxford.com/concise\\_oed/cinema?view=uk](http://www.askoxford.com/concise_oed/cinema?view=uk) [Accessed June 6, 2010]

Cinemark Digital Projection (n.d.) **Cinemark Digital Projection** [Internet] Cinemark. Retrieved from: <http://www.cinemark.com/digitaledge.asp> [Accessed June 6, 2010]

Clark, J. (2001) **Digital Server Technology and the Digital Cinema Revolution**, ZD Net [Internet] Retrieved from: <http://www.zdnet.co.uk/white-papers/network-technologies/2010/04/05/digital-server-technology-and-the-digital-cinema-revolution-260028922/> [Accessed June 6, 2010]

Clark, J.A. & Bruns, M.W. (2000) **Practical Digital Cinema Distribution in an Evolving Technology Environment**, Thomson Grass Valley Group [Internet] Retrieved from:

<http://www.broadcastpapers.com/whitepapers/GVGPracticalDigitalCinema.pdf?CFID=17776275&CFTOKEN=6d82336efc1fe16-097B9037-A4B3-2124-604EB4C1D6E6D172> [Accessed June 6, 2010]

Cohen, D.S. (2006) **Revolution will be digitized: D-cinema dares theater owners to reinvent their businesses**, Variety [Internet] April 20. Retrieved from: <http://www.variety.com/article/VR1117941892?categoryid=2222&cs=1> [Accessed June 6, 2010]

Cohen, S.B. (2002) **Digital Distribution: It's tantalisingly Close, But Many Issues Remain Unresolved**, Editors Guild Magazine (Vol. 23, No. 4) [Internet] July/August. Retrieved from: [http://www.editorsguild.com/v2/magazine/Newsletter/JulAug02/digital\\_distribution.html](http://www.editorsguild.com/v2/magazine/Newsletter/JulAug02/digital_distribution.html) [Accessed June 6, 2010]

Coldplay's first concert film (2003) **Coldplay's first concert film to premiere exclusively at Regal Entertainment Groups theatres, November 3rd**, All Business [Internet] October 28. Retrieved from: <http://www.allbusiness.com/media-telecommunications/movies-sound-recording/5773931-1.html> [Accessed June 6, 2010]

Commission staff working paper (n.d.) **Commission staff working paper on certain legal aspects relating to cinematographic and other audiovisual works: UNIC [International Union of Cinema's answer]**, European Union On-Line [Internet]. Retrieved from [http://ec.europa.eu/avpolicy/docs/reg/cinema/unic\\_en.pdf](http://ec.europa.eu/avpolicy/docs/reg/cinema/unic_en.pdf) [Accessed June 6, 2010]

Cook D. A. (2002) **Lost Illusions: American Cinema in the Shadow of Watergate and Vietnam, 1970-1979**. London, University of California Press.

Cowan, M. & Nielsen, L. (2005) *Projection*. In Swartz, C.S. (ed.) **Understanding Digital Cinema: A Professional Handbook**. Oxford, Focal Press. pp. 227-256.

Cox, A. (2002) **Why we should join in an attack on the digital clones**, The Guardian [Internet] May 27. Retrieved from: <http://film.guardian.co.uk/features/featurepages/0,,723114,00.html> [Accessed June 6, 2010]

Crabtree, S. (2004) **Sony raising curtain on 'holy grail' of d-cinema**, Hollywood Reporter [Internet] June 02. Retrieved from: [http://www.hollywoodreporter.com/thr/columns/tech\\_reporter\\_display.jsp?vnu\\_content\\_id=1000522875](http://www.hollywoodreporter.com/thr/columns/tech_reporter_display.jsp?vnu_content_id=1000522875) [Accessed June 6, 2010]

Crabtree, S. (2005) **'Chicken' release set on more than a wing and prayer**, The Hollywood Reporter [Internet] November 3. Retrieved from: [http://www.hollywoodreporter.com/thr/article\\_display.jsp?vnu\\_content\\_id=1001433021](http://www.hollywoodreporter.com/thr/article_display.jsp?vnu_content_id=1001433021) [Accessed June 6, 2010]

Crawford, C. (2002) **The Art of Interactive Design: A Euphonious and Illuminating Guide to Building Successful Software**. San Francisco, No Starch Press.

Creating a complete digital cinema chain (n.d.) **Creating a complete digital cinema chain for Europe**, ITEA [Internet]. Retrieved from: [http://www.itea-office.org/documents/project\\_proposals\\_results/Digital\\_Cinema\\_profile\\_oct-02.pdf](http://www.itea-office.org/documents/project_proposals_results/Digital_Cinema_profile_oct-02.pdf) [Accessed January 28 2004]

Creeber, G. (2009) *Digital Theory: Theorising New Media*. In: Creeber, G. & Martin, R. (ed.) **Digital Cultures – Understanding New Media**. Maidenhead, Open University Press, pp.11-22.

Curtis Mathes Davis Co Branding Alliance (1997) **Curtis Mathes Davis Co Branding Alliance Delivers Cutting Edge Projection TV Featuring DLP Technology To Consumers; Powerscreen Alliance Brings Future**, BNet UK [Internet] September 05. Retrieved from: [http://www.findarticles.com/p/articles/mi\\_m0EIN/is\\_1997\\_Sept\\_5/ai\\_19723295](http://www.findarticles.com/p/articles/mi_m0EIN/is_1997_Sept_5/ai_19723295) [Accessed June 6, 2010]

Dager N, (2003) **My View: The Big Picture - What the Landmark Deal Means**, Digital Cinema Report [Internet]. Originally Retrieved from: [http://www.digitalcinemareport.com/thebigpicture\\_11.html](http://www.digitalcinemareport.com/thebigpicture_11.html) Accessed 28 October 2004]

Davies, H. (2003) **Cult horror film gives audience a choice of endings**, Telegraph.co.uk [Internet]. Retrieved from: <http://www.telegraph.co.uk/news/worldnews/northamerica/usa/1437401/Cult-horror-film-gives-audience-a-choice-of-endings.html> [Accessed June 6, 2010]

DCI Announces Completion and Availability of “StEM Mini-Movie” (2004) **DCI Announces Completion and Availability of “StEM Mini-Movie” for Digital Cinema Testing**, Digital Cinema Today [Internet] March 19. Retrieved from: <http://www.dcinematoday.com/dc/PR.aspx?NewsID=100> [Accessed June 6, 2010]

DCI announces completion of overall system requirements (2004) **DCI announces completion of overall system requirements and specifications for digital cinema; member studios unanimously agree to extended term**, Digital Cinema Initiatives [Internet] September 8. Retrieved from: <http://www.dcinovies.com/press/09-08-04.html> [Accessed June 6, 2010]

Despringre, C. (2008) *Film Directors and European Media Governance*. In Terzis, G. (ed.) **European Media Governance: The Brussels Dimension**. Bristol, Intellect Books. pp. 77-86.

Olson, D. (2001) *Technology Infrastructures*. In Dewan, N.A, Lorenzi N.M., Riley R.T., Bhattacharya, S.R. (ed.) **Behavioral Healthcare Informatics**. New York, Springer-Verlag. pp. 9-30

DG2L Releases World's First MPEG-4 Digital Cinema System (2004) **DG2L Releases World's First MPEG-4 Digital Cinema System: Lands Seven-Figure Deal to Launch New Film Distribution Service in India**, BNet UK [Internet] December 16. Retrieved from:  
[http://findarticles.com/p/articles/mi\\_m0EIN/is\\_2003\\_Dec\\_16/ai\\_111293065](http://findarticles.com/p/articles/mi_m0EIN/is_2003_Dec_16/ai_111293065) [Accessed June 6, 2010]

Digital Cinema Event (2002) **Digital Cinema Event: REG Screens Live Football**, NATO Online / In Focus [Internet] November. Retrieved from:  
<http://www.natoonline.org/infocus/02November/digital.htm> [Accessed June 6, 2010]

Digital Cinema in Ireland (2008) **Digital Cinema in Ireland: A review of current possibilities**, The Arts Council (Ireland) [Internet]. Retrieved from:  
<http://www.artscouncil.ie/Publications/Digital%20Cinema%20in%20Ireland.pdf> [Accessed June 6, 2010]

Digital Cinema System Specification V1.0 (2005) **Digital Cinema System Specification V1.0, Digital Cinema Initiatives**, LLC [Internet] July 20. Retrieved from: [http://www.dcmovies.com/v1errata/DCI\\_Digital\\_Cinema\\_System\\_Spec\\_v1.pdf](http://www.dcmovies.com/v1errata/DCI_Digital_Cinema_System_Spec_v1.pdf) [Accessed June 6, 2010]

Digital Cinema: The EDCF Guide (2005) **Digital Cinema - The EDCF Guide for Early Adopters**, European Digital Cinema Forum [Internet]. Retrieved from:  
[http://www.edcf.net/edcf\\_docs/EDCF%20EAG%20final%20version.pdf](http://www.edcf.net/edcf_docs/EDCF%20EAG%20final%20version.pdf) [Accessed June 6, 2010]

Digital Exhibition - Coming to a Theater Near You (2002) **Digital Exhibition -**

**Coming to a Theater Near You**, Woodstock Film Festival. Retrieved from:

<http://www.woodstockfilmfestival.com/archives/2002schedule/seminars/seminars2002.htm> [Accessed June 6, 2010]

Digital Screen Network (n.d.) **Digital Screen Network**, The UK Film Council

[Internet]. Retrieved from: <http://www.ukfilmcouncil.org.uk/dsn> [Accessed June 6, 2010]

Digital Technology Strategy (2003) **Digital Technology Strategy: An Interim**

**Position Paper**, UK Film Council [Internet] April. Retrieved from:

[http://www.ukfilmcouncil.org.uk/media/word/1/r/Digital\\_Strategy\\_Position\\_Paper\\_11-08-03.doc](http://www.ukfilmcouncil.org.uk/media/word/1/r/Digital_Strategy_Position_Paper_11-08-03.doc) [Accessed June 6, 2010]

Dinglasan, F. (1999) **Digital Cinema Demonstration**, Box Office Magazine [Internet].

Retrieved from: <http://www.boxoff.com/daily/daily99daily12.html> [Accessed September 28, 2006]

Diorio, C. (2003) **Landmark going digital: All auditoriums nationwide to be**

**outfitted with d-cinema**, Variety [Internet], April 2. Retrieved from:

<http://www.variety.com/article/VR1117884050.html?categoryid=13&cs=1&query=microsoft&display=microsoft> [Accessed June 6, 2010]

Disney to Release Newest Animated Feature in REAL D (2005) **Disney to Release**

**Newest Animated Feature in REAL D Cinema Following Historic Success of**

**"Chicken Little" in 3-D**, Digital Cinema Today [Internet] December 6. Retrieved

from: <http://www.dcinematoday.com/dc/PR.aspx?newsID=360> [Accessed June 6, 2010]

DLP Technology FAQs (n.d.) **DLP Technology FAQs (Frequently Asked**

**Questions)**, Texas Instruments [Internet]. Retrieved from:

<http://www.dlp.com/technology/dlp-faqs/default.aspx> [Accessed June 6, 2010]

Doherty, T. (2003) **Cold War, Cool Medium: Television, McCarthyism, and**

**American Culture**, New York, Columbia University Press.

Downs, A. (2002) *Where the Drive-in fits into the Movie Industry*. In Hark, I.R. (ed) **Exhibition The Film Reader**, London, Routledge. pp. 123-126.

Duffy B. (2005) *The Analysis of Documentary Evidence*. In Bell J. (ed) **Doing your research project: a guide for first-time researchers in education, health and social science, Fourth Edition**. Maidenhead, Open University Press. pp. 122-135.

Duhamel G. (1931) **America: the Menace: Scenes from the Life of the Future**, Translated by Charles Miner Thompson. Houghton Mifflin Company.

Ebert, R. (1988) **Julia and Julia**, Chicago Sun Times [Internet] February 5. Retrieved from:  
<http://rogerebert.suntimes.com/apps/pbcs.dll/article?AID=/19880205/REVIEWS/802050301/1023> [Accessed June 6, 2010]

Ebert, R. (1999) **Start the revolution without digital**, Chicago Sun Times [Internet] December 12. Retrieved from:  
<http://rogerebert.suntimes.com/apps/pbcs.dll/article?AID=/19991212/COMMENTARY/212010335> [Accessed June 6, 2010]

Ebert, R. (2004) **Roger Ebert's Movie Yearbook 2005**. Kansas, Andrews McMeel Publishing.

Ebert, R. (2008) **Roger Ebert's Journal: Why I'm so Conservative**, Chicago Sun Times [Internet] October 7. Retrieved from:  
[http://blogs.suntimes.com/ebert/2008/10/why\\_im\\_so\\_conservative.html](http://blogs.suntimes.com/ebert/2008/10/why_im_so_conservative.html) [Accessed June 6, 2010]

EDCF Foundation (2003) **EDCF Foundation**, EDCF [Internet]. Retrieved from:  
[http://www.edcf.net/objectives\\_docs/edcf\\_foundation.pdf](http://www.edcf.net/objectives_docs/edcf_foundation.pdf) [Accessed June 6, 2010]

Edgar, R. (1995) **HDID and Aesthetic Practice**, Robert Edgar [Internet] Retrieved from: <http://www.robertedgar.com/Articles/HDID.HTM> [Accessed June 6, 2010] (Originally Published in the Position Papers for The Third Conference on Computers, Freedom and Privacy)

Egenfeldt-Nielsen S., Heide Smith J. & Pajares Tosca S. (2008) **Understanding Video Games: The Essential Introduction**. New York, Routledge.

Einstein, M. (2004) **Media Diversity: Economics, Ownership and the FCC**. London, Lawrence Erlbaum Associates

El.pub Analytic No. 3 (n.d) **El.pub Analytic No. 3 "Celluloid or Silicon?"**, El.Pub [Internet]. Retrieved from: <http://www.elpub.org/analytic03.htm> [Accessed June 6, 2010]

Ellingson A. (2000) *New Technologies: Digital Cinema - TITAN D.C.* In **Boxoffice Magazine**, October, pp.58-59.

Elsaesser, T. (1996) *Early German Cinema: A Second Life?* In Elsaesser T. & Wedel, M. (ed) **A Second Life: German Cinema's First Decades**. Amsterdam, Amsterdam University Press. pp. 9-41

Elsaesser, T. (2000) **Weimar Cinema and After: Germany's Historical Imaginary**. London, Routledge

Entertaining the Future (2006) **Entertaining the Future**, Sega World [Internet] Retrieved from: [http://www.sega-world.com/PSO-WORLD\\_DE/playstation3/Text-Dokumente/Sony\\_CESBrochure.pdf](http://www.sega-world.com/PSO-WORLD_DE/playstation3/Text-Dokumente/Sony_CESBrochure.pdf) [Accessed June 6, 2010]

Epstein, E.J. (2005) **The Big Picture - The New Logic of Money and Power in Hollywood**. New York, Random House.

Ernst F.W. Alexanderson (n.d.) **Ernst F.W. Alexanderson**, Encyclopædia Britannica. [Internet]. Retrieved from: <http://www.britannica.com/eb/article-9005622/Ernst-FW-Alexanderson> [Accessed June 6, 2010]

Ess, C. (2001) **Culture, Technology, Communication: Towards an intercultural Global Village**. New York, State University of New York Press.

ET-10 (n.d.) **ET-10**, Epson [Internet]. Retrieved from:

[http://www.epson.co.jp/e/company/milestones/17\\_et-10.pdf](http://www.epson.co.jp/e/company/milestones/17_et-10.pdf) [Accessed June 6, 2010]

EurekaBuild (n.d.) **EurekaBuild**, Eureka [Internet]. Retrieved from:

[http://www.eurekanetwork.org/c/document\\_library/get\\_file?uuid=e23f6e35-d1ac-4c71-9d15-254db9dfde36&groupId=10137](http://www.eurekanetwork.org/c/document_library/get_file?uuid=e23f6e35-d1ac-4c71-9d15-254db9dfde36&groupId=10137) [Accessed June 6, 2010]

Europe, a culture of shared causes? (1999) **Europe, a culture of shared causes?**,

COEUR [Internet] February 25. Retrieved from:

<http://www.coeur.ws/meetings/meeting1c.htm> [Accessed June 6, 2010]

Exhibition Giant AMC Entertainment Joins (2004) **Exhibition Giant AMC**

**Entertainment Joins National Association of Theatre Owners; NATO Now**

**represents all Major North America There Exhibition Companies**, The Free Library

[Internet]. Retrieved from:

<http://www.thefreelibrary.com/Exhibition+Giant+AMC+Entertainment+Joins+National+Association+of+...-a0124013990> [Accessed June 6, 2010]

Falk, Q. (2003) **Cinema's strangest Moments: Extraordinary But True Tales from the History of Film**. London, Chrysalis Books.

Featuring Reflective Liquid Crystal Display (n.d.) **Featuring Reflective Liquid Crystal Display Technology for Use in Projection System: SXRD Creates**

**Previously Unknown Smooth, Realistic Images**, Sony [Internet]. Retrieved from:

[http://www.so-net.pl/Products/SC-HP/cx\\_news/vol41/pdf/featuring41.pdf](http://www.so-net.pl/Products/SC-HP/cx_news/vol41/pdf/featuring41.pdf) [Accessed June 6, 2010]

Film (n.d.) **Film**, Department for Culture Media and Sport [Internet]. Retrieved from:

[http://webarchive.nationalarchives.gov.uk/+http://www.culture.gov.uk/what\\_we\\_do/creative\\_industries/3269.aspx/](http://webarchive.nationalarchives.gov.uk/+http://www.culture.gov.uk/what_we_do/creative_industries/3269.aspx/) [Accessed June 6, 2010]

Film Fans Across the UK to Benefit (2004) **Film Fans Across the UK to Benefit from**

**£½ Million 'Mobile Movies' Fund**, Creative Match [Internet]. Retrieved from:

<http://www.creativematch.co.uk/viewnews/?90082> [Accessed June 6, 2010]

Fiske, J. (1987) **Television Culture**, London, Routledge

Fithian, J. (2001) *Digital Cinema: Promising Technology, Serious Issues*. In **Boxoffice Magazine**, April 2001, p.113, p.116, p.120

Fithian, J. (2002 a) *The Business of Digital Cinema - The Exhibitors' Perspective*. In **SMPTE Journal**, June. pp.277-279

Fithian, J. (2002 b) **Survey of Exhibition Industry Practices: U.S. Answers by John Fithian, NATO President**, NATO [Internet], December 9. Retrieved from:  
<http://www.natoonline.org/UNIC-NATOSurveyUSAnswers.pdf> [Accessed June 6, 2010]

Fithian, J. (2003) **Feedback**, Digital Cinema Report [Internet]. Retrieved from:  
<http://www.digitalcinemareport.com/feedback.html> [Accessed October 28 2005]

Fithian, J. (2004) **Digital Cinema: The Nexus Between Technical and Business Considerations**, In Focus Magazine [Internet], March. Retrieved from  
<http://www.natoonline.org/infocus//04march/prezdesk.htm> [Accessed June 6, 2010]

Friedberg, A. (1997) *The End of Cinema: Multimedia and Technological Change*. In Gledhill, C. and Williams, L. (ed.) **Reinventing Film Studies**. London, Arnold, pp.438-452

Friedberg, A. (2002) *CD and DVD*. In Harries, D. (ed.) **The New Media Book**. London, British Film Institute. pp. 30-39.

