

# **Mnemovie: Visual Mnemonics for Creative Interactive Video**

Michael Leggett, M.F.A

Thesis, Doctor of Philosophy

Creativity & Cognition Studios  
University of Technology Sydney  
2008

## Certificate of Authorship

I certify that the work in this thesis has not been previously submitted for a degree nor has it been submitted as part of requirements for a degree except as fully acknowledged within the text.

I also certify that the thesis has been written by me. Any help that I have received in my research work and the preparation of the thesis itself has been acknowledged. In addition, I certify that all the information sources and literature used are indicated in the thesis.

Signed

Date

---

## **Acknowledgements**

For Deborah, Hal and Aurora, my main sponsors.

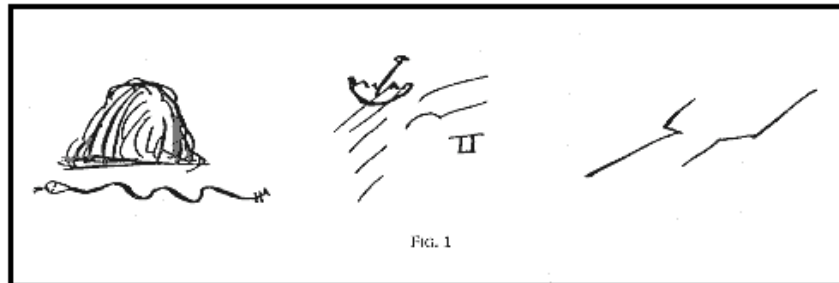
The many artists and other researchers, both real and virtual, many of whom are listed in the References, but in particular, Adam Hinshaw, Adrian Miles, Alex Davies, Andrew Brown, Chris Welsby, Darren Tofts, David Tafler, Gerhardt Fischer, John Downie, John Sutton, Kate Richards, Keir Smith, Lizzie Muller, Louise Curham, Lucas Ihlein, Lyndal Jones, Michael Buckley, Murray McKeich, Norie Neumark, Stephen Jones, Sue Healey.

My supervisor Professor Ernest Edmonds and colleagues in the Creativity & Cognition Studios, Faculty of Engineering and Information Technology, University of Technology Sydney, who have given help in myriad ways for the making of these researches over the past four years. In particular, Linda Candy, Shigeki Amitani, Zafer Bilda, Alastair Weakley, Julien Phalip, Brigid Costello and Deborah Turnbull. In the Faculty: Laurel Dyson, Steven Grant, Jim Underwood, Teraesa Ashworth and Andrew Johnston. In the University: Professor Ross Gibson, Annmarie Chandler, Chris Bowman, Ian Gwilt, Andrew Martin and Paul Ashton, the Graduate School and those who approved and administered my Australian Postgraduate Award.

For those I have overlooked, there will come a time when all will be revealed.....

## Preface

'While more and more people ... are plunged into film history, the experience is far removed from that of the traditional cinema audience bound to a film in its given order at 24 frames per second. In this dialogue between old and new, past and present, the opposition between film and new technologies begins to break down and the new modes of spectatorship illuminate aspects of cinema that, like the still frame, have been hidden from view.'  
(Mulvey, 2006) 27.



When a man is making a speech and you are to follow him, don't jot down notes to speak from, jot down PICTURES. It is awkward and embarrassing to have to keep referring to notes .... but you can tear up your pictures as soon as you have made them - they will stay fresh and strong in your memory in the order and sequence in which you scratched them down. (Twain, 1914)

---

My initial encounters with the contemporary era of interactive computer-mediated artworks began in 1992. A small Macintosh SE, a single unit incorporating screen and CPU, placed on a table in one of the vast upper loggias of the Royal Festival Hall in London, containing a 'virtual book' of 'animated poems' by the poet and Chinese scholar John Cayley, demonstrated to me the potential of animated motion pictures controlled through computers.<sup>1</sup>

A few days later I visited the Town Hall Gallery in Croydon, south London, and caught sight of myself on a monitor. The artist had captured my image on the way into the exhibition, added it into a database, then retrieved it along with other visitor's appearances, displayed randomly as we moved through the space. Photographic images as dynamic, randomly accessible resources for memory and the moment, as memory-resonant moments of time were experienced firsthand.

