

University of New England

UNDERSTANDING CINEMATIC STEREOCOPY IN THE DIGITAL  
SCREEN PERIOD

Thesis submitted by

**Dave Hare**

B. Media (Hons) and M. Phil (media) Macquarie University.

A thesis submitted for the degree of

**Doctor of Philosophy**

of the University of New England.

2015

## ACKNOWLEDGEMENTS

Firstly, I would like to thank my supervisors. Principal Supervisor, Professor Dugald Williamson, provided timely assistance, clear advice, and a model of collegiality for me to reference in the future. Thanks also to Co-Supervisor, Dr. Yvonne Griggs, who provided guidance to the thesis.

I would also like to thank the University of New England for its support, particularly in regard to the Australian Postgraduate Awards and Extension scholarships. As well, I am grateful to the University's academic and administrative staff who gave their time and their support to the project. They include Head of School, Associate Professor Alan Davison, Gill Willis, Jane Kelly, Helena Davies, Dr. Rose Williamson, Dr. Elizabeth Hale, and Jo-Ann Sozou.

Over the course of the thesis a number of industry practitioners gave their time to recount their experiences of stereoscopic production. These discussions were invaluable to me and helped to shape significant parts of the thesis. I would like to thank Mark Lewis, Paul Nichola, Chris Nelius and Rob Morton.

Finally, thank you to Dr. Noel King for giving ideas and guidance to the thesis, particularly in the early stages of its conception; and to Lisa Ward for the support and the opportunities to work on various English, Media and Communications units. Thank you also to my family. Most of all, thank you to my much better half, Jo.

## ABSTRACT

‘How are we to understand the significance of cinematic stereoscopy in the digital screen period, 2004 to the present?’ This question is at the heart of this thesis, and is primarily answered by an examination of the relationship between stereoscopic technology, and visual technique and visual style. This relationship illustrates a number of key elements of film and stereoscopy’s significance in the digital screen period, such as the adoption of new and different digital technologies by various filmmakers, including *auteurs*; the commercial needs of industry; as well as the diverse aesthetic approaches to screen technology integration, many of which correspond to representations of ‘reality’. This is to say the relationship between stereoscopic technology, and visual technique and visual style is a way to understand broader notions about screen technology in digital screen period cinema.

The digital screen period is defined in terms of the transition from analogue to digital technologies, while digital stereoscopic (D3D) production is defined in relation to this period as well as to previous periods of notable stereoscopic production, namely the 1910s and 1920s, 1950s, and 1980s. As a result, two significant areas of change and continuity to do with the digital screen period are explored. The first area concerns the broader history of film and its transition from analogue to digital, and the second is to do with stereoscopy’s history of use in the film industry. . In relation to both of these areas, the Australian national cinema is used as an example to illustrate how the transition to digital has led to D3D being taken up and creatively approached in diverse ways. A key feature of the Australian example is that it has a recent history of stereoscopy that is primarily located within the 2004 to 2015 digital screen period. Its first stereoscopic feature film, *Cane Toads: The Conquest*, for example, was released as recently as 2009. In this respect, the Australian context shows, via the productions of *The Great Gatsby* (2013), *Cane Toads* and *Storm Surfers 3D* (2011), how digital screen period stereoscopy is similar to previous periods and also different from these periods; how technology, visual

technique and visual style have developed in this period; and how dominant social forces of the period have helped to shape this development.

Qualitative and quantitative methodologies are used to explore the topic and make the argument. These methodologies are derived from the three branches of film study: film history, film theory and film criticism. David Bordwell's largely qualitative analysis of classical Hollywood continuity and intensified continuity systems, and Barry Salt's largely quantitative 'practical film theory', for example, are combined to define and illustrate specific characteristics of D3D production. Both the combined methods draw on the three branches of film study to provide the thesis with a basis from which to compare and contrast D3D production in relation to conventional production.<sup>1</sup> In effect, they help to identify the visual techniques and visual styles that are specific to D3D. The combination of qualitative and quantitative methodologies, applied specifically to D3D, is the thesis's original contribution to methodology, and it plays a key role in exploring and answering the main thesis question, 'How are we to understand the significance of cinematic stereoscopy in the digital screen period, 2004 to the present?'

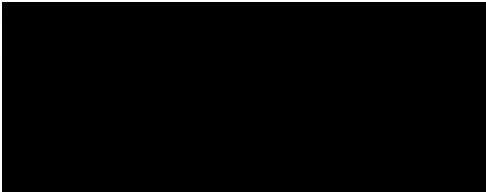
---

<sup>1</sup>The term 'conventional' is preferred over '2D'. '2D' incorrectly suggests that all non-stereoscopic representations of objects and environments on screen are flat, whereas 'conventional' is a more inclusive term that reflects the long history of visual technique (including camera and character movement, three-point lighting, continuity editing, production and costume design) that illustrate three-dimensional spaces on screen.