Friedberg, A (2009) **The Virtual Window, From Alberto to Microsoft**. London, The MIT Press.

Friedberg, A.A. (1992) *The Theatrical Exhibitor*. In Squire, J. (ed.) **The Move Business Book - Second Edition**. London, Fireside. pp.341-251.

Friedman K. (2003) *Electronic Publishing*. In Jones, S. (ed.) **Encyclopedia of New Media: an essential reference to communication and technology**. London, Sage Publications. pp. 173-175

Friedman, K. (2005) *Intermedia: Four Histories, three Directions, Two futures*. In Busse, K.P. & Breder, H. (ed.) **Intermedia: Enacting the Liminal**. Books on Demand. pp. 51-62

Fuchs, A. (2003) **CineMedia Technology, Regal Readies Largest Digital Communications Theatre Network – A Regal Revolution**, Film Journal International [Internet]. Retrieved from:  
[http://www.filmjournal.com/filmjournal/search/article\\_display.jsp?vnu\\_content\\_id=1000692818](http://www.filmjournal.com/filmjournal/search/article_display.jsp?vnu_content_id=1000692818) [Accessed June 6, 2010]

Funding (n.d.) **Funding**, UK Film council [Internet] Retrieved from:  
<http://www.ukfilmcouncil.org.uk/funding> [Accessed June 6, 2010]

Gallagher, W. (2003) **Bowie thrills crowd with cinema gig**, The British Broadcasting Corporation [Internet]. Retrieved from:  
<http://news.bbc.co.uk/1/hi/entertainment/reviews/3091186.stm> [Accessed June 6, 2010]

Garnham, N. (1995) **Political economy and cultural studies: Reconciliation or divorce?**, Education Resources Information Centre [Internet]. Retrieved from:  
[http://www.eric.ed.gov/ERICWebPortal/search/detailmini.jsp?\\_nfpb=true&\\_ERICExtSearch\\_SearchValue\\_0=EJ501109&ERICExtSearch\\_SearchType\\_0=no&accno=EJ501109](http://www.eric.ed.gov/ERICWebPortal/search/detailmini.jsp?_nfpb=true&_ERICExtSearch_SearchValue_0=EJ501109&ERICExtSearch_SearchType_0=no&accno=EJ501109) [Accessed March 1, 2011]

Gene Roddenberry's Earth (2000) **Gene Roddenberry's Earth: Final Conflict first to adopt CineAlta**, Sony [Internet]. Retrieved from:  
[http://www.sonybiz.net/biz/view/ShowContent.action?BIZ\\_SESSIONID=WBLGGZ9ShpczXn0QNJspzcg1QG41TFXBW1112yJTvLz4Jn9zP!-513469731&site=biz\\_en\\_GB&contentId=1166605183656&site=biz\\_en\\_GB](http://www.sonybiz.net/biz/view/ShowContent.action?BIZ_SESSIONID=WBLGGZ9ShpczXn0QNJspzcg1QG41TFXBW1112yJTvLz4Jn9zP!-513469731&site=biz_en_GB&contentId=1166605183656&site=biz_en_GB) [Accessed June 6, 2010]

General Information (n.d.) **General Information**, National Institute of Standards and Technology [Internet]. Retrieved from:

[http://www.nist.gov/public\\_affairs/general\\_information.cfm](http://www.nist.gov/public_affairs/general_information.cfm) [Accessed June 6, 2010]

George, S. (2004) **All local cinemas will be digital within five years, says Hoyts**, New Zealand Motion Picture Exhibitors Association [Internet] Retrieved from:

[http://www.nzmpa.org.nz/news\\_archives.php?table=News&view=2](http://www.nzmpa.org.nz/news_archives.php?table=News&view=2) [Accessed June 6, 2010]

Geraghty, C. & Lusted D. (eds.) (1998) **The Television Studies Book**. London, British Film Institute, pp.17-32.

Giardina, C. (2008) **John Fithian fires back at Warner Bros**, The Hollywood Reporter [Internet] July 10. Retrieved from:

[http://www.hollywoodreporter.com/hr/content\\_display/news/e3ia50cdcb373435f1b678c50694c2c6918](http://www.hollywoodreporter.com/hr/content_display/news/e3ia50cdcb373435f1b678c50694c2c6918) [Accessed June 6, 2010]

Giarratana, C. (2002) *The Keanu Effect Stardom and The Landscape of the Acting Body: Los Angeles/Hollywood as Sight/Site*. In Ndalians, A. Henry, C. (ed.) **Stars in Our Eyes: The Star Phenomenon in the Contemporary Era**. Westport, Greenwood Publishing Group. pp 61-84.

Gillham, B. (2000) **Case Study Research Methods**. London, Continuum 2000.

Given, J. (2003) **Turning Off the Television: Broadcasting's Uncertain Future**. Sydney, University of New south Wales Press.

Go to the cinema and star in the film (2005) **Go to the cinema and star in the film you're about to see**, Times Online [Internet] March 26. Retrieved from:

<http://www.timesonline.co.uk/tol/news/world/article437699.ece> [Accessed June 6, 2010]

Goals for Digital Cinema (2001) **Goals for Digital Cinema**, Idea Lake [Internet]

Retrieved from: [http://www.idealake.com/wp\\_digicinema.html](http://www.idealake.com/wp_digicinema.html) [Accessed June 6, 2010]

Golding, P. & Murdock, G. (1991) *Culture, Communications and Political Economy*. In Curran, J. and Gurevitch, M (eds.) **Mass Media and Society**. London, Arnold, pp.15-32.

Golding, P and Murdock, G. (2000) *Culture, Communications and Political Economy*. In Curran, J. and Gurevitch, M (eds.) **Mass Media and Society, 3rd edition**. London, Arnold, pp.70-92.

Goldman, M. (2008) **Digitally Independent Cinema**, Filmmaker [Internet]. Retrieved from: <http://www.filmmakermagazine.com/winter2008/projection.php> [Accessed June 6, 2010]

Goldman, W. (1983) **Adventures in the Screen Trade**. London, Abacus.

Goodridge, M. (2002) **Major studios team to standardise digital cinema**, Screen Daily [Internet] April 2. Retrieved from: <http://www.screendaily.com/major-studios-team-to-standardise-digital-cinema/408781.article> [Accessed June 6, 2010]

Graser, M. (1999) **Digital 'Menace' unveiled - New projection system, print heralded as film's 'future'**, Variety Magazine [internet] June 18. Retrieved from: <http://www.variety.com/article/VR1117503236?categoryid=13&cs=1> [Accessed June 6, 2010]

Gray, H. (1971) *Translator's Introduction*. In Bazin, A. (1971) **What Is Cinema? Essays selected and translated by Hugh Gray - Volume Two**, University of California Press. pp. 1-15.

Gripsrud, J. (1998). *Television, Broadcasting, Flow: Key Metaphors in TV Theory*. In Geraghty, C. & Lusted D. (eds.) **The Television Studies Book**, London, British Film Institute. pp.17-32.

Grossberg, L. (2006) *Cultural Studies vs. Political Economy: Is anybody else bored with this debate?* In Story J. (ed) **Cultural theory and popular culture: a reader**, Essex, Pearson Education Ltd. pp.626-636.

Group and Lottery Annual Report (2005) **Group and Lottery Annual Report and Financial Statements for the year ended 31 March 2005**, UK Film Council [Internet]. Retrieved from:

[http://www.ukfilmcouncil.org.uk/media/pdf/p/r/Annual\\_Accounts\\_2004\\_to\\_2005.pdf](http://www.ukfilmcouncil.org.uk/media/pdf/p/r/Annual_Accounts_2004_to_2005.pdf)  
[Accessed June 6, 2010]

Guy, R. (2004) **The Moviegoer's Companion**. London, Robson Books.

Hailer, G. & Pacatte, R. (2007) **Media mindfulness: educating teens about faith and media**. Winona, St. Mary's Press.

Haines, R. W. (2003) **The Moviegoing Experience 1968-2001**. North Carolina, McFarland & Company.

Halbfinger, D.M. (2005) **Going Deep for Digital**, New York Times [Internet] September 26. Retrieved from:  
<http://www.nytimes.com/2005/09/26/business/media/26digital.html?ex=1285387200&en=c10e8c62c97ab0f8&ei=5088&partner=rssnyt&emc=rss> [Accessed June 6, 2010]

Hall, K. (2003) **Response from Kurt Hall, President and CEO, Regal CineMedia**, Captive Motion Picture Audience of America [Internet] May 19. Retrieved from:  
[http://www.captiveaudience.org/response\\_030519.html](http://www.captiveaudience.org/response_030519.html) [Accessed June 6, 2010]

Hansen, M. B. N. (2004) **New Philosophy For New Media**. London, MIT Press

Harris, T. (n.d.) **How Plasma Displays Work**, How Stuff Works [Internet]. Retrieved from: <http://electronics.howstuffworks.com/plasma-display.htm> [Accessed June 6, 2010]

Hart, C. (1998) **Doing a literature review: releasing the social science research imagination**. London, Sage.

Hart, J et al (2007) **Inter-Society Digital Cinema Forum (ISDCF) – Digital Cinema Primer**, ISDCF [Internet] March. Retrieved from:  
<http://www.isdcf.com/papers/DigitalCinemaPrimerShowWest2007.pdf> [Accessed June 6, 2010]

Hartley, J. (2004) *From Republic of Letters to Television Republic? Citizen readers in the era of broadcast television*. In Spiegel, L. & Olsson, J. (ed) **Television after TV: essays on a medium in transition**. Duke University Press. pp. 386-417.

Healey, J. (2005) **Warner Gets a Jump on Film Pirates in China**, Los Angeles Times [Internet] June 09. Retrieved from:  
<http://pqasb.pqarchiver.com/latimes/access/851108841.html?dids=851108841:851108841&FMT=ABS&FMTS=ABS:FT&type=current&date=Jun+9%2C+2005&author=Jon+Healey&pub=Los+Angeles+Times&edition=&startpage=A.1&desc=Warner+Gets+a+Jump+on+Film+Pirates+in+China> [Accessed June 6, 2010]

Hefflinger, M. (2009) **TI, Barco, Christie to Introduce 4K Digital Cinema Projectors**, Digital Media Wire [Internet]. Retrieved from:  
<http://www.dmwmedia.com/news/2009/06/19/ti,-barco,-christie-introduce-4k-digital-cinema-projectors>

Hernandez, E. & Rabinowitz, M. (2000) **NY Underground; Oscar Thoughts; Zeitgeist Acquisition**, IndieWire [Internet] February 16. Retrieved from:  
[http://www.indiewire.com/article/daily\\_news\\_ny\\_underground\\_oscar\\_thoughts\\_zeitgeist\\_acquisition/](http://www.indiewire.com/article/daily_news_ny_underground_oscar_thoughts_zeitgeist_acquisition/) [Accessed June 6, 2010]

Hidalgo, P. (2003) **Defining High Definition**, StarWars.Com [Internet] (May 13). Retrieved from: <http://www.starwars.com/episode-iii/bts/production/f20030516/index.html?page=2> [Accessed June 6, 2010]

High Definition Camcorders (n.d.) **High Definition Camcorders**, Roscor Rentals [Internet]. Retrieved from: <http://www.roscorrentals.com/content/view/162/231/> [Accessed June 6, 2010]

Hindes, A. (1999) **Sticking with 35mm- New theater system touts old favorite**

[Internet] Variety. Retrieved from:

<http://www.variety.com/article/VR1117493379.html?categoryid=13&cs=1> [Accessed June 6, 2010]

Hinrichs, B. (1996) **A trip to the movies: 100 years of film as art**, Humanist [Internet]

January - February. Retrieved from:

[http://www.findarticles.com/p/articles/mi\\_m1374/is\\_n1\\_v56/ai\\_17981202](http://www.findarticles.com/p/articles/mi_m1374/is_n1_v56/ai_17981202) [Accessed June 6, 2010]

History and Heritage, (n.d.) **History and Heritage**, Vistech [Internet]. Retrieved from:

[http://www.visitech.no/About\\_Visitech/110](http://www.visitech.no/About_Visitech/110) [Accessed June 6, 2010]

History and Milestones (n.d. a) **History and Milestones**, IMAX [Internet] Retrieved

from: <http://www.imax.com/corporate/profile/historyMilestones/> [Accessed June 6, 2010]

History of the Film Institute (2008) **History of the Film Institute**, Swedish Film

Institute [Internet] November 17. Retrieved from: [http://www.sfi.se/en-gb/About-](http://www.sfi.se/en-gb/About-SFI/Verksamhet/History-of-the-Film-Institute/)

[SFI/Verksamhet/History-of-the-Film-Institute/](http://www.sfi.se/en-gb/About-SFI/Verksamhet/History-of-the-Film-Institute/) [Accessed June 6, 2010]

Hoffner, R. (2004) **Display Resolution**, TVtechnology.com [Internet] April 7.

Retrieved from: <http://www.tvtechnology.com/article/12882> [Accessed June 6, 2010]

Home (n.d.) **Home**, COEUR [Internet]. Retrieved from: <http://www.coeur.ws/>

[Accessed June 6, 2010]

'Home Theater' (n.d.) **'Home Theater'**, Princeton University (WordNet 3.0) [Internet].

Retrieved from: <http://wordnetweb.princeton.edu/perl/webwn?s=home%20theater>

[Accessed June 6, 2010]

Hopkins, R. (1994) **Digital terrestrial HDTV for North America: The Grand**

**Alliance HDTV system**, The European Broadcasting Union [Internet] Summer.

Retrieved from: [http://www.ebu.ch/trev\\_260-hopkins.pdf](http://www.ebu.ch/trev_260-hopkins.pdf) [Accessed June 6, 2010]

- Horak J. (2000) **Introduction to Film Stocks**, University of California [Internet]. Retrieved from: <http://www.cinema.ucla.edu/TANK/stockshorak.htm> [Accessed June 6, 2010]
- Hornbeck, L.J. (1995) **Digital Light Processing and MEMS: Timely Convergence for a Bright Future**, Texas Instruments [Internet]. Retrieved from: [http://focus.ti.com/download/dlpdmd/115\\_Digital\\_Light\\_Processing\\_MEMS\\_Timely\\_Convergence.pdf](http://focus.ti.com/download/dlpdmd/115_Digital_Light_Processing_MEMS_Timely_Convergence.pdf) [Accessed June 6, 2010]
- Hornbeck, L.J. (1998 a) **From cathode rays to digital micromirrors: A history of electronic projection display technology**, Texas Instruments Technical Journal [Internet] Vol 15, July-September, pp.7-46. Retrieved from: [http://focus.ti.com/download/dlpdmd/166\\_History\\_Electronic\\_Proj\\_Tech\\_Hornbeck.pdf](http://focus.ti.com/download/dlpdmd/166_History_Electronic_Proj_Tech_Hornbeck.pdf) [Accessed June 6, 2010]
- Hornbeck, L.J. (1998 b) **Current Status and Future Applications for DMD-Based Projection Displays**, Texas Instruments [Internet]. Retrieved from: [http://focus.ti.com/download/dlpdmd/139\\_idw98.pdf](http://focus.ti.com/download/dlpdmd/139_idw98.pdf) [Accessed June 6, 2010]
- Hornig Priest, S. (2010) **Doing Media Research: An Introduction, 2nd Edition**. London, Sage.
- Hose, J., Winchell, M., Walker, K. & Ratzel, J. (2002) **Data Transport and Processing in a Digital Cinema Theatre System**, The Society of Motion Picture and Television Engineers (SMPTE) Journal [Internet] December 12. Retrieved from: <http://www.smpete.org/journal/?p=1849> [Accessed June 6, 2010]
- How to Join (n.d.) **How to Join**, European Digital Cinema Forum [Internet]. Retrieved from: <http://www.edcf.net/join.html> [Accessed June 6, 2010]
- How to Make Your Community a Star (n.d.) **How to Make Your Community a Star**, Cape Film Commission [Internet]. Retrieved from: <http://www.capefilmcommission.com/documents/How%20to%20make%20your%20community%20a%20star.pdf> [Accessed June 6, 2010]

Hughes, S. (1972) **Famous Mozart Operas**, Minola, Dover Publications.