Later that year, the Third International Symposium of Electronic Art (TISEA, 1992), was hosted in Sydney and shortly after, I signed up for a Master of Fine Art by Research on the topic of interactive multimedia. Another decade and the need for further advanced research, delivers me to the present.

The act of 'being in the world' of related research, affects directions taken and affordances encountered, as in any other endeavour. The 'snapshot' herein of my research and the research of others is therefore a four-year time exposure of captured written information and thoughts from the recent to the more distant past. Though so many 'leads' and possibilities were assiduously followed-up, it does not claim to be exhaustive. Making connections and establishing relations between aspects of several otherwise specialised disciplines, was motivated not only by understanding more deeply the tools and technologies available to the artist, but also the university culture supporting broader research objectives.

The significance of this became amplified to me for instance at meetings of senior researchers, where documents presented supported in a parallel sense, my personal research objectives. Thus for example in June 2006, one of the

---

<sup>1</sup> Later that year I purchased his collection of works, all made using the revolutionary Hypercard software, on a floppy disc (Cayley, 1992). Cayley is now a well-known artist, the winner of prizes and residencies around the world and a prolific experimenter with poetic and generative forms.

<http://homepage.mac.com/shadoof/net/in/>

handful of invited delegates to the *Symposium on Supporting Creativity with Search Tools*, Washington DC, affirmed the activity of searching a database or collection as “...*part of a creative process.*” (Kules, 2006).

Creativeness, like memory, has many descriptions and meanings subject to context, particularly when conjoining with the visual image. A famous user of visual memory aids was Mark Twain. At one point he was delivering memorised lectures nightly, but he found remembering the ten phrases he used to structure his presentation difficult. So he tried the first letters of each phrase, written on the ends of his fingers. But he sweated them off during the course of the lecture. So he used pictures instead....

The image of the 6<sup>th</sup> Century technology of the letters of language dissolving before the speaker’s eyes as he determines to aid his memory is a suitable metaphor to commence this written account. Plato would have been equally unimpressed by the muteness of the images Twain chose to stimulate memory. In a world drowning in images of affirmation, invariably set against a backdrop of intractability, this research affirms mutability as a guiding research principle.

Mike Leggett

April 2008

# Table of Contents

<b>Title page</b>	
<b>Certificate</b>	
<b>Acknowledgements</b>	
<b>PREFACE</b>	<b>i</b>
<b>Table of Contents</b>	<b>v</b>
<b>List of Illustrations</b>	<b>ix</b>
<b>ABSTRACT</b>	<b>xiii</b>
<b>CHAPTERS</b>	
<b>1. Introduction</b>	<b>1</b>
1.1. The Problem	6
1.2. The Method	6
1.3. The Outcomes	7
1.4. Significance	7
1.5. The Chapters	10
1.6. Notes	13
<b>2. Context - a state of the art</b>	
2.1. Introduction	15
2.2. Interdisciplinary Expeditions: Mind	16
2.2.1. Motion Picture Mediums	16
2.2.2. Mind	20
2.2.3. Representation and Mind	21
2.2.4. Memory	23
2.2.5. Indexing Systems	26
2.3. Interdisciplinary Expeditions: Machines	31
2.4. Relational models	37
2.5. Models of Interaction	42
2.5.1. Interactivity: databases and installations	45
2.5.2. Davies	50
2.5.3. Welsby	51
2.6. Linkages	53
2.6.1. Image With Text	53
2.6.2. Hypervideo	54
2.6.3. Authoring	58
2.7. Summary	60
2.8. Notes	62
<b>3. Methodology</b>	
3.1 Introduction	68
3.2 Strategy	68
3.2.1 Objectives	70
3.2.2 Approach	70