## CERTIFICATION OF THESIS

I certify that the substance of this thesis has not been submitted for any degree and is not currently being submitted for any other degree or qualification.

I certify that any help received in preparing this thesis and all sources used have been acknowledged in this thesis.

X   
\_\_\_\_\_  
Signature of Candidate

## ENDORSEMENT

X  
\_\_\_\_\_  
Signature of Supervisor

X  
\_\_\_\_\_  
DATE

X  
\_\_\_\_\_  
Signature of Supervisor

X  
\_\_\_\_\_  
DATE

# TABLE OF CONTENTS

ACKNOWLEDGEMENTS .....	i
ABSTRACT .....	ii
CERTIFICATION OF THESIS .....	iv
LIST OF FIGURES .....	viii
INTRODUCTION .....	1
D3D Technology and its Relationship to Visual Technique and Visual Style .....	2
Factors Shaping the Relationship of D3D Technology and Visual Style .....	4
Ways to Explore D3D .....	8
Thesis Outline: Chapter Summaries .....	12
CHAPTER ONE: Literature Review and Methodology .....	15
Introduction .....	15
Chapter Overview .....	16
Stereoscopy as a Technology .....	19
Stereoscopic Craft .....	21
Digital Development and the Implications of Technology ....	25
Factors That Shape Screen Technology Adoption .....	28
Technologies Must Satisfy The Industry and The Audience ...	28
Industrial, Economic and Aesthetic Factors .....	34
1950s Stereoscopy: Issues, Problems, and Ideas .....	37
Tacky and Clichéd .....	43
Theory of Classical Hollywood Cinema .....	45
An Aberrational Style .....	46
Tasteful and Fresh .....	49
Explaining The Decline .....	53
The Digital Screen Period .....	55
Industrial Power Struggle and the ‘Killer App’ .....	57
Diverse Digital Affordances .....	59

Commercial Affordances .....	64
Directions, Focus and Approach of the Study .....	70
A Mix of Methodology: Qualitative and Quantitative .....	71
Practical Film Theory: 1950s Stereoscopic Production .....	75
Objects of Study .....	80
Screen Shots .....	83
Chapter Conclusion .....	83
 CHAPTER TWO: Hollywood D3D Style and Form Developments .....	85
Introduction .....	85
Tuning the Z-Axis .....	86
1). Plus One Equals A Strong 3(D): Monoscopic Depth .....	89
2). Obstructions .....	99
D3D Cutting .....	102
3). D3D's Narrative Form .....	116
Fans » Participants: Actual and Alternate .....	120
<i>Tron: Legacy</i> .....	125
Chapter Conclusion .....	129
 CHAPTER THREE: D3D's Australian Expansion: <i>The Great Gatsby</i> .....	131
Introduction .....	131
Market-oriented Incentives .....	132
Australian Screen Production Incentive .....	135
Contesting the Definition .....	140
Adaptation and D3D Adoption .....	143
Decoding Into D3D .....	145
1920s and 2010s .....	151
Framing D3D .....	155
Industrial and Commercial Factors .....	164
The Return On Investment: Feedback Loop .....	170
Chapter Conclusion .....	174
 CHAPTER FOUR: Connected Documentary Spaces: <i>Cane Toads: The Conquest</i> and <i>Storm Surfers 3D</i> .....	177

Introduction .....	177
Merging Space: Active Audiences .....	180
1. Event Films: ‘Just like being there’ .....	184
2. IMAX Films .....	191
3. Cinematic Feature Documentary .....	196
<i>Cane Toads: The Conquest</i> .....	201
Illustrating the Conflict .....	202
A Comparative Quantitative Analysis: <i>An Unnatural</i> <i>History and The Conquest</i> .....	205
<i>Storm Surfers 3D</i> .....	214
D3D Production, Distribution and Exhibition .....	215
Ship Stern Bluff: Surfing As A Non-Character .....	217
Chapter Conclusion .....	221
 CONCLUSION .....	 223
 BIBLIOGRAPHY .....	 230
 FILMS CITED .....	 260
 APPENDICES .....	 271
Appendix A: Ethics Approval .....	271
Appendix B: Information Sheet for Participants.....	273
Appendix C: Sample Interview Questions .....	277



# LIST OF FIGURES

## CHAPTER ONE

1.1.	Natural Vision .....	39
1.2	<i>This is Cinerama</i> .....	48
1.3	Gartner's Hype Cycle .....	51 – 52
1.4	Cinematics .....	77
1.5	Cinematics .....	77
1.6	Average shot length of 21 stereoscopic films from the 1950s period .....	77 – 78
1.7	Average shot length of 21 films from the 1950s period .....	79