Hunt, J. (Rt Hon) (2010) **Ministerial Written Statement - Department for Culture, Media and Sport's arm's length bodies**, Department for Culture, Media and Sport [Internet] July 26, 2010. Retrieved from:  
[http://www.culture.gov.uk/images/publications/100726MWS\\_DCMSarmslengthbodies.pdf](http://www.culture.gov.uk/images/publications/100726MWS_DCMSarmslengthbodies.pdf) [Accessed August 2, 2010]

IMAX Corp: Key Developments (n.d.) **IMAX Corp: Key Developments**, MSN [Internet] Retrieved from:  
<http://moneycentral.msn.com/news/ticker/sigdev.aspx?ipage=product&symbol=IMAX> [Accessed June 6, 2010]

InFocus Launches Flagship (2004) **InFocus Launches Flagship Three-Chip DLP Home Cinema Projector**, EMedia Live [Internet] April 27. Retrieved from:  
<http://www.emedialive.com/Articles/ReadArticle.aspx?ArticleID=8473> [Accessed June 6, 2010]

International Edition No. 8 (2006) **International Edition No. 8 - year 1 - 6 April 2006**, Media Salles [Internet] April. Retrieved from:  
[http://www.mediasalles.it/dgt\\_online/DGT\\_online\\_informer\\_8/news08\\_p.htm](http://www.mediasalles.it/dgt_online/DGT_online_informer_8/news08_p.htm) [Accessed June 6, 2010]

Introduction to the CST (n.d.) **Introduction to the CST**, Commission Supérieure Technique de l'Image et du Son [Internet]. Retrieved from:  
<http://www.cst.fr/spip.php?article89> [Accessed June 6, 2010]

ITU and The Big Screen (n.d.) **ITU and The Big Screen: Digital Cinema**, International Telecommunication Union [Internet]. Retrieved from:  
<http://www.itu.int/itu-news/issue/2002/01/digital-cinema.html> [Accessed June 6, 2010]

Ive, J. (2004) **Image Formats for HDTV**, The European Broadcasting Union [Internet] July. Retrieved from: [http://www.ebu.ch/en/technical/trev/trev\\_299-ive.pdf](http://www.ebu.ch/en/technical/trev/trev_299-ive.pdf) [Accessed June 6, 2010]

- Iverson, J. (1998) **News Desk**, Ultimate AV Magazine [Internet] April 26. Retrieved from: <http://ultimateavmag.com/news/10134/> [Accessed June 6, 2010]
- Jacques Barzun, J. & Graff, H.F. (1992) **The Modern Researcher, 5th Edition**. Boston. Houghton Mifflin [Accessed June 6, 2010]
- Jaeger, T. (2005) **VJ: Live Cinema Unravelled, Handbook for live visual performance**, Nadav Assor [Internet]. Retrieved from: [http://nadassor.net/nonsite\\_files/livemedia\\_course/VJ\\_BOOK.pdf](http://nadassor.net/nonsite_files/livemedia_course/VJ_BOOK.pdf) [Accessed June 6, 2010]
- Jardin X. (2005) **Thinking Outside the Box Office**, Wired [Internet] December. Retrieved from: <http://www.wired.com/wired/archive/13.12/soderbergh.html> [Accessed June 6, 2010]
- Jentsch S. (2006) **REAL D Brings Columbia Pictures Monster House in Digital 3D to More Than 200 Theaters**, The Big Screen Journal [Internet] July 17. Retrieved from: <http://www.bigscreen.com/journal.php?id=168> [Accessed June 6, 2010]
- John, M. (2002) **Can Hollywood Reinvent Itself in the Age of Digital Cinema?**, Digital Producer Magazine [Internet] January 21. Retrieved from: <http://www.digitalproducer.com/articles/viewarticle.jsp?id=7453> [Accessed June 6, 2010]
- Jones, S. (1997) **Virtual Culture: Identity and Communication in Cybersociety**. London, Sage.
- Jones, S.B., Kallenberger, R.H. & Cvjetnicanin, G.D. (2000) **Film into Video 2nd Edition**, London, Focal Press.
- JPEG 2000: Questions and Answers (n.d.) **JPEG 2000: Questions and Answers**, Avica Technology [Internet]. Retrieved from: <http://www.avicatech.com/jpeg2000.html> [Accessed June 6, 2010]

JVC Announces HD-ILA Microdisplay (2004), **JVC Announces HD-ILA Microdisplay Rear Projection HD Televisions**, JVC [Internet] June 24. Retrieved from: [http://findarticles.com/p/articles/mi\\_m0EIN/is\\_2004\\_June\\_24/ai\\_n6086962/](http://findarticles.com/p/articles/mi_m0EIN/is_2004_June_24/ai_n6086962/) [Accessed June 6, 2010]

JVC Develops Ultra High Resolution D-ILA (2000) **JVC Develops Ultra High Resolution D-ILA Display Device at 2048x1536**, JVC [Internet]. Retrieved from: <http://pro.jvc.com/pro/pr/infocomm/2kchip.htm> [Accessed June 6, 2010]

Kairoff, J. (2000) **Examining Digital Cinema, Sound and Video Contractor** [Internet] June 1. Retrieved from: [http://www.svconline.com/mag/avinstall\\_examining\\_digital\\_cinema/](http://www.svconline.com/mag/avinstall_examining_digital_cinema/) [Accessed June 6, 2010]

Karagosian Named NATO Digital Cinema Consultant (2000) **Karagosian Named NATO Digital Cinema Consultant**, MKPE [Internet] September 14. Retrieved from: [http://www.mkpe.com/company/press\\_release/NATO\\_Sep\\_00.php](http://www.mkpe.com/company/press_release/NATO_Sep_00.php) [Accessed June 6, 2010]

Karagosian, M, & MacDowell, G.K. (2005) **RE: Release of DCI's Digital Cinema System Specification**, NATO [Internet] July 27. Retrieved from: <http://www.natoonline.org/DCI%20Final-Summary-7-27-051.pdf> [Accessed June 6, 2010]

Karagosian, M (n.d.a) **How Digital Cinema Works, Part 7: Putting It All Together**, MKPE Consulting [Internet]. Retrieved from: [http://mkpe.com/digital\\_cinema/works/dc\\_technology7.php](http://mkpe.com/digital_cinema/works/dc_technology7.php) [Accessed June 6, 2010]

Karagosian, M (n.d.b) **How Digital Cinema Works, Part 2: Presentation System: The Broadcast Server Model**, MKPE Consulting [Internet]. Retrieved from: [http://mkpe.com/digital\\_cinema/works/dc\\_technology2.php](http://mkpe.com/digital_cinema/works/dc_technology2.php) [Accessed June 6, 2010]

Karagosian, M (n.d.c) **How Digital Cinema Works, Part 3: presentation - data Centric Model**, MKPE Consulting [Internet]. Retrieved from: [http://mkpe.com/digital\\_cinema/works/dc\\_technology3.php](http://mkpe.com/digital_cinema/works/dc_technology3.php) [Accessed June 6, 2010]

Karagosian, M. (1999) **It's Not the Projector...**, MKPE [Internet] Retrieved from: [http://mkpe.com/publications/d-cinema/misc/not\\_the\\_projector.php](http://mkpe.com/publications/d-cinema/misc/not_the_projector.php) [Accessed June 6, 2010]

Karagosian, M. (2000) **Answering the Question: Is Film Really Dead?**, MKPE Consulting [Internet] Retrieved from: [http://www.mkpe.com/publications/digital\\_cinema/misc/is\\_film\\_dead.php](http://www.mkpe.com/publications/digital_cinema/misc/is_film_dead.php) (Published in the February 2000 issue of System Contractor News) [Accessed June 6, 2010]

Karagosian, M. (2001 a) **Where's The Standard? Part II**, MKPE Consulting [Internet]. Retrieved from: [http://mkpe.com/publications/digital\\_cinema/infocus/where\\_standard\\_p2.php](http://mkpe.com/publications/digital_cinema/infocus/where_standard_p2.php) (Published in the Sept 2001 issue of In Focus Magazine) [Accessed June 6, 2010]

Karagosian, M. (2001 b) **Pioneering or Pie-In-The-Sky?**, MKPE Consulting [Internet]. Retrieved from: [http://www.mkpe.com/publications/digital\\_cinema/misc/pioneers.php](http://www.mkpe.com/publications/digital_cinema/misc/pioneers.php) (Published in the January 2001 issue of In Focus Magazine) [Accessed June 6, 2010]

Karagosian, M. (2001 c) **The American View**, MKPE Consulting [Internet]. Retrieved from: [http://www.mkpe.com/publications/digital\\_cinema/misc/EDCF\\_Dec2001.php](http://www.mkpe.com/publications/digital_cinema/misc/EDCF_Dec2001.php) (Presented to the EDCF Content Module in Stockholm, December 2001. Text published in the March 2002 issue of In Focus Magazine) [Accessed June 6, 2010]

Karagosian, M. (2002 a) **Low-Cost Electronic Cinema Projectors May Build Delivery Infrastructure: Backing Into Digital Cinema**, In-focus Magazine [Internet] April. Retrieved from: <http://www.natoonline.org/infocus/02April/digital.htm> [Accessed June 6, 2010]

Karagosian, M. (2002 b) **'Episode II' Precipitates Assumptions: Are We There Yet?**, In Focus Magazine [Internet] July. Retrieved from: <http://www.natoonline.org/infocus/02July/digital.htm> [Accessed June 6, 2010]

Karagosian, M. (2002 c) **Small Steps and Standards: The American View Part II**, In Focus Magazine [Internet] March. Retrieved from:  
<http://natoonline.org/infocus/02March/digital.htm> [Accessed June 6, 2010]

Karagosian, M. (2003) **Introduction to Digital Cinema**, Karagosian MacCalla Partners [Internet]. Retrieved from:  
[http://mkpe.com/publications/digital\\_cinema/insasia/introduction\\_to\\_dc.php](http://mkpe.com/publications/digital_cinema/insasia/introduction_to_dc.php) (published in the December 2003 issue of INS Asia Magazine) [Accessed June 6, 2010]

Karagosian, M. (2004) **Quality in Digital Cinema**, MKPE [Internet]. Retrieved from:  
[http://www.mkpe.com/publications/digital\\_cinema/insasia/quality\\_in\\_dc.php](http://www.mkpe.com/publications/digital_cinema/insasia/quality_in_dc.php) (Also published in the August 2004 issue of INS Asia Magazine) [Accessed June 6, 2010]

Karagosian, M. (2005) *Theatre Systems*. In Swartz, C.S. (ed) **Understanding Digital Cinema**, London, Focal Press. pp. 257-278.

Kay, J. (2008) **NATO welcomes digital agreement between five studios, exhibitors**, Screen Daily [Internet]. Retrieved from <http://www.screendaily.com/nato-welcomes-digital-agreement-between-five-studios-exhibitors/4041165.article> [Accessed June 6, 2010]

Kern, P. (n.d.) **The European Union and Cinema**, Skillset [Internet]. Retrieved from:  
[http://www.skillset.org/film/knowledge/article\\_5094\\_1.asp](http://www.skillset.org/film/knowledge/article_5094_1.asp) [Accessed June 6, 2010]

Kienzle, C. (2003) **A Global view of D-Cinema**, Post Magazine [Internet] October 01. Retrieved from:  
<http://www.postmagazine.com/ME2/Audiences/dirmod.asp?sid=&nm=&type=Publishing&mod=Publications%3A%3AArticle&mid=8F3A7027421841978F18BE895F87F91&tier=4&id=DB634B83D5024F9D8394B4AE10E1AF54&AudID=All%20E%2DNewsletters> [Accessed June 6, 2010]

Kinemacolor The first successful color system (n.d.) **Kinemacolor The first successful color system**, WideScreen Museum [Internet]. Retrieved from:  
<http://www.widescreenmuseum.com/oldcolor/kinemaco.htm> [Accessed June 6, 2010]

King, G. (2002) **New Hollywood Cinema: An Introduction**. London, IB Tauris Publishers

Kirsner, S. (2008) **Inventing The Movies: Hollywood's Epic Battle Between Innovation And The Status Quo, From Thomas Edison To Steve Jobs**. Boston, CinemaTech Books.

Kittler, F.A. (1999) **Gramophone, Film, Typewriter: Translated with an Introduction by Geoffrey Winthrop-Young and Michael Wutz**. Sanford, Sanford University Press.

Klimek, M. (1997) **Discovering Curves and Surfaces With Maple**. New York, Springer-Verlag.

Kodak unveils d-cinema operating system (2003) **Kodak unveils d-cinema operating system**, Screen Digest [Internet] March. Retrieved from:  
<http://www.accessmylibrary.com/article-1G1-99004267/kodak-unveils-d-cinema.html>  
[Accessed June 6, 2010]

Kracauer, S. and Gazetas A. (2000) **An Introduction to World Cinema**. Jefferson, McFarland & Company.

Ku, R.S.R (2002) **The Creative Destruction of Copyright: Napster and the New Economics of Digital Technology**, Social Science Research Network [Internet]. Retrieved from: [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=266964](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=266964) [Accessed June 6, 2010]

Laing, D. (2003) *Sony Music Entertainment*. In Shepherd, J. Horn, D. & Laing D. (ed) **Continuum Encyclopedia of Popular Music of the World: Volume One - Media, Industry and Society**. London, Continuum. pp.634-635.

Landmark Theatres and Microsoft (2003) **Landmark Theatres and Microsoft Create the Largest Digital Cinema Circuit in the United States**, Microsoft [Internet] April 03. Retrieved from: <http://www.microsoft.com/presspass/press/2003/apr03/04-03LandmarkTheatresPR.msp> [Accessed June 6, 2010]

Larson, C.U. (2010) **Persuasion: Reception and Responsibility, 12th Edition**. Boston, Wadsworth Cengage Learning.

Lawson, M. (2005) **Equal but different**, The Guardian [Internet]. Retrieved from: <http://www.guardian.co.uk/film/2005/apr/30/media.television>

Lee, Cheon-Yeol & Lee, Chang-Ho (1997) **Computer system having video cassette recorder incorporated therein**, Free Patents OnLine [Internet] Retrieved from: <http://www.freepatentsonline.com/6134376.html> [Accessed June 6, 2010]

Lester, P.M. (2006) **Visual Communication: Images With Messages, 4th Edition**. London, Thomson Learning.

Lew M. (2004) **Live Cinema: Designing an Instrument for Cinema Editing as a Live Performance**, MIT Media Lab [Internet] Retrieved from: <http://alumni.media.mit.edu/~lew/research/livecinema/Live%20Cinema%20NIME%202004.pdf> [Accessed June 6, 2010]

Lewis, J. (ed.) (2002) **The End of Cinema as We Know It: American Film in the Nineties**, Pluto Press.

Lines of Resolution (2003) **Lines of Resolution- DCI's Ordway Talks 2K-4K**, NATO [Internet] April. Retrieved from: <http://www.natoonline.org/infocus/03April/digital.htm> [Accessed June 6, 2010]

Lister, M. (2003) **New Media: A Critical Introduction**. London, Routledge

Lister, M., Dovey, J., Giddings, S., Grant, I., Kelly, K. (2009) **New Media A Critical Introduction Second Edition**. London, Routledge

LitePro 580 user's Guide (n.d.) **LitePro 580 user's Guide: Appendix**, In Focus [Internet]. Retrieved from: [http://www.infocus.com/service/tech\\_library/user\\_guides/pdf/580/580eappendix.pdf](http://www.infocus.com/service/tech_library/user_guides/pdf/580/580eappendix.pdf) [Accessed June 6, 2010]

Live 3D sport plan for US cinemas (2006) **Live 3D sport plan for US cinemas**, British Broadcasting Corporation [Internet] Retrieved from:

<http://news.bbc.co.uk/1/hi/entertainment/4842344.stm> [Accessed June 6, 2010]

Low, R. (1996) **The history of British Film - Volume vi**. London, Routledge.

Lusted, D. (1991) **The Media Studies Book: a guide for teachers**. Abingdon, Routledge.

Ma, H. & Shin, K.G. (2006) **Multicast Video on Demand Services**, Association for Computing Machinery [Internet]. Retrieved from:

<http://www.acm.org/sigs/sigcomm/ccr/archive/2002/jan02/ccr-200201-ma.pdf>  
[Accessed June 6, 2010]

Mackay, H. & O'Sullivan, T. ed. (1999) **The Media Reader: Continuity and Transformation**. London, Sage.

Mackenzie, I. (2006) **Europe gets glimpse of HD future**, BBC [Internet] Retrieved from: <http://news.bbc.co.uk/1/hi/technology/5335870.stm> [Accessed June 6, 2010]

Major Distribution Companies (n.d.) **Major Distribution Companies of the Motion Picture Industry**, Duke University [Internet]. Retrieved from:

<http://www.soc.duke.edu/~s142tm05/corporate.htm> [Accessed June 6, 2010]

Manovich, L. (2001) **The Language of New Media**. London, The MIT Press.

Manovich, L. (2002) *Old Media as New Media: Cinema*. In Harries, D. (ed.) **The New Media Book**. London, British Film Institute. pp.210-218.

Marks, M. (2000) *Music, Drama, Warner Brothers: The Case of Casablanca and The Maltese Falcon*. In Buhler, J. Flinn, C. Nuemeyer, D. (ed) **Music and Cinema**.

Hanover, University Press of New England. pp. 161-186.

- Marlowe C. (2002) **Panel: Who's Going To Pay For The Digital Evolution?**, AllBusiness [Internet] January 28. Retrieved from:  
<http://www.allbusiness.com/services/motion-pictures/4880232-1.html> [Accessed June 6, 2010]
- Martin-Lanuza, M. (2008) **Research and Development Projects: Funding Opportunities Through the European Union**, Croatian Information Technology Society (HIZ) [Internet]. Retrieved from:  
<http://www.hiz.hr/icttrain/content/trainings/16092008+A+Glance+to+International+Funding+instruments.l.ppt> [Accessed June 6, 2010]
- McCarthy T. (1999) **Digital cinema is the future ... or is it?** [Internet] Variety. Retrieved from:  
<http://www.variety.com/article/VR1117503451.html?categoryid=5&cs=1> [Accessed June 6, 2010]
- McCarthy, A. (2001) **Ambient Television - visual culture and public space**. Durham and London, Duke University Press
- McKellen, I. (2000) **Rasputin: Words, Ian McKellen** [Internet]. Retrieved from:  
<http://www.mckellen.com/cinema/rasputin/notes.htm> [Accessed June 6, 2010]
- McLean, D.F. (2000 a) **The Television Age**, TV Dawn [Internet]. Retrieved from:  
[http://www.tvdawn.com/files/TVAge\\_web.PDF](http://www.tvdawn.com/files/TVAge_web.PDF) [Accessed June 6, 2010]
- McLean, D.F. (2000 b) **Restoring Baird's Image**, London, The Institute of Electrical Engineers.
- McLuhan, M. & McLuhan. E. (1988) **Laws of Media: The New Science**. Toronto, University of Toronto Press.
- McLuhan, M. (1964) **Understanding media: The extensions of man. 2nd edition**. New York, Mentor.

McQuire, S. (1998) **Visions of Modernity: Representation, Memory, Time and Space in the Age of the Cinema**. London, Sage.

Mead, B. (2010) **Re: No. of Digital Screens in the world**. E-mail to Author (S. Walker) 12 July.

Meehan, E.R., Mosco V. & Wasko J (1994) *Rethinking Political Economy: Change and Continuity*. In Levy, M.R. & Gurevitch M. (eds) **Defining Media Studies – Reflections on the Future of the Field**. Oxford, Oxford University Press.

Mellor, D. (2000 a) **A Sound Person's Guide to Video**, Oxford, Focal Press.

Mellor, D. (2000 b) **The Mighty Eidophor, A Sound Persons Guide to Video** [Internet]. Retrieved from:  
<http://web.archive.org/web/20071123082911/www.spgv.com/columns/eidophor.html>  
[Accessed June 6, 2010].

Membership (n.d.) **Membership**, ITU, [Internet] Retrieved from:  
<http://www.itu.int/net/about/membership.aspx> [Accessed June 6, 2010]

Membership Application Form (n.d.) **Membership Application Form**, NATO [internet] Retrieved from: [http://www.natoonline.org/Membership\\_Application.pdf](http://www.natoonline.org/Membership_Application.pdf)  
[Accessed June 6, 2010]

Mendrala, J, (2001) **2001 SMPTE Seminar, The Cinema - Now and the Future**, Tech-Notes [Internet] May. Retrieved from: [http://www.tech-notes.tv/Archive/tech\\_notes\\_080.htm](http://www.tech-notes.tv/Archive/tech_notes_080.htm) [Accessed June 6, 2010]

Meyrowitz, J. (1993) *Images of Media: Hidden Ferment - and Harmony - in the Field*. In Levy, M.R. & Gurevitch M. (ed.) **Defining Media Studies: Reflections on the Future of the Field**. Oxford, Oxford University Press. pp.63-74.