3.3	Practice-base	72
3.3.1	Iterative Design	73
3.3.2	Reflective Research	75
3.4	Reflection as Practice	77
3.4.1	Systems	78
3.4.2	Cognition	82
3.4.3	Semiotics	84
3.4.4	Media	87
3.5	Evaluation	89
3.6	Summary	93
3.7	Notes	93
<b>4</b>	<b>Foundation Work</b>	
4.1	Introduction	96
4.2	Background	97
4.2.1	Generations	98
4.3	Media Arts Practice - Analogue	100
4.3.1	Discontinuity - <i>Sheepman &amp; the Sheared</i>	102
4.3.2	Generative Film – <i>Red + Green + Blue</i>	103
4.3.3	Temporal Film - <i>Window</i>	104
4.3.4	Continuity - Image Con Text	107
4.4	Media Arts Practice - Digital	111
4.4.1	Objects, Processes, Networks	112
4.4.2	PathScape	114
4.4.3	Interaction Design	116
4.4.4	Consultations	118
4.4.5	Contemporary Evaluation	121
4.5	Conclusion: Questions, Repertoires and Framings	123
4.6	Notes	124
<b>5</b>	<b>New Studies</b>	
5.1	Introduction	127
5.2	Hypermedia and Motion Picture Files	128
5.2.1	Hypermedia	128
5.2.2	Hypervideo	129
5.2.3	The relational semantic schema	130
5.2.4	Neutral Time	131
5.2.5	Durational Time	132
5.2.6	Landscape as Knowledge Structure	134
5.2.7	Temporal Spaces: 'Window'	135
5.2.8	Drawers	137
5.3	Mnemonic Movie Paradigms	140
5.3.1	Video	140
5.3.2	Interaction Concept Summary	142
5.3.3	The Mnemonic iPod	144
5.3.4	Indigitrax Toolset	144
5.4	Tools	145
5.4.1	Pathscape as tool	145
5.4.2	Hypervideo Tools	146
5.4.3	MediaLoom	147
5.4.4	Korsakow-System	147
5.4.5	HyVAL team	147



5.4.6	Impromptu	147
5.4.7	Hyper-Hitchcock	148
5.4.8	Precepts as Propositions	148
5.5	Primary data	151
5.5.1	Video shooting and post-production	151
5.5.2	The Mnemovie Engine	152
5.5.3	Resolutions and Propositions	155
5.6	Mnemonic Movie Models and Secondary data	155
5.6.1	Lanes	158
5.6.2	Drawers	160
5.6.3	Clock (19.9.06)	165
5.6.4	Menu Loop	167
5.6.5	Morph Pans	169
5.6.6	Forest	171
5.7	Reflective Summary	173
5.8	Notes	175

## 6. Evaluation

6.1.	Introduction	178
6.2.	Evaluation Method	179
6.2.1.	Goals	180
6.2.2.	Questions	180
6.2.3.	Evaluation paradigm and techniques	180
6.2.4.	Identify Practical Issues	182
6.2.5.	Determine Ethical Issues	183
6.2.6.	Evaluation, Interpretation and Presentation	183
6.3.	Evaluation Plan	185
6.3.1.	Objectives	185
6.3.2.	Materials	186
6.3.3.	Pilot Study	187
6.3.4.	Participant Testing Sessions	187
6.4.	Evaluation Procedures	187
6.4.1.	Sheet One: Research Project Background	187
6.4.2.	Sheet Two: Participant Release Form	188
6.4.3.	Sheet Three: Participant Background	188
6.4.4.	Scoring Method	190
6.4.5.	Typical Profiles	192
6.4.6.	Sheet Four: Testing Instructions	192
6.4.7.	Sheet Five: Interactive Principles	193
6.4.8.	Sheet Six: Practice Model	194
6.4.9.	Sheet Seven: Test Models	195
6.4.10.	Three Test Models: LINE	195
6.4.11.	Test Model: CIRCLE	197
6.4.12.	Test Model: GRID	198
6.4.13.	Procedure	199
6.4.14.	Sheet Eight: Second Questionnaire	200
6.4.15.	Sheet Nine: Interview	201
6.4.16.	Sheet Ten: Researcher Log Sheets	202
6.5.	Results	203
6.5.1.	Pilot Study Profile	203
6.5.2.	Test Model Studies	205
6.5.3.	Participant Profiles	206