## CHAPTER TWO

2.1	<i>Journey to the Centre of the Earth</i> .....	87
2.2	<i>Tron: Legacy</i> .....	90
2.3	<i>Tron: Legacy</i> .....	91
2.4	<i>Avatar</i> .....	92
2.5	<i>Life of Pi</i> .....	93
2.6	<i>Life of Pi</i> .....	94
2.7	<i>Journey to the Centre of the Earth</i> .....	95
2.8	<i>Journey to the Centre of the Earth</i> .....	96
2.9	<i>Dredd</i> .....	96
2.10	<i>Dredd</i> .....	97
2.11	<i>Hugo</i> .....	98
2.12	<i>Hugo</i> .....	99
2.13	The Dynamic Floating Window .....	101
2.14	Mean ASL of American Films: 1940 – 1995 .....	104
2.15	ASLs of 75 D3D films from the period 2004 to 2013 .....	105 – 107
2.16	A breakdown of D3D production types .....	108
2.17	Average Shot Length of the 75 Digital Screen Period Stereoscopic films .....	108
2.18	ASLs of blockbuster franchises with D3D films .....	109 – 110

2.19	<i>Resident Evil</i> franchise .....	113
2.20	<i>Resident Evil</i> .....	113
2.21	<i>Resident Evil: Extinction</i> .....	114
2.22	<i>Resident Evil: Afterlife</i> .....	114
2.23	<i>Tron</i> franchise .....	119
2.24	<i>Tron: Legacy</i> .....	126
2.25	<i>Tron: Legacy</i> .....	126
2.26	<i>Tron: Legacy</i> .....	127

### CHAPTER THREE

3.1	Significant Australian Content test guidelines .....	138
3.2	<i>The Great Gatsby</i> .....	141
3.3	ASLs of Baz Luhrmann’s feature films .....	150
3.4	ASLs of film and television adaptations of <i>The Great Gatsby</i> .....	150
3.5	<i>The Great Gatsby</i> .....	152
3.6	<i>The Great Gatsby</i> .....	153
3.7	<i>The Great Gatsby</i> .....	154
3.8	<i>The Great Gatsby</i> .....	155
3.9	<i>The Great Gatsby</i> [1949 version] .....	157
3.10	<i>The Great Gatsby</i> [1949 version] .....	158
3.11	<i>The Great Gatsby</i> .....	160
3.12	<i>The Great Gatsby</i> .....	160
3.13	<i>The Great Gatsby</i> .....	162
3.14	<i>The Great Gatsby</i> .....	163
3.15	<i>The Great Gatsby</i> production .....	163
3.16	Nationalities of key creative roles in <i>The Great Gatsby</i> .....	167
3.17	<i>The Great Gatsby</i> production .....	169
3.18	<i>The Great Gatsby</i> .....	169
3.19	AUD to USD: <i>Gatsby</i> Principle Production (5/9/2011 to 22/12/2011) .....	171
3.20	AUD and NZD Exchange Rates (to USD) during 2007/13 period ...	171
3.21	Australian feature slate 2007 to 2013 .....	172
3.22	2/1/2007 to 31/12/2013: AUD Exchange Rate and Production Spend .....	173

## CHAPTER FOUR

4.1	<i>Hannah Montana &amp; Miley Cyrus: Best of Both Worlds</i>	181
4.2	<i>Pina</i>	182
4.3	<i>Pina</i>	184
4.4	ASL of D3D event films	185
4.5	<i>Justin Bieber: Never Say Never</i>	187
4.6	<i>Hannah Montana &amp; Miley Cyrus: Bets of Both Worlds</i>	187
4.7	<i>Jonas Brothers: The 3D Concert Experience</i>	189
4.8	ASL of D3D IMAX films	192 – 193
4.9	<i>Space Station 3D</i>	194
4.10	<i>Space Station 3D</i>	195
4.11	ASL of D3D cinematic feature documentary films	197
4.12	<i>TT3D</i>	198
4.13	<i>Cave of Forgotten Dreams</i>	200
4.14	<i>Cane Toads: The Conquest</i>	205
4.15	<i>Cane Toads: An Unnatural History</i>	207
4.16	<i>Cane Toads: The Conquest</i>	207
4.17	A comparison of ASLs of <i>Cane Toads: An Unnatural History</i> and <i>Cane Toads: The Conquest</i>	208
4.18	Shot length variation in <i>Cane Toads: An Unnatural History</i>	209
4.19	Shot length variation in <i>Cane Toads: The Conquest</i>	209
4.20	Shot size analysis of <i>Cane Toads: An Unnatural History</i>	210
4.21	Shot size analysis of <i>Cane Toads: The Conquest</i>	210
4.22	Normalised shot size analysis of <i>Cane Toads: An Unnatural History</i>	211
4.23	Normalised shot size analysis of <i>Cane Toads: The Conquest</i>	211
4.24	Normalised tally. POV and camera movement shots	213
4.25	<i>Storm Surfers 3D</i>	215
4.26	Ship Stern Bluff scene shot length, shot size and GoPro shots analysis	218
4.27	<i>Storm Surfers 3D</i>	219
4.28	<i>Storm Surfers 3D</i>	220
4.29	<i>Storm Surfers 3D</i>	221