- Mignardi, M.A. (1994) **Digital Micromirror Array for Projection TV**, Texas Instruments [Internet]. Retrieved from: [http://focus.ti.com/download/dlpdmd/113\\_Digital\\_Micromirror\\_Array\\_Projection\\_TV.pdf](http://focus.ti.com/download/dlpdmd/113_Digital_Micromirror_Array_Projection_TV.pdf) [Accessed June 6, 2010]
- Miller, D. (1995) *Theories of Consumption in Media Studies*. In Miller, D. (ed) **Acknowledging consumption: a review of new studies**. London, Routledge, pp. 293-324
- Miller, L. (1994) *Evidence for a British Film Noir Cycle*. In Dixon, W. W. (ed) **Re-Viewing British Cinema, 1900-1992: Essays and Interviews**. Albany, State University of New York Press. pp. 155-164.
- Miller, M. (1999) **The Complete Idiot's Guide to Fixing Your #S%@ PC Problems**. Indianapolis, Alpha Books.
- Millerson, G & Owens, J. (2009) **Television Production, 14th Edition**. London, Focal Press.
- Minns, A. (2004) **UK Film Council offers digital projection funding for film clubs**, Screen Daily [Internet] March 8. Retrieved from: <http://www.screendaily.com/uk-film-council-offers-digital-projection-funding-for-film-clubs/4017703.article> [Accessed June 6, 2010]
- Missions (n.d.) **Missions**, Groupe de Travail Cinéma Numérique [Internet]. Retrieved from: <http://www.cnc.fr/Site/Template/T7.aspx?SELECTID=2062&id=1325&t=3> [Accessed June 6, 2010]
- Mitchell, K. (2004) **Screen Test: Can digital projection handle the work of some of Hollywood's top cinematographers?**, Kerrie Mitchell [Internet]. Retrieved from: [http://kerriemitchell.com/article\\_screentest.html](http://kerriemitchell.com/article_screentest.html) (Published in the Spring 2004 issue of FilmMaker Magazine) [Accessed June 6, 2010]

Mitchell, L. (2009) **The Commissioners Message**, The Cape Film Commission [Internet]. Retrieved from: <http://www.capefilmcommission.com/> [Accessed June 6, 2010]

Mitsubishi makes world's 1st (2006) **Mitsubishi makes world's 1st laser-based rear projection TV**, Digital TV Design Line [Internet] February 20. Retrieved from: <http://www.digitaltvdesignline.com/products/180204821> [Accessed June 6, 2010]

Moisander, J. & Valtonen, A. (2006) **Qualitative marketing research: a cultural approach**. London. Sage.

Monaco, J. (2000) **How to Read a Film: 3rd Edition**. Oxford, Oxford University Press

Morley, S. A. Thyagarajan, K. S. and Irvine, A. C. (2000) **Balancing Technology in Digital Cinema Systems**, Qualcomm [Internet] Retrieved from: <http://www.developingforbrew.com/digitalcinema/pdf/smpte2000.pdf> [Accessed September 28 2006]

Morley, S. A. (2005) **Re: Digital Cinema Papers**. E-mail to author (S. Walker) May 25.

Mullan, B. (1997) **Consuming Television**, London, Blackwell Publishing.

Multimedia Projectors (2008) **Multimedia Projectors**, Exodus Info Tech [Internet] Retrieved from: [http://www.exodusinfotech.com/html/products\\_visual\\_projectors.html](http://www.exodusinfotech.com/html/products_visual_projectors.html) [Accessed June 6, 2010]

Mundell, I. (2004) **"Rouch Isn't Here, He Has Left" A Report on Building Bridges: The Cinema of Jean Rouch**, Senses of Cinema [Internet] November. Retrieved from: [http://archive.sensesofcinema.com/contents/festivals/05/34/jean\\_rouch\\_conference.html](http://archive.sensesofcinema.com/contents/festivals/05/34/jean_rouch_conference.html) [Accessed June 6, 2010]

Nayer, P.K. (2010) **An Introduction to New Media and Cybercultures**. Chichester, Wiley-Blackwell.

Negroponte, N. (1995) **Being Digital**. New York, Vintage

Nelson Reinsch, P. (1999) **Time Code**, Pop Matters [Internet] Retrieved from:  
<http://www.popmatters.com/film/reviews/t/time-code.shtml> [Accessed June 6, 2010]

Nickell, J.A. (1999) **The Dawn of Digital Movies?**, Wired News [Internet] May 5.  
Retrieved from: <http://www.wired.com/news/politics/0,1283,19501,00.html> [Accessed  
June 6, 2010]

Noam, E. M. (2009) **Media Ownership and Concentration in America**. Oxford,  
Oxford University Press.

Noll, A.M. (1997) **Highway of Dreams: A Critical View Along the Information  
Superhighway**. London, Lawrence Erlbaum Associates.

NORDIC Norway's Digital Interoperability in Cinemas (2006) **NORDIC Norway's  
Digital Interoperability in Cinemas - Quarterly activity report from August 1 to  
October 21, 2006**, Docstoc [Internet]. Retrieved from:  
<http://www.docstoc.com/docs/3398605/smartjog> [Accessed June 6, 2010]

Norton, T.J (2002) **Sony Grand Wega KF-60DX100 rear projection TV**, Ultimate  
AV Magazine [Internet] July. <http://www.ultimateavmag.com/rearprojectiontvs/41/>  
[Accessed June 6, 2010]

Nu Metro's Montecasino Flagship (2007) **Nu Metro's Montecasino Flagship Cinema  
in South Africa Selects Christie CP2K**, Christie Digital [Internet] Spring, p.7.  
Retrieved from: [http://www.christiedigital.com/NR/rdonlyres/A88D024A-4A88-4AD2-  
9360-AB80895D42AB/0/christieKinoNotes\\_spring2007.pdf](http://www.christiedigital.com/NR/rdonlyres/A88D024A-4A88-4AD2-9360-AB80895D42AB/0/christieKinoNotes_spring2007.pdf) [Accessed June 6, 2010]

Ochica, D. (2004) *Entertainment Technologies: Past, Present and Future*. In Squire,  
J.E. (ed.) **The Movie Business Book - 3rd Edition**. New York, Fireside. pp. 498-530.

Ornstein, S.I. (2002) *Motion Pictures: Competition, Distribution and Efficiencies*. In  
Duetsch, L.L (ed) **Industry Studies - Third Edition**. New York, M.E. Sharpe. pp.263-  
288.

O'Sullivan, T. (1998). *Nostalgia, Revelation and Intimacy: tendencies in the Flow of Modern Popular Television*. In Geraghty, C. & Lusted D. (eds.) **The Television Studies Book**, London, British Film Institute. pp.198-209.

Owen, B.M. (1999) **The Internet Challenge to Television**. London, Harvard University Press.

Padjen, R., Keefer, L., Thurston, S., Bankston, J., & Flannagan, M.E. (2001) **Cisco AVVID and IP Telephony Design & Implementation**. Rockland MA, Syngress Publishing.

Panasonic Announces New Wide Screen (2006) **Panasonic Announces New Wide Screen 1-Chip DLP Based Projectors For Viewing of Movie Pre-Shows**, Panasonic [Internet] March 13. Retrieved from:  
<http://www.dcinematoday.com/dc/pr.aspx?newsID=463> [Accessed June 6, 2010]

Panorama of the European Union (n.d.) **Panorama of the European Union**, Europa [Internet]. Retrieved from: [http://europa.eu/abc/panorama/index\\_en.htm](http://europa.eu/abc/panorama/index_en.htm) [Accessed June 6, 2010]

Pearson, R.E. (2004) *The Menace of The Movies - Cinema's Challenge to The Theater in the Transitional Period*. In Keil, C. & Stamp, S. (ed.) **American Cinema's Transitional Era - Audiences, Institutions, Practices**. California, University of California Press. pp. 315-331.

Perenson, M.J. (2001) **Until Studios And Exhibitors See Eye To Eye, The Future Of Digital Cinema Remains Grainy**, All Business [Internet] June 19. Retrieved from:  
<http://www.allbusiness.com/services/motion-pictures/4772813-1.html> [Accessed June 6, 2010]

Perse, E.M. (2001) **Media effects and Society**. New Jersey, Lawrence Earlbaum Associates.

- Pesce, M. (2004) **Redefining Television**, Mindjack [Internet] May 17. Retrieved from: <http://www.mindjack.com/feature/redefiningtv.html> [Accessed June 6, 2010]
- Plunkett, J. W. (2006) **Plunkett's E-Commerce & Internet Business Almanac 2006: Market Research, Trends and Statistics**. Houston, Plunkett Research, Ltd.
- Powell, E. (2000 a) **Amazing Home Theater: The JVC DLA-G11U**, Projector Central [Internet] September 01. Retrieved from: [http://www.projectorcentral.com/jvc\\_g11.htm](http://www.projectorcentral.com/jvc_g11.htm) [Accessed June 6, 2010]
- Powell, E. (2000 b) **InFocus LP350 vs. Sony VPL-VW10HT: Comparison review of two popular projectors for Home Theater**, Projector Central [Internet] October 20. Retrieved from: [http://www.projectorcentral.com/lp350\\_vw10ht.htm](http://www.projectorcentral.com/lp350_vw10ht.htm) [Accessed June 6, 2010]
- Production Network Experiment (n.d) **Production Network Experiment**, Telecommunications Policy Review Panel [Internet]. Retrieved from: [http://www.telecomreview.ca/epic/internet/intprp-gecert.nsf/vwapj/Crawley\\_Pat\\_-\\_PNE2\\_\(e-cinema\).doc/\\$FILE/Crawley\\_Pat\\_-\\_PNE2\\_\(e-cinema\).doc](http://www.telecomreview.ca/epic/internet/intprp-gecert.nsf/vwapj/Crawley_Pat_-_PNE2_(e-cinema).doc/$FILE/Crawley_Pat_-_PNE2_(e-cinema).doc) [Accessed June 6, 2010]
- Putman, P.H. (1999) **Digital Cinema: The Studio Perspective Part II**, Digital Content Producer [Internet] November 1. Retrieved from: [http://digitalcontentproducer.com/mag/video\\_digital\\_cinema\\_studio/](http://digitalcontentproducer.com/mag/video_digital_cinema_studio/) [Accessed June 6, 2010]
- Putman, P.H. (2001 a) **A New Path to the Screen**, Sound & Video Contractor [Internet] April 1. Retrieved from: [http://svconline.com/mag/avinstall\\_new\\_path\\_screen/](http://svconline.com/mag/avinstall_new_path_screen/) [Accessed June 6, 2010]
- Putman, P.H. (2001 b) **The Mirror Has Two Faces**, Sound and Video Contractor [Internet] July 01. Retrieved from: [http://www.svconline.com/mag/avinstall\\_mirror\\_two\\_faces/index.html](http://www.svconline.com/mag/avinstall_mirror_two_faces/index.html) [Accessed June 6, 2010]

Putman, P.H. (2003) **Where do We go from Here?**, Sound and Video Contractor [Internet] May 01. Retrieved from:  
[http://www.svconline.com/mag/avinstall\\_go/index.html](http://www.svconline.com/mag/avinstall_go/index.html) [Accessed June 6, 2010]

Qualcomm Grants Development License (2001) **Qualcomm Grants Development License to Teranex for Image Compression Technology**, All Business [Internet] April 23. Retrieved from: <http://www.allbusiness.com/media-telecommunications/movies-sound-recording-movie/6062287-1.html> [Accessed June 6, 2010]

Raney, A.A., Smith, J.K & Baker, K. (2006) *Adolescents and the Appeal of Video Games*. In Vorderer, P. & Bryant, J. (ed) **Playing Video Games - Motives, Responses, and Consequences**. New Jersey, Lawrence Earlbaum Associates. pp.191-209.

Rea, P.W. & Irving, D.W. (2006) **Producing and Directing the Short Film and Video- Third Edition**. Oxford, Focal Press.

Regal Entertainment Group (2003) **Regal Entertainment Group Brings Quartet of Hi-Def MLS Contests to Big Screen**, All Business [Internet] May 28 Retrieved from:  
<http://www.allbusiness.com/media-telecommunications/movies-sound-recording-movie/5792415-1.html> [Accessed June 6, 2010]

Rickitt, R. (2000) **Special Effects: The History and Techniques**, London, Virgin Publishing

Riordan, J. & Krüger A. (2003) **European Cultures in Sport: Examining the Nations and Regions**, Portland, Intellect Books.

Romney, J. (2004) Film: **There's pulp. And then there's... pulp!**, The Independent [Internet] September 19. Retrieved from: <http://www.independent.co.uk/arts-entertainment/films/reviews/collateral-15-547028.html> [Accessed June 6, 2010]

Rose, J. (2003) **'80 Fun Minutes': Muller and Bonnitt on Mau Mau**, GreenCinea.

[Internet] September 15. Retrieved from:

<http://www.greencine.com/article?action=view&articleID=93&pageID=178> [Accessed June 6, 2010]

Rosen, P. (1993) *Document and Documentary; On the Persistence of Historical Concepts*. In Renov, M. (ed.) **Theorizing Documentary**. London, Routledge, pp.58-89.

SA Digital Cinema Era Launched (2007) **SA Digital Cinema Era Launched**, Screen Africa [Internet] January, p.43. Retrieved from:

[http://www.screenafrica.com/download\\_files/latest\\_edition/pdfs/SCAF-Jan07\(31-46\)\\_Web.pdf](http://www.screenafrica.com/download_files/latest_edition/pdfs/SCAF-Jan07(31-46)_Web.pdf) [Accessed June 6, 2010]

Sabin, R. (2000) **The Movies' Digital Future Is in Sight and It Works**, Carnegie Mellon University [Internet]. Retrieved from:

[http://www.cs.cmu.edu/afs/andrew/scs/cs/15-463/2001/pub/www/digital\\_movies.html](http://www.cs.cmu.edu/afs/andrew/scs/cs/15-463/2001/pub/www/digital_movies.html) [Accessed June 6, 2010]

Salt, B. (1992) **Film Style & Technology: History & Analysis - 2nd Edition**, Starword.

Savlov, M. (1998) **The First Broadcast**, Wired News [Internet] October 23. Retrieved from: <http://www.wired.com/news/culture/1,15781-0.html> [Accessed June 6, 2010]

Schatzkin, P. (2002) **The Boy Who Invented Television: A Story of Inspiration, Persistence and Quiet Passion**. Silver Spring- MD, TeamCom Books.

Schatzkin, P. (n.d.) **The Farnsworth Chronicles - Part 11 'Tears in his eyes'**, Farnovision.com [Internet]. Retrieved from: <http://www.farnovision.com/chronicles/tfc-part11.html> [Accessed June 6, 2010]

Schenk, S. (2001) **Digital Non-Linear Desktop Editing**, Hingham Massachusetts, Charles River Media Inc.

Schiffman, B. (2000) **Movie Theaters Stuck in Stone Age**, Forbes [Internet] September 9. Retrieved from: <http://www.forbes.com/2000/09/23/0923newmedia.html> [Accessed June 6, 2010]

'Schlieren' (n.d.) '**Schlieren**', The American Heritage Dictionary of the English Language, Fourth Edition [Internet]. Retrieved from: <http://dictionary.reference.com/browse/schlieren> [Accessed June 6, 2010]

Schumann, R. (2005) *Security and Packaging*. In Swartz, C.S. (ed.) **Understanding Digital Cinema: A Professional Handbook**. Oxford, Focal Press. pp. 149-181.

Schwartz, R. (2001) **Noir, Now and Then: Film Noir Originals and Remakes (1944-1999)**. London, Greenwood Publishing Group

Scott, A. J. (2004) **On Hollywood: The Place, The Industry**. Princeton, Princeton University Press.

Screen Digest Report (2002) **Screen Digest Report on the Implications of Digital Technology for the Film Industry**, Department of Culture Media and Sport [Internet] September. Retrieved from: [http://www.culture.gov.uk/PDF/Screen\\_Digest\\_Report.pdf](http://www.culture.gov.uk/PDF/Screen_Digest_Report.pdf) [Accessed June 6, 2010]

Seymour, M. (2008) **Art of Digital 3D Stereoscopic Film**, Fxguide [Internet] 25 March. Retrieved from: <http://www.fxguide.com/article471.html> [Accessed June 6, 2010]

Sharp History: 1988 ~ 1989 (n.d.) **Sharp History: 1988 ~ 1989 Optoelectronics, the Core Technology**, Sharp [Internet]. Retrieved from: [http://sharp-world.com/corporate/info/his/h\\_company/1988\\_1989/index.html](http://sharp-world.com/corporate/info/his/h_company/1988_1989/index.html) [Accessed June 6, 2010]

Silverman, J. (1999) **Sundance Enters the Digital Era**, Wired [Internet] January 21. Retrieved from: <http://www.wired.com/news/culture/0,1284,17440,00.html> [Accessed June 6, 2010]

Simons, J. (2002) *New Media as Old Media: Cinema*. In Harries, D. (ed.) **The New Media Book**. London, British Film Institute. pp.231-241.

Singla R.K. (2006) **Business Studies**. New-Dehli. V.K. India Enterprises.

Sitney, P.A. (2002) **Visionary Film.: The American Avant-Garde, 1943-2000**, Oxford, Oxford University Press.

Sklar, R. (1975) **Movie-made America: A Cultural History of American Movies**. New York, Vintage Books.

Sky Guide Explained (n.d.) **Sky Guide Explained - Sky Box Office - EPG Version 3.4.4b**, Astra 2D [Internet]. Retrieved from: <http://www.astra2d.com/boxoffice.html> [Accessed June 6, 2010]

Slocombe, M. & Perry, S. (2005) **World's First MPEG-4/AVC Broadcast on HomeChoice**, Digital Lifestyles [Internet] April 20. Retrieved from: [http://digital-lifestyles.info/display\\_page.asp?section=platforms&id=2122](http://digital-lifestyles.info/display_page.asp?section=platforms&id=2122) [Accessed June 6, 2010]

Smith, B. (2003) **The D-Cinema Debate: SMPTE's Digital Cinema Summit**, Techtribes [Internet] April 11. Retrieved from: <http://www.techtribes.ch/article.php?story=20030411001530777> [Accessed June 6, 2010]

Smith, S.J. (2005) **Children's Cinema And Censorship: From Dracula to the Dead End Kids**. London, I.B.Tauris.

Solomon, S. J. (1972) **The Film Idea**. New York, Harcourt Brace Jovanovich.