6.5.4.	Matrix for Ranking of Test Models	208
6.6.	Analysis of Test Model Results	209
6.6.1.	A Framework Emerges	210
6.6.2.	Emergence of Personas	214
6.6.3.	Outcomes	219
6.7.	Findings	220
6.8.	Notes	225
<b>7.</b>	<b>Concluding</b>	
7.1.	Summary	227
7.2.	Implication for Interaction Design	233
7.2.1.	Design Principles	235
7.2.2.	General Principles	237
7.2.3.	Community Principles	239
7.2.4.	Specialist Principles	241
7.2.5.	Generic Moves	244
7.3.	Conclusion	246
7.4.	Notes	249
<b>8.</b>	<b>Appendices</b>	
8.1.	Appendix: IBM VideoAnnEx Annotation Tool	251
8.2.	Appendix: RICOH MovieTool	255
8.3.	Appendix: Annodex	257
8.4.	Presence – some debates	258
8.5.	James Turrell	259
8.6.	Appendix: Sensing and Interactive Devices - a survey (2005)	261
8.7.	Appendix: Films and Videos by Mike Leggett, 1965 – 1986	268
8.8.	Appendix: Red+Green+Blue summary	271
8.9.	Appendix: Window notes	272
8.10.	Appendix: The Heart Cycle.	272
8.11.	Appendix: Image Con Text	273
8.12.	Appendix: SonTel prototype response.	275
8.13.	Appendix: Mnemonic Paradigms – early notes	275
8.14.	Appendix: Mnemonic iPod research proposal	277
8.15.	Appendix: Indigitrax research proposal	279
8.16.	Appendix: Indigitrax tools specification	287
8.17.	Appendix: Pathscape SWOT analysis	288
8.18.	Appendix: Mnemonic Movies: Iterative Progression	290
8.19.	Appendix: MneMovie Timings	294
8.20.	Appendix: Mnemonic Movie Model Report (Sample)	295
8.21.	Appendix: Test Model movie list	298
8.22.	Appendix: Research Background Information for participant	300
8.23.	Appendix: Participant Consent/Release Form	301
8.24.	Appendix: First questionnaire – participant background	302
8.25.	Appendix: Testing Procedures and Instructions	304
8.26.	Appendix: Using the MneMovie system	305
8.27.	Appendix: Practice Model Instructions	306
8.28.	Appendix: Test Model Instructions	307
8.29.	Appendix: LINE Test Model instructions	308

8.30.	Appendix: CIRCLE Test Model Instructions	309
8.31.	Appendix: GRID Test Model Instructions	310
8.32.	Appendix: Researcher Log Sheets (X4)	311
8.33.	Appendix: Second questionnaire – participant’s responses	315
8.34.	Appendix: Interview Questions	317
8.35.	Appendix: Evaluation 2nd Questionnaire Table of Results	318
8.36.	Appendix: ArtLab proposal	321
8.37.	Appendix: Sketches – Interactive Gestural Scenarios	324
8.38.	Appendix: Mnemovie Cascading Menu Development	326
8.39.	Appendix: Mnemovie Online Development	328
8.40.	Appendix: Notes for Generic Navigational Strategies	329
8.41.	DVD-ROM Notes	330

**Bibliography (References) 336**

**List of Illustrations**

Figure numbers are preceded by chapter number.

All images are copyright, attributed in the text and References.