Soneira , R. (2006) **LCoS Display Technology Shootout**, ExtremeTech [Internet] January 31. Retrieved from: <http://www.extremetech.com/article2/0,1697,1917529,00.asp> [Accessed June 6, 2010]

- Sperling, N. (2003) **Future of digital cinema tied to technical standards**, The Hollywood Reporter [Internet], February 5. Retrieved from:  
[http://www.hollywoodreporter.com/thr/article\\_display.jsp?vnu\\_content\\_id=1809391](http://www.hollywoodreporter.com/thr/article_display.jsp?vnu_content_id=1809391)  
[Accessed June 6, 2010]
- Spigel, L. (1992) **Make Room for TV: Television and the Family Ideal in Postwar America**. Chicago, University of Chicago Press.
- Srivastava, J., Wang, J.H. Lim, E.P., & Hwang, S.Y. (2002) *A Case for Analytical Customer Relationship Management*. In Chen, M.S Yu, P.S. & Liu, B. (eds.) **Advances in Knowledge Discovery & Data Mining**. London, Springer. pp.14-27.
- Stam, R. (2000) **Film Theory: An Introduction**. Oxford, Blackwell
- Storaro, V. (n.d.) **What is UNIVISIUM?**, International Cinematographers Guild [Internet] Retrieved from:  
[http://www.cameraguild.com/interviews/chat\\_storaro/storaro\\_univi.htm](http://www.cameraguild.com/interviews/chat_storaro/storaro_univi.htm) [Accessed June 6, 2010]
- Strategy (n.d.) **Strategy**, UK Film Council [Internet]. Retrieved from:  
<http://www.ukfilmcouncil.org/strategy> [Accessed June 6, 2010]
- 'Stuff' (n.d.) **'Stuff'**, Oxford Dictionaries [Internet]. Retrieved from:  
[http://www.askoxford.com/concise\\_oed/stuff?view=uk](http://www.askoxford.com/concise_oed/stuff?view=uk) [Accessed June 6, 2010]
- Sullivan, L. (ed) (2009) **The SAGE Glossary of the Social and Behavioral Sciences**. London, Sage.
- Sun, P. (2000) **The Future of Movies: Digital Cinema Is Coming... To A Theatre Near You, Part 4**, Pushtoshare.com -Widescreen Review [Internet]. Retrieved from:  
<http://www.pushtoshare.com/digitalcinema/pdf/widescreen.pdf> [Accessed October 13, 2006]

Support Funding (2008) **Support Funding from the Swedish Film Institute**, Swedish Film Institute [Internet] August 21. Retrieved from: <http://www.sfi.se/en-gb/English/funding/> [Accessed June 6, 2010]

Surman, D. (2003) **CGI Animation: Pseudorealism, Perception and Possible Worlds**, Game Career Guide [Internet]. Retrieved from: <http://www.gamecareerguide.com/education/theses/20040928/DavidSurmanThesis.pdf> [Accessed June 6, 2010]

Svanberg, L (2001) **The Future of Digital Cinema in Europe**, Faculdade de Engenharia da Universidade do Porto [Internet] November 9. Retrieved from: <http://paginas.fe.up.pt/~mandrade/tvd/2003/additionalDocs/digitalCinemaInEurope.pdf> [Accessed September 28, 2006]

Swann, P. (2000) **TV dot Com: The Future of Interactive Television**. New York, TV Books.

Symes, P. (2005) *Compression for Digital Cinema*. In Swartz, C.S. (ed.) **Understanding Digital Cinema: A Professional Handbook**. Oxford, Focal Press. pp. 121-148.

Tamaki, J. (2006) **Q&A; Exec Has Positive Outlook for Digital Movie Delivery**, The Los Angeles Times [Internet] January 16. Retrieved from: <http://articles.latimes.com/2006/jan/16/business/fi-digicin16> [Accessed June 6, 2010]

Taub, E. (2003) **Digital Projection of Films Is Coming. Now, Who Pays?**, The New York Times [Internet] October 13. Retrieved from: <http://www.nytimes.com/2003/10/13/business/media/13projector.html?ex=1381377600&en=16b3afe09b5a316e&ei=5007&partner=USERLAND> [Accessed June 6, 2010]

'Television' (n.d.) **'Television'**, The American Heritage Dictionary of the English Language, Fourth Edition [Internet]. Retrieved from: <http://dictionary.reference.com/browse/television> [Accessed June 6, 2010]

Texas Instruments DLP Cinema (2004) **Texas Instruments DLP Cinema Utilized for Premiere of Universal's The Bourne Supremacy**, Digital Cinema Today [Internet] July 15. Retrieved from: <http://www.dcinematoday.com/dc/PR.aspx?newsID=135> [Accessed June 6, 2010]

The Film Agreement (2008) **The Film Agreement**, Swedish Film Institute [Internet] November 17. Retrieved from: <http://www.sfi.se/en-gb/About-SFI/Verksamhet/The-Film-Agreement/> [Accessed June 6, 2010]

The i-cinema Standard (n.d.) **The i-cinema Standard**, Emerging Pictures [Internet]. Retrieved from: <http://emergingpictures.com/emerging-pictures/about/the-i-cinema-standard/> [Accessed June 6, 2010]

The ITU mission (n.d.) **The ITU mission: bringing the benefits of ICT to all the world's inhabitants**, International Telecommunications Union [Internet] Retrieved from: <http://www.itu.int/net/about/mission.aspx> [Accessed June 6, 2010]

The Truth About Digital Cinema (2009) **The Truth About Digital Cinema**, Filmcontact.com [Internet] August 6. Retrieved from: <http://www.filmcontact.com/south-africa/truth-about-digital-cinema> [Accessed June 6, 2010]

Thompson K. & Bordwell, D. (1994) **Film History: An Introduction**. New York, McGraw-Hill.

Torkildsen, G. (2005) **Leisure and Recreation Management**. New York, Routledge.

Turner In The Multiplexes (2003) **Turner In The Multiplexes: REG Forms Program Alliance With TBS**, In focus Magazine [Internet] February. Retrieved from: <http://www.natoonline.org/infocus/03February/digital.htm> [Accessed June 6, 2010]

UK Film Council to be abolished (2010) **UK Film Council to be abolished**. BBC [Internet], Retrieved from: <http://www.bbc.co.uk/news/entertainment-arts-10761225> [Accessed March 3, 2011]

UNIC (n.d.) **UNIC**, Union International des Cinemas [Internet]. Retrieved from:  
<http://www.unic-cinemas.org/en/> [Accessed June 6, 2010]

UNIC'S position on digital cinema (2005) **UNIC'S position on digital cinema**, NATO [Internet] January/ Retrieved from:  
[http://www.natoonline.org/UNIC'position%20on%20digital%20cinema%20Jan%2005%20\\_J%201\\_.pdf](http://www.natoonline.org/UNIC'position%20on%20digital%20cinema%20Jan%2005%20_J%201_.pdf) [Accessed June 6, 2010]

Useful Definitions (n.d.) **Useful Definitions**, European Commission [Internet]. Retrieved from: [http://ec.europa.eu/delegations/delita/about\\_us/useful\\_definitions.htm#](http://ec.europa.eu/delegations/delita/about_us/useful_definitions.htm#) [Accessed June 6, 2010]

USVO Video Piracy Brief (n.d.) **USVO Video Piracy Brief**, PerfSpot [Internet] Retrieved from: <http://d.scribd.com/docs/2j2eclkjsskd87mpxe2r.pdf> [Accessed June 6, 2010]

van Dommelen, J. & Fithian J. (2003) **NATO and UNIC letter to DCI on Digital Cinema Security Issues**, NATO [Internet], December 18. Retrieved from: <http://www.natoonline.org/DigitalCinemaSecurityLetterv.pdf> [Accessed June 6, 2010]

Vivendi & Convex Join NBC and TBS (2003) **Vivendi & Convex Join NBC and TBS As Providers: CineMedia Launches 'The Twenty' Preshow**, In focus Magazine [Internet] April. Retrieved from: <http://www.natoonline.org/infocus/03April/digital.htm> [Accessed June 6, 2010]

von Sychowski, P. (2000) **Electronic Cinema: The Big Screen Goes Digital**. London, Screen Digest.

von Sychowski, P. (2003 a) **Video killed the cinema star?**, The Hollywood Reporter [Internet] September 26. Retrieved from: [http://www.hollywoodreporter.com/thr/film/feature\\_display.jsp?vnu\\_content\\_id=1987718](http://www.hollywoodreporter.com/thr/film/feature_display.jsp?vnu_content_id=1987718) [Accessed June 6, 2010]

von Sychowski, P. (2003 b) **Digital Cinema Business Models: The Global Outlook**. London, Screen Digest.

von Sychowski, P. (2003 c) **Chip of the Blockbuster**, The Hollywood Reporter [Internet] September 26. Retrieved from:  
[http://www.hollywoodreporter.com/thr/film/feature\\_display.jsp?vnu\\_content\\_id=1987719](http://www.hollywoodreporter.com/thr/film/feature_display.jsp?vnu_content_id=1987719) [Accessed June 6, 2010]

von Sychowski, P. (2003 d) **Pay to Play**, Hollywood Reporter [Internet]. September 26. Retrieved from:  
[http://www.hollywoodreporter.com/thr/film/feature\\_display.jsp?vnu\\_content\\_id=1987715](http://www.hollywoodreporter.com/thr/film/feature_display.jsp?vnu_content_id=1987715) [Accessed June 6, 2010]

von Sychowski, P. (2004) *The Digital Future of Cinema - So Close, and Yet So Far Away*. In Svanberg, L. (ed.) **The EDCF Guide to Digital Cinema Production**. Oxford, Focal Press. pp.133-137.

Wade, N. & Swanston, M. (2001) **Visual Perception: An Introduction - 2nd Edition**. Hove, Psychology Press.

Walk, K. (1998) **How to Write a Comparative Analysis**, Harvard University Writing Centre [Internet]. Retrieved from:  
<http://www.fas.harvard.edu/~wricntr/documents/CompAnalysis.html> [Accessed June 6, 2010]

Walker, S. (2007) *What Is Digital Cinema? ...And What Isn't Digital Cinema?* In **StudentFilmmakers Magazine**, June, pp.10-13.

Watson, N. & Morris, R. (2002) **Specialised Exhibition and Distribution: E-Cinema: A Study for the Film Council**, UK Film Council [Internet]. Retrieved from:  
<http://www.ukfilmcouncil.org.uk/media/pdf/i/r/ECinemaMainReport.pdf> [Accessed June 6, 2010]

Welcome to the Cape Film Commission (n.d.) **Welcome to the Cape Film Commission**, Cape Film Commission [Internet]. Retrieved from:  
<http://www.capefilmcommission.co.za/> [Accessed June 6, 2010]

Welcome to the Internet Site of the European Audiovisual Observatory (n.d.) **Welcome to the Internet Site of the European Audiovisual Observatory**, European Audiovisual Observatory [Internet]. Retrieved from:  
<http://www.obs.coe.int/about/oea/org/index.html> [Accessed June 6, 2010]

Wempen, F. (2001) **Tune Up Your PC in a Weekend – 2nd Edition**. Thomson Course Technology.

What is EDCF? (n.d.) **What is EDCF?**, European Digital Cinema Forum [Internet]. Retrieved from: <http://www.edcf.net/> [Accessed June 6, 2010]

What You Need to Know About Digital Projection (2005) **What You Need to Know About Digital Projection**, Digital Cinema Magazine [Internet]. Retrieved from:  
<http://www.2-pop.com/Cinematographer/Features/article/66170> [Accessed June 6, 2010]

Whitaker, J.C. (1994) **Electronic Displays: Technology, Design, and Applications**. London, McGraw Hill.

Whitaker, J.C. (2001) **Dtv Handbook: The Revolution in Digital Video - 3rd Edition**. London, McGraw-Hill Professional

Who We Are (n.d.) **Who We Are**, National Association of Theater Owners [Internet]. Retrieved from: <http://www.natoonline.org/> [Accessed June 6, 2010]

Why you should join NATO (n.d.) **Why You Should Join NATO**, National Association of Theater Owners [Internet]. Retrieved from:  
<http://www.natoonline.org/whyjoin.htm> [Accessed June 6, 2010]

Wiebe, E. Durepos G. & Mills A.J. (ed.) (2010) **Encyclopaedia of Case Study Research, Volume Two**. London. Sage.

Wildlife, Docs and the Big Screen (2007) **Wildlife, Docs and the Big Screen**, Screen Africa [Internet] October, p.32 Retrieved from:

[http://www.screenafrica.com/download\\_files/latest\\_edition/pdfs/SCAF-Oct07\(15-34\)\\_Web.pdf](http://www.screenafrica.com/download_files/latest_edition/pdfs/SCAF-Oct07(15-34)_Web.pdf) [Accessed June 6, 2010]

Williams, R. (1974) **Television: Technology and Cultural Form**. London, Collins

Williams, R. (1990) **Television Technology and Cultural Form 2nd edition**. London, Routledge

Winokur, M. & Holsinger, B. (2001) **The Complete Idiot's Guide to Movies, Flicks, and Films**. London, Pearson Education.

Winslow, G. (2010) **T-VIPS Launches JPEG 2000 Transport in U.S. : TVG 450 Will Bow at NAB Show in Las Vegas**, Multichannel News [Internet] April 6.

Retrieved from: [http://www.multichannel.com/article/451115-T\\_VIPS\\_Launches\\_JPEG\\_2000\\_Transport\\_in\\_U\\_S\\_.php](http://www.multichannel.com/article/451115-T_VIPS_Launches_JPEG_2000_Transport_in_U_S_.php) [Accessed June 6, 2010]

Winston, B. (1995) *How Are Media Born and Developed?* In Downing, J., Mohammadi, A., & Sreberny-Mohammadi, A. (ed.) **Questioning the Media: a critical introduction, 2nd Edition**. London, Sage. pp. 54-74.

Wollen, P. (2002) **Paris Hollywood: Writings on Film**. London, Verso.

Worsdale, A. (2004) **Ster-Kinekor embraces digital future**, Screen Daily [Internet] February 17. Retrieved from: <http://www.screendaily.com/ster-kinekor-embraces-digital-future/4017361.article> [Accessed June 6, 2010]

Yin, R. K. (2003) **Case Study Research Design and Methods, 3rd edition**. London, Sage.

Yoon S. (1996) *Power Online: A Poststructuralist Perspective on CMC*. In Ess, C. (ed.) **Philosophical Perspectives on Computer-Mediated Communication**. Albany, State University of New York Press. pp. 171-196.

Yoshioka, T. and Ogawa, M. (1998) *Phosphors for Cathode Ray Tubes*. In Shionoya, S., & Yin, W.M. (ed.) **Phosphor Handbook**, London, CRC Press. pp. 445-520.

Young, S.M. Gong, J.J. Van der Stede, W.A. (2009) *Value Creation and the Possibilities for Management Accounting Research in the Entertainment Sector: the United States Motion Picture Industry*. In Hopwood, A.G., Chapman, C.S., & Shields, M.D. (ed.) **Handbook of Management Accounting Research, Volume 3**. Oxford, Elsevier. pp. 1337-1352.

Yull S., Jarvis A., Lawson J. & Smith A. (2005) **Edexcel AS GCE Applied ICT Double Award**. Oxford, Harcourt Heinemann

Zakia, R.D. & Stroebel, L. (ed.) (1993) **Focal Encyclopaedia of Photography - Third Edition**. London, Focal Press.

## Notes

<sup>1</sup> However, the author recognises that no single discourse could be so ‘comprehensive’ that every single contributive theorist gets acknowledgement.

<sup>2</sup> The decision to focus this work on commercially exploited Digital Exhibition was drawn following two discoveries;

- Whilst some commentators consider all types of digital video projection to represent an evolved form television, typically only commercial applications of digital projection are described as being an evolved form of the cinema.
- Indeed, the designator of ‘the cinema’ is broadly considered as describing commercially exploited moving pictures. As Scott McQuire observes: “cinema is usually defined with reference to the celebrated screenings held by the Lumière brothers at the *Grand Café* in Paris on 28 December 1895” (1998, p.3). However, in March 1895, nine months prior to the commercial launch, the Lumière’s had demonstrated their Cinématographe equipment (without charge) to the Societe d'Encouragement all'industrie Nationale.

These discoveries also led the author to question whether it may have been the similarity in the models of commerciality which provided the initial impetus for certain commentators to draw parallels between Digital Exhibition and the cinema. This questions led the author to consider that prevailing definitions of Digital Exhibition (as a form of the cinema) might, have been drawn from a flawed, possibly even commercially biased, methodology – and consequently encouraged further research into the aptness of established interpretations of Digital Exhibition.

<sup>3</sup> Bill Gillham states that, in case study research, “questions *emerge*, and may change radically as you get to know the context at first hand” (2000, p. 17) and further that: “In naturalistic case study research, theorizing *emerges*”, noting that this is because “you cannot usefully theorize in the absence of evidence, or on very little.” (2000, p. 35) [original emphases maintained]

<sup>4</sup> Yin states that ‘every case study’ should “strive to have a general analytic strategy” and describes one such strategy as “setting up a framework based on rival explanations” (2003, p.109). Yin further states of the ‘Explanation Building’ strategy: “To ‘explain’ a phenomenon is to stipulate a presumed set of causal links about it” (2003, p. 120) and: “The gradual building of an explanation is similar to the process of refining a set of ideas” of which, Yin claims, an important aspect is “to entertain other *plausible or rival explanations*.” (2003, p. 122) [original emphasis maintained]

<sup>5</sup> Donald T. Campbell states “I have come to the conclusion that the core of the scientific method is not experimentation per se but rather that strategy connoted by the phrase ‘plausible rival hypotheses’” (2003, p. ix). This strategy, Campbell explains, “includes making explicit other implications of the hypotheses for other available data and reporting how these fit”, and further that, “it also includes seeking out rival explanations of the focal evidence and examining their plausibility” (ibid).

<sup>6</sup> The methodological approach to this study is discussed in greater detail in Chapter Two: Methodological Approach to Study.

<sup>7</sup> Within the ‘Encyclopedia of Case Study Research – Volume 2’, Robert Yin PhD is described, by Elden Wiebe, Gabrielle Durepos and Albert J. Mills (ed.), as “an expert on case study design” (2010, p.288)

<sup>8</sup> It is with regards to this latter point that Gillham adds: “you cannot usefully theorize in the absence of evidence, or on very little” (2000, p. 35).

<sup>9</sup> Yin declares that: “The case study, like other research strategies, is a way of investigating an empirical topic by following a set of prespecified procedures” (2003, p.13).

<sup>10</sup> With specific regards to the contribution to knowledge that this work aims to make, it is also significant to note that, as Yin states of ‘critical case’ studies: “such a study can even help to refocus future investigations in an entire field” (2003, p.40).

<sup>11</sup> According to Gillham: “Framing good questions is the most important part of research procedure” (2000, p.17). Gillham continues, expressing that: “the importance of framing your research directions in the form of *questions* is that you are then driven to consider your *methods*: How would I answer those questions? What information do I need and how would I go about getting it?” (ibid).

<sup>12</sup> Gillham expresses that the ‘development’ of a study’s questions occurs as a ‘continuous strand’, and that this is “in response to your increasingly clear grasp of the issues” (2000, p.96).

<sup>13</sup> See Chapter Three for a discussion around the terms ‘digital cinema’ and ‘other digital stuff’.

<sup>14</sup> See Chapter Three for a comprehensive explanation as to the use of these terms.

<sup>15</sup> See Chapter Three for further analysis of the discourses on ‘Digital Exhibition’ which prompted this proposition.

<sup>16</sup> See Chapter Four for further analysis as to literatures offering definitions of ‘the cinema’

<sup>17</sup> Golding and Murdock state that critical political economy theory “sets out to show how different ways of financing and organizing cultural production have traceable consequences for the range of discourses and representations in the public domain” (2000, p.70)

<sup>18</sup> Further to this, Yin advises that that these ‘causal links’ may be “complex and difficult to measure in any precise manner” (2003, p.120).

<sup>19</sup> As will be seen throughout this thesis, the author uncovered inconsistencies as to what the cinema and television are understood to be - as well as inconsistencies as to what is understood to result in a single phenomenon pertaining to multiple media, and inconsistencies in what constitutes ‘new media’, etc.

<sup>20</sup> A further example of this occurred when the author found that whilst earlier texts offer theories suggesting that the cinema can pertain to the exhibition of short, silent, black and white films within shops and cafés, at least one contemporary theory as to the nature of the cinema presents it as pertaining exclusively to the exhibition of first-run feature films in purpose built venues. When both these theoretical understandings of the cinema were compared to historical accounts, which indicate that the cinema was first experienced in a café, and that the content was silent, black and white, and ran for no longer than a few minutes, then (in the mind of the author at least) the earlier events began to illuminate inadequacies in the later texts. Therefore, the theoretical model of the cinema evident in the earlier texts became the leading lens through which to view the known facts about Digital Exhibition. As such, the interpretation of Digital Exhibition as a form of the cinema (even when pertaining to ‘alternative’ content and venues) was brought into focus.

<sup>21</sup> See N. Garnham (1995) and L. Grossberg (2006) for exemplar texts on the debate around the issue of Cultural Studies vs. Political Economy; however, it should be made clear that the author of this thesis is not, for the most part, concerned with contributing to this debate. As this thesis is aimed at assessing whether ‘established, industrially and politically sourced, definitions of Digital Exhibition faithfully represent the phenomenon’s position within the contemporary media theory framework’ the author has attempted to provide a broad / holistic ‘media theory’ approach to the analysis of Digital Exhibition (and its various established definitions).

The author does examine how the political / economic context of the phenomenon appears to have influenced the categorisation of the phenomenon (e.g. as the cinema, multiple media, etc) as offered by those commentators / institutions with political / economic agendas – i.e. the author adheres to the principles of Political Economy analysis. However, in order to assess whether these potentially disingenuously produced definitions actually represent how the phenomenon ‘should’ be defined (from a ‘media theory’ perspective) the author has also performed a series of comparative analyses around ‘cultural’ elements (such as the forms of content, reactions of audiences to content and social applications) of the case phenomenon and those events which have been claimed as pertaining to the cinema or television, etc.

In his ultimate conclusion the author offers that neither the ‘Cultural Studies’ nor the ‘Political Economy’ approach can provide a definitive answer as to what Digital Exhibition is (or is not). The author concludes that the existence of multiple methods by which to define what the ‘media’ are actually provides evidence that the media do not truly exist as definable artefacts – but pertain to a near infinite series of communication events which can be subjectively (and usefully) grouped together (for analytic purposes) in a near infinite number of ways, i.e. by subjectively weighting the import of a near infinite number of variables – such as economic context or content genre, for example.

<sup>22</sup> According to Yin: “This role of theory development, prior to the conduct of any data collection, is one point of difference between case studies and related methods such as ethnography and ‘grounded theory’” (2003, p.28).

<sup>23</sup> Writing on behalf of the UK government, in July 2010 Jeremy Hunt (Secretary of State for Culture, Olympics, Media and Sport) proposed the abolition of the UK Film Council (2010, p.2).

<sup>24</sup> The Swedish Film Institute (SFI) was founded in 1963 by act of Parliament. According to the SFI website, the funding for this organisation came from an agreement whereby “the Swedish state and the film industry signed an agreement exempting cinemas from the entertainment tax that existed at the time in return for a ten percent levy on cinema admission tickets” (History of the Film Institute, 2008). Whilst this pseudo public funding model presently only accounts for 25% of the organisations funding (ibid), the SFI is still, in essence, a public body. As expressed within SFI literature, “The Board of the Swedish Film Institute Foundation is made up of nine members appointed by the government” (Board and Management, 2008).

According to the organisation’s own website: “The Swedish Film Institute is tasked to encourage Swedish film in a broad context” (Support Funding, 2008).

Furthermore, the aims of the '2006 Film Agreement', to which the SFI are bound, are presented as:

- To support and stimulate the innovation and development of worthwhile film production and the distribution and screening of films throughout Sweden
- To encourage film production to be a dynamic and growing industry
- To improve conditions for women filmmakers
- To promote efforts to suppress illegal dealing in films in all screening formats
- To encourage Swedish film to reflect the country as a whole
- To help Swedish film to reach a wider audience in all screening formats both in Sweden and internationally
- To promote an increase in the number of cinema admissions in Sweden

(The Film Agreement, 2008)

<sup>25</sup> According to the official CNC website this group was "created by the law on 25 October 1946" and is "a public administrative organization, set up as a separate and financially independent entity. The centre comes under the authority of the ministry of culture and communication" (missions, n.d.). According to their own literature, the principal missions of the CNC are (ibid):

- regulatory
- support for the film, broadcast, video, multimedia and technical industries,
- promotion of film and television for distribution to all audiences
- preservation and development of the film heritage

<sup>26</sup> According to the official CST (Commission Supérieure Technique de l'Image et du Son) website:

"On behalf of the National Cinematographic Centre (CNC), the CST is responsible for quality control in cinemas throughout France" (Introduction to the CST, n.d.)

<sup>27</sup> The countries with exhibitors that have joined UNIC are: Germany, Austria, Belgium, Denmark, Spain, Finland, France, United Kingdom, the Netherlands, Italy, Norway, Switzerland, Luxemburg, Israel, Hungary, Ireland, Greece & Turkey. To qualify for 'individual membership' to UNIC, exhibition companies must operate in "at least two European countries" or possesses "at least 5% of their national market" (UNIC, n.d.). With regards to this, within the group's own literatures it is expressed that "most of UNIC's members represent the majority of cinemas in their country" (ibid).

<sup>28</sup> i.e. 'release windows' – the time between a film's various commercial releases (in the cinema, on DVD, on pay-per-view television, etc).

<sup>29</sup> According to ‘European Commission’ literature, this group is “is the executive branch of the European Union. The body is responsible for proposing legislation, implementing decisions, upholding the Union’s treaties and the general day-to-day running of the Union” (Useful Definitions, n.d.).

According to ‘European Union’ (EU) literature, the EU is: “A unique economic and political partnership between 27 democratic European countries” with the aim of bringing “Peace, prosperity and freedom for its 498 million citizens — in a fairer, safer world” (Panorama of the European Union, n.d.)

<sup>30</sup> Referred to as ‘electronic cinema’ .

<sup>31</sup> According to the EAO’s own literatures: “The Observatory is a European public service body with 36 member States and the European Community, represented by the European Commission. It owes its origins to Audiovisual Eureka and operates within the legal framework of the Council of Europe” (Welcome to the Internet Site of the European Audiovisual Observatory, n.d.)

<sup>32</sup> A. Alan Friedberg presents a number of contractual clauses which can affect the intricate negotiations held between the studios and exhibitors when determining the box-office percentage split. For example, Friedberg explains that that the ‘*house allowance*’ clause determines the amount of money an exhibitor may extract from revenues before the remaining is divided up for sharing with the studio (1992, p.356). Friedberg presents that: “a *guarantee* is a non-refundable amount of cash that an exhibitor must pay to a studio, often months before the release date, in order to secure a certain picture” (1992, pp.346-347). Friedberg adds that some studios have added a ‘minimum *per capita*’ clause which “guarantees a minimum amount per admission” for the studios (1992, p.347). Friedberg further expresses that a ‘*holdover*’ clause may also be requested by the studio: “whereunder if the picture continues to perform above a minimum holdover figure...the theater must continue to play it (1992, p.348).

<sup>33</sup> Binet adds that: “Historically, we have also made some revenues sponsoring conventions” and details that: “The final source of income is a return on our investments” (2009).

<sup>34</sup> As reported in ‘Karagosian Named NATO Digital Cinema Consultant’ (2000)

<sup>35</sup> As is shown in the following extract from an EDCF publication, and a definition of 'ODS' from 'Norway's Digital Interoperability in Cinemas' (NORDIC) project (below):

**Alternative content is a perhaps somewhat pejorative term used to describe non-Hollywood content. John Fithian from the North American Exhibitors Association coined the term O.D.S, Other Digital Stuff. It can be describing anything [sic] from reasonably high-budget independent productions to a DV movie or even live transmission of, for example, a football match (Digital Cinema – The EDCF Guide for Early Adopters, 2005, p.17).**

**ODS ('Other Digital Stuff') – Term created by NATO president John Fithian to denote all form of alternative content or non-film entertainment shown in digital cinemas. Typically this includes sports, music concerts, digital advertising, television broadcasts, games and more (NORDIC Norway's Digital Interoperability in Cinemas, 2006).**

<sup>36</sup> According to SMPTE literature, this group "is recognized as the global leader in the development of standards and authoritative practices for film, television, video and multimedia", it is further expressed that: "over 200 Sustaining (Corporate) Members belong to SMPTE" (About us, n.d. c).

<sup>37</sup> Held during the 2003 'National Association of Broadcasters' (NAB) convention.

<sup>38</sup> Whilst after some analysis it can be concluded that Fithian's (and thusly NATO's) stance is that 'alternative content' can pertain to 'digital cinema' – so long as it is of a sufficient image quality, it is not difficult to see how Karagosian might have considered he was presenting NATO's official definition when he expressed his belief that "digital cinema is the art of presenting first-run motion pictures". Although Fithian's discourse strongly suggests that he branded them 'ODS' because of their low image quality, a degree of ambiguity as to the NATO presidents official stance regarding the question of 'alternative content: digital cinema or ODS?' is invoked due to the fact that neither of the Digital Exhibition schemes referred to (i.e. the activities of Regal CineMedia, and Landmark & Microsoft) were initiated in order to present Hollywood feature films. Exacerbating the situation yet further, Dan Diamond, VP of business development at Regal CineMedia seemingly considers that Regal's showing of 'alternative content' *does* negate their right to use the 'digital cinema' designator. Diamond is cited within a paper published by the Canadian 'Telecommunications Policy Review Panel' as stating of Regal's Digital Exhibition projects (which are discussed in Chapter One): "Our intention isn't to become or to state that this is 'digital cinema', We're not doing theatrical releases. We're presenting alternative types of content in movie theaters" (Production Network Experiment, n.d., p.45).

<sup>39</sup> According to the ITU's own literature: "Membership of ITU is open to governments, which may join the Union as Member States, as well as to private organizations like carriers, equipment manufacturers, funding bodies, research and development organizations and international and regional telecommunication organizations" (Membership, n.d.). Furthermore, it is stated on the ITU's own Website: "It is our task to ensure that people around the world can communicate with each other in an efficient, safe, easy and affordable manner. It is our responsibility to be proactive about what the world might need in the future, not just what it needs right now. We will do our utmost to get everyone to work together – government and industry alike – to come up with solutions that work: for sharing knowledge, developing tools, and building and safeguarding networks" (The ITU mission, n.d.).

<sup>40</sup> See Appendix 2: A Fundamental Overview of Digital Exhibition for definitions of '2K', '4K' and HD image resolutions.

<sup>41</sup> "*The Celluloid or Silicon*' road show, which took place in the UK during October and November 2000, set out to challenge the supremacy of celluloid and raise awareness of the new possibilities presented by the emerging e-cinema" (El.pub Analytic No. 3, n.d.).

<sup>42</sup> In addition to expressing that it is a form of the cinema which has, technologically, more in common with television than any other medium.

<sup>43</sup> According to the organisation's own website: "COEUR is a privately funded, not-for-profit foundation, dedicated to promoting Europe as a force for peace, political stability, cultural values and economic progress in the new globalized world" (Home, n.d.)

<sup>44</sup> An on-line publication of the Duke University Sociology Department states that: "The power of the industry is very much dominated in the distribution companies, for the product, the film, can not be completely produced without the finances and influence of the distribution company" (Major Distribution Companies, n.d.). It is further expressed within this same article that: "These vast entertainment conglomerates very much dominate the industry because they do have more clout with theatre owners" (ibid).

<sup>45</sup> As detailed above, Edward Jay Epstein identifies that presently the studios' distribution arms handle films produced by independent and foreign filmmakers, at a typical charge of one third of all the revenues from theatres (2005, p.115).

<sup>46</sup> According to official NATO literature, in order to qualify for membership: "Applicant must be either an individual, partnership, corporation or other business entity engaged on a 'for profit' basis in the ownership and/or operation of one or more exhibition facilities" (Membership Application Form, n.d.).

<sup>47</sup> The term 'film rental' refers to the negotiated price paid by the exhibitor to the distributor.

<sup>48</sup> Friedberg adds that: “Usually the theater has choices of other pictures waiting to open and be slotted in, perhaps from another studio or an independent distributor” (1992, p.349).

<sup>49</sup> According to S. Mark Young, James J. Gong and Wim A. Van der Stede: “in dollar terms, moviegoers in the US still account for about 44% of global box office” (2009, p.1346). Furthermore Young et al find that: “The amount that the premium channel pays per movie is based on domestic box office, and can go as high as \$20-25 million for a blockbuster” (2009, p.1349).

<sup>50</sup> According to EUREKA literature, the group was “Created as an intergovernmental Initiative in 1985” (EurekaBuild, n.d.). It is further stated that: “EUREKA aims to enhance European competitiveness through its support to businesses, research centres and universities who carry out pan-European projects to develop innovative products, processes and services” (ibid).

<sup>51</sup> According to Mónica Martin-Lanuz: “The ambition of ITEA (Information Technology for European Advancement) is to stimulate and support the development of software technology for the benefit of European industry” (2008, p.37).

<sup>52</sup> It is notable that all European organisations present this to be an achievable goal. UNIC, the industry body of the commercial exhibitors of Europe (who have already been cited within this Chapter as opposing the use of digital technologies in the ‘artificial creation of new cinemas’ by publicly funded organisations), also expresses that: “UNIC doesn’t expect digital cinema will be the tool to have more European films in cinemas as it is today” (UNIC’s position on Digital Cinema, 2005, p.2)

<sup>53</sup> As detailed on the NIST website: “NIST is a non-regulatory federal agency within the U.S. Department of Commerce. NIST’s mission is to promote U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology in ways that enhance economic security and improve our quality of life” (General Information, n.d.)

<sup>54</sup> Since the 2008 agreement was announced, and as Mark Hefflinger (2009) reports, AMC and Regal have signed a deal with equipment manufacturer Sony to use its line of 4K projectors, whilst Cinemark has stated an intention to implement projectors based on Texas Instrument’s new 4K DLP system.

<sup>55</sup> It is significant to note that according to Michael Goldman (senior editor for Video Systems, Millimeter and SRO magazines) systems that are not DCI compliant (i.e. high-end, high-cost) “simply won’t be able to play Hollywood content once digital cinema becomes ubiquitous” (2008). This point is reiterated by Nick Dager who states: “theatres in the United States and around the world that can’t accept a so-called DCI-compliant digital release package will not be able to legally screen mainstream Hollywood films” (2008).

<sup>56</sup> Von Sychowski adds that, if these figures are correct “the price tag to outfit all U.S. screens will be more than \$3 billion” (2003 d).

<sup>57</sup> Sholder further expresses that “combined with increased sales at the concession stand”, this willingness to pay premium prices indicates that “digital and 3D capable projectors are the best value proposition for theatres” (Christie Certifies Growing Number of Cinema Re-Sellers, n.d.)

<sup>58</sup> It is of some note (when considering the political economy of Hollywood’s approach to the media) that Eli Noam adds how, through their consequent acquisition of television broadcast networks, the Hollywood studios “reduced market access for independents as well as for rival network companies” (2009, p.110)

<sup>59</sup> As discussed in Appendix 5: The Landmark Case.

<sup>60</sup> According to the organisation’s own literature, the EFCA was “founded in Brussels in September 1995”, and is “a non-profit organisation with a scientific and artistic purpose” (About EFCA > Background, n.d.). It is further expressed that as an organisation the EFCA aims to “bring together European entrepreneurs active in film production and distribution”, adding: It is an essential platform for information exchanges and business networking” (ibid).

<sup>61</sup> In 1975, Ebert became the first film critic to win a Pulitzer Prize for Criticism.

<sup>62</sup> With regards to Roger Ebert’s stance on Digital Exhibition, it is notable that he appears to consider there to be some sort of pseudo-political choice to be made between digital and film projection. After presenting a favourable review of the digitally exhibited ‘*Star Wars Episode II: Attack of The Clones*’, Ebert writes: “Readers familiar with my preference for film over video projection systems will wonder if I have switched parties. Not at all” (2004, p.636).

<sup>63</sup> Other parties which are financially reliant upon the American content producers, specifically within Africa, have also been found to support this interpretation – See Appendix 6: The South African Case.

<sup>64</sup> In pronouncing the objective of ‘explanation building’ as being to show how rival explanations *cannot* be built, Yin reflects Gillham’s observation that “It is an axiom of scientific philosophy that theories cannot be proved – in a definitive sense – only *disproved*” (2000, p.34)

<sup>65</sup> It is of further note that, according to Yin, “If the quest for contrary findings can produce documentable rebuttals, then the likelihood of bias will have been reduced” (2003, p.181).

<sup>66</sup> For example, in the 1950s Daniel Blum penned ‘A pictorial history of the Talkies’ (1958), and in the early years of the second millennium, Jon Lewis edited ‘The End of Cinema as We Know It: American Film in the Nineties’ (2002).

<sup>67</sup> The lack of consensus regards the artistic nature of the cinema can be seen when one examines discourses surrounding a single example, or genre, of cinematic content. For example, Laurence Miller clearly suggests that ‘film noir’ is a form of art, in his writing: “Art is in part a reflection of a culture’s state of existence at the time that art is created. The series of forces that shaped an influenced American film noir were no doubt present at the same time in Britain and no doubt exerted a strong and similar influence on the content and style of British films” (1994, p.160). Relating to this, Ronald Schwartz writes: “Some American critics cite *The Maltese Falcon* (1941) as the first real ‘film noir’” (2001, p.xi). However, Martin Marks cites Belgian poet Leon Kochnitzky as considering that *The Maltese Falcon* “is not art at all: it is the product of the ‘smooth workings of the astonishing machinery [in Hollywood] that sells pleasure and forgetfulness all over the world” (2000, p.182).

<sup>68</sup> It should be noted that Karagosian is not alone in his consideration that, in a contemporary context, ‘the cinema’ pertains exclusively to feature film presentation. Spike Hughes even suggests (in a text on Mozart and opera) that the general public tends to limit the definition of ‘the cinema’ to a particular brand of feature film: “today - rightly or wrongly – when we think of The Cinema we think of films coming primarily from Hollywood” (1972, p.15). Notably, Hughes adds that “the French, the Russians, the Italians and even the English make films too, of course, but the majority of films we see and care about are made in America” (ibid) – in this discourse Hughes does not offer that the concept of ‘the cinema’ might pertain to anything other than feature films, only that it should not necessarily be considered as pertaining exclusively to Hollywood feature films.