Fig. 2.1:	Memory schema (based on sources referenced in the text)	23
Fig. 2.2:	screen grab from Jerome B. Wiesner, 1915-1994.	27
Fig. 2.3:	Aspen Walk, frame grabs	29
Fig. 2.4:	Exeter Cathedral Lady Chapel, plan of vaulting and bosses.	30
Fig. 2.5:	Fotofile hyperbolic tree visual query interface	33
Fig. 2.6:	i-Map visual query interface	33
Fig. 2.7:	Xi-Hu Historical Landscape interactive interface.	38
Fig. 2.8:	Firebird (1971) Bridget Riley	40
Fig. 2.9:	Portrait One (1990)	41
Fig. 2.10:	A moment from Surface Browser animation	45
Fig. 2.11:	T_Visionarium (2005)	46
Fig. 2.12:	Murray McKeich generated photographic print.	48
Fig. 2.13:	Haze Express (1999)	48
Fig. 2.14:	<i>Twelve</i> (1995): five views (top to bottom) of interactive composite.	49
Fig. 2.15:	<i>Swarm</i> (2003) movie frame	50
Fig. 2.16:	Changing Light (2004) installation at Artspace, Sydney.	51
Fig. 2.17:	Hyper-Hitchcock player tool (Shipman et al., 2005)	56
Fig. 2.18:	<i>korsakow</i> online interactive movie system	59
Fig. 3.1	Summary of approach to iterative process of investigation	71
Fig. 3.2:	Iterative Design Process, bottom up emergence (after Schön)	74
Fig. 3.3:	Iterative Design Process (after Schön) augmented.	76
Fig. 3.4:	Venn diagram – Media, Systems Theory, Semiotics, Cognition and memory.	78
Fig. 3.5:	The Maltese Cross, intermittent mechanism	80
Fig. 3.6:	Human information processing model (after Preece)	86
Fig. 3.7:	System image as concept	90
Fig. 3.8:	Table of data objects and evaluation paradigms employed.	91
Fig. 4.1:	Image strip from 16mm film <i>Shepherd’s Bush</i>	102
Fig. 4.2:	<i>Red+Green+Blue</i> schematic.	103
Fig. 4.3:	<i>Window</i> (1974)	105
Fig. 4.4:	‘ <i>Window</i> ’ – temporal markers and signifiers.	105-106

Fig. 4.5: diagram from <i>'Image Con Text'</i> (1978) .....	109
Fig. 4.6: Caption frame from <i>'Image Con Text : Two'</i> (1985) video .....	109
Fig. 4.7: <i>Pathscape</i> , prototype interactive system (Leggett, 2000b).....	114
Fig. 4.8: <i>Pathscape</i> , screen Area Images and Cursor Gesture Outcomes.....	116
Fig. 4.9: <i>Pathscape</i> , schematic for accessing movie database .....	117
Fig. 4.10: <i>Pathscape</i> , screen grab : end of a node movie, with colour-coded circles. ....	118
Fig. 4.11: <i>Pathscape</i> , screen grab within a narrative branch, with colour-coded circles.119	
Fig. 4.12: table analysis of <i>Pathscape</i> development.....	121
Fig. 5.1: Hypertext schema of Storyspace .....	129
Fig. 5.2: Hypervideo schema .....	129
Fig. 5.3: Motion picture film / file, as looped infinite duration. ....	130
Fig. 5.4: Hypervideo schematic - motion picture files and linking paths .....	130
Fig. 5.5: Gum tree Interactive Schema (tacit) of a hypothetical interactive progression.132	
Fig. 5.6: Ocean to Water-spring to Sea Interactive schema. ....	133
Fig. 5.7: table of conceptual models (after Preece) .....	134
Fig. 5.8: Temporal Object matrix analysis – <i>Window</i> .....	136
Fig. 5.9: Temporal Object matrix analysis <i>Window</i> compressions, by Object. ....	136
Fig. 5.10: Wooton patent desk .....	138
Fig. 5.11: Interactive object (tacit) – the Chest of drawers.....	139
Fig. 5.12: Interactive schema (tacit) for Chest of drawers .....	139
Fig. 5.13: Shape of gesture, shape of information space .....	141
Fig. 5.14: Hypervideo, Parent and Child. ....	142
Fig. 5.15: 4-way interactive movie navigation. ....	143
Fig. 5.16: Retrieval event from Piece Park grid pattern .....	149
Fig. 5.17: Primitive shapes as an aid to spatial orientation.....	150
Fig. 5.18: Two-camera handheld mount, with wireframe viewfinder.....	152
Fig. 5.19:Table of Mnemovie conceptual data model .....	153
Fig. 5.20: Table of motion picture direction semantic. ....	154
Fig. 5.21: Table of Left / Right gesture as motion picture linking semantic.....	154
Fig. 5.22: Table Summary of experimental Models, Test Models and Practice Model. .	157
Fig. 5.23: LANES - the Location movie.....	158
Fig. 5.24: Sketch for authoring interface .....	160
Fig. 5.25: the chest of Drawers object retrieval schema. ....	161
Fig. 5.26: Concentric Circle device: .....	162
Fig. 5.27: Spike moves from left to right of screen.....	162
Fig. 5.28: The line moves from left to right of frame .....	163
Fig. 5.29: compositing of graphic gauge scanner line with movie in NLVE tool.....	163
Fig. 5.30: Drawers Model.....	164
Fig. 5.31: Interactive schema (implicit). ....	165
Fig. 5.32: Clock face and colour gradient background.....	166
Fig. 5.33: Circle as Menu Loop, interactive schema .....	167
Fig. 5.34: Desktop set-up for authoring Morph Pans. ....	169
Fig. 5.35: Morph Pans sketches .....	170
Fig. 5.36: Forest – plan: standard distance and compass direction for pans grid.....	172
Fig. 5.37: 4/5-way navigator, l-r: DVD controller; digital camera; mobile phone .....	174
Fig. 6.1: table of Evaluation paradigms and techniques for four levels of user profile... 181	
Fig. 6.2: table of Three Test Models, A to C, rotation testing pattern. ....	183
Fig. 6.3: table of Test Models - Word and Title. ....	184
Fig. 6.4: Table of Scoring method employed. ....	190-191
Fig. 6.5: Practice Model .....	195
Fig. 6.6: Test Model, 'LINE' navigation schema.....	196
Fig. 6.7: Test Model, 'CIRCLE' navigational schema.....	197
Fig. 6.8: Test Model, 'GRID' navigation schema.....	198
Fig. 6.9: table of Three Test Models rotation pattern for participants 1-6, 7-12. ....	199
Fig. 6.10: table of Pilot Study, participant's Scores.....	203-204

Fig. 6.11: Database interface – participant details and qualitative session data .....	206
Fig. 6.12: Database interface – Participant Profiles .....	206
Fig. 6.13: table of Participant Profile Groupings (Revised) .....	207
Fig. 6.14: Mnemovie Matrix for Ranking of Test Models .....	208
Fig. 6.15: Responses to Test Models: Ranking Matrix graphs .....	209
Fig. 6.16: First summary: Total Testing Duration (T-Time, in minutes).....	211
Fig. 6.17: Second summary: Testing Duration (T-Time, in minutes) .....	211
Fig. 6.18: User Group sorted by a) Profile b) Task Duration.....	212
Fig. 6.19: Average Durations for Tasks 1 and 2 .....	212
Fig. 6.20: Table of task durations and interaction style.....	215
Fig. 6.21: Participants confidence levels.....	217
Fig. 6.22: Durations for each Test Model.....	217
Fig. 6.23: Summary Table.....	218
Fig. 6.24: Durations for Quickies and Explorers .....	219
Fig. 6.25: Summary of interactive behaviours.....	222
Fig. 7.1: Summary of interactive behaviours.....	234
Fig. 7.2: Interactive experiences as design qualities .....	235
Fig. 7.3: Forest –standard distance and compass direction for pans grid (plan view) .....	244
Fig. 8.1: HyVAL Editor .....	253
Fig. 8.2: IBM VideoAnnEx Annotation Tool.....	254
Fig. 8.3: Ricoh MovieTool .....	256
Fig. 8.4: Annodex_file_structure.svg.....	258
Fig. 8.5: JT2 ganzfeld installation (2005) .....	260
Fig. 8.6: schematic of interactive ‘stand-alone’ microprocessor to ‘program computer’ .....	261
Fig. 8.7: schematic scenario using Trax control technology .....	262
Fig. 8.6: National Museum of Australia, Canberra interactive installation.....	262
Fig. 8.7: digital solid state video server c. 2004 .....	263
Fig. 8.8: custom design-build multi-DVD controller. (© Stephen Jones).....	263
Fig. 8.9: Preliminary schematic of AID multimedia controller unit.....	264
Fig. 8.10: MIT Media Lab Cricket.....	265
Fig. 8.11: The Handy Board .....	265
Fig. 8.12: The Basic Stamp programmable controller chip components. ....	266
Fig. 8.13: the Picaxe kit.....	266
Fig. 8.14: Making Things programming interface.....	267
Fig. 8.15: Teleo I/O kit.....	267
Fig. 8.16: Crossbow wireless ‘mote’ sensor network components. ....	268
Fig. 8.17: <i>Red+Green+Blue</i> 16mm filmstrip of 4 frames .....	270
Fig. 8.18 : ‘The Heart Cycle’ video frame.....	272
Fig. 8.19: caption frame from ‘Image Con Text: One’ (1984) video .....	273
Fig. 8.20: table of Mnemonic paradigms and modes of representation. ....	276
Fig. 8.21: table analysis of Pathscape information and presentation mode.....	289
Fig. 8.22: table of analysis of Pathscape evaluation data, method and SWOT. ....	289-290



## Abstract

There is a problem with storing and retrieving audio-visual digital media files using information and communication technologies employing text-based indexing systems. Fundamentally, the complexities of language as a semantic system do not serve well the complexities of the motion picture document.

The objective is to propose effective and affecting means by which creators and audiences can store and retrieve the video files with which we work, communicate and entertain ourselves, increasingly each day. The research has employed practice-based research to extend our understanding of the precept of a taxonomy based on the visual mnemonics of the motion picture document.

The research approach draws on the work of Schön: “...*our knowing is in our action...*” (Schön, 1983) 49, together with Norman’s description of two modes of cognitive behaviour, the experiential and the reflective (Norman 1993) 16. This is echoed by recent work on ‘the configuration of indexicals’ (indexicality) where communities of expertise can collaboratively establish ‘...*shared meaningful objects...*’ within a referential network (Sarmiento and Stahl, 2007). It joins many others, who have identified the activity of searching a database or collection as “...*part of a creative process.*” (Kules 2006). These researchers have informed the production of evidence in my research, that takes the form of experimental models from which data has been gathered, both in the making of the artefacts and their evaluation.

A series of seven experimental Models have been built using movie files encountered as full screen motion-picture images, navigated with four-way gestural interactivity. Mnemonics – aids to memory – are deployed taking two broad approaches: a schema, (from the Greek *skhema*, meaning shape), imparted with a word description at the outset of the interactive encounter of a primitive to describe navigational principles for each Model; and the images and sounds within the movies, associatively and semantically related mnemonically to the knowledge domain of the collection.

Conclusions emerge from two areas of practice-based research, the artist/designer and the potential user group. Initially, evaluation of the objective of each experiment with the creativity support tool - the Mmemovie engine – revealed the need to design interactive movie Models specifically for each

collection of movies. Subsequently, observational data from the test subjects both confirmed and contradicted the precept, leading to the description by participants of their own navigational designs using the Mnemovie system for personal movie collections.

Further research objectives are reported emerging from the conclusions, proposing specifications for a system, or series of systems, incorporating further development of the Mnemovie engine support tool, live performance collaborative projects, generative systems, and opportunities for interactive sensing systems technology.