<sup>69</sup> It is not certain that even this production would meet Karagosian’s remit for ‘the cinema’, as according to Quentin Falk ‘*The Story of The Kelly Gang*’ “comprised no fewer than four reels running to more than forty minutes” (2003, p.9)

<sup>70</sup> In fact the Dogme films were not the first films produced on DV and then printed onto 35mm film for presentation in cinemas. According to Eugene Hernandez and Mark Rabinowitz, Ian Kerkhof’s 1998 DV acquired production, ‘Wasted!’, was “the world’s first digital-to-35mm feature” (2000), and of the 1998 documentary film ‘*The Cruise*’, Sam Adams of the ‘Philadelphia City Paper’ writes: “Bennett Miller’s film represents the first large-scale release of a feature-length film shot on digital video (DV)” (1998). With regards to the degree to which cinema goers have embraced motion pictures acquired using television quality resolution video (and then presented through 35mm film) it is of note that, according to figures from the ‘Box Office Mojo’ Internet site, the DV acquired feature films ‘*Open Water*’ and ‘*28 Days Later*’ achieved total worldwide grosses of US\$53,686,170 and US\$82,719,885 respectively. Given these figures, it seems pertinent to suggest that 35mm film has been widely accepted as a presentation medium for television quality imagery.

<sup>71</sup> The first commercially produced Kinemacolor film was George Smith's 1908 production of 'A Visit to the Seaside', which was essentially eight minutes of footage from a trip to Brighton. Of Kinemacolor Erik Barnouw writes: "It involved a whirling color wheel in front of the camera, and a similar wheel in front of the projector. The camera shot thirty-two frames per second onto black-and-white film. Half of these, alternative frames, were shot through a bluish-green filter, the others through a red filter. When projected through a properly synchronised color wheel they produced impressive color images." (2001, p.41).

<sup>72</sup> It is also of some note that with regards to dictionary definitions of the word 'cinema' the venue of the exhibition has again been considered a significant aspect - for example, the Compact Oxford English dictionary defines 'cinema' as "a theatre where films are shown" ('cinema', n.d. b).

<sup>73</sup> Notably, as detailed in the Literature Review above, American commentators do not commonly use the term 'e-cinema', however, like Watson and Morris these commentators do not generally consider that the presentation of Digital Exhibition outside of purpose built cinemas merits the title 'digital cinema'. Therefore, as a substitute to applying the designator of cinema upon cases of Digital Exhibition outside of purpose built cinemas, industry commentators often describe such activities as 'alternative venue' presentations.

<sup>74</sup> This expression suggests that Bazin would have accepted Digital Exhibition as being the latest technological attempt to realise the concept of the cinema. To paraphrase Bazin (1967): 'it would be absurd to take film based cinema as a state of primal perfection which has gradually been forsaken by the realism of live presentation and /or increased resolution. The primacy of physical film is both historically and technically accidental'.

<sup>75</sup> As is evidenced in cited examples of Bazin's (1967) discourse, such as: "If cinema in its cradle lacked all the attributes of the cinema to come....", "Every new development added to the cinema must.....".

<sup>76</sup> Significantly, of the very camera used to capture 'Star Wars Episode II' (the 'CineAlta HDW-F900') equipment retailer 'Roscor Rentals' write: "Because of its outstanding picture quality and operational flexibility, this camera offers an important new alternative to 24-frame film origination for major television productions and commercials" (High Definition Camcorders, n.d.)

<sup>77</sup> Peter Sussman is the President of Alliance Atlantis Entertainment.

<sup>78</sup> Cantor and Valencia add that "1994 brought the first half-hour, all-CG television shows: Mainframe's *Reboot* and Fantome's *Insektors*" (2004, p.8).

<sup>79</sup> Notably the word 'telecine' derives from its original intended use, i.e. the production of **television** programming (i.e. video) from **cinema** (i.e. filmed) content. Any motion picture shot on film, which is presented through Digital Exhibition has to pass through a 'telecine' device. In the case of *'Star Wars: Episode I'*, the device used was a 'Spirit DataCine', which as reported by Stuart Blake Jones, Richard H. Kallenberger and George D. Cvjetnicanin was developed by Philips Digital Video systems and the Eastman Kodak Company and unveiled at the 1996 NAB convention (2000, p.83). This device, Blake Jones et al describe the 'DataCine' as a 'telecine' which is capable of handling "standard definition and high definition formats along with the ability to perform 2K data transfers" (ibid).

<sup>80</sup> Significantly, as of 2000, David J. Bancroft considered that despite advances in digital video technology, "the preference for motion picture film as the dominant image capture medium for prime time television seems set to increase" (2000, p.1).

<sup>81</sup> Rose cites the producer/director of *'Mau Mau Sex Sex'*, Ted Bonnitt, as asserting: "each successive year over the four year period, that I was shooting editing, then posting it, distributing it, were major technological leaps. Not the least of which was the advent of these low cost LCD video projectors, which were totally portable" adding "I'd mail this 15lb projector to the theater that filled up the big screen, and told the theater to bring in their DVD player from home. That's how we played all the major theaters" (2003)

<sup>82</sup> Michael W. Bruns and James T. Whittlesey consider that "The scope of compression techniques provided in the MPEG2 toolkit is broad enough to meet today's picture quality expectations of digital cinema theatrical presentations" (2000, p.1). Furthermore technology provider 'Avica', has issued a consideration that for Digital Exhibition, "MPEG capability will always be required to support live streaming, alternative content, and cinema advertising" (JPEG 2000 : Questions and Answers, n.d.).

<sup>83</sup> Matt Cheplic details that "Instead of using traditional delivery methods, filmmakers encoded 'The Last Broadcast' to an MPEG-2 signal, then beamed it from a Network Operations Center...to a geosynchronous platform satellite 22,300 miles above North America" (1999).

Cheplic further details that 'upon returning to earth' "the signal went through a dish located on theaters, then through cabling to localized Cyberstar servers running Windows NT, and ultimately through a Digital Projection system" (ibid).

<sup>84</sup> Notably ignoring the Hollywood-independent achievements behind 'The Last Broadcast', Karagosian states: "In mid-2001, 'Jurassic Park III' was the first feature to be selectively presented using an adaptation of MPEG2 video compression" (2002 b), adding: "The results encouraged more experimentation with MPEG2" (ibid).

<sup>85</sup> According to Mike Slocombe and Simon Perry, in April 2005 'Video Networks Limited' (VNL), who operate the London based 'HomeChoice' Video On Demand (VOD) service, added a children's animation channel, 'Toonami', to their listings using the MPEG-4/AVC format, thus making it "the world's first television channel to be encoded with advanced compression technology" (2005)

<sup>86</sup> George Winslow cites Janne T. Morstol (T-VIPS Chief Operating Officer) as declaring: "JPEG2000, which is widely used in digital cinema, has become more popular in the television industry in the last few years. That's because it offers a number of advantages over MPEG transport systems for broadcast contribution, backhaul and studio-to-studio media exchange of HD content" (2010).

<sup>87</sup> Michael Karagosian expresses that: "Few items have caused more misunderstanding and confusion among engineers in Digital Cinema than the concept of a *server*" (2005, p.261). Karagosian implies that this confusion has come about due to multiple interpretations of the word 'server': "To a broadcaster, a server outputs a synchronous stream of content. To an information technologist, the server outputs either asynchronous or isochronous data" (ibid).

<sup>88</sup> Because less bandwidth is required to transfer compressed data.

<sup>89</sup> Because the data is still encrypted until the point of presentation.

<sup>90</sup> In his book 'Consuming Television', Bob Mullan describes VOD as a system whereby "viewers have the opportunity to select a programme from a catalogue to watch whenever they please" (1997, p.36).

<sup>91</sup> Please note that Appendix 7 does not purport offer a definitive account as to *all* the developments by all those concerned in the endeavour to produce the ultimate television display system.

<sup>92</sup> In June 1997 a Norwegian company, 'Davis AS', unveiled a DLP system, called 'Powerscreen'. 'Vistech' (A company established by the former research and development team of 'Davis AS') describes the 'Powerscreen' as "the very first rear projection (DLP) TV" (History and Heritage, n.d.). In September 1997 the 'Curtis Mathes Marketing Corporation' entered into an agreement to market the 'Powerscreen' to the 'consumer market', and in particular the "high-end home theater audience" (Curtis Mathes Davis Co Branding Alliance, 1997).

<sup>93</sup> In answer to the question "What is the difference between DLP technology and DLP Cinema technology?"

<sup>94</sup> The 'PT-DW5000' and 'PT-DW5000L'

<sup>95</sup> The award was ultimately won by 'TiVo'.

<sup>96</sup> Further to the announcement by Christie Digital, Neil Watson and Richard Morris express that the UK Film Council's priority for 'e-cinema distribution and exhibition' should be to "maximise opportunities for radical experimentation using the widest possible range of technologies", and that these technologies should include "the most basic combination of a DVD player and an LCD projector" (2002, p.4). Indeed, this basic combination of a DVD player and a transmissive LCD projector is exactly how Ted Bonnitt digitally exhibited his documentary film '*Mau Mau Sex Sex*' to public audiences in 2001 (Rose, 2003).

<sup>97</sup> As detailed in Appendix 2, it was not until 1999 that ILA technology would be employed in the public presentation of feature films. In June of that year JVC ILA projectors were installed in two cinemas for the four-week digital run of '*Star Wars Episode I: The Phantom Menace*'. During this run a further ILA projector was employed in the presentation of the Miramax film '*An Ideal Husband*'.

<sup>98</sup> Additionally, rather than a single LCD the ILA projector uses a technique akin to that of transmissive LCD FDTV systems; the source light from the xenon lamp is divided (by means of a dichroic beamsplitter) into the three primary colours, each primary colour beam is passed through the front of one of three separate LCLV panels, and is reflected back through a projection lens, re-converging on the display screen.

<sup>99</sup> Ultimately ILA projection never succeeded in the Digital Exhibition market and soon after the '*Star Wars: Episode I*' presentation JVC discontinued production. There were numerous problems with the technology; Karagosian details that ILA projection "suffered from maintenance and alignment issues, making it nearly impossible to use in the 14x7 environment of the cinema, which only magnified its quality problems" (2003). As Putman describes, market forces left the ILA to "disappear into the mists of history" (2001 b).

<sup>100</sup> The D-ILA projector revisits the 'TV watch' concept whereby an LCLV matrix is housed upon a reflective surface, each 'picture element' (pixel) on the projected image is represented by a single cell within the LCD, and the electronic signal input for that pixel is delivered directly via a transparent electrode matrix. However, unlike the Seiko-Epson TV Watch, the D-ILA LCLV matrix is configured on a silicon CMOS (Complimentary Metal-Oxide Semiconductor) digital microchip – and is thusly referred to as a 'Liquid Crystal on Silicon' (LCoS) device.

<sup>101</sup> JVC proposed to achieve this expansion through the development of a 'QXGA' (2048 x 1536 pixel resolution) D-ILA chip. According to a JVC press release: "This device will be the key for JVC's development of its flagship D-ILA projectors, including the ones specifically designed for electronic cinema application" (JVC Develops Ultra High Resolution D-ILA, 2000)

<sup>102</sup> Whilst JVC continues to produce D-ILA projectors for Digital Exhibition applications, the company appears eager to maintain the technology's position within the television display market. In 2004 JVC launched what was described as "a new generation of high definition rear projection televisions based on the company's D-ILA microdisplay device" (JVC Announces HD-ILA Microdisplay, 2004).

<sup>103</sup> At the 'Digital Cinema Laboratory' in Hollywood.

<sup>104</sup> The QUALIA 004

<sup>105</sup> The 70V QUALIA 006

<sup>106</sup> i.e. above the 1920 vertical-line resolution of High Definition (HD) television systems.

<sup>107</sup> Once again this definition of television can also be considered as applying to satellite broadcast Digital Exhibition.

<sup>108</sup> In order to reflect the spelling used within the majority of cited literatures, the author has employed the American spelling of 'theater' (as opposed to 'theatre') when referring to 'Theater Television'.

<sup>109</sup> Paraphrasing Bazin (1967, p.21) - who wrote, with regards to the fact that sound was a later development in cinema: "the primacy of the image is both historically and technically accidental".

<sup>110</sup> As discussed in Chapter Four, 'Total Cinema' refers to Bazin's notion that there exists a never fully realised conceptual medium which pertains to the originating concepts of the cinema.

<sup>111</sup> Suggesting that the sheer size of Digital Exhibition screens does not negate the possibility of considering the phenomenon as an example of 'ambient television', McCarthy finds that 'one immediate difference between the domestic and the nondomestic' application of television is that "public spaces are televisual sites in which spectatorship can encompass a far broader range of physical scales, from the spectacular collective address of a huge screen in a basketball arena to the personal viewing position annexed by the small TV set placed behind the counter of an all-night gas station" (2001, 119).

<sup>112</sup> Of course, as McCarthy herself points out, "this demarcation of space and subjectivity is an ability shared by domestic and nondomestic TV sets alike" (2001, p.119).

<sup>113</sup> It must be brought to mind that Williams' contribution to the debate as to what television is goes significantly beyond his theory of 'broadcast flow'. Indeed Williams (1990) offers that television carries a number of definitive inherent characteristics – including (for example), its application being aimed towards meeting certain 'social needs', such as the need to satisfy a paradoxical tendency in modern society whereby individuals and families aspire to be mobile whilst seeking self-sufficient 'home centred' ways of living, i.e. achieve 'mobile privatisation' (Williams, 1990, p.26). Further to this, the author of this thesis acknowledges that Williams' (1974 / 1990) discourses on the existence of media as concepts (before invention); the existence of various 'forms' of television; technological determinism / symptomatic technologies; the effect of economic / institutional forces upon cultural expectations and technological development, etc. have had a meaningful impact on his own work.

However, in this section, the author is attempting to show that notions around 'television' adhering to a particular structure of content delivery (i.e. 'flow') do not reflect broader / contemporary understandings as to how we receive television – and therefore can not be used to dismiss the notion that Digital Exhibition is television. Furthermore, whilst the author does discuss several other apparently defining characteristics of television within Chapter Five (including variously claimed essential technologies and social applications), it is the ultimate conclusion of the thesis that television can not be categorically defined by any means because it does not exist as a corporeal entity (See Chapter Eight – Conclusion and Discussion).

<sup>114</sup> In 1977 George Atkinson purchased two copies of each of the fifty movie titles that were at that time being publicly sold in America – one on VHS and one on Betamax, and in December of that year Atkinson famously announced the availability of the videos for rent in an ad in the Los Angeles Times (A history of Home Video, n.d.).

<sup>115</sup> Bolter and Grusin define 'remediation' as "the representation of one medium in other" (2000, p.45). The concept of 'remediation' will be discussed in greater detail in Chapter Seven of this paper.

<sup>116</sup> Performed to promote the album 'Reality'.

<sup>117</sup> William Gallagher also notes that during the concert one member of the audience at Birmingham's Odeon New Street cinema called out "Turn it up!" (Gallagher, 2003), presumably hoping to influence those in command of the control.

<sup>118</sup> E.g. Sky Box Office

<sup>119</sup> e.g. MTV

<sup>120</sup> e.g. 'Sky Sports'

<sup>121</sup> Notably, it is claimed on the 'Sky Arts' official website, that this channel offers "a range of top performances and documentaries on the arts including drama, rock, classical music, dance, opera, art, design, jazz, and literature", About Sky Arts, n.d.)

<sup>122</sup> e.g. 'Bloomberg'

<sup>123</sup> e.g. 'The God Channel'

<sup>124</sup> e.g. 'Teachers TV'

<sup>125</sup> It should be noted that in addition to Meyrowitz's (1993) literature, the author did identify that Marshal McLuhan & Eric McLuhan have presented work in this area. In their publication entitled 'Laws of Media: The New Science' (1988), McLuhan and McLuhan hypothetically ask: "What general, verifiable (that is, testable) statements can be made about all media?" (1988, p.7), and answer that there are four such statements - which can be attained by asking four pertinent questions (ibid).

These four questions address what it is that a medium enhances, what it obsolesces, what it retrieves that was previously obsolesced, and what it ultimately becomes when pressed to an extreme. McLuhan and McLuhan propose that the answers to these questions produce a 'tetrad' which provides a "ready means of identifying the properties of, and actions exerted upon ourselves by, our technologies and media and artefacts" (1988, p.98). A 'tetrad' has been produced for Digital Exhibition; this is presented as discussed within Appendix 10: The Tetrad of Digital Exhibition.

<sup>126</sup> There is at least one commentator (who has already been identified as potentially ideologically biased towards the presentation of Digital Exhibition as television – see Chapter Three) who has presented a consideration that Digital Exhibition does have characteristics which make the digital experience psychologically different to film based exhibition.

According to Godfrey Cheshire, at the 1999 Cannes Film Festival film critic Roger Ebert voiced concern over Digital Exhibition, specifically that “the technological revolution is being rushed into place without the industry having done (or made public) any studies about its likely effects, especially on the psychological level” (1999). According to Todd McCarthy, Ebert’s concern was based around a notion that “film and electronic images reach different parts of the brain and therefore affect human beings in different ways” (1999). McCarthy details that, Ebert had argued (at the Cannes festival) that “film creates an alpha state of reverie due to its imperceptible flickering, therefore creating a more emotional and intense reaction. Television, by contrast, creates a beta state that is constant and more hypnotic, which is why people can sit in front of the TV screen for hours at a stretch” (ibid). According to McCarthy: “The hidden danger to the industry, therefore, is that, while digital projection will soon look just as rich and sharp and beautiful as 35mm film, its emotional and imaginative impact over the long term will not be the same” (ibid). Ultimately however, McCarthy dismissively states of Ebert’s argument: “there is only sketchy science to back him up” (ibid).

<sup>127</sup> In May 2001 a screening of ‘*Space Cowboys*’ was run, alternating the reels between film and digital projection. According to a communication by Jim Mendrala (a former president of the Society of Television Engineers): “Those seated in the rear half of the auditorium were hard put to tell the differences. Many turned around during the performance to see what was running, film or digital” (2001).

<sup>128</sup> MaxiVision 48 is also reported to have a higher resolution than standard 35mm prints; the removal of the analogue soundtrack increases the film image area by about 30% per frame.

<sup>129</sup> In 1999 Andrew Hindes wrote of MaxiVision 48: “Flying in the face of the prevailing wisdom that digital projection is the inevitable future of exhibition, film editor Dean Goodhill has spent the past four years quietly overseeing the design of a film-based system that he believes will change the way people see movies forever” (1999). Furthermore, of this system, Roger Ebert wrote: “I have seen the future of the cinema, and it is not digital” (1999). To this Ebert adds: “No matter what you’ve read, the movie theater of the future will not use digital video projectors, and it will not beam the signal down from satellites. It will use film, and the film will be right there in the theater with you” (1999).

<sup>130</sup> Director of the National Film and Sound Archive of Australia.

<sup>131</sup> The Oscar winning cinematographer of ‘*Apocalypse Now*’, ‘*Reds*’ and ‘*The Last Emperor*’.

<sup>132</sup> It should be noted that Ebert does further express: “I prefer to see a movie in a theatrical setting but love my home setup” (2008).

<sup>133</sup> UIP is a joint venture of the 'Universal' and 'Paramount Pictures' Hollywood studios, and was established in order to distribute both studios' films outside North America.

<sup>134</sup> Similarly, McLuhan & McLuhan fail to make clear how changes in a medium's technologies (which result in the production of tetrads different to those which would have been drawn during previous technological eras) should be addressed under the 'Laws of Media' - i.e. it is not expressly questioned whether new and unique tetrads always pertain to new and unique media, or whether they can pertain to new forms of old media. See Appendix 10 for further discussion.

<sup>135</sup> Joe Hart, Jim Smith, Walt Ordway and Don Tannenbaum (2007) define the term 'Digital Cinema Distribution Master' as: "A Master set of files that have not been compressed, encrypted or packaged for Digital Cinema distribution. The DCDM all of the elements required to provide a Digital Cinema presentation" (2007, p.5).

<sup>136</sup> David Olson writes that: "The Data Encryption Standards (DES) is the U.S. and international standard for symmetric data encryption that uses a 56-bit key". Olson adds that "Variants of DES, such as Triple DES, which uses a 112 bit key, remain extremely secure" (2002, p.22)

<sup>137</sup> The Digital Cinema Initiatives (DCI) group were tasked with defining the 'standardised technical specifications' for (what they refer to as) 'digital cinema', and in 2005 they published a document, essentially specifying how they wished the 'computer layer' of Digital Exhibition to be organised. Within this document it is stated that systems should employ the 'JPEG 2000 codestream' and 'JPEG2000 decoder' compression algorithms (Digital Cinema System Specification - V1.0, 2005, p.1), and it is determined that the requirements for 'packaging' Digital Exhibition content include (where possible) the employment of existing 'Material eXchange Format' (MXF) and 'eXtensible Mark up Language' (XML) specifications (ibid). It is also expressed that the 'file format' for Digital Exhibition content "is required to contain metadata that indicates the first frame of image" (Digital Cinema System Specification - V1.0, p.15), and that "the audio file format shall comply with the Broadcast Wave file format (.wav), per [ITU Tech 3285 version 1 (PCM WAVE coding)]" (Digital Cinema System Specification - V1.0, p.19).

<sup>138</sup> It is notable that in a separate press release, Walt Ordway, the DCI's chief technology officer announced of the StEM: "We are also pleased to make this test material available to other companies and organizations for use in their various testing programs" (ASC And DCI Creating Digital Cinema Test Film, 2003).

<sup>139</sup> Although stating that 'modern film language' is based upon 'sequential narrative' Manovich makes clear that the failure to adhere to a sequential narrative does not automatically negate the possibility for any phenomenon to be categorised as 'cinema': "Spatial montage represents an alternative to traditional cinematic temporal montage, replacing its traditional sequential mode with a spatial one" (2001, p.xxxiv)

<sup>140</sup> Although stating that ‘the new media’ tend to ‘favour’ the “database form” over others Manovich makes clear that adhering to sequential narrative does not automatically negate the possibility for Digital Exhibition to be categorised as ‘new media’: “in new media, the database supports a variety of cultural forms that range from direct translation (i.e., a database stays a database) to a form whose logic is the opposite of the logic of the material form itself – narrative” (2001, p.228)

<sup>141</sup> Steven Jones expresses that, “unlike the distributed systems of mass communication, with a central agency producing media messages”, with the growth of computer mediated communications (CMC) and in particular from use of the Internet, “the computer system could be used as a more ‘democratic’ apparatus” (1997. p.56). Conversely, according to Charles Ess, ‘contrary to the presumption that the Internet only democratizes’, computer mediated communications may in fact, “lead either to resistance or subjugation, to democratic communication, or (cultural) capitalist dominance.” (2001, p.12). As an example of this, Ess cites Sunh-Hee Yoon (1996) as finding that “Korean students accept the on-line dominance and importance of English without question” (ibid). Ess expresses that “Language thereby becomes a cultural capital that exercises ‘symbolic power over the cultural have-nots in the virtual world system’”, and that this induces ‘voluntary subjugation’ (ibid).

<sup>142</sup> It is argued above that the facilitation of a ‘hypernarrative’ form does represent such an influence.

<sup>143</sup> Nevertheless, despite considering that it does not totally achieve the medium, Bazin (and media theorists en masse) still consider (and refer to) film based exhibition as pertaining to the cinema.

<sup>144</sup> Furthermore, Manovich keenly expresses of digitised imagery: “*Synthetic computer-generated imagery is not an inferior representation of our reality, but a realistic representation of a different reality*” (2001, p.202)

<sup>145</sup> With regards to this issue, see also the analysis of the McLuhan & McLuhan’s (1988) discourse on the ‘Tetrad’, presented within Appendix 10: The Tetrad of Digital Exhibition.

<sup>146</sup> Furthermore, just as with Digital Exhibition systems, the computer is able to play-back and store moving pictures from video tapes – this is evidenced in a patent filed by Cheon-Yeol Lee and Chang-Ho Lee, in August 1997, for a computer system “having an internal video cassette recorder incorporated therein in order to provide an effective means of recording/playing a moving picture produced in the computer system onto or from a video cassette” (1997).

<sup>147</sup> Faithe Wempfen further explains “Now you can watch TV right on your computer screen. A TV card is an interface card that enables you to open a window in Windows and watch your favourite television show” (2001, p.290).

<sup>148</sup> The announcement from Microsoft goes on to state that: “Once the network is in place, Windows Media 9 Series allows films to be sent to theaters over private networks, on CD-ROM or on DVD-ROM, all protected with Windows Media Digital Rights Management technology” (Landmark Theatres and Microsoft, 2003).

<sup>149</sup> Friedman repeats these claims verbatim in an alternative text within Klaus-Peter Busse and Hans Breder’s (eds.) ‘Intermedia: Enacting the Liminal’ (2005, p.58).

<sup>150</sup> Explanation Eight can be considered as related to the previously explored explanation whereby Digital Exhibition is construed as both the cinema and television unified (see Explanation Four). However, Explanation Eight does not present these media as having always been aspects of the same ‘total’ medium (as Explanation Four does) – but rather suggests that their unification is a result of their ongoing convergence.

<sup>151</sup> Notably Explanations Nine and Ten can be considered as respectively pertaining to the previously explored notions whereby the phenomenon is offered to be...

a wholly new medium (see Explanation Three)

a case of the new media (again see Explanation Three)

<sup>152</sup> Nor does she specifically mention the phenomenon of Digital Exhibition.

<sup>153</sup> McLuhan additionally suggests that the media “depend upon us for their interplay and their evolution” (1964, p.57), and notes: “The fact that they do interact and spawn new progeny has been a source of wonder over the ages. It need baffle us no longer if we trouble to scrutinize their action” (ibid), further telling that “There need be no blindness in these matters once we have been notified that there is anything to observe” (ibid).

<sup>154</sup> This reflects Meyrowitz’s (1993) discourse on ‘medium analysis’ and the ‘environment metaphor’ (see Chapter Six).

<sup>155</sup> As an example of the desire for immediacy, Bolter and Grusin express that “‘Webcams’ on the Internet pretend to locate you in various natural environments” (ibid). However, Bolter and Grusin also consider that “even webcams, which operate under the logic of immediacy, can be embedded in a hypermediated web site” (2000, p.6) noting that through one particular website a user can generate a ‘panelled display’ combining the output of three separate webcams (2000, pp.6-8).

<sup>156</sup> Giving as an example ‘synthetic digital images’ which are intended to look ‘photorealistic’ (i.e. as a photograph of a physical object), Bolter and Grusin suggest that a digital medium may seek to make itself invisible to the audience (following the logic of immediacy), whilst manifestly appearing as an ‘older’ medium (following the logic of hypermediacy) (2000, p.28).

<sup>157</sup> Home ground to the ‘Boston Red Sox’ Baseball team.

<sup>158</sup> As Dr. Raymond M. Soneira points out: “The physical process that controls the brightness of each pixel is actually analog for LCoS and all other Liquid Crystal based technologies” (2006).

<sup>159</sup> As detailed in Appendix 2, in all LCD devices, including Digital Exhibition projectors, the physical motion of the liquid crystals which dictate how much light passes on to the screen is actually analogue. In other words, although both receive a digital-input, there is a clear distinction between DLP Digital Exhibition systems (which present their content to audiences as binary pulses of light - like a ‘digital light switch’) and LCD Digital Exhibition systems (which present their content to audiences as analogue graded light - like a ‘dimmer switch’). As is discussed in Chapter Seven, this process of converting a digital signal into an analogue form before presentation to audiences can be likened to the printing of computer generated images onto celluloid film prior to distribution and projection (resulting in something which Bolter and Grusin do not consider to be new media but rather present as a case of the old media remediating digital media). As such, unless the term Digital Exhibition is revoked from use when referencing events projected via LCD systems, Digital Exhibition can not be considered to be a ‘purely’ digital medium.

Furthermore, it can be argued that even DLP enabled events are not purely digital if the presentation involves any sound content – in so much as all existing cinema sound installations use analogue moving coil speakers (even when employing digital amplification systems). And in actual fact it can be argued that there is actually no such thing as a *purely* digital medium – in so much as the ultimate form of the ‘signals’ which audiences receive are always analogue, i.e. sound and light waves.

Significantly, if it *is* argued that there is no such thing as truly digital media, then it can be also argued that Bolter and Grusin do not offer any definitive means by which to identify ‘new media’ from ‘old media’ – which ultimately reflects the conclusion of this thesis whereby the author proposes that the ‘new media’ can not be definitively defined, because (as a collective) they do not exist as a corporeal entity – see Chapter Eight – Discussion and Conclusions.

<sup>160</sup> i.e. Chapters Four through Seven

<sup>161</sup> For example, whilst some commentators claim television to be a domestic medium, others find it to exist in both private and public spaces. Similarly, whilst some commentators claim an experience warrants classification as an instance of ‘the cinema’, others find it to be artless and therefore not worthy of the designation. Furthermore, whilst some commentators find that a case of the ‘new media’ can digitally emulate an established medium to the point of invisibility, others find that to warrant the ‘new media’ designator a phenomenon must allow for the type of audience interactions which the older media are incapable of.

<sup>162</sup> I feel it is necessary to note that that media theorists have historically constructed groupings in ways which give focus to those aspects of moving image mediation about which they have a particular interest, and designated these groupings as ‘the cinema’, ‘television’ or the ‘new media’. For example, Bazin only applies ‘the cinema’ designator to those aspects of moving mediation which strive to emulate reality – and as observed by Hugh Grey (the official translator of Bazin’s work into English) Bazin held an ‘obsession’ for ‘concrete reality’ (1971, p.11); Manovich withholds Digital Exhibition from his list the “effects of computerization on cinema proper” (i.e. the list of qualities which he considers as reflecting the cinema’s transition from old to new media) because it does not affect ‘film language’ – which Manovich expresses as being his “main concern” (2000, p.289).

Once again this is not offered as a criticism to the approaches of Bazin, Manovich, McCarthy et al. Rather, I accept that media theorists have found themselves in an essentially untenable situation whereby there are only three broad overarching categories (‘media’) by which to classify the infinite possibilities of moving image mediation.

This is highlighted by the use of ostensibly oxymoronic terms like ‘ambient television’ (& ‘theater television’), ‘home cinema’, and indeed (given that it has been almost half a century years since development of the first interactive digital computer game with a form of narrative) ‘new media’. NB: With regards to ‘the first interactive digital computer game with a form of narrative’, Simon Egenfeldt-Nielsen, Jonas Heide Smith & Susana Pajares Tosca write that the 1961 computer game ‘Spacewar’ was based upon its programmers “dreams of how their favourite sci-fi books might be adapted to movies”, adding that the game featured “two spaceships, named Wedge and Needle, each manned by a player, who were engaged in galactic warfare” (2008, p.51).

<sup>163</sup> Charles U. Larson succinctly presents the notion of media ‘uses and gratification’ as pertaining to “how receivers use to media to gratify or meet or satisfy their individual needs” (2009, p. 352)

<sup>164</sup> See Appendix 11: Towards a Taxonomy of Moving Image Mediation for further discussion around the categorisation of media events by ‘Transmission Technologies’.

<sup>165</sup> As with DLP systems the digital data must still undergo a process of ‘Pulse Width Modulation’ in order to convert it into pulses of electricity.

<sup>166</sup> In relation to this, Putman goes so far as to describe the D-ILA as a “hybrid digital/analog imaging technology” (2001 b).

<sup>167</sup> Further information on the historical, application specific, development of each type of digital projector can be found in Chapter Five - Explanation Two: Digital Exhibition is a form of television.

<sup>168</sup> Spencer Ante (1998) reports production costs for ‘*The Last Broadcast*’ as being US\$900.

<sup>169</sup> ‘Wavelength Releasing’

<sup>170</sup> ‘Digital Projection’

<sup>171</sup> Doylestown being Stefan Avalos' hometown.

<sup>172</sup> A murder-mystery film by director Edward Vilga. Notably, unlike ‘*The Last Broadcast*’, ‘*Dead Broke*’ was acquired using 35mm film. Ashbrook Nickell cites director Vilga as stating of this: “It’s ironic that the film is called ‘*Dead Broke*’, because we ourselves could hardly afford the digital transfer” (1999).

<sup>173</sup> According to NATO’s ‘Digital Cinema Consultant’, Michael Karagosian: “Without a doubt, the superior quality of the film presentation was apparent” (1999), although he conceded that “Kodak chose the material, and naturally it was selected to demonstrate the worst of video” and further that “if anyone were to walk into a theatre with one of these video projectors in use, they probably wouldn’t know the difference” (ibid).

<sup>174</sup> The film’s makers were reportedly satisfied with the results – the film’s producer Rick McCallum is cited by Marc Graser as claiming: “The digital version is the film we made, the focus, colour reproduction, brightness is what we wanted” (1999)

<sup>175</sup> In fact, ‘*Star Wars*’ was not the only Hollywood film to be digitally exhibited during this period. On July 15 1999, the Miramax (owned at that time by the Disney studio) production of ‘*An Ideal Husband*’ was digitally presented (using an ILA projector) on a single screen in Los Angeles. Notably, of this digital presentation, Godfrey Cheshire, of the New York Press declared: “I actually preferred it to the same movie on celluloid, which I thought was overlit and had oversaturated colors” (1999).

<sup>176</sup> Staring Ben Affleck and Gwyneth Paltrow.

<sup>177</sup> A 'Real D' press release reports that after three weeks of exhibition, over the 2005 Thanksgiving weekend (25-27 November), the digital 3D presentation of Chicken Little generated more than \$7 million, nearly three times the screen average of the 2D version (Disney to Release Newest Animated Feature in REAL D, 2005).

<sup>178</sup> The musical play had been recorded 'live-in-performance' at Broadway's Barrymore Theatre, using over forty surround-sound microphones and ten digital High Definition video cameras. According to Marc John, President of 'Quantum Digital' (the organisation which coordinated the event), this produced a work "ideal for projection in a cinema environment" (2002).

<sup>179</sup> Again coordinated by Marc John and 'Quantum Digital'.

<sup>180</sup> Notably, not all of Britain's cinema chains were persuaded by the appeal of showing World Cup matches in their auditoria. According to Laura Bushell, a spokesman from UGC announced "we won't be showing matches due to the fact we're committed to our core focus of film" (2002)

<sup>181</sup> RCM CEO Kurt Hall stated: "the whole mission statement of RCM is creating different uses for our theatre", adding of the presentation of football matches: "Now that we have the digital capabilities, this is the obvious place to start as certain sports programming is very compelling on the big screen." (Digital Cinema Event, 2002).

<sup>182</sup> The term 'electronic cinema' is commonly used to describe particular types of Digital Exhibition – see 'Chapter 3: Commercial Meaning Making Literature Survey & Critique' for further details.

<sup>183</sup> Of Regal's six-thousand two-hundred screens

<sup>184</sup> According to the press release, after the interview concluded the film North Country was shown in its entirety (Big Screen Entertainment, Education and Sports Premiere Events, 2006., p.1).

<sup>185</sup> In a communication to the author, Bill Mead, Publisher of DCinema Today states: "As the numbers have grown larger and the market has matured the value of keeping specific data about screens is less—while the complexity of obtaining and maintaining the database is much higher. It has become difficult, if not impossible, for our sponsors to provide us with accurate installation information. Many manufacturers have lost track of where their systems are installed" (June 12, 2010).

<sup>186</sup> Prepared for the British Governmental Department of Culture, Media and Sport.

<sup>187</sup> Ever since Ricciotto Canudo first coined the term in the 1910s.

<sup>188</sup> According to the organisation's own literature: "Cape Film Commission is the Official Representative of the City of Cape Town and the Province of the Western Cape, for the Economic Development, Marketing and Promotion of the Film Industry, through Growth, Integration and Transformation" (Welcome to the Cape Film Commission, n.d.)

<sup>189</sup> The CCC is a joint initiative of the Arts Council (AC) and the Irish Film Board (IFB).

<sup>190</sup> According to Taisuke Yoshioka and Masataka Ogawa, the CRT is still "more popularly called the Braun tube in Japan and some other countries after its inventor" (1998, p.445)

<sup>191</sup> The American Heritage Dictionary defines '*schlieren*' as "Regions of a transparent medium, as of a flowing gas, that are visible because their densities are different from that of the bulk of the medium." ('schlieren', n.d.)

<sup>192</sup> Princeton University's 'WordNet 3.0' definition of 'Home Theater' is: "television and video equipment designed to reproduce in the home the experience of being in a movie theater" ('Home Theater', n.d.). Anna McCarthy implies the term 'home theater' to be a metaphorical term (for describing a particular form of television display system) which alludes to both the escape from and allures of public entertainment (2001, p.45).

<sup>193</sup> Trunbull's ultimate consideration actually closely reflects a somewhat fantastical notion which Jay David Bolter and Richard Grusin present as being "a fanciful extrapolation of virtual reality, with its goal of unmediated visual experience" (2000, p.4).

<sup>194</sup> I intentionally avoid use of the word 'medium' here to prevent confusion, although the physical sciences definition of the word 'medium' would suggest it to be apt.

<sup>195</sup> I even consider that if a group of people (an audience) were to watch the same film twice in the same venue, that audience would be 'different' for each presentation - for the second showing they would be an audience with the experience of having already seen the